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Colin Hinson

In the village of Blunham, Bedfordshire, UK.

(A.P.113, Sect.6D

AIR PUBLICATION

2527C

VOLUME 1

PARTS 1, 2 and 3

PUBLICATIONS

L. 55

R.A.F. LOCKING

INFORMATION GENERATOR FOR RADAR STATIONS

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence

FOR USE IN THE ROYAL AIR FORCE

(Prepared by the Ministry of Aviation)

NOTE TO READERS

The subject matter of this publication may be affected by Air Ministry Orders, or by "General Orders and Modifications" leaflets in this A.P., in the associated publications listed below, or even in some others. If possible, Amendment Lists are issued to correct this publication accordingly, but it is not always practicable to do so. When an Order or leaflet contradicts any portion of this publication, the Order or leaflet is to be taken as the overriding authority.

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LIST OF ASSOCIATED PUBLICATIONS

Radar Type 13 ◄(*Mk.* 6, 7 *and* 8)► *and* 14 (*Mk.* 7, 8, 9, 10 *and* 11) *RVT* 500, 501, 502 *and static versions*	2527B
Test equipment for mobile and static radar stations	2527D
Information generation and distribution for static radar stations ...	2527E
Radar Type 54 *Mk.* 2 *and* 3	2527K
Marker unit (*video map*) *Type* 30	2527R
Basic IFF Mk. 10 (*ground*)	2906K

LAYOUT OF A.P.2527C

INFORMATION GENERATOR FOR RADAR STATIONS

Heavy type indicates the books being issued under this A.P. number; when issued they will be listed in A.P.113

VOLUME 1		**General and technical information**
	Part 1	**Leading particulars and general information**
	Part 2	**Technical information**
	Part 3	**Fault diagnosis**
	Part 4	Testing after installation at a given ground station point (***not issued***)
VOLUME 2		**General orders and modifications**
VOLUME 3		**Equipment schedules and scales**
VOLUME 4		**Planned servicing schedules**
VOLUME 5		**Basic servicing schedules**
VOLUME 6		**Repair and reconditioning instructions**

LIST OF PARTS

Note.—*A list of chapters appears at the beginning of each part*

1 Leading particulars and general information

2 Technical information

3 Fault diagnosis

PART 1

LEADING PARTICULARS AND GENERAL INFORMATION

SECTION 2

AMPLIFIERS AND AMPLIFYING UNITS

LIST OF CHAPTERS

Note.—*A list of contents appears at the beginning of each chapter*

1 ▶◀

2 **Amplifier (AZ, Mk.) Type A.3678**

3 **Amplifier (NB-W) Type A.3679**

4 **Amplifier (IF and vid.) Type A.3680**

5 **Receiving unit Type 215**

6 **Amplifier (AJ and vid.) Type A.3681**

7 **Amplifiers Type A.3719 and A.3720**

8 **Amplifier unit (pulse) splitter Type 300**

9 **Amplifier unit (servo) Type 297**

10 **Amplifying unit (pulse) Type 4279**

11 **Amplifying unit (video) 4416**

12 **Amplifying unit 4727**

13 **Amplifying unit 4728**

14 **Amplifying unit (video) 4416A**

PART 1

LEADING PARTICULARS AND GENERAL INFORMATION

LIST OF SECTIONS

Note:—*A detailed list of chapters appears at the beginning of each section*

1 Rack assemblies

2 Amplifiers and amplifying units

3 Marker, pulse and waveform generators

4 Monitors and test sets

5 Switching apparatus and delay networks

6 Power, rectifier and transformer units

7 Control units

8 Setting-up and operating

9 Packaging, assembling and dismantling

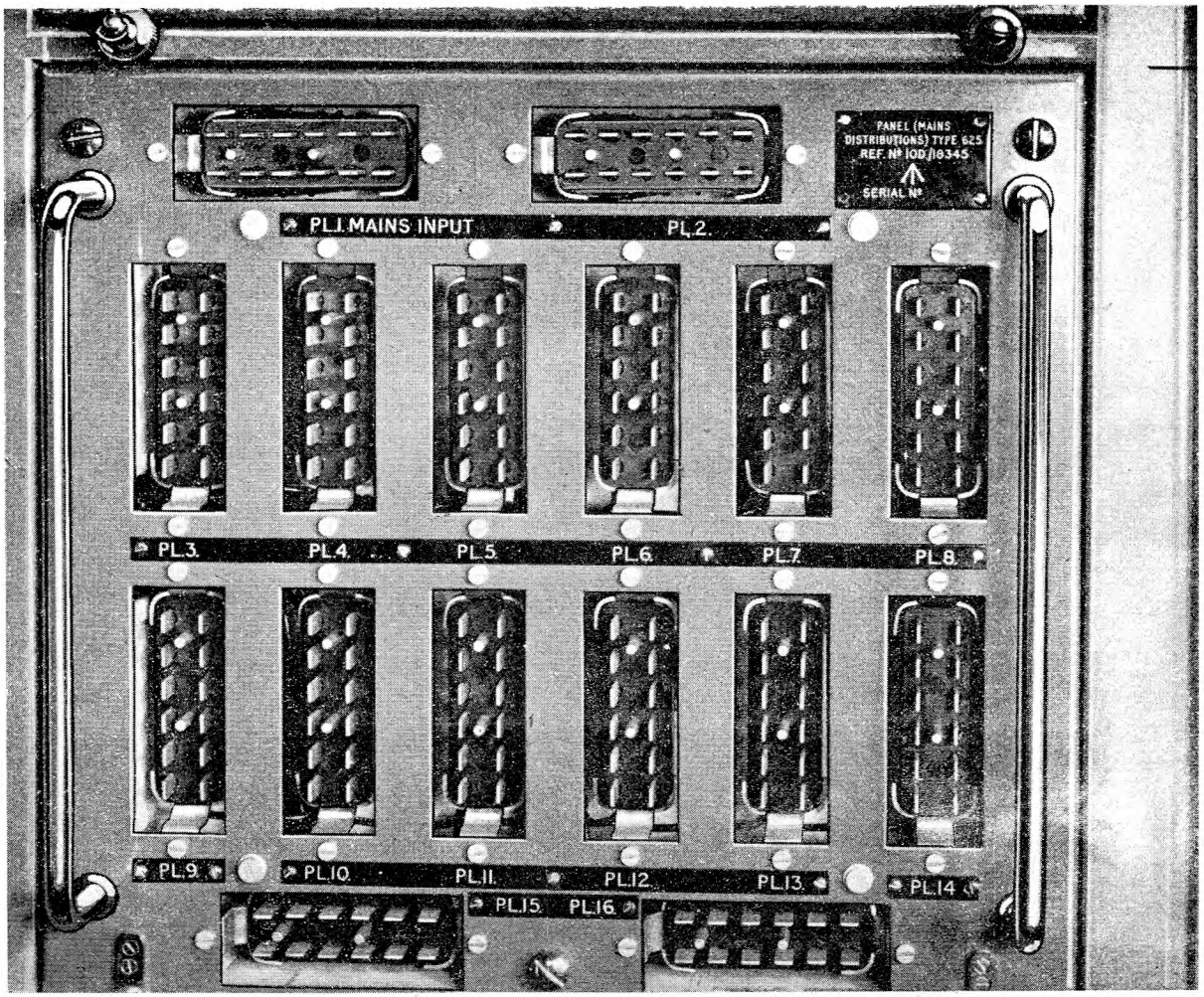


Fig. 2. Panel (mains distribution) Type 625

(2) Main unscreened cableform. This distributes inputs and outputs of units top panel (mains distribution) Type 625 and right-hand side panel. Carries some 230V 50c/s mains supplies and earths.

(3) Mains distribution cableform links on a ring mains system, the rack "on/off" gate switch with sockets built into the frame between columns of units. One plug serves each bay, hence it is possible by disconnecting a plug and socket to isolate any one bay for servicing purposes, or by use of a jumper lead, to take out mains supplies from the rack.

(4) There is a small cableform linking the mains plug on the panel (mains distribution) Type 625 to the 4-pin mains input plug at the bottom of the right-hand side panel.

Wiring diagrams are shown in fig. 8 to 11 (incl.); a functional diagram is given in fig. 12.

Wiring and terminations

16. Screened wire throughout the rack is of Uniradio 32 (Stores Ref. 5E/2232). Unscreened wiring is of cable, PPC flex, black, 7 (Stores Ref. 5E/2712), with the exception of e.h.t. connections between the monitoring unit Type 75 and power unit Type 741, which is in Unihiten No. 1.

17. When necessary, two or more wires are run in parallel to increase the current carrying capacity. Co-axial terminations are in plugs Type 790 or sockets Type 579, except on the right-hand side panel where wires from the inter-vehicle cabling kits terminate on the panel on sockets Type 730.

18. All other terminations are in 12-pin Jones plugs or sockets except on the right-hand side panel which takes connections from the inter-vehicle cables.

19. Wherever possible 230V 50 c/s mains supplies are introduced to a unit on pins 11 and 12 of 12-pin Jones plugs or sockets, 50V d.c. relay supplies are connected to pins 2 (earth) and 3 (negative 50V), earths to pin 1 and 180V 500 c/s to pins 7 and 8.

Coding of cables

20. As mentioned previously each unit space in the rack is lettered. Plugs and sockets are numbered consecutively, starting from one in each

SECTION 1

RACK ASSEMBLIES

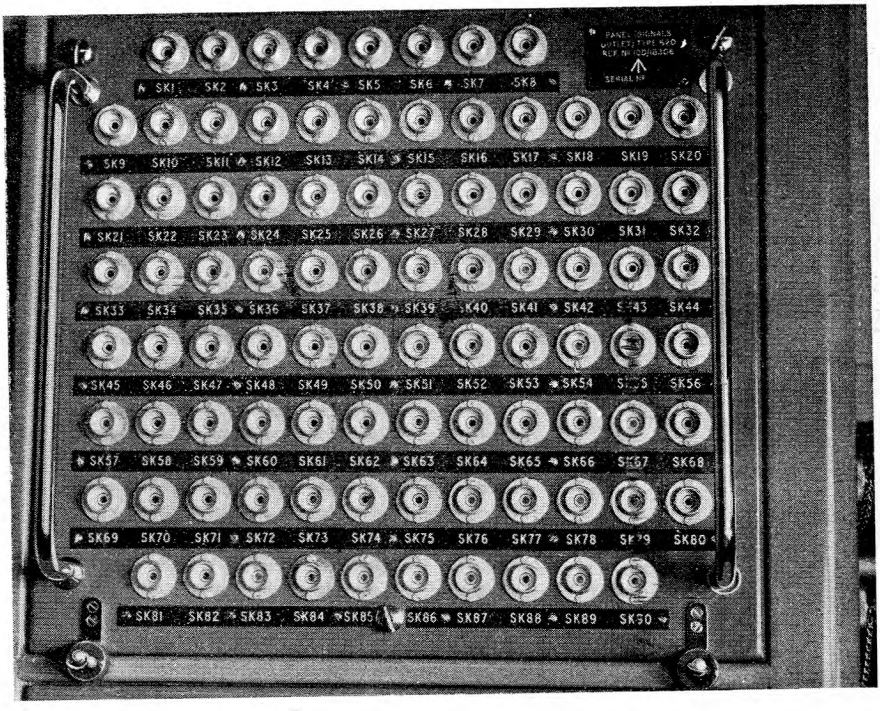


Fig. 3. Panel (signals outlet) Type 620

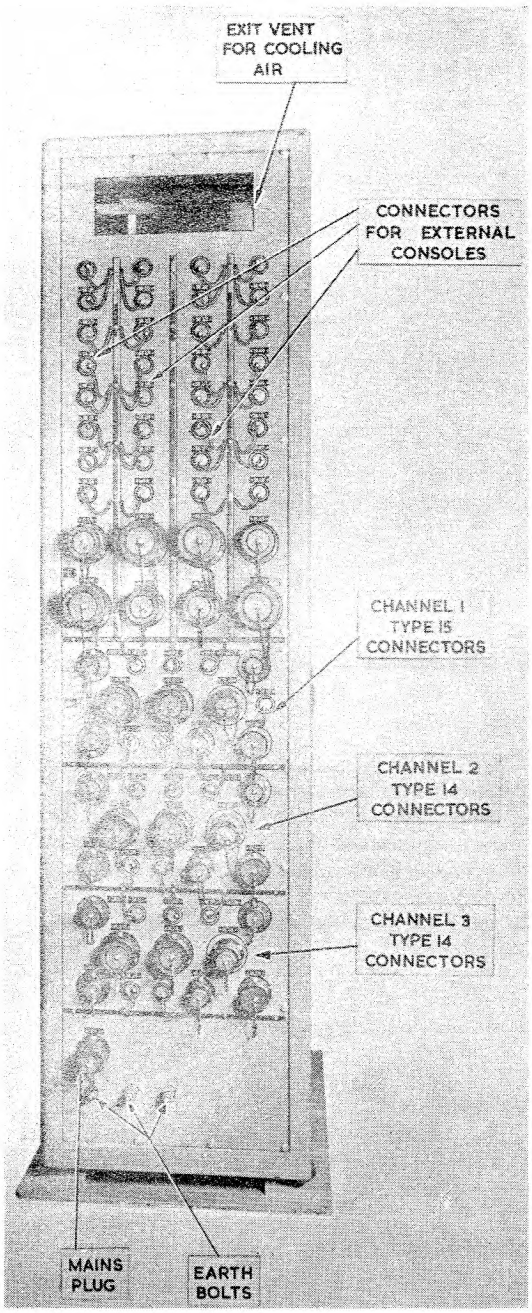


Fig. 4. Right-hand side panel

space and on each corresponding unit irrespective of type. Thus, for example, each marker unit (range) Type 27 carries six panel-mounted co-axial sockets, numbered SKT.1 to SKT.6, and one panel-mounted 12-pin Jones plug PL.7. Marker unit (range) occupies spaces O, S and T in the rack, and plugs and sockets in these positions are marked with the appropriate letter followed by the correct corresponding plug or socket number. On the right-hand side, panel plugs and sockets are numbered with the channel number, followed by the plug or socket number which corresponds with the number on the inter-vehicle connecting cable.

Ventilation of rack

21. Air is blown through the floor in the mobile radar operations room Type 1 and enters the rack in the space behind blank panel W. The air circulates through the units in the rack and exhausts through the vent at the top of the right-hand side panel.

Panels

Panel D;—panel (signals outlet) Type 620

22. A schematic diagram of the inputs and outputs through this panel is given on fig. 5.

Panel J;—panel (mains distribution) Type 625

23. A schematic diagram of the inputs and outputs to this panel is given on fig. 6.

Right-hand side panel

24. Connections from aerial heads to the IG are made direct via connector sets which are standard for any type of aerial vehicle. On its lower half the right-hand side panel contains three batches of plugs and sockets separated into groups by chromium-plated strips of metal. These are identical except for those working on channel 1, which has one extra co-axial socket. A schedule of incoming information and plug and socket numbers on panel F is given in the accompanying TABLE A.

25. Below channel 3 connectors there is a single plug carrying the IG mains. This is not normally used and, for reasons of safety, the loose cover should be kept in place. Alongside this plug are three (commoned) earth bolts.

26. The upper half of the right-hand side panel (panel E) carries four vertical rows of plugs and sockets intended for feeding information to consoles external to the mobile radar operations room Type 1. Only three of the four channels are connected to outgoing information. The schedule of outgoing information and plug and socket numbers is given in TABLE B.

RADAR SIGNAL CHANNELS

General

27. Signals are accepted from the head amplifiers in the aerial heads, are amplified at i.f., detected and limited. Three independent outputs are provided from each channel for feeding to the various displays. The following anti-jamming measures can be switched into each channel as required:—

(1) Narrow band-width amplifier (NB-W)

(2) IAGC (instantaneous automatic gain control)

(3) Short time-constant circuit (STC)

(4) Low-pass filter (LPF).

28. The units concerned are:—

(1) Amplifier (NB-W) Type A3679

(2) Amplifier (IF and vid.) Type A3680, which includes on its chassis the receiver unit, Type 215 (IF strip)

(3) Amplifier (AJ and vid.) Type A3681.

A block diagram is shown in fig. 7.

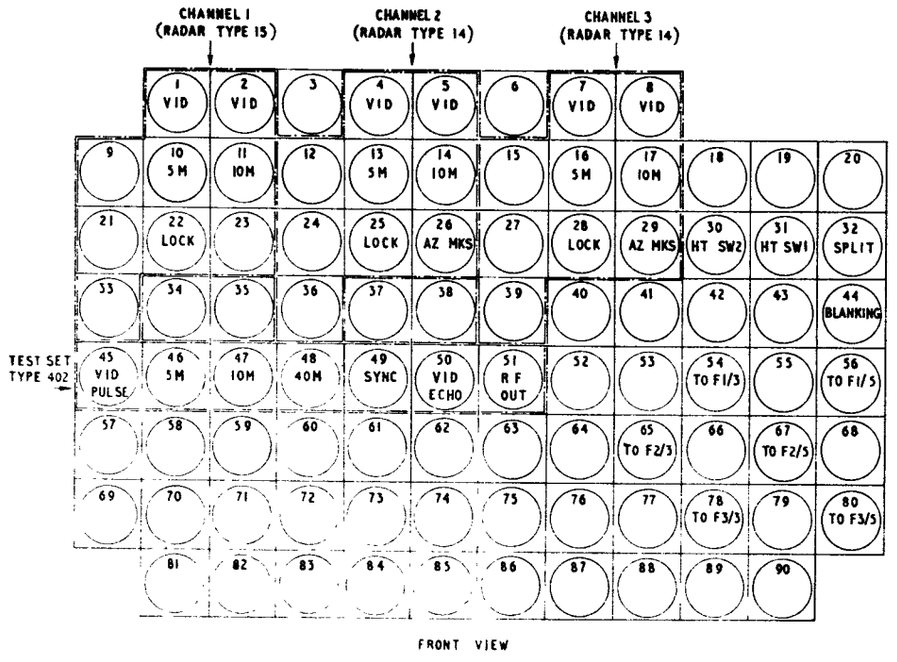


Fig. 5. Panel (signals outlet) Type 620, schematic

Amplifier (NB-W) Type A3679

29. This amplifier accepts signals at 45 Mc/s mixes them with the output of a 65 Mc/s oscillator and passes them through an i.f. amplifier having unity gain, a pass-band of 500 kc/s at 3dB down, and a frequency of 20 Mc/s. The output is converted back to 45 Mc/s by further mixing with 65 Mc/s. The narrow pass-band circuits are normally by-passed, and are relay-switched into operation. A power unit requiring 230V at 50 c/s is incorporated.

Amplifier (IF and video) Type A3680

30. This amplifier is divided into three main sections:—

(1) IF amplifier and detector, receiving unit, Type 215

(2) Limiter, video amplifier and cathode-followers

(3) IAGC circuits.

31. The 45 Mc/s signals from the narrow bandwidth amplifier are fed into the i.f. strip, amplified in 5 stages and detected and the video signals are then limited and fed by cathode-followers to the anti-jamming and video amplifier. Signals from the latter are fed back into this unit to three cathode-followers working in parallel and delivering independent outputs. The IAGC circuits accept the unlimited output from the i.f. strip and reduce the gain of the first stage in the i.f. strip to certain types of interference. Stabilized power supplies derived from 230V 50 c/s mains are provided on the unit.

Amplifier (AJ and video) Type A3681

32. Limited signals from the i.f. and video amplifier can be passed, if required, through either a short time-constant circuit or a low-pass filter, or both, to counter certain types of interference, the anti-jamming circuits being switched in by means of the relays, either on the unit or, remotely, from the display positions. Two channels are dealt with in one unit, power supplies being common on both sets of circuitry.

MARKERS

Range

Marker unit (range) Type 27

33. The marker unit (range) (Stores Ref. 10D 18308) is operated by a positive or negative locking voltage and generates four outputs:—

(1) Two of 2μS pulses 5 miles apart, every 40-mile pulse being doubled

(2) Two of 2μS pulses 10 miles apart, again with every 40-mile pulse doubled.

Doubling of the range marker pulse at 40, 80, 120 miles, etc., greatly facilitates range reading when the origin of the timebase is not visible as is possible when using off-centred p.p.i.'s. The 5-mile and 10-mile outputs are variable in amplitude so that equal brilliance may be obtained on the displays when switching from one to another.

34. The equipment with which this unit is associated can be run at either a pulse recurrence frequency of 500 or 250, the lower p.r.f. being used when increased ranges are required. Provision has therefore been made for increasing the number of range marker pips to cope with the increased range obtained at the lower p.r.f.

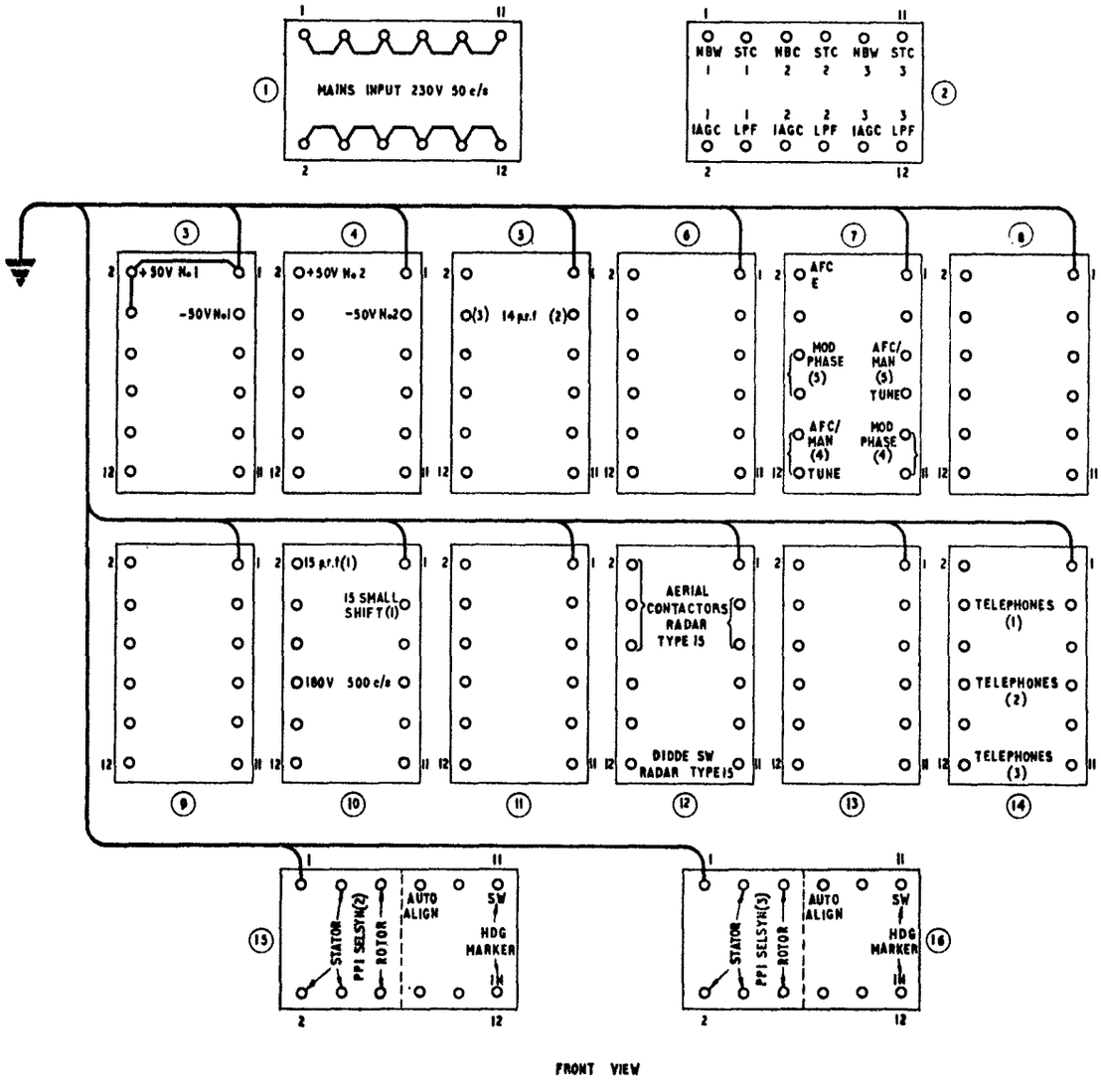


Fig. 6. Panel (mains distribution) Type 625, schematic

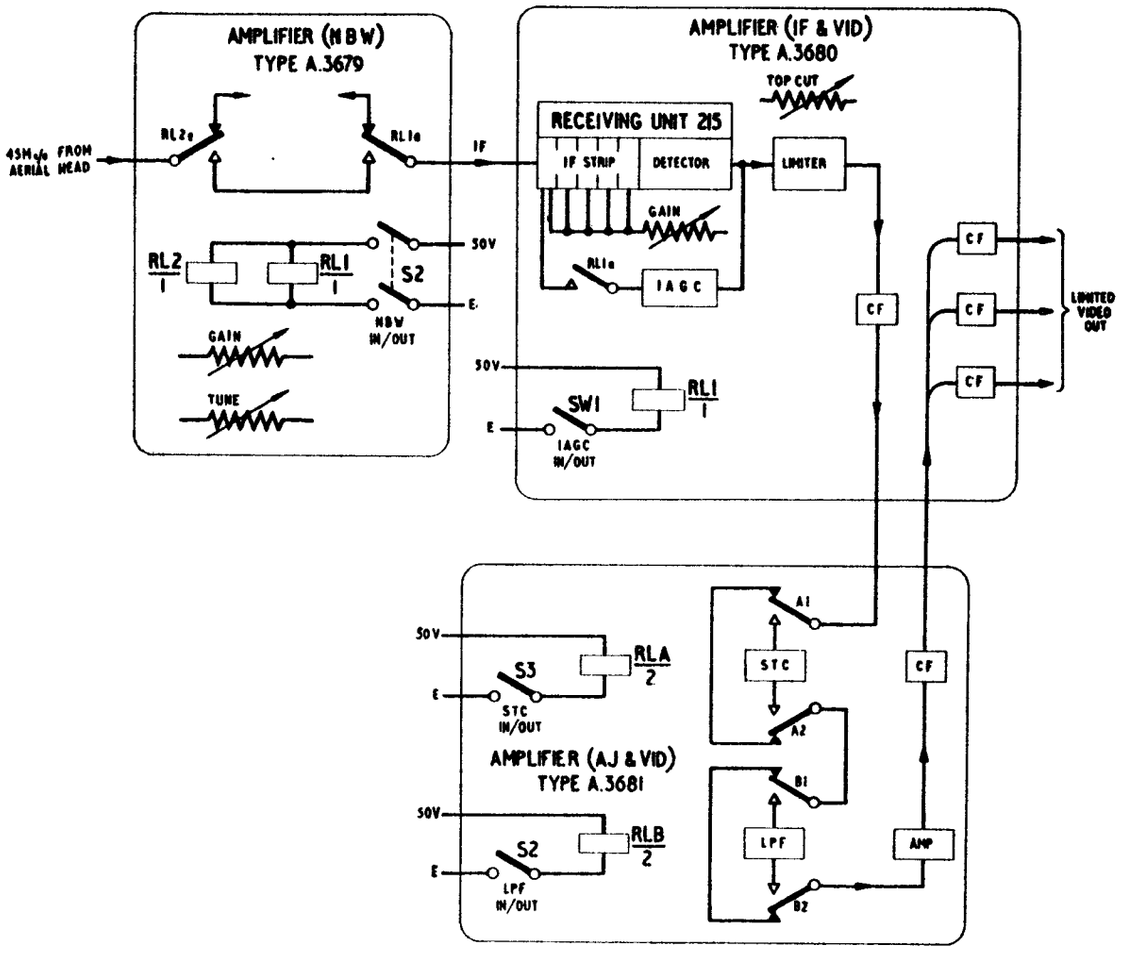


Fig. 7. Radar signals channels block diagram

35. The markers are derived from a pulse oscillator, the natural frequency of which can be adjusted over a small range allowing the unit to set up against a crystal-driven standard.

Azimuth

36. The units associated with the generation and amplification of azimuth markers are:—

(1) Marker unit (az.) Type 26

(2) Amplifier (az. marker) Type A3678.

37. Two channels of information can be dealt with simultaneously, there being two identical generators in the marker unit and two identical amplifiers fed from one power rack in the amplifier unit.

Marker unit (az.) Type 26

38. This unit provides pulses of approximately 4 mS duration which are used to form radial lines on the p.p.i. display, spaced 10 deg. apart in azimuth. The pulses are generated by a beam of light, interrupted by a rotating slotted disc, following on a photo-electric cell. The disc is driven by a selsyn which is coupled to the appropriate selsyn in the p.p.i. aerial head. An auto-aligning device is incorporated for the purpose of aligning the azimuth markers to the aerial.

39. Amplifier (az. marks) signals are fed in from the marker unit (az). Type 26, amplified and squared, and then fed out by two parallel cathode-followers to the displays. Facilities are incorporated for mixing in a northing or heading marker from the associated aerial vehicle. Normally this would coincide with one of the azimuth markers.

TRIGGERING AND HEIGHT-FINDING

Radar Type 15

Multivibrator unit Type 52

40. Multivibrator unit Type 52 produces a positive locking pulse to lock the transmitter of radar Type 15, together with a small negative locking pulse. When free running, any p.r.f. in the range 250 to 500 can be obtained. The unit may also be locked by the 180V 500 c/s supply. In the latter a phasing control ensures the correct point of triggering.

41. A small shift of frequency from 500 c/s or 250 c/s can be obtained by operating a relay, normally from a remote position.

42. The unit also produces square waves for lobe switching the aerial of radar Type 15, and a time-base "split" waveform, capable of suppression.

The switching waveforms are delayed with respect to the transmitter pulse ensuring that the switching occurs between timebases.

43. The unit requires supplies of 230V 50 c/s and 180V 500 c/s single-phase.

44. Aerial contactor and diode switching connections from the console to radar Type 15 are routed through the rack assembly for reasons of convenience.

Modulator phasing controls for radar Type 13 and 14

45. Phasing controls for setting-up triggering on these aerial heads to the appropriate part of the cycle are mounted on the switch unit (mon.) Type 296. Four channels are concerned, channels 2 and 3 normally being associated with radar Type 14 and channels 4 and 5 with radar Type 13.

IFF Mk. 10

46. Services are provided, through the rack assembly 165, between the operations room and the IFF vehicle RVT 511 in order to indicate, and effect control of, the state of the IFF equipment.

47. Indication in the operations room is provided by the indicator electrical mounted on the wall of the cabin, as shown in fig. 11. Control of the IFF is provided by switches on the consoles Type 60. The connections to both of these services are provided by a loom connected at one end to plugs 6 and 8 on panel J on the rack assembly 165. The corresponding sockets are connected inside the rack to panel E, SK30 and PL31. The cables from RVT 511 that are numbered 30 to 31 connect to panel E, SK30 and PL31, and carry the following services:

(1) cable 30 carries the 50V supplies and mode switching

(2) cable 31 carries remote indication and telephone signals.

WAVEFORM MONITORING

Units

48. Facilities for waveform monitoring are provided in the rack assembly Type 165 by the:—

(1) Monitoring unit Type 75

(2) Power unit Type 741

(3) Switch unit (mon.) Type 296.

Note . . .

On static stations, switch unit (mon,) Type 296 is not used. The monitoring unit Type 75 and power unit Type 741 are mounted with the test set Type 402 on a trolley, test rig (installation) Type 6 (Air Publication 2527D).

Power supplies

49. The monitoring unit Type 75 requires the following supplies:—

(1) +350V d.c.

(2) +300V d.c.

(3) −300V d.c.

(4) 4V 1A 45-65 c/s

(5) +3,000V d.c.

(6) 6·3V 3·1A

(7) 6·3V 0·2A

(8) 6·3V 0·3A.

All power supplies for the monitoring unit are provided by the power unit, direct connection being made by three twelve-pin Jones plugs and sockets and two Belling-Lee voltage plugs and sockets on each unit. A 2V, peak-to-peak, 45-65 c/s test signal is also supplied by the power unit for calibration purposes on the monitoring unit.

Timebases

50. The monitoring unit contains a 6-inch c.r.t. which displays one of two timebases as an A-scan. The main timebase is continuously variable in range between the minimum and maximum limits in nautical miles. Hence if the transmitter p.r.f. is 500 it is possible to display over two cycles of any waveform occurring at this p.r.f. In addition a strobe timebase is provided so that any 10-mile stretch of the main timebase can be selected and displayed on the c.r.t. by means of a switch. The section selected by the strobe range control is indicated on the main timebase by a brightening of the trace over the corresponding section. The strobe timebase has the same amplitude as the main timebase and therefore gives an expanded display of any desired part of the main trace.

Signals to c.r.t.

51. In the rack assembly Type 165 two methods of feeding signals to the c.r.t. are provided:—

(1) Signals are condenser-fed to the Y2 plate via co-axial socket on the front panel. This facility is intended as a means of monitoring waveforms which are brought out to 10 monitoring points on the front panels of units in the 1G by use of a jumper lead. These include a 2V testpoint and earth.

(2) Signals are fed to the Y1 plate via a co-axial socket at the rear of the chassis and an amplifier with gain variable between 5 and 150. This is connected direct to the output of the switch unit (mon.) Type 296. The following information is permanently wired in to the switch unit (mon.):—

(a) 5-mile range marks (3 channels)

(b) 10-mile range marks (3 channels)

(c) Radar video out (3 channels)

(d) Azimuth marks (2 channels)

(e) 2V peak-to-peak 45-65 c/s

(f) Earth.

One switch selects the type of information and the other selects the channel from which it is taken; it is then passed direct to the input to the amplifier in the monitoring unit Type 75.

Synchronizing

52. Sync. pulses are also permanently wired to the switch unit, and the channel selector switch passes the correct sync. for the channel concerned to the monitoring unit, which will operate on a +4V or −7V pulse.

50V d.c. SUPPLIES

Rectifier unit Type 15

53. This unit supplies two negative outputs of 50V d.c. at 4A. maximum each, for operation of relays and indicator lamps. In the mobile radar operating room Type 1, No. 1 supply operates all relays and indicator lamps in the rack assembly Type 165 and p.p.i. consoles. No. 2 supply is utilized in the plotting board Type 102. The unit also contains manual tuning and AFC/manual switching for four sets of a.f.c. circuits in radars Type 13 or 14. These are not now used.

TELEPHONES

54. Telephone connections with p.p.i. aerial heads are routed through the rack assembly Type 165 from panel F to panel J.

TABLE 3

Connections and services to aerial vehicles from panel F

Note . . .

The letter "C" in brackets below the socket or plug represents "co-axial", a bracketed figure the number of cores.

	SK1/18 (4)	SK1/20 (C)	SK1/19 (C)	SK1/21 (C)	
CHANNEL 1 Radar Type 15		PL1/5 (7)	PL1/3 (8)	PL1/10 (5)	SK1/25 (C)
		SK1/23 (C)	SK1/22 (C)	PL1/17 (4)	SK1/4 (5)
	SK2/18 (4)	SK2/20 (C)	SK2/19 (C)	SK2/21 (C)	
CHANNEL 2 Radar Type 14		PL2/5 (7)	PL2/3 (8)	PL2/10 (5)	
		SK2/23 (C)	SK2/22 (C)	PL2/17 (4)	SK2/4 (5)
	SK3/18 (4)	SK2/20 (C)	SK3/19 (C)	SK3/21 (C)	
CHANNEL 3 Radar Type 14		PL3/5 (7)	PL3/3 (8)	PL3/10 (5)	
		SK3/23 (C)	SK3/22 (C)	PL3/17 (4)	SK3/4 (5)
	PL1 (4)				
		E E E Earth bolts			

Co-axial

PL or SK No.	Channel 1	Channel 2 or 3
SK–/19	Sync. in	Sync. in
SK–/21	IF in	IF in
SK–/25	Radar Type 15 sync. out	

TABLE 3—(contd.)

Multicore

SK–/18	a b c d	Diode switching	Spare
PL–/5	a b c d f g h	Spare	Spare
PL–/3	a b c d f g h j	Telephones Aerial contactor p.r.f. halving Aerial contactors	Telephones p.r.f. halving
PL–/10	a b c d f	Spare	Spare
PL–/17	a b c d	AFC/MAN SW. Klystron tune	AFC/MAN SW. Klystron tune
PL–/17	a b c d	AFC/MAN SW. Klystron tune AFC/E	AFC/MAN SW. Klystron tune AFC/E
SK–/4	a b c d f		Phasing (radar Type 14)
PL1	a b c d	230V 50 c/s mains	230V 50 c/s mains

TABLE 4

Connections and services to external consoles from panel E

Note . . .

The letter "C" or figures in brackets below the socket or plug represent "co-axial" or number of cores.

SK1/1 (C)	SK2/1 (C)	SK3/1 (C)	SK4/1 (C)
SK1/2 (C)	SK2/2 (C)	SK3/2 (C)	SK4/2 (C)
SK1/3 (C)	SK2/3 (C)	SK3/3 (C)	SK4/3 (C)
SK1/4 (C)	SK2/4 (C)	SK3/4 (C)	SK4/4 (C)
SK1/5 (C)	SK2/5 (C)	SK3/5 (C)	SK4/5 (C)
SK1/6 (C)	SK2/6 (C)	SK3/6 (C)	SK4/6 (C)
SK1/7 (C)	SK2/7 (C)	SK3/7 (C)	SK4/7 (C)
SK1/8 (C)	SK2/8 (C)	SK3/8 (C)	SK4/8 (C)
PL/19 (8)	PL2/9 (10)	PL3/9 (10)	PL4/9 (8)
PL1/10 (10)	PL2/10 (8)	PL3/10 (8)	PL4/10 (10)

Co-axial

SK No.	Service
1/3 2/3 3/3	Radar video out
1/5 2/5 3/5	Sync. out
1/7 2/7 3/7	10-mile range marks out
2/8 3/8	Azimuth marks out

TABLE 4—(contd.)

Multicore		
PL No.		Service
1/9	a b c d e f g h	50V + 50V − } supply No. 1 Radar Type 15 p.r.f. halve Radar Type 15 p.r.f. small shift
1/10		Spare
2/9 and 3/9	a b c d f g h j k l	 PPI selsyn stator 230V 50 c/s selsyn rotors Heading marker switch Heading marker Auto-align
2/10 and 3/10	a b c d f g h j	50V + 50V − } supply No. 2 Radar Type 14 p.r.f. halve
4/9 and 4/10		Spare

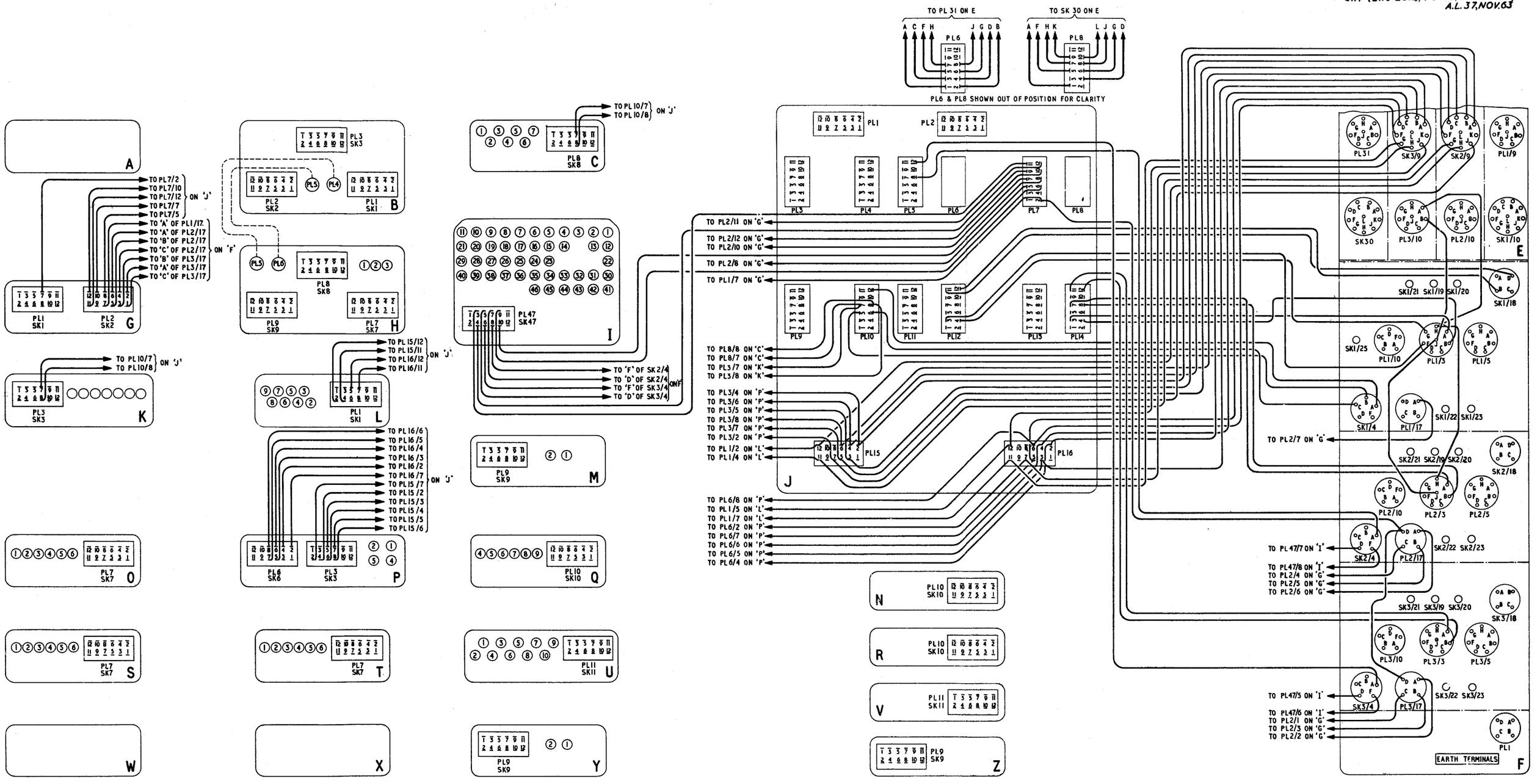


Fig.10

Rack assembly Type 165 wiring - aerial cabin remote controls

Fig.10

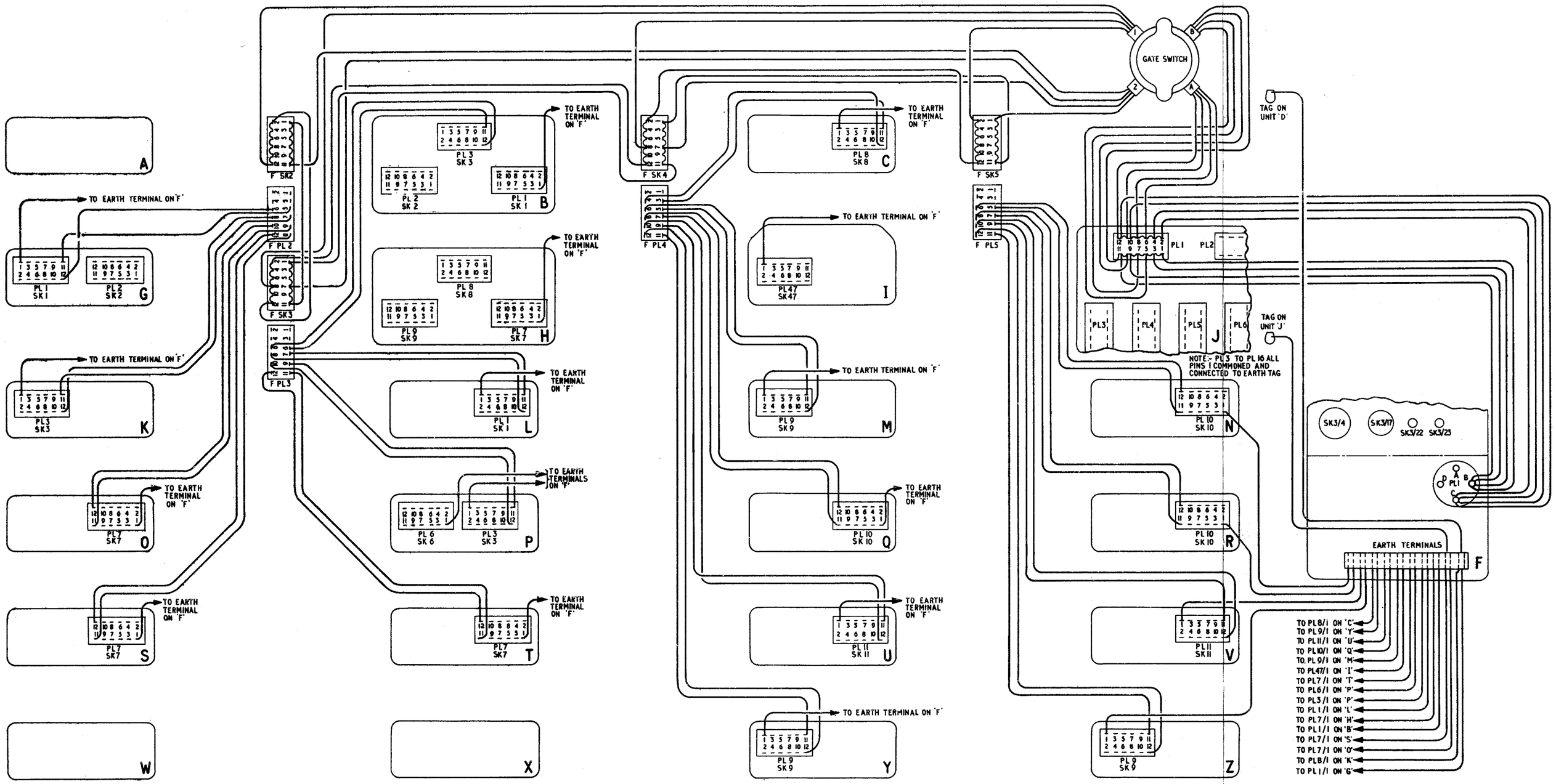


Fig. 11

Rack assembly Type 165 wiring - mains and earth

Fig. 11

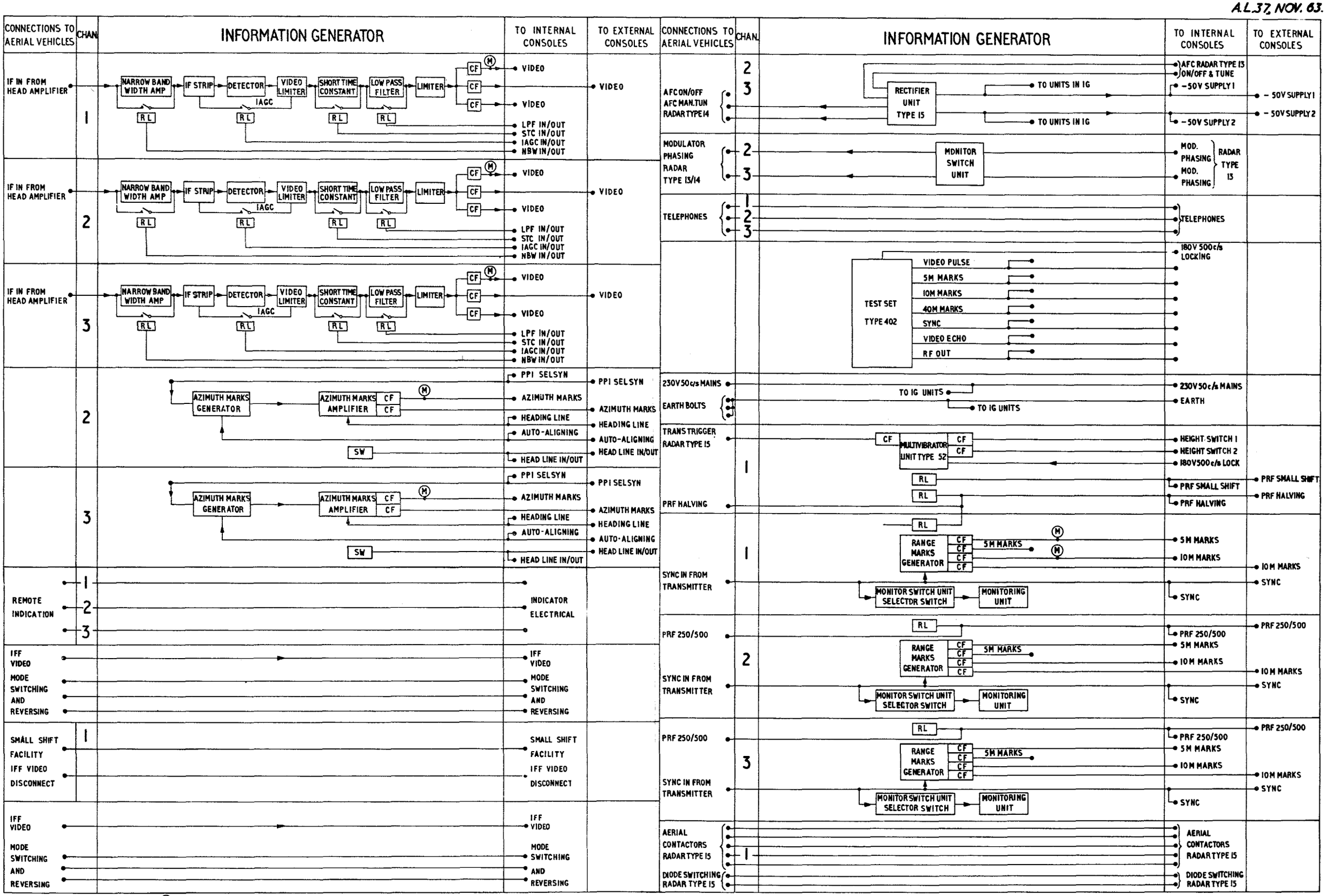


Fig.12 Rack assembly Type 165 functional diagram Fig.12

Chapter 2

RACK ASSEMBLY TYPE 166

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ILLUSTRATION

	Fig.
Rack assembly Type 166	1

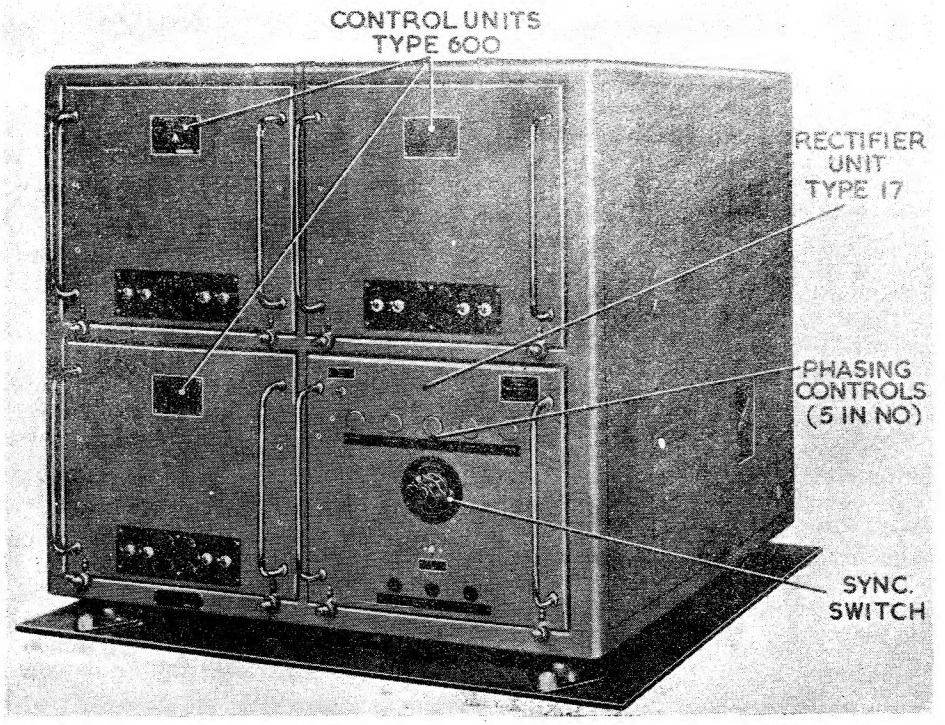


Fig. 1. Rack assembly Type 166

Introduction

1. The rack assembly Type 166 is a symmetrically built rack having four spaces into which standard AIR MINISTRY chassis can be slid and locked in place. The arrangement consists of two vertical and two horizontal rows as shown in the illustration of the rack given in fig. 1.

2. The upper and lower left-hand spaces, and the upper right-hand space, are occupied by control units Type 600 (Stores Ref. 10L/16029) and the lower right-hand space is occupied by a rectifier unit Type 17 (Stores Ref. 10D/17779). This arrangement of component units is standard for all applications of the rack assembly.

Description

3. In its mobile application, the rack assembly Type 166 is located beneath the plotting board Type 102 in the mobile operations room (RVT. 510). Each RVT. 510 contains five turning controls, four of which are fitted on the PPI consoles and permit the full facilities afforded by the amplidyne turning gear to be employed, viz., position control, sweeping, continuous rotation clockwise and continuous rotation counter-clockwise. The fifth turning

control, consisting of a wall-mounted switch and resistance box, affords only the limited facility of continuous rotation in slave with another aerial head, or stopped. The turning control channels are standardized for operational reasons, T.C.1 and T.C.2 being the left-hand and right-hand control panels, respectively, on PPI No. 1. T.C.3 and T.C.4 are the corresponding control panels on PPI No. 2 and T.C.5 is the switch and resistance box already referred to.

4. Each control unit Type 600 contains two complete sets of control gear and each set is capable of controlling one aerial head. The five operational sets of control gear are numbered 1 to 5 to correspond with the associated turning controls. Control gear sets 1 and 2 are contained in the upper left-hand control unit, and control sets 3 and 4 in the upper right-hand unit. The lower control unit contains No. 5 and a spare control set. With the INDIVIDUAL/SYNCHRONIZED switch in its INDIVIDUAL setting, the turning of the appropriate aerial head is effected by operation of the associated turning control in the RVT. 510.

5. The rectifier unit Type 17 is used to supply −50V DC for the relay circuits associated with the turning gear for the aerial heads. A master selector switch in the unit supplies −50V DC to the turning gear of the aerial head selected as master head when two or more aerial heads are rotating in synchronism.

6. The circuits entering the rack assembly Type 166 all terminate upon Jones plugs fitted in a junction box on the left-hand side at the rear of the rack. There are 19 of these plugs in the junction box, three of which are spare. An additional plug (PL 18), fitted inside the rack, carries the 230V mains leads to and from the main gate switch, SW 1. The 230-volt, 50 c/s mains from the synchronizing switch on the control panel Type 626 enters on pins 10 and 12 of PL 3 on the junction box. The supply is then taken to the gate switch, via SK.18 and PL.18, and the switched supply fed to the four units in the rack through SK.18. A toggle mechanism, associated with the gate switch, locks the four units in position so that they can only be withdrawn from the rack when the gate switch is in the off position.

7. Each of the control gear sets on a control unit Type 600 has four Jones plugs, viz., PL.501, PL.502, PL.503 and PL.504. The corresponding cableforms from the junction box terminate in Jones sockets annoted SK.501–1, SK.502–1, etc., where the number following the hyphen refers to the number of the turning control set with which it is to be mated. There are also four sockets annoted SK.701, SK.702, SK.703 and SK.704 which mate with correspondingly numbered plugs on the rectifier unit Type 17. Interconnections between these sockets and the junction box plugs are given in Table 1.

Synchronous turning

8. For synchronous operation of the azimuth heads under continuous rotating conditions, one head must be selected as master and the AERIAL HEADS 230V SYNCHRONIZING switch on panel control Type 626 set to the position corresponding to the turning gear channel number for the master aerial head. The purpose of the synchronizing switch on the panel control Type 626 is to ensure that the control units obtain their mains supply from the same source as the selsyn rotor of the master aerial head when two or more are controlling aerial heads that are rotating in synchronism.

9. On the rack assembly Type 166, the master head selector switch on the rectifier unit Type 17 must be set to the number corresponding with that of the turning gear channel for the master aerial head. The INDIVIDUAL/SYNCHRONOUS switch, on the control units Type 600, of the control gear set for each head to be run in synchronsim (including that for the master head) should be set to SYNCHRONOUS.

10. As a result of these switch settings, relays are operated to produce the following conditions :–

(1) The individual phases of the servo selsyn in each of the selected aerial heads are commoned.

(2) The selsyn stator windings in each of the 'slave' heads are changed over from Delta to Star connection.

(3) The selsyn stator windings of the master head are held in Delta connection.

The master aerial head can now be operated in normal speed control and each 'slave' head will function in a modified form of position control, in which the rotor of the servo selsyn takes the place of the console selsyn rotor, the control signals being applied through the servo input transformer TR3 in the amplifier (servo) Type 278.

11. When the aerial heads are rotating in synchronism, any misalignment of the slave heads can be rectified by adjustment of the phasing control for that head. The phasing controls, one for each turning gear channel, are mounted inside the rectifier unit Type 17 and are conveniently accessible through the front panel.

Back-to-back running

12. Any aerial head which is normally slaved to a master head can be made to rotate in synchronism with the master head but in a position of correspondence which is 180 degrees away from that taken by the master head; the aerial head so arranged is said to be running "back-to-back" with the master. This condition is achieved by putting the relevant IN LINE/180° DISPLACED switch, on the control unit Type 600, to its 180° DISPLACED position. Electrical inter-locking of the relays prevents an aerial head from running in the 180 degrees displaced condition when that head is selected as master on the master head selector switch of the rectifier unit Type 17.

TABLE 1

Rack assembly Type 166—Internal wiring

No.	Originating unit and socket		Cross reference	Junction box Jones plug	Internal termination
(1)	Control unit Type 600 (1) (Control gear No. 1)	SK.501–1/1	—	1/1	
(2)		2	—	1/2	
(3)		3	—	1/3	
(4)		4	—	1/4	
(5)		5	—	1/5	
(6)		6	—	1/6	
(7)		7	—	1/7	
(8)		8	—	1/8	
(9)		9	—	1/9	
(10)		10	—	1/10	
(11)		11	—	1/11	
(12)		12	—	1/12	
(13)		SK.502–1/1			
(14)		2			
(15)		3	—	2/3	
(16)		4	—	2/4	
(17)		5	—	2/5	
(18)		6	—	2/6	
(19)		7	—	2/7	
(20)		8	—	2/8	
(21)		9	—	2/9	
(22)		10	—	2/10	
(23)		11	—	2/11	
(24)		12	—	2/12	
(25)		SK.503–1/1	—	2/1	
(26)		2			
(27)		3	—	2/2	
(28)		4	295	—	SK.18/7
			76		SK.503—2/4
(29)		5	—	3/1	
(30)		6	296	—	SK.18/8
			78		SK.503–2/6
(31)		7	—	3/2	
(32)		8			
(33)		9			
(34)		10			
(35)		11			
(36)		12			
(37)		SK.504–1/1			
(38)		2			
(39)		3			
(40)		4			
(41)		5			
(42)		6			
(43)		7	—	3/3	
(44)		8			
(45)		9			
(46)		10	254	—	SK.702/2
(47)		11	264	—	SK.702/12
(48)		12	96	—	SK.504—2/12

(A.L. 8, Jan. 55)

TABLE 1

Rack assembly Type 166—Internal wiring—(Continued)

No.	Originating unit and socket		Cross reference	Junction box Jones plug	Internal termination
(49)	Control unit Type 600 (1)	SK.501–2/1	—	4/1	
(50)	(Control gear No. 2)	2	—	4/2	
(51)		3	—	4/3	
(52)		4	—	4/4	
(53)		5	—	4/5	
(54)		6	—	4/6	
(55)		7	—	4/7	
(56)		8	—	4/8	
(57)		9	—	4/9	
(58)		10	—	4/10	
(59)		11	—	4/11	
(60)		12	—	4/12	
(61)		SK.502–2/1			
(62)		2			
(63)		3	—	5/3	
(64)		4	—	5/4	
(65)		5	—	5/5	
(66)		6	—	5/6	
(67)		7	—	5/7	
(68)		8	—	5/8	
(69)		9	—	5/9	
(70)		10	—	5/10	
(71)		11	—	5/11	
(72)		12	—	5/12	
(73)		SK.503–2/1	—	5/1	
(74)		2			
(75)		3	—	5/2	
(76)		4	28	—	SK.503–1/4
(77)		5	—	3/4	
(78)		6	30	—	SK.503–1/6
(79)		7	—	3/5	
(80)		8			
(81)		9			
(82)		10			
(83)		11			
(84)		12			
(85)		SK.504–2/1			
(86)		2			
(87)		3			
(88)		4			
(89)		5			
(90)		6			
(91)		7	—	3/6	
(92)		8			
(93)		9			
(94)		10	267	—	SK.703/3
(95)		11	265	—	SK.703/1
(96)		12	48	Earth	SK.504–1/12
(97)	Control unit Type 600 (2)	SK.501–3/1	—	10/1	
(98)	(Control gear No. 3)	2	—	10/2	
(99)		3	—	10/3	
(100)		4	—	10/4	
(101)		5	—	10/5	

TABLE I

Rack assembly Type 166—Internal wiring—(*Continued*)

No.	Originating unit and socket		Cross reference	Junction box Jones plug	Internal termination
(102)	Control unit Type 600 (2)	SK.501-3/6	—	10/6	
(103)	(Control gear No. 3)	7	—	10/7	
(104)		8	—	10/8	
(105)		9	—	10/9	
(106)		10	—	10/10	
(107)		11	—	10/11	
(108)		12	—	10/12	
(109)		SK.502-3/1			
(110)		2			
(111)		3	—	11/3	
(112)		4	—	11/4	
(113)		5	—	11/5	
(114)		6	—	11/6	
(115)		7	—	11/7	
(116)		8	—	11/8	
(117)		9	—	11/9	
(118)		10	—	11/10	
(119)		11	—	11/11	
(120)		12	—	11/12	
(121)		SK.503-3/1	—	11/1	
(122)		2			
(123)		3	—	11/2	
(124)		4	297	—	SK.18/9
			172		SK.503-4/4
(125)		5	—	12/1	
(126)		6	298	—	SK.18/10
			174		SK.503-4/6
(127)		7	—	12/2	
(128)		8			
(129)		9			
(130)		10			
(131)		11			
(132)		12			
(133)		SK.504-3/1			
(134)		2			
(135)		3			
(136)		4			
(137)		5			
(138)		6			
(139)		7	—	12/3	
(140)		8			
(141)		9			
(142)		10	271	—	SK.703/7
(143)		11	269	—	SK.703/5
(144)		12	192	Earth	SK.504-4/12
(145)	Control unit Type 600 (2)	SK.501-4/1	—	13/1	
(146)	(Control gear No. 4)	2	—	13/2	
(147)		3	—	13/3	
(148)		4	—	13/4	

TABLE I

Rack assembly Type 166—Internal wiring—(*Continued*)

No.	Originating unit and socket		Cross reference	Junction box Jones plug	Internal termination
(149)	Control unit Type 600 (2)	SK.501–4/5	—	13/5	
(150)	(Control gear No. 4)	6	—	13/6	
(151)		7	—	13/7	
(152)		8	—	13/8	
(153)		9	—	13/9	
(154)		10	—	13/10	
(155)		11	—	13/11	
(156)		12	—	13/12	
(157)		SK.502–4/1			
(158)		2			
(159)		3	—	14/3	
(160)		4	—	14/4	
(161)		5	—	14/5	
(162)		6	—	14/6	
(163)		7	—	14/7	
(164)		8	—	14/8	
(165)		9	—	14/9	
(166)		10	—	14/10	
(167)		11	—	14/11	
(168)		12	—	14/12	
(169)		SK.503–4/1	—	14/1	
(170)		2			
(171)		3	—	14/2	
(172)		4	124	—	SK.503–3/4
(173)		5	—	12/4	
(174)		6	126	—	SK.503–3/6
(175)		7	—	12/5	
(176)		8			
(177)		9			
(178)		10			
(179)		11			
(180)		12			
(181)		SK.504–4/1			
(182)		2			
(183)		3			
(184)		4			
(185)		5			
(186)		6			
(187)		7	—	12/6	
(188)		8			
(189)		9			
(190)		10	275	—	SK.703/11
(191)		11	273	—	SK.703/9
(192)		12	144	—	SK.504–3/12
(193)	Control unit Type 600 (3)	SK.501–5/1	—	15/1	
(194)	(Control gear No. 5)	2	—	15/2	
(195)		3	—	15/3	
(196)		4	—	15/4	
(197)		5	—	15/5	
(198)		6	—	15/6	
(199)		7	—	15/7	
(200)		8	—	15/8	
(201)		9	—	15/9	
(202)		10	—	15/10	
(203)		11	—	15/11	
(204)		12	—	15/12	

TABLE 1

Rack assembly Type 166—Internal wiring—(*Continued*)

No.	Originating unit and socket		Cross reference	Junction box Jones plug	Internal termination
(205)	Control unit Type 600 (3)	SK.502–5/1			
(206)	(Control gear No. 5)	2			
(207)		3	—	16/3	
(208)		4	—	16/4	
(209)		5	—	16/5	
(210)		6	—	16/6	
(211)		7	—	16/7	
(212)		8	—	16/8	
(213)		9	—	16/9	
(214)		10	—	16/10	
(215)		11	—	16/11	
(216)		12	—	16/12	
(217)		SK.503–5/1	—	16/1	
(218)		2			
(219)		3	—	16/2	
(220)		4	299	—	SK.18/11
(221)		5	—	12/7	
(222)		6	300	—	SK.18/12
(223)		7	—	12/8	
(224)		8			
(225)		9			
(226)		10			
(227)		11			
(228)		12			
(229)		SK.504–5/1			
(230)		2			
(231)		3			
(232)		4			
(233)		5			
(234)		6			
(235)		7	—	12/9	
(236)		8			
(237)		9			
(238)		10	284	—	SK.704/8
(239)		11	282	—	SK.704/6
(240)		12	—	Earth	
(241)	Rectifier unit Type 17	SK.701/1	—	6/1	
(242)		2	—	6/2	
(243)		3	—	6/3	
(244)		4	—	6/4	
(245)		5	—	6/5	
(246)		6	—	6/6	
(247)		7	—	6/7	
(248)		8	—	6/8	
(249)		9	—	6/9	
(250)		10	—	6/10	
(251)		11	—	6/11	
(252)		12	—	6/12	

TABLE I

Rack assembly Type 166—Internal wiring—(*Continued*)

No.	Originating unit and socket		Cross reference	Junction box Jones plug	Internal termination
(253)	Rectifier unit Type 17	SK.702/1	—	7/1	
(254)		2	46	—	SK.504-1/10
(255)		3	—	7/3	
(256)		4	—	7/4	
(257)		5	—	7/5	
(258)		6	—	7/6	
(259)		7	—	7/7	
(260)		8	—	7/8	
(261)		9	—	7/9	
(262)		10	—	7/10	
(263)		11	—	7/11	
(264)		12	47	—	SK.504-1/11
(265)		SK.703/1	95	—	SK.504-2/11
(266)		2	—	8/2	
(267)		3	94	—	SK.504-2/10
(268)		4	—	8/4	
(269)		5	143	—	SK.504-3/11
(270)		6	—	8/6	
(271)		7	142	—	SK.504-3/10
(272)		8	—	8/8	
(273)		9	191	—	SK.504-4/11
(274)		10	—	8/10	
(275)		11	190	—	SK.504-4/10
(276)		12	—	8/12	
(277)		SK.704/1	—	9/1	
(278)		2	—	9/2	
(279)		3	—	9/3	
(280)		4	—	9/4	
(281)		5	—	9/5	
(282)		6	239	—	SK.504-5/11
(283)		7	—	9/7	
(284)		8	238	—	SK.504-5/10
(285)		9	—	9/9	
(286)		10	—	Earth	
(287)		11	293	—	SK.18/5
(288)		12	294	—	SK.18/6
(289)	Gate switch	SK.18/1	—	3/9	
(290)		2 (*strapped*)	—	3/10 (*strapped*)	
(291)		3	—	3/11	
(292)		4 (*strapped*)	—	3/12 (*strapped*)	
(293)		5	287	—	SK.704/11
(294)		6	288	—	SK.704/12
(295)		7	28	—	SK.503-1/4
(296)		8	30	—	SK.503-1/6
(297)		9	124	—	SK.503-3/4
(298)		10	126	—	SK.503-3/6
(299)		11	220	—	SK.503-5/4
(300)		12	222	—	SK.503-5/6

Chapter 3

I.G. RACK ASSEMBLIES FOR STATIC RADAR STATIONS

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	Para.		Para.
Introduction	1	*Wiring schedules*...	5
Description	3		

Introduction

◀ **1.** Chapter 4 to 19 of this publication give the wiring details of rack assemblies Type 307 to 322 used at static radar stations, and chapter 20 gives details of all the variants of these rack assemblies. Chapter 21 gives details of the 4400 series racks, chapter 22 gives the 4700 series, chapter 23 the 6300 series and chapter 24 the 16600 series. These racks, for the most part, are composed of units originally included in rack assembly Type 165 (Chap. 1) but, for convenience, other units have been included and these units will be found described elsewhere in this publication. ▶

2. The original intention was for these racks to contain various combinations of units for the amplification and distribution of information received from various radar aerial heads. In consequence they are generally referred to as "information generator" racks. The additional units, however, have functions differing from these and may be for turning gear control, amplification of servo voltages, pulse splitting, switching waveform generation or other services depending upon the station's special requirements.

Description

3. A rack designed to accommodate twelve standard AIR MINISTRY units is used for all assemblies, the inter-unit wiring and external connections being different for each type of rack. The inter-unit wiring is taken direct from unit to unit, but external connections are wired to Jones sockets situated at the rear of the rack.

4. In most instances co-axial leads are connected to the units directly, except where a distribution unit is required to split an output for use at more than one external termination point. Where racks have less than twelve operational units the remaining spaces may be used for stowage of stand-by units.

Wiring schedules

5. In the ensuing chapters the wiring schedule and any necessary description is prefaced by a diagram, typeset with the names of the units occupying relatively the same position on the skeleton rack as they do physically on the assembly. The numbers of the Jones plugs are printed at the side. This printed diagram represents the rack as viewed from the rear.

6. To obviate the necessity of reprinting the full titles of the various inter-connected units, a short-title code has been used. This code is printed after the A.M. title of the apparatus in the "originating unit" column of the SCHEDULE. Plugs are designated by "PL" with plug number followed by pin number as "PL7/1", but where pin numbers run in sequence, the plug number has not been repeated for each pin.

7. The following abbreviations are employed throughout the SCHEDULES:—

(1) "Amp" followed by function for "amplifier"; for example, "AmpNBW" for the narrow band-width amplifier Type A.3679.

(2) "RU" for "rectifier unit" and "MU" for marker unit with Type number, as "RU15", "CU" for "control unit."

(3) "SR" for "slip-ring," followed by the number of the ring.

(4) "Ampdn" for "amplidyne," followed by the terminal numbers, as "ampdnX4."

(5) "IAGC" for "instantaneous automatic gain control."
"AFC" for "automatic frequency control."
"STC" for "short-time constant."
"LPF" for "low-pass filter."

(6) "SA" for "amplifier (servo)."

Chapter 4

(**Note:**—*This chapter supersedes that issued with A.L.1, A.L.10 and A.L.27*)

RACK ASSEMBLY TYPE 307

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Para.

Detailed description 1

ILLUSTRATION

Fig.

Disposition of units and plugs, schematic ... 1

		Panel (blanking) 4639 (Stores Ref. 10D/19663)	Panel (blanking) 4639		
5	6	Rectifier unit Type 17	Waveform generator (anti-sea clutter)	39	40
7	8		Type 104	41	42
9	10	(Stores Ref. 10D/17779) RU17	(Stores Ref. 10V/16079) WGASC	43	44
11	12	Amplifier (servo) Type 297	Rectifier unit Type 15	45	46
13	14			47	48
15	16	(Stores Ref. 10U/16054) SA	(Stores Ref. 10D/17761) RU15	49	50
17	18	Control unit Type 600	Amplifier (AJ and Vid.)	51	52
19	20		Type A.3681	53	54
21	22	(Stores Ref. 10L/16029) CU600	(Stores Ref. 10U/16028) AmpAJ	55	56
23	24	Panel (blanking) 4639	Amplifier (IF and Vid.)	57	58
25	26		Type A.3680	59	60
27	28		(Stores Ref. 10U/16027) AmpIF	61	62
29	30	Marker unit (range) Type 27	Amplifier (NBW) Type A.3679	63	64
31	32			65	66
33	34	(Stores Ref. 10D/18308) MU27	(Stores Ref. 10U/16026) Amp NBW	67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 307 (Stores Ref. 10D/18801) is used on Stage 1 CHEL/A stations and carries both signals and control unit services. The IF output from the radar Type 14 Mk. 7 head is fed through the chain of IF and video amplification in this rack and various anti-jamming measures can be effected.

2. Along with the signals outputs are fed the range markers, both five-mile and ten-mile, generated in the marker unit Type 27.

3. Also in the rack are the control unit Type 600, amplifier (servo) Type 297 and rectifier unit Type 17. These provide the necessary outputs for the control of turning gear at the radar head. The 50-volt relay supplies used both for this rack and in external connections are obtained from the rectifier unit Type 15.

RACK ASSEMBLY TYPE 307—WIRING *(continued)*

No	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(77)	Amplifier (NB-W) Type A.3679	PL9/5				
(78)	(AMP NBW)—*continued*	6				
(79)		7				
(80)		8				
(81)		9				
(82)		10				
(83)		11	—	66/9	—	Mains input
(84)		12	—	66/10	—	Mains input
	Rectifier unit Type 17 (RU17)					
		PL701	*Not required*			
(85)		PL702/1	160	—	PL5/6(SA)	
(86)		2	200	—	PL504/10(CU600)	
(87)		3	159	—	PL5/5(SA)	
(88)		4				
(89)		5				
(90)		6				
(91)		7				
(92)		8				
(93)		9				
(94)		10				
(95)		11				
(96)		12	201	—	PL504/11(CU600)	
		PL703	*Not required*			
(97)		PL704/1				
(98)		2				
(99)		3				
(100)		4				
(101)		5				
(102)		6				
(103)		7				
(104)		8				
(105)		9				
(106)		10	—	—	Earth	
(107)		11	—	18/5	—	Mains input
(108)		12	—	18/6	—	Mains input
(109)	Amplifier (servo) Type 297	PL1/1	—	15/11	—	Plinth term. block 36
(110)	(SA)	2	—	15/12	—	Plinth term. block 35
(111)		3	—	18/1	—	Mains input
(112)		4	—	—	Earth	
(113)		5				
(114)		6	—	18/2	—	Mains input
(115)		7	—	11/6	—	Console N8
(116)		8				
(117)		9	—	15/9	—	SR46
(118)		10	—	11/7	—	Console N9
(119)		11	—	11/8	—	Console N10
(120)		12	—	15/10	—	SR38
(121)		PL2/1				
(122)		2				
(123)		3				
(124)		4	—	13/5	—	SR23
(125)		5	—	13/4	—	SR22
(126)		6	—	13/7	—	SR25
(127)		7	—	13/6	—	SR24
(128)		8	—	13/9	—	SR27
(129)		9	—	13/8	—	SR26
(130)		10	151	13/10	PL4/7(SA)	SR28
(131)		11	195	11/4, 13/3, 13/11 (*strapped*)	PL503/7(CU600)	SR29, Console N6
(132)		12	—	13/12	—	SR30
(133)		PL3/1				
(134)		2				
(135)		3	—	15/1	—	AmpdnX4
(136)		4	—	15/2	—	AmpdnX3
(137)		5	—	15/3	—	AmpdnX2
(138)		6	—	15/4	—	AmpdnX1
(139)		7	—	15/5	—	AmpdnX5
(140)		8	—	15/6	—	AmpdnX6
(141)		9	—	15/7	—	AmpdnA4
(142)		PL3/10				
(143)		11	—	15/8	—	AmpdnA2
(144)		12				
(145)		PL4/1	—	7/3	—	Console J3
(146)		2	—	7/5	—	Console J5

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(147)	Amplifier (servo) Type 297	3	188	—	PL502/12(CU600)	
(148)	(SA)—*contd.*	4	—	13/1	—	SR36
(149)		5	184	—	PL502/8(CU600)	
(150)		6	185	—	PL502/9(CU600)	
(151)		7	130	13/10	PL2/10(SA)	SR28
(152)		8	—	11/5, 13/2	—	Console N7, SR34
(153)		9	182	—	PL502/6(CU600)	
(154)		10	—	7/12	—	Console J12
(155)		PL5/1				
(156)		2	—	7/4	—	Console J4
(157)		3	—	7/7	—	Console J7
(158)		4	179	—	PL502/3(CU600)	
(159)		5	87	—	PL702/3(RU17)	
(160)		6	85	—	PL702/1(RU17)	
(161)		7	—	9/2	—	Console K2
(162)		8	180	—	PL502/4(CU600)	
(163)		9	181	—	PL502/5(CU600)	
(164)		10				
(165)		11	187	—	PL502/11(CU600)	
(166)		12	168	7/6	PL501/2(CU600)	Console J6
(167)	Control unit Type 600 (CU600)	PL501/1				
(168)		2	166	7/6	PL5/12(SA)	Console J6
(169)		3	—	9/4	—	Console K4
(170)		4				
(171)		5	—	9/6	—	Console K6
(172)		6				
(173)		7	—	9/8	—	Console K8
(174)		8				
(175)		9	—	7/9	—	Console J9
(176)		10	—	7/11	—	Console J11
(177)		11	—	7/8	—	Console J8
(178)		12	—	9/1	—	Console K1
(179)		PL502/3	158	—	PL5/4(SA)	
(180)		4	162	—	PL5/8(SA)	
(181)		5	180	—	PL5/9(SA)	
(182)		6	153	—	PL4/9(SA)	
(183)		7				
(184)		8	149	—	PL4/5(SA)	
(185)		9	150	—	PL4/3(SA)	
(186)		10				
(187)		11	165	—	PL5/11(SA)	
(188)		12	147	—	PL4/3(SA)	
(189)		PL503/1	—	7/10	—	Console J10
(190)		2				
(191)		3	—	9/9	—	Console K9
(192)		4	—	18/3	—	Mains input
(193)		5	—	9/10	—	Console K10
(194)		6				
(195)		7	131	11/4, 13/3, 13/11 (*strapped*)	PL2/11(SA)	SR29, SR19, Console N6
(196)		8	—	18/4	—	Mains input
(197)		PL504/7				
(198)		8				
(199)		9				
(200)		10	86	—	PL702/3(RU17)	
(201)		11	96	—	PL702/12(RU17)	
(202)		12	—	—	Earth	

COAXIAL CABLE CONNECTIONS

(203)	Amplifier (A.J. and video)	SK1	206	—	SK5 on Amp. (I.F. and Vid.)
(204)	Type A.3681 (Amp. A.J.)	SK2	207	—	SK6 on Amp. (I.F. and Vid.)
(205)	Amplifier (I.F. and video)	SK4	208	—	SK2 on Amp. (NBW)
(206)	Type A.3680 (Amp. I.F.)	SK5	203	—	SK1 on Amp. (A.J. and Vid.)
(207)		SK6	204	—	SK2 on Amp. (A.J. and Vid.)
(208)	Amplifier (NBW) Type A.3679 (Amp. NBW)	SK2	205	—	SK4 on Amp. (I.F. and Vid.)
(209)	Waveform Generator (A.S.C.)	SK1/11	—	18/7	
(210)	Type 104	SK1/12	—	18/8	
(211)		SK1/1	—	—	Earth
(212)	Waveform Generator (A.S.C.)	PL.2	—	—	PL10 Amp. (I.F. and Vid.)

Chapter 5

(Note:—*This chapter supersedes that issued with A.L.27)*

RACK ASSEMBLY TYPE 308

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Para.

Detailed description 1

ILLUSTRATION

Fig.

Disposition of units and plugs, schematic ... 1

		Panel (blanking) 4639 (Stores Ref. 10D/19663)	Panel (blanking) 4639		
5	6	Panel (blanking) 4639	Panel (blanking) 4639)	39	40
7	8			41	42
9	10			43	44
11	12	Panel (blanking) 4639	Rectifier unit Type 15	45	46
13	14			47	48
15	16		10D/17761 RU15	49	50
17	18	Waveform generator (anti-sea clutter)	Amplifier (AJ and Video)	51	52
19	20	Type 104	Type A.3681	53	54
21	22	(Stores Ref. 10V/16079) WGASC	10U/16028 AmpAJ	55	56
23	24	Panel (blanking) 4639	Amplifier (IF and Video)	57	58
25	26		Type A.3680	59	60
27	28		10U/16027 AmpIF	61	62
29	30	Marker unit (Range) Type 27	Amplifier (NBW) Type A.3679	63	64
31	32			65	66
33	34	10D/18308 MU27	10U/16026 AmpNBW	67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 308 (Stores Ref. 10D/18802) is used on Stage 1 CHEL/B stations. It receives the IF output from the radar Type 54 head and also houses a marker unit Type 27 and a rectifier unit Type 15. The IF output is fed through IF and video amplifiers (*fig.* 1). The marker unit Type 27 supplies both five and ten-mile range marks. The rectifier unit Type 15 provides the 50V relay-operating voltages required both in the rack and for external circuits on the station. Details of the rack wiring are shown in the accompanying schedule.

SCHEDULE 1

RACK ASSEMBLY TYPE 308—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
	Note.—*No.* (1) *to* (12) *previously occupied by amplifier (IFF) Type A.3677, now removed. Mod. classification B.2.*					
(13)	Marker unit (range) Type 27	PL7/1	—	—	Earth	
(14)	(MU27)	2	74	—	PL9/2(AmpNBW)	
(15)		3	75	—	PL9/3(AmpNBW)	
(16)		4				
(17)		5				
(18)		6				
(19)		7				
(20)		8				
(21)		9				
(22)		10				
(23)		11	—	66/1	—	Mains input
(24)		12	—	66/2	—	Mains input
(25)	Rectifier unit Type 15	PL1/1	—	—	Earth	
(26)	(RU15)	2	50	68/5, 68/6, 68/7 and 68/8 (*strapped*)	PL11/2(AmpAJ)	
(27)		3	51	68/1, 68/2, 68/3 and 68/4 (*strapped*)	PL11/3(AmpAJ)	
(28)		4	—	68/5, 68/6, 68/7 and 68/8 (*strapped*)	—	50V ouput (+ve)
(29)		5	—	68/9, 68/10, 68/11 and 68/12 (*strapped*)	—	50V output (—ve)
(30)		6				
(31)		7	—	67/6	—	AFC
(32)		8				
(33)		9				
(34)		10				
(35)		11	—	66/11	—	Mains input
(36)		12	—	66/12	—	Mains input
(37)		PL2/1	—	67/10	—	AFC
(38)		2				
(39)		3	—	67/8	—	AFC
(40)		4				
(41)		5				
(42)		6				
(43)		7				
(44)		8				
(45)		9				
(46)		10				
(47)		11				
(48)		12				
(49)	Amplifier (AJ and video)	PL11/1	—	—	Earth	
(50)	Type A.3681 (AmpAJ)	2	26	—	PL1/2(RU15)	
			62	—	PL10/2(AmpIF)	
(51)		3	27	—	PL1/3(RU15)	
			63	—	PL10/3(AmpIF)	
(52)		4	—	67/4	—	CU621 PLAE/4 STC
(53)		5	—	67/3	—	CU621 PLAE/3 LPF
(54)		6				
(55)		7				
(56)		8				
(57)		9				
(58)		10				
(59)		11	—	66/7	—	Mains input
(60)		12	—	66/8	—	Mains input
(61)	Amplifier (IF and video)	PL10/1	—	—	Earth	
(62)	Type A.3680 (AmpIF)	2	74	—	PL9/2(AmpNBW)	
			50	—	PL11/2(AmpAJ)	
(63)		3	75	—	PL9(AmpNBW)	
			51	—	PL11/3(AmpAJ)	
(64)		4	—	67/2	—	CU621 PLAE/2 IAGC
(65)		5				
(66)		6				

RACK ASSEMBLY TYPE 308—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(67)	Amplifier (IF and video)	PL10/7				
(68)	Type A.3680 (AmpIF)—	8				
(69)	*contd.*	9				
(70)		10				
(71)		11	—	66/5	—	Mains input
(72)		12	—	66/6	—	Mains input
(73)	Amplifier (NBW)	PL9/1	—	—	Earth	
(74)	Type A.3879 (AmpNBW)	2	62	—	PL10/2(AmpIF)	
			14	—	PL7/2(MU27)	
(75)		3	63	—	PL10/3(AmpIF)	
			15	—	PL7/3(MU27)	
(76)		4	—	67/5	—	CU621 PLAE/5 NBW
(77)		5				
(78)		6				
(79)		7				
(80)		8				
(81)		9				
(82)		10				
(83)		11	—	66/9	—	Mains input
(84)		12	—	66/10	—	Mains input

COAXIAL CABLE CONNECTIONS

(85)	Amplifier (AJ and video)	SK1	88	—	SK5 on AmpIF	
(86)	Type A.3681 (AmpAJ)	SK2	89	—	SK6 on AmpIF	
(87)	Amplifier IF and video)	SK4	90	—	SK2 on AmpNBW	
(88)	Type A.3680 (AmpIF)	SK5	85	—	SK1 on AmpAJ	
(89)		SK6	86	—	SK2 on AmpAJ	
(90)	Amplifier (NBW)	SK2	87	—	SK4 on AmpIF	
	Type A.3679 (AmpNBW)					
(91)	Waveform Generator (A.S.C.)	SK1/11	—	67/9	—	—
(92)	Type 104	SK1/12	—	67/11	—	—
(93)		SK1/1	—	—	Earth	—
(94)	Waveform Generator (A.S.C.)	PL2	—	—	PL10 Amp (IF and video)	

Chapter 6

(**Note:**—*This chapter supersedes that issued with A.L.10 and 27*)

RACK ASSEMBLY TYPE 309

LIST OF CONTENTS

Para.

Detailed description 1

ILLUSTRATION

Fig.

Disposition of units and plugs, schematic ... 1

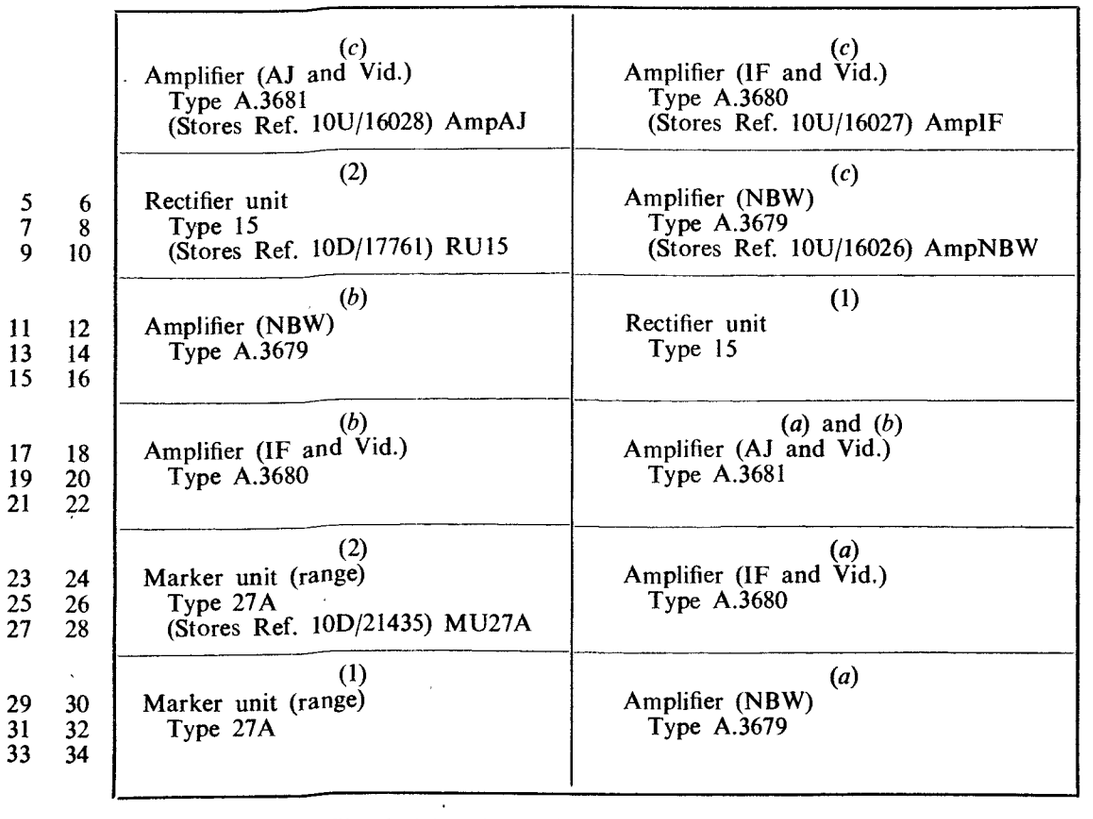


Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 309 (Stores Ref. 10D/18803) contains three signal channels together with two rectifier units Type 15 and two marker units (range) Type 27A. It is used on ◀Stage 1 and 2 CEW/B, Stage 1 CEW/D and Stage 1 and 2 GCI/B stations, in each case passing signals from the same combination of radar heads.▶

2. Referring to fig. 1, the identifying letters (*a*)

(*b*) and (*c*) against the several amplifiers indicate their typical combinations in a Stage 1 set-up, radar Type 14 being superseded at Stage 2.

Amplifier	CEW	GCI
NB-W(*c*) IF(*c*) AJ(*c*)	Radar Type 54, head	Radar Type 54 head
NB-W(*b*) IF(*b*) AJ(*b*)	Radar Type 14, Mk. 8	Radar Type 14, Mk. 9($\frac{1}{2}$ deg.)
NB-W(*a*) IF(*a*) AJ(*a*)	Radar Type 14, Mk. 9($\frac{1}{2}$ deg.)	Radar Type 14, Mk. 8

3. Since the amplifier (AJ and video) Type A.3681 has two separate signal channels one unit only is used for (*a*) and (*b*) and this is indicated accordingly on the figure. Two marker units Type 27A are used, both actually triggered at 250 c/s. The position of the change-over switch determines the amount of capacitance in the circuit and the consequent mark/space ratio of the square-wave which produces the range marks. One unit, therefore, is switched to 250 PRF and the other to 500 PRF. From the former are obtained the 10-mile markers only; from the latter the 5-mile markers.

4. The second marker unit Type 27A is synchronized by linking it to the first through a coaxial line to socket SK6.

5. The 50V relay supply voltages for the rack and external units are provided by the two rectifier units Type 15. On CEW stations these two units fulfil the total requirements but on **GCI** stations there are further rectifier units included in the rack assembly Type 319 or 319A.

SCHEDULE 1
RACK ASSEMBLY TYPE 309—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Amplifier (IF and Vid)	PL10/1	—	—	Earth	—
(2)	Type A.3680, AmpIF(*c*)	2	86	—	PL11/2AmpAJ(*c*)	—
			14	—	PL9/2AmpNBW(*c*)	—
(3)		3	87	—	PL11/3AmpAJ(*c*)	—
			15	—	PL9/3AmpNBW(*c*)	—
(4)		4	—	32/2	—	CU621(*c*) PLAE/2.IAGC
(5)		5	—	—	—	—
(6)		6	—	—	—	—
(7)		7	—	—	—	—
(8)		8	—	—	—	—
(9)		9	—	—	—	—
(10)		10	—	—	—	—
(11)		11	—	51/5	—	Mains input
(12)		12	—	51/6	—	Mains input
(13)	Amplifier (NBW) Type	PL9/1	—	—	Earth	—
(14)	A.3679, AmpNBW(*c*)	2	2	—	PL10/2AmpIF(*c*)	—
(15)		3	3	—	PL10/3AmpIF(*c*)	—
(16)		4	—	32/5	—	CU621 PLAE/5.NBW
(17)		5	—	—	—	—
(18)		6	—	—	—	—
(19)		7	—	—	—	—
(20)		8	—	—	—	—
(21)		9	—	—	—	—
(22)		10	—	—	—	—
(23)		11	—	51/9	—	Mains input
(24)		12	—	51/10	—	Mains input
(25)	Rectifier unit Type 15,	PL1/1	—	—	Earth	—
(26)	RU15	2	50	61/5, 61/6, 61/7 61/8, *strapped*	PL11/2AmpAJ (*a*) and (*b*)	50V output (+*ve*)
(27)		3	51	61/1, 61/2, 61/3, 61/4, *strapped*	PL11/3AmpAJ (*a*) and (*b*)	50V output (+*ve*)
(28)		4	—	61/5, 61/6, 61/7, 61/8, *strapped*	—	50V output (+*ve*)
(29)		5	—	61/9, 61/10, 61/11, 61/12, *strapped*	—	50V output (—*ve*)
(30)		6	—	—	—	—
(31)		7	—	63/11, 65/11, 67/11, *strapped*	—	AFC (common)
(32)		8	—	—	—	—
(33)		9	—	—	—	—
(34)		10	—	—	—	—
(35)		11	—	51/11	—	Mains input
(36)		12	—	51/12	—	Mains input
(37)		PL2/1	—	67/7	—	AFC(*a*)
(38)		2	—	—	—	—
(39)		3	—	67/9	—	AFC(*a*)
(40)		4	—	63/7	—	AFC(1)
(41)		5	—	63/9	—	AFC(1)
(42)		6	—	—	—	—
(43)		7	—	—	—	—
(44)		8	—	65/9	—	AFC(*b*)
(45)		9	—	—	—	—
(46)		10	—	65/7	—	AFC(*b*)
(47)		11	—	—	—	—
(48)		12	—	—	—	—
(49)	Amplifier (AJ and Vid)	PL11/1	—	—	Earth	—
(50)	Type A.3681, AmpAJ (*a*) and (*b*)	2	26	—	PL1/2 R15(1)	—
			62	—	PL10/2AmpIF(*a*)	—
(51)		3	27	—	PL1/3 R15(1)	—
			63	—	PL10/3AmpIF(*a*)	—
(52)		4	—	67/4	—	CU619(*a*) PLAK/4.STC
(53)		5	—	67/3	—	CU619(*a*) PLAK/3.LPF
(54)		6	—	65/4	—	CU619(*b*) PLAK/4.STC
(55)		7	—	65/3	—	CU619(*b*) PLAK/3.LPF
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	51/3	—	Mains input
(60)		12	—	51/4	—	Mains input

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(61)	Amplifier (IF and Vid)	PL10/1	—	—	Earth	—
(62)	Type A.3680, AmpIF(*a*)	2	50	—	PL11AmpAJ (*a*) and (*b*)	—
			74	—	PL9/2AmpMBW(*a*)	—
(63)		3	51	—	PL11/3AmpAJ (*a*) and (*b*)	—
			75	—	PL9/2AmpNBW(*a*)	—
(64)		4	—	67/2	—	CU619(*a*) PLAK/2.IAGC
(65)		5	—	—	—	—
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	51/1	—	Mains input
(72)		12	—	51/2	—	Mains input
(73)	Amplifier (NBW) Type	PL9/1	—	—	Earth	—
(74)	A.3679,AmpNBW(*a*)	2	62	—	PL10/2AmpIF(*a*)	—
			158	—	PL7/2 MU27A(1)	—
(75)		3	63	—	PL10/3AmpIF(*a*)	—
			159	—	PL7/3 MU27A(1)	—
(76)		4	—	67/5	—	CU619(*a*) PLAK/5.NBW
(77)		5	—	—	—	—
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	Mains input
(83)		11	—	51/7	—	Mains input
(84)		12	—	51/8	—	Mains input
(85)	Amplifier (AJ and Vid)	PL11/1	—	—	Earth	—
(86)	Type A.3681, AmpAJ(*a*)	2	98	—	PL1/2 RU15(2)	—
			2	—	PL10/2AmpIF(*c*)	—
(87)		3	99	—	PL1/3 RU15(2)	—
			3	—	PL10/3AmpIF(*c*)	—
(88)		4	—	32/4	—	CU621(*c*) PLAE/4.STC
(89)		5	—	32/3	—	CU621(*c*) PLAE/3.LPF
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	18/7	—	Mains input
(96)		12	—	18/8	—	Mains input
(97)	Rectifier unit Type 15,	PL1/1	—	—	Earth	—
(98)	RU15(2)	2	86	28/5, 28/6, 28/7, 28/8, *strapped*	PL11/2AmpAJ(*c*)	50V output (+*ve*)
(99)		3	87	28/1, 28/2, 28/3, 28/4, *strapped*	PL11/3AmpAJ(*c*)	50V output (—*ve*)
(100)		4	—	28/5, 28/6, 28/7, 28/8, *strapped*	—	50V output (+*ve*)
(101)		5	—	28/9, 28/10, 28/11, 28/12, *strapped*	—	50V output (—*ve*)
(102)		6	—	—	—	—
(103)		7	—	30/11, 32/11, 34/11, *strapped*	—	AFC (earth)
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	18/11	—	Mains input
(108)		12	—	18/12	—	Mains input
(109)		PL2/1	—	34/7	—	AFC(2)
(110)		2	—	—	—	—
(111)		3	—	34/9	—	AFC(2)
(112)		4	—	30/7	—	AFC(3)
(113)		5	—	30/9	—	AFC(3)
(114)		6	—	—	—	—
(115)		7	—	—	—	—
(116)		8	—	32/9	—	AFC(*c*)
(117)		9	—	—	—	—
(118)		10	—	32/7	—	AFC(*c*)
(119)		11	—	—	—	—
(120)		12	—	—	—	—

RACK ASSEMBLY TYPE 509—WIRING (*continued*

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(121)	Amplifier (NBW) Type	PL9/1			Earth	
(122)	A.3679, AmpNBW(*b*)	2	134		PL10/2AmpIF(*b*)	
(123)		3	135		PL10/3AmpIF(*b*)	
(124)		4		65/5		CU619(*b*) PLAK/5NBW
(125)		5				
(126)		6				
(127)		7				
(128)		8				
(129)		9				
(130)		10				
(131)		11		18/9		Mains input
(132)		12		18/10		Mains input
(133)	Amplifier (IF and Vid)	PL10/1			Earth	
(134)	Type A.3680, AmpIF(*b*)	2	146		PL7/2MU27A(2)	
			122		PL9/2AmpNBW(*b*)	
(135)		3	147		PL7/3MU27A(2)	
			123		PL9/3AmpNBW(*b*)	
(136)		4		65/2		CU619(*b*) PLAK/21AGC
(137)		5				
(138)		6				
(139)		7				
(140)		8				
(141)		9				
(142)		10				
(143)		11		18/5		Mains input
(144)		12		18/6		Mains input
(145)	Marker unit (range)	PL7/1			Earth	
(146)	Type 27A MU27A (2)	2	158		PL7/2 MU27A(1)	
			134		PL10/2 Amp. (IF and Vid)(*b*)	
(147)		3	159		PL7/3 MU27A (1)	
			135		PL10/3 Amp. (IF and Vid) (*b*)	
(148)		4				
(149)		5				
(150)		6				
(151)		7				
(152)		8				
(153)		9				
(154)		10				
(155)		11		18/1		Mains input
(156)		12		18/2		Mains input
(157)	Marker unit (range)	PL7/1			Earth	
(158)	Type 27A MU27A(1)	2	74		PL9/2AmpNBW(*a*)	
			146		PL7/2MU27A(2)	
(159)		3	75		PL9/3AmpNBW(*a*)	
			147		PL7/3MU27A(2)	
(160)		4				
(161)		5				
(162)		6				
(163)		7				
(164)		8				
(165)		9				
(166)		10				
(167)		11		18/3		Mains input
(168)		12		18/4		Mains input

EXTRA CONNECTIONS

(169)	Plug No. 65/1 *connected to* 61/5
(170)	,, 65/6 ,, 61/1
(171)	,, 67/1 ,, 61/6
(172)	,, 67/6 ,, 61/2

COAXIAL CABLE INTERCONNECTIONS

(173)	SK2 AmpNBW(*c*) *to* SK4 AmpIF(*c*)
(174)	SK5 AmpIF(*c*) *to* SK1 AmpAJ(*c*)
(175)	SK2 AmpAJ(*c*) *to* SK6 AmpIF(*c*)
(176)	SK2 AmpNBW(*b*) *to* SK4 AmpIF(*b*)
(177)	SK5 AmpIF(*b*) *to* SK6 AmpAJ(*a*) and (*b*)
(178)	SK7 AmpAJ(*a*) and (*b*) to SK6 AmpIF(*b*)
(179)	SK2 AmpNBW(*a*) *to* SK4 AmpIF(*a*)
(180)	SK5 AmpIF(*a*) *to* SK1 AmpAJ(*a*) and (*b*)
(181)	SK2 AmpAJ(*a*) and (*b*) *to* SK6 AmpIF(*a*)
(182)	SK6 MU27A(1) *to* SK5 MU27A(2)

Chapter 7

RACK ASSEMBLY TYPE 310

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	Fig.
Disposition of units and plugs, schematic	1

◀	Panel (blanking) 4639 (Stores Ref. 10D/19663)	Panel (blanking) 4639	
5 6 7 8 9 10	(2) Rectifier unit Type 15 (Stores Ref. 10D/17761) RU15	Panel (blanking) 4639 ▶	
11 12 13 14 15 16	(*b*) Amplifier (NBW) Type A.3679 (Stores Ref. 10U/16026) AmpNBW	(1) Rectifier unit Type 15	45 46 47 48 49 50
17 18 19 20 21 22	(*b*) Amplifier (IF and Vid) Type A.3680 (Stores Ref. 10U/16027) AmpIF	(*a*) and (*b*) Amplifier (AJ and Vid) Type A.3681 (Stores Ref. 10U/16028) AmpAJ	51 52 53 54 55 56
23 24 25 26 27 28	(2) Marker unit (range) Type 27 (Stores Ref. 10D/18308) MU27	(*a*) Amplifier (IF and Vid) Type A.3680	57 58 59 60 61 62
29 30 31 32 33 34	(1) Marker unit (range) Type 27	(*a*) Amplifier (NBW) Type A.3679 (Stores Ref. 10U/16026)	63 64 65 66 67 68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 310 (Stores Ref. 10D/18804) is similar to rack assembly Type 309 (Chapter 6) the only difference being the omission of the amplifiers used for the signals from radar Type 54.

◀**2.** It is used on the majority of GCI stations and CEW/A, CEW/C and CEW/F at Stage 1. At Stage 2 it is confined to GCI/A/A, /H, /L, /M and /P. It is not used at Stage 3. Its original function was the handling of output from radars Type 14.▶

(A.L.10, Sep. 55)

SCHEDULE I

RACK ASSEMBLY TYPE 316—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Rectifier Type 15, RU15(1)	PL1/1	—	—	Earth	—
(2)		2	26	61/5, 61/7, 61/6, 61/8, *strapped*	PL11/2AmpAJ (*a*) and (*b*)	50V output
(3)		3	27	61/1, 61/2, 61/3, 61/4, *strapped*	PL11/3AmpAJ (*a*) and (*b*)	50V output (—*ve*)
(4)		4	—	61/7, 61/6, 61/8, 61/5, *strapped*	—	50V output
(5)		5	—	61/9, 61/10, 61/11, 61/12, *strapped*	—	50V output
(6)		6	—	—	—	—
(7)		7	—	63/11, 65/11, 67/11, *strapped*	—	AFC (Earth)
(8)		8	—	—	—	—
(9)		9	—	—	—	—
(10)		10	—	—	—	—
(11)		11	—	51/11	—	Mains input
(12)		12	—	51/12	—	Mains input
(13)		PL2/1	—	67/7	—	AFC(*a*)
(14)		2	—	—	—	—
(15)		3	—	67/9	—	AFC(*a*)
(16)		4	—	63/7	—	AFC(1)
(17)		5	—	63/9	—	AFC(1)
(18)		6	—	—	—	—
(19)		7	—	—	—	—
(20)		8	—	65/9	—	AFC(*b*)
(21)		9	—	—	—	—
(22)		10	—	65/7	—	AFC(*b*)
(23)		11	—	—	—	—
(24)		12	—	—	—	—
(25)	Amplifier (AJ and Vid) Type A.3681, AmpAJ (*a*) and (*b*)	PL11/1	—	—	Earth	—
(26)		2	2 and 38	—	PL1/2 RU15(1) PL10/2AmpIF(*a*) PL1/3 RU15(1)	
(27)		3	3 and 39	—	PL10/3AmpIF(*a*)	—
(28)		4	—	67/4	—	CU619/(*a*) STC(*a*)PLAK/4
(29)		5	—	67/3	—	CU619(*a*) LPF(*a*)PLAK/3
(30)		6	—	65/4	—	CU619/(*b*) STC(*b*)PLAK/4
(31)		7	—	65/3	—	CU619(*b*) LPF(*b*)PLAK/3
(32)		8	—	—	—	—
(33)		9	—	—	—	—
(34)		10	—	—	—	—
(35)		11	—	51/3	—	Mains input
(36)		12	—	51/4	—	Mains input
(37)	Amplifier (IF and Vid) Type A.3680, AmpIF(*a*)	PL10/1	—	—	Earth	—
(38)		2	26 and 50	—	PL11/2AmpAJ (*a*) and (*b*)	—
					PL9/2AmpNBW(*a*)	—
(39)		3	27 and 51	—	PL11/3AmpAJ (*a*) and (*b*)	—
					PL9/3AmpNBW(*a*)	—
(40)		4	—	67/2	—	CU619/(*a*) IAGC(*a*)PLAK/2
(41)		5	—	—	—	—
(42)		6	—	—	—	—
(43)		7	—	—	—	—
(44)		8	—	—	—	—
(45)		9	—	—	—	—
(46)		10	—	—	—	—
(47)		11	—	51/1	—	Mains input
(48)		12	—	51/2	—	Mains input
(49)	Amplifier (NBW) Type A.3679, AmpNBW(*a*)	PL9/1	—	—	Earth	—
(50)		2	38 and 122	—	PL10/2AmpIF(*a*) PL7/2 MU27(1)	—
(51)		3	39 and 123	—	PL10/3AmpIF(*a*) PL7/3 MU27(1)	—
(52)		4	—	67/5	—	CU619(*a*) NBW(*a*)PLAK/5
(53)		5	—	—	—	—
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—

RACK ASSEMBLY TYPE 310—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(58)	Amplifier (NBW) Type	PL9/10	—	—	—	—
(59)	A.3679, AmpNBW(*a*)	11	—	51/7	—	Mains input
(60)		12	—	51/8	—	Mains input
(61)	Rectifier Type 15, RU15 (2)	PL1/1	—	—	Earth	—
(62)		2	—	28/5, 28/6, 28/7, 28/8, *strapped*	—	50V output
(63)		3	—	28/1, 28/2, 28/3, 28/4, *strapped*	—	50V output (−*ve*)
(64)		4	—	28/5, 28/6, 28/7, 28/8, *strapped*	—	50V output
(65)		5	—	28/9, 28/10, 28/11, 28/12, *strapped*	—	50V output (−*ve*)
(66)		6	—	—	—	—
(67)		7	—	30/11, 32/11, 34/11, *strapped*	—	AFC (Earth)
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	18/11	—	Mains input
(72)		12	—	18/12	—	Mains input
(73)		PL2/1	—	34/7	—	AFC(2)
(74)		2	—	—	—	—
(75)		3	—	34/9	—	AFC(2)
(76)		4	—	30/7	—	AFC(3)
(77)		5	—	30/9	—	AFC(3)
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	—	—	—
(84)		12	—	—	—	—
(85)	Amplifier (NBW) Type 3679,	PL9/1	—	—	Earth	—
(86)	AmpNBW(*b*)	2	98	—	PL10/2AmpIF(*b*)	—
(87)		3	99	—	PL10/3AmpIF(*b*)	—
(88)		4	—	65/5	—	CU619/(*b*) NBW(*b*)PLAK/5
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	18/9	—	Mains input
(96)		12	—	18/10	—	Mains input
(97)	Amplifier (IF and Vid)	PL10/1	—	—	Earth	—
(98)	Type A.3680, AmpIF(*b*)	2	86	—	PL7/2 MU27(1)	—
			122	—	PL9/2AmpNBW(*b*)	—
(99)		3	87	—	PL7/3 MU27(1)	—
			123	—	PL9/3AmpNBW(*b*)	—
(100)		4	—	65/2	—	IAGC(*b*) PLAK/2 CU619(*b*)
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	18/5	—	Mains input
(108)		12	—	18/6	—	Mains input
(109)	Marker unit (range)	PL7/1	—	—	Earth	
(110)	Type 27 MU27(2)	2	122	—	PL7/2 MU27(1) and	—
			98	—	PL10/2AmpIF(*b*)	—
(111)		3	123	—	PL7/3 MU27(1) and	
			99	—	PL10/3AmpIF(*b*)	—
(112)		4	—	—	—	—
(113)		5	—	—	—	—
(114)		6	—	—	—	—
(115)		7	—	—	—	—
(116)		8	—	—	—	—
(117)		9	—	—	—	—
(118)		10	—	—	—	—
(119)		11	—	18/1	—	Mains input
(120)		12	—	18/2	—	Mains input
(121)	Marker unit (range)	PL7/1	—	—	Earth	—
(122)	Type 27 MU27(1)	2	50	—	PL9/2AmpNBW(*a*)	—

RACK ASSEMBLY TYPE 310—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(123)	Marker unit (range) Type 27 MU27(1)	PL7/3	51	—	PL9/3AmpNBW(*a*)	—
			111	—	PL7/3MU27(2)	—
(124)		4	—	—	—	—
(125)		5	—	—	—	—
(126)		6	—	—	—	—
(127)		7	—	—	—	—
(128)		8	—	—	—	—
(129)		9	—	—	—	—
(130)		10	—	—	—	—
(131)		11	—	18/3	—	Mains input
(132)		12	—	18/4	—	Mains input

EXTRA CONNECTIONS

(133) 65/1 *strapped to* 61/5
(134) 65/6 ,, 61/1
(135) 67/1 *strapped to* 61/6
(136) 67/6 ,, 61/2

CO-AXIAL CABLE INTERCONNECTIONS

(137) SK2 AmpNBW(*a*) to SK4 AmpIF(*a*)
(138) SK5 AmpIF(*a*) *to* SKI AmpAJ(*a*) and (*b*)
(139) SK2 AmpAJ(*a*) and (*b*) *to* SK6 AmpIF(*a*)
(140) SK2 AmpNBW(*b*) *to* SK4 AmpIF(*b*)
(141) SK5 AmpIF(*b*) *to* SK6 AmpAJ(*a*) and (*b*)
(142) SK7 AmpAJ(*a*) and (*b*) *to* SK6 AmpIF(*b*)
(143) SK6 MU27(1) *to* SK5 MU27(2)

Chapter 8

RACK ASSEMBLY TYPE 311

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Fig.
Disposition of units and plugs, schematic 1

		Panel (blanking) 4639 (Stores Ref. 10D/19663)	Rectifier unit Type 17 (Stores Ref. 10D/17779) RU17 (1)		
5	6	Control unit Type 600 (Stores Ref. 10L/16029) CU600 (e)	Switch unit Type 410 (Stores Ref. 10F/16163) SU410	39	40
7	8			41	42
9	10			43	44
11	12	Amplifier (servo) Type 297 (Stores Ref. 10U/16054) SA (e)		45	46
13	14		Rectifier unit Type 17 (2)	47	48
15	16			49	50
17	18	Amplifier (servo) Type 297 (d)	Amplifier (servo) Type 297 (a)	51	52
19	20			53	54
21	22			55	56
23	24	Control unit Type 600 (c) and (d)	Control unit Type 600 (a) and (b)	57	58
25	26			59	60
27	28			61	62
29	30	Amplifier (servo) Type 297 (c)	Amplifier (servo) Type 297 (b)	63	64
31	32			65	66
33	34			67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 311 (Stores Ref. 10D/18805) is devoted almost entirely to turning-gear control equipment. It is used only on Stage 1 CEW/A, /C, /E and /F stations for operation of five turning gear systems (three Type 13 heads and two Type 14). The radar Type 14 Mk. 8 is wired for continuous rotation method of search and is controlled by a control unit Type 619 whilst the type 14 Mk. 9 (½ deg.) head is employed on " stop-and-look " operation and its controls are situated in the console Type 60. The accompanying schedule covers the wiring of this rack. The units associated with the various heads are identified as follows :—

(a) radar Type 14 Mk. 9 (½ deg.)
(b) radar Type 14 Mk. 8
(c) radar Type 13
(d) radar Type 13
(e) radar Type 13.

Although the rack houses five servo amplifiers one for each head controlled, only three control units Type 600 are needed since this unit incorporates two separate channels.

2. Two rectifiers Type 17 are used, one in operation and one as stand-by. Should a failure occur, the switch unit Type 410 will effect an automatic change-over to maintain relay voltage supplies. The connections to phasing control transformers are also switched simultaneously in the event of a change-over.

SCHEDULE 1

RACK ASSEMBLY TYPE 311

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Rectifier unit Type 17	PL1/1				
(2)	RU17(1)	2				
(3)		3				
(4)		4				
(5)		5				
(6)		6				
(7)		7				
(8)		8				
(9)		9				
(10)		10	106	—	PL905/10(SU410)	
(11)		11	107	—	PL905/11(SU410)	
(12)		12	108	—	PL905/12(SU410)	
	Plugs 2 and 3 not used					
(13)		PL4/1	133	—	PL908/1(SU410)	
(14)		2	134	—	PL908/2(SU410)	
(15)		3	135	—	PL908/3(SU410)	
(16)		4				
(17)		5				
(18)		6				
(19)		7	139	—	PL908/7(SU410)	
(20)		8	140	—	PL908/8(SU410)	
(21)		9				
(22)		10	—	—	Earth	
(23)		11	—	51/11	—	Mains input
(24)		12	—	51/12	—	Mains input
(25)	Rectifier unit Type 17	PL1/1				
(26)	RU17(2)	2				
(27)		3				
(28)		4				
(29)		5				
(30)		6				
(31)		7				
(32)		8				
(33)		9				
(34)		10	118	—	PL906/10(SU410)	
(35)		11	119	—	PL906/11(SU410)	
(36)		12	120	—	PL906/12(SU410)	
	Plugs 2 and 3 not used					
(37)		PL4/1	121	—	PL907/1(SU410)	
(38)		2	122	—	PL907/2(SU410)	
(39)		3	123	—	PL907/3(SU410)	
(40)		4				
(41)		5				
(42)		6				
(43)		7	127	—	PL907/7(SU410)	
(44)		8	128	—	PL907/8(SU410)	
(45)		9				
(46)		10	—	—	Earth	
(47)		11	—	51/9	—	Mains input
(48)		12	—	51/10	—	Mains input
(49)	Switch unit Type 410	PL901/1				
(50)	(SU410)	2				
(51)		3				
(52)		4				
(53)		5				
(54)		6				
(55)		7				
(56)		8				
(57)		9				
(58)		10	—	53/1	—	PLAL/1(CU619(2))
(59)		11	166	54/10	PL2/10(SA(*a*))	SR28 14/9 (1")
(60)		12	—	53/2	—	PLAL/2(CU619(2))
(61)		PL902/1	198	—	PL5/6(SA(*a*))	
(62)		2	238	—	PL504/10(CU(*a*))	
(63)		3	197	—	PL5/5(SA(*a*))	
(64)		4	325	—	PL5/1(SA(*b*))	
(65)		5				
(66)		6				
(67)		7				
(68)		8	—	59/2	—	PLAJ/2(CU619(1))
(69)		9				
(70)		10				
(71)		11				
(72)		12	239	—	PL504/11(CU(*a*))	
(73)		PL903/1	275	—	PL504/11(CU(*b*))	
(74)		PL903/2	330	—	PL5/6(SA(*b*))	
(75)		3	374	—	PL504/10(CU(*b*))	

RACK ASSEMBLY TYPE 311 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(76)	Switch unit Type 410	4	329	—	PL5/5(SA(*b*))	
(77)	(SU410)—*contd.*	5	431	—	PL504/11(CU(*c*))	
(78)		6	390	—	PL5/6(SA(*c*))	
(79)		7	430	—	PL504/10(CU(*c*))	
(80)		8	389	—	PL5/5(SA(*c*))	
(81)		9	467	—	PL504/11(CU(*d*))	
(82)		10	522	—	PL5/6(SA(*d*))	
(83)		11	466	—	PL504/10(CU(*d*))	
(84)		12	521	—	PL5/5(SA(*d*))	
(85)		PL904/1	—	63/1	—	PLAL/1(CU619(1))
(86)		2	298	65/10	PL2/10(SA(*b*))	SR28 14/8
(87)		3	—	63/2	—	PLAL/2(CU619(1))
(88)		4				
(89)		5				
(90)		6	582	—	PL5/6(SA(*e*))	
(91)		7	623	—	PL504/11(CU(*e*))	
(92)		8	622	—	PL504/10(CU(*e*))	
(93)		9	581	—	PL5/5(SA(*e*))	
(94)		10				
(95)		11				
(96)		12				
(97)		PL905/1				
(98)		2				
(99)		3				
(100)		4				
(101)		5				
(102)		6				
(103)		7				
(104)		8				
(105)		9				
(106)		10	10	—	PL1/10(RU17(1))	
(107)		11	11	—	PL1/11(RU17(1))	
(108)		12	12	—	PL1/12(RU17(1))	
(109)		PL906/1				
(110)		2				
(111)		3				
(112)		4				
(113)		5				
(114)		6				
(115)		7				
(116)		8				
(117)		9				
(118)		10	34	—	PL1/10(RU17(2))	
(119)		11	35	—	PL1/11(RU17(2))	
(120)		12	36	—	PL1/12(RU17(2))	
(121)		PL907/1	37	—	PL4/1(RU17(2))	
(122)		2	38	—	PL4/2(RU17(2))	
(123)		3	39	—	PL4/3(RU17(2))	
(124)		4				
(125)		5				
(126)		6				
(127)		7	43	—	PL4/7(RU17(2))	
(128)		8	44	—	PL4/8(RU17(2))	
(129)		9				
(130)		10				
(131)		11				
(132)		12				
(133)		PL908/1	13	—	PL4/1(RU17(1))	
(134)		2	14	—	PL4/2(RU17(1))	
(135)		3	15	—	PL4/3(RU17(1))	
(136)		4				
(137)		5				
(138)		6				
(139)		7	19	—	PL4/7(RU17(1))	
(140)		8	20	—	PL4/8(RU17(1))	
(141)		9				
(142)		10				
(143)		11				
(144)		12				
	Plugs 909 and 910 not used					
(145)	Amplifier (servo) Type 297	PL1/1	—	52/11	—	Plinth term.36 14/9(¼")
(146)	SA(*a*)	2	—	52/12	—	Plinth term.35
(147)		3	—	51/7	—	Main input
(148)		4	—	—	Earth	
(149)		5				

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(150)	Amplifier (servo) Type 297 SA(*a*)—*contd.*	PL1/6	—	51/8	—	Mains input
(151)		7	—	56/7	—	N8 S and L Cons68
(152)		8				
(153)		9	—	52/9	—	SR46 14/9 (⅛")
(154)		10	—	56/8	—	N9 S and L Cons60
(155)		11	—	56/6	—	N10 S and L Cons60
(156)		12	—	52/10	—	SR38 14/9 (⅛")
(157)		PL2/1	289	*57/1 *strapped to* 57/4	PL2/1(SA(*b*))	
(158)		2	290	*57/2 *strapped to* 57/5	PL2/2(SA(*b*))	
(159)		3	291	*57/3 *strapped to* 57/6	PL2/3(SA(*b*))	
		* **Note.**—*These leads from SA(a) are brought to a free Jones socket SK.57 which plugs into frame plug PL.57. Strapping of 57/1 to 57/4, etc., are done on PL.57.*				
(160)		4	—	54/4	—	SR23 14/9 (⅛")
(161)		5	—	54/5	—	SR22 14/9 (⅛")
(162)		6	—	54/6	—	SR25 14/9 (⅛")
(163)		7	—	54/7	—	SR24 14/9 (⅛")
(164)		8	—	54/8	—	SR27 14/9 (⅛")
(165)		9	—	54/9	—	SR26 14/9 (⅛")
(166)		10	59	54/10	PL901/11(SU410)	SR28 14/9 (⅛")
(167)		11	233	56/4 *strapped to* 54/3	PL503/7(CU(*a*))	SR19 and 29 N6 S and L Cons60
(168)		12	—	54/12	—	SR30 14/9 (⅛")
(169)		PL3/1				
(170)		2				
(171)		3	—	52/1	—	AmpdnX4 14/9 (⅛")
(172)		4	—	52/1	—	AmpdnX3 14/9 (⅛")
(173)		5	—	52/3	—	AmpdnX2 14/9 (⅛")
(174)		6	—	52/4	—	AmpdnX1 14/9 (⅛")
(175)		7	—	52/5	—	AmpdnX5 14/9 (⅛")
(176)		8	—	52/6	—	AmpdnX6 14/9 (⅛")
(177)		9	—	52/7	—	AmpdnA4 14/9 (⅛")
(178)		10				
(179)		11	—	52/8	—	AmpdnA2 14/9 (⅛")
(180)		12				
(181)		PL4/1	—	60/3	—	J3 S and L Cons60
(182)		2	—	60/5	—	J5 S and L Cons60
(183)		3	226	—	PL502/12(CU(*a*))	
(184)		4	—	54/1	—	SR36 14/9 (⅛")
(185)		5	222	—	PL502/8(CU(*a*))	
(186)		6	223	—	PL502/9(CU(*a*))	
(187)		7	—	53/3	—	PLAL/3(CU619(2))
(188)		8	—	56/5 *strapped to* 54/2	—	SR34 14/9 (⅛") N7 S and L Cons60
(189)		9	220	—	PL502/6(CU(*a*))	
(190)		10	—	60/12	—	J12 S and L Cons60
(191)		11				
(192)		12				
(193)		PL5/1				
(194)		2	—	60/4	—	J4 S and L Cons60
(195)		3	—	60/7	—	J7 S and L Cons60
(196)		4	217	—	PL502/3(CU(*a*))	
(197)		5	63	—	PL902/3(SU410)	
(198)		6	61	—	PL902/1(SU410)	
(199)		7	—	58/2	—	K2 S and L Cons60
(200)		8	218	—	PL502/4(CU(*a*))	
(201)		9	219	—	PL502/5(CU(*a*))	
(202)		10	224	—	PL502/10(CU(*a*))	
(203)		11	225	—	PL502/11(CU(*a*))	
(204)		12	206	60/6	PL501/2(CU(*a*))	J6 S and L Cons60
(205)	Control unit Type 600 CU(*a*)	PL501/1				
(206)		2	204	60/6	PL5/12(SA(*a*))	J6 S and L Cons60
(207)		3	—	58/4	—	K4 S and L Cons60
(208)		4				
(209)		5	—	58/6	—	K6 S and L Cons60
(210)		6				
(211)		7	—	58/8	—	K8 S and L Cons60
(212)		8				
(213)		9	—	60/9	—	J9 S and L Cons60
(214)		10	—	60/11	—	J11 S and L Cons60
(215)		11	—	60/8	—	J8 S and L Cons60
(216)		12	—	58/1	—	K1 S and L Cons60
(217)		PL502/3	196	—	PL5/4(SA(*a*))	
(218)		4	200	—	PL5/8(SA(*a*))	
(219)		5	201	—	PL5/9(SA(*a*))	

RACK ASSEMBLY TYPE 311 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(220)	Control unit Type 600	PL502/6	189	—	PL4/9(SA(*a*))	
(221)	CU(*a*)—*contd.*	7				
(222)		8	185	—	PL4/5(SA(*a*))	
(223)		9	186	—	PL4/6(SA(*a*))	
(224)		10	202	—	PL5/10(SA(*a*))	
(225)		11	203	—	PL5/11(SA(*a*))	
(226)		12	183	—	PL4/3(SA(*a*))	
(227)		PL503/1	—	60/10	—	J10 S and L Cons60
(228)		2				
(229)		3	—	58/10	—	K9 S and L Cons60
(230)		4	—	51/3	—	Mains input
(231)		5	—	58/9	—	K10 S and L Cons60
(232)		6				
(233)		7	167	56/4 *strapped to* 54/3	PL2/11(SA(*a*))	SR19 and 29 14/9 (½°) N6 S and L Cons60
(234)		8	—	51/4	—	Mains input
(235)		PL504/7	—	58/11	—	M8 S and L Cons60
(236)		8				
(237)		9				
(238)		10	62	—	PL902/2(SU410)	
(239)		11	72	—	PL902/12(SU410)	
(240)		12	—	—	Earth	
(241)	Control unit Type 600	PL501/1	—	59/1	—	PLAJ/1 CU619(1)
(242)	CU(*b*)	2	336	59/6	PL5/12(SA(*b*))	PLAJ/6 CU619(1)
(243)		3	—	61/4	—	PLAI/4 CU619(1)
(244)		4				
(245)		5	—	61/6	—	PLAI/6(CU619(1))
(246)		6				
(247)		7	—	61/8	—	PLAI/8(CU619(1))
(248)		8				
(249)		9	—	59/9	—	PLAJ/9(CU619(1))
(250)		10	—	59/11	—	PLAJ/11(CU619(1))
(251)		11	—	59/8	—	PLAJ/8(CU619(1))
(252)		12	—	61/1	—	PLAI/1(CU619(1))
(253)		PL502/3	328	—	PL5/4(SA(b))	
(254)		4	332	—	PL5/8(SA(b))	
(255)		5	333	—	PL5/9(SA(b))	
(256)		6	321	—	PL4/9(SA(b))	
(257)		7				
(258)		8	317	—	PL4/5(SA(b))	
(259)		9	318	—	PL4/6(SA(b))	
(260)		10	334	—	PL5/10(SA(b))	
(261)		11	335	—	PL5/11(SA(b))	
(262)		12	315	—	PL/3(SA(b))	
(263)		PL503/1	—	59/10	—	PLAJ/10(CU619(1))
(264)		2				
(265)		3	—	61/3	—	PLAI/3(CU619(1))
(266)		4				
(267)		5	—	61/5	—	PLAI/5(CU619(1))
(268)		6				
(269)		7	299	63/4 *strapped to* 65/3	PL2/11(SA(*b*))	SR19 and 29 14/8 PLAL/4(CU619(1))
(270)		8				
(271)		PL504/7	—	61/9	—	PLAI/9(CU619(1))
(272)		8				
(273)		9				
(274)		10	75	—	PL903/3(SU410)	
(275)		11	73	—	PL903/1(SU410)	
(276)		12	—	—	Earth	
(277)	Amplifier (servo) Type 297	PL1/1	—	67/11	—	Plinth term.36 T.14/8
(278)	SA(*b*)	2	—	67/12	—	Plinth term.35 T.14/8
(279)		3	—	51/1	—	Mains input
(280)		4	—	—	Earth	
(281)		5				
(282)		6	—	51/2	—	Mains input
(283)		7	—	63/7	—	PLAL/7(CU619(1))
(284)		8				
(285)		9	—	67/9	—	SR46 14/8
(286)		10	—	63/8	—	PLAL/8(CU619(1))
(287)		11	—	63/6	—	PLAL/6
(288)		12	—	67/10	—	SR38 T.14/8
(289)		PL2/1	157	** 57/4 *strapped to* 57/1	PL2/1(SA(*a*))	
(290)		2	158	57/5 *strapped to* 57/2	PL2/2(SA(*a*))	
(291)		3	159	57/6 *strapped to* 57/3	PL2/3(SA(*a*))	

** **Note.**—*These leads from SA(b) are brought to a free Jones socket SK57 which plugs into frame plug PL57. Strapping of 57/4 to 57/1, etc., is done on PL57.*

RACK ASSEMBLY TYPE 311 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(292)	Amplifier (servo) Type 297 SA(*b*)—*contd.*	PL2/4	—	65/4	—	SR23 T.14/8
(293)		5	—	65/5	—	SR22 T.14/8
(294)		6	—	65/6	—	SR25 T.14/8
(295)		7	—	65/7	—	SR24 T.14/8
(296)		8	—	65/8	—	SR27 T.14/8
(297)		9	—	65/9	—	SR26 T.14/8
(298)		10	86	65/10	PL904/2(SU410)	SR28 T.14/8
(299)		11	269	63/4	PL503/7(CU(b))	SR19 and 29 T.14/8
				strapped to 65/3	—	PLAL/4(CU619(1))
(300)		12	—	65/12	—	SR30 T.14/8
(301)		PL3/1				
(302)		2				
(303)		3*	—	67/1	—	AmpdnX4 14/8
(304)		4*	—	67/2	—	AmpdnX3 14/8
(305)		5*	—	67/3	—	AmpdnX2 14/8
(306)		6*	—	67/4	—	AmpdnX1 14/8
(307)		7	—	67/5	—	AmpdnX5 14/8
(308)		8	—	67/6	—	AmpdnX6 14/8
(309)		9				
(310)		10				
(311)		11	—	67/8	—	AmpdnA2 14/8
(312)		12				
(313)		PL4/1	—	59/3	—	PLAJ/3(CU619(1))
(314)		2	—	59/5	—	PLAJ/5(CU619(1))
(315)		3	262	—	PL502/12(CU(*b*))	
(316)		4	—	65/1	—	SR36 14/8
(317)		5	258	—	PL502/8(CU(*b*))	
(318)		6	259	—	PL502/9(CU(*b*))	
(319)		7	—	63/3	—	PLAL/3(CU619(1))
(320)		8	—	63/5	—	PLAL/5(CU619(1))
				strapped to 65/2	—	SR34 14/8
(321)		9	256	—	PL502/6(CU(*b*))	
(322)		10	—	59/12	—	PLAJ/12(CU619(1))
(323)		11				
(324)		12				
(325)		PL5/1	64	—	PL902/4(SU410)	
(326)		2	—	59/4	—	PLAJ/4(CU619(1))
(327)		3	—	59/7	—	PLAJ/7(CU619(1))
(328)		4	253	—	PL502/3(CU(*b*))	
(329)		5	76	—	PL903/4(SU410)	
(330)		6	74	—	PL903/2(SU410)	
(331)		7	—	61/2	—	PLAI/2(CU619(1))
(332)		8	254	—	PL502/4(CU(*b*))	
(333)		9	255	—	PL502/5(CU(*b*))	
(334)		10	260	—	PL502/10(CU(*b*))	
(335)		11	261	—	PL502/11 (CU(*b*))	
(336)		12	242	59/6	PL501/2(CU(*b*))	PLAJ/6(CU619(1))
(337)	Amplifier (servo) Type 297 SA(*c*)	PL1/1	—	34/11	—	Plinth term.36 13(1)
(338)		2	—	34/12	—	Plinth term.35 13(1)
(339)		3	—	18/1	—	Mains input
(340)		4	—	—	Earth	
(341)		5				
(342)		6	—	18/2	—	Mains input
(343)		7	—	30/7	—	N8 Cons60 (HF1)
(344)		8				
(345)		9	—	34/9	—	SR46 13(1)
(346)		10	—	30/8	—	N9 Cons60 (HF1)
(347)		11	—	30/6	—	N10 Cons60 (HF1)
(348)		12	—	34/10	—	SR38 13(1)
(349)		PL2/1				
(350)		2				
(351)		3				
(352)		4	—	32/4	—	SR23 13(1)
(353)		5	—	32/5	—	SR22 13(1)
(354)		6	—	32/6	—	SR25 13(1)
(355)		7	—	32/7	—	SR24 13(1)
(356)		8	—	32/8	—	SR27 13(1)
(357)		9	—	32/9	—	SR26 13(1)
(358)		10	379	32/10	PL4/7(SA(*c*))	SR28 13(1)
(359)		11	425	30/4	PL503/7(CU(*c*))	N6 Cons60 (HF1)
				strapped to 32/3	—	SR19 and 29 13(1)
(360)		12	—	32/12	—	SR30 and 29 13(1)
(361)		PL3/1				
(362)		2				
(363)		3	—	34/1	—	AmpdnX4 13(1)
(364)		4*	—	34/2	—	AmpdnX3 13(1)
(365)		5*	—	34/3	—	AmpdnX2 13(1)
(366)		6*	—	34/4	—	AmpdnX1 13(1)

RACK ASSEMBLY TYPE 311 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(367)	Amplifier (servo) Type 297	PL3/7	—	34/5	—	AmpdnX5 13(1)
(368)	SA(*c*)—*contd.*	8	—	34/6	—	AmpdnX6 13(1)
(369)		9	—	34/7	—	AmpdnX4 13(1)
(370)		10				
(371)		11	—	34/8	—	AmpdnA2 13(1)
(372)		12				
(373)		PL4/1	—	26/3	—	J3 Cons60 (HF1)
(374)		2	—	26/5	—	J5 Cons60 (HF1)
(375)		3	418	—	PL502/12(CU(*c*))	
(376)		4	—	32/1	—	SR36 13(1)
(377)		5	414	—	PL502/8(CU(*c*))	
(378)		6	415	—	PL502/9(CU(*c*))	
(379)		7	358	32/10	PL2/10(SA(*c*))	SR28 13 (1)
(380)		8	—	30/5 *strapped to* 32/2	—	N7 Cons60 (HF1), SR34 13(1)
(381)		9	412	—	PL502/6(CU(*c*))	
(382)		10	—	26/12	—	J12 Cons60 (HF1)
(383)		11				
(384)		12				
(385)		PL5/1				
(386)		2	—	26/4	—	J4 Cons60 (HF1)
(387)		3	—	26/7	—	J7 Cons60 (HF1)
(388)		4	409	—	PL502/3(CU(*c*))	
(389)		5	80	—	PL903/8(SU410)	
(390)		6	78	—	PL903/6	
(391)		7	—	28/2	—	K2 Cons60 (HF1)
(392)		8	410	—	PL502/4(CU(*c*))	
(393)		9	411	—	PL502/5(CU(*c*))	
(394)		10	416	—	PL502/10(CU(*c*))	
(395)		11	417	—	PL502/11(CU(*c*))	
(396)		12	398	26/6	PL501/2	J6 Cons60 (HF1)
(397)	**Control unit Type 600**	PL501/1				
(398)	**CU(*c*)**	2	396	26/6	PL5/12(SA(*c*))	J6 Cons60 (HF1)
(399)		3	—	28/4	—	K4 Cons60 (HF1)
(400)		4				
(401)		5	—	28/6	—	K6 Cons60 (HF1)
(402)		6				
(403)		7	—	28/8	—	K8 Cons60 (HF1)
(404)		8				
(405)		9	—	26/9	—	J9 Cons60 (HF1)
(406)		10	—	26/11	—	J11 Cons60 (HF1)
(407)		11	—	26/8	—	J8 Cons60 (HF1)
(408)		12	—	28/1	—	K1 Cons60 (HF1)
(409)		PL502/3	388	—	PL5/4(SA(*c*))	
(410)		4	392	—	PL5/8(SA(*c*))	
(411)		5	393	—	PL5/9(SA(*c*))	
(412)		6	381	—	PL4/9(SA(*c*))	
(413)		7				
(414)		8	377	—	PL4/5(SA(*c*))	
(415)		9	378	—	PL4/6(SA(*c*))	
(416)		10	394	—	PL5/10(SA(*c*))	
(417)		11	395	—	PL5/11(SA(*c*))	
(418)		12	375	—	PL4/3(SA(*c*))	
(419)		PL503/1	—	26/10	—	J10 Cons60 (HF1)
(420)		2				
(421)		3	—	28/10	—	K9 Cons60 (HF1)
(422)		4				
(423)		5	—	28/9	—	K10 Cons60 (HF1)
(424)		6				
(425)		7	359	30/4 *strapped to* 32/3	PL2/11 (SA(*c*)) —	N6 Cons60 (HF1) SR19 and 29 13(1)
(426)		8				
(427)		7				
(428)		8				
(429)		9				
(430)		10	79	—	PL903/7(SU410)	
(431)		11	77	—	PL903/5(SU410)	
(432)		12	—	—	Earth	
(433)	**Control unit Type 600**	PL501/1				
(434)	**CU(*d*)**	2	528	25/6	PL5/12(SA(*d*))	J6 Cons60 (HF2)
(435)		3	—	23/4	—	K4 Cons60 (HF2)
(436)		4				
(437)		5	—	23/6	—	K6 Cons60 (HF2)
(438)		6				

RACK ASSEMBLY TYPE 311 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(439)	Control unit Type 600	PL501/7	—	23/8	—	K8 Cons60 (HF2)
(440)	CU(*d*)—*contd.*	8				
(441)		9	—	25/9	—	J9 Cons60 (HF2)
(442)		10	—	25/11	—	J11 Cons60 (HF2)
(443)		11	—	25/8	—	J8 Cons60 (HF2)
(444)		12	—	23/1	—	K1 Cons60 (HF2)
(445)		PL502/3	520	—	PL5/4(SA(*d*))	
(446)		4	524	—	PL5/8(SA(*d*))	
(447)		5	525	—	PL5/9(SA(*d*))	
(448)		6	513	—	PL4/9(SA(*d*))	
(449)		7				
(450)		8	509	—	PL4/5(SA(*d*))	
(451)		9	510	—	PL4/6(SA(*d*))	
(452)		10	526	—	PL5/10(SA(*d*))	
(453)		11	527	—	PL5/11(SA(*d*))	
(454)		12	507	—	PL4/3(SA(*d*))	
(455)		PL503/1	—	25/10	—	J10 Cons60 (HF2)
(456)		2				
(457)		3	—	23/10	—	K9 Cons60 (HF2)
(458)		4	—	18/3	—	Mains input
(459)		5	—	23/9	—	K10 Cons60 (HF2)
(460)		6				
(461)		7	491	21/4	PL2/11(SA(*d*))	N6 Cons60 (HF2)
				strapped to 19/3	—	SR19 and 29 13(2)
(462)		8	—	18/4	—	Mains input
(463)		PL504/7				
(464)		8				
(465)		9				
(466)		10	83	—	PL903/11(SU410)	
(467)		11	81	—	PL903/9(SU410)	
(468)		12	—	—	Earth	
(469)	Amplifier (servo) Type 297	PL1/1	—	17/11	—	Plinth term.36 13(2)
(470)	SA(*d*)	2	—	17/12	—	Plinth term.35 13(2)
(471)		3	—	18/7	—	Mains input
(472)		4	—	—	Earth	
(473)		5				
(474)		6	—	18/8	—	Mains input
(475)		7	—	21/7	—	N8 Cons60(HF2)
(476)		8				
(477)		9	—	17/9	—	SR46 13(2)
(478)		10	—	21/8	—	N9 Cons60 (HF2)
(479)		11	—	21/6	—	N10 Cons60 (HF2)
(480)		12	—	17/10	—	SR38 13(2)
(481)		PL2/1				
(482)		2				
(483)		3				
(484)		4	—	19/4	—	SR23 13(2)
(485)		5	—	19/5	—	SR22 13(2)
(486)		6	—	19/6	—	SR25 13(2)
(487)		7	—	19/7	—	SR24 13(2)
(488)		8	—	19/8	—	SR27 13(2)
(489)		9	—	19/9	—	SR26 13(2)
(490)		10	511	19/10	PL4/7(SA(*d*))	SR28 13(2)
(491)		11	461	21/4	PL503/7(CU(*d*))	N6 Cons60 (HF2)
				strapped to 19/3	—	SR19 and 29 13(2)
(492)		12	—	19/12	—	SR30 13(2)
(493)		PL3/1				
(494)		2				
(495)		3	—	17/1	—	AmpdnX4 13(2)
(496)		4	—	17/2	—	AmpdnX3 13(2)
(497)		5	—	17/3	—	AmpdnX2 13(2)
(498)		6	—	17/4	—	AmpdnX1 13(2)
(499)		7	—	17/5	—	AmpdnX5 13(2)
(500)		8	—	17/6	—	AmpdnX6 13(2)
(501)		9	—	17/7	—	AmpdnA4 13(2)
(502)		10				
(503)		11	—	17/8	—	AmpdnA2 13(2)
(504)		12				
(505)		PL4/1	—	25/3	—	J3 Cons60 (HF2)
(506)		2	—	25/5	—	J5 Cons60 (HF2)
(507)		3	454	—	PL502/12(CU(*d*))	
(508)		4	—	19/1	—	SR36 13(2)
(509)		5	450	—	PL502/8(CU(*d*))	
(510)		6	451	—	PL502/9(CU(*d*))	
(511)		7	490	19/10	PL2/10(SA(*d*))	SR28 13(2)

RACK ASSEMBLY TYPE 311 (continued)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(512)	Amplifier (servo) Type 297 SA(*d*)—*contd.*	PL1/8	—	21/5	—	N7 Cons60 (HF2)
				strapped to 19/2	—	SR34 13(2)
(513)		9	448	—	PL502/6(CU(*d*))	
(514)		10	—	25/12	—	J12 Cons60 (HF2)
(515)		11				
(516)		12				
(517)		PL5/1				
(518)		2	—	25/4	—	J4 Cons60 (HF2)
(519)		3	—	25/7	—	J7 Cons60 (HF2)
(520)		4	445	—	PL502/3(CU(*d*))	
(521)		5	84	—	PL903/12(SU410)	
(522)		6	82	—	PL903/10(SU410)	
(523)		7	—	23/2	—	K2 Cons60 (HF2)
(524)		8	446	—	PL502/4(CU(*d*))	
(525)		9	447	—	PL502/5(CU(*d*))	
(526)		10	452	—	PL502/10(CU(*d*))	
(527)		11	453	—	PL502/11(CU(*d*))	
(528)		12	434	25/6	PL501/2(CU(*d*))	J6 Cons60 (HF2)
(529)	Amplifier (servo) Type 297 SA(*e*)	PL1/1	—	15/11	—	Plinth term.36 13(3)
(530)		2	—	15/12	—	Plinth term.35
(531)		3	—	18/9	—	Mains input
(532)		4	—	—	Earth	
(533)		5				
(534)		6	—	18/10	—	Mains input
(535)		7	—	11/7	—	N8 Cons60 (HF3)
(536)		8				
(537)		9	—	15/9	—	SR46 13(3)
(538)		10	—	11/8	—	N9 Cons60 (HF3)
(539)		11	—	11/6	—	N10 Cons60(HF3)
(540)		12	—	15/10	—	SR38 13(3)
(541)		PL2/1				
(542)		2				
(543)		3				
(544)		4	—	13/4	—	SR23 13(3)
(545)		5	—	13/5	—	SR22 13(3)
(546)		6	—	13/6	—	SR25 13(3)
(547)		7	—	13/7	—	SR24 13(3)
(548)		8	—	13/8	—	SR27 13(3)
(549)		9	—	13/9	—	SR26 13(3)
(550)		10	571	13/10	PL4/7(SA(*e*))	SR28 13(3)
(551)		11	617	11/4	PL503/7(CU(*e*))	N6 Cons60 (HF3)
				strapped to 13/3	—	SR19 and 29 13(3)
(552)		12	—	13/12	—	SR30 13(3)
(553)		PL3/1				
(554)		2				
(555)		3	—	15/1	—	AmpdnX4 13(3)
(556)		4	—	15/2	—	AmpdnX3 13(3)
(557)		5	—	15/3	—	AmpdnX2 13(3)
(558)		6	—	15/4	—	AmpdnX1 13(3)
(559)		7	—	15/5	—	AmpdnX5 13(3)
(560)		8	—	15/6	—	AmpdnX6 13(3)
(561)		9	—	15/7	—	AmpdnA4 13(3)
(562)		10				
(563)		11	—	15/8	—	AmpdnA2 13(3)
(564)		12				
(565)		PL4/1	—	7/3	—	J3 Cons60 (HF3)
(566)		2	—	7/5	—	J5 Cons60 (HF3)
(567)		3	610	—	PL502/12(CU(*e*))	
(568)		4	—	13/1	—	SR36 13(3)
(569)		5	606	—	PL502/8(CU(*e*))	
(570)		6	607	—	PL502/9(CU(*e*))	
(571)		7	550	13/10	PL2/10(SA(*e*))	SR28 13(3)
(572)		8	—	11/5	—	N7 Cons60 (HF3)
				strapped to 13/2	—	SR34 13(3)
(573)		9	604	—	PL502/6(CU(*e*))	
(574)		10	—	7/12	—	J12 Cons60 (HF3)
(575)		11				
(576)		12				
(577)		PL5/1				
(578)		2	—	7/4	—	J4 Cons60 (HF3)
(579)		3	—	7/7	—	J7 Cons60 (HF3)
(580)		4	601	—	PL502/3(CU(*e*))	
(581)		5	93	—	PL904/9(SU410)	
(582)		6	90	—	PL904/6(SU410)	
(583)		7	—	9/2	—	K2 Cons60 (HF3)
(584)		8	602	—	PL502/4(CU(*e*))	
(585)		9	603	—	PL502/5(CU(*e*))	

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(586)	Amplifier (servo) Type 297)	PL5 /10	608	—	PL502 /10(CU(*e*))	
(587)	SA(*e*)—*cont.*	11	609	—	PL502 /11(CU(*e*))	
(588)		12	590	7 /6	PL501 /2(CU(*e*))	J6 Cons60 (HF3)
(589)	Control unit Type 600	PL501 /1				
(590)	CU(*e*)	2	588	7 /6	PL5 /12(SA(*e*))	J6 Cons60 (HF3)
(591)		3	—	9 /4	—	K4 Cons60 (HF3)
(592)		4				
(593)		5	—	9 /6	—	K6 Cons60 (HF3)
(594)		6				
(595)		7	—	9 /8	—	K8nCons60 (HF3)
(596)		8				
(597)		9	—	7 /9	—	J9 Cons60 (HF3)
(598)		10	—	7 /11	—	J1 Cons60 (HF3)
(599)		11	—	7 /8	—	J8 Cons60 (HF3)
(600)		12	—	9 /1	—	K1 Cons60 (HF3)
(601)		PL502 /3	580	—	PL5 /4(SA(*e*))	
(602)		4	584	—	PL5 /8(SA(*e*))	
(603)		5	585	—	PL5 /9(SA(*e*))	
(604)		6	573	—	PL4 /9(SA(*e*))	
(605)		7				
(606)		8	569	—	PL4 /5(SA(*e*))	
(607)		9	570	—	PL4 /6(SA(*e*))	
(608)		10	586	—	PL5 /10(SA(*e*))	
(609)		11	587	—	PL5 /11(SA(*e*))	
(610)		12	567	—	PL4 /3(SA(*e*))	
(611)		PL503 /1	—	7 /10	—	J10 Cons60 (HF3)
(612)		2				
(613)		3	—	9 /10	—	K6 Cons60 (HF3)
(614)		4	—	18 /11	—	Mains input
(615)		5	—	9 /9	—	K10 Cons60 (HF3)
(616)		6				
(617)		7	551	11 /4	PL2 /11(SA(*e*))	N6 Cons60 (HF3)
				strapped to 13 /3	—	SR19 and 29 13(3)
(618)		8	—	18 /12	—	Mains input
(619)		PL504 /7				
(620)		8				
(621)		9				
(622)		10	92	—	PL904 /8(SU410)	
(623)		11	91	—	PL904 /7(SU410)	
(624)		12	—	—	Earth	
(625)						
(626)	**Note.**—*No.* (625) *to* (636) *previously occupied by amplifier* (*IFF*) *Type A*.3677 *now*					
(627)	*removed. Mod. classification B2.*					
(628)						
(629)						
(630)						
(631)						
(632)						
(633)						
(634)						
(635)						
(636)						

ADDITIONAL CONNECTION REQUIRED

	58 /12	—	M9 S and L Cons60
	61 /10	—	PLA1 /10(CU619(1))
	58 /12 *and* 61 /10 *to be strapped together*		

Chapter 9

RACK ASSEMBLY TYPE 312

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ILLUSTRATION

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		Panel (blanking) 4639) (Stores Ref. 10D/19663)	Rectifier unit Type 17 (Stores Ref. 10D/17779) RU17		
5	6	Control unit Type 600 (Stores Ref. 10L/16029) CU600 (*e*)	Switch unit Type 410 (Stores Ref. 10F/16163) SU410	39	40
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31	32			65	66
33	34			67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. On Stage 1 C W/B and CEW/D stations the radar Type 14 Mk. 9 (¼ deg.) head is used in a manner similar to that in which radar Type 14 Mk. 8 is employed with the rack assembly Type 311 (Chapter 8); that is, it is wired for continuous rotation method of search and controlled by control unit Type 619. The only difference between this rack assembly, Type 312 (Stores Ref. 10D/18806) and the Type 311 is in the necessary wiring changes as shown in the accompanying schedule.

(A.L. 27, May 57)

SCHEDULE 1

RACK ASSEMBLY TYPE 312

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Rectifier unit Type 17	PL1/1				
(2)	RU17(1)	2				
(3)		3				
(4)		4				
(5)		5				
(6)		6				
(7)		7				
(8)		8				
(9)		9				
(10)		10	106	—	PL905/10(SU410)	
(11)		11	107	—	PL905/11(SU410)	
(12)		12	108	—	PL905/12(SU410)	
	Plugs 2 and 3 not used					
(13)		PL4/1	133	—	PL908/1(SU410)	
(14)		2	134	—	PL908/2(SU410)	
(15)		3	135	—	PL908/3(SU410)	
(16)		4				
(17)		5				
(18)		6				
(19)		7	139	—	PL908/7(SU410)	
(20)		8	140	—	PL908/7(SU410)	
(21)		9				
(22)		10	—	—	Earth	
(23)		11	—	51/11	—	Mains input
(24)		12	—	51/12	—	Mains input
(25)	Rectifier unit Type 17	PL1/1				
(26)	RU(2)	2				
(27)		3				
(28)		4				
(29)		5				
(30)		6				
(31)		7				
(32)		8				
(33)		9				
(34)		10	118	—	PL908/10(SU410)	
(35)		11	119	—	PL908/11(SU410)	
(36)		12	120	—	PL908/12(SU410)	
	Plugs 2 and 3 not used					
(37)		PL4/1	121	—	PL907/1(SU410)	
(38)		2	122	—	PL907/2(SU410)	
(39)		3	123	—	PL907/3(SU410)	
(40)		4				
(41)		5				
(42)		6				
(43)		7	127	—	PL907/7(SU410)	
(44)		8	128	—	PL907/8(SU410)	
(45)		9				
(46)		10	—	—	Earth	
(47)		11	—	51/9	—	Mains input
(48)		12	—	51/10	—	Mains input
(49)	Switch unit Type 410	PL901/1				
(50)	(SU410)	2				
(51)		3				
(52)		4				
(53)		5				
(54)		6				
(55)		7				
(56)		8				
(57)		9				
(58)		10	—	56/1	—	PLAL/1(CU619(2))
(59)		11	166	54/10	PL2/10(SA(*a*))	SR28 14/9 (1°)
(60)		12	—	56/1	—	PLAL/2(CU619(2))
(61)		PL902/1	198	—	PL5/6(SA(*a*))	
(62)		2	238	—	PL504/10(CU(*a*))	
(63)		3	197	—	PL5/5(SA(*a*))	
(64)		4	325	—	PL5/1(SA(*b*))	
(65)		5	193	—	PL5/1(SA(*a*))	
(66)		6				
(67)		7				
(68)		8	—	59/2	—	PLAJ/2(CU619(1))
(69)		9	—	60/2	—	PLAJ/2(CU619(2))
(70)		10				
(71)		11				
(72)		12	239	—	PL504/11(CU(*a*))	
(73)		PL903/1	275	—	PL504/11(CU(*b*))	

RACK ASSEMBLY TYPE 312 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(74)	Switch unit Type 410	PL903/2	330	—	PL5/6(SA(*b*))	
(75)	(SU410)—*contd.*	3	374	—	PL504/10(CU(*b*))	
(76)		4	329	—	PL5/5(SA(*b*))	
(77)		5	431	—	PL504/11(CU(*c*))	
(78)		6	390	—	PL5/6(SA(*c*))	
(79)		7	430	—	PL504/10(CU(*c*))	
(80)		8	389	—	PL5/5(SA(*c*))	
(81)		9	467	—	PL504/11(CU(*d*))	
(82)		10	522	—	PL5/6(SA(*d*))	
(83)		11	466	—	PL504/10(CU(*d*))	
(84)		12	521	—	PL5/5(SA(*d*))	
(85)		PL904/1	—	63/1	—	PLAL/1(CU619(1))
(86)		2	298	65/10	PL2/10(SA(*b*))	SR28 14/8
(87)		3	—	63/2	—	PLAL/2(CU619(1))
(88)		4				
(89)		5				
(90)		6	582	—	PL5/6(SA(*e*))	
(91)		7	623	—	PL504/11(CU(*e*))	
(92)		8	622	—	PL504/10(CU(*e*))	
(93)		9	581	—	PL5/5(SA(*e*))	
(94)		10				
(95)		11				
(96)		12				
(97)		PL905/1				
(98)		2				
(99)		3				
(100)		4				
(101)		5				
(102)		6				
(103)		7				
(104)		8				
(105)		9				
(106)		10	10	—	PL1/10(RU17(1))	
(107)		11	11	—	PL1/11(RU17(1))	
(108)		12	12	—	PL1/12(RU17(1))	
(109)		PL906/1				
(110)		2				
(111)		3				
(112)		4				
(113)		5				
(114)		6				
(115)		7				
(116)		8				
(117)		9				
(118)		10	34	—	PL1/10(RU17(2))	
(119)		11	35	—	PL1/11(RU17(2))	
(120)		12	36	—	PL1/12(RU17(2))	
(121)		PL907/1	37	—	PL4/1(RU17(2))	
(122)		2	38	—	PL4/2(RU17(2))	
(123)		3	39	—	PL4/3(RU17(2))	
(124)		4				
(125)		5				
(126)		6				
(127)		7	43	—	PL4/7(RU17(2))	
(128)		8	44	—	PL4/8(RU17(2))	
(129)		9				
(130)		10				
(131)		11				
(132)		12				
(133)		PL908/1	13	—	PL4/1(RU17(1))	
(134)		2	14	—	PL4/2(RU17(1))	
(135)		3	15	—	PL4/3(RU17(1))	
(136)		4				
(137)		5				
(138)		6				
(139)		7	19	—	PL4/7(RU17(1))	
(140)		8	20	—	PL4/8(RU17(1))	
(141)		9				
(142)		10				
(143)		11				
(144)		12				
	Plugs 909 and 910 not used					
(145)	Amplifier (servo) Type 297 SA(*a*)	PL1/1	—	52/11	—	Plinth term.36 14/9 (½°)
(146)		2	—	52/12	—	Plinth term.35
(147)		3	—	51/7	—	Mains input
(148)		4	—	—	Earth	

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(149)	Amplifier (servo) Type 297	PL/5				
(150)	SA(*a*)—*contd.*	6	—	51/8	—	Mains input
(151)		7	—	56/7	—	PLAL/7(CU619(2))
(152)		8				
(153)		9	—	52/9	—	SR46/9 ($\frac{1}{2}$°)
(154)		10	—	56/8	—	PLAL/8(CU619(2))
(155)		11	—	56/6	—	PLAI/6(CU619(2))
(156)		12	—	52/10	—	SR38 14/9 ($\frac{1}{2}$°)
(157)		PL2/1	*289	57/1 *strapped to* 57/4	PL2/1 SA(*b*)	
(158)		2	*290	57/2 *strapped to* 57/5	PL2/2 SA(*b*)	
(159)		3	*291	57/3 *strapped to* 57/6	PL2/3 SA(*b*)	
	*Note.—*These leads from SA(a) are brought to a free Jones socket SK57 which plugs into frame plug PL57. Strapping of 57/1 to 57/4, etc., is done on PL57.*					
(160)		4	—	54/4		SR23 14/9 ($\frac{1}{2}$°)
(161)		5	—	54/5	—	SR22 14/9 ($\frac{1}{2}$°)
(162)		6	—	54/6	—	SR25 14/9 ($\frac{1}{2}$°)
(163)		7	—	54/7	—	SR24 14/9 ($\frac{1}{2}$°)
(164)		8	—	54/8	—	SR27/14/9 ($\frac{1}{2}$°)
(165)		9	—	54/9	—	SR26 14/9 ($\frac{1}{2}$°)
(166)		10	59	54/10	PL501/11(SU410)	SR28 14/9 ($\frac{1}{2}$°)
(167)		11	233	56/4 *strapped to* 54/3	PL503/7(CU(*a*))	SR19 *and* 29 14/9 ($\frac{1}{2}$°) PLAL/4 CU619(2)60
(168)		12	—	54/12	—	SR20 14/9 ($\frac{1}{2}$°)
(169)		PL3/1				
(170)		2				
(171)		3	—	52/1	—	AmpdnX4 14/9 ($\frac{1}{2}$°)
(172)		4	—	52/1	—	AmpdnX3 14/9 ($\frac{1}{2}$°)
(173)		5	—	52/3	—	AmpdnX2 14/9 ($\frac{1}{2}$°)
(174)		6	—	52/4	—	AmpdnX1 14/9 ($\frac{1}{2}$°)
(175)		7	—	52/5	—	AmpdnX5 14/9 ($\frac{1}{2}$°)
(176)		8	—	52/6	—	AmpdnX6 14/9 ($\frac{1}{2}$°)
(177)		9	—	52/7	—	AmpdnA4 14/9 ($\frac{1}{2}$°)
(178)		10				
(179)		11	—	52/8	—	AmpdnA2 14/9 ($\frac{1}{2}$°)
(180)		12				
(181)		PL4/1	—	60/3	—	PLAJ/3(CU619(2))
(182)		2	—	60/5	—	PLAJ/5(CU619(2))
(183)		3	226	—	PL502/12(CU(*a*))	
(184)		4	—	54/1	—	SR36 14/9 ($\frac{1}{2}$°)
(185)		5	222	—	PL502/8(CU(*a*))	
(186)		6	223	—	PL502/9(CU(*a*))	
(187)		7	—	56/3	—	PLAL/3(CU619(2))
(188)		8	—	56/5 *strapped*	—	(SR34 14/9 ($\frac{1}{2}$°)) PLAL/6(CU619(2))
(189)		9	220	—	PL502/6(CU(*a*))	
(190)		10	—	60/12	—	PLAJ/12(CU619(2))
(191)		11				
(192)		12				
(193)		PL5/1	65	—	PL902/3(SU410)	
(194)		2	—	60/4	—	PLAJ/4(CU619(2))
(195)		3	—	60/7	—	PLAJ/7(CU619(2))
(196)		4	217	—	PL502/3(CU(*a*))	
(197)		5	63	—	PL902/3(SU410)	
(198)		6	61	—	PL902/1(SU410)	
(199)		7	—	58/2	—	PLAI/2(CU619(2))
(200)		8	218	—	PL502/4(CU(*a*))	
(201)		9	219	—	PL502/5(CU(*a*))	
(202)		10	224	—	PL502/10(CU(*a*))	
(203)		11	225	—	PL502/12(CU(*a*))	
(204)		12	206	60/6	PL501/2(CU(*a*))	PLAJ/6(CU619(2))
(205)	Control unit Type 600	PL501/1	—	60/1	—	PLAJ/1(CU619(2))
(206)	CU(*a*)	2	204	60/6	PL5/12(SA(*a*))	PLAJ/6(CU619(2))
(207)		3	—	58/4	—	PLAI/4(CU619(2))
(208)		4				
(209)		5	—	58/6	—	PLAI/6(CU619(2))
(210)		6				
(211)		7	—	58/8	—	PLAI/8(CU619(2))
(212)		8				
(213)		9	—	60/9	—	PLAJ/9(CU619(2))
(214)		10	—	60/11	—	PLAJ/11(CU619(2))
(215)		11	—	60/8	—	PLAJ/8
(216)		12	—	58/1	—	PLAI/1
(217)		PL502/3	196	—	PL5/4(SA(*a*))	
(218)		4	200	—	PL5/8(SA(*a*))	
(219)		5	201	—	PL5/9(SA(*a*))	

RACK ASSEMBLY TYPE 312 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(220)	Control unit Type 600	PL502/6	189	—	PL4/9(SA(*a*))	
(221)	CU(*a*)—*contd.*	7				
(222)		8	185	—	PL4/5(SA(*a*))	
(223)		9	186	—	PL4/6(SA(*a*))	
(224)		10	202	—	PL5/10(SA(*a*))	
(225)		11	203	—	PL5/11(SA(*a*))	
(226)		12	183	—	PL4/3(SA(*a*))	
(227)		PL503/1	—	60/10	—	PLAJ/10(CU619(2))
(228)		2			—	
(229)		3	—	58/3	—	PLAL/3(CU619(2))
(230)		4	—	51/3	—	Mains input
(231)		5	—	58/5	—	PLAI/5(CU619(2))
(232)		6				
(233)		7	167	56/4 *strapped to* 54/3	PL2/11(SA(*a*))	SR19 29 14/9 ($\frac{1}{2}$°) PLAL/4(CU619(2))
(234)		8	—	51/4	—	Mains input
(235)		PL504/7	—	58/9	—	PLAI/9(CU619(2))
(236)		8				
(237)		9				
(238)		10	62	—	PL902/2(SU410)	
(239)		11	72	—	PL902/12(SU410)	
(240)		12	—	—	Earth	
(241)	Control unit Type 600	PL501/1	—	59/1	—	PLAJ/1(CU619(1))
(242)	CU(*b*)	2	336	59/6	PL5/12(SA(*b*))	PLAJ/6(CU619(1))
(243)		3	—	61/4	—	PLAI/4(CU619(1))
(244)		4				
(245)		5	—	61/6	—	PLAI/6(CU619(1))
(246)		6				
(247)		7	—	61/8	—	PLAI/8(CU619(1))
(248)		8				
(249)		9	—	59/9	—	PLAI/9(CU619(1))
(250)		10	—	59/11	—	PLAJ/11(CU619(1))
(251)		11	—	59/8	—	PLAJ/8(CU619(1))
(252)		12	—	61/1	—	PLAI/1(CU619(1))
(253)		PL502/3	328	—	PL5/4(SA(*b*))	
(254)		4	332	—	PL5/8(SA(*b*))	
(255)		5	333	—	PL5/9(SA(*b*))	
(256)		6	321	—	PL4/9(SA(*b*))	
(257)		7				
(258)		8	317	—	PL4/5(SA(*b*))	
(259)		9	318	—	PL4/6(SA(*b*))	
(260)		10	334	—	PL5/10(SA(*b*))	
(261)		11	355	—	PL5/11(SA(*b*))	
(262)		12	315	—	PL4/3(SA(*b*))	
(263)		PL503/1	—	59/10	—	PLAJ/10(CU619(1))
(264)		2				
(265)		3	—	61/3	—	PLAI/3(CU619(1))
(266)		4				
(267)		5	—	61/5	—	PLAI/5(CU619(1))
(268)		6				
(269)		7	299	63/4 *strapped to* 65/3	PL2/11(SA(*b*))	SR19 29 14/8 PLAL/4(CU619(1))
(270)		8				
(271)		PL504/7	—	61/9	—	PLAI/(CU619(1))
(272)		8				
(273)		9				
(274)		10	75	—	PL903/3(SU410)	
(275)		11	73	—	PL903/1(SU410)	
(276)		12	—	—	Earth	
(277)	Amplifier (servo) Type 297	PL1/1	—	67/11	—	Plinth term.36 14/8
(278)	SA(*b*)	2	—	67/12	—	Plinth term.35 14/8
(279)		3	—	51/1	—	Mains input
(280)		4	—	—	Earth	
(281)		5				
(282)		6	—	51/2	—	Mains input
(283)		7	—	63/7	—	PLAI/7(CU619(1))
(284)		8				
(285)		9	—	67/9	—	SR46 14/8
(286)		10	—	63/8	—	PLAI/8(CU619(1))
(287)		11	—	69/6	—	PLAI/6(CU619(1))
(288)		12	—	67/10	—	SR36 14/8
(289)		PL2/1	*157	57/4 *strapped to* 57/1	PL2/1(SA(*a*))	
(290)		2	*158	57/5 *strapped to* 57/2	PL2/2(SA(*a*))	
(291)		3	*159	57/6 *strapped to* 57/3	PL2/3(SA(*a*))	

*Note.—*These leads from SA(b) are brought to a free Jones socket SK57 which plugs into frame plug PL57. Strapping of 57/4 to 57/1, etc., is done on PL57.*

(292)		4	—	65/4	—	SR23 14/8

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(293)	Amplifier (servo) Type 297	PL2/5	—	65/5	—	SR22 14/8
(294)	SA(*b*)—*contd.*	6	—	65/6	—	SR25 14/8
(295)		7	—	65/7	—	SR24 14/8
(296)		8	—	65/8	—	SR27 14/8
(297)		9	—	65/9	—	SR26 14/8
(298)		10	26	65/10	PL904/2(SU410)	SR28 14/8
(299)		11	269	63/4 *strapped to* 65/3	PL503/7(CU(*b*))	SR19 & 29 14/8 PLAI/4(CU619(1))
(300)		12	—	65/12	—	SR30 14/8
(301)		PL3/1				
(302)		2				
(303)		3	—	67/1	—	AmpdnX4 14/8
(304)		4	—	67/2	—	AmpdnX3 14/8
(305)		5	—	67/3	—	AmpdnX2 14/8
(306)		6	—	67/4	—	AmpdnX1 14/8
(307)		7	—	67/5	—	AmpdnX5 14/8
(308)		8	—	67/6	—	AmpdnX6 14/8
(309)		9	—	67/7	—	AmpdnA4 14/8
(310)		10				
(311)		11	—	67/8	—	AmpdnA2 14/8
(312)		12				
(313)		PL4/1	—	59/3	—	PLAJ/3(CU619(1))
(314)		2	—	59/5	—	PLAJ/5(CU619(1))
(315)		3	262	—	PL502/12(CU(*b*))	
(316)		4	—	65/1	—	SR36 14/8
(317)		5	258	—	PL502/8(CU(*b*))	
(318)		6	259	—	PL502/9(CU(*b*))	
(319)		7	—	63/3	—	PLAI/3(CU619(1))
(320)		8	—	63/5 *strapped to* 63/5	—	PLAI/5(CU619(1)) SR34 14/8
(321)		9	256	—	PL502/6(CU(*b*))	
(322)		10	—	59/12	—	PLAJ/12(CU619(1))
(323)		11				
(324)		12				
(325)		PL5/1	64	—	PL902/4(SU410)	
(326)		2	—	59/4	—	PLAJ/4(CU619(1))
(327)		3	—	59/7	—	PLAJ/7(CU619(1))
(328)		4	253	—	PL502/3(CU(*b*))	
(329)		5	76	—	PL903/4(SU410)	
(330)		6	74	—	PL903/2(SU410)	
(331)		7	—	61/2	—	PLAI/2(CU619(1))
(332)		8	254	—	PL502/4(CU(*b*))	
(333)		9	255	—	PL502/5(CU(*b*))	
(334)		10	260	—	PL502/10(CU(*b*))	
(335)		11	261	—	PL502/11(CU(*b*))	
(336)		12	242	59/6	PL501/2(CU(*b*))	PLAJ/6(CU619(1))
(337)	Amplifier (servo) Type 297	PL1/1	—	34/11	—	Plinth term.36 13 (1)
(338)	SA(*c*)	2	—	34/12	—	Plinth term.35 13(1)
(339)		3	—	18/1	—	Mains input
(340)		4	—	—	Earth	
(341)		5				
(342)		6	—	18/2	—	Mains input
(343)		7	—	30/7	—	M8 Cons.60 (HF1)
(344)		8				
(345)		9	—	34/9	—	SR46 13(1)
(346)		10	—	30/8	—	N9 Cons.60 (HF1)
(347)		11	—	30/6	—	N10 Cons.60 (HF1)
(348)		12	—	34/10	—	SR38 13(1)
(349)		PL2/1				
(350)		2				
(351)		3				
(352)		4	—	32/4	—	SR23 13(1)
(353)		3	—	32/5	—	SR22 13(1)
(354)		6	—	32/6	—	SR25 13(1)
(355)		7	—	32/7	—	SR24 13(1)
(356)		8	—	32/8	—	SR27 13(1)
(357)		9	—	32/9	—	SR26 13(1)
(358)		10	379	32/10	PL4/7(SA(*c*))	SR28 13(1)
(359)		11	425	30/4 *strapped to* 32/3	PL503/7(CU(*c*))	N6 Cons.60 (HF1) SR9 and 29 13(1)
(360)		12	—	32/12	—	SR30 13(1)
(361)		PL3/1				
(362)		2				
(363)		3	—	34/1	—	AmpdnX4 13(1)
(364)		4	—	34/2	—	AmpdnX3 13(1)

RACK ASSEMBLY TYPE 312 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(365)	Amplifier (servo) Type 297	PL3/5	—	34/3	—	AmpdnX2 13(1)
(366)	SA(*c*)—*contd.*	6	—	34/4	—	AmpdnX1 13(1)
(367)		7	—	34/5	—	AmpdnX5 13(1)
(368)		8	—	34/6	—	AmpdnX6 13(1)
(369)		9	—	34/7	—	AmpdnA1 13(1)
(370)		10				
(371)		11	—	34/8	—	AmpdnA2 13(1)
(372)		12				
(373)		PL4/1	—	26/3	—	J3 Cons.60 (HF1)
(374)		2	—	26/5	—	J5 Cons.60 (HF1)
(375)		3	418	—	PL502/12(CU(*c*))	
(376)		4	—	32/1	—	SR30 13(1)
(377)		5	414	—	PL502/8(CU(*c*))	
(378)		6	415	—	PL502/9(CU(*c*))	
(379)		7	356	34/10	PL2/10(SA(*c*))	SR28 13(1)
(380)		8	—	30/5 *strapped to* 32/2	—	J7 Cons.60 (HF1) SR34 13(1)
(381)		9	412	—	PL502/6(CU(*c*))	
(382)		10	—	26/12	—	J12 Cons.60 (HF1)
(383)		11				
(384)		12				
(385)		PL5/1				
(386)		2	—	26/4	—	J4 Cons.60 (HF1)
(387)		3	—	26/7	—	J4 Cons.60 (HF1)
(388)		4	409	—	PL502/3(CU(*c*))	
(389)		5	80	—	PL903/8(SU410)	
(390)		6	78	—	PL903/6(SU410)	
(391)		7	—	28/2	—	K2 Cons.60 (HF1)
(392)		8	410	—	PL502/4(CU(*c*))	
(393)		9	411	—	PL502/5(CU(*c*))	
(394)		10	416	—	PL502/10(CU(*c*))	
(395)		11	417	—	PL502/11(CU(*c*))	
(396)		12	398	26/6	PL501/2(CU(*c*))	J6 Cons.60 (HF1)
(397)	Control unit Type 600	PL501/1				
(398)	CU(*c*)	2	396	26/6	PL5/12(SA(*c*))	J6 Cons.60 (HF1)
(399)		3	—	28/4	—	K4 Cons.60 (HF1)
(400)		4				
(401)		5	—	28/6	—	K6 Cons.60 (HF1)
(402)		6				
(403)		7	—	28/8	—	N8 Cons.60 (HF1)
(404)		8				
(405)		9	—	26/9	—	J9 Cons.60 (HF1)
(406)		10	—	26/11	—	J11 Cons.60 (HF1)
(407)		11	—	26/8	—	J8 Cons.60 (HF1)
(408)		12	—	28/1	—	K1 Cons.60 (HF1)
(409)		PL502/3	388	—	PL5/4(SA(*c*))	
(410)		4	392	—	PL5/8(SA(*c*))	
(411)		5	393	—	PL5/9(SA(*c*))	
(412)		6	381	—	PL4/9(SA(*c*))	
(413)		7				
(414)		8	377	—	PL4/5(SA(*c*))	
(415)		9	378	—	PL4/6(SA(*c*))	
(416)		10	394	—	PL5/10(SA(*c*))	
(417)		11	395	—	PL5/11(SA(*c*))	
(418)		12	375	—	PL4/3(SA(*c*))	
(419)		PL503/1	—	26/10	—	J10 Cons.60 (HF1)
(420)		2				
(421)		3	—	28/10	—	K9 Cons.60 (HF1)
(422)		4				
(423)		5	—	28/9	—	K10 Cons.60 (HF1)
(424)		6				
(425)		7	359	30/4 *strapped to* 32/3	PL2/11(SA(*c*))	N6 Cons.60 (HF1) SR19 and 29 13(1)
(426)		8				
(427)		PL504/7				
(428)		8				
(429)		9				
(430)		10	79	—	PL903/7(SU410)	
(431)		11	77	—	PL903/5(SU410)	
(432)		12	—	—	Earth	
(433)		PL501/1				
(434)		2	528	25/6	PL5/12(SA(*d*))	J6 Cons.60 (HF2)
(435)		3	—	23/4	—	K4 Cons.60 (HF2)
(436)		4				
(437)		5	—	23/6	—	K6 Cons.60 (HF2)
(438)		6				
(439)		7	—	23/8	—	K8 Cons.60 (HF2)
(440)		8				

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(441)	Control unit Type 600	PL501/9	—	25/9	—	J9 Cons.60 (HF2)
(442)	CU(*c*)—*contd.*	10	—	25/11	—	J11 Cons.60 (HF2)
(443)		11	—	25/8	—	J8 Cons.60 (HF2)
(444)		12	—	34/1	—	K1 Cons.60 (HF2)
(445)		PL502/3	520	—	PL5/4(SA(*d*))	
(446)		4	524	—	PL5/8(SA(*d*))	
(447)		5	525	—	PL5/9(SA(*d*))	
(448)		6	513	—	PL4/9(SA(*d*))	
(449)		7				
(450)		8	509	—	PL4/5(SA(*d*))	
(451)		9	510	—	PL4/6(SA(*d*))	
(452)		10	526	—	PL5/10(SA(*d*))	
(453)		11	527	- -	PL5/11(SA(*d*))	
(454)		12	507	—	PL4/3(SA(*d*))	
(455)		PL503/1	—	25/10	—	J10 Cons.60 (HF2)
(456)		2				
(457)		3	—	23/10	—	K9 Cons.60 (HF2)
(458)		4	—	18/3	—	Mains input
(459)		5	—	23/9	—	K10 Cons.60 (HF2)
(460)		6				
(461)		7	491	21/4 *strapped to* 19/3	PL2/11(SA(*d*))	N6 Cons.60 (HF2) SR19 and 29 13 (2)
(462)		8	—	18/4	—	Mains input
(463)		PL503/7				
(464)		8				
(465)		9				
(466)		10	—	—	PL903/11(SU410)	
(467)		11	81	—	PL903/9(SU410)	
(468)		12	—	—	Earth	
(469)	Amplifier (servo) Type 297	PL1/1	—	17/11	—	Plinth term.36 13 (2)
(470)	SA(*d*)	2	—	17/12	—	Plinth term.35 13 (2)
(471)		3	—	18/7	—	Mains input
(472)		4	—	—	Earth	
(473)		5				
(474)		6	—	18/8	—	Mains input
(475)		7	—	21/7	—	N8 Cons.60 (HF2)
(476)		8				
(477)		9	—	17/9	—	SR46 13 (2)
(478)		10	—	21/8	—	N9 Cons.60 (HF2)
(479)		11	—	21/6	—	N10 Cons.60 (HF2)
(480)		12	—	17/10	—	SR38 13(2)
(481)		PL2/1				
(482)		2				
(483)		3				
(484)		4	—	19/4	—	SR29 13(2)
(485)		5	—	19/5	—	SR22 13(2)
(486)		6	—	19/6	—	SR25 13(2)
(487)		7	—	19/7	—	SR24 13(2)
(488)		8	—	19/8	—	SR27 13(2)
(489)		9	—	19/9	—	SR26 13(2)
(490)		10	511	19/10	PL4/7(SA(*d*))	SR28 13(2)
(491)		11	461	21/4 *strapped to* 19/3	PL503/7(CU(*d*))	N6 Cons.60 (HF2) SR19 and 29 13(2)
(492)		12	—	19/12	—	SR30 13(2)
(493)		PL3/1				
(494)		2				
(495)		3	—	27/1	—	AmpdnX4 13(2)
(496)		4	—	17/2	—	AmpdnX3 13(2)
(497)		5	—	17/3	—	AmpdnX2 13(2)
(498)		6	—	17/4	—	AmpdnX1 13(2)
(499)		7	—	17/5	—	AmpdnX5 13(2)
(500)		8	—	17/6	—	AmpdnX6 13(2)
(501)		9	—	17/7	—	AmpdnA4 13(2)
(502)		10				
(503)		11	—	17/8	—	AmpdnA2 13(2)
(504)		12				
(505)		PL4/1	—	25/9	—	J3 Cons.60 (HF2)
(506)		2	—	25/5	—	J5 Cons.60 (HF2)
(507)		3	454	—	PL502/12(CU(*d*))	
(508)		4	—	19/1	—	SR36 13(2)
(509)		5	450	—	PL502/8(CU(*d*))	
(510)		6	451	—	PL502/9(CU(*d*))	
(511)		7	490	19/10	PL2/10(SA(*d*))	SR28 13(2)
(512)		8	—	21/3 *strapped to* 19/2	—	K7 Cons.60 (HF2) SR34 13(2)
(513)		9	448	—	PL502/6(CU(*d*))	

RACK ASSEMBLY TYPE 312 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(514)	Amplifier (servo) Type 297	PL4/10	—	25/12	—	J12 Cons.60 (HF2)
(515)	SA(d)—*contd.*	11				
(516)		12				
(517)		PL5/1				
(518)		2	—	25/4	—	J4 Cons.60 (HF2)
(519)		3	—	25/7	—	J7 Cons.60 (HF2)
(520)		4	445	—	PL502/3(CU(*d*))	
(521)		5	84	—	PL903/12(SU410)	
(522)		6	82	—	PL903/10(SU410)	
(523)		7	—	23/2	—	K2 Cons.60 (HF2)
(524)		8	446	—	PL502/4(CU(*d*))	
(525)		9	447	—	PL502/5(CU(*d*))	
(526)		10	452	—	PL502/10(CU(*d*))	
(527)		11	453	—	PL502/11(CU(*d*))	
(528)		12	434	25/6	PL501/2(CU(*d*))	J6 cons.60 (HF2)
(529)	Amplifier (servo) Type 297	PL1/1	—	15/11	—	Plinth term.36 13(3)
(530)	SA(*e*)	2	—	15/12	—	Plinth term.35 13(3)
(531)		3	—	18/9	—	Mains input
(532)		4	—	—	Earth	
(533)		5				
(534)		6	—	18/10	—	Mains input
(535)		7	—	11/7	—	N6 Cons.60 (HF3)
(536)		8				
(537)		9	—	15/9	—	SR46 13(3)
(538)		10	—	11/8	—	N9 Cons.60 (HF3)
(539)		11	—	11/6	—	N10 Cons.60 (HF3)
(540)		12	—	15/10	—	SR36 13(3)
(541)		PL2/1				
(542)		2				
(543)		3				
(544)		4	—	13/4	—	SR23 13(3)
(545)		5	—	13/5	—	SR22 13(3)
(546)		6	—	13/6	—	SR25 13(3)
(547)		7	—	13/7	—	SR24 13(3)
(548)		8	—	13/8	—	SR27 13(3)
(549)		9	—	13/9	—	SR26 13(3)
(550)		10	571	13/10	PL4/7(SA(*e*))	SR28 13(3)
(551)		11	617	11/4 *strapped to* 13/3	PL503/7(CU(*c*))	N6 Cons.60 (HF3) SR19 and 29 13(3)
(552)		12	—	13/12	—	SR13(3)
(553)		PL3/1				
(554)		2				
(555)		3	—	15/1	—	AmpdnX4 13(3)
(556)		4	—	15/2	—	AmpdnX3 13(3)
(557)		5	—	15/5	—	ApendX2 13(3)
(558)		6	—	15/4	—	AmpdnX1 13(3)
(559)		7	—	15/5	—	AmpdnX3 13(3)
(560)		8	—	15/6	—	AmpdnX6 13(3)
(561)		9	—	15/7	—	AmpdnA4 13(3)
(562)		10				
(563)		11	—	15/8	—	AmpdnA2 13(3)
(564)		12				
(565)		PL4/1	—	7/3	—	J3 Cons.60 (HF3)
(566)		2	—	7/5	—	J5 Cons.60 (HF3)
(567)		3	610	—	PL502/12(CU(*e*).)	
(568)		4	—	13/1	—	SR36 13(3)
(569)		5	606	—	PL502/8(CU(*e*))	
(570)		6	607	—	PL502/9(CU(*e*))	
(571)		7	550	13/10	PL2/10(SA(*e*))	SR28 13(3)
(572)		8	—	11/3 *strapped to* 13/2	—	N7 Cons.60 (HF3) SR34 13(3)
(573)		9	604	—	PL502/6(CU(*e*))	
(574)		10	—	7/12	—	J12 Cons.60 (HF3)
(575)		11				
(576)		12				
(577)		PL5/1				
(578)		2	—	7/4	—	J4 Cons.60 (HF3)
(579)		3	—	7/7	—	J7 Cons.60 (HF3)
(580)		4	601	—	PL502/3(CU(*e*))	
(581)		5	93	—	PL904/9(SU410)	
(582)		6	90	—	PL904/6(SU410)	
(583)		7	—	9/2	—	K2 Cons.60 (HF3)
(584)		8	602	—	PL502/4(CU(*e*))	
(585)		9	603	—	PL502/5(CU(*e*))	
(586)		10	608	—	PL502/11(CU(*e*))	
(587)		11	609	—	PL502/11(CU(*e*))	
(588)		12	590	7/6	PL501/2(CU(*e*))	J6 Cons.60 (HF3)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(589)	Control unit Type 600	PL501/1				
(590)	CU(*e*)	2	588	7/6	PL5/12(SA(*e*))	J6 Cons.60 (HF3)
(591)		3	—	7/4	—	K4 Cons.60 (HF3)
(592)		4				
(593)		5	—	9/6	—	K6 Cons.60 (HF3)
(594)		6				
(595)		7	—	9/8	—	K8 Cons.60 (HF3)
(596)		8				
(597)		9	—	7/9	—	J9 Cons.60 (HF3)
(598)		10	—	7/11	—	J11 Cons.60 (HF3)
(599)		11	—	7/8	—	J8 Cons.60 (HF3)
(600)		12	—	9/1	—	K1 Cons.60 (HF3)
(601)		PL501/3	580	—	PL5/4(SA(*e*))	
(602)		4	584	—	PL5/8(SA(*e*))	
(603)		5	585	—	PL5/9(SA(*e*))	
(604)		6	573	—	PL4/9(SA(*e*))	
(605)		7				
(606)		8	569	—	PL4/5(SA(*e*))	
(607)		9	570	—	PL4/6(SA(*e*))	
(608)		10	586	—	PL5/10(SA(*e*))	
(609)		11	587	—	PL5/11(SA(*e*))	
(610)		12	567	—	PL4/3(SA(*e*))	
(611)		PL503/1	—	7/10	—	J10 Cons.60 (HF3)
(612)		2				
(613)		3	—	9/10	—	K9 Cons.60 (HF3)
(614)		4	—	18/11	—	Mains input
(615)		5	—	9/9	—	K10 Cons.60 (HF3)
(616)		6				
(617)		7	591	11/4 *strapped to* 13/8	PL2/11(SA(*e*))	N6 Cons.60 (HF3) SR19 and 29 13(3)
(618)		8	—	18/12	—	Mains input
(619)		PL504/7				
(620)		8				
(621)		9				
(622)		10	92	—	PL904/8(SU410)	
(623)		11	91	—	PL904/7(SU410)	
(624)		12				

Note.—*No.* (625) *to* (636) *previously occupied by amplifier* (*IFF*) *Type A*.3677 *now removed. Mod. classification B2.*

ADDITIONAL CONNECTION REQUIRED

	58/10	—	PLA1/10(CU619(2))
	61/10	—	PLA1/10(CU619(1))
	58/10 *and* 61/10 *to be strapped together*		

Chapter 10

(**Note:**—*This chapter supersedes that issued with A.L.27*)

RACK ASSEMBLY TYPE 313

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Para.

Detailed description 1

ILLUSTRATION

Fig.

Disposition of units and plugs, schematic ... 1

		Panel (blanking) 4639 (Stores Ref. 10D/19663)	Rectifier unit Type 17 Stores Ref. 10D/17779) RU17 (1)		
7		Control unit Type 600	Switch unit Type 410	39	40
9		(Stores Ref. 10L/16029) CU600 (*e*) and (*k*)	(Stores Ref. 10F/16163) SU410	43	44
11 13		Amplifier (servo) Type 297	Rectifier unit Type 17		
15		(Stores Ref. 10U/16054) SA (*e*)	(2)		
17 19 21	18	Amplifier (servo) Type 297 (*d*)	Amplifier (servo) Type 297 (*a*)	51 	52 54 56
23 25	 26	Control unit Type 600	Control unit Type 600	57 59	58 60
	28	(*c*) and (*d*)	(*a*) and (*b*)	61	
	30 32 34	Amplifier (servo) Type 297 (*c*)	Amplifier (servo) Type 297 (*b*)	63 65 67	

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 313 (Stores Ref. 10D/18807) is very similar to rack assembly Type 311 and contains control equipment for five radar heads. It is used on a number of Stage 1 and 2 **GCI** stations. The accompanying wiring schedule refers to a typical Stage 1 station. Variations at other stations are too numerous to include but details can be found in the Site wiring schedules of limited issue (refer A.P.2527H).

2. On all stations, other racks containing servo control units are used and the wiring of rack assembly Type 313 is arranged to give relay voltage supplies and phasing transformer facilities from the rectifier unit Type 17 to the extra racks. The switch unit Type 410 is incorporated to give automatic change-over to the standby rectifier Type 17 in case of failure of the unit in operation; this switch unit and the G-band IFF amplifier are also housed in the rack.

SCHEDULE 1

RACK ASSEMBLY TYPE 313—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Rectifier unit Type 17	PL1/1				
(2)	RU17(1)	2				
(3)		3				
(4)		4	100	—	PL905/4(SU410)	
(5)		5	101	—	PL905/5(SU410)	
(6)		6	102	—	PL905/6(SU410)	
(7)		7	103	—	PL905/7(SU410)	
(8)		8	104	—	PL905/8(SU410)	
(9)		9	105	—	PL905/9(SU410)	
(10)		10	106	—	PL905/10(SU410)	
(11)		11	107	—	PL905/11(SU410)	
(12)		12	108	—	PL905/12(SU410)	
	Plugs 2 and 3 not used					
(13)		PL4/1				
(14)		2				
(15)		3				
(16)		4				
(17)		5				
(18)		6				
(19)		7	139	—	PL908/7(SU410)	
(20)		8	140	—	PL908/8(SU410)	
(21)		9				
(22)		10	—	—	Earth	
(23)		11	—	51/11		
(24)		12	—	51/12		
(25)	Rectifier unit Type 17	PL1/1				
(26)	RU17(2)	2				
(27)		3				
(28)		4	112	—	PL906/4(SU410)	
(29)		5	113	—	PL906/5(SU410)	
(30)		6	114	—	PL906/6(SU410)	
(31)		7	115	—	PL906/7(SU410)	
(32)		8	116	—	PL906/8(SU410)	
(33)		9	117	—	PL906/9(SU410)	
(34)		10	118	—	PL906/10(SU410)	
(35)		11	119	—	PL906/11(SU410)	
(36)		12	120	—	PL906/12(SU410)	
	Plugs 2 and 3 not used					
(37)		PL4/1				
(38)		2				
(39)		3				
(40)		4				
(41)		5				
(42)		6				
(43)		7	127	—	PL907/7(SU410)	
(44)		8	128	—	PL907/8(SU410)	
(45)		9				
(46)		10	—	—	Earth	
(47)		11	—	51/9		
(48)		12	—	51/10		
(49)	Switch unit Type 410	PL901/1				
(50)	(SU410)	2				
(51)		3				
(52)		4	—	39/1		
(53)		5	—	39/2		
(54)		6	—	39/3		
(55)		7	—	56/1		
(56)		8	166	54/10	PL2/10(SA(*a*))	
(57)		9	—	52/2		
(58)		10	—	63/1		
(59)		11	298	65/10	PL2/10(SA(*b*))	
(60)		12	—	63/2		
(61)		PL902/1	198	—	PL5/6(SA(*a*))	
(62)		2	238	—	PL504/10(CU(*a*))	
(63)		3	197	—	PL5/5(SA(*a*))	
(64)		4	—	40/1		
(65)		5	325	—	PL5/1(SA(*b*))	
(66)		6	193	—	PL5/1(SA(*a*))	
(67)		7	—	39/4		
(68)		8				
(69)		9	—	59/2		
(70)		10	—	60/2		
(71)		11	—	39/5		
(72)		12	239	—	PL504/11(CU(*a*))	

RACK ASSEMBLY TYPE 313—WIRING (*continued*)

No.	Originating unit (short ref. cicle) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(73)	Switch unit Type 410	PL903/1	275	—	PL504/11(CU(*b*))	
(74)	(SU410)—*contd.*	2	330	—	PL5/6(SA(*b*))	
(75)		3	274	—	PL504/10(CU(*b*))	
(76)		4	329	—	PL5/5(SA(*b*))	
(77)		5	431	—	PL504/11(CU(*c*))	
(78)		6	390	—	PL5/6(SA(*c*))	
(79)		7	430	—	PL504/10(CU(*c*))	
(80)		8	389	—	PL5/5(SA(*c*))	
(81)		9	467	—	PL504/11(CU(*d*))	
(82)		10	522	—	PL5/6(SA(*d*))	
(83)		11	466	—	PL504/10(CU(*d*))	
(84)		12	521	—	PL5/5(SA(*d*))	
(85)		PL904/1				
(86)		2				
(87)		3				
(88)		4				
(89)		5				
(90)		6	582	—	PL5/6(SA(*e*))	
(91)		7	623	—	PL504/11(CU(*e*))	
(92)		8	622	—	PL504/10(CU(*e*))	
(93)		9	581	—	PL5/5(SA(*e*))	
(94)		10				
(95)		11				
(96)		12				
(97)		PL905/1				
(98)		2				
(99)		3				
(100)		4	4	—	PL1/4(RU17(1))	
(101)		5	5	—	PL1/5(RU17(1))	
(102)		6	6	—	PL1/6(RU17(1))	
(103)		7	7	—	PL1/7(RU17(1))	
(104)		8	8	—	PL1/8(RU17(1))	
(105)		9	9	—	PL1/9(RU17(1))	
(106)		10	10	—	PL1/10(RU17(1))	
(107)		11	11	—	PL1/11(RU17(1))	
(108)		12	12	—	PL1/12(RU17(1))	
(109)		PL906/1				
(110)		2				
(111)		3				
(112)		4	28	—	PL1/4(RU17(2))	
(113)		5	29	—	PL1/5(RU17(2))	
(114)		6	30	—	PL1/6(RU17(2))	
(115)		7	31	—	PL1/7(RU17(2))	
(116)		8	32	—	PL1/8(RU17(2))	
(117)		9	33	—	PL1/9(RU17(2))	
(118)		10	34	—	PL1/10(RU17(2))	
(119)		11	35	—	PL1/11(RU17(2))	
(120)		12	36	—	PL1/12(RU17(2))	
(121)		PL907/1				
(122)		2				
(123)		3				
(124)		4				
(125)		5				
(126)		6				
(127)		7	43	—	PL4/7(RU17(2))	
(128)		8	44	—	PL4/8(RU17(2))	
(129)		9				
(130)		10				
(131)		11				
(132)		12				
(133)		PL908/1				
(134)		2				
(135)		3				
(136)		4				
(137)		5				
(138)		6				
(139)		7	19	—	PL4/7(RU17(1))	
(140)		8	20	—	PL4/8(RU17(1))	
(141)		9				
(142)		10				
(143)		11				
(144)		12				
		Note.—*For plugs 909 and 910 see* leads *637 to 660.*				
(145)	Amplifier (servo) Type 207	PL1/1	—	52/11		
(146)	SA(*a*)	2	—	52/12		
(147)		3	—	51/7		
(148)		4	—	—	Earth	

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(149)	**Amplifier (servo) Type 297 SA(*a*)—*contd.***	PL1/5				
(150)		6	—	51/8		
(151)		7	—	56/7		
(152)		8				
(153)		9	—	52/9		
(154)		10	—	56/8		
(155)		11	—	56/6		
(156)		12	—	52/10		
(157)		PL2/1	*289	57/1 *strapped to* 57/4	PL2/1(SA(*b*))	
(158)		2	*290	57/2 *strapped to* 57/5	PL2/2(SA(*b*))	
(159)		3	*291	57/3 *strapped to* 57/6	PL2/3(SA(*b*))	
		*** Note.**—*These leads from SA(a) are brought to a free Jones socket SK57 which plugs into frame plug PL57. Strapping of 57/1 to 57/4, etc., is done on PL57. (Also see additional connections.)*				
(160)		4	—	54/5		
(161)		5	—	54/4		
(162)		6	—	54/7		
(163)		7	—	54/6		
(164)		8	—	54/9		
(165)		9	—	54/9		
(166)		10	56	54/10	PL901/8(SU410)	
(167)		11	233	56/4 *strapped to* 54/3 *and* 54/11	PL503/7(CU(*a*))	
(168)		12	—	54/12		
(169)		PL3/1				
(170)		2				
(171)		3	—	52/1		
(172)		4	—	52/2		
(173)		5	—	52/3		
(174)		6	—	52/4		
(175)		7	—	52/5		
(176)		8	—	52/6		
(177)		9	—	52/7		
(178)		10				
(179)		11	—	52/8		
(180)		12				
(181)		PL4/1	—	60/3		
(182)		2	—	60/5		
(183)		3	226	—	PL502/12(CU(*a*))	
(184)		4	—	54/1		
(185)		5	222	—	PL502/8(CU(*a*))	
(186)		6	223	—	PL502/9(CU(*a*))	
(187)		7	—	56/3		
(188)		8	—	56/5 *strapped to* 54/2		
(189)		9	220	—	PL502/6(CU(*a*))	
(190)		10	—	60/12		
(191)		11				
(192)		12				
(193)		PL5/1	66	—	PL902/6(SU410)	
(194)		2	—	60/4		
(195)		3	—	60/7		
(196)		4	217	—	PL502/3(CU(*a*))	
(197)		5	63	—	PL902/3(SU410)	
(198)		6	61	—	PL902/1(SU410)	
(199)		7	—	58/2		
(200)		8	218	—	PL502/4(CU(*a*))	
(201)		9	219	—	PL502/5(CU(*a*))	
(202)		10	224	—	PL502/10(CU(*a*))	
(203)		11	225	—	PL502/11(CU(*a*))	
(204)		12	206	60/6	PL501/2(CU(*a*))	
(205)	**Control unit Type 600 CU(*a*)**	PL501/1	—	60/1		
(206)		2	204	60/6	PL/12(SA(*a*))	
(207)		3	—	58/4		
(208)		4				
(209)		5	—	58/6		
(210)		6				
(211)		7	—	58/8		
(212)		8				
(213)		9	—	60/9		
(214)		10	—	60/11		
(215)		11	—	60/8		
(216)		12	—	58/1		
(217)		PL502/3	196	—	PL5/4(SA(*a*))	
(218)		4	200	—	PL5/8(SA(*a*))	
(219)		5	201	—	PL5/9(SA(*a*))	

RACK ASSEMBLY TYPE 313—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(220)	Control unit Type 600	PL502/6	189	—	PL4/9(SA(*a*))	
(221)	CU(*a*)—*contd.*	7				
(222)		8	185	—	PL4/5(SA(*a*))	
(223)		9	186	—	PL4/6(SA(*a*))	
(224)		10	202	—	PL5/10(SA(*a*))	
(225)		11	203	—	PL5/11(SA(*a*))	
(226)		12	183	—	PL4/3(SA(*a*))	
(227)		PL503/1	—	60/10		
(228)		2				
(229)		3	—	58/3		
(230)		4	—	51/3		
(231)		5	—	58/5		
(232)		6				
(233)		7	167	56/4 *strapped to* 54/3 *and* 54/11	PL2/11(SA(*a*))	
(234)		8	—	51/4		
(235)		PL504/7	—	58/9		
(236)		8				
(237)		9				
(238)		10	62	—	PL902/2(SU410)	
(239)		11	72	—	PL902/12(SU410)	
(240)		12	—	—	Earth	
(241)	Control unit Type 600	PL501/1	—	59/1		
(242)	CU(*b*)	2	336	59/6	PL5/12(SA(*b*))	
(243)		3	—	61/4		
(244)		4				
(245)		5	—	61/6		
(246)		6				
(247)		7	—	61/8		
(248)		8				
(249)		9	—	59/9		
(250)		10	—	59/11		
(251)		11	—	59/8		
(252)		12	—	61/1		
(253)		PL502/3	328	—	PL5/4(SA(*b*))	
(254)		4	332	—	PL5/8(SA(*b*))	
(255)		5	333	—	PL5/9(SA(*b*))	
(256)		6	321	—	PL4/9(SA(*b*))	
(257)		7				
(258)		8	317	—	PL4/5(SA(*b*))	
(259)		9	318	—	PL4/6(SA(*b*))	
(260)		10	334	—	PL5/10(SA(*b*))	
(261)		11	335	—	PL5/11(SA(*b*))	
(262)		12	315	—	PL4/3(SA(*b*))	
(263)		PL503/1	—	59/10		
(264)		2				
(265)		3	—	61/3		
(266)		4				
(267)		5	—	61/5		
(268)		6				
(269)		7	299	63/4 *strapped to* 65/3 *and* 65/11	PL2/11(SA(*b*))	
(270)		8				
(271)		PL504/7	—	61/9		
(272)		8				
(273)		9				
(274)		10	75	—	PL903/3(SU410)	
(275)		11	73	—	PL903/1(SU410)	
(276)		12	—	—	Earth	
(277)	Amplifier (servo) Type 297	PL1/1	—	67/11		
(278)	SA(*b*)	2	—	67/12		
(279)		3	—	51/1		
(280)		4	—	—	Earth	
(281)		5				
(282)		6	—	51/2		
(283)		7	—	63/7		
(284)		8				
(285)		9	—	67/9		
(286)		10	—	63/8		
(287)		11	—	63/6		
(288)		12	—	67/10		
(289)		PL2/1	**157	57/4 *strapped to* 57/1	PL2/1(SA(*a*))	
(290)		2	**158	57/5 *strapped to* 57/2	PL2/2(SA(*a*))	
(291)		3	**159	57/6 *strapped to* 57/3	PL2/3(SA(*a*))	

** **Note.**—*These leads from SA(b) are brought to a free Jones socket SK57 which plugs into frame plug PL57. Strapping of 57/4 to 57/1, etc., is done on PL57. (Also see additional connections.)*

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(292)	Amplifier (servo) Type 297 SA(*b*)—*contd.*	PL2/4	—	65/5		
(293)		5	—	65/4		
(294)		6	—	65/7		
(295)		7	—	65/6		
(296)		8	—	65/9		
(297)		9	—	65/8		
(298)		10	59	65/10	PL901/11(SU410)	
(299)		11	269	63/4 *strapped to* 65/3 *and* 65/11	PL503/7(CU(*b*))	
(300)		12	—	65/12		
(301)		PL3/1				
(302)		2				
(303)		3	—	67/1		
(304)		4	—	67/2		
(305)		5	—	67/3		
(306)		6	—	67/4		
(307)		7	—	67/5		
(308)		8	—	67/6		
(309)		9	—	67/7		
(310)		10				
(311)		11	—	67/8		
(312)		12				
(313)		PL4/1	—	59/3.		
(314)		2	—	59/5		
(315)		3	262	—	PL502/12(CU(*b*))	
(316)		4	—	65/1		
(317)		5	258	—	PL502/8(CU(*b*))	
(318)		6	259	—	PL502/9(CU(*b*))	
(319)		7	—	63/3		
(320)		8	—	63/5 *strapped to* 65/2		
(321)		9	256	—	PL502/6(CU(*b*))	
(322)		10	—	59/12		
(323)		11				
(324)		12				
(325)		PL5/1	65	—	PL902/5(SU410)	
(326)		2	—	59/4		
(327)		3	—	59/7		
(328)		4	253	—	PL502/3(CU(*b*))	
(329)		5	76	—	PL903/4(SU410)	
(330)		6	74	—	PL903/2(SU410)	
(331)		7	—	61/2		
(332)		8	254	—	PL502/4(CU(*b*))	
(333)		9	255	—	PL502/5(CU(*b*))	
(334)		10	260	—	PL502/10(CU(*b*))	
(335)		11	261	—	PL502/11(CU(*b*))	
(336)		12	242	59/6	PL501/2(CU(*b*))	
(337)	Amplifier (servo) Type 297 SA(*c*)	PL1/1	—	34/11		
(338)		2	—	34/12		
(339)		3	—	18/1		
(340)		4	—	—	Earth	
(341)		5				
(342)		6	—	18/2		
(343)		7	—	30/7		
(344)		8				
(345)		9	—	34/9		
(346)		10	—	30/8		
(347)		11	—	30/6		
(348)		12	—	34/10		
(349)		PL2/1				
(350)		2				
(351)		3				
(352)		4	—	32/5		
(353)		5	—	32/4		
(354)		6	—	32/7		
(355)		7	—	32/6		
(356)		8	—	32/9		
(357)		9	—	32/8		
(358)		10	—	32/10		
(359)		11	425	30/4 *strapped to* 32/3 *and* 32/11	PL503/7(CU(*c*))	
(360)		12	—	32/12		
(361)		PL3/1				
(362)		2				
(363)		3	—	34/1		
(364)		4	—	34/2		

RACK ASSEMBLY TYPE 313—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(365)	Amplifier (servo) Type 297	PL3/5	—	34/3		
(366)	SA(*c*)—*contd.*	6	—	34/4		
(367)		7	—	34/5		
(368)		8	—	34/6		
(369)		9	—	34/7		
(370)		10				
(371)		11	—	34/8		
(372)		12				
(373)		PL4/1	—	26/3		
(374)		2	—	26/5		
(375)		3				
(376)		4	—	32/1		
(377)		5	—	30/1		
(378)		6	415	—	PL502/9(CU(*c*))	
(379)		7				
(380)		8	—	30/5 *strapped to* 32/2		
(381)		9	—	30/2		
(382)		10	—	30/3		
(383)		11				
(384)		12				
(385)		PL5/1				
(386)		2	—	26/4		
(387)		3	—	26/7		
(388)		4	409	—	PL502/3(CU(*c*))	
(389)		5	80	—	PL903/8(SU410)	
(390)		6	78	—	PL903/6(SU410)	
(391)		7	—	26/1		
(392)		8	410	—	PL502/4(CU(*c*))	
(393)		9				
(394)		10				
(395)		11				
(396)		12	398	—	PL501/2(CU(*c*))	
(397)	Control unit Type 600	PL501/1				
(398)	CU(*e*)	2	396	—	PL5/12(SA(*c*))	
(399)		3	401 403	28/4 *strapped to* 28/6 *and* 28/8	PL501/5 and PL501/7 (CU(*c*))	
(400)		4				
(401)		5	399 403	28/6 *strapped to* 28/4 *and* 28/8	PL501/3 and PL501/7 (CU(*c*))	
(402)		6				
(403)		7	399 401	28/8 *strapped to* 28/4 *and* 28/6	PL501/3 and PL501/5 (CU(*c*))	
(404)		8				
(405)		9	—	26/9		
(406)		10	—	26/11		
(407)		11	—	26/8		
(408)		12	—	30/10		
(409)		PL502/3	388	—	PL5/4 SA(*c*))	
(410)		4	392	—	PL5/8(SA(*c*))	
(411)		5				
(412)		6	—	30/11		
(413)		7				
(414)		8	—	30/9		
(415)		9	378	—	PL4/6(SA(*c*))	
(416)		10				
(417)		11				
(418)		12				
(419)		PL503/1	—	26/10		
(420)		2				
(421)		3	—	26/2		
(422)		4				
(423)		5	—	26/6		
(424)		6				
(425)		7	359	30/4 *strapped to* 32/3 *and* 32/11	PL2/11(SA(*c*))	
(426)		8				
(427)		PL504/7				
(428)		8				
(429)		9				
(430)		10	79	—	PL903/7(SU410)	
(431)		11	77	—	PL903/5(SU410)	
(432)		12	—	—	Earth	
(433)	Control unit Type 600	PL501/1				
(434)	CU(*d*)	2	528	—	PL5/12(SA(*d*))	
(435)		3	437 439	23/4 *strapped to* 23/6 *and* 23/8	PL501/5 and PL501/7 (CU(*d*))	
(436)		4				

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(437)	Control unit Type 600 CU(*d*)—*contd.*	PL501/5	435 439	23/6 *strapped to* 23/4 *and* 23/8	PL501/3 and PL501/7 (CU(*d*))	
(438)		6				
(439)		7	435 437	23/8 *strapped to* 23/4 *and* 23/6	PL501/3 and PL501/5 (CU(*d*))	
(440)		8				
(441)		9	—	25/9		
(442)		10	—	25/11		
(443)		11	—	25/8		
(444)		12	—	24/10		
(445)		PL502/3	520	—	PL5/4(SA(*d*))	
(446)		4	524	—	PL5/8(SA(*d*))	
(447)		5				
(448)		6	—	21/11		
(449)		7				
(450)		8	—	21/9		
(451)		9	510	—	PL4/6(SA(*d*))	
(452)		10				
(453)		11				
(454)		12				
(455)		PL503/1	—	25/10		
(456)		2				
(457)		3	—	25/2		
(458)		4	—	18/3		
(459)		5	—	25/6		
(460)		6				
(461)		7	491	21/4 *strapped to* 19/3 *and* 19/11	PL2/11(SA(*d*))	
(462)		8	—	18/4		
(463)		PL504/7				
(464)		8				
(465)		9				
(466)		10	83	—	PL903/11(SU410)	
(467)		11	81	—	PL903/9(SU410)	
(468)		12	—	—	Earth	
(469)	Amplifier (servo) Type 297 SA(*d*)	PL1/1	—	17/11		
(470)		2	—	17/12		
(471)		3	—	18/7		
(472)		4	—	—	Earth	
(473)		5				
(474)		6	—	18/8		
(475)		7	—	21/7		
(476)		8				
(477)		9	—	17/9		
(478)		10	—	21/8		
(479)		11	—	21/6		
(480)		12	—	17/10		
(481)		PL2/1				
(482)		2				
(483)		3				
(484)		4	—	19/5		
(485)		5	—	19/4		
(486)		6	—	19/7		
(487)		7	—	19/6		
(488)		8	—	19/9		
(489)		9	—	19/8		
(490)		10	—	19/10		
(491)		11	461	21/4 *strapped to* 19/3 *and* 19/11	PL503/7(CU(*d*))	
(492)		12	—	19/12		
(493)		PL3/1				
(494)		2				
(495)		3	—	17/1		
(496)		4	—	17/2		
(497)		5	—	17/3		
(498)		6	—	17/4		
(499)		7	—	17/5		
(500)		8	—	17/6		
(501)		9	—	17/7		
(502)		10				
(503)		11	—	17/8		
(504)		12				
(505)		PL4/1	—	23/3		
(506)		2	—	25/5		
(507)		3				
(508)		4	—	19/1		
(509)		5	—	21/1		

RACK ASSEMBLY TYPE 313—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(510)	Amplifier (servo) Type 297	PL4 /6	451	—	PL502 /9(CU(*d*))	
(511)	SA(*d*)—*contd.*	7				
(512)		8	—	21 /5 *strapped to* 19 /2		
(513)		9	—	21 /2		
(514)		10	—	21 /3		
(515)		11				
(516)		12				
(517)		PL5 /1				
(518)		2	—	25 /4		
(519)		3	—	25 /7		
(520)		4	445	—	PL502 /3(CU(*d*))	
(521)		5	84	—	PL903 /12(SU410)	
(522)		6	82	—	PL903 /10(SU410)	
(523)		7	—	25 /1		
(524)		8	446	—	PL502 /4(CU(*d*))	
(525)		9				
(526)		10				
(527)		11				
(528)		12	434	—	PL501 /2(CU(*d*))	
(529)	Amplifier (servo) Type 297	PL1 /1	—	15 /11		
(530)	SA(*e*)	2	—	15 /12		
(531)		3	—	18 /9		
(532)		4	—	—	Earth	
(533)		5				
(534)		6	—	18 /10		
(535)		7	—	11 /7		
(536)		8				
(537)		9	—	15 /9		
(538)		10	—	11 /8		
(539)		11	—	11 /6		
(540)		12	—	15 /10		
(541)		PL2 /1				
(542)		2				
(543)		3				
(544)		4	—	13 /5		
(545)		5	—	13 /4		
(546)		6	—	13 /7		
(547)		7	—	13 /6		
(548)		8	—	13 /8		
(549)		9	—	13 /9		
(550)		10	—	13 /10		
(551)		11	617	11 /4 *strapped to* 13 /3 *and* 13 /11	PL503 /7(CU(*e*))	
(552)		12	—	13 /12		
(553)		PL3 /1				
(554)		2				
(555)		3	—	15 /1		
(556)		4	—	15 /2		
(557)		5	—	15 /3		
(558)		6	—	15 /4		
(559)		7	—	15 /5		
(560)		8	—	15 /6		
(561)		9	—	15 /7		
(562)		10				
(563)		11	—	15 /8		
(564)		12				
(565)		PL4 /1	—	7 /3		
(566)		2	—	7 /5		
(567)		3				
(568)		4	—	13 /1		
(569)		5	—	11 /1		
(570)		6	607	—	PL502 /9(CU(*e*))	
(571)		7				
(572)		8	—	11 /5 *strapped to* 13 /2		
(573)		9	—	11 /2		
(574)		10	—	11 /3		
(575)		11				
(576)		12				
(577)		PL5 /1				
(578)		2	—	7 /4		
(579)		3	—	7 /7		
(580)		4	601	—	PL502 /3(CU(*e*))	
(581)		5	93	—	PL904 /9(SU410)	
(582)		6	90	—	PL904 /6(SU410)	
(583)		7	—	7 /1		
(584)		8	602	—	PL502 /4(CU(*e*))	

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(585)	Amplifier (servo) Type 297	9				
(586)	SA(*e*)—*contd.*	10				
(587)		11				
(588)		12	590	—	PL501/2(CU(*e*))	
(589)	Control unit Type 600	PL501/1				
(590)	CU(*e*)	2	588	—	PL5/12(SA(*e*))	
(591)		3	593	9/4 *strapped to* 9/6	PL501/5 and PL501/7	
			595	*and* 9/8	(CU(*e*))	
(592)		4				
(593)		5	591	9/6 *strapped to* 9/4	PL501/3 and PL501/7	
			595	*and* 9/8	(CU(*e*))	
(594)		6				
(595)		7	591	9/8 *strapped to* 9/4	PL501/3 and PL501/5	
			593	*and* 9/6	(CU(*e*))	
(596)		8				
(597)		9	—	7/9		
(598)		10	—	7/11		
(599)		11	—	7/8		
(600)		12	—	11/10		
(601)		PL502/3	580	—	PL5/4(SA(*e*))	
(602)		4	584	—	PL5/8(SA(*e*))	
(603)		5				
(604)		6	—	11/11		
(605)		7				
(606)		8	—	11/9		
(607)		9	570	—	PL4/6(SA(*e*))	
(608)		10				
(609)		11				
(610)		12				
(611)		PL503/1	—	7/10		
(612)		2				
(613)		3	—	7/2		
(614)		4	—	18/11		
(615)		5	—	7/6		
(616)		6				
(617)		7	551	11/4 *strapped to* 13/3	PL2/11(SA(*e*))	
				and 13/11		
(618)		8	—	18/12		
(619)		PL504/7				
(620)		8				
(621)		9				
(622)		10	92	—	PL904/8(SU410)	
(623)		11	91	—	PL904/7(SU410)	
(624)		12	—	—	Earth	

Note.—*No.* (625) *to* (636) *previously occupied by amplifier* (*IFF*) *Type A.3677 now removed. Mod. classification B2.*

(637)	Switch unit Type 410	PL909/1	—	43/1		
(638)	SU410	2	—	43/2		
(639)		3	—	43/3		
(640)		4	—	43/4		
(641)		5	—	43/5		
(642)		6	—	43/6		
(643)		7	—	43/7		
(644)		8	—	43/8		
(645)		9	—	43/9		
(646)		10	—	43/10		
(647)		11	—	43/11		
(648)		12	—	43/12		
(649)		PL910/1	—	39/6		
(650)		2	—	39/7		
(651)		3	—	39/8		
(652)		4	—	39/9		
(653)		5	694	—	PL504/10(CU(*k*))	
(654)		6	695	—	PL504/11(CU(*k*))	
(655)		7	—	44/2		
(656)		8	—	44/3		

RACK ASSEMBLY TYPE 313—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(657)	Switch unit Type 410	PL910/9				
(658)	SU410—*contd.*	10				
(659)		11	—	44/1		
(660)		12	—	40/10		
(661)	Control unit Type 600	PL501/1				
(662)	CU(*k*)	2	—	44/4		
(663)		3				
(664)		4				
(665)		5				
(666)		6				
(667)		7				
(668)		8				
(669)		9	670	44/5	PL501/10(CU(*k*))	
(670)		10	669	44/5	PL501/9(CU(*k*))	
(671)		11				
(672)		12				
(673)		PL502/3				
(674)		4				
(675)		5				
(676)		6	—	44/6 *strapped to* 44/7		
(677)		7				
(678)		8				
(679)		9				
(680)		10				
(681)		11				
(682)		12				
(683)		PL503/1	—	44/8		
(684)		2				
(685)		3	—	44/9		
(686)		4				
(687)		5	—	44/10		
(688)		6				
(689)		7				
(690)		8				
(691)		PL504/7				
(692)		8				
(693)		9				
(694)		10	653	—	PL910/5(SU410)	
(695)		11	654	—	PL910/6(SU410)	
(696)		12	—	—	Earth	

ADDITIONAL CONNECTIONS REQUIRED

40/8 *strapped to* 40/11, 61/10 *and* 58/10
40/2 *strapped to* 39/10 *and* 57/1
40/4 *strapped to* 39/11 *and* 57/2
40/6 *strapped to* 39/12 *and* 57/3

Chapter 11

RACK ASSEMBLY TYPE 314

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Para.
Detailed description 1

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		Panel (blanking) 4639 (Stores Ref. 10D/19663)	(1) Rectifier unit Type 17 (Stores Ref. 10D/17779) RU17		
5	6	Panel (blanking) 4639	Switch unit Type 410 (Stores Ref. 10F/16163) SU410	39	40
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9	10			43	44
11	12	Panel (blanking) 4639	(2) Rectifier unit Type 17	45	46
13	14			47	48
15	16			49	50
		(*d*) Amplifier (servo) Type 297 (Stores Ref. 10U/16054) SA	(*a*) Amplifier (servo) Type 297		
17	18			51	52
19	20			53	54
21	22			55	56
		(*c*) and (*d*) Control unit Type 600 (Stores Ref. 10L/16029) CU600	(*a*) and (*b*) Control unit Type 600		
23	24			57	58
25	26			59	60
27	28			61	62
		(*c*) Amplifier (servo) Type 297	(*b*) Amplifier (servo) Type 297		
29	30			63	64
31	32			65	66
33	34			67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 314 (Stores Ref. 10D/18808) houses four channels for turning gear controls, two rectifier units Type 17 and a switch unit Type 410. The accompanying Schedule 1 covers typical Stage 1 wiring details.

2. The rack is employed on Stage 1 **GCI/B**/D, E and R, also on Stage 2 **GCI/B**/E and G and **GCI/C**/C and K. The rectifier unit Type 17 supplies the 50V requirements of this rack and of any other turning gear control racks used on the particular station. It also carries the necessary phasing transformers for the various turning control equipments. Switch unit Type 410 will effect an automatic change-over to the spare rectifier unit Type 17 in the event of breakdown.

SCHEDULE 1

RACK ASSEMBLY TYPE 314—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Rectifier unit (Type 17), RU17(1)	PL1 /1	—	—	—	—
(2)		2	—	—	—	—
(3)		3	—	—	—	—
(4)		4	—	—	—	—
(5)		6	—	—	—	—
(6)		6	—	—	—	—
(7)		7	91	—	PL905 /7	SU410
(8)		8	92	—	PL905 /8	SU410
(9)		9	93	—	PL905 /9	SU410
(10)		10	94	—	PL905 /10	SU410
(11)		11	95	—	PL905 /11	SU410
(12)		12	96	—	PL905 /12	SU410
(13)	(Plugs 2 and 3 not used)	PL4 /1	—	—	—	—
(14)		2	—	—	—	—
(15)		3	—	—	—	—
(16)		4	—	—	—	—
(17)		5	—	—	—	—
(18)		6	—	—	—	—
(19)		7	127	—	PL908 /7	SU410
(20)		8	128	—	PL908 /8	SU410
(21)		9	—	—	—	—
(22)		10	—	—	Earth	—
(23)		11	—	51 /11	—	—
(24)		12	—	51 /12	—	—
(25)	Rectifier unit Type 17 RU17(2)	PL1 /1	—	—	—	—
(26)		2	—	—	—	—
(27)		3	—	—	—	—
(28)		4	—	—	—	—
(29)		5	—	—	—	—
(30)		6	—	—	—	—
(31)		7	103	—	PL906 /7	SU410
(32)		8	104	—	PL906 /8	SU410
(33)		9	105	—	PL906 /9	SU410
(34)		10	106	—	PL906 /10	SU410
(35)		11	107	—	PL906 /11	SU410
(36)		12	108	—	PL906 /12	SU410
(37)	(Plugs 2 and 3 not used)	PL4 /1	—	—	—	—
(38)		2	—	—	—	—
(39)		3	—	—	—	—
(40)		4	—	—	—	—
(41)		5	—	—	—	—
(42)		6	—	—	—	—
(43)		7	115	—	PL907 /7	SU410
(44)		8	116	—	PL907 /8	SU410
(45)		9	—	—	—	—
(46)		10	—	—	Earth	—
(47)		11	—	51 /9	—	—
(48)		12	—	51 /10	—	—
(49)	Switch unit Type 410 SU410	PL901 /1	—	—	—	—
(50)		2	—	—	—	—
(51)		3	—	—	—	—
(52)		4	—	—	—	—
(53)		5	—	—	—	—
(54)		6	—	—	—	—
(55)		7	—	39 /1	—	—
(56)		8	—	39 /2	—	—
(57)		9	—	39 /3	—	—
(58)		10	—	56 /1	—	—
(59)		11	178	54 /10	PL2 /10	SA(*a*)
(60)		12	—	56 /2	—	—
(61)		PL902 /1	210	—	PL5 /6	SA(*a*)
(62)		2	250	—	PL504 /10	CU(*a*)
(63)		3	209	—	PL5 /5	SA(*a*)
(64)		4	—	40 /1	—	—
(65)		5	205	—	PL5 /1	SA(*a*)
(66)		6	—	39 /4	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	60 /2	—	—
(70)		10	—	39 /5	—	—
(71)		11	—	—	—	—
(72)		12	251	—	PI 504 /11	CU(*a*)
(73)		PL903 /1	347	—	PL504 /11	SU(*a*)
(74)		2	306	—	PL5 /6	SA(*b*)
(75)		3	346	—	PL504 /10	CU(*b*)
(76)		4	305	—	PL5 /5	SA(*b*)
(77)		5	443	—	PL504 /11	CU(*c*)

RACK ASSEMBLY TYPE 314—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(78)	Switch unit Type 410	PL903/6	402	—	PL5/6	SA(*c*)
(79)	SU410 "	7	442	—	PL504/10	CU(*c*)
(80)		8	401	—	PL5/5	SA(*c*)
(81)		9	539	—	PL504/11	CU(*d*)
(82)		10	498	—	PL5/6	SA(*d*)
(83)		11	538	—	PL504/10	CU(*d*)
(84)		12	497	—	PL5/5	SA(*d*)
(85)	(PL904 not used)	PL905/1	—	—	—	—
(86)		2	—	—	—	—
(87)		3	—	—	—	—
(88)		4	—	—	—	—
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	7	—	PL1/7	RU17(1)
(92)		8	8	—	PL1/8	RU17(1)
(93)		9	9	—	PL1/9	RU17(1)
(94)		10	10	—	PL1/10	RU17(1)
(95)		11	11	—	PL1/11	RU17(1)
(96)		12	12	—	PL1/12	RU17(1)
(97)		PL906/1	—	—	—	—
(98)		2	—	—	—	—
(99)		3	—	—	—	—
(100)		4	—	—	—	—
(101)		5	—	—	—	—
(102)		6	—	—	—	RU17(2)
(103)		7	31	—	PL1/7	RU17(2)
(104)		8	32	—	PL1/8	RU17(2)
(105)		9	33	—	PL1/9	RU17(2)
(106)		10	34	—	PL1/10	RU17(2)
(107)		11	35	—	PL1/11	RU17(2)
(108)		12	36	—	PL1/12	RU17(2)
(109)		PL907/1	—	—	—	—
(110)		2	—	—	—	—
(111)		3	—	—	—	—
(112)		4	—	—	—	—
(113)		5	—	—	—	—
(114)		6	—	—	—	—
(115)		7	43	—	PL4/7	RU17(2)
(116)		8	44	—	PL4/8	RU17(2)
(117)		9	—	—	—	—
(118)		10	—	—	—	—
(119)		11	—	—	—	—
(120)		12	—	—	—	—
(121)		PL908/1	—	—	—	—
(122)		2	—	—	—	—
(123)		3	—	—	—	—
(124)		4	—	—	—	—
(125)		5	—	—	—	—
(126)		6	—	—	—	RU17(1)
(127)		7	19	—	PL4/7	RU17(1)
(128)		8	20	—	PL4/8	RU17(1)
(129)		9	—	—	—	—
(130)		10	—	—	—	—
(131)		11	—	—	—	—
(132)		12	—	—	—	—
(133)		PL909/1	—	43/1	—	—
(134)		2	—	43/2	—	—
(135)		3	—	43/3	—	—
(136)		4	—	43/4	—	—
(137)		5	—	43/5	—	—
(138)		6	—	43/6	—	—
(139)		7	—	43/7	—	—
(140)		8	—	43/8	—	—
(141)		9	—	43/9	—	—
(142)		10	—	43/10	—	—
(143)		11	—	43/11	—	—
(144)		12	—	43/12	—	—
(145)		PL910/1	—	39/6	—	—
(146)		2	—	39/7	—	—
(147)		3	—	39/8	—	—
(148)		4	—	39/9	—	—
(149)		5	—	—	—	—
(150)		6	—	—	—	—
(151)		7	—	—	—	—
(152)		8	—	—	—	—
(153)		9	—	—	—	—

RACK ASSEMBLY TYPE 314—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(154)	Switch unit Type 410	PL910/10	—	—	—	—
(155)	SU410	11	—	—	—	—
(156)		12	—	40/10	—	—
(157)	Amplifier (servo) Type 297	PL1/1	—	52/11	—	—
(158)	SA(*a*)	2	—	52/12	—	—
(159)		3	—	51/7	—	—
(160)		4	—	—	Earth	—
(161)		5	—	—	—	—
(162)		6	—	51/8	—	—
(163)		7	—	56/7	—	—
(164)		8	—	—	—	—
(165)		9	—	52/9	—	—
(166)		10	—	56/8	—	—
(167)		11	—	56/6	—	—
(168)		12	—	52/10	—	—
(169)		PL2/1	—	40/2 *strapped to* 39/10	—	—
(170)		2	—	40/4 *strapped to* 39/11	—	—
(171)		3	—	40/6 *strapped to* 39/12	—	—
(172)		4	—	54/5	—	—
(173)		5	—	54/4	—	—
(174)		6	—	54/7	—	—
(175)		7	—	54/6	—	—
(176)		8	—	54/9	—	—
(177)		9	—	54/8	—	—
(178)		10	59	54/10	PL901/11	SU410
(179)		11	245	56/4, *strapped to* 54/3 *and* 54/11	PL503/7	CU(*a*)
(180)		12	—	54/12	—	—
(181)		PL3/1	—	—	—	—
(182)		2	—	—	—	—
(183)		3	—	52/1	—	—
(184)		4	—	52/2	—	—
(185)		5	—	52/3	—	—
(186)		6	—	52/4	—	—
(187)		7	—	52/5	—	—
(188)		8	—	52/6	—	—
(189)		9	—	52/7	—	—
(190)		10	—	—	—	—
(191)		11	—	52/8	—	—
(192)		12	—	—	—	—
(193)		PL4/1	—	60/3	—	—
(194)		2	—	60/5	—	—
(195)		3	238	—	PL502/12	CU(*a*)
(196)		4	—	54/1	—	—
(197)		5	234	—	PL502/8	CU(*a*)
(198)		6	235	—	PL502/9	CU(*a*)
(199)		7	—	56/3	—	—
(200)		8	—	56/5 *strapped to* 54/2	—	—
(201)		9	232	—	PL502/6	CU(*a*)
(202)		10	—	60/12	—	—
(203)		11	—	—	—	—
(204)		12	—	—	—	—
(205)		PL5/1	65	—	PL902/5	SU410
(206)		2	—	60/4	—	—
(207)		3	—	60/7	—	—
(208)		4	229	—	PL502/3	CU(*a*)
(209)		5	63	—	PL902/3	SU410
(210)		6	61	—	PL902/1	SU410
(211)		7	—	58/2	—	—
(212)		8	230	—	PL502/4	CU(*a*)
(213)		9	231	—	PL502/5	CU(*a*)
(214)		10	236	—	PL502/10	CU(*a*)
(215)		11	237	—	PL502/11	CU(*a*)
(216)		12	218	60/6	PL501/2	CU(*a*)
(217)	Control unit Type 600	PL501/1	—	60/1	—	—
(218)	CU (*a*)	2	216	60/6	PL5/12	SA(*a*)
(219)		3	—	58/4	—	—
(220)		4	—	—	—	—
(221)		5	—	58/6	—	—
(222)		6	—	—	—	—
(223)		7	—	58/8	—	—
(224)		8	—	—	—	—
(225)		9	—	60/9	—	—
(226)		10	—	60/11	—	—
(227)		11	—	60/8	—	—
(228)		12	—	58/1	—	—
(229)		PL502/3	208	—	PL5/4	SA(*a*)
(230)		4	212	—	PL5/8	SA(*a*)
(231)		5	213	—	PL5/9	SA(*a*)

RACK ASSEMBLY TYPE 314—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(232)	Control unit Type 600	PL502/6	201	—	PL4/9	SA(*a*)
(233)	CU(*a*)	7	—	—	—	—
(234)		8	197	—	PL4/5	SA(*a*)
(235)		9	198	—	PL4/6	SA(*a*)
(236)		10	214	—	PL5/10	SA(*a*)
(237)		11	215	—	PL5/11	SA(*a*)
(238)		12	195	—	PL4/3	SA(*a*)
(239)		PL503/1	—	60/10	—	—
(240)		2	—	—	—	—
(241)		3	—	58/3	—	—
(242)		4	—	51/3	—	—
(243)		5	—	58/5	—	—
(244)		6	—	—	—	—
(245)		7	179	56/4, *strapped to* 54/3 *and* 54/11	PL2/11	SA(*a*)
(246)		8	—	51/4	—	—
(247)		PL504/7	—	58/9	—	—
(248)		8	—	—	—	—
(249)		9	—	—	—	—
(250)		10	62	—	PL902/2	SU410
(251)		11	72	—	PL902/12	SU410
(252)		12	—	—	Earth	—
(253)	Amplifier (servo) Type 297	PL1/1	—	67/11	—	—
(254)	SA(*b*)	2	—	67/12	—	—
(255)		3	—	51/1	—	—
(256)		4	—	—	Earth	—
(257)		5	—	—	—	—
(258)		6	—	51/2	—	—
(259)		7	—	63/7	—	—
(260)		8	—	—	—	—
(261)		9	—	67/9	—	—
(262)		10	—	63/8	—	—
(263)		11	—	63/6	—	—
(264)		12	—	67/10	—	—
(265)		PL2/1	—	—	—	—
(266)		2	—	—	—	—
(267)		3	—	—	—	—
(268)		4	—	65/5	—	—
(269)		5	—	65/4	—	—
(270)		6	—	65/7	—	—
(271)		7	—	65/6	—	—
(272)		8	—	65/9	—	—
(273)		9	—	65/8	—	—
(274)		10	—	65/10	—	—
(275)		11	341	63/4, *strapped to* 65/3 *and* 65/11	PL503/7	CU(*b*)
(276)		12	—	65/12	—	
(277)		PL3/1	—	—	—	—
(278)		2	—	—	—	—
(279)		3	—	67/1	—	—
(280)		4	—	67/2	—	—
(281)		5	—	67/3	—	—
(282)		6	—	67/4	—	—
(283)		7	—	67/5	—	—
(284)		8	—	67/6	—	—
(285)		9	—	67/7	—	—
(286)		10	—	—	—	—
(287)		11	—	67/8	—	—
(288)		12	—	—	—	—
(289)		PL4/1	—	59/3	—	—
(290)		2	—	59/5	—	—
(291)		3	—	—	—	—
(292)		4	—	65/1	—	—
(293)		5	—	63/1	—	—
(294)		6	331	—	PL502/9	CU(*b*)
(295)		7	—	—	—	—
(296)		8	—	63/5 *strapped to* 65/2	—	—
(297)		9	—	63/2	—	—
(298)		10	—	63/3	—	—
(299)		11	—	—	—	—
(300)		12	—	—	—	—
(301)		PL5/1	—	—	—	—
(302)		2	—	59/4	—	—
(303)		3	—	59/7	—	—
(304)		4	325	—	PL502/3	CU(*b*)
(305)		5	76	—	PL903/4	SU410

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(306)	Amplifier (servo) Type 297	PL5/6	74	—	PL903/2	SU410
(307)	SA(*b*)	7	—	59/1	—	—
(308)		8	326	—	PL502/4	CU(*b*)
(309)		9	—	—	—	—
(310)		10	—	—	—	—
(311)		11	—	—	—	—
(312)		12	314	—	PL501/2	CU(*b*)
(313)	Control unit Type 600	PL501/1	—	—	—	—
(314)	CU(*b*)	2	312	—	PL5/12	SA(*b*)
(315)		3	317 319	61/4 *strapped to* 61/6 *and* 61/8	PL501/5 and PL501/7	CU(*b*)
(316)		4	—	—	—	—
(317)		5	315 319	61/6 *strapped to* 61/4 *and* 61/8	PL501/3 and PL501/7	CU(*b*)
(318)		6	—	—	—	—
(319)		7	315 317	61/8 *strapped to* 61/4 *and* 61/6	PL501/3 and PL501/5	CU(*b*)
(320)		8	—	—	—	—
(321)		9	—	59/9	—	—
(322)		10	—	59/11	—	—
(323)		11	—	59/8	—	—
(324)		12	—	63/10	—	—
(325)		PL502/3	304	—	PL5/4	SA(*b*)
(326)		4	308	—	PL5/8	SA(*b*)
(327)		5	—	—	—	—
(328)		6	—	63/11	—	—
(329)		7	—	—	—	—
(330)		8	—	63/9	—	—
(331)		9	—	—	PL4/6	SA(*b*)
(332)		10	—	—	—	—
(333)		11	—	—	—	—
(334)		12	—	—	—	—
(335)		PL503/1	—	59/10	—	—
(336)		2	—	—	—	—
(337)		3	—	59/2	—	—
(338)		4	—	—	—	—
(339)		5	—	59/6	—	—
(340)		6	—	—	—	—
(341)		7	275	63/4 *strapped to* 65/3 *and* 65/11	PL2/11	SA(*b*)
(342)		8	—	—	—	—
(343)		PL504/7	—	—	—	—
(344)		8	—	—	—	—
(345)		9	—	—	—	—
(346)		10	75	—	PL903/3	SU410
(347)		11	73	—	—	SU410
(348)		12	—	—	Earth	—
(349)	Amplifier (servo) Type 297	PL1/1	—	34/11	—	—
(350)	SA(*c*)	2	—	34/12	—	—
(351)		3	—	18/1	—	—
(352)		4	—	—	Earth	
(353)		5	—	—	—	—
(354)		6	—	18/2	—	—
(355)		7	—	30/7	—	—
(356)		8	—	30/7	—	—
(357)		9	—	34/9	—	—
(358)		10	—	30/8	—	—
(359)		11	—	30/6	—	—
(360)		12	—	34/10	—	—
(361)		PL2/1	—	—	—	—
(362)		2	—	—	—	—
(363)		3	—	—	—	—
(364)		4	—	32/5	—	—
(365)		5	—	32/4	—	—
(366)		6	—	32/7	—	—
(367)		7	—	32/6	—	—
(368)		8	—	32/9	—	—
(369)		9	—	32/8	—	—
(370)		10	—	32/10	—	—
(371)		11	437	30/4 *strapped to* 32/3 and 32/11	PL503/7	CU(*c*)
(372)		12	—	32/12	—	—
(373)		PL3/1	—	—	—	—
(374)		2	—	—	—	—
(375)		3	—	34/1	—	—
(376)		4	—	34/2	—	—
(377)		5	—	34/3	—	—
(378)		6	—	34/4	—	—
(379)		7	—	34/5	—	—

RACK ASSEMBLY TYPE 314—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(380)	Amplifier (servo) Type 297	PL3/8	—	34/6	—	—
(381)	SA(*c*)	9	—	34/7	—	—
(382)		10	—	—	—	—
(383)		11	—	34/8	—	—
(384)		12	—	—	—	—
(385)		PL4/1	—	26/3	—	—
(386)		2	—	26/5	—	—
(387)		3	—	—	—	—
(388)		4	—	32/1	—	—
(389)		5	—	30/1	—	—
(390)		6	427	—	PL502/9	CU(*c*)
(391)		7	—	—	—	—
(392)		8	—	30/5 *strapped to* 32/2	—	—
(393)		9	—	30/2	—	—
(394)		10	—	30/3	—	—
(395)		11	—	—	—	—
(396)		12	—	—	—	—
(397)		PL5/1	—	—	—	—
(398)		2	—	26/4	—	—
(399)		3	—	26/7	—	—
(400)		4	421	—	PL502/3	CU(*c*)
(401)		5	80	—	PL903/8	SU410
(402)		6	78	—	PL903/6	SU410
(403)		7	—	26/1	—	—
(404)		8	422	—	PL502/4	CU(*c*)
(405)		9	—	—	—	—
(406)		10	—	—	—	—
(407)		11	—	—	—	—
(408)		12	410	—	PL501/2	CU(*c*)
(409)	Control unit Type 600	PL501/1	—	—	—	—
(410)	CU(*c*)	2	408	—	PL5/12	SA(*c*)
(411)		3	413, 415	28/4 *strapped to* 28/6 *and* 18/8	PL501/5 and PL501/7	CU(*c*)
(412)		4	—	—	—	—
(413)		5	413, 415	28/6 *strapped to* 28/4 *and* 18/8	PL501/3 and PL501/7	CU(*c*)
(414)		6	—	—	—	—
(415)		7	411, 413	28/8 *strapped to* 28/4 *and* 28/6	PL501/3 and PL501/5	CU(*c*)
(416)		8	—	—	—	—
(417)		9	—	26/9	—	—
(418)		10	—	26/11	—	—
(419)		11	—	26/8	—	—
(420)		12	—	30/10	—	—
(421)		PL502/3	400	—	PL5/4	SA(*c*)
(422)		4	404	—	PL5/8	SA(*c*)
(423)		5	—	—	—	—
(424)		6	—	30/11	—	—
(425)		7	—	—	—	—
(426)		8	—	30/9	—	—
(427)		9	390	—	PL4/6	SA(*c*)
(428)		10	—	—	—	—
(429)		11	—	—	—	—
(430)		12	—	—	—	—
(431)		PL503/1	—	26/10	—	—
(432)		2	—	—	—	—
(433)		3	—	26/2	—	—
(434)		4	—	—	—	—
(435)		5	—	26/6	—	—
(436)		6	—	—	—	—
(437)		7	371	30/4 *strapped to* 32/3 *and* 32/11	PL2/11	SA(*c*)
(438)		8	—	—	—	—
(439)		PL504/7	—	—	—	—
(440)		8	—	—	—	—
(441)		9	—	—	—	—
(442)		10	79	—	PL903/7	SU410
(443)		11	77	—	PL903/5	SU410
(444)		12	—	—	Earth	—
(445)	Amplifier (servo) Type 297	PL1/1	—	17/11	—	—
(446)	SA(*d*)	2	—	17/12	—	—
(447)		3	—	18/7	—	—
(448)		4	—	—	Earth	—
(449)		5	—	—	—	—
(450)		6	—	18/8	—	—
(451)		7	—	21/7	—	—

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(452)	Amplifier (servo) Type 297, SA(*d*)	PL1/8	—	—	—	—
(453)		9	—	17/9	—	—
(454)		10	—	21/8	—	—
(455)		11	—	21/6	—	—
(456)		12	—	17/10	—	—
(457)		PL2/1	—	—	—	—
(458)		2	—	—	—	—
(459)		3	—	—	—	—
(460)		4	—	19/5	—	—
(461)		5	—	19/4	—	—
(462)		6	—	19/7	—	—
(463)		7	—	19/6	—	—
(464)		8	—	19/9	—	—
(465)		9	—	19/8	—	—
(466)		10	—	19/10	—	—
(467)		11	533	21/4 *strapped to* 19/3 *and* 19/11	PL503/7	CU(*d*)
(468)		12	—	19/12	—	—
(469)		PL3/1	—	—	—	—
(470)		2	—	—	—	—
(471)		3	—	17/1	—	—
(472)		4	—	17/2	—	—
(473)		5	—	17/3	—	—
(474)		6	—	17/4	—	—
(475)		7	—	17/5	—	—
(476)		8	—	17/6	—	—
(477)		9	—	17/7	—	—
(478)		10	—	—	—	—
(479)		11	—	17/8	—	—
(480)		12	—	—	—	—
(481)		PL4/1	—	25/3	—	—
(482)		2	—	25/5	—	—
(483)		3	—	—	—	—
(484)		4	—	19/1	—	—
(485)		5	—	21/1	—	—
(486)		6	523	—	PL502/9	CU(*d*)
(487)		7	—	—	—	—
(488)		8	—	21/5 *strapped to* 19/2	—	—
(489)		9	—	21/2	—	—
(490)		10		21/3	—	—
(491)		11	—	—	—	—
(492)		12	—	—	—	—
(493)		PL5/1	—	—	—	—
(494)		2	—	25/4	—	—
(495)		3	—	25/7	—	—
(496)		4	517	—	PL502/3	CU(*d*)
(497)		5	84	—	PL903/12	SU410
(498)		6	82	—	PL903/10	SU410
(499)		7	—	25/1	—	—
(500)		8	518	—	PL502/4	CU(*d*)
(501)		9	—	—	—	—
(502)		10	—	—	—	—
(503)		11	—	—	—	—
(504)		12	506	—	PL501/2	CU(*d*)
(505)	Control unit Type 600 CU(*d*)	PL501/1	—	—	—	—
(506)		2	504	—	PL5/12	SA(*d*)
(507)		3	509, 511	23/4 *strapped to* 23/6 *and* 23/8	PL501/5 and PL501/7	CU(*d*)
(508)		4	—	—	—	—
(509)		5	507, 511	23/6 *strapped to* 23/4 *and* 23/8	PL501/3 and PL501/7	CU(*d*)
(510)		6	—	—	—	—
(511)		7	507, 509	23/8 *strapped to* 23/4 *and* 23/6	PL501/3 and PL501/5	CU(*d*)
(512)		8	—	—	—	—
(513)		9	—	25/9	—	—
(514)		10	—	25/11	—	—
(515)		11	—	25/8	—	—
(516)		12	—	21/10	—	—
(517)		PL502/3	496	—	PL5/4	SA(*d*)
(518)		4	500	—	PL5/8	SA(*d*)
(519)		5	—	—	—	—
(520)		6	—	21/11	—	—
(521)		7	—	—	—	—
(522)		8	—	21/9	—	—
(523)		9	486	—	PL4/6	SA(*d*)
(524)		10	—	—	—	—
(525)		11	—	—	—	—
(526)		12	—	—	—	—

RACK ASSEMBLY TYPE 307—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(527)	Control unit Type 600	PL503/1	—	25/10	—	—
(528)	CU(*d*)	2	—	—	—	—
(529)		3	—	25/2	—	—
(530)		4	—	18/3	—	—
(531)		5	—	25/6	—	—
(532)		6	—	—	—	—
(533)		7	467	21/4, *strapped to* 19/3 *and* 19/11	PL2/11	SA(*d*)
(534)		8	—	18/4	—	—
(535)		PL504/7	—	—	—	—
(536)		8	—	—	—	—
(537)		9	—	—	—	—
(538)		10	83	—	PL903/11	SU410
(539)		11	81	—	PL903/9	SU410
(540)		12	—	—	Earth	—

Note.—*No.* (541) *to* (552) *previously occupied by amplifier* (*IFF*) *Type A.3677 now removed. Mod. Classification B.2.*

ADDITIONAL CONNECTION REQUIRED

58/10 *strapped to* 40/8 *and* 40/11

Chapter 12

(**Note:**—*This chapter supersedes that issued with A.L.10 and 27*)

RACK ASSEMBLY TYPE 315

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Para.
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ILLUSTRATION

Fig.
Disposition of units and plugs, schematic ... 1

		Panel (blanking) 4639 (Stores Ref. 10D/19663)	Panel (blanking) 4639		
5	6	Control unit 600	Panel (blanking) 4639	39	40
7	8	(Stores Ref. 10L/16029) CU600		41	42
9	10	(*g*)		43	44
11	12	Amplifier (servo) Type 297	Amplifying unit (pulse splitter)	45	46
13	14	(Stores Ref. 10U/16054) SA	Type 300	47	48
15	16	(*g*)	(Stores Ref. 10U/16057) AmpPS	49	50
17	18	Amplifier (servo)	Rectifier unit (3)	51	52
19	20	Type 297	Type 15	53	54
21	22	(*e*)	(Stores Ref. 10D/17761) RU15	55	56
23	24	Control unit	Rectifier unit (4)	57	58
25	26	Type 600	Type 15	59	60
27	28	(*e*) and (*f*)		61	62
29	30	Amplifier (servo)	Rectifier unit (5)	63	64
31	32	Type 297	Type 15	65	66
33	34	(*f*)		67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

◀**1.** The rack assembly Type 315 (Stores Ref. 10D/18809) is used on **GCI/C/C** and K stations and contains units for turning-gear control of radar heads, together with three rectifiers Type 15 which provide 50V supplies for relay operation on various other units on the station. Typical wiring details are given in the accompanying schedule.▶

SCHEDULE I

RACK ASSEMBLY TYPE 315

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(1)	Amplifier (servo) Type 297	PL1/1	—	17/11	—	Plinth term.67 T.14/9(1)
(2)	SA(*e*)	2	—	17/12	—	Plinth term.68 T.14/9(1)
(3)		3	—	24/1	—	Mains input
(4)		4	—	—	Earth	
(5)		5				
(6)		6	—	24/2	—	Mains input
(7)		7	—	21/7	—	PLAL/7 CU619(2)
(8)		8				
(9)		9	—	17/9	—	SR46 T.14/9(1)
(10)		10	—	21/8	—	PLAL/8 CU619(2)
(11)		11	—	21/6	—	PLAL/6 CU619(2)
(12)		12	—	17/10	—	SR38 14/9(1)
(13)		PL2/1	—	31/10	—	PL39/10 RA314
(14)		2	—	31/11	—	PL39/11 RA314
(15)		3	—	31/12	—	PL39/12 RA314
(16)		4	—	19/5	—	SR23 T.14/9(1)
(17)		5	—	19/4	—	SR22 T.14/9(1)
(18)		6	—	19/7	—	SR25 T.14/9(1)
(19)		7	—	19/6	—	SR24
(20)		8	—	19/9	—	SR27
(21)		9	—	19/8	—	SR26
(22)		10	—	19/10	—	SR28
				Strapped to 31/2	—	PL39/2 RA314
(23)		11	89	21/4	PL503/7 CU(*e*)	PLAL/4 CU619(2)
				Strapped to 19/3 *and* 19/11		SR219 and 29 T.14/9(1)
(24)		12	—	19/12	—	SR30 T.14/9(1)
(25)		PL3/1				
(26)		2				
(27)		3	—	17/1	—	AmpdnX4 T.14/9(1)
(28)		4	—	17/2	—	AmpdnX3 T.14/9(1)
(29)		5	—	17/3	—	AmpdnX2 T.14/9(1)
(30)		6	—	17/4	—	AmpdnX1 T.14/9(1)
(31)		7	—	17/5	—	AmpdnX5 T.14/9(1)
(32)		8	—	17/6	—	AmpdnX6 T.14/9(1)
(33)		9	—	17/7	—	AmpdnA4 T.14/9(1)
(34)		10				
(35)		11	—	17/8	—	AmpdnA2 T.14/9(1)
(36)		12				
(37)		PL4/1	—	25/3	—	PLAJ/3 CU619(2)
(38)		2	—	25/5	—	PLAJ/5 CU619(2)
(39)		3	82	—	PL502/12 CU(*e*)	
(40)		4	—	19/1	—	SR36 T.14/9(1)
(41)		5	78	—	PL502/8 CU(*e*)	
(42)		6	79	—	PL502/9 CU(*e*)	
(43)		7	—	21/3	—	PLAL/3 CU619(2)
(44)		8	—	21/5	—	PLAL/5 CU619(2)
				Strapped to 19/2		SR34 T.14/9(1)
(45)		9	76	—	PL502/6 CU(*e*)	
(46)		10	—	25/12	—	PLAJ/12 CU619(2)
(47)		11				
(48)		12				
(49)		PL5/1	—	31/4	—	PL39/4 RA314
(50)		2	—	25/4	—	PLAJ/4 CU619(2)
(51)		3	—	25/7	—	PLAJ/7 CU619(2)
(52)		4	73	—	PL502/3 CU(*e*)	
(53)		5	—	27/1	—	PL43/1 RA314
(54)		6	—	27/2	—	PL43/2 RA314
(55)		7	—	23/2	—	PLAI/2 CU619(2)
(56)		8	74	—	PL502/4 CU(*e*)	
(57)		9	75	—	PL502/5 CU(*e*)	
(58)		10	80	—	PL502/10 CU(*e*)	
(59)		11	81	—	PL502/11 CU(*e*)	
(60)		12	62	25/6	PL501/2 CU(*e*)	PLAJ/6 CU619(2)
(61)	Control unit Type 600	PL501/1	—	25/1	—	PLAJ/1 CU619(2)
(62)	CU(*e*)	2	60	25/6	PL5/12 SA(*e*)	PLAJ/6 CU619(2)
(63)		3	—	23/4	—	PLAI/4 CU619(2)
(64)		4				
(65)		5	—	23/6	—	PLAI/6 CU619(2)
(66)		6				
(67)		7	—	23/8	—	PLAI/8 CU619(2)
(68)		8				
(69)		9	—	26/9	—	PLAJ/9 CU619(2)
(70)		10	—	25/11	—	PLAJ/11 CU619(2)
(71)		11	—	25/8	—	PLAJ/8CU619(2)
(72)		12	—	23/1	—	PLAI/1 CU619(2)

RACK ASSEMBLY TYPE 315—*(continued)*

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(73)	Control unit Type 600	PL502/3	52	—	PL5/4 SA(*e*)	
(74)	CU(*e*)—*contd.*	4	56	—	PL5/8 SA(*e*)	
(75)		5	57	—	PL5/9 SA(*e*)	
(76)		6	45	—	PL4/9 SA(*e*)	
(77)		7				
(78)		8	41	—	PL4/5 SA(*e*)	
(79)		9	42	—	PL4/6 SA(*e*)	
(80)		10	58	—	PL5/10 SA(*e*)	
(81)		11	59	—	PL5/11 SA(*e*)	
(82)		12	39	—	PL4/3 SA(*e*)	
(83)		PL503/1	—	25/10	—	PLAJ/10 CU619(2)
(84)		2				
(85)		3	—	23/3	—	PLAI/3 CU619(2)
(86)		4	—	24/3	—	Mains input
(87)		5	—	23/5	—	PLAI/5 CU619(2)
(88)		6				
(89)		7	23	21/4 *Strapped to* 19/3 *and* 19/11	PL2/11 SA(*e*)	PLAL/4 CU619(2) SRs 19 and 29 14/9(1)
(90)		8	—	24/4	—	Mains input
(91)		PL504/7	—	23/9	—	PLAI/9 CU619(2)
(92)		8				
(93)		9				
(94)		10	—	27/3	—	PL43/3 RA314
(95)		11	—	27/4	—	PL43/4 RA314
(96)		12	—	—	Earth	
(97)	Amplifier (servo) Type 297	PL1/1	—	34/11	—	Plinth term.67 T.13(4)
(98)	SA(*f*)	2	—	34/12	—	Plinth term.68 T.13(4)
(99)		3	—	24/5	—	Mains input
(100)		4	—	—	Earth	
(101)		5				
(102)		6	—	24/6	—	Mains input
(103)		7	—	30/7	—	PL2/7 CU(T.13 Tr.) (4)
(104)		8				
(105)		9	—	34/9	—	SR46 13 (4)
(106)		10	—	30/8	—	PL2/8 CU(T.13 Tr.) (4)
(107)		11	—	30/6	—	PL2/6 CU(T.13 Tr.) (4)
(108)		12	—	34/10	—	SR38 T.13(4)
(109)		PL2/1				
(110)		2				
(111)		3				
(112)		4	—	32/5	—	SR23 T.13(4)
(113)		5	—	32/4	—	SR22 T.13(4)
(114)		6	—	32/7	—	SR25 T.13(4)
(115)		7	—	32/6	—	SR24 T.13(4)
(116)		8	—	32/9	—	SR27 T.13(4)
(117)		9	—	32/8	—	SR26 T.13(4)
(118)		10	—	32/10	—	SR28 T.13(4)
(119)		11	185	30/4 *Strapped to* 32/3 *and* 32/11	PL503/7 CU(*f*)	PL2/4 CU(T.13 Tr.)(4) SRs 19 and 29 T.13(4)
(120)		12	—	32/12	—	SR30 T.13(4)
(121)		PL3/1				
(122)		2				
(123)		3	—	34/1	—	AmpdnX4 T.13(4)
(124)		4	—	34/2	—	Ampdn X3 T.13(4)
(125)		5	—	34/3	—	AmpdnX2 T.13(4)
(126)		6	—	34/4	—	AmpdnX1 T.13(4)
(127)		7	—	34/5	—	AmpdnX5 T.13(4)
(128)		8	—	34/6	—	AmpdnX6 T.13(4)
(129)		9	—	34/7	—	AmpdnA4 T.13(4)
(130)		10				
(131)		11	—	34/8	—	AmpdnA2 T.13(4)
(132)		12				
(133)		PL4/1	—	26/3	—	PL1/3 CU(T.13 Tr.)(4)
(134)		2	—	26/5	—	PL1/5 CU(T.13 Tr.)(4)
(135)		3				
(136)		4	—	32/1	—	SR36 T.13(4)
(137)		5	—	30/1	—	PL2/1 CU(T.13 Tr.)(4)
(138)		6	175	—	PL502/9 CU(*f*)	
(139)		7				
(140)		8	—	30/5 *Strapped to* 32/2	—	PL2/5 CU(T.13 Tr.)(4) SR34 13(4)
(141)		9	—	30/2	—	PL2/2 CU(T.13 Tr.)(4)
(142)		10	—	30/3	—	PL2/3 CU(T.13 Tr.)(4)
(143)		11				
(144)		12				

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(145)	Amplifier (servo) Type 297	PL5/1				
(146)	SA(*f*)—*contd.*	2	—	26/4	—	PL1/4 CU(T.13 Tr.)(4)
(147)		3	—	26/7	—	PL1/7 CU(T.13 Tr.)(4)
(148)		4	169	—	PL502/3 CU(*f*)	
(149)		5	—	27/5	—	PL43/5 RA314
(150)		6	—	27/6	—	PL43/6 RA314
(151)		7	—	26/1	—	PL1/1 CU(T.13 Tr.)(4)
(152)		8	170	—	PL502/4 CU(*f*)	
(153)		9				
(154)		10				
(155)		11				
(156)		12	158	—	PL501/2 CU(*f*)	
(157)	Control unit Type 600 CU(*f*)	PL501/1				
(158)		2	156	—	PL5/12 SA(*f*)	
(159)		3	161 163	28/4 *Strapped to* 28/6 *and* 28/8	PL501/5 and PL501/7 CU(*f*)	
(160)		4				
(161)		5	159 163	28/6 *Strapped to* 28/4 *and* 28/8	PL501/3 and PL501/7 CU(*f*)	
(162)		6				
(163)		7	159 161	28/8 *Strapped to* 28/4*and* 28/6	PL501/3 and PL501/5 CU(*f*)	
(164)		8				
(165)		9	—	26/9	—	PL1/9 CU(T.13 Tr.)(4)
(166)		10	—	26/11	—	PL1/11 CU(T.13 Tr.)(4)
(167)		11	—	26/8	—	PL1/8 CU(T.13 Tr.)(4)
(168)		12	—	30/10	—	PL2/10 CU(T.13 Tr.)(4)
(169)		PL502/3	148	—	PL5/4 SA(*f*)	
(170)		4	152	—	PL5/8 SA(*f*)	
(171)		5				
(172)		6	—	30/11	—	PL2/11 CU(T.13 Tr.)(4)
(173)		7				
(174)		8	—	30/9	—	PL2/9 CU(T.13 Tr.)(4)
(175)		9	138	—	PL4/6 SA(*f*)	
(176)		10				
(177)		11				
(178)		12				
(179)		PL503/1	—	26/10	—	PL1/10 CU (T.13 Tr.)(4)
(180)		2				
(181)		3	—	26/2	—	PL1/2 CU(T.13 Tr.)(4)
(182)		4				
(183)		5	—	26/6	—	PL1/6 CU(T.13 Tr.)(4)
(184)		6				
(185)		7	119	30/4 *Strapped to* 32/3 *and* 32/11	PL2/11 SA(*f*)	PL2/4 CU (T.13 Tr.)(4) SRs 19 and 29 T.13(4)
(186)		8				
(187)		PL504/7				
(188)		8				
(189)		9				
(190)		10	—	27/7	—	PL43/7 RA314
(191)		11	—	27/8	—	PL43/8 RA314
(192)		12	—	—	Earth	
(193)	Rectifier unit Type 15 RU15(3)	PL1/1	—	—	Earth	
(194)		2	—	51/1, 51/2, 51/3, 51/4, 51/5 and 51/6 *Strapped*	—	50V output (+*ve*)
(195)		3	—	51/7, 51/8, 51/9, 51/10, 51/11, 51/12 *Strapped*	—	50V output (—*ve*)
(196)		4	—	55/1, 55/2, 55/3, 55/4, 55/5 and 55/6 *Strapped*	—	50V output (+*ve*)
(197)		5	—	55/7, 55/8, 55/9, 55/10, 55/11 and 55/12 *Strapped*	—	50V output (—*ve*)
(198)		6				
(199)		7				
(200)		8				
(201)		9				
(202)		10				
(203)		11	—	24/7	—	Mains input
(204)		12	—	24/8	—	Mains input
		Plug 2 not used				
(205)	Rectifier unit Type 15 RU15(4)	PL1/1	—	—	Earth	

RACK ASSEMBLY TYPE 315 (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(206)	Rectifier unit Type 15 RU15(4)—*contd.*	PL1/2	—	57/1, 57/2, 57/3, 57/4, 57/5, 57/6 *Strapped*	—	50V output (+*ve*)
(207)		3	—	57/7, 57/8, 57/9, 57/10, 57/11 and 57/12 *Strapped*	—	50V output (—*ve*)
(208)		4	—	61/1, 61/2, 61/3, 61/4, 61/5 and 61/6 *Strapped*	—	50V output (+*ve*)
(209)		5	—	61/7, 61/8, 61/9, 61/10, 61/11 and 61/12 *Strapped*	—	50V output (—*ve*)
(210)		6				
(211)		7				
(212)		8				
(213)		9				
(214)		10				
(215)		11	—	24/9	—	Mains input
(216)		12	—	24/10	—	Mains input
		Plug 2 not used				
(217)	Rectifier unit Type 15 RU 15(5)	PL1/1	—	—	Earth	
(218)		2	—	63/1, 63/2, 63/3, 63/4, 63/5 and 63/6 *Strapped*	—	50V output (+*ve*)
(219)		3	—	63/7, 63/8, 63/9, 63/10, 63/11 and 63/12 *Strapped*	—	50V output (—*ve*)
(220)		4	—	67/1, 67/2, 67/3, 67/4, 67/5 and 67/6 *Strapped*	—	50V output (+*ve*)
(221)		5	—	67/7, 67/8, 67/9, 67/10, 67/11 and 67/12 *Strapped*	—	50V output (—*ve*)
(222)		6				
(223)		7				
(224)		8				
(225)		9				
(226)		10				
(227)		11	—	24/11	—	Mains input
(228)		12	—	24/12	—	Mains input
(229)	Amplifier (Servo) Type 297 SA (*g*)	PL1/1	—	16/11	—	Plinth Term 67 (13(5)
(230)		2	—	16/12	—	Plinth Term 68 (13(5)
(231)		3	—	6/1	—	Mains input
(232)		4	—	—	Earth	—
(233)		5	—	—	—	—
(234)		6	—	6/2	—	Mains input
(235)		7	—	12/7	—	PL2/7 CU(T.13 Tr.) (5)
(236)		8	—	—	—	—
(237)		9	—	16/9	—	SR46 13 (5)
(238)		10	—	12/8	—	PL2/8 CU(T.13 Tr.) (5)
(239)		11	—	12/6	—	PL2/6 CU(T.13 Tr.) (5)
(240)		12	—	16/10	—	SR38 13 (5)
(241)		PL2/1	—	—	—	—
(242)		2	—	—	—	—
(243)		3	—	—	—	—
(244)		4	—	14/5	—	SR23 13 (5)
(245)		5	—	14/4	—	SR22 13 (5)
(246)		6	—	14/7	—	SR25 13 (5)
(247)		7	—	14/6	—	SR24 13 (5)
(248)		8	—	14/9	—	SR27 13 (5)
(249)		9	—	14/8	—	SR26 13 (5)
(250)		10	—	14/10	—	SR28 13 (5)
(251)		11	317	12/4 Strapped to 14/3 and 14/11	PL503/7 CU(*g*)	PL2/4 CU(T13 Tr.) (5) SRs 19 & 29 13 (5)
(252)		12	—	14/12	—	SR30 13 (5)
(253)		PL3/1	—	—	—	—
(254)		2	—	—	—	—
(255)		3*	—	16/1	—	Amplid X4 13 (5)
(256)		4*	—	16/2	—	Amplid X3 13 (5)
(257)		5*	—	16/3	—	Amplid X2 13 (5)
(258)		PL3/6*	—	16/4	—	Amplid X2 13 (5)
(259)		7	—	16/5	—	Amplid X5 13 (5)
(260)		8	—	16/6	—	Amplid X6 13 (5)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(261)		9	—	16/7	—	Amplid A4 13 (5)
(262)		10	—	—	—	—
(263)		11	—	16/8	—	Amplid A2 13 (5)
(264)		12	—	—	—	—
(265)		PL4/1	—	8/3	—	PL1/3 CU(T.13 Tr.) (5)
(266)		2	—	8/5	—	PL1/5 CU(T.13 Tr.) (5)
(267)		3	—	—	—	—
(268)		4	—	14/1	—	SR36 13 (5)
(269)		5	—	12/1	—	PL2/1 CU(T.13 Tr.) (5)
(270)		6	307	—	PL502/9 CU(*g*)	—
(271)		7	—	—	—	—
(272)		8	—	12/5, 14/2 } Strapped	—	PL2/5 CU(T.13 Tr.) (5) SR34 13 (5)
(273)		9	—	12/2	—	PL2/2 CU(T.13 Tr.) (5)
(274)		10	—	12/3	—	PL2/3 CU(T.13 Tr.) (5)
(275)		11	—	—	—	—
(276)		12	—	—	—	—
(277)		PL5/1	—	—	—	—
(278)		2	—	8/4	—	PL1/4 CU(T.13 Tr.) (5)
(279)		3	—	8/7	—	PL1/7 CU(T.13 Tr.) (5)
(280)		4	301	—	PL502/3 CU(*g*)	—
(281)		5	—	27/9	—	PL43/9 RA314
(282)		6	—	27/10	—	PL43/10 RA314
(283)		7	—	8/1	—	PL1/1 CU(T.13 Tr.) (5)
(284)		8	302	—	PL502/4 CU(*g*)	—
(285)		9	—	—	—	—
(286)		10	—	—	—	—
(287)		11	—	—	—	—
(288)		12	290	—	PL501/2 CU(*g*)	—
(289)	Control Unit Type 600	PL501/1	—	—	—	—
(290)	CU(*g*)	2	288	—	PL5/12 SA(*g*)	—
(291)		3	293 295	10/4 *Strapped* to 10/6 & 10/8	PL501/5 to PL501/7 CU(*g*)	—
(292)		4	—	—	—	—
(293)		5	291 295	10/6 *Strapped* to 10/4 & 10/8	PL501/3 & PL501/7 CU(*g*)	—
(294)		6	—	—	—	—
(295)		7	291 293	10/8 *Strapped* to 10/4 & 10/6	PL501/3 & PL501/5 CU(*g*)	—
(296)		8	—	—	—	—
(297)		9	—	8/9	—	PL1/9 CU(T.13 T) (5)
(298)		10	—	8/11	—	PL1/11 CU(T.13 T) (5)
(299)		11	—	8/8	—	PL1/8 CU (T.13 T) (5)
(300)		12	—	12/10	—	PL2/10 CU (T.13 T) (5)
(301)		PL502/3	280	—	PL5/4 SA(*g*)	—
(302)		4	284	—	PL5/8 SA(*g*)	—
(303)		5	—	—	—	—
(304)		6	—	12/11	—	PL2/11 CU(T.13 T) (5)
(305)		7	—	—	—	—
(306)		8	—	12/9	—	PL2/9 CU(T.13 T) (5)
(307)		9	270	—	PL4/6 SA(*g*)	—
(308)		10	—	—	—	—
(309)		11	—	—	—	—
(310)		12	—	—	—	—
(311)		PL503/1	—	8/10	—	PL1/10 CU(T.13 T) (5)
(312)		2	—	—	—	—
(313)		3	—	8/2	—	PL1/2 CU(T.13 T) (5)
(314)		4	—	6/3	—	Mains input
(315)		5	—	8/6	—	PL1/6 CU(T.13 T) (5)
(316)		6	—	6/4	—	Mains input
(317)		7	251	12/4, 14/3, 4/11 } Strapped	PL2/11 SA(*g*)	PL2/4 CU(T.13 T) (5) SRs 19 & 29 (13/5)
(318)		8	—	—	—	—
(319)		PL504/7	—	—	—	—
(320)		8	—	—	—	—
(321)		9	—	—	—	—
(322)		10	—	27/11	—	PL43/11 RA314
(323)		11	—	27/12	—	PL43/12 RA314
(324)		12	—	—	Earth	—
(325)	Amplifying Unit	PL1/1	—	—	Earth	—
(326)	(Pulse splitter Type 300	2	—	—	—	—
(327)		3	—	—	—	—
(328)		4	—	—	—	—
(329)		5	—	—	—	—
(330)		6	—	—	—	—
(331)		7	—	—	—	—

RACK ASSEMBLY TYPE 315—*(continued*

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(332)		8	—	—	—	—
(333)		9	—	—	—	—
(334)		10	—	—	—	—
(335)		11	—	6/5	—	Mains input
(336)		12	—	6/6	—	Mains input
(337)	Rectifier Unit Type 15	PL2/1	—	10/9	A.F.C (1)	—
(338)	(3)	2	—	—	—	—
(339)		3	—	10/10	A.F.C. (1)	—
(340)		4	—	10/11	A.F.C. (2)	—
(341)		5	—	10/12	A.F.C. (2)	—
(342)		6	—	—	—	—
(343)		7	—	—	—	—
(344)		8	—	—	—	—
(345)		9	—	—	—	—
(346)		10	—	—	—	—
(347)		11	—	—	—	—
(348)		12	—	—	—	—

ADDITIONAL CONNECTIONS REQUIRED

	23/10	—	PLAI/10 CU619(2)
	20/11	—	PL40/11 RA314
	23/10 *strapped to* 20/11		
	31/1 *strapped to* 21/1		
	31/3 *strapped to* 21/2		
	31/5 *strapped to* 25/2		
	25/2 *strapped to* PLAJ/2 CU619(2)		

Chapter 13

RACK ASSEMBLY TYPE 316

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Para.
Detailed description 1

ILLUSTRATION

Fig.
Disposition of units and plugs, schematic 1

		◀ Panel (blanking) 4639 (Stores Ref. 10D/19663)	Panel (blanking) 4639		
5	6	Panel (blanking) 4639	Panel (blanking) 4639	39	40
7	8			41	42
9	10			43	44
11	12	Panel (blanking) 4639	Panel (blanking) 4639	45	46
13	14			47	48
15	16			49	50
		(*f*)			
17	18	Amplifier (servo)	Panel (blanking) 4639	51	52
19	20	Type 297		53	54
21	22	(Stores Ref. 10U/16054) SA		55	56
		(*f*) and (*g*)			
23	24	Control unit	Panel (blanking) 4639	57	58
25	26	Type 600		59	60
27	28	(Stores Ref. 10L/16029) CU600		61	62
		(*g*)			
29	30	Amplifier (servo)	Panel (blanking) 4639 ▶	63	64
31	32	Type 297		65	66
33	34			67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 316 (Stores Ref. ◀10D/18810) is used on Stage 1 and 2 GCI/A, GCI/E/J and N stations and houses the control units for the radar Type 13 heads turning gear. Typical wiring is detailed in the accompanying Schedule 1, the two leads being identified by the letters (*f*) and (*g*). Site variations occur and these can be found in the appropriate schedules of limited issue. The necessary 50V supply and▶ phasing transformer connections for the operation of the units contained in the rack are obtained from a rectifier unit Type 17 housed in another type of rack assembly on the station.

(A.L.10, Sep. 55)

SCHEDULE 1

RACK ASSEMBLY TYPE 316—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Amplifier (servo) Type 297 SA(*f*)	PL1/1	—	17/11	—	—
(2)		2	—	17/12	—	—
(3)		3	—	24/1	—	—
(4)		4	—	—	Earth	—
(5)		5	—	—	—	—
(6)		6	—	24/2	—	—
(7)		7	—	21/7	—	—
(8)		8	—	—	—	—
(9)		9	—	17/9	—	—
(10)		10	—	21/8	—	—
(11)		11	—	21/6	—	—
(12)		12	—	17/10	—	—
(13)		PL2/1	—	—	—	—
(14)		2	—	—	—	—
(15)		3	—	—	—	—
(16)		4	—	19/5	—	—
(17)		5	—	19/4	—	—
(18)		6	—	19/7	—	—
(19)		7	—	19/6	—	—
(20)		8	—	19/9	—	—
(21)		9	—	19/8	—	—
(22)		10	—	19/10	—	—
(23)		11	89	21/4, *strapped to* 19/3 *and* 19/11	PL503/7 CU(*f*)	—
(24)		12	—	19/12	—	—
(25)		PL3/1	—	—	—	—
(26)		2	—	—	—	—
(27)		3	—	17/1	—	—
(28)		4	—	17/2	—	—
(29)		5	—	17/3	—	—
(30)		6	—	17/4	—	—
(31)		7	—	17/5	—	—
(32)		8	—	17/6	—	—
(33)		9	—	17/7	—	—
(34)		10	—	—	—	—
(35)		11	—	17/8	—	—
(36)		12	—	—	—	—
(37)		PL4/1	—	25/3	—	—
(38)		2	—	25/5	—	—
(39)		3	—	—	—	—
(40)		4	—	19/1	—	—
(41)		5	—	21/1	—	—
(42)		6	79	—	PL502/9 CU(*f*)	—
(43)		7	—	—	—	—
(44)		8	—	21/5, *strapped to* 19/2	—	—
(45)		9	—	21/2	—	—
(46)		10	—	21/3	—	—
(47)		11	—	—	—	—
(48)		12	—	—	—	—
(49)		PL5/1	—	—	—	—
(50)		2	—	25/4	—	—
(51)		3	—	25/7	—	—
(52)		4	73	—	PL502/3 CU(*f*)	—
(53)		5	—	27/1	—	—
(54)		6	—	27/2	—	—
(55)		7	—	25/1	—	—
(56)		8	74	—	PL502/4 CU(*f*)	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	—	—	—
(60)		12	62	—	PL501/2 CU(*f*)	—
(61)	Control unit Type 600 CU (*f*)	PL501/1	—	—	—	—
(62)		2	60	—	PL5/12 SA(*f*)	—
(63)		3	65	23/4, *strapped to* 23/6 *and* 23/8	PL501/5 and PL501/7 CU(*f*)	—
(64)		4	—	—	—	—
(65)		5	63	23/6, *strapped to* 23/4 *and* 23/8	PL501/3 and PL501/7 CU(*f*)	—
(66)		6	—	—	—	—
(67)		7	63	23/8, *strapped to* 23/4 *and* 23/6	PL501/3 and PL501/5 CU(*f*)	—
(68)		8	—	—	—	—
(69)		9	—	25/9	—	—
(70)		10	—	25/11	—	—
(71)		11	—	25/8	—	—
(72)		12	—	21/10	—	—

RACK ASSEMBLY TYPE 316—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(73)	Control unit Type 600	PL502/3	52	—	PL5/4 SA(*f*)	—
(74)	CU(*f*)	4	56	—	PL5/8 SA(*f*)	—
(75)		5	—	—	—	—
(76)		6	—	21/11	—	—
(77)		7	—	—	—	—
(78)		8	—	21/9	—	—
(79)		9	42	—	PL4/6 SA(*f*)	—
(80)		10	—	—	—	—
(81)		11	—	—	—	—
(82)		12	—	—	—	—
(83)		PL503/1	—	25/10	—	—
(84)		2	—	—	—	—
(85)		3	—	25/2	—	—
(86)		4	—	24/3	—	—
(87)		5	—	25/6	—	—
(88)		6	—	—	—	—
(89)		7	23	21/4, *strapped to* 19/3 *and* 19/11	PL2/11 SA(*f*)	—
(90)		8	—	24/4	—	—
(91)		PL504/7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	27/3	—	—
(95)		11	—	27/4	—	—
(96)		12	—	—	Earth	—
(97)	Amplifier (servo) Type 297	PL1/1	—	34/11	—	—
(98)	SA(*g*)	2	—	34/12	—	—
(99)		3	—	24/5	—	—
(100)		4	—	—	Earth	—
(101)		5	—	—	—	—
(102)		6	—	24/6	—	—
(103)		7	—	30/7	—	—
(104)		8	—	—	—	—
(105)		9	—	34/9	—	—
(106)		10	—	30/8	—	—
(107)		11	—	30/6	—	—
(108)		12	—	34/10	—	—
(109)		PL2/1	—	—	—	—
(110)		2	—	—	—	—
(111)		3	—	—	—	—
(112)		4	—	32/5	—	—
(113)		5	—	32/4	—	—
(114)		6	—	32/7	—	—
(115)		7	—	32/6	—	—
(116)		8	—	32/9	—	—
(117)		9	—	32/8	—	—
(118)		10	—	32/10	—	—
(119)		11	185	30/4 *strapped to* 32/3 *and* 32/11	PL503/7 CU(*g*)	—
(120)		12	—	32/12	—	—
(121)		PL3/1	—	—	—	—
(122)		2	—	—	—	—
(123)		3	—	34/1	—	—
(124)		4	—	34/2	—	—
(125)		5	—	34/3	—	—
(126)		6	—	34/4	—	—
(127)		7	—	34/5	—	—
(128)		8	—	34/6	—	—
(129)		9	—	34/7	—	—
(130)		10	—	—	—	—
(131)		11	—	34/8	—	—
(132)		12	—	—	—	—
(133)		PL4/1	—	26/3	—	—
(134)		2	—	26/5	—	—
(135)		3	—	—	—	—
(136)		4	—	32/1	—	—
(137)		5	—	30/1	—	—
(138)		6	175	—	PL502/9 CU(*g*)	—
(139)		7	—	—	—	—
(140)		8	—	30/5 *strapped to* 32/2	—	—
(141)		9	—	30/2	—	—
(142)		10	—	30/3	—	—
(143)		11	—	—	—	—
(144)		12	—	—	—	—

RACK ASSEMBLY TYPE 316—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(145)	Amplifier (servo) Type 297	PL5/1	—	—	—	—
(146)	SA(*g*)	2	—	26/4	—	—
(147)		3	—	26/7	—	—
(148)		4	169	—	PL502/3 CU(*g*)	—
(149)		5	—	27/5	—	—
(150)		6	—	27/6	—	—
(151)		7	—	26/1	—	—
(152)		8	170	—	PL502/4 CU(*g*)	—
(153)		9	—	—	—	—
(154)		10	—	—	—	—
(155)		11	—	—	—	—
(156)		12	158	—	PL501/2 CU(*g*)	—
(157)	Control unit	PL501/1	—	—	—	—
(158)	Type 600, CU(*g*)	2	156	—	PL5/12 SA(*g*)	—
(159)		3	161	28/4 *strapped to*	PL501/5 and	—
			163	28/6 *and* 28/8	PL501/7 CU(*g*)	—
(160)		4	—	—	—	—
(161)		5	159	28/6 *strapped to*	PL501/3 and	—
			163	28/4 *and* 28/8	PL501/7 CU(*g*)	—
		6	—	—	—	—
(162)		7	159	28/8 *strapped to*	PL501/3 and	—
(163)			161	28/4 *and* 28/6	PL501/5 CU(*g*)	—
(164)		8	—	—	—	—
(165)		9	—	26/9	—	
(166)		10	—	26/11	—	
(167)		11	—	26/8	—	—
(168)		12	—	30/10	—	—
(169)		PL502/3	148	—	PL5/4 SA(*g*)	—
(170)		4	152	—	PL5/8 SA(*g*)	—
(171)		5	—	—	—	—
(172)		6	—	30/11	—	—
(173)		7	—	—	—	—
(174)		8	—	30/9	—	—
(175)		9	138	—	PL4/6 SA(*g*)	—
(176)		10	—	—	—	—
(177)		11	—	—	—	—
(178)		12	—	—	—	—
(179)		PL503/1	—	26/10	—	—
(180)		2	—	—	—	—
(181)		3	—	26/2	—	—
(182)		4	—	—	—	—
(183)		5	—	26/6	—	—
(184)		6	—	—	—	—
(185)		7	119	30/4 *strapped to* 32/3 *and* 32/11	PL2/11 SA(*g*)	—
(186)		8	—	—	—	—
(187)		PL504/7	—	—	—	—
(188)		8	—	—	—	—
(189)		9	—	—	—	—
(190)		10	—	27/7	—	—
(191)		11	—	27/8	—	—
(192)		12	—	—	Earth	—

Chapter 14

RACK ASSEMBLY TYPE 317

LIST OF ILLUSTRATIONS

Fig.
Disposition of units and plugs, schematic 1

◄		Panel (blanking) 4639 (10D/19663)	Panel (blanking) 4639		
5	6	Panel (blanking) 4639	Panel (blanking) 4639	39	40
7	8			41	42
9	10			43	44
		Panel (blanking) 4639	Panel (blanking) 4639		
11	12			45	46
13	14			47	48
15	16			49	50
		(j)	(f)		
17	18	Amplifier (servo)	Amplifier (servo)	51	52
19	20	Type 297	Type 297	53	54
21	22	10U/16054 SA		55	56
		(h and j)	(f and g)		
23	24	Control unit	Control unit	57	58
25	26	Type 600	Type 600	59	60
27	28	10L/16029 CU600		61	62
		(h)	(g)		
29	30	Amplifier (servo)	Amplifier (servo)	63	64
31	32	Type 297	Type 297	65	66
33	34			67	68

Fig. 1. Disposition of units and plugs, schematic ►

►◄

SCHEDULE 1

Rack assembly Type 317—Wiring

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Amplifier (servo) Type 297	PL1/1	—	52/11	—	—
(2)	SA(*f*)	2	—	52/12	—	—
(3)		3	—	51/7	—	—
(4)		4	—	—	Earth	—
(5)		5	—	—	—	—
(6)		6	—	51/8	—	—
(7)		7	—	56/7	—	—
(8)		8	—	—	—	—
(9)		9	—	52/9	—	—
(10)		10	—	56/8	—	—
(11)		11	—	52/6	—	—
(12)		12	—	52/10	—	—
(13)		PL2/1	—	55/10	—	—
(14)		2	—	55/11	—	—
(15)		3	—	55/12	—	—
(16)		4	—	54/5	—	—
(17)		5	—	54/4	—	—
(18)		6	—	54/7	—	—
(19)		7	—	54/6	—	—
(20)		8	—	54/9	—	—
(21)		9	—	54/8	—	—
(22)		10	—	54/10 *strapped to* 55/2	—	—
(23)		11	89	56/4, *strapped to* 54/3 *and* 53/11	PL503/7 CU(*f*)	—
(24)		12	—	54/12	—	—
(25)		PL3/1	—	—	—	—
(26)		2	—	—	—	—
(27)		3	—	52/1	—	—
(28)		4	—	52/2	—	—
(29)		5	—	52/3	—	—
(30)		6	—	52/4	—	—
(31)		7	—	52/5	—	—
(32)		8	—	52/6	—	—
(33)		9	—	52/7	—	—
(34)		10	—	—	—	—
(35)		11	—	52/8	—	—
(36)		12	—	—	—	—
(37)		PL4/1	—	60/3	—	—
(38)		2	—	60/5	—	—
(39)		3	82	—	PL502/12 CU(*f*)	—
(40)		4	—	54/1	—	—
(41)		5	78	—	PL502/8 CU(*f*)	—
(42)		6	79	—	PL502/9 CU(*f*)	—
(43)		7	—	56/3	—	—
(44)		8	—	56/5 *strapped to* 54/2	—	—
(45)		9	76	—	PL502/6 CU(*f*)	—
(46)		10	—	60/12	—	—
(47)		11	—	—	—	—
(48)		12	—	—	—	—
(49)		PL5/1	—	55/4	—	—
(50)		2	—	60/4	—	—
(51)		3	—	60/7	—	—
(52)		4	73	—	PL502/3 CU(*f*)	—
(53)		5	—	22/1	—	—
(54)		6	—	22/2	—	—
(55)		7	—	58/2	—	—
(56)		8	74	—	PL502/4 CU(*f*)	—
(57)		9	75	—	PL502/5 CU(*f*)	—
(58)		10	80	—	PL502/10 CU(*f*)	—
(59)		11	81	—	PL502/11 CU(*f*)	—
(60)		12	62	60/6	PL501/2 CU(*f*)	—
(61)	Control unit Type 600	PL501/1	—	60/1	—	—
(62)	CU(*f*)	2	60	60/2	—	—
(63)		3	—	58/4	—	—
(64)		4	—	—	—	—
(65)		5	—	58/6	—	—
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	60/9	—	—
(70)		10	—	60/11	—	—
(71)		11	—	60/8	—	—
(72)		12	—	58/1	—	—
(73)		PL502/3	52	—	PL5/4 SA(*f*)	—
(74)		4	56	—	PL5/8 (SA(*f*)	—
(75)		5	57	—	PL5/9 SA(*f*)	—
(76)		6	45	—	PL4/9 SA(*f*)	—

RACK ASSEMBLY TYPE 317—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(77)	Control unit Type 600 CU(*f*)	PL502/7	—	—	—	—
(78)		8	41	—	PL4/5 SA(*f*)	—
(79)		9	42	—	PL4/6 SA(*f*)	—
(80)		10	58	—	PL5/10 SA(*f*)	—
(81)		11	59	—	PL5/11 SA(*f*)	—
(82)		12	39	—	PL4/3 SA(*f*)	—
(83)		PL503/1	—	60/10	—	—
(84)		2	—	—	—	—
(85)		3	—	58/3	—	—
(86)		4	—	51/3	—	—
(87)		5	—	58/5	—	—
(88)		6	—	—	—	—
(89)		7	23	56/4 *strapped to* 54/3 *and* 54/11	PL2/11 SA(*f*)	—
(90)		8	—	51/4	—	—
(91)		PL504/7	—	58/9	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	22/3	—	—
(95)		11	—	22/4	—	—
(96)		12	—	—	Earth	—
(97)	Amplifier (servo) Type 29/SA(*g*)	PL1/1	—	67/11	—	—
(98)		2	—	67/12	—	—
(99)		3	—	51/1	—	—
(100)		4	—	—	Earth	—
(101)		5	—	—	—	—
(102)		6	—	51/2	—	—
(103)		7	—	63/7	—	—
(104)		8	—	—	—	—
(105)		9	—	67/9	—	—
(106)		10	—	63/8	—	—
(107)		11	—	63/6	—	—
(108)		12	—	67/10	—	—
(109)		PL2/1	—	—	—	—
(110)		2	—	—	—	—
(111)		3	—	—	—	—
(112)		4	—	65/5	—	—
(113)		5	—	65/4	—	—
(114)		6	—	65/7	—	—
(115)		7	—	65/6	—	—
(116)		8	—	65/9	—	—
(117)		9	—	65/8	—	—
(118)		10	—	65/10	—	—
(119)		11	185	63/4 *strapped to* 65/3 *and* 65/11	PL503/7 CU(*g*)	—
(120)		12	—	65/12	—	—
(121)		PL3/1	—	—	—	—
(122)		2	—	—	—	—
(123)		3	—	67/1	—	—
(124)		4	—	67/2	—	—
(125)		5	—	67/3	—	—
(126)		6	—	67/4	—	—
(127)		7	—	67/5	—	—
(128)		8	—	67/6	—	—
(129)		9	—	67/7	—	—
(130)		10	—	—	—	—
(131)		11	—	67/8	—	—
(132)		12	—	—	—	—
(133)		PL4/1	—	59/3	—	—
(134)		2	—	59/5	—	—
(135)		3	—	—	—	—
(136)		4	—	65/1	—	—
(137)		5	—	63/1	—	—
(138)		6	175	—	PL502/9 CU(*g*)	—
(139)		7	—	—	—	—
(140)		8	—	63/5 *strapped to* 65/2	—	—
(141)		9	—	63/2	—	—
(142)		10	—	63/3	—	—
(143)		11	—	—	—	—
(144)		12	—	—	—	—
(145)		PL5/1	—	—	—	—
(146)		2	—	59/4	—	—
(147)		3	—	59/7	—	—
(148)		4	169	—	PL502/3 CU(*g*)	—
(149)		5	—	22/5	—	—
(150)		6	—	22/6	—	—

RACK ASSEMBLY TYPE 317—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(151)	Amplifier (servo) Type 297	PL5/7	—	59/1	—	—
(152)	SA(*g*)	8	170	—	PL502/4 CU(*g*)	—
(153)		9	—	—	—	—
(154)		10	—	—	—	—
(155)		11	—	—	—	—
(156)		12	158	—	PL501/2 CU(*g*)	—
(157)	Control unit Type 600	PL501/1	—	—	—	—
(158)	CU(*g*)	2	156	—	PL5/12 SA(*g*)	—
(159)		3	161	61/4 *strapped to* 61/6 *and* 61/8	PL501/5 and PL501/7 CU(*g*)	—
			163	—	—	—
(160)		4	—	—	—	—
(161)		5	159	61/6 *strapped to* 61/4 *and* 61/8	PL501/3 and PL501/7 CU(*g*)	—
			163	—	—	—
(162)		6	—	—	—	—
(163)		7	159	61/8 *strapped to* 61/4 *and* 61/6	PL501/3 and PL501/5 CU(*g*)	—
			161	—	—	—
(164)		8	—	—	—	—
(165)		9	—	59/9	—	—
(166)		10	—	59/11	—	—
(167)		11	—	59/8	—	—
(168)		12	—	63/10	—	—
(169)		PL502/3	148	—	PL5/4 SA(*g*)	—
(170)		4	152	—	PL5/8 SA(*g*)	—
(171)		5	—	—	—	—
(172)		6	—	63/11	—	—
(173)		7	—	—	—	—
(174)		8	—	63/9	—	—
(175)		9	138	—	PL4/6 SA(*g*)	—
(176)		10	—	—	—	—
(177)		11	—	—	—	—
(178)		12	—	—	—	—
(179)		PL503/1	—	59/10	—	—
(180)		2	—	—	—	—
(181)		3	—	59/2	—	—
(182)		4	—	—	—	—
(183)		5	—	59/6	—	—
(184)		6	—	—	—	—
(185)		7	119	63/4 *strapped to* 65/3 *and* 65/11	PL2/11 SA(*g*)	—
(186)		8	—	—	—	—
(187)		PL504/7	—	—	—	—
(188)		8	—	—	—	—
(189)		9	—	—	—	—
(190)		10	—	22/7	—	—
(191)		11	—	22/8	—	—
(192)		12	—	—	Earth	—
(193)	Amplifier (servo) Type 297	PL1/1	—	34/11	—	—
(194)	SA(*h*)	2	—	34/12	—	—
(195)		3	—	18/1	—	—
(196)		4	—	—	Earth	—
(197)		5	—	—	—	—
(198)		6	—	18/2	—	—
(199)		7	—	30/7	—	—
(200)		8	—	—	—	—
(201)		9	—	34/9	—	—
(202)		10	—	30/8	—	—
(203)		11	—	30/6	—	—
(204)		12	—	34/10	—	—
(205)		PL2/1	—	—	—	—
(206)		2	—	—	—	—
(207)		3	—	—	—	—
(208)		4	—	32/5	—	—
(209)		5	—	32/4	—	—
(210)		6	—	32/7	—	—
(211)		7	—	32/6	—	—
(212)		8	—	32/9	—	—
(213)		9	—	32/8	—	—
(214)		10	—	32/10	—	—
(215)		11	281	30/4 *strapped to* 32/3 *and* 32/11	PL503/7 CU(*h*)	—
(216)		12	—	32/12	—	—
(217)		PL3/1	—	—	—	—
(218)		2	—	—	—	—
(219)		3	—	34/1	—	—
(220)		4	—	34/2	—	—
(221)		5	—	34/3	—	—

RACK ASSEMBLY TYPE 317—WIRING (continued)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(222)	Amplifier (servo) Type 297	PL3/6	—	34/4	—	—
(223)	SA(h)	7	—	34/5	—	—
(224)		8	—	34/6	—	—
(225)		9	—	34/7	—	—
(226)		10	—	—	—	—
(227)		11	—	34/8	—	—
(228)		12	—	—	—	—
(229)		PL4/1	—	26/3	—	—
(230)		2	—	26/5	—	—
(231)		3	—	—	—	—
(232)		4	—	32/1	—	—
(233)		5	—	30/1	—	—
(234)		6	271	—	PL502/9 CU(h)	—
(235)		7	—	—	—	—
(236)		8	—	30/5 *strapped to* 32/2	—	—
(237)		9	—	30/2	—	—
(238)		10	—	30/3	—	—
(239)		11	—	—	—	—
(240)		12	—	—	—	—
(241)		PL5/1	—	—	—	—
(242)		2	—	26/4	—	—
(243)		3	—	26/7	—	—
(244)		4	265	—	PL502/3 CU(h)	—
(245)		5	—	22/9	—	—
(246)		6	—	22/10	—	—
(247)		7	—	26/1	—	—
(248)		8	266	—	PL502/4 CU(h)	—
(249)		9	—	—	—	—
(250)		10	—	—	—	—
(251)		11	—	—	—	—
(252)		12	254	—	PL501/2 CU(h)	—
(253)	Control unit Type 600	PL501/1	—	—	—	—
(254)	CU(h)	2	252	—	PL5/12 SA(h)	—
(255)		3	257	28/4 *strapped to* 28/6 *and* 28/8	PL501/5 and PL501/7 CU(h)	—
			259	—	—	—
(256)		4	—	—	—	—
(257)		5	255	28/6 *strapped to* 28/4 *and* 28/8	PL501/3 and PL501/7 CU(h)	—
			259	—	—	—
(258)		6	—	—	—	—
(259)		7	255	28/8 *strapped to* 28/4	PL501/3 and	—
			257	*and* 28/6	PL501/5 CU(h)	—
(260)		8	—	—	—	—
(261)		9	—	26/9	—	—
(262)		10	—	26/11	—	—
(263)		11	—	26/8	—	—
(264)		12	—	30/10	—	—
(265)		PL502/3	244	—	PL5/4 SA(h)	—
(266)		4	248	—	PL5/8 SA(h)	—
(267)		5	—	—	—	—
(268)		6	—	30/11	—	—
(269)		7	—	—	—	—
(270)		8	—	30/9	—	—
(271)		9	234	—	PL4/6 SA(h)	—
(272)		10	—	—	—	—
(273)		11	—	—	—	—
(274)		12	—	—	—	—
(275)		PL503/1	—	26/10	—	—
(276)		2	—	—	—	—
(277)		3	—	26/2	—	—
(278)		4	—	—	—	—
(279)		5	—	26/6	—	—
(280)		6	—	—	—	—
(281)		7	215	30/4 *strapped to* 32/3 *and* 32/11	PL2/11 SA(h)	—
(232)		8	—	—	—	—
(283)		PL504/7	—	—	—	—
(284)		8	—	—	—	—
(285)		9	—	—	—	—
(286)		10	—	22/11	—	—
(287)		11	—	22/12	—	—
(288)		12	—	—	Earth	—
(289)	Amplifier (servo) Type 297	PL1/1	—	17/11	—	—
(290)	SA(j)	2	—	17/12	—	—

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(291)	Amplifier (servo) Type 297	PL1/3	—	18/7	—	—
(292)	SA(*j*)—cont.	4	—	—	Earth	—
(293)		5	—	—	—	—
(294)		6	—	18/8	—	—
(295)		7	—	21/7	—	—
(296)		8	—	—	—	—
(297)		9	—	17/9	—	—
(298)		10	—	21/8	—	—
(299)		11	—	21/6	—	—
(300)		12	—	17/10	—	—
(301)		PL2/1	—	—	—	—
(302)		2	—	—	—	—
(303)		3	—	—	—	—
(304)		4	—	19/5	—	—
(305)		5	—	19/4	—	—
(306)		6	—	19/7	—	—
(307)		7	—	19/6	—	—
(308)		8	—	19/9	—	—
(309)		9	—	19/8	—	—
(310)		10	—	19/10	—	—
(311)		11	377	21/4 *strapped to* 19/3 *and* 19/11	PL503/7 CU(*j*)	—
(312)		12	—	19/12	—	—
(313)		PL3/1	—	—	—	—
(314)		2	—	—	—	—
(315)		3	—	17/1	—	—
(316)		4	—	17/2	—	—
(317)		5	—	17/3	—	—
(318)		6	—	17/4	—	—
(319)		7	—	17/5	—	—
(320)		8	—	17/6	—	—
(321)		9	—	17/7	—	—
(322)		10	—	—	—	—
(323)		11	—	17/8	—	—
(324)		12	—	—	—	—
(325)		PL4/1	—	25/3	—	—
(326)		2	—	25/5	—	—
(327)		3	—	—	—	—
(328)		4	—	19/1	—	—
(329)		5	—	21/1	—	—
(330)		6	367	—	PL502/9 CU(*j*)	—
(331)		7	—	—	—	—
(332)		8	—	21/5 *strapped to* 19/2	—	—
(333)		9	—	21/2	—	—
(334)		10	—	21/3	—	—
(335)		11	—	—	—	—
(336)		12	—	—	—	—
(337)		PL5/1	—	—	—	—
(338)		2	—	25/4	—	—
(339)		3	—	25/7	—	—
(340)		4	361	—	PL502/3 CU(*j*)	—
(341)		5	—	55/6	—	—
(342)		6	—	55/7	—	—
(343)		7	—	25/1	—	—
(344)		8	362	—	PL502/4 CU(*j*)	—
(345)		9	—	—	—	—
(346)		10	—	—	—	—
(347)		11	—	—	—	—
(348)		12	350	—	PL501/2 CU(*j*)	—
(349)	Control unit Type 600	PL501/1	—	—	—	—
(350)	CU(*j*)	2	348	—	PL5/12 SA(*j*)	—
(351)		3	353	23/4 *strapped to* 23/6 *and* 23/8	PL501/5 and PL501/7 CU(*j*)	—
			355	—	—	—
(352)		4	—	—	—	—
(353)		5	351	23/6 *strapped to* 23/4 *and* 23/8	PL501/3 and PL501/7	—
			355	—	—	—
(354)		6	—	—	—	—
(355)		7	351	23/8 *strapped to* 23/4 *and* 23/6	PL501/3 and PL501/5 CU(*j*)	—
			353	—	—	—
(356)		8	—	—	—	—
(357)		9	—	25/9	—	—
(358)		10	—	25/11	—	—
(359)		11	—	25/8	—	—
(360)		12	—	21/10	—	—
(361)		PL502/3	340	—	PL5/4 SA(*j*)	—
(362)		4	344	—	PL5/8 SA(*j*)	—

RACK ASSEMBLY TYPE 317—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(363)	Control unit Type 600	PL502/5	—	—	—	—
(364)	CU(*j*)	6	—	21/11	—	—
(365)		7	—	—	—	—
(366)		8	—	21/9	—	—
(367)		9	330	—	PL4/6 SA(*j*)	—
(368)		10	—	—	—	—
(369)		11	—	—	—	—
(370)		12	—	—	—	—
(371)		PL503/1	—	25/10	—	—
(372)		2	—	—	—	—
(373)		3	—	25/2	—	—
(374)		4	—	18/3	—	—
(375)		5	—	25/6	—	—
(376)		6	—	—	—	—
(377)		7	311	21/4 *strapped to* 19/3 *and* 19/11	PL2/11 SA(*j*)	—
(378)		8	—	18/4	—	—
(379)		PL504/7	—	—	—	—
(380)		8	—	—	—	—
(381)		9	—	—	—	—
(382)		10	—	55/8	—	—
(383)		11	—	55/9	—	—
(384)		12	—	—	Earth	—

ADDITIONAL CONNECTIONS REQUIRED

(385)	58/10 *strapped to* 62/11
(386)	55/1 *strapped to* 56/1
(387)	55/3 *strapped to* 56/2
(388)	55/5 *strapped to* 60/2

Chapter 15

(Note.—*This chapter supersedes that issued with A.L. 10*)

RACK ASSEMBLY TYPE 318

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	Para.
Detailed description	1

ILLUSTRATION

	Fig.
Disposition of units and plugs, schematic	1

		Panel (blanking) 4639 (Stores Ref. 10D/19663)	Panel (blanking) 4639		
5	6	Panel (blanking) 4639	Panel (blanking) 4639	39	40
7	8			41	42
9	10			43	44
11	12	Panel (blanking) 4639	Panel (blanking) 4639)	45	46
13	14			47	48
15	16			49	50
17	18	Rectifier unit	Transformer unit (selsyn)	51	52
19	20	Type 17	Type 175	53	54
21	22	(Stores Ref. 10D/17779) RU17	(Stores Ref. 10K/17102) TU175	55	56
		(1)			
23	24	Control unit	Amplifier	57	58
25	26	Type 600	Type A.3719	59	60
27	28	(Stores Ref. 10L/16029) CU600	(Stores Ref. 10U/16788) AmpCo	61	62
		(1)			
29	30	Amplifier (servo)	Panel (blanking) 4639	63	64
31	32	Type 297		65	66
33	34	(Stores Ref. 10U/16054) SA		67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 318 (Stores Ref. 10D/18812) is used in Stage 1, 2 and 3 GCI stations which have a *remote* radar Type 7 head. It is located in the radar Type 7 transmitter well and contains units solely concerned with the operation of the remote heads.

2. The rectifier unit Type 17, control unit Type 600 and amplifier (servo) Type 297 are used for turning control of the radar Type 79 cabin containing IFF equipment associated with radar Type 7.

3. The " tell-back " selsyn information from the radar Type 7 aerial cabin to the operations block is fed through transformer unit Type 175 where it is stepped up in the ratio of 1 : 3 to allow for the use of relatively high resistance leads. The energizing voltage for this selsyn is supplied from the operations block to the selsyn rotor through another transformer in this unit.

4. The 45 Mc/s IF from the heads is connected to amplifier Type A.3719, the output of which is fed via a coaxial line to the radar office. In the amplifiying unit the output from the IFF G-band receiver is combined with the output from the radar Type 7 receiver and the IF is used to convey all the signals information to the radar office.

5. The accompanying Schedule 1 shows typical cabling of this rack assembly.

(A.L. 27, May 57)

SCHEDULE 1

RACK ASSEMBLY TYPE 318—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
	Plugs 1, 2 and 3 not used					
(1)	Rectifier unit Type 17	PL4/1	—	—	—	—
(2)	RU17	2	—	—	—	—
(3)		3	—	—	—	—
(4)		4	—	—	—	—
(5)		5	—	—	—	—
(6)		6	66	—	PL5/6 SA(1)	
(7)		7	107	—	PL504/11 CU(1)	—
(8)		8	65	—	PL5/5 SA(1)	—
(9)		9	106	28/10	PL504/10 (CU 1)	—
(10)		10	—	—	Earth	—
(11)		11	—	22/1	—	—
(12)		12	—	22/2	—	—
(13)	Amplifier servo) Type 297	PL1/1	—	34/11	—	—
(14)	SA(1)	2	—	34/12	—	—
(15)		3	—	22/3	—	—
(16)		4	—	—	Earth	—
(17)		5	—	—	—	—
(18)		6	—	22/4	—	—
(19)		7	—	—	—	—
(20)		8	—	—	—	—
(21)		9	—	34/9	—	—
(22)		10	—	—	—	—
(23)		11	—	—	—	—
(24)		12	—	34/10	—	—
(25)		PL2/1	—	30/1	—	—
(26)		2	—	30/2	—	—
(27)		3	—	30/3	—	—
(28)		4	—	32/5	—	—
(29)		5	—	32/4	—	—
(30)		6	—	32/7	—	—
(31)		7	—	32/6	—	—
(32)		8	—	32/9	—	—
(33)		9	—	32/8	—	—
(34)		10	55	32/10 *strapped to* 28/3	PL4/7 SA(1)	—
(35)		11	101	28/5 *strapped to* 32/3 *and* 32/11	PL503/7 CU(1)	—
(36)		12	—	32/12	—	—
(37)		PL3/1	—	—	—	—
(38)		2	—	—	—	—
(39)		3	—	34/1	—	—
(40)		4	—	34/2	—	—
(41)		5	—	34/3	—	—
(42)		6	—	34/4	—	—
(43)		7	—	34/5	—	—
(44)		8	—	34/6	—	—
(45)		9	—	34/7	—	—
(46)		10	—	—	—	—
(47)		11	—	34/8	—	—
(48)		12	—	—	—	—
(49)		PL4/1	—	26/3	—	—
(50)		2	—	26/5	—	—
(51)		3	94	—	PL502/12 CU(1)	—
(52)		4	—	32/1	—	—
(53)		5	90	—	PL502/8 (CU(1)	—
(54)		6	91	—	PL502/9 (CU(1)	—
(55)		7	34	32/10 *strapped to* 28/3	PL2/10 SA(1)	—
(56)		8	—	32/2	—	—
(57)		9	88	—	PL502/6 (CU(1)	—
(58)		10	—	26/12	—	—
(59)		11	—	—	—	—
(60)		12	—	—	—	—
(61)		PL5/1	—	—	—	—
(62)		2	—	26/4	—	—
(63)		3	—	26/7	—	—
(64)		4	85	—	PL502/3 CU(1)	—
(65)		5	8	—	PL4/8 RU17	—
(66)		6	6	—	PL4/6 RU17	
(67)		7	—	28/2	—	—
(68)		8	86	—	PL502/4 CU(1)	—
(69)		9	87	—	PL502/5 CU(1)	—
(70)		10	92	—	PL502/10 CU(1)	—
(71)		11	93	—	PL502/11 CU(1)	—
(72)		12	74	26/6	PL501/2 CU(1)	

RACK ASSEMBLY TYPE 318—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(73)	Control unit Type 600	PL501/1	—	—	—	—
(74)	CU(1)	2	72	26/6	PL5/12 SA(1)	—
(75)		3	—	28/4	—	—
(76)		4	—	—	—	—
(77)		5	—	28/6	—	—
(78)		6	—	—	—	—
(79)		7	—	28/8	—	—
(80)		8	—	—	—	—
(81)		9	—	26/9	—	—
(82)		10	—	26/11	—	—
(83)		11	—	26/8	—	—
(84)		12	—	28/1	—	—
(85)		PL/502/3	64	—	PL5/4 SA(1)	—
(86)		4	68	—	PL5/8 SA(1)	—
(87)		5	69	—	PL5/9 SA(1)	—
(88)		6	57	—	PL4/9 SA(1)	—
(89)		7	—	—	—	—
(90)		8	53	—	PL4/5 SA(1)	—
(91)		9	54	—	PL4/6 SA(1)	—
(92)		10	70	—	PL5/10 SA(1)	—
(93)		11	71	—	PL5/11 SA(1)	—
(94)		12	51	—	PL4/3 SA(1)	—
(95)		PL503/1	—	26/10	—	—
(96)		2	—	—	—	—
(97)		3	—	28/11	—	—
(98)		4	—	22/5	—	—
(99)		5	—	28/12	—	—
(100)		6	—	—	—	—
(101)		7	35	28/5 *strapped to* 32/3 *and* 32/11	PL2/11 SA(1)	—
(102)		8	—	22/6	—	—
(103)		PL504/7	—	28/9	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	9	—	PL4/9 RU17	—
(107)		11	7	—	PL4/7 RU17	—
(108)		12	—	—	Earth	—
(109)	Transformer unit (selsyn)	PL801/1	—	18/1	—	—
(110)	Type 175 TU	2	—	18/2	—	—
(111)		3	—	18/3	—	—
(112)		4	—	18/4	—	—
(113)		5	—	18/5	—	—
(114)		6	—	—	—	—
(115)		PL802/13	—	18/6	—	—
(116)		14	—	18/7	—	—
(117)		15	—	18/8	—	—
(118)		16	—	—	—	—
(119)		PL803/13	—	18/11	—	—
(120)		14	—	18/12	—	—
(121)	Amplifier Type A.3719 (AU)	PL1/1	—	—	Earth	—
(122)		2	—	—	—	—
(123)		3	—	—	—	—
(124)		4	—	—	—	—
(125)		5	—	—	—	—
(126)		6	—	—	—	—
(127)		7	—	—	—	—
(128)		8	—	—	—	—
(129)		9	—	—	—	—
(130)		10	—	—	—	—
(131)		11	—	22/7	—	—
(132)		12	—	22/8	—	—

COAXIAL CABLE CONNECTIONS

(133)	Connections to Amplifier Type A.3719	SK1 *to* SK1 *on* Attenuator T.113 SK2 *to* SK2 AmpIFF	—	—
(134)	Connections to Attenuator Type T.113	SK1 *to* SK1 AU SK2 *to* SK1 A	—	—

Note.—*Since this Chapter was prepared it has been found necessary to add one attenuator Type* 113 (*Stores Ref.* 10L/16055) *to this rack assembly. This attenuator is described in AIR PUBLICATION* 2527E.
Wiring for amplifier (*IFF*) *Type A.*3677 *originally included, is now omitted. This also applies to rack Type* 318*A.*

SCHEDULE 1

RACK ASSEMBLY TYPE 319—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Amplifier (NBW) Type A.3679	PL9/1	—	—	Earth	—
(2)	AmpNBW(*e*)	2	14	—	PL10/2AmpIF	—
(3)		3	15	—	PL10/3AmpIF	—
(4)		4	—	67/5	—	CU619 PL AE5 NBW
(5)		5	—	—	—	—
(6)		6	—	—	—	—
(7)		7	—	—	—	—
(8)		8	—	—	—	—
(9)		9	—	—	—	—
(10)		10	—	—	—	—
(11)		11	—	68/1	—	Mains input
(12)		12	—	68/2	—	Mains input
(13)	Amplifier (IF and Video)	PL10/1	—	—	Earth	—
(14)	Type A.3680, AmpIF(*e*)	2	2	—	PL9/2AmpNBW(*e*)	—
			26	—	PL11/2AmpAJ(*d*) and (*e*)	—
(15)		3	3	—	PL9/3AmpNBW(*e*)	—
			27	—	PL11/3AmpAJ(*d*) and (*e*)	—
(16)		4	—	67/2	—	CU619 PL AK2 IAGC
(17)		5	—	—	—	—
(18)		6	—	—	—	—
(19)		7	—	—	—	—
(20)		8	—	—	—	—
(21)		9	—	—	—	—
(22)		10	—	—	—	—
(23)		11	—	68/3	—	Mains input
(24)		12	—	68/4	—	Mains input
(25)	Amplifier (AJ and Video)	PL11/1	—	—	Earth	—
(26)	Type 3681, AmpAJ(*d*) and (*e*)	2	14	—	PL10/2AmpIF(*e*)	—
			50	—	PL1/2 RUI5(1)	—
(27)		3	15	—	PL10/3AmpIF(*e*)	—
			51	—	PL1/3 RUI5(1)	—
(28)		4	—	67/4	—	CU619 PL AK4 STC(*e*)
(29)		5	—	67/3	—	CU619 PL AK3 LPF(*e*)
(30)		6	—	65/4	—	CU618 PL AH4 STC(*d*)
(31)		7	—	65/3	—	CU618 PL AH3 LPF(*d*)
(32)		8	—	—	—	—
(33)		9	—	—	—	—
(34)		10	—	—	—	—
(35)		11	—	68/5	—	Mains input
(36)		12	—	68/6	—	Mains input
(37)	Amplifying unit (pulse	PL1/1	—	—	Earth	—
(38)	splitter) Type 300, AmpPS	2	—	—	—	—
(39)		3	—	—	—	—
(40)		4	—	—	—	—
(41)		5	—	—	—	—
(42)		6	—	—	—	—
(43)		7	—	—	—	—
(44)		8	—	—	—	—
(45)		9	—	—	—	—
(46)		10	—		—	—
(47)		11	—	68/7	—	Mains input
(48)		12	—	68/8	—	Mains input
(49)	Rectifier Type 15, RU15(1)	PL1/1	—	—	Earth	—
(50)		2	26	61/1, 61/2, 61/3, 61/4, 61/5, 61/6, *strapped together and* 63/6	PL11/2AmpAJ(*d*) and(*e*)	50V output (+ *ve*)
(51)		3	27	61/7, 61/8, 61/9, 61/10, 61/11, 61/12 *strapped together*	PL11/3AmpAJ(*d*) and (*e*)	50V output (− *ve*)
(52)		4	—	63/1, 63/2, 63/3, 63/4, 63/5, 63/6, *strapped together and* 61/6	—	50V output (+ *ve*)
(53)		5	—	63/7, 63/8, 63/9, 63/10, 63/11, 63/12 *strapped together*	—	50V output (− *ve*)
(54)		6	—	—	—	—
(55)		7	—	67/7, 67/9, 65/7, *and* 65/9, *strapped together*	—	AFC (Earth)
(56)						
(57)		8	—	—	—	—
		9	—	—	—	—

RACK ASSEMBLY TYPE 319—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(58)	Rectifier Type 15, RU15(1)	PL1/10	—	—	—	—
(59)		11	—	68/9	—	Mains input
(60)		12	—	68/10	—	Mains input
(61)		PL2/1	—	67/11	—	AFC(*s*)
(62)		2	—	—	—	—
(63)		3	—	67/8	—	AFC(*s*)
(64)		4	—	67/10	—	AFC(1)
(65)		5	—	67/12	—	AFC(1)
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	65/6	—	AFC(2)
(69)		9	—	—	—	—
(70)		10	—	65/8	—	AFC(2)
(71)		11	—	65/10	—	AFC(3)
(72)		12	—	65/12	—	AFC(3)
(73)	Rectifier unit Type 15	PL1/1	—	—	Earth	—
(74)	RU15(3)	2	—	64/1, 64/2, 64/3, 64/4, 64/5, 64/6, *strapped together and* 66/6	—	50V output (+ *ve*)
(75)		3	—	64/7, 64/8, 64/9, 64/10, 64/11, 64/12, *strapped together*	—	50V output (— *ve*)
(76)		4	—	66/1, 66/2, 66/3, 66/4, 66/5, 66/6, *strapped together and* 64/6	—	50V output (+ *ve*)
(77)		5	—	66/7, 66/8, 66/9, 66/10, 66/11, 66/12, *strapped together*	—	50V output (— *ve*)
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	68/11	—	Mains input
(84)		12	—	68/12	—	Mains input
		PL2 not used				
(85)	Amplifier (NBW) Type A.3679	PL9/1	—	—	Earth	—
(86)	AmpNBW(*d*)	2	98	—	PL10/2AmpIF(*d*)	—
(87)		3	99	—	PL10/3AmpIF(*d*)	—
(88)		4	—	65/5	—	CU618 PL AH5 NBW
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	33/1	—	Mains input
(96)		12	—	33/2	—	Mains input
(97)	Amplifier (IF and Video)	PL10/1	—	—	Earth	—
(98)	Type A.3680, AmpIF(*d*)	2	86	—	PL9/2AmpNBW(*d*)	—
			110	—	PL1/2 RU15(2)	—
(99)		3	87	—	PL9/3AmpNBW(*d*)	—
			111	—	PL1/3 RU15(2)	—
(100)		4	—	65/2	—	CU618 PL AH2 IAGC
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	33/3	—	Mains input
(108)		12	—	33/4	—	Mains input
(109)	Rectifier unit Type 15	PL1/1	—	—	Earth	—
(110)	RU15(2)	2	98	29/1, 29/2, 29/3 29/4, 29/5, 29/6, *strapped together and* 31/6	PL10/2AmpIF(*d*)	50V output (+ *ve*)
(111)		3	99	29/7, 29/8, 29/9, 29/10, 29/11, 29/12, *strapped together*	PL10/3AmpIF(*d*)	50V output (— *ve*)

RACK ASSEMBLY TYPE 319—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(112)	**Rectifier unit Type 15 RU15(2)**	PL1/4	—	31/1, 31/2, 33/3, 33/4, 31/5, 31/6, *strapped together, and* 29/6	—	50V output (+ *ve*)
(113)		5	—	31/7, 31/8, 31/9 31/10, 31/11, 31/12 *strapped together*	—	50V output (— *ve*)
(114)		6	—	—	—	—
(115)		7	—	—	—	—
(116)		8	—	—	—	—
(117)		9	—	—	—	—
(118)		10	—	—	—	—
(119)		11	—	33/7	—	Mains input
(120)		12	—	33/8	—	Mains input
		PL2 not used				
(121)	**Selection unit Type 7Ae Type 33 SU**	PL/1	—	—	Earth	—
(122)		2	—	—	—	—
(123)		3	—	—	—	—
(124)		4	—	—	—	—
(125)		5	—	—	—	—
(126)		6	—	—	—	—
(127)		7	—	32/9	—	Cap. Sw. " C " Sine wave
(128)		8	—	32/10	—	Cap. Sw. " O " Sine wave
(129)		9	—	32/7	—	Cap. Sw. " A " Sine wave
(130)		10	—	32/8	—	Cap. Sw. " B " Sine wave
(131)		11	—	33/9	—	Mains input
(132)		12	—	33/10	—	Mains input
(133)		—	—	67/1 *strapped to* 61/5	—	—
(134)		—	—	67/6 *strapped to* 61/7	—	—

CO-AXIAL CABLE CONNECTIONS

(135)	SK2 AmpNBW(*d*)	—SK4 AmpIF(*d*)
(136)	SK5 AmpIF(*d*)	—SK6 AmpAJ(*d*) and (*e*)
(137)	SK7 AmpAJ(*d*) and (*e*)	—SK6 AmpIF(*d*)
(138)	SK2 AmpNBW(*e*)	—SK4 AmpIF(*e*)
(139)	SK5 AmpIF(*e*)	—SK1 AmpAJ(*d*) and (*e*)
(140)	SK2 AmpAJ(*d*) and (*e*)	—SK6 AmpIF(*e*)
(141)	SK1 SU	—Dis. Box No. 3
(142)	SK5 SU	—Dis. Box No. 4
(143)	SK6 SU	—Dis. Box No. 1
(144)	SK7 SU	—Dis. Box No. 2

Chapter 17

RACK ASSEMBLY TYPE 320

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Para.

Detailed description 1

ILLUSTRATION

Fig.

Disposition of units and plugs, schematic 1

			Amplifying unit (pulse) 4279 (Stores Ref. 10U/16838) AmpP	(c) Amplifier (NBW) Type A.3679 (Stores Ref. 10U/16026) AmpNBW		
	5	6	(d) Amplifier (NBW) Type A.3679	(c) Amplifier (IF and Vid.) Type A.3680 (Stores Ref. 10U/16027) AmpIF	39	40
	7	8			41	42
	9	10			43	44
	11	12	(d) Amplifier (IF and Vid.) Type A.3680	(c) and (d) Amplifier (AJ and Vid.) Type A.3681 (Stores Ref. 10U/16028) AmpAJ	45	46
	13	14			47	48
	15	16			49	50
	17	18	Amplifier Type A.3720 (Stores Ref. 10U/16789)	Amplifying unit (pulse splitter) Type 300 (Stores Ref. 10U/16057) AmpPS	51	52
Dis. Box 1.	19	20			53	54
Dis. Box 2.	21	22			55	56
			(2)	(1)		
Dis. Box 3.	23	24	Rectifier unit Type 15 (Stores Ref. 10D/17761) RU15	Rectifier unit Type 15	57	58
Dis. Box 4.	25	26			59	60
	27	28			61	62
	29	30	Selector unit (Type 7 aerial) Type 33 (Stores Ref. 10D/18570) SU33	(3) Rectifier unit Type 15	63	64
	31	32			65	66
	33	34			67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 320 (Stores Ref. 10D/18814) is almost identical to the rack assembly Type 319 but has, in addition, amplifier Type A.3720. The rack is employed on Stage 1 and 2 GCI stations which have remote radar heads Type 7. The new unit is used to convert signals from these heads to the normal IF before passing them to the amplifiers on the rack. The accompanying Schedule 1 gives details of the rack wiring, the letter (*d*) indicating the units used for radar Type 7 signals and (*c*) denotes units in the path of the output from radar head Type 54. Distribution boxes are mounted in the spaces allocated to plugs 19 to 26 as shown in fig. 1.

2. Amplifying unit (pulse) Type 4279 is described in Chap. 10, Sect. 2 of this AP. It is connected to transformer unit Type 4278 located in rack assembly Type 183 situated in the remote well. It deals with transformation and amplification of sync. pulses carried over G.P.O. cables.

SCHEDULE 1

RACK ASSEMBLY TYPE 320—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Amplifier (NBW) Type A.3679	PL9/1	—	—	Earth	—
(2)	AmpNBW(*c*)	2	14	—	PL10/2AmpIF(*c*)	IF and Vid.
(3)		3	15	—	PL10/3AmpIF(*c*)	—
(4)		4	—	67/5	—	CU621 PLAE5 NBW
(5)		5	—	—	—	—
(6)		6	—	—	—	—
(7)		7	—	—	—	—
(8)		8	—	—	—	—
(9)		9	—	—	—	—
(10)		10	—	—	—	—
(11)		11	—	68/1	—	Mains input
(12)		12	—	68/2	—	Mains input
(13)	Amplifier (IF and Vid.)	PL10/1	—	—	Earth	—
(14)	Type A.3680, AmpIF(*c*)	2	2	—	PL9/2AmpNBW(*c*)	—
			26	—	PL11/2AmpAJ (*c*) and (*d*)	—
(15)		3	3	—	PL9/3AmpNBW(*c*)	—
			27	—	PL11/3AmpAJ (*c*) and (*d*)	—
(16)		4	—	67/2	—	CU621 PLAE2 IAGC
(17)		5	—	—	—	—
(18)		6	—	—	—	—
(19)		7	—	—	—	—
(20)		8	—	—	—	—
(21)		9	—	—	—	—
(22)		10	—	—	—	—
(23)		11	—	68/3	—	Mains input
(24)		12	—	68/4	—	Mains input
(25)	Amplifier (AJ and Vid.)	PL11/1	—	—	Earth	—
(26)	Type A.3681, AmpAJ (*c*) and (*d*)	2	14	—	PL10/2AmpIF(*c*)	—
			50	—	PL1/2 RU15(1)	—
(27)		3	15	—	PL10/3AmpIF(*c*)	—
			51	—	PL1/3 RU15(1)	—
(28)		4	—	67/4	—	CU621 PLAE4 STC(*a*)
(29)		5	—	67/3	—	CU621 PLAE3 LPF(*c*)
(30)		6	—	65/4	—	CU618 PLAH4 STC(*d*)
(31)		7	—	65/3	—	CU618 PLAH3 LPF(*d*)
(32)		8	—	—	—	—
(33)		9	—	—	—	—
(34)		10	—	—	—	—
(35)		11	—	68/5	—	Mains input
(36)		12	—	68/6	—	Mains input
(37)	Amplifying unit (pulse	PL1/1	—	—	Earth	—
(38)	splitter) Type 300, AmpPS	2	—	—	—	—
(39)		3	—	—	—	—
(40)		4	—	—	—	—
(41)		5	—	—	—	—
(42)		6	—	—	—	—
(43)		7	—	—	—	—
(44)		8	—	—	—	—
(45)		9	—	—	—	—
(46)		10	—	—	—	—
(47)		11	—	68/7	—	Mains input
(48)		12	—	68/8	—	Mains input
(49)	Rectifier unit Type 15	PL1/1	—	—	Earth	—
(50)	RU15(1)	2	26	61/1, 61/2, 61/3, 61/4, 61/5, 61/6, *strapped together and* 63/6	PL11/2AmpAJ (*c*) and (*d*)	50V output (+ *ve*)
(51)		3	27	61/7, 61/8, 61/9, 61/10, 61/11, 61/12 *strapped together*	PL11/3AmpAJ	50V output (— *ve*)
(52)		4	—	63/1, 63/2, 63/3, 63/4, 63/5, 63/6, *strapped together and* 61/6	—	50V output (+ *ve*)
(53)		5	—	63/7, 63/8, 63/9, 63/10, 63/11, 63/12 *strapped together*	—	50V output (— *ve*)
(54)		6	—	—	—	—
(55)		7	—	67/7, 67/9, 65/7, 65/9, *strapped together*	—	AFC (earth)
(56)		8	—	—	—	—
(57)		9	—	—	—	—

RACK ASSEMBLY TYPE 320—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(58)	Rectifier unit Type 15	PL1/10	—	—	—	—
(59)	RU15(1)	11	—	68/9	—	Mains input
(60)		12	—	68/10	—	Mains input
(61)		PL2/1	—	67/6	—	AFC(*c*)
(62)		2	—	—	—	—
(63)		3	—	67/8	—	AFC(*c*)
(64)		4	—	67/10	—	AFC(1)
(65)		5	—	67/12	—	AFC(1)
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	65/6	—	AFC(2)
(69)		9	—	—	—	—
(70)		10	—	65/8	—	AFC(2)
(71)		11	—	65/10	—	AFC(3)
(72)		12	—	65/12	—	AFC(3)
(73)	Rectifier unit Type 15	PL1/1	—	—	Earth	—
(74)	RU15(3)	2	—	64/1, 64/2, 64/3, 64/4, 64/5, 64/6, *strapped and* 66/6	—	50V output (+ *ve*)
(75)		3	—	64/7, 64/8, 64/9, 64/10, 64/11, 64/12 *strapped*	—	50V output (— *ve*)
(76)		4	—	66/1, 66/2, 66/3, 66/4, 66/5, 66/6, *strapped and* 64/6	—	50V output (+ *ve*)
(77)		5	—	66/7, 66/8, 66/9, 66/10, 66/11, 66/12, *strapped*	—	—
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	68/11	—	Mains input
(84)		12	—	68/12	—	Mains input
		PL2 not used				
(85)	Amplifier (NBW) Type	PL9/1	—	—	Earth	—
	A.3679, AmpNBW(*d*)	2	98	—	PL10/2AmpIF(*d*)	—
(86)			110	—	PL1/2AU	—
(87)		3	99	—	PL10/3AmpIF(*d*)	—
			111	—	PL1/3AU	—
(88)		4	—	65/5	—	CU618 PLAH5 NBW
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	33/1	—	Mains input
(96)		12	—	33/2	—	Mains input
(97)	Amplifier (IF and Vid.)	PL10/1	—	—	Earth	—
(98)	Type A.3680, AmpIF(*d*)	2	86	—	PL9/2AmpNBW(*d*)	—
			122	—	PL1/2 RU15(2)	—
(99)		3	87	—	PL9/3AmpNBW(*d*)	—
			123	—	PL1/3 RU15(2)	—
(100)		4	—	65/2	—	CU618 PLAH21 AGC
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	33/3	—	Mains input
(108)		12	—	33/4	—	Mains input
(109)	Amplifier Type A.3720(AU)	PL1/1	—	—	Earth	—
(110)		2	122	—	PL1/2 RU15(2)	—
			86	—	PL10/2AmpNWB	—
(111)		3	123	—	PL1/3 RU15(2)	—
			87	—	PL10/2AmpNWB	—
(112)		4	—	2[illegible]/4	—	IFF Rx (T.14)
(113)		5	—	/5	—	IFF Tx (T.7)
(114)		6	—	/6	—	IFF Tx (T.14)
(115)		7	—	/7	—	RA184 (T.14 Sw.)
(116)		8	—	/8	—	IFF GAIN
(117)		9	—	/9	—	RA184 (T.7 Sw.)
(118)		10	—	—	—	—

RACK ASSEMBLY TYPE 320—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(119)	Amplifier Type A.3720—*contd.*	PL1/11	—	33/5	—	Mains input
(120)		12	—	33/6	—	Mains input
(121)	Rectifier unit Type 15	PL1/1	110	—	PL1/2AU	—
(122)	RU15(2)	2	98	29/1, 29/2, 29/3, 29/4, 29/5, 29/6, *strapped together and* 31/6	PL10/2AmpIF(*d*)	50V output (+ *ve*)
(123)		3	99	29/7, 29/8, 29/9, 29/10, 29/11, 29/12 *strapped together*	PL10/3AmpIF(*d*)	50V output (— *ve*)
			111	—	PL1/3AU	—
(124)		4	—	31/1, 31/2, 31/3, 31/4, 31/5, 31/6, *strapped together and* 29/6	—	50V output (+ *ve*)
(125)		5	—	31/7, 31/8, 31/9, 31/10, 31/11, 31/12 *strapped together*	—	50V output (+ *ve*)
(126)		6	—	—	—	—
(127)		7	—	—	—	—
(128)		8	—	—	—	—
(129)		9	—	—	—	—
(130)		10	—	—	—	—
(131)		11	—	33/7	—	Mains input
(132)		12	—	33/8	—	Mains input
		PL2 not used				
(133)	Selector unit Type 33, SU33	PL11/1	—	—	Earth	—
(134)		2	—	—	—	—
(135)		3	—	—	—	—
(136)		4	—	—	—	—
(137)		5	—	—	—	—
(138)		6	—	—	—	—
(139)		7	—	32/9	—	Cap. Sw. "C" line wave
(140)		8	—	32/10	—	Cap. Sw. "D" line wave
(141)		9	—	32/7	—	Cap. Sw. "A" line wave
(142)		10	—	32/8	—	Cap. Sw. "B" line wave
(143)		11	—	33/9	—	Mains input
(144)		12	—	33/10	—	Mains input
(145)	Amplifying unit (pulse) Type 4279 (AmpP)	PL1/1	—	—	—	—
(146)		5	—	32/1 } Twisted pair to P.O. cable		
(147)		6	—	32/2 }		
(148)		11	—	33/11 } Twisted pair for AC mains.		
(149)		12	—	33/12 }		

CO-AXIAL CABLE CONNECTIONS

(150)	SK2 AmpNBW(*d*) *to* SK4 AmpIF(*d*)
(151)	SK5 AmpIF(*d*) *to* SK6 AmpAJ(*c*) and (*d*)
(152)	SK7 AmpAJ(*c*) and (*d*) *to* SK6 AmpIF(*d*)
(153)	SK2 AmpNBW(*c*) *to* SK4 AmpIF(*c*)
(154)	SK5 AmpIF(*c*) *to* SK1 AmpAJ(*c*) and (*d*)
(155)	SK2 AmpAJ(*c*) and (*d*) *to* SK6 AmpIF(*c*)
(156)	SK1 SU *to* Dis. Box No. 3 ("C" output)
(157)	SK5 SU *to* Dis. No. 4 ("D" output)
(158)	SK6 SU *to* Dis. Box No. 1 ("A" output)
(159)	SK7 SU *to* Dis. Box No. 2 ("B" output)
(160)	SK2 AU *to* SK4 AmpAJ(*c*) and (*d*)

Chapter 18

RACK ASSEMBLY TYPE 321

►◄

ILLUSTRATION

Fig.
Disposition of units and plugs, schematic 1

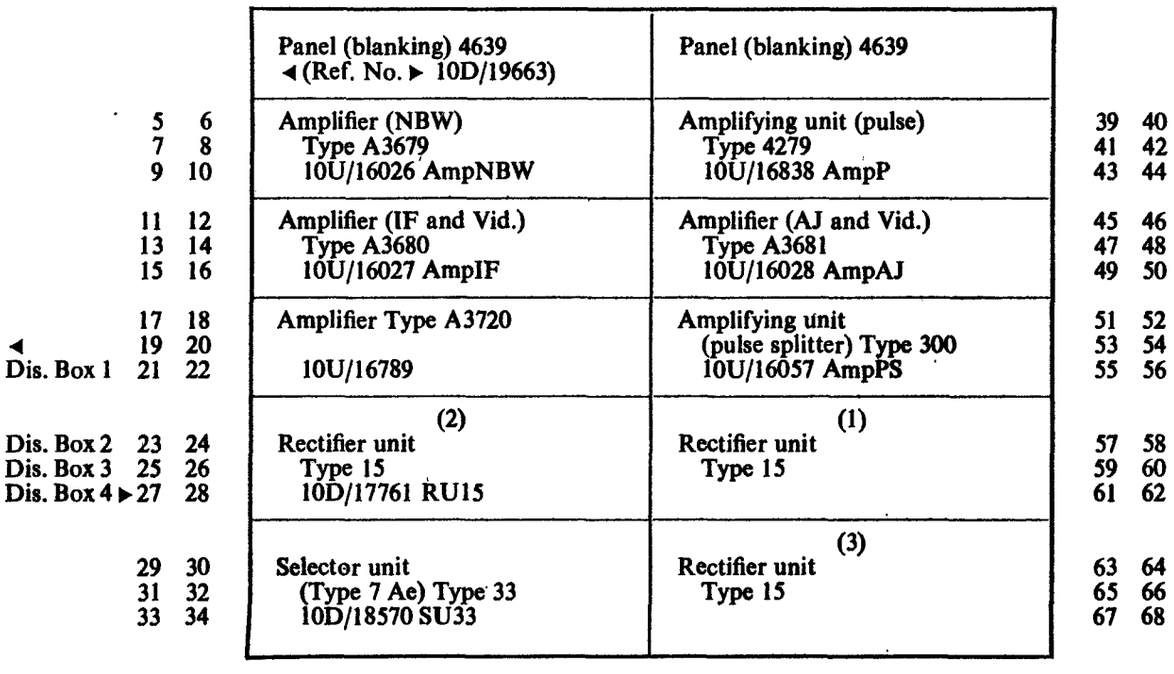


Fig. 1. Disposition of units and plugs, schematic

►◄

SCHEDULE 1

Rack assembly Type 321—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(1)	Amplifier (AJ and Video)	PL11/1	—	—	Earth	—
(2)	Type A.3681, AmpAJ	2	62	—	PL9/2 AmpNBW	—
			26	—	PL1/2 RU15(1)	—
(3)		3	63	—	PL9/3 AmpNBW	—
			27	—	PL1/3 RU15(1)	—
(4)		4	—	65/4	—	CU618 PLAH4 STC
(5)		5	—	65/3	—	CU618 PLAH3 LPF
(6)		6	—	—	—	—
(7)		7	—	—	—	—
(8)		8	—	—	—	—
(9)		9	—	—	—	—
(10)		10	—	—	—	—
(11)		11	—	68/5	—	Mains input
(12)		12	—	68/6	—	Mains input
(13)	Amplifying unit (pulse	PL1/1	—	—	Earth	—
(14)	splitter) Type 300 AmpPS	2	—	—	—	—
(15)		3	—	—	—	—
(16)		4	—	—	—	—
(17)		5	—	—	—	—
(18)		6	—	—	—	—
(19)		7	—	—	—	—
(20)		8	—	—	—	—
(21)		9	—	—	—	—
(22)		10	—	—	—	—
(23)		11	—	68/7	—	Mains input
(24)		12	—	68/8	—	Mains input
(25)	Rectifier unit Type 15	PL1/1	—	—	Earth	—
(26)	RU15(1)	2	2	61/1, 61/2, 61/3, 61/4, 61/5, 61/6, *strapped together and* 63/6	PL11/2AmpAJ	50V output (+ *ve*)
(27)		3	3	61/7, 61/8, 61/9, 61/10, 61/11, 61/12, *strapped together*	PL11/3AmpAJ	50V output (− *ve*)
(28)		4	—	63/1, 63/2, 63/3, 63/4, 63/5, 63/6, *strapped together and* 61/6	—	50V output (+ *ve*)
(29)		5	—	63/7, 63/8, 63/9, 63/10, 63/11, 63/12, *strapped together*	—	50V output (− *ve*)
(30)		6	—	—	—	—
(31)		7	—	67/3, 67/7 *and* 67/9, *strapped together*	—	AFC (earth)
(32)		8	—	—	—	—
(33)		9	—	—	—	—
(34)		10	—	—	—	—
(35)		11	—	68/9	—	Mains input
(36)		12	—	68/10	—	Mains input
(37)		PL2/1	—	67/6	—	AFC(1)
(38)		2	—	—	—	—
(39)		3	—	67/8	—	AFC(1)
(40)		4	—	67/10	—	AFC(2)
(41)		5	—	67/12	—	AFC(2)
(42)		6	—	—	—	—
(43)		7	—	—	—	—
(44)		8	—	67/2	—	AFC(3)
(45)		9	—	—	—	—
(46)		10	—	67/4	—	AFC(3)
(47)		11	—	—	—	—
(48)		12	—	—	—	—
(49)	Rectifier unit Type 15	PL1/1	—	—	Earth	—
(50)	RU15(3)	2	—	64/1, 64/2, 64/3, 64/4, 64/5, 64/6, *strapped together, and* 66/6	—	50V output (+ *ve*)
(51)		3	—	64/7, 64/8, 64/9, 64/10, 64/11, 64/12, *strapped together*	—	50V output (− *ve*)
(52)		4	—	66/1, 66/2, 66/3, 66/4, 66/5, 66/6, *strapped together, and* 64/6	—	50V output (+ *ve*)

RACK ASSEMBLY TYPE 321—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(53)	Rectifier unit Type 15 RU15(3)	PL1/5	—	66/7, 66/8, 66/9, 66/10, 66/11, 66/12 *strapped together*	—	50V output (— *ve*)
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	68/11	—	Mains input
(60)		12	—	68/12	—	Mains input
(61)	Amplifier (NBW)	PL9/1	—	—	Earth	—
(62)	Type A.3679, AmpNBW	2	2	—	PL11/2AmpAJ	—
			74	—	PL10/2AmpIF	—
(63)		3	3	—	PL11/3AmpAJ	—
			75	—	PL10/3AmpIF	—
(64)		4	—	65/5	—	CU618 PLAH5 NBW
(65)		5	—	—	—	—
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	33/1	—	Mains input
(72)		12	—	33/2	—	Mains input
(73)	Amplifier (IF and Video)	PL10/1	—	—	Earth	—
(74)	Type A.3680, AmpIF	2	62	—	PL9/2AmpNBW	—
(75)		3	63	—	PL9/3AmpNBW	—
(76)		4	—	65/2	—	CU618 PLAH21 AGC
(77)		5	—	—	—	—
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	33/3	—	Mains input
(84)		12	—	33/4	—	Mains input
(85)	Amplifier Type 3720 (AU)	PL1/1	—	—	Earth	—
(86)		2	98	—	PL1/2 RU15(2)	—
(87)		3	99	—	PL1/3 RU15(2)	—
(88)		4	—	27/4	—	IFF Rx (T14)
(89)		5	—	27/5	—	IFF Tx (T7)
(90)		6	—	27/6	—	IFF Tx (T14)
(91)		7	—	27/7	—	RA184 (T14 Sw.)
(92)		8	—	27/8	—	IFF GAIN
(93)		9	—	27/9	—	RA184 (T7 Sw.)
(94)		10	—	—	—	—
(95)		11	—	33/5	—	Mains input
(96)		12	—	33/6	—	Mains input
(97)	Rectifier unit Type 15	PL1/1	—	—	Earth	
(98)	RU15(2)	2	86	29/1, 29/2, 29/3, 29/4, 29/5, 29/6, *strapped together and* 31/6	PL1/2 AU	50V output (+ *ve*)
(99)		3	87	29/7, 29/8, 29/9, 20/10, 29/11, 29/12, *strapped together*	PL1/3 AU	50V output (— *ve*)
(100)		4	—	31/1, 31/2, 31/3, 31/4, 31/5, 31/6, *strapped together and* 29/6	—	50V output (+ *ve*)
(101)		5	—	31/7, 31/8, 31/9, 31/10, 31/11, 31/12, *strapped together*	—	50V output (— *ve*)
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	33/3	—	Mains input
(108)	(PL2 not used)	12	—	33/4	—	Mains input
(109)	Selector unit (Type 7Ae)	PL11/1	—	—	Earth	—
(110)	Type 33, SU	2	—	—	—	—
(111)		3	—	—	—	—

RACK ASSEMBLY TYPE 321—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(112)	Selector unit (Type 7Ae)	PL11/4	—	—	—	—
(113)	Type 33, SU	5	—	—	—	—
(114)		6	—	—	—	—
(115)		7	—	32/9	—	Cap Sw. " C " output
(116)		8	—	32/10	—	Cap Sw. " D " output
(117)		9	—	32/7	—	Cap Sw. " A " output
(118)		10	—	32/8	—	Cap Sw. " B " output
(119)		11	—	33/9	—	Mains input
(120)		12	—	33/10	—	Mains input
(121)	Amplifying unit (pulse)	PL1/1	—	—	—	—
(122)	Type 4279* AmpP	5	—	65/9	Twisted pair to P.O. cable	
(123)		6	—	65/10		
(124)		11	—	68/3	Twisted pair to A.C. mains	
(125)		12	—	68/4		

CO-AXIAL CONNECTIONS

(126)	SK2 AmpNBW	—SK4 AmpIF
(127)	SK5 AmpIF	—SK1 AmpAJ
(128)	SK2 AmpAJ	—SK6 AmpIF
(129)	SK1 SU	—Dis. Box No. 3
(130)	SK5 SU	—Dis. Box No. 4
(131)	SK6 SU	—Dis. Box No. 1
(132)	SK7 SU	—Dis. Box No. 2
(133)	SK2 AU	—SK4 AmpAJ

*** Note.**—*Connection from PL1/5 on AmpP eventually terminate at PL1/5 on transformer unit Type* 4278 *in rack assembly Type* 183 *at the remote well.*

Chapter 19

RACK ASSEMBLY TYPE 322

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Para.
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ILLUSTRATION

Fig.
Disposition of units and plugs, schematic 1

		◀	Panel (blanking) 4639 (Stores Ref. 10D/19663)	Panel (blanking) 4639 ▶		
	5	6	Amplifier (NBW) Type A.3679 (Stores Ref. 10U/16026) AmpNBW	◀ Panel (blanking) 4639 ▶	39	40
	7	8			41	42
	9	10			43	44
	11	12	Amplifier (IF and Vid.) Type A.3680 (Stores Ref. 10U/16027) AmpIF	Amplifier (AJ and Vid.) Type A.3681 (Stores Ref. 10U/16028) AmpAJ	45	46
	13	14			47	48
	15	16			49	50
	17	18◀	Panel (blanking) 4639 ▶	Amplifying unit (pulse splitter) Type 300 (Stores Ref. 10U/16057) AmpPS	51	52
	19	20			53	54
Dis. Box 1.	21	22			55	56
			(2)	(1)		
Dis. Box 2.	23	34	Rectifier unit Type 15 (Stores Ref. 10D/17761) RU15	Rectifier unit Type 15	57	58
Dis. Box 3.	25	26			59	60
Dis. Box 4.	27	28			61	62
	29	30	Selector unit (Type 7 Ae) Type 33 10D/18570 SU33	(3) Rectifier unit Type 15 10D/17761	63	64
	31	32			65	66
	33	34			67	68

Fig. 1. Disposition of units and plugs, schematic

Detailed description

1. The rack assembly Type 322 (Stores Ref. 10D/18816) is used on Stage 1 and 2 **GCI/A/A**, M and Q stations. These stations have a local radar Type 7. Apart from the omission of amplifier Type A3720 and amplifying unit (pulse) Type 4279, the rack is the same as rack assembly Type 321. Four distribution boxes are mounted in the spaces allocated to plugs 21 to 28.

SCHEDULE I

RACK ASSEMBLY TYPE 322—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(1)	Amplifier (AJ and Vid.)	PL11/1	—	—	Earth	—
(2)	Type A.3681, AmpAJ	2	62	—	PL9/2AmpNBW	—
			26	—	PL1/2 RU15(1)	—
(3)		3	63	—	PL9/3AmpNBW	—
			27	—	PL1/3 RU15(1)	—
(4)		4	—	65/4	—	CU618PL AH4.STC
(5)		5	—	65/3	—	CU618PL AH3.LPF
(6)		6	—	—	—	—
(7)		7	—	—	—	—
(8)		8	—	—	—	—
(9)		9	—	—	—	—
(10)		10	—	—	—	—
(11)		11	—	68/5	—	Mains input
(12)		12	—	68/6	—	Mains input
(13)	Amplifying unit (pulse	PL1/1	—	—	Earth	—
(14)	splitter) Type 300, AmpPS	2	—	—	—	—
(15)		3	—	—	—	—
(16)		4	—	—	—	—
(17)		5	—	—	—	—
(18)		6	—	—	—	—
(19)		7	—	—	—	—
(20)		8	—	—	—	—
(21)		9	—	—	—	—
(22)		10	—	—	—	—
(23)		11	—	68/7	—	Mains input
(24)		12	—	68/8	—	Mains input
(25)	Rectifier unit Type 15	PL1/1	—	—	Earth	—
(26)	RU(1)	2	2	61/1, 61/2, 61/3, 61/4, 61/5, 61/6, *strapped together and* 63/6	PL11/2AmpAJ	50V output (+ *ve*)
(27)		3	3	61/7, 61/8, 61/9, 61/10, 61/11, 61/12, *strapped together*	PL11/3AmpAJ	50V output (— *ve*)
(28)		4	—	63/1, 63/2, 63/3, 63/4, 63/5, 63/6, *strapped together and* 61/6	—	50V output (+ *ve*)
(29)		5	—	63/7, 63/8, 63/9, 63/10, 63/11, 63/12, *strapped together*	—	—
(30)		6	—	—	—	—
(31)		7	—	67/3, 67/7, 67/9, *strapped together*	—	—
(32)		8	—	—	—	—
(33)		9	—	—	—	—
(34)		10	—	—	—	—
(35)		11	—	68/9	—	Mains input
(36)		12	—	68/10	—	Mains input
(37)		PL2/1	—	67/6	—	AFC(1)
(38)		2	—	—	—	—
(39)		3	—	67/8	—	AFC(1)
(40)		4	—	67/10	—	AFC(1)
(41)		5	—	67/12	—	AFC(2)
(42)		6	—	—	—	—
(43)		7	—	—	—	—
(44)		8	—	67/2	—	AFC(3)
(45)		9	—	—	—	—
(46)		10	—	67/4	—	AFC(3)
(47)		11	—	—	—	—
(48)		12	—	—	—	—
(49)	Rectifier unit Type 15	PL/1	—	—	Earth	—
(50)	RU15(3)	2	—	64/1, 64/2, 64/3, 64/4, 64/5, 64/6, *strapped together and* 66/6	—	50V output (+ *ve*)
(51)		3	—	64/7, 64/8, 64/9, 64/10, 64/11, 64/12, *strapped together*	—	50V output (— *ve*)
(52)		4	—	66/1, 66/2, 66/3, 66/4, 66/5, 66/6, *strapped together and* 64/6	—	50V output (+ *ve*)

RACK ASSEMBLY TYPE 322—WIRING (*continued*)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(53)	Rectifier unit Type 15 RU15(3)—*cont.*	PL/5	—	66/7, 66/8, 66/9, 66/10, 66/11, 66/12 *strapped*	—	50V output (— *ve*)
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	68/11	—	Mains input
(60)		12	—	68/12	—	Mains input
		PL2 not used				
(61)	Amplifier (NBW) Type	PL9/1	—	—	Earth	—
(62)	A.3679, AmpNBW	2	2	—	PL11/2AmpAJ	—
			74	—	PL10/2AmpIF	—
(63)		3	3	—	PL11/3AmpAJ	—
			75	—	PL10/3AmpIF	—
(64)		4	—	65/5	—	CU618 PLAH5 NBW
(65)		5	—	—	—	—
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	33/1	—	Mains input
(72)		12	—	33/2	—	Mains input
(73)	Amplifier (IF and Vid.)	PL10/1	—	—	Earth	—
(74)	Type A.3680, AmpIF	2	62	—	PL9/2AmpNBW	—
(75)		3	63	—	PL9/3AmpNBW	—
(76)		4	—	65/2	—	CU618 PLAH2
(77)		5	—	—	—	I.A.C.C.
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	33/3	—	Mains input
(84)		12	—	33/4	—	Mains input
(85)	Rectifier unit Type 15	PL1/1	—	—	Earth	—
(86)	RU(2)	2	—	29/1, 29/2, 29/3, 29/4, 29/5, 29/6, *strapped together and* 31/6	—	50V output (+ *ve*)
(87)		3	—	29/7, 29/8, 29/9, 29/10, 29/11, 29/12, *strapped together*	—	50V output (— *ve*)
(88)		4	—	31/1, 31/2, 31/3, 31/4, 31/5, 31/6, *strapped together and* 29/6	—	50V output (+ *ve*)
(89)		5	—	31/7, 31/8, 31/9, 31/10, 31/11, 31/12, *strapped together*	—	50V output (— *ve*)
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	33/7	—	Mains input
(96)		12	—	33/8	—	Mains input
		PL2 not used				
(97)	Selector unit (Type 7 Ae.)	PL11/1	—	—	Earth	—
(98)	Type 33 SU	2	—	—	—	—
(99)		3	—	—	—	—
(100)		4	—	—	—	—
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	32/9	—	Cap. Sw. " C " output
(104)		8	—	32/10	—	Cap. Sw. " D " output
(105)		9	—	32/7	—	Cap. Sw. " A " output
(106)		10	—	32/8	—	Cap. Sw. " B " output
(107)		11	—	33/9	—	Mains input
(108)		12	—	33/10	—	Mains input

CO-AXIAL CONNECTIONS

(109)	SK2 AmpNBW	—SK4 AmpIF
(110)	SK5 AmpIF	—SK1 AmpAJ
(111)	SK2 AmpAJ	—SK6 AmpIF
(112)	SK1 SU	—Dis. Box No. 3
(113)	SK5 SU	—Dis. Box No. 4
(114)	SK6 SU	—Dis. Box No. 1
(115)	SK7 SU	—Dis. Box No. 2

Chapter 20

VARIANTS OF I.G. RACK ASSEMBLIES

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Introduction

1. The re-engineering project concerned with the U.K. radar defence system was, during the course of development, known by a code name which will not persist under Service conditions. The several programmes involved were numbered 1, 2 and 3 and to preserve the differentiation they will be referred to herein as Stages 1, 2 and 3.

2. The Stages, whilst they originated as planned programmes with their individual target dates, were automatically subjected to change in the course of development due to the evolution of new and improved equipment combined with a quickening of tempo and betterment of target dates. Stations acquired different roles and, as a consequence, a greater or lesser amount of equipment.

3. The majority of equipment changes are reflected in the make-up of those racks particularly associated with the information generator (IG). The units contained in the racks described in previous chapters, rack assemblies Type 307 to 322, have, therefore, been either increased or decreased and, to preserve some continuity with the numbering of the original racks, a suffix letter has been added to the original number.

4. At the time of writing, the possibility of still further changes is envisaged and to accommodate these and the wiring schedules the plan has been adopted of allocating one leaf to each rack variant. When wiring schedules are finished they can be inserted immediately after the relevant leaf.

▶◀

5. The illustrations in this Chapter show the disposition of components as viewed from the rear of the rack. The abbreviated nomenclature hitherto adopted (*Chap.* 3) is preserved.

RACK ASSEMBLY TYPE 309A
(Ref. No. 10D/19392)

Amplifier (AJ and Vid.) A.3681 Ref. No. 10U/16028	Amplifier (IF and Vid.) A.3680 Ref. No. 10U/16027	
Rectifier Unit 15 Ref. No. 10D/17761 (2)	Amplifier (NBW) A.3679 Ref. No. 10U/16026	
Panel (blanking) 4639 (Stores Ref. 10D/19663)	Rectifier Unit 15 Ref. No. 10D/17761 (1)	
Panel (blanking) 4639	Panel (blanking) 4639	51
Marker Unit (Range) 27 Ref. No. 10D/18308	Panel (blanking) 4639	61
Waveform Generator (Anti-sea clutter) 104 Ref. No. 10V/16079	Panel (blanking) 4639	63 65 67

Fig. 1. Rack assembly Type 309A, schematic

RACK ASSEMBLY TYPE 309A

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Amplifier (I.F. & Video) A.3680 No. 10U/16027					
(1)	PL10/1	—	—	Earth	—
(2)	2	50	—	PL11/2 Amp (A.J. & Vid)	—
		14	—	PL9/2 Amp (NBW)	—
(3)	3	51	—	PL11/3 Amp (A.J. & Vid)	—
		15	—	PL9/3 Amp (NBW)	—
(4)	4	—	32/2	—	CU621 (*c*) PLAE/2 IAGC
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	51/5	—	Mains input
(12)	12	—	51/6	—	Mains input
Connections from Amplifier (NBW) A.3679, Ref. No. 10U/16026					
(13)	PL9/1	—	—	Earth	—
(14)	2	2	—	PL10/2 Amp (IF and Vid.)	—
(15)	3	3	—	PL10/3 Amp (IF and Vid)	—
(16)	4	—	32/5	—	CU621 PLAE/5 NBW
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	51/9	—	Mains input
(24)	12	—	51/10	—	Mains input
Connections from Rectifier Unit 15, Ref. No. 10D/17761 (1)					
(25)	PL1/1	—	—	Earth	—
(26)	2	—	61/5, 61/6, 61/7, 61/8 *Strapped*	—	50V Output (+ve)
(27)	3	—	61/1, 61/2, 61/3, 61/4 *Strapped*	—	50V Output (—ve)
(28)	4	—	61/5, 61/6, 61/7, 61/8 *Strapped*	—	50V Output (+ve)
(29)	5	—	61/9, 61/10, 61/11, 61/12 *Strapped*	—	50V Output (—ve)
(30)	6	—	—	—	—
(31)	7	—	63/11, 65/11 and 67/11 *Strapped*	—	AFC (Common)
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	51/11	—	Mains input
(36)	12	—	51/12	—	Mains input
(37)	PL2/1	—	67/7	—	AFC(*a*)
(38)	2	—	—	—	—
(39)	3	—	67/9	—	AFC(*a*)
(40)	4	—	63/7	—	AFC(1)
(41)	5	—	63/9	—	AFC(1)
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	65/9	—	AFC(*b*)
(45)	9	—	—	—	—
(46)	10	—	65/1	—	AFC(*b*)
(47)	11	—	—	—	—
(48)	12	—	—	—	—
Connections from Amplifier (AJ and Video) A.3681, Ref. No. 10U/16028					
(49)	PL11/1	—	—	Earth	—
(50)	2	62	—	PL1/2 Rectifier 15(2)	—
		2	—	PL10/2 Amp.(IF and Vid.)	—
(51)	3	63	—	PL1/3 Rectifier 15(2)	—
		3	—	PL10/3 Amp.(IF and Vid.)	—
(52)	4	—	32/4	—	CU621(*c*) PLAE/4 STC
(53)	5	—	—	—	CU621(*c*) PLAE/3 LPF
(54)	6	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	18/7	—	Mains input
(60)		12	—	18/8	—	Mains input
Connections from Rectifier Unit 15, Ref. No. 10D/17761 (2)						
(61)		PL1/1	—	—	Earth	—
(62)		2	50	28/5, 28/6, 28/7, 28/8, *strapped*	PL11/2 Amp.(AJ and Vid.)	50V Output (+ ve)
(63)		3	51	28/1, 28/2, 28/3, 28/4, *strapped*	PL11/3 Amp.(AJ and Vid.)	50V Output (—ve)
(64)		4	—	28/5, 28/6, 28/7, 28/8, *strapped*	—	50V Output (+ ve)
(65)		5	—	28/9, 28/10, 28/11, 28/12, *strapped*	—	50V Output (—ve)
(66)		6	—	—	—	—
(67)		7	—	30/11, 32/11, 34/11, *strapped*	—	AFC (earth)
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	18/11	—	Mains input
(72)		12	—	18/12	—	Mains input
(73)		PL2/1	—	34/7	—	AFC(2)
(74)		2	—	—	—	—
(75)		3	—	34/9	—	AFC(2)
(76)		4	—	30/7	—	AFC(3)
(77)		5	—	30/9	—	AFC(3)
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	32/9	—	AFC(*c*)
(81)		9	—	—	—	—
(82)		10	—	32/7	—	AFC(*c*)
(83)		11	—	—	—	—
(84)		12	—	—	—	—
Connections from Marker Unit (range) 27, Ref. No. 10D/18308						
(85)		PL7/1	—	—	Earth	—
(86)		2	98	—	PL1/2 W/F. Gen.	—
(87)		3	99	—	PL1/3 W/F. Gen.	—
(88)		4	—	—	—	—
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	18/1	—	Mains input
(96)		12	—	18/2	—	Mains input
Connections from Waveform Generator (Anti-Sea Clutter) 104, Ref. No. 10V/16079						
(97)		PL1/1	—	—	Earth	—
(98)		2	86	—	PL7/2 Marker Unit 27	—
(99)		3	87	—	PL7/3 Marker Unit 27	—
(100)		4	—	—	—	—
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	18/3	—	Mains input
(108)		12	—	18/4	—	Mains input

EXTRA CONNECTIONS

(109)	Plug No.	65/1	*connected to*	61/5
(110)	,,	65/6	,,	61/1
(111)	,,	67/1	,,	61/6
(112)	,,	67/6	,,	61/2

COAXIAL CABLE INTERCONNECTIONS

(113)	SK2 Amplifier (NBW) *to* SK4 Amplifier (IF and Vid.)
(114)	SK5 Amplifier (IF and Vid.) *to* SK1 Amplifier (AJ and Vid.)
(115)	SK2 Amplifier (AJ and Vid.) *to* SK6 Amplifier (IF and Vid.)
(116)	SK1 W/F. Generator *to* SK5 Marker Unit 27

RACK ASSEMBLY TYPE 310A
(Ref. No. 10D/19393)

	Panel (Blanking) 4639 (Ref. No. 10D/19663)	Waveform generator (anti-sea clutter) Type 104 (10V/16079) WGASC (1)	
	Rectifier Unit Type 15 (10D/17761) RU15 (2)	Waveform generator (anti-sea clutter) Type 104 (2)	
	Amplifier (NBW) Type A.3679 (10U/16026) Amp. NBW (*b*)	Rectifier Unit Type 15 (1)	
18	Amplifier (IF & Vid.) Type A.3680 (10U/16027) Amp. IF (*b*)	Amplifier (AJ & Vid.) Type A.3681 (10U/16028) Amp. AJ (*a*) and (*b*)	51
28	Marker Unit (Range) Type 27 (10D/18308) MU27 (*a*)	Amplifier (IF & Vid.) Type A.3680 (*a*)	59 60 61
30 32 34	Marker Unit (Range) Type 27 (1)	Amplifier (NBW) Type A.3679 (*a*)	63 65 67

Fig. 2. Rack assembly Type 310A, schematic

SCHEDULE 1

Rack assembly Type 310A—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to rectifier Unit 15, Ref. No. 10D/17761 (1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	26	61/5, 61/7, 61/6, 61/8, *strapped together*	PL11/2 AJ & Vid Amp (*a* & *b*)	50V output
(3)	3	27	61/1, 61/2, 61/3, 61/4, *strapped together*	PL11/3 AJ & Vid Amp (*a* & *b*)	50V output (— *ve*)
(4)	4	—	61/7, 61/6, 61/8, 61/5, *strapped together*	—	50V output
(5)	5	—	61/9, 61/10, 61/11, 61/12, *strapped together*	—	50V output (— *ve*)
(6)	6	—	—	—	—
(7)	7	—	63/11, 65/11, 67/11, *strapped together*		AFC (earth)
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	51/11	—	Mains input
(12)	12	—	51/12	—	Mains input
(13)	PL2/1	—	67/7	—	AFC(*a*)
(14)	2	—	—	—	—
(15)	3	—	67/9	—	AFC(*a*)
(16)	4	—	63/7	—	AFC(1)
(17)	5	—	63/9	—	AFC(1)
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	65/9	—	AFC(*b*)
(21)	9	—	—	—	—
(22)	10	—	65/7	—	AFC(*b*)
(23)	11	—	—	—	—
(24)	12	—	—	—	—
Connections to Amplifier (A.J. & Vid) A3681, Ref. No. 10U/16028 (*a* & *b*)					
(25)	PL11/1	—	—	—	Earth
(26)	2	2 & 38	—	PL1/2 Rect.15(1), PL10/2 IF & Vid Amp(*a*)	—
(27)	3	3 & 39	—	PL1/3 Rect.15(1), PL10/3 IF & Vid Amp(*a*)	—
(28)	4	—	67/4	—	CU619(*a*) STC(*a*) PL.AK/4
(29)	5	—	67/3	—	CU619 (*a*) LPF(*a*) PL.AK/3
(30)	6	—	65/4	—	CU619(*b*) STC(*b*) PL.AK/4
(31)	7	—	65/3	—	CU619(*b*) LPF(*b*) PL.AK/3
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	51/3	—	Mains input
(36)	12	—	51/4	—	Mains input
Connections to Amplifier (IF & Vid) A3680, Ref. No. 10U/16027 (*a*)					
(37)	PL10/1	—	—	Earth	—
(38)	2	26 & 50	—	PL11/2 AJ & Vid Amp (*a* & *b*), PL9/2 NBWAmp (*a*)	— —
(39)	3	27 & 51	—	PL11/3 AJ & Vid Amp (*a* & *b*) PL9/3 NBWAmp (*a*)	— —
(40)	4	—	67/2	—	CU619(*a*) IAGC (*a*) PL.AK/2
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	51/1	—	Mains input
(48)	12	—	51/2	—	Mains input

SCHEDULE 1. Rack assembly Type 310A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026 (*a*)					
(49)	PL9/1	—	—	Earth	—
(50)	2	38 & 122	—	PL10/2 IF & Vid Amp (*a*), PL7/2 RM27 (1)	—
(51)	PL9/1	39 & 123	—	PL10/3 IF & Vid Amp (*a*) PL7/3 RM27 (1)	—
(52)	4	—	67/5	—	CU619(*a*) NBW(*a*) PL.AK/5
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	51/7	—	Mains input
(60)	12	—	52/8	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761 (2)					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(63)	3	—	28/1, 28/2, 28/3, 28/4, *strapped together*	—	50V output (— *ve*)
(64)	4	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(65)	5	—	28/9, 28/10, 28/11, 28/12, *strapped together*	—	50V output (— *ve*)
(66)	6	—	—	—	—
(67)	7	—	30/11, 32/11, 34/11, *strapped together*	—	AFC (earth)
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	18/11	—	Mains input
(72)	12	—	18/12	—	Mains input
(73)	PL2/1	—	34/7	—	AFC(2)
(74)	2	—	—	—	—
(75)	3	—	34/9	—	AFC(2)
(76)	4	—	30/7	—	AFC(3)
(77)	5	—	30/9	—	AFC(3)
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	PL1/11	—	—	—	—
(84)	12	—	—	—	—
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026 (*b*)					
(85)	PL9/1	—	—	Earth	—
(86)	2	98	—	PL10/2 IF & Vid Amp (*b*)	—
(87)	3	99	—	PL10/3 IF & Vid Amp (*b*)	—
(88)	4	—	65/5	—	CU619(*b*) NBW (*b*) PL.AK/5
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026					
(93)	PL9/9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	18/9	—	Mains input
(96)	12	—	18/10	—	Mains input

SCHEDULE 1. Rack assembly Type 310A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (IF & Vid) A3680, Ref. No. 10U/16027 (*b*)					
(97)	PL10/1	—	—	Earth	—
(98)	2	86	—	PL7/2 RM27 (1)	—
		122	—	PL9/2 NBW Amp (*b*)	—
(99)	3	87	—	PL7/3 RM27 (1)	—
		123	—	PL9/3 NBW Amp (*b*)	—
(100)	4	—	65/2	—	IAGC(*b*) PL.AK/2 CU619(*b*)
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	18/5	—	Mains input
(108)	12	—	18/6	—	Mains input
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308 (2)					
(109)	PL7/1	—	—	Earth	—
(110)	PL7/2	122	—	PL7/2 RM27 (1) &	—
		98	—	PL10/2 IF & Vid Amp (*b*)	—
(111)	3	123	—	PL7/3 RM27 (1) &	—
		99	—	PL10/3 IF & Vid Amp (*b*)	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	18/1	—	Mains input
(120)	12	—	18/2	—	Mains input
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308 (1)					
(121)	PL7/1	—	—	Earth	—
(122)	2	50	—	PL9/2 NBW Amp (*a*) &	—
		110	—	PL7/2 RM27(2)	—
(123)	3	51	—	PL9/3 NBW Amp (*a*) &	—
		111	—	PL7/3 RM27(2)	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	—	—	—	—
(128)	8	—	—	—	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	18/3	—	Mains input
(132)	12	—	18/4	—	Mains input
Connections to Waveform Generator (ASC) 104, Ref. No. 10V/16079 (1)					
(133)	PL1/1	—	—	Earth	—
(134)	2	—	—	—	—
(135)	3	—	—	—	—
(136)	4	—	—	—	—
(137)	5	—	—	—	—
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	PL1/9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	51/11	—	—
(144)	12	—	51/12	—	—

SCHEDULE 1. Rack assembly Type 310A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Waveform Generator (ASC) 104, Ref. No. 10V/16079 (2)					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	—	—	—
(147)	3	—	—	—	—
(148)	4	—	—	—	—
(149)	5	—	—	—	—
(150)	6	—	—	—	—
(151)	7	—	—	—	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	—	—	—	—
(155)	11	—	51/5	—	—
(156)	12	—	51/6	—	—
Extract connections					
	65/1 *strapped to* 61/5				
	65/6 *strapped to* 61/1				
	67/1 *strapped to* 61/6				
	67/6 *strapped to* 61/2				
Coaxial interconnection					
	SK2 (NBW) Amp (*a*)		to	SK4 (IF & Vid) Amp (*a*)	
	SK5 (IF & Vid) Amp (*a*)		to	SK1 (AJ & Vid) Amp (*a* & *b*)	
	SK2 (AJ & Vid) Amp (*a* & *b*)		to	SK6 (IF & Vid) Amp (*a*)	
	SK2 (NBW) Amp (*b*)		to	SK4 (IF & Vid) Amp (*b*)	
	SK5 (IF & Vid) Amp (*b*)		to	SK6 (AJ & Vid) Amp (*a* & *b*)	
	SK7 (AJ & Vid) Amp (*a* & *b*)		to	SK6 (IF & Vid) Amp (*b*)	
	SK6 Marker Unit 27 (1)			SK5 Marker Unit 27(2)	
	SK2 Wave. Gen. 104 (1)			SK10 Amp (IF & Vid (*b*)	

RACK ASSEMBLY TYPE 310B
(Ref. No. 10D/19394)

Panel (Blanking) 4639 (Stores reference 10D/19663)	Waveform generator (anti-sea clutter) 104 Ref. No. 10V/16079
(2) Rectifier Unit Type 15 Ref. No. 10D/17761	Panel (Blanking) 4639
Amplifier (NBW) A.3679 Ref. No. 10U/16026	(1) Rectifier Unit Type 15 Ref. No. 10D/17761
Amplifier (IF & Vid.) A.3680 Ref. No. 10U/16027	Amplifier (AJ & Vid.) A.3681 Ref. No. 10U/16028
Panel (Blanking) 4639	Panel (Blanking) 4639
Marker Unit (Range) 27 Ref. No. 10D/18308	Panel (Blanking) 4639

Fig. 3. Rack Assembly Type 310B, schematic

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761 (1)						
(1)	PL1/1	—		—	Earth	—
(2)	2	26		61/5, 61/7, 61/6, 61/8 *strapped*	PL11/2 AJ and Vid. Amp.	50V output (+*ve*)
(3)	3	27		61/1, 61/2, 61/3, 61/4 *strapped*	PL11/3 AJ and Vid. Amp.	50V output (—*ve*)
(4)	4	—		61/7, 61/6, 61/8, 61/5 *strapped*	—	50V output (+*ve*)
(5)	5	—		61/9, 61/10, 61/11, 61/12 *strapped*	—	50V output (—*ve*)
(6)	6	—		—	—	—
(7)	7	—		63/11, 65/11, 67/11 *strapped*	—	A.F.C. (Earth)
(8)	8	—		—	—	—
(9)	9	—		—	—	—
(10)	10	—		—	—	—
(11)	11	—		51/11	—	Mains input
(12)	12	—		51/12	—	Mains input
(13)	PL2/1	—		67/7	—	A.F.C.(*a*)
(14)	2	—		—		
(15)	3	—		67/9	—	A.F.C.(*a*)
(16)	4	—		63/7	—	A.F.C.(1)
(17)	5	—		63/9	—	A.F.C.(1)
(18)	6	—		—	—	—
(19)	7	—		—	—	—
(20)	8	—		65/9	—	A.F.C.(*b*)
(21)	9	—		—	—	—
(22)	10	—		65/7	—	A.F.C.(*b*)
(23)	11	—		—	—	—
(24)	12	—		—	—	—
Connections to Amplifier (A.J. and Video) A.3681, Ref. No. 10U/16028)						
(25)	PL11/1	—		—	—	Earth
(26)	2	2		—	PL1/2 Rect.15(1)	—
(27)	3	3		—	PL1/3 Rect.15(1)	—
(28)	4	—		67/4	—	CU619(*a*) STC(*a*) PL.AK/3
(29)	5	—		67/3	—	CU619(*a*) LPF(*a*) PL.AK/3
(30)	6	—		65/4	—	CU619(*b*) STC(*b*) PL.AK/4
(31)	7	—		65/3	—	CU619(*b*) LPE(*b*) PL.AK/3
(32)	8	—		—	—	—
(33)	9	—		—	—	—
(34)	10	—		—	—	—
(35)	11	—		51/3	—	Mains input
(36)	12	—		51/4	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(2)						
(37)	PL1/1	—		—	Earth	—
(38)	2	—		28/5, 28/6, 28/7, 28/3 *strapped*	—	50V output (+*ve*)
(39)	3	—		28/1, 28/2, 28/3, 28/4 *strapped*	—	50V output (—*ve*)
(40)	4	—		28/5, 28/6, 28/7, 28/8 *strapped*	—	50V output (+*ve*)
(41)	5	—		28/9, 28/10, 28/11, 28/12 *strapped*	—	50V output (—*ve*)
(42)	6	—		—	—	—
(43)	7	—		30/11, 32/11, 34/11 *strapped*	—	AFC (Earth)
(44)	8	—		—	—	—
(45)	9	—		—	—	—
(46)	10	—		—	—	—
(47)	11	—		18/11	—	Mains input
(48)	12	—		18/12	—	Mains input
(49)	PL2/1	—		34/7	—	AFC(2)
(50)	2	—		—	—	—
(51)	3	—		34/9	—	AFC(2)
(52)	4	—		30/7	—	AFC(3)
(53)	5	—		30/9	—	AFC(3)
(54)	6	—		—	—	—
(55)	7	—		—	—	—
(56)	8	—		—	—	—

RACK ASSEMBLY TYPE 310B (*continued*)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	—	—	—
(60)		12	—	—	—	—
Connections to Amplifier (NBW) A.3679, Ref. No. 10U/16026						
(61)		PL9/1	—	—	Earth	—
(62)		2	74	—	PL10/2 IF and Vid. Amp.	—
(63)		3	75	—	PL10/3 IF and Vid. Amp.	—
(64)		4	—	65/5	—	CU619(*b*) NBW.PL.AK5
(65)		5	—	—	—	—
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	18/9	—	Mains input
(72)		12	—	18/10	—	Mains input
Connections to Amplifier (IF and Vid.) A.3680, Ref. No. 10U/16027						
(73)		PL10/1	—	—	Earth	—
(74)		2	62	—	PL9/2 NBW Amp.	—
(75)		3	63	—	PL9/3 NBW Amp.	—
(76)		4	—	65/2	—	IAGC(*b*) PLAK/2 CU619(*b*)
(77)		5	—	—	—	—
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	18/5	—	Mains input
(84)		12	—	18/6	—	Mains input
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308						
(85)		PL7/1	—	—	Earth	—
(86)		2	—	—	—	—
(87)		3	—	—	—	—
(88)		4	—	—	—	—
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	18/3	—	Mains input
(96)		12	—	18/4	—	Mains input
Connections to Waveform Generator (ASC) 104, Ref. No. 10V/16079						
(97)		PL1/1	—	—	Earth	—
(98)		2	—	—	—	—
(99)		3	—	—	—	—
(100)		4	—	—	—	—
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	51/11	—	—
(108)		12	—	51/12	—	—

Extra Connections

65/1 *strapped to* 61/5
65/6 *strapped to* 61/1
67/1 *strapped to* 61/6
67/6 *strapped to* 61/2

Coaxial Interconnection

SK2 (NBW) Amp.	*to*	SK4 (IF and Vid.) Amp.
SK5 (IF and Vid.) Amp.	*to*	SK6 (AJ and Vid.) Amp.
SK7 (AJ and Vid.) Amp.	*to*	SK6 (IF and Vid.) Amp.
SK2 Wave. Gen. 104	*to*	SK10 (IF and Vid.) Amp.

RACK ASSEMBLY TYPE 310C
(Ref. No. 10D/20007)

	Panel (Blanking) 4639 (Stores Reference 10D/19663)	Panel (Blanking) 4639	
	Rectifier Unit 15 Ref. No. 10D/17761 (2)	Panel (Blanking) 4639	
	Rectifier Unit 15 Ref. No. 10D/17761 (4)	Rectifier Unit 15 Ref. No. 10D/17761 (1)	
18	Rectifier Unit 15 Ref. No. 10D/17761 (3)	(*a*) and (*b*) Amplifier AJ & Vid.) A.3681 Ref. No. 10U/16028	51
28	Marker Unit (Range) 27 Ref. No. 10D/18308 (2)	(*a*) Amplifier (IF & Vid.) A.3680 Ref. No. 10U/16027	59 60 61
30 32 34	Marker Unit (Range) 27 Ref. No. 10D/18308	(*a*) Amplifier (NBW) A.3679 Ref. No. 10U/16026	63 65 67

Fig. 4. Rack assembly Type 310C, schematic

SCHEDULE 1

RACK ASSEMBLY TYPE 310C—WIRING

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761(1)						
(1)	PL1/1	—		—	Earth	
(2)	2	26		61/5, 61/7, 61/6, 61/8, *strapped*	PL11/2 AJ & Vid. Amp (*a* & *b*)	50V output (+ve)
(3)	3	27		61/1, 61/2, 61/3, 61/4, *strapped*	PL11/3 AJ & Vid. Amp (*a* & *b*)	50V output (—ve)
(4)	4	—		61/7, 61/6, 61/8, 61/5, *strapped*	—	50V output (+ve)
(5)	5	—		61/9, 61/10, 61/11, 61/12, *strapped*	—	50V output (—ve)
(6)	6	—		—	—	—
(7)	7	—		63/11, 65/11, 67/11, *strapped*	—	AFC (earth)
(8)	8	—		—	—	—
(9)	9	—		—	—	—
(10)	10	—		—	—	—
(11)	11	—		51/11	—	Mains input
(12)	12	—		51/12	—	Mains input
(13)	PL2/1	—		67/7	—	AFC(*a*)
(14)	2	—		—	—	—
(15)	3	—		67/9	—	AFC(*a*)
(16)	4	—		63/7	—	AFC(1)
(17)	5	—		63/9	—	AFC(1)
(18)	6	—		—	—	—
(19)	7	—		—	—	—
(20)	8	—		—	—	—
(21)	9	—		—	—	—
(22)	10	—		—	—	—
(23)	11	—		—	—	—
(24)	12	—		—	—	—
Connections to Amplifier (AJ & Vid.) A3681, Ref. No. 10U/16028(*a* & *b*)						
(25)	PL11/1	—		—	Earth	—
(26)	2	2 & 38		—	PL1/2 Rect. 15(1) PL10/2 IF & Vid. Amp (*a*)	—
(27)	3	3 & 39		—	PL1/3 Rect. 15(1) PL10/3 IF & Vid. Amp (*a*)	—
(28)	4	—		67/4	—	CU619(*a*) STC(*a*) PL.AK/4
(29)	5	—		67/3	—	CU619(*a*) LPF(*a*) PL.AK/3
(30)	6	—		—	—	—
(31)	7	—		—	—	—
(32)	8	—		—	—	—
(33)	9	—		—	—	—
(34)	10	—		—	—	—
(35)	11	—		51/3	—	Mains input
(36)	12	—		51/4	—	Mains input
Connections to Amplifiers (IF & Vid.) A3680, Ref. No. 10U/16027(*a*)						
(37)	PL10/1	—		—	Earth	—
(38)	2	26 & 50		—	PL11/2 AJ & Vid. Amp (*a* & *b*) PL9/2 NBW Amp (*a*)	—
(39)	3	27 & 51		—	PL11/3 AJ & Vid. Amp (*a* & *b*) PL9/3 NBW Amp (*a*)	—
(40)	4	—		67/2	—	CU619(*a*) IAGC(*a*) PL.AK/2
(41)	5	—		—	—	—
(42)	6	—		—	—	—
(43)	7	—		—	—	—
(44)	8	—		—	—	—
(45)	9	—		—	—	—
(46)	10	—		—	—	—
(47)	11	—		51/1	—	Mains input
(48)	12	—		51/2	—	Mains input

SCHEDULE 1. Rack assembly Type 310C—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*a*)					
(49)	PL9/1	—	—	Earth	
(50)	2	38 & 122	—	PL10/2 IF & Vid Amp(*a*) PL7/2 RM27(1)	—
(51)	3	39 & 123	—	PL10/3 IF & Vid Amp(*a*) PL7/3 RM27(1)	—
(52)	PL9/4	—	67/5	—	CU619(*a*) NBW(*a*) PL.AK/5
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	51/7	—	Mains input
(60)	12	—	51/8	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(2)					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(63)	3	—	28/1, 28/2, 28/3, 28/4, *strapped together*	—	50V output (−*ve*)
(64)	4	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(65)	5	—	28/9, 28/10, 28/11, 28/12, *strapped together*	—	50V output (−*ve*)
(66)	6	—	—	—	—
(67)	7	—	30/11, 32/11, 34/11, *strapped together*	—	AFC (earth)
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	18/11	—	Mains input
(72)	12	—	18/12	—	Mains input
(73)	PL2/1	—	34/7	—	AFC(2)
(74)	2	—	—	—	—
(75)	3	—	34/9	—	AFC(2)
(76)	4	—	30/7	—	AFC(3)
(77)	5	—	30/9	—	AFC(3)
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	—	—	—
(84)	12	—	—	—	—
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308(2)					
(85)	PL7/1	—	—	Earth	—
(86)	2	98	—	PL7/2 RM27(1)	—
(87)	3	99	—	PL7/3 RM27(1)	—
(88)	4	—	—	—	—
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	18/1	—	Mains input
(96)	12	—	18/2	—	Mains input

SCHEDULE 1. Rack assembly Type 310C—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308(1)					
(97)	PL7/1	—	—	Earth	—
(98)	2	50	—	PL9/2 NBW Amp(*a*) &	—
		86	—	PL7/2 RM27(2)	—
(99)	3	51	—	PL9/3 NBW Amp(*a*) &	—
		87	—	PL7/3 RM27(2)	—
(100)	4	—	—	—	—
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	18/3	—	Mains input
(108)	12	—	18/4	—	Mains input

Extra connections

65/1 *strapped to* 61/5
65/6 *strapped to* 61/1
67/1 *strapped to* 61/6
67/6 *strapped to* 61/2

Coaxial interconnections

SK2 (NBW) Amp(*a*)	*to*	SK4 (LF & Vid) Amp(*a*)
SK5 (IF & Vid) Amp(*a*)	*to*	to SK1 (AJ & Vid) Amp(*a & b*)
SK2 (AJ & Vid) Amp(*a & b*)	*to*	SK6 (IF & Vid) Amp(*a*)
SK6 Marker Unit 27(1)	*to*	SK5 Marker Unit 27(2)

Connections to Rectifier Unit 15, Ref. No. 10D/17761(3)						
(109)	PL1/1	—	—	Earth		—
(110)	2	—	59/5, 59/6, 59/7, 59/8, *strapped together*	—	+50V	
(111)	3	—	59/1, 59/2, 59/3, 59/4, *strapped together*	—	−50V	
(112)	4	—	59/5, 59/6, 59/7, 59/8, *strapped together*	—	+50V	
(113)	5	—	59/9, 59/10, 59/11, 59/12, *strapped together*	—	−50V	
(114)	6	—	—	—		—
(115)	7	—	—	—		—
(116)	8	—	—	—		—
(117)	9	—	—	—		—
(118)	10	—	—	—		—
(119)	11	—	18/5	—	Mains input	
(120)	12	—	18/6	—	Mains input	
Connections to Rectifier 15, Ref. No. 10D/17761(4)						
(121)	PL1/1	—	—	Earth		—
(122)	2	—	60/5, 60/6, 60/7, 60/8, *strapped together*	—	+50V	
(123)	3	—	60/1, 60/2, 60/3, 60/4, *strapped together*	—	−50V	
(124)	4	—	60/5, 60/6, 60/7, 60/8, *strapped together*	—	+50V	
(125)	5	—	60/9, 60/10, 60/11, 60/12, *strapped together*	—	−50V	
(126)	6	—	—	—		—
(127)	7	—	—	—		—
(128)	8	—	—	—		—
(129)	9	—	—	—		—
(130)	10	—	—	—		—
(131)	11	—	18/7	—	Mains input	
(132)	12	—	18/8	—	Mains input	

RACK ASSEMBLY TYPE 310D

(Ref. No. 10D/20008)

	Panel (blanking) 4639 (Ref. No. 10D/19663)		Waveform generator (anti-sea clutter) Type 104 10V/16079	
	(2) Rectifier unit Type 15 10D/17761 RU15		Panel (blanking) 4639	
	(b) Amplifier (N.B.W.) Type A3679 10U/16026 AMPNBW		(1) Rectifier unit Type 15	
18	(b) Amplifier (IF and Vid.) Type A3680 10U/16027 AMPIF		(a and b) Amplifier (AJ and Vid.) Type A3681 10U/16028 AMPAJ	51
28	(2) Marker unit (range) Type 27 10D/18308 MU27		(3) Rectifier unit Type 15	59 60 61
30 32 34	(1) Marker unit (range) Type 27		(4) Rectifier unit Type 15	63 65 67

Fig. 5. Rack assembly Type 310D, schematic

SCHEDULE 1

Rack assembly Type 310D—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761(1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	26	61/5, 61/7, 61/6, 61/8, *strapped together*	PL11/2 AJ & Vid Amp(*a* & *b*)	50V output
(3)	3	27	61/1, 61/2, 61/3, 61/4, *strapped together*	PL11/3 AJ & Vid Amp(*a* & *b*)	50V output (−*ve*)
(4)	4	—	61/7, 61/6, 51/8, 61/5, *strapped together*	—	50V output
(5)	5	—	61/9, 61/10, 61/11, 61/12, *strapped together*	—	50V output (−*ve*)
(6)	6	—	—	—	—
(7)	7	—	63/11, 65/11, 67/11, *strapped together*	—	AFC (earth)
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	51/11	—	Mains input
(12)	12	—	51/12	—	Mains input
(13)	PL2/1	—	67/7	—	AFC(*a*)
(14)	2	—	—	—	—
(15)	3	—	67/9	—	AFC(*a*)
(16)	4	—	63/7	—	AFC(1)
(17)	5	—	63/9	—	AFC(1)
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	65/9	—	AFC(*b*)
(21)	9	—	—	—	—
(22)	10	—	65/7	—	AFC(*b*)
(23)	11	—	—	—	—
(24)	12	—	—	—	—
(25)	PL11/1	—	—	Earth	—
(26)	2	2 & 98	—	PL1/2 Rect. 15(1) RM27(1) PL7/2	—
(27)	3	3 & 99	—	PL1/3 Rect. 15(1) RM27(1) PL7/3	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	65/4	—	CU619(*b*) STC(*b*) PL.AK/4
(31)	7	—	65/3	—	CU619(*b*) LPF(*b*) PL.AK/3
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	51/3	—	Mains input
(36)	12	—	51/4	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(2)					
(37)	PL1/1	—	—	Earth	—
(38)	2	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(39)	3	—	28/1, 28/2, 28/3, 28/4 *strapped together*	—	50V output (−*ve*)
(40)	4	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(41)	5	—	28/9, 28/10, 28/11, 28/12, *strapped together*	—	50V output (−*ve*)
(42)	6	—	—	—	—
(43)	7	—	30/11, 32/11, 34/11, *strapped together*	—	AFC (earth)
Connections to Rectifier Unit 15, Ref. No. 10D/17761(2)					
(44)	PL1/8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	18/11	—	Mains input
(48)	12	—	18/12	—	Mains input
(49)	PL2/1	—	34/7	—	AFC(2)
(50)	2	—	—	—	—
(51)	3	—	34/9	—	AFC(2)
(52)	4	—	30/7	—	AFC(3)
(53)	5	—	30/9	—	AFC(3)
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	—	—	—
(60)	12	—	—	—	—

SCHEDULE 1. Rack assembly Type 310D—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*b*)					
(61)	PL9/1	—	—	Earth	—
(62)	2	73	—	PL10/2 IF & Vid Amp(*b*)	—
(63)	3	74	—	PL10/3 IF & Vid Amp(*b*)	—
(64)	4	—	65/5	—	CU619(*b*) NBW(*b*) PL.AK/5
(65)	5	—	—	—	—
(66)	6	—	—	—	—
(67)	7	—	—	—	—
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	18/9	—	Mains input
(72)	12	—	18/10	—	Mains input
Connections to Amplifier (IF & Vid) A3680, Ref. No. 10U/16027(*b*)					
(73)	PL10/1	—	—	Earth	—
(74)	2	98	—	PL7/2 RM27(2)	—
		62	—	PL9/2 NBW Amp(*b*)	—
(75)	3	99	—	PL7/3 RM27(2)	—
		63		PL9/3 NBW Amp(*b*)	
(76)	4	—	65/2	—	IAGC(*b*) PL.AK/2 CU619(*b*)
(77)	5	—	—	—	—
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	18/5	—	Mains input
(84)	12	—	18/6	—	Mains input
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308(2)					
(85)	PL7/1	—	—	Earth	—
(86)	2	98	—	PL7/2 RM27(1) &	—
		74	—	PL10/2 IF & Vid Amp (*b*)	—
(87)	3	99	—	PL7/3 RM27(1) &	—
		75	—	PL10/3 IF & Vid Amp(*b*)	—
(88)	4	—	—	—	—
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	18/1	—	Mains input
(96)	12	—	18/2	—	Mains input
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308(1)					
(97)	PL7/1	—	—	Earth	—
(98)	2	—	—	PL11/2 AJ & Vid (*a* & *b*)	—
		86	—	PL7/2 RM27(2)	—
(99)	3	—	—	PL11/3 AJ & Vid (*a* & *b*)	—
		87	—	PL7/3 RM27(2)	—
(100)	4	—	—	—	—
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	18/3	—	Mains input
(108)	12	—	18/4	—	Mains input
Connections for Waveform Generator (anti-sea clutter) 104, Ref. No. 10V/16079					
(109)	PL1/1	—	—	Earth	—
(110)	2	—	—	—	—
(111)	PL1/3	—	—	—	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	Twisted pair to rack plug 51 pins 5 and 6 (mains)			
(120)	12				

SCHEDULE 1. Rack assembly Type 310D—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Extra connections					
	65/1 *strapped to* 61/5				
	65/6 *strapped to* 61/1				
	67/1 *strapped to* 61/6				
	67/6 *strapped to* 61/2				
Coaxial connections					
	SK2 Waveform Gen. 104		*to* SK10 Amp (IF & Vid)(*b*)		
	SK2 (NBW) Amp(*b*)		*to* SK4 Amp (IF & Vid)(*b*)		
	SK5 (IF & Vid) Amp(*b*)		*to* SK6 Amp (AJ & Vid)(*a* & *b*)		
	SK7 (AJ & Vid) Amp(*a* & *b*)		*to* SK6 Amp (IF & Vid)(*b*)		
	SK6 Marker Unit 27(1)		*to* SK5 Marker Unit 27(2)		
Connections to Rectifier Unit 15, Ref. No. 10D/17761(3)					
(133)	PL1/1	—	—	Earth	
(134)	2	—	59/5,6,7,8, *strapped together*	—	+50V
(135)	3	—	59/1,2,3,4, *strapped together*	—	−50V
(136)	4	—	59/5,6,7,8, *strapped together*	—	+50V
(137)	5	—	59/9,10,11,12, *strapped together*	—	−50V
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	51/1	—	Mains input
(144)	12	—	51/2	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(4)					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	60/5,6,7,8, *strapped together*	—	+50V
(147)	3	—	60/1,2,3,4, *strapped together*	—	−50V
(148)	4	—	60/5,6,7,8, *strapped together*	—	+50V
(149)	5	—	60/9,10,11,12, *strapped together*	—	−50V
(150)	6	—	—	—	—
(151)	7	—	—	—	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	—	—	—	—
(155)	11	—	51/7	—	Mains input
(156)	12	—	51/8	—	Mains input

RACK ASSEMBLY TYPE 310E

(Ref. No. 10D/21404)

	(3) Rectifier unit Type 15 10D/17761 RU15	Panel (blanking) 4639 (Ref. No. 10D/19663)
6	(2) Rectifier unit Type 15	Panel (blanking) 4639
	(b) Amplifier (N.B.W.) Type A3679 10U/16026 AMPNBW	(1) Rectifier unit Type 15
18	(b) Amplifier (IF and Vid.) Type A3680 10U/16027 AMPIF	(a and b) Amplifier (AJ and Vid.) Type A3681 10U/16028 AMPAJ 51
28	(2) Marker unit (range) Type 27 10D/18308 MU27	(a) Amplifier (IF and Vid.) Type A3680 61
30 32 34	(1) Marker unit (range) Type 27	(a) Amplifier (N.B.W.) Type A3679 63 65 67

Fig. 6. Rack assembly Type 310E, schematic

SCHEDULE 1

Rack assembly Type 310E—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761 (1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	26	61/5, 61/7, 61/6, 61/8, *strapped together*	PL11/2 AJ & Vid Amp (*a* & *b*)	50V output
(3)	3	27	61/1, 61/2, 61/3, 61/4, *strapped together*	PL11/3 AJ & Vid Amp (*a* & *b*)	50V output (−*ve*)
(4)	4	—	61/7, 61/6, 61/8, 61/5, *strapped together*	—	50V output
(5)	5	—	61/9, 61/10, 61/11, 61/12, *strapped together*	—	50V output (−*ve*)
(6)	6	—	—	—	—
(7)	7	—	63/11, 65/11, 67/11, *strapped together*	—	AFC (earth)
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	51/11	—	Mains input
(12)	12	—	51/12	—	Mains input
(13)	PL2/1	—	67/7	—	AFC(*a*)
(14)	2	—	—	—	—
(15)	3	—	67/9	—	AFC(*a*)
(16)	4	—	63/7	—	AFC(1)
(17)	5	—	63/9	—	AFC(1)
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	65/9	—	AFC(*b*)
(21)	9	—	—	—	—
(22)	10	—	65/7	—	AFC(*b*)
(23)	11	—	—	—	—
(24)	12	—	—	—	—
Connections to Amplifier (AJ & Vid) A3681, Ref. No. 10U/16028(*a* & *b*)					
(25)	PL11/1	—	—	—	Earth
(26)	2	2 & 38	—	PL1/2 Rect. 15(1) PL10/2 IF & Vid Amp(*a*)	—
(27)	3	3 & 39	—	PL1/3 Rect. 15(1) PL10/3 IF & Vid Amp(*a*)	—
(28)	4	—	67/4	—	CU619(*a*) STC(*a*) PL.AK/4
(29)	5	—	67/3	—	CU619(*a*) LPF(*a*) PL.AK/3
(30)	6	—	65/4	—	CU619(*b*) STC(*b*) PL.AK/4
(31)	7	—	65/3	—	CU619(*b*) LPF(*b*) PL.AK/3
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	51/3	—	Mains input
(36)	12	—	51/4	—	Mains input
Connections to Amplifier (IF & Vid) A3680, Ref. No. 10U/16027(*a*)					
(37)	PL10/1	—	—	Earth	—
(38)	2	26 & 50	—	PL11/2 AJ & Vid Amp(*a* & *b*) PL9/2 NBW Amp(*a*)	—
(39)	3	27 & 51	—	PL11/3 AJ & Vid Amp(*a* & *b*) PL9/3 NBW Amp(*a*)	—
(40)	4	—	67/2	—	CU619(*a*) IAGC(*a*) PL.AK/2
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	51/1	—	Mains input
(48)	12	—	51/2	—	Mains input

SCHEDULE 1. Rack assembly Type 310E—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*a*)					
(49)	PL9/1	—	—	Earth	—
(50)	2	38 & 122	—	PL10/2 IF & Vid Amp(*a*) PL7/2 RM27(1)	—
(51)	3	39 & 123	—	PL10/3 IF & Vid Amp(*a*) PL7/3 RM27(1)	—
(52)	4	—	67/5	—	CU619(*a*) NBW(*a*) PL.AK/5
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	51/7	—	Mains input
(60)	12	—	51/8	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(2)					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(63)	3	—	28/1, 28/2, 28/3, 38/4, *strapped together*	—	50V output (—*ve*)
(64)	4	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(65)	5	—	28/9, 28/10, 28/11, 28/12, *strapped together*	—	50V output (—*ve*)
(66)	6	—	—	—	—
(67)	7	—	30/11, 32/11, 34/11, *strapped together*	—	AFC (earth)
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	18/11	—	Mains input
(72)	12	—	18/12	—	Mains input
(73)	PL2/1	—	34/7	—	AFC(2)
(74)	2	—	—	—	—
(75)	3	—	34/9	—	AFC(2)
(76)	4	—	30/7	—	AFC(3)
(77)	5	—	30/9	—	AFC(3)
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	—	—	—
(84)	12	—	—	—	—
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*b*)					
(85)	PL9/1	—	—	Earth	—
(86)	2	98	—	PL10/2 IF & Vid Amp(*b*)	—
(87)	3	99	—	PL10/3 IF & Vid Amp(*b*)	—
(88)	4	—	65/5	—	CU619(*b*) NBW(*b*) PL.AK/5
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	18/9	—	Mains input
(96)	12	—	18/10	—	Mains input

SCHEDULE 1. Rack assembly Type 310E—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Connections to Amplifier (IF & Vid) A3680, Ref. 10U/16027(*b*)					
(97)	PL10/1	—	—	Earth	—
(98)	2	86	—	PL7/2 RM27(1) &	—
		122	—	PL9/2 NBW Amp(*b*)	—
(99)	3	87	—	PL7/3 RM27(1) &	—
		123	—	PL9/3 NBW Amp(*b*)	—
(100)	4	—	65/2	—	IAGC(*b*) PL.AK/2 CU619(*b*)
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	18/5	—	Mains input
(108)	12	—	18/6	—	Mains input
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308(2)					
(109)	PL7/1	—	—	Earth	—
(110)	2	122	—	PL7/2 RM27(1) &	—
		98	—	PL10/2 IF & Vid Amp(*b*)	—
(111)	3	123	—	PL7/3 RM27(1) &	—
		99	—	PL10/3 IF & Vid Amp(*b*)	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	PL7/7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	18/1	—	Mains input
(120)	12	—	18/2	—	Mains input
Connections to Marker Unit (Range) 27, Ref. No. 10D/18308(1)					
(121)	PL7/1	—	—	Earth	—
(122)	2	50	—	PL9/2 NBW Amp(*a*) &	—
		110	—	PL7/2 RM27(2)	
(123)	3	51	—	PL9/3 NBW Amp(*a*) &	—
		111	—	PL7/3 RM27(2)	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	—	—	—	—
(128)	8	—	—	—	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	18/3	—	Mains input
(132)	12	—	18/4	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(3)					
(133)	PL1/1	—	—	Earth	—
(134)	2	—	6/5, 6/6, 6/7 & 6/8, *strapped together*	—	+50V
(135)	3	—	6/1, 6/2, 6/3, 6/4, *strapped together*	—	−50V
(136)	4	—	6/5, 6/6, 6/7, 6/8, *strapped together*	—	+50V
(137)	5	—	6/9, 6/10, 6/11, 6/12, *strapped together*	—	−50V
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	18/7	—	Mains input
(144)	12	—	18/8	—	Mains input

Extra connections

65/1 *strapped to* 61/5
65/6 *strapped to* 61/1
67/1 *strapped to* 61/6
67/6 *strapped to* 61/2

Coaxial interconnection

SK2 (NBW) Amp(*a*)	*to*	SK4 (IF & Vid) Amp(*a*)
SK5 (IF & Vid) Amp(*a*)	*to*	SK1 (AJ & Vid) Amp(*a & b*)
SK2 (AJ & Vid) Amp(*a & b*)	*to*	SK6 (IF & Vid) Amp(*a*)
SK2(NBW) Amp(*b*)	*to*	SK4 (IF & Vid) Amp(*b*)
SK5 (IF & Vid) Amp(*b*)	*to*	SK6 (AJ & Vid) Amp(*a & b*)
SK7 (AJ & Vid) Amp(*a & b*)	*to*	SK6 (IF & Vid) Amp.(*b*)
SK6 Marker Unit 27(1)	*to*	SK5 Marker Unit 27(2)

RACK ASSEMBLY TYPE 310F

(Ref. No. 10D/21405)

	(3) Rectifier unit Type 15 10D/17761 RU15	(1) Waveform generator (anti-sea clutter) Type 104 10V/16079
	(2) Rectifier unit Type 15	(2) Waveform generator (anti-sea clutter) Type 104
	(b) Amplifier (N.B.W.) Type A3679 10U/16026 AMPNBW	(1) Rectifier unit Type 15
18	(b) Amplifier (IF and Vid.) Type A3680 10U/16027 AMPIF	(a and b) Amplifier (AJ and Vid.) Type A3681 10U/16028 AMPAJ 51
28	(2) Marker unit (range) Type 27A 10D/21435 MU27A	(a) Amplifier (IF and Vid.) Type A3680 61
30 32	(1) Marker unit (range) Type 27A	(a) Amplifier (N.B.W.) Type A3679 63 65 67

Fig. 7. Rack assembly Type 310F, schematic

SCHEDULE 1

Rack assembly Type 310F—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761(1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	26	61/5, 61/7, 61/6 & 61/8, *strapped together*	PL11/2 AJ & Vid Amp(*a* & *b*)	50V output
(3)	3	27	61/1, 61/2, 61/3 & 61/4, *strapped together*	PL11/3 AJ & Vid Amp(*a* & *b*)	50V output (−*ve*)
(4)	4	—	61/7, 61/6, 61/8 & 61/5, *strapped together*	—	50V output
(5)	5	—	61/9, 61/10, 61/11, 61/12, *strapped together*	—	50V output (−*ve*)
(6)	6	—	—	—	—
(7)	7	—	63/11, 65/11 & 67/11, *strapped together*	—	AFC (earth)
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	51/11	—	Mains input
(12)	12	—	51/12	—	Mains input
(13)	PL2/1	—	67/7	—	AFC(*a*)
(14)	2	—	—	—	—
(15)	3	—	67/9	—	AFC(*a*)
(16)	4	—	63/7	—	AFC(1)
(17)	5	—	63/9	—	AFC(1)
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	65/9	—	AFC(*b*)
(21)	9	—	—	—	—
(22)	10	—	65/7	—	AFC(*b*)
(23)	11	—	—	—	—
(24)	12	—	—	—	—
Connections to Amplifier (AJ & Vid) A3681, Ref. No. 10U/16028(*a* & *b*)					
(25)	PL11/1	—	—	—	Earth
(26)	2	2 & 38	—	PL1/2 Rect. 15(1) PL10/2 IF & Vid Amp(*a*)	—
(27)	3	3 & 39	—	PL1/3 Rect. 15(1) PL10/3 IF & Vid Amp(*a*)	—
(28)	4	—	67/4	—	CU619(*a*) STC(*a*) PL.AK/4
(29)	5	—	67/3	—	CU619(*a*) LPF(*a*) PL.AK/3
(30)	6	—	65/4	—	CU619(*b*) STC(*b*) PL.AK/4
(31)	7	—	65/3	—	CU619(*b*) LPF(*b*) PL.AK/3
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	51/3	—	Mains input
(36)	12	—	51/4	—	Mains input
Connections to Amplifier (IF & Vid) A3680, Ref. No. 10U/16027(*a*)					
(37)	PL10/1	—	—	Earth	—
(38)	2	26 & 50	—	PL11/2 AJ & Vid Amp(*a* & *b*) PL9/2 NBW Amp(*a*)	—
(39)	3	27 & 51	—	PL11/3 AJ & Vid Amp(*a* & *b*) PL9/3 NBW Amp(*a*)	—
(40)	4	—	67/2	—	CU619(*a*) IAGC(*a*) PL.AK/2
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	51/1	—	Mains input
(48)	12	—	51/2	—	Mains input

SCHEDULE 1. Rack assembly Type 310F—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*a*)					
(49)	PL9/1	—	—	Earth	—
(50)	2	38 & 122	—	PL10/2 IF & Vid Amp(*a*) PL7/2 RM27(1)	—
(51)	3	39 & 123	—	PL10/3 IF & Vid Amp(*a*) PL7/3 RM27(1)	—
(52)	PL9/4	—	67/5	—	CU619(*a*) NBW(*a*) PL.AK/5
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	51/7	—	Mains input
(60)	12	—	51/8	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(2)					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	28/5, 28/6, 28/7, & 28/8, *strapped together*	—	50V output
(63)	3	—	28/1, 28/2, 28/3, & 28/4, *strapped together*	—	50V output (—*ve*)
(64)	4	—	28/5, 28/6, 28/7, & 28/8, *strapped together*	—	50V output
(65)	5	—	28/9, 28/10, 28/11, & 28/12, *strapped together*	—	50V output (—*ve*)
(66)	6	—	—	—	—
(67)	7	—	30/11, 32/11, & 34/11, *strapped together*	—	AFC (earth)
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	18/11	—	Mains input
(72)	12	—	18/12	—	Mains input
(73)	PL2/1	—	34/7	—	AFC(2)
(74)	2	—	—	—	—
(75)	3	—	34/9	—	AFC(2)
(76)	4	—	30/7	—	AFC(3)
(77)	5	—	30/0	—	AFC(3)
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	—	—	—
(84)	12	—	—	—	—
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*b*)					
(85)	PL9/1	—	—	Earth	—
(86)	2	98	—	PL10/2 IF & Vid Amp (*b*)	—
(87)	3	99	—	PL10/3 IF & Vid Amp(*b*)	—
(88)	4	—	65/5	—	CU619(*b*) NBW(*b*) PL.AK5
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026					
(93)	PL9/9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	18/9	—	Mains input
(96)	12	—	18/10	—	Mains input

SCHEDULE 1. Rack assembly Type 310F—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplier (IF & Vid) A3680, Ref. No. 10U/16027(*b*)					
(97)	PL10/1	—	—	Earth	—
(98)	2	86	—	PL7/2 RM27(1)	—
		122	—	PL9/2 NBW Amp(*b*)	—
(99)	3	87	—	PL7/3 RM27(1)	—
		123	—	PL9/3 NBW Amp(*b*)	—
(100)	4	—	65/2	—	IAGC(*b*) PL.AK/2 CU619(*b*)
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	18/5	—	Mains input
(108)	12	—	18/6	—	Mains input
Connections to Marker Unit (Range) 27A, Ref. No. 10D/21435 (2)					
(109)	PL7/1	—	—	Earth	—
(110)	2	122	—	PL7/2 RM27(1) &	—
		98	—	PL10/2 IF & Vid Amp(*b*)	
(111)	3	123	—	PL7/3 RM27(1) &	—
		99	—	PL10/3 IF & Vid Amp(*b*)	
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	18/1	—	Mains input
(120)	12	—	18/2	—	Mains input
Connections to Marker Unit (Range) 27A, Ref. No. 10D/21435(1)					
(121)	PL7/1	—	—	Earth	—
(122)	2	50	—	PL9/2 NBW Amp(*a*) &	
		110	—	PL7/2 RM27(2)	—
(123)	3	51	—	PL9/3 NBW Amp(*a*) &	—
		111	—	PL7/3 RM27(2)	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	—	—	—	—
(128)	8	—	—	—	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	18/3	—	Mains input
(132)	12	—	18/4	—	Mains input
Connections to Waveform Generator (ASC)104, Ref. No. 10V/16079(1)					
(133)	PL1/1	—	—	Earth	—
(134)	2	—	—	—	—
(135)	3	—	—	—	—
(136)	4	—	—	—	—
(137)	5	—	—	—	—
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	51/11	—	Mains input
(144)	12	—	51/12	—	Mains input
Connections to Waveform Generator (ASC)104, Ref. No. 10V/16079(2)					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	—	—	—
(147)	3	—	—	—	—
(148)	4	—	—	—	—
(149)	5	—	—	—	—
(150)	6	—	—	—	—
(151)	7	—	—	—	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	—	—	—	—
(155)	11	—	51/5	—	Mains input
(156)	12	—	51/6	—	Mains input

SCHEDULE 1. Rack assembly Type 310F—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761(3)					
(157)	PL1/1	—	—	Earth	—
(158)	2	—	6/5, 6/6, 6/7, 6/8, *strapped together*	—	+50V
(159)	3	—	6/1, 6/2, 6/3, 6/4, *strapped together*	—	−50V
(160)	4	—	6/5, 6/6, 6/7, 6/8, *strapped together*	—	+50V
(161)	5	—	6/9, 6/10, 6/11, 6/12, *strapped together*	—	−50V
(162)	6	—	—	—	—
(163)	7	—	—	—	—
(164)	8	—	—	—	—
(165)	9	—	—	—	—
(166)	10	—	—	—	—
(167)	11	—	18/7	—	Mains input
(168)	12	—	18/8	—	Mains input

Extra connections

65/1 *strapped to* 61/5
65/6 *strapped to* 61/1
67/1 *strapped to* 61/6
67/6 *strapped to* 61/2

Coaxial interconnections

SK2 (NBW) Amp(*a*)—SK4 (IF & Vid) Amp(*a*)
SK5 (IF & Wid) Amp(*a*)—SK1 (AJ & Vid) Amp(*a & b*)
SK2 (AJ & Vid) Amp(*a & b*)—SK6 (IF & Vid) Amp(*a*)
SK2 (NBW) Amp(*b*)—SK4 (IF & Vid) Amp(*b*)
SK5 (IF & Vid) Amp(*b*)—SK6 (AJ & Vid) Amp(*a & b*)
SK7 (AJ & Vid) Amp(*a & b*)—SK6 (IF & Vid) Amp(*b*)
SK6 Marker Unit 27(1)—SK5 Marker Unit 27(2)
SK2 Wave. Gen. 104(1)—SK10 Amp(IF & Vid)(*b*)

RACK ASSEMBLY TYPE 310G

(Ref. No. 10D/22334)

Panel (blanking) 4639 (Ref. No. 10D/19663)	(1) Waveform generator (anti-sea clutter) Type 104 10V/16079
(2) Rectifier unit Type 15 10D/17761 RU15	(2) Waveform generator (anti-sea clutter) Type 104
(b) Amplifier (N.B.W.) Type A3679 10U/16026 AMPNBW	(1) Rectifier unit Type 15
(b) Amplifier (IF and Vid.) Type A3680 10U/16027 AMPIF	(a and b) Amplifier (AJ and Vid.) Type A3681 10U/16028 AMPAJ
(2) Marker unit (range) Type 27A 10D/21435 MU27A	(a) Amplifier (IF and Vid.) Type A3680
(1) Marker unit (range) Type 27A	(a) Amplifier (N.B.W.) Type A3679

Fig. 8. Rack assembly Type 310G, schematic

SCHEDULE 1

Rack assembly Type 310G—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761(1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	26	61/5, 61/7, 61/6, 61/8, *strapped together*	PL11/2 AJ & Vid Amp(*a* & *b*)	50V output
(3)	3	27	61/1, 61/2, 61/3, 61/4, *strapped together*	PL11/3 AJ & Vid Amp(*a* & *b*)	50V output (−*ve*)
(4)	4	—	61/7, 61/6, 61/8, 61/5, *strapped together*	—	50V output
(5)	5	—	61/9, 61/10, 61/11, 61/12, *strapped together*	—	50V output (−*ve*)
(6)	6	—	—	—	—
(7)	7	—	63/11, 65/11, 67/11, *strapped together*	—	AFC (earth)
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	51/11	—	Mains input
(12)	12	—	51/12	—	Mains input
(13)	PL2/1	—	67/7	—	AFC(*a*)
(14)	2	—	—	—	—
(15)	3	—	67/9	—	AFC(*a*)
(16)	4	—	63/7	—	AFC(1)
(17)	5	—	63/9	—	AFC(1)
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	65/9	—	AFC(*b*)
(21)	9	—	—	—	—
(22)	10	—	65/7	—	AFC(*b*)
(23)	11	—	—	—	—
(24)	12	—	—	—	—
Connections to Amplifier (AJ & Vid) A3681, Ref. No. 10U/16028(*a* & *b*)					
(25)	PL11/1	—	—	—	Earth
(26)	2	2 & 38	—	PL1/2 Rect15(1) PL10/2 IF & Vid Amp(*a*)	—
(27)	3	3 & 39	—	PL1/3 Rect15(1) PL10/3 IF & Vid Amp(*a*)	—
(28)	4	—	67/4	—	CU619(*a*) STC(*a*) PL.AK/4
(29)	5	—	67/3	—	CU619(*a*) LPF(*a*) PL.AK/3
(30)	6	—	65/4	—	CU619(*b*) STC(*b*) PL.AK/4
(31)	7	—	65/3	—	CU619(*b*) LPF(*b*) PL.AK/3
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	51/3	—	Mains input
(36)	12	—	51/4	—	Mains input
Connections to Amplifier (IF & Vid) A3680, Ref. 10U/16027(*a*)					
(37)	PL10/1	—	—	Earth	—
(38)	2	26 & 50	—	PL11/2 AJ & Vid Amp (*a* & *b*) PL9/2 NBW Amp(*a*)	—
(39)	3	27 & 51	—	PL11/3 AJ & Vid Amp(*a* & *b*) PL9/3 NBW Amp(*a*)	—
(40)	4	—	67/2	—	CU619(*a*) IAGC(*a*) PL.AK/2
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	57/1	—	Mains input
(48)	12	—	51/2	—	Mains input

SCHEDULE 1. Rack assembly Type 310G—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*a*)					
(49)	PL9/1	—	—	Earth	—
(50)	2	38 & 122	—	PL10/2 IF & Vid Amp(*a*) PL7/2 RM27(1)	—
(51)	3	39 & 123	—	PL10/3 IF & Vid Amp(*a*) PL7/3 RM27(1)	—
(52)	4	—	67/5	—	CU619(*a*) NBW(*a*) PL.AK/5
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	51/7	—	Mains input
(60)	12	—	51/8	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10U/17761(2)					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(63)	3	—	28/1, 28/2, 38/3, 28/4, *strapped together*	—	50V output (−*ve*)
(64)	4	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	50V output
(65)	5	—	28/9, 28/10, 28/11, 28/12, *strapped together*	—	50V output (−*ve*)
(66)	6	—	—	—	—
(67)	7	—	30/11, 32/11, 34/11, *strapped together*	—	AFC (earth)
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	18/11	—	Mains input
(72)	12	—	18/12	—	Mains input
(73)	PL2/1	—	34/7	—	AFC(2)
(74)	2	—	—	—	—
(75)	3	—	34/9	—	AFC(2)
(76)	4	—	30/7	—	AFC(3)
(77)	5	—	30/9	—	AFC(3)
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	—	—	—
(84)	12	—	—	—	—
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*b*)					
(85)	PL9/1	—	—	Earth	—
(86)	2	98	—	PL10/2 IF & Vid Amp(*b*)	—
(87)	3	99	—	PL10/3 IF & Vid Amp(*b*)	—
(88)	4	—	65/5	—	CU619(*b*) NBW(*b*) PL.AK5
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026					
(93)	PL9/9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	18/9	—	Mains input
(96)	12	—	18/10	—	Mains input
Connections to Amplifier (IF & Vid) A3680, Ref. No. 10U/16027(*b*)					
(97)	PL10/1	—	—	Earth	—
(98)	2	86	—	PL7/2 RM27(1)	—
		122	—	PL9/2 NBW Amp(*b*)	—
(99)	3	87	—	PL7/3 RM27(1)	—
		123	—	PL9/3 NBW Amp(*b*)	—
(100)	4	—	65/2	—	IAGC(*b*) PL.AK/2 CU619(*b*)
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	18/5	—	Mains input
(108)	12	—	18/6	—	Mains input

SCHEDULE 1. Rack assembly Type 310G—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Marker Unit (Range) 27A, Ref. No. 10D/21435(2)					
(109)	PL7/1	—	—	Earth	—
(110)	2	122	—	PL7/2 RM27 (1) &	
		98	—	PL10/2 IF & Vid Amp(*b*)	
(111)	3	123	—	PL7/3 RM27 (1) &	—
		99	—	PL10/3 IF & Vid Amp(*b*)	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	18/1	—	Mains input
(120)	12	—	18/2	—	Mains input
Connections to Marker Unit (Range) 27A, Ref. No. 10D/21435(1)					
(121)	PL7/1	—	—	Earth	—
(122)	2	50	—	PL9/2 NBW Amp(*a*) &	—
		110	—	PL7/2 RM27(2)	—
(123)	3	51	—	PL9/3 NBW Amp(*a*) &	—
		111	—	PL7/3 RM27(2)	—
(124)	—	—	—	—	—
(125)	—	—	—	—	—
(126)	—	—	—	—	—
(127)	7	—	—	—	—
(128)	8	—	—	—	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	18/3	—	Mains input
(132)	12	—	18/4	—	Mains input
Connections to Waveform Generator (ASC) 104, Ref. No. 10V/16079(1)					
(133)	PL1/1	—	—	Earth	—
(134)	2	—	—	—	—
(135)	3	—	—	—	—
(136)	4	—	—	—	—
(137)	5	—	—	—	—
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	51/11	—	—
(144)	12	—	51/12	—	—
Connections to Waveform Generator (ASC) 104, Ref. No. 10V/16079(2)					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	—	—	—
(147)	3	—	—	—	—
(148)	4	—	—	—	—
(149)	5	—	—	—	—
(150)	6	—	—	—	—
(151)	7	—	—	—	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	—	—	—	—
(155)	11	—	51/5	—	—
(156)	12	—	51/6	—	—

Extra connections

65/1 *strapped to* 61/5
65/6 *strapped to* 61/1
67/1 *strapped to* 61/6
67/6 *strapped to* 61/2

Coaxial interconnection

SK2 (NBW) Amp(*a*)	*to*	SK4 (IF & Vid) Amp(*a*)
SK5 (IF & Vid) Amp(*a*)	*to*	SK1 (AJ & Vid) Amp(*a* & *b*)
SK2 (AJ & Vid) Amp(*a* & *b*)	*to*	SK6 (IF & Vid) Amp(*a*)
SK2 (NBW) Amp(*b*)	*to*	SK4 (IF & Vid) Amp(*b*)
SK5 (IF & Vid) Amp(*b*)	*to*	SK6 (AJ & Vid) Amp(*a* & *b*)
SK7 (AJ & Vid) Amp(*a* & *b*)	*to*	SK6 (IF & Vid) Amp(*a*)
SK6 Marker Unit 27(1)		SK5 Marker Unit 27(2)
SK2 Wav. Gen. 104(1)		SK10 Amp (IF & Vid)(*b*)

RACK ASSEMBLY TYPE 310H
(Ref. No. 10D/22335)

	Rectifier Unit 15 Ref. No. 10D/17761 (3)	Panel (Blanking) 4639 (Stores reference 10D/19663)
6	Rectifier Unit 15 Ref. No. 10D/17761 (2)	Panel (Blanking) 4639
	Amplifier (NBW) A.3679 Ref. No. 10U/16027 (*b*)	Rectifier Unit 15 Ref. No. 10D/17761 (1)
18	Amplifier (IF & Vid.) A.3680 Ref. No. 10U/16027 (*b*)	Amplifier (AJ & Vid.) A.3681 Ref. No. 10U/16028 (*a*) and (*b*) 51
28	Marker Unit (Range) 27A Ref. No. 10D/21435 (2)	Amplifier (IF & Vid.) A.3680 Ref. No. 10U/16027 (*a*) 61
30 32 34	Marker Unit (Range) 27A Ref. No. 10D/21435 (1)	Amplifier (NBW) 63 A.3679 65 Ref. No. 10U/16026 67 (*a*)

Fig. 9. Rack assembly Type 310H, schematic

RACK ASSEMBLY TYPE 310H

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761 (1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	26	61/5, 61/7, 61/6, 61/8, *Strapped*	PL11/2 AJ and Vid. Amp.(*a* & *b*)	50V Output (+ve)
(3)	3	27	61/1, 61/2, 16/3, 61/4, *Strapped*	PL11/3 AJ and Vid. Amp(*a* & *b*)	50V Output (—ve)
(4)	4	—	61/7, 61/6, 61/8, 61/5, *Strapped*	—	50V Output (+ve)
(5)	5	—	61/9, 61/10, 61/11, 61/12, *Strapped*	—	50V Output (—ve)
(6)	6	—	—	—	—
(7)	7	—	63/11, 65/11, 67/11, *Strapped*	—	AFC (Earth)
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	51/11	—	Mains input
(12)	12	—	51/12	—	Mains input
(13)	PL2/1	—	67/7	—	AFC(*a*)
(14)	2	—	—	—	—
(15)	3	—	67/9	—	AFC(*a*)
(16)	4	—	63/7	—	AFC(1)
(17)	5	—	63/9	—	AFC(1)
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	65/9	—	AFC(*b*)
(21)	9	—	—	—	—
(22)	10	—	65/7	—	AFC(*b*)
(23)	11	—	—	—	—
(24)	12	—	—	—	—
Connections to Amplifier (AJ and Vid.) A.3681, Ref. No. 10U/16028 (*a* & *b*)					
(25)	PL11/1	—	—	—	Earth
(26)	2	2 & 38	—	PL1/2 Rect. 15(1) PL10/2 (IF & Vid.) Amp(*a*)	—
(27)	3	3 & 39	—	PL1/3 Rect. 15(1) PL10/3 (IF & Vid.) Amp(*a*)	—
(28)	4	—	67/4		CU619(*a*)STC(*a*) PL.AK/4
(29)	5	—	67/3	—	CU619(*a*)LPF(*a*) PL.AK/3
(30)	6	—	65/4	—	CU619(*b*)STC(*b*) PL.AK/4
(31)	7	—	65/3	—	CU619(*b*)LPF(*b*) PL.AK/3
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	51/3	—	Mains input
(36)	12	—	51/4	—	Mains input
Connections to Amplifier (IF & Vid.) A.3680, Ref. No. 10U/16027(*a*)					
(37)	PL10/1	—	—	Earth	—
(38)	2	26 & 50	—	PL11/2 AJ & Vid. Amp(*a* & *b*) PL9/2 NBW Amp(*a*)	
(39)	3	27 & 51	—	PL11/3 AJ & Vid. Amp(*a* & *b*) PL9/3 NBW Amp(*a*)	
(40)	4	—	67/2	—	CU619(*a*) IAGC(*a*) PLK.AK/2
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	51/1	—	Mains input
(48)	12	—	51/2	—	Mains input
Connections to Amplifier (NBW) A.3679, Ref. No. 10U/16026(*a*)					
(49)	PL9/1	—	—	Earth	—
(50)	2	38 & 122	—	PL10/2 IF & Vid. Amp(*a*) PL7/2 RM27(1)	—
(51)	3	39 & 123	—	PL10/3 IF & Vid. Amp(*a*) PL7/3 RM27(1)	—
(52)	4	—	67/5	—	CU619(*a*)NBW(*a*) PLK.AK/5
(53)	5	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	51/7	—	Mains input
(60)		12	—	51/8	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(2)						
(61)		PL1/1	—	—	Earth	—
(62)		2	—	28/5, 28/6, 28/7, 28/8, *Strapped*	—	50V Output (+ ve)
(63)		3	—	28/1, 28/2, 28/3, 28/4, *Strapped*	—	50V Output —ve)
(64)		4	—	28/5, 28/6, 28/7, 28/8, *Strapped*	—	50V Output (+ ve)
(65)		5	—	28/9, 28/10, 28/11, 28/12, *Strapped*	—	50V Output (—ve)
(66)		6	—	—	—	—
(67)		7	—	30/11, 32/11, 34/11, *Strapped*	—	AFC (Earth)
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	18/11	—	Mains input
(72)		12	—	18/12	—	Mains input
(73)		PL2/1	—	34/7	—	AFC(2)
(74)		2	—	—	—	—
(75)		3	—	34/9	—	AFC(2)
(76)		4	—	30/7	—	AFC(3)
(77)		5	—	30/9	—	AFC(3)
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	—	—	—
(84)		12	—	—	—	—
Connections to Amplifier (NBW) A.3679, Ref. No. 10U/16026(*b*)						
(85)		PL9/1	—	—	Earth	—
(86)		2	98	—	PL10/2 IF & Vid. Amp(*b*)	—
(87)		3	99	—	PL10/3 IF & Vid Amp(*b*)	—
(88)		4	—	65/5	—	CU619(*b*)NBW(*b*) PL.AK/5
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	18/9	—	Mains input
(96)		12	—	18/10	—	Mains input
Connections to Amplifier (IF & Video) A.3680, Ref. No. 10U/16027(*b*)						
(97)		PL10/1	—	—	Earth	—
(98)		2	86	—	PL7/2 RM27(1) &	—
			122	—	PL9/2 NBW Amp(*b*)	—
(99)		3	87	—	PL7/3 RM27(1) &	—
			123	—	PL9/3 NBW Amp(*b*)	—
(100)		4	—	65/2	—	IAGC(*b*)PL.AK/2 CU619(*b*)
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	18/5	—	Mains input
(108)		12	—	18/6	—	Mains input
Connections to Marker Unit (Range) 27A, Ref. No. 10D/21435(2)						
(109)		PL7/1	—	—	Earth	—
(110)		2	122	—	PL7/2 RM27(1) &	—
			98	—	PL10/2 IF & Vid. Amp(*b*)	—

RACK ASSEMBLY TYPE 310H *(continued)*

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(111)		3 123	—	PL7/3 RM27(1) &	
		99	—	PL10/3 IF & Vid. Amp(*b*)	—
(112)		4 —	—	—	—
(113)		5 —	—	—	—
(114)		6 —	—	—	—
(115)		7 —	—	—	—
(116)		8 —	—	—	—
(117)		9 —	—	—	—
(118)		10 —	—	—	—
(119)		11 —	18/1	—	Mains input
(120)		12 —	18/2	—	Mains input
Connections to Marker Unit (Range) 27A, Ref. No. 10D/21435(1)					
(121)		PL7/1 —	—	Earth	—
(122)		2 50	—	PL9/2 NBW Amp(*a*) &	—
		110	—	PL7/2 RM27(2)	—
(123)		3 51	—	PL9/3 NBW Amp(*a*) &	—
		111	—	PL7/3 RM27(2)	
(124)		4 —	—	—	—
(125)		5 —	—	—	—
(126)		6 —	—	—	—
(127)		7 —	—	—	—
(128)		8 —	—	—	—
(129)		9 —	—	—	—
(130)		10 —	—	—	—
(131)		11 —	18/3	—	Mains input
(132)		12 —	18/4	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(3)					
(133)		PL1/1 —	—	Earth	—
(134)		2 —	6/5, 6/6, 6/7, 6/8, *strapped*	—	50V output (+ve)
(135)		3 —	6/1, 6/2, 6/3, 6/4, *strapped*	—	50V output (—ve)
(136)		4 —	6/5, 6/6, 6/7, 6/8, *strapped*	—	50V output (+ve)
(137)		5 —	6/9, 6/10, 6/11. 6/12, *strapped*	—	50V output (—ve)
(138)		6 —	—	—	—
(139)		7 —	—	—	—
(140)		8 —	—	—	—
(141)		9 —	—	—	—
(142)		10 —	—	—	—
(143)		11 —	18/7	—	Mains input
(144)		12 —	18/8	—	Mains input

EXTRA CONNECTIONS

65/1 *strapped to* 61/5
65/6 *strapped to* 61/1
67/1 *strapped to* 61/6
67/1 *strapped to* 61/2

COAXIAL INTERCONNECTION

SK2 (NBW) Amp(*a*) *to* SK4 (IF & Vid) Amp(*a*)
SK5 (IF & Vid) Amp(*a*) *to* SK1 (AJ & Vid) Amp(*a & b*)
SK2 (AJ & Vid) Amp(*a & b*) *to* SK6 (IF & Vid) Amp(*a*)
SK2 (NBW) Amp(*b*) *to* SK4 (IF & Vid) Amp(*b*)
SK5 (IF & Vid) Amp(*b*) *to* SK6 (AJ & Vid) Amp(*a & b*)
SK7 (AJ & Vid) Amp(*a & b*) *to* SK6 (IF & Vid) Amp(*b*)
SK6 Marker Unit 27(1) *to* SK5 Marker Unit 27(2)

RACK ASSEMBLY TYPE 310J
(Ref. No. 10D/22896)

	Rectifier Unit Type 15 10D/17761 RU.15 (3)	Rectifier Unit Type 15 (5)	
6	Rectifier Unit Type 15 (2)	Rectifier Unit Type 15 (4)	
	Amplifier (NBW) Type A.3679 10U/16026 Amp.NBW (*b*)	Rectifier Unit Type 15 (1)	
18	Amplifier (IF & Vid.) Type A.3680 10U/16027 Amp.IF (*b*)	Amplifier (AJ & Vid.) Type A.3681 10U/16028 Amp.AJ (*a*) and (*b*)	51
28	Marker Unit (Range) Type 27A 10D/21435 MU.27A (2)	Amplifier (IF & Vid.) Type A.3680 (*a*)	59 60 61
30 32 34	Marker Unit (Range) Type 27A (1)	Amplifier (NBW) Type A.3679 (*a*)	63 65 67

Fig. 10. Rack assembly Type 310J, schematic

SCHEDULE 1

Rack assembly Type 310J—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761(1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	26	61/5, 61/7, 61/6, 61/8, *strapped together*	PL11/2 AJ & Vid Amp(*a* & *b*)	+50V output
(3)	3	27	61/1, 61/2, 61/3, 61/4, *strapped together*	PL/3 AJ & Vid Amp(*a* & *b*)	50V output (−*ve*)
(4)	4	—	61/7, 61/6, 61/8, 61/5, *strapped together*	—	+50V output
(5)	5	—	61/9, 61/10, 61/11, 61/12, *strapped together*	—	50V output (−*ve*)
(6)	6	—	—	—	—
(7)	7	—	63/11, 65/11, 67/11, *strapped together*	—	AFC (earth)
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	51/11	—	Mains input
(12)	12	—	51/12	—	Mains input
(13)	PL2/1	—	67/7	—	AFC(*a*)
(14)	2	—	—	—	—
(15)	3	—	67/9	—	AFC(*a*)
(16)	PL2/4	—	63/7	—	AFC(1)
(17)	5	—	63/9	—	AFC(1)
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	65/9	—	AFC(*b*)
(21)	9	—	—	—	—
(22)	10	—	65/7	—	AFC(*b*)
(23)	11	—	—	—	—
(24)	12	—	—	—	—
Connections to Amplifier (AJ & Vid) A3681, Ref. No. 10U/16028(*a* & *b*)					
(25)	PL11/1	—	—	—	Earth
(26)	2	2 & 38	—	PL1/2 Rect. 15(1) PL10/2 IF & Vid Amp(*a*)	—
(27)	3	3 & 39	—	PL1/3 Rect. 15(1) PL10/3 IF & Vid Amp(*a*)	—
(28)	4	—	67/4	—	CU619(*a*) STC(*a*) PL.AK/4
(29)	5	—	67/3	—	CU619(*a*) LPF(*a*) PL.AK/3
(30)	6	—	65/4	—	CU619(*b*) STC(*b*) PL.AK/4
(31)	7	—	65/3	—	CU619(*b*) LPF(*b*) PL.AK/3
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	51/3	—	Mains input
(36)	12	—	51/4	—	Mains input
Connections to Amplifier (IF & Vid) A3680, Ref. No. 10U/16027(*a*)					
(37)	PL10/1	—	—	Earth	—
(38)	2	26 & 50	—	PL11/2 AJ & Vid Amp(*a* & *b*) PL9/2 NBW Amp(*a*)	—
(39)	3	27 & 51	—	PL11/3 AJ & Vid Amp(*a* & *b*) PL9/3 NBW Amp(*a*)	—
(40)	4	—	67/2	—	CU619(*a*) IAGC(*a*) PL.AK/2
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	PL10/11	—	51/1	—	Mains input
(48)	12	—	51/2	—	Mains input

SCHEDULE 1. Rack assembly Type 310J—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*a*)					
(49)	PL9/1	—	—	Earth	—
(50)	2	38 & 122	—	PL10/2 IF & Vid Amp(*a*) PL7/2 RM27A(1)	—
(51)	3	39 & 123	—	PL10/3 IF & Vid Amp(*a*) PL7/3 RM27A(1)	—
(52)	4	—	67/5	—	CU619(*a*) NBW(*a*) PL.AK/5
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	51/7	—	Mains input
(60)	12	—	51/8	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(2)					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	+50V output
(63)	3	—	28/1, 28/2, 28/3, 28/4, *strapped together*	—	50V output (−*ve*)
(64)	4	—	28/5, 28/6, 28/7, 28/8, *strapped together*	—	+50V output
(65)	5	—	28/9, 28/10, 28/11, 28/12, *strapped together*	—	50V output (−*ve*)
(66)	6	—	—	—	—
(67)	7	—	30/11, 32/11, 34/11, *strapped together*	—	AFC (earth)
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	18/11	—	Mains input
(72)	12	—	18/12	—	Mains input
(73)	PL2/1	—	34/7	—	AFC(2)
(74)	2	—	—	—	—
(75)	3	—	34/9	—	AFC(2)
(76)	4	—	30/7	—	AFC(3)
(77)	5	—	30/9	—	AFC(3)
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	—	—	—
(84)	12	—	—	—	—
Connections to Amplifier (NBW) A3679, Ref. No. 10U/16026(*b*)					
(85)	PL9/1	—	—	Earth	—
(86)	2	98	—	PL10/2 IF & Vid Amp(*b*)	—
(87)	3	99	—	PL10/3 IF & Vid Amp(*b*)	—
(88)	4	—	65/5	—	CU619(*b*) NBW(*b*) PL.AK/5
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	18/9	—	Mains input
(96)	12	—	18/10	—	Mains input
Connections to Amplifier (IF & Vid) A3680, Ref. No. 10U/16027(*b*)					
(97)	PL10/1	—	—	Earth	—
(98)	2	86 122	—	PL7/2 RM27(1) & PL9/2 NBW Amp(*b*)	—
(99)	3	87 123	— —	PL7/3 RM27A(1) & PL9/3 NBW Amp(*b*)	— —
(100)	4	—	65/2	—	IAGC(*b*) PL.AK/2 CU619(*b*)
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	18/5	—	Mains input
(108)	12	—	18/6	—	Mains input

SCHEDULE 1. Rack assembly Type 310J—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Marker Unit (Range) 27A, Ref. No. 10D/21435(2)					
(109)	PL7/1	—	—	Earth	—
(110)	2	122	—	PL7/2 RM27A(1) &	—
		98	—	PL10/2 IF & Vid Amp(*b*)	
(111)	3	123	—	PL7/3 RM27A(1) &	—
		99	—	PL10/3 IF & Vid Amp(*b*)	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	18/1	—	Mains input
(120)	12	—	18/2	—	Mains input
Connections to Marker Unit (Range) 27A, Ref. No. 10D/21435(1)					
(121)	PL7/1	—	—	Earth	—
(122)	2	50	—	PL9/2 NBW Amp(*a*) &	—
		110	—	PL7/2 RM27A(2)	—
(123)	3	51	—	PL9/3 NBW Amp(a) &	—
		111	—	PL7/3 RM27A(2)	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	—	—	—	—
(128)	8	—	—	—	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	18/3	—	Mains input
(132)	12	—	18/4	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(3)					
(133)	PL1/1	—	—	Earth	—
(134)	2	—	6/5, 6/6, 6/7, 6/8, *strapped*	—	50V output (+*ve*)
(135)	3	—	6/1, 6/2, 6/3, 6/4, *strapped*	—	50V output (—*ve*)
(136)	4	—	6/5, 6/6, 6/7, 6/8, *strapped*	—	50V output (+*ve*)
(137)	5	—	6/9, 6/10, 6/11, 6/12, *strapped*	—	50V output (—*ve*)
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	18/7	—	Mains input
(144)	12	—	18/8	—	Mains input
Connections to Rectifier Unit 15, Ref. No. 10D/17761(4)					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	59/5, 59/6, 59/7, 59/8, *strapped*	—	50V output (+*ve*)
(147)	3	—	59/1, 59/2, 59/3, 59/4, *strapped*	—	50V output (—*ve*)
(148)	4	—	59/5, 59/6, 59/7, 59/8, *strapped*	—	50V output (+*ve*)
(149)	5	—	59/9, 59/10, 59/11, 59/12, *strapped*	—	50V output (—*ve*)
(150)	6	—	—	—	—
(151)	7	—	—	—	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	—	—	—	—
(155)	11	—	51/5	—	Mains input
(156)	12	—	51/6	—	Mains input

SCHEDULE 1. Rack assembly Type 310J—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 15, Ref. No. 10D/17761(5)					
(157)	PL1/1	—	—	Earth	—
(158)	2	—	60/5, 60/6, 60/7, 60/8, *strapped*	—	50V output (+*ve*)
(159)	3	—	60/1, 60/2, 60/3, 60/4, *strapped*	—	50V output (—*ve*)
(160)	4	—	60/5, 60/6, 60/7, 60/8, *strapped*	—	50V output (+*ve*)
(161)	5	—	60/9, 60/10, 60/11, 60/12, *strapped*	—	50V output (—*ve*)
(162)	6	—	—	—	—
(163)	7	—	—	—	—
(164)	8	—	—	—	—
(165)	9	—	—	—	—
(166)	10	—	—	—	—
(167)	11	—	51/9	—	Mains input
(168)	12	—	51/10	—	Mains input

Extra connections

65/1 *strapped to* 61/5
65/6 *strapped to* 61/1
67/1 *strapped to* 61/6
67/6 *strapped to* 61/2

Coaxial interconnection

SK2 (NBW) Amp(*a*)	*to*	SK4 (IF & Vid) Amp(*a*)
SK5 (IF & Vid) Amp(*a*)	*to*	SK1 (AJ & Vid) Amp(*a* & *b*)
SK2 (AJ & Vid) Amp(*a* & *b*)	*to*	SK6 (IF & Vid) Amp(*a*)
SK2 (NBW) Amp(*b*)	*to*	SK4 (IF & Vid) Amp(*b*)
SK5 (IF & Vid) Amp(*b*)	*to*	SK6 (AJ & Vid) Amp(*a* & *b*)
SK7 (AJ & Vid) Amp(*a* & *b*)	*to*	SK6 (IF & Vid) Amp(*b*)
SK6 (Marker Unit 27A(1)	*to*	SK5 Marker Unit 27A(2)

RACK ASSEMBLY TYPE 311A
(Ref. No. 10D/19395)

Panel (Blanking) 4639 (Ref. No. 10D/19663)	Rectifier Unit 17 Ref. No. 10D/17779 (1)	
Panel (Blanking) 4639	Switch Unit 410 Ref. No. 10F/16163	
Panel (Blanking) 4639	Rectifier Unit 17 Ref. No. 10D/17779 (2)	
Panel (Blanking) 4639	Amplifier (Servo) 297 Ref. No. 10D/17779 (*a*)	51 52 53 54 56
Panel (Blanking) 4639	Control Unit 600 Ref. No. 10L/16029 (*a*) and (*b*)	57 58 59 60 61
Panel (Blanking) 4639	Panel (Blanking) 4639	63 65

Fig. 11. Rack assembly Type 311A, schematic

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 17, Ref. No. 10D/17779(1)					
(1)	PL1/1	—	—	—	—
(2)	2	—	—	—	—
(3)	3	—	—	—	—
(4)	4	—	—	—	—
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	106	—	PL905/10 SU410	—
(11)	11	107	—	PL905/11 SU410	—
(12)	12	108	—	PL905/12 SU410	—
	Plugs 2 and 3 not used				
(13)	PL4/1	133	—	PL908/1 SU410	—
(14)	2	134	—	PL908/2 SU410	—
(15)	3	135	—	PL908/3 SU410	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	139	—	PL908/7 SU410	—
(20)	8	140	—	PL908/8 SU410	—
(21)	9	—	—	—	—
(22)	10	—	—	Earth	—
(23)	11	—	51/11	—	Mains input
(24)	12	—	51/12	—	Mains input
Connections to Rectifier Unit 17, Ref. No. 10D/17779(2)					
(25)	PL1/1	—	—	—	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	118	—	PL906/10 SU410	—
(35)	11	119	—	PL906/11 SU410	—
(36)	12	120	—	PL906/12 SU410	—
	Plugs 2 and 3 not used				
(37)	PL4/1	121	—	PL907/1 SU410	—
(38)	2	122	—	PL907/2 SU410	—
(39)	3	123	—	PL907/3 SU410	—
(40)	4	—	—	—	—
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	127	—	PL907/7 SU410	—
(44)	8	128	—	PL907/8 SU410	—
(45)	9	—	—	—	—
(46)	10	—	—	Earth	—
(47)	11	—	51/9	—	Mains input
(48)	12	—	51/10	—	Mains input
Connections to Switch Unit 410, Ref. No. 10F/16163					
(49)	PL901/1	—	—	—	—
(50)	2	—	—	—	—
(51)	3	—	—	—	—
(52)	4	—	—	—	—
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	53/1	—	PLAL/1 CU619(2)
(59)	11	166	54/10	PL2/10 SA(*a*)	SR18 14/9 1/2°)
(60)	12	—	53/2	—	PLAL/2 CU619(2)
(61)	PL902/1	198	—	PL5/6 SA(*a*)	—
(62)	2	238	—	PL504/10 CU(*a*)	—
(63)	3	197	—	PL5/5 SA(*a*)	—
(64)	4	—	—	—	—
(65)	5	—	—	—	—
(66)	6	—	—	—	—
(67)	7	—	—	—	—
(68)	8	—	59/2	—	PLAJ/2 CU619(1)

RACK ASSEMBLY TYPE 311A (continued)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(69)	9	—		—	—	—
(70)	10	—		—	—	—
(71)	11	—		—	—	—
(72)	12	239		—	PL504/11 CU(*a*)	—
(73)	PL903/1	275		—	PL504/11 CU(*b*)	—
(74)	2	—		—	—	—
(75)	3	274		—	PL504/10 CU(*b*)	—
(76)	4	—		—	—	—
(77)	5	—		—	—	—
(78)	6	—		—	—	—
(79)	7	—		—	—	—
(80)	8	—		—	—	—
(81)	9	—		—	—	—
(82)	10	—		—	—	—
(83)	11	—		—	—	—
(84)	12	—		—	—	—
(85)	PL904/1	—		63/1	—	PLAL/1 CU619(1)
(86)	2	—		65/10	—	S.R.28 14/8
(87)	3	—		63/2	—	PLAL/2 CU619(1)
(88)	4	—		—	—	—
(89)	5	—		—	—	—
(90)	6	—		—	—	—
(91)	7	—		—	—	—
(92)	8	—		—	—	—
(93)	9	—		—	—	—
(94)	10	—		—	—	—
(95)	11	—		—	—	—
(96)	12	—		—	—	—
(97)	PL905/1	—		—	—	—
(98)	2	—		—	—	—
(99)	3	—		—	—	—
(100)	4	—		—	—	—
(101)	5	—		—	—	—
(102)	6	—		—	—	—
(103)	7	—		—	—	—
(104)	8	—		—	—	—
(105)	9	—		—	—	—
(106)	10	10		—	PL1/10 Rect.17(1)	—
(107)	11	11		—	PL1/11 Rect.17(1)	—
(108)	12	12		—	PL1/12 Rect.17(1)	—
(109)	PL906/1	—		—	—	—
(110)	2	—		—	—	—
(111)	3	—		—	—	—
(112)	4	—		—	—	—
(113)	5	—		—	—	—
(114)	6	—		—	—	—
(115)	7	—		—	—	—
(116)	8	—		—	—	—
(117)	9	—		—	—	—
(118)	10	34		—	PL1/10 Rect.17(2)	—
(119)	11	35		—	PL1/11 Rect.17(2)	—
(120)	12	36		—	PL1/12 Rect.17(2)	—
(121)	PL907/1	37		—	PL4/1 Rect.17(2)	—
(122)	2	38		—	PL4/2 Rect.17(2)	—
(123)	3	39		—	PL4/3 Rect.17(2)	—
(124)	4	—		—	—	—
(125)	5	—		—	—	—
(126)	6	—		—	—	—
(127)	7	43		—	PL4/7 Rect.17(2)	—
(128)	8	44		—	PL4/8 Rect.17(2)	—
(129)	9	—		—	—	—
(130)	10	—		—	—	—
(131)	11	—		—	—	—
(132)	12	—		—	—	—
(133)	PL908/1	13		—	PL4/1 Rect.17(1)	—
(134)	2	14		—	PL4/2 Rect.17(1)	—
(135)	3	15		—	PL4/3 Rect.17(1)	—
(136)	4	—		—	—	—
(137)	5	—		—	—	—
(138)	6	—		—	—	—
(139)	7	19		—	PL4/7 Rect.17(1)	—
(140)	8	20		—	PL4/8 Rect.17(1)	—
(141)	9	—		—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(142)	10	—		—	—	—
(143)	11	—		—	—	—
(144)	12	—		—	—	—
	Plugs 909 and 910 not used					
Connections to Amplifier (Servo) 297, Ref. No. 10U/16054(*a*)						
(145)	PL1/1	—		52/11	—	Plinth Term 67 14/9($\frac{1}{2}$°)
(146)	2	—		52/12	—	Plinth Term 68 14/9($\frac{1}{2}$°)
(147)	3	—		51/1	—	Mains input
(148)	4	—		—	Earth	—
(149)	5	—		—	—	—
(150)	6	—		51/8	—	Mains input
(151)	7	—		56/6	—	N8 S & L Cons 60
(152)	8	—		—	—	—
(153)	9	—		52/9	—	SR46 14/9($\frac{1}{2}$°)
(154)	10	—		56/7	—	N9 S & L Cons 60
(155)	11	—		56/8	—	N10 S & L Cons 60
(156)	12	—		52/10	—	SR38 14/9($\frac{1}{2}$°)
(157)	PL2/1	—		57/1 strapped 57/4	—	—
(158)	2	—	See Note 1	57/2 strapped 57/5	—	—
(159)	3	—		57/3 strapped 57/6	—	—
(160)	4	—		54/5	—	SR23 14/9($\frac{1}{2}$°)
(161)	5	—		54/4	—	SR22 14/9($\frac{1}{2}$°)
(162)	6	—		54/7	—	SR25 14/9($\frac{1}{2}$°)
(163)	7	—		54/6	—	SR24 14/9($\frac{1}{2}$°)
(164)	8	—		54/9	—	SR27 14/9($\frac{1}{2}$°)
(165)	9	—		54/8	—	SR26 14/9($\frac{1}{2}$°)
(166)	10	59		54/10	PL901/11 SU410	SR28 14/9($\frac{1}{2}$°)
(167)	11	233	56/4, 54/11, 54/3 strapped		PL503/7 CU(*a*)	SR19 & 29 14/9($\frac{1}{2}$°) N6S & L Cons 60
(168)	12	—		54/12	—	SR30 (14/9($\frac{1}{2}$°)
(169)	PL3/1	—		—	—	—
(170)	2	—		—	—	—
(171)	3	—		52/1	—	AmplidX4 14/9($\frac{1}{2}$°)
(172)	4	—		52/2	—	AmplidX3 14/9($\frac{1}{2}$°)
(173)	5	—		52/3	—	AmplidX2 14/9($\frac{1}{2}$°)
(174)	6	—		52/4	—	AmplidX1 14/9($\frac{1}{2}$°)
(175)	7	—		52/5	—	AmplidX5 14/9($\frac{1}{2}$°)
(176)	8	—		52/6	—	AmplidX6 14/9($\frac{1}{2}$°)
(177)	9	—		52/7	—	AmplidA4 14/9($\frac{1}{2}$°)
(178)	10	—		—	—	—
(179)	11	—		52/8	—	AmplidA2 14/9($\frac{1}{2}$°)
(180)	12	—		—	—	—
(181)	PL4/1	—		60/3	—	J3 S & L Cons 60
(182)	2	—		60/5	—	J5 S & L Cons 60
(183)	3	226		—	PL502/12 CU(*a*)	—
(184)	4	—		54/1	—	SR36 14/9($\frac{1}{2}$°)
(185)	5	222		—	PL502/8 CU(*a*)	—
(186)	6	223		—	PL502/9 CU(*a*)	—
(187)	7	—		53/3	—	PLAL/3 CU619(2)
(188)	8	—	56/5, 54/2 strapped		—	SR34 14/9($\frac{1}{2}$°) N7S & L Cons 60
(189)	9	220		—	PL502/6 CU(*a*)	—
(190)	10	—		60/12	—	J12 S & L Cons 60
(191)	11	—		—	—	—
(192)	12	—		—	—	—
(193)	PL5/1	—		—	—	—
(194)	2	—		60/4	—	J4 S & L Cons 60
(195)	3	—		60/7	—	J7 S & L Cons 60
(196)	4	217		—	PL502/3 CU(*a*)	—
(197)	5	63		—	PL902/3 SU410	—
(198)	6	61		—	PL902/1 SU410	—
(199)	7	—		58/2	—	K2 S & L Cons 60
(200)	8	218		—	PL502/4 CU(*a*)	—
(201)	9	219		—	PL502/5 CU(*a*)	—
(202)	10	224		—	PL502/10 CU(*a*)	—
(203)	11	225		—	PL502/11 CU(*a*)	—
(204)	12	206		60/6	PL501/2 CU(*a*)	J6 S & L Cons 60

Note 1:—*These leads from SA(a) are to be brought to a free Jones Socket SK.57 which will plug into frame plug PL.57. Strapping of 57/1 to 57/4 to be done on PL.57.*

RACK ASSEMBLY TYPE 311A—(continued)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections to Control Unit 600, Ref. No. 101/16029(*a*)					
(205)	PL501/1	—	—	—	—
(206)	2	204	60/6	PL5/12 SA(*a*)	J6 S & L Cons 60
(207)	3	—	58/4	—	K4 S & L Cons 60
(208)	4	—	—	—	—
(209)	5	—	58/6	—	K6 S & L Cons 60
(210)	6	—	—	—	—
(211)	7	—	58/8	—	K8 S & L Cons 60
(212)	8	—	—	—	—
(213)	9	—	60/9	—	J9 S & L Cons 60
(214)	10	—	60/11	—	J11 S & L Cons 60
(215)	11	—	60/8	—	J8 S & L Cons 60
(216)	12	—	58/1	—	K1 S & L Cons 60
(217)	PL502/3	196	—	PL5/4 SA(*a*)	—
(218)	4	200	—	PL5/8 SA(*a*)	—
(219)	5	201	—	PL5/9 SA(*a*)	—
(220)	6	189	—	PL4/9 SA(*a*)	—
(221)	7	—	—	—	—
(222)	8	185	—	PL4/5 SA(*a*)	—
(223)	9	186	—	PL4/6 SA(*a*)	—
(224)	10	202	—	PL5/10 SA(*a*)	—
(225)	11	203	—	PL5/11 SA(*a*)	—
(226)	12	183	—	PL4/3 SA(*a*)	—
(227)	PL503/1	—	60/10	—	J10 S & L Cons 60
(228)	2	—	—	—	—
(229)	3	—	58/9	—	K9 S & L Cons 60
(230)	4	—	51/3	—	Mains input
(231)	5	—	58/10	—	K10 S & L Cons 60
(232)	6	—	51/4	—	Mains input
(233)	7	167	56/4, 54/3, 54/11 *strapped*	PL2/11 SA(*a*)	SR19 & 29 14/9($\frac{1}{2}$°), N6S & L Cons 60
(234)	8	—	—	—	—
(235)	7	—	58/11	—	M8 S & L Cons 60
(236)	8	—	—	—	—
(237)	9	—	—	—	—
(238)	10	62	—	PL902/2 SU410	—
(239)	11	72	—	PL902/12 SU410	—
(240)	12	—	—	Earth	—
Connections to Control Unit 600, Ref. No. 10L/16029(*b*)					
(241)	PL501/1	—	59/1	—	PLAJ/1 CU619(1)
(242)	2	—	59/6	—	PLAJ/6 CU619(1)
(243)	3	—	61/4	—	PLAI/4 CU619(1)
(244)	4	—	—	—	—
(245)	5	—	61/6	—	PLAI/6 CU619(1)
(246)	6	—	—	—	—
(247)	7	—	61/8	—	PLAI/8 CU619(1)
(248)	8	—	—	—	—
(249)	9	—	59/9	—	PLAJ/9 CU619(1)
(250)	10	—	59/11	—	PLAJ/11 CU619(1)
(251)	11	—	59/8	—	PLAJ/8 CU619(1)
(252)	12	—	61/1	—	PLAI/1 CU619(1)
(253)	PL502/3	—	—	—	—
(254)	4	—	—	—	—
(255)	5	—	—	—	—
(256)	6	—	—	—	—
(257)	7	—	—	—	—
(258)	8	—	—	—	—
(259)	9	—	—	—	—
(260)	10	—	—	—	—
(261)	11	—	—	—	—
(262)	12	—	—	—	—
(263)	PL503/1	—	59/10	—	PLAJ/10 CU619(1)
(264)	2	—	—	—	—
(265)	3	—	61/3	—	PLAI/3 CU619(1)
(266)	4	—	—	—	—
(267)	5	—	61/5	—	PLAI/5 CU619(1)
(268)	6	—	—	—	—
(269)	7	—	63/4, 65/3, 65/11 *strapped*	—	SR19 & 29 14/8, PLAI/4 CU619(1)
(270)	8	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(271)		7	—	61/9	—	PLAI/9 CU619(1)
(272)		8	—	—	—	—
(273)		9	—	—	—	—
(274)		10	75	—	PL903/3 SU410	—
(275)		11	73	—	PL903/1 SU410	—
(276)		12	—	—	Earth	—
Additional connections required						
				58/12		M9 S & L Cons 60
				61/10		PLAI/10 CU619(1)
				58/12 and 61/10 to be strapped		
				59/12 and 61/10 to be strapped		

RACK ASSEMBLY TYPE 311B
(Ref. No. 10D/19396)

		Panel (Blanking) 4639 (Stores Ref. 10D/19663)	Rectifier Unit Type 17 Ref. 10D/17779 (1)		
	6	Control Unit Type 600	Switch Unit Type 410		
7		Ref. 10L/16029 (*e*)	Ref. 10F/16163		
9					
11		Amplifier (Servo) Type 297	Rectifier Unit Type 17		
13		Ref. 10U/16054 (*e*)	Ref. 10D/17779 (2)		
15					
17	18	Amplifier (Servo) Type 297	Amplifier (Servo) Type 297	51	52
19		Ref. 10U/16054 (*d*)	Ref. 10U/16054 (*a*)	53	54
21					56
23		Control Unit Type 600	Control Unit Type 600	57	58
25	26	Ref. 10L/16029	Ref. 10L/16029	59	60
	28	(*c*) and (*d*)	(*a*) and (*b*)	61	
	30	Amplifier (Servo) Type 297	Amplifier (Servo) Type 297	63	
	32	Ref. 10U/16054 (*c*)	Ref. 10U/16054 (*b*)	65	
	34			67	

Fig. 12. Rack assembly Type 311B, schematic

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Wiring connections as for rack assembly 311A except for those shown below					
Connections to Switch Unit Type 410 10F/16163					
(75)	PL903/3	274	—	PL504/10 CU(*b*)	—
Connections to Amplifier (Servo) Type 10U/16054(*a*)					
(145)	PL1/1	—	52/11	—	Plinth Term 67 14/9($\frac{1}{2}$°)
(146)	2	—	52/11	—	Plinth Term 68 14/9($\frac{1}{2}$°)
(151)	7	—	56/6	—	N8 S& L Cons 60
(154)	10	—	56/7	—	N9 S & L Cons 60
(155)	11	—	56/8	—	N10 S & L Cons 60
(160)	PL2/4	—	54/5	—	SR23 14/9($\frac{1}{2}$°)
(161)	5	—	54/4	—	SR22 14/9($\frac{1}{2}$°)
(162)	6	—	54/7	—	SR25 14/9($\frac{1}{2}$°)
(163)	7	—	54/6	—	SR24 14/9($\frac{1}{2}$°)
(164)	8	—	54/9	—	SR27 14/9($\frac{1}{2}$°)
(165)	9	—	54/8	—	SR26 14/9($\frac{1}{2}$°)
(167)	11	233	56/4 *strapped to* 54/11 & 54/3	PL503/7 CU(*a*)	SR19 & 29 14/9($\frac{1}{2}$°) N6 S & L Cons 60
(171)	3	—	52/1	—	Amplid X4 14/9($\frac{1}{2}$°)
(172)	4	—	52/2	—	Amplid X3 14/9($\frac{1}{2}$°)
Connections to Control Unit Type 600 10L/16029(*a*)					
(229)	PL503/3	—	58/9	—	K9 S & L Cons 60
(231)	5	—	58/10	—	K10 S & L Cons 60
(232)	6	—	51/4	—	Mains input
(233)	7	167	56/4 *Strapped to* 54/3 & 54/11	PL2/11 SA(*a*)	SR19 & 29 14/9($\frac{1}{2}$°) N6 S & L Cons 60
(234)	8	—	—	—	—
Connections to Control Unit Type 600 10L/16029(*b*)					
(269)	PL503/7	299	63/4 *Strapped to* 65/3 & 65/11	PL2/11 SA(*b*)	SR19 & 29 14/8 PLAL/4 CU619(1)
Connections to Amplifier (Servo) Type 297 10U/16054(*b*)					
(277)	PL1/1	—	67/11	—	Plinth Term 67 14/8
(278)	2	—	67/12	—	Plinth Term 68 14/8
(292)	4	—	65/5	—	SR23 14/8
(293)	5	—	65/4	—	SR22 14/8
(294)	6	—	65/7	—	SR25 14/8
(295)	7	—	65/6	—	SR24 14/8
(296)	8	—	65/9	—	SR27 14/8
(297)	9	—	65/8	—	SR26 14/8
(299)	11	269	63/4 65/11 *strapped* 65/3	PL503/7 CU(*b*) —	SR19 & 29 14/8 PLAL14 CU619(1)
(303)	PL3/3	—	67/1	—	Amplid X4 14/8
(304)	4	—	67/2	—	Amplid X3 14/8
(305)	5	—	67/3	—	Amplid X2 14/8
(306)	6	—	67/4	—	Amplid X1 14/8
(309)	9	—	67/7	—	Amplid A4 14/8
Connections to Amplifier (Servo) Type 297 10U/16054(*c*)					
(337)	PL1/1	—	34/11	—	Plinth Term 67 13(1)
(338)	2	—	34/12	—	Plinth Term 68 13(1)
(346)	10	—	30/7	—	N9 Cons 60 (HFI)
(347)	11	—	30/8	—	N10 Cons 60 (HFI)
(352)	PL2/4	—	32/5	—	SR23 13(1)
(353)	5	—	32/4	—	SR22 13(1)
(355)	7	—	32/6	—	SR24 13(1)
(356)	8	—	32/9	—	SR27 13(1)
(357)	9	—	32/8	—	SR26 13(1)
(358)	10	379	32/10	PL4/7 SA(*c*)	SR28 13(1)
(359)	11	425	30/4 32/3 32/11 *strapped*	PL503/7 CU(*c*)	N6 Cons 60 (HFI) SR19 & 29 13(1)
(360)	12	—	32/12	—	SR30 13(1)
(364)	PL3/4	—	34/2	—	Amp X3 13(1)
(365)	5	—	34/3	—	Amp X2 13(1)
(366)	6	—	34/4	—	Amp X1 13(1)
(377)	PL4/5	—	30/1	—	—
(381)	9	—	30/2	—	—

RACK ASSEMBLY TYPE 311B—(continued)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(388)	PL5/4	409	68/1	PL502/3 CU(*c*)	—
(392)	8	410	—	PL502/4 CU(*a*)	—
(393)	9	411	—	PL502/5 CU(*a*)	—
(394)	10	416	—	PL502/10 CU(*a*)	—
(395)	11	417	—	PL502/11 CU(*a*)	—
Connections to Control Unit Type 600 10L/16029(*c*)					
(412)	PL502/6	—	30/11	—	—
(414)	8	—	30/9	—	—
(421)	PL503/3	—	28/9	—	K9 Cons 60 (HFI)
(423)	5	—	28/10	—	K10 Cons 60 (HFI)
(427)	PL504/7	—	—	—	—
Connections to Control Unit Type 600 10L/16029(*d*)					
(448)	PL502/6	—	21/11	—	—
(450)	8	—	21/9	—	—
(457)	PL503/3	—	23/9	—	K9 Cons 60 (HF2)
(459)	5	—	23/10	—	K10 Cons 60 (HF2)
(460)	6	—	18/4	—	Mains input
(461)	7	491	21/4, 19/3, 19/11 *strapped*	PL2/11 SA(*d*)	N6 Cons 60 (HF2), SR19 & 29 13(2)
(462)	8	—	—	—	—
Connections to Amplifier (Servo) Type 10U/16054(*d*)					
(469)	PL1/1	—	17/11	—	Plinth Term 67 13(2)
(470)	2	—	17/12	—	Plinth Term 68 13(2)
(475)	7	—	21/6	—	N8 Cons 60 (HF2)
(478)	10	—	21/7	—	N9 Cons 60 (HF2)
(479)	11	—	21/8	—	N10 Cons 60 (HF2)
(484)	PL2/4	—	19/5	—	SR23 13(2)
(485)	5	—	19/4	—	SR22 13(2)
(486)	6	—	19/7	—	SR25 13(2)
(487)	7	—	19/6	—	SR24 13(2)
(488)	8	—	19/9	—	SR27 13(2)
(489)	9	—	19/8	—	SR26 13(2)
(491)	11	461	21/4, 19/3, 19/11 *strapped*	PL503/7 CU(*d*)	N6 Cons 60 (HF2), SR19 & 29 13(2)
(509)	PL4/5	—	21/1	—	—
(513)	9	—	21/2	—	—
(520)	PL5/4	445	68/3	PL502/3 CU(*d*)	—
Connections to amplifier (Servo) Type 297 10U/16054(*e*)					
(529)	PL1/1	—	15/11	—	Plinth Term 67 13(3)
(530)	2	—	15/12	—	Plinth Term 68 13(3)
(535)	7	—	11/6	—	N8 Cons 60 (HF3)
(538)	10	—	11/7	—	N9 Cons 60 (HF3)
(539)	11	—	11/8	—	N10 Cons 60 (HF3)
(544)	PL2/4	—	13/5	—	SR23 13(3)
(545)	5	—	13/4	—	SR22 13(3)
(546)	6	—	13/7	—	SR25 13(3)
(547)	7	—	13/6	—	SR24 13(3)
(548)	8	—	13/9	—	SR27 13(3)
(549)	9	—	13/8	—	SR26 13(3)
(551)	11	617	11/4, 13/11, 13/3 *strapped*	PL503/7 CU(*e*)	N6 Cons 60 (HF3), SR19 & 29 13(3)
(569)	PL4/5	—	11/1	—	—
(573)	9	—	11/2	—	—
(574)	10	—	7/12	—	J12 Cons 60 (HF2)
(578)	PL5/2	—	7/4	—	J4 Cons 60 (HF2)
(579)	3	—	7/7	—	J7 Cons 60 (HF2)
(580)	4	601	68/5	PL502/3 CU(*e*)	—
(583)	7	—	9/2	—	K2 Cons 60 (HF2)
(588)	12	590	7/6	PL501/2 CU(*e*)	J6 Cons 60 (HF2)
Connections to Control Unit Type 600 10L/16029(*e*)					
(589)	PL501/1	—	—	—	—
(590)	2	588	7/6	PL5/12 SA(*e*)	J6 Cons 60 (HF2)
(591)	3	—	9/4	—	K6 Cons 60 (HF2)
(592)	4	—	—	—	—
(593)	5	—	9/6	—	K6 Cons 60 (HF2)
(594)	6	—	—	—	—

RANK ASSEMBLY TYPE 311B—(continued)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(595)	7	—	9/8	—	K8 Cons 60 (HF2)
(596)	8	—	—	—	—
(597)	9	—	7/9	—	J9 Cons 60 (HF2)
(598)	10	—	7/11	—	J11 Cons 60 (HF2)
(599)	11	—	7/8	—	J8 Cons 60 (HF2)
(600)	12	—	9/1	—	K1 Cons 60 (HF2)
(601)	PL502/3	580	—	PL5/4 SA(*e*)	—
(602)	4	584	—	PL5/8 SA(*e*)	—
(603)	5	585	—	PL5/9 SA(*e*)	—
(604)	6	—	11/11	—	—
(605)	7	—	—	—	—
(606)	8	—	11/9	—	—
(607)	9	570	—	PL5/6 SA(*e*)	—
(608)	10	586	—	PL5/10 SA(*e*)	—
(609)	11	587	—	PL5/11 SA(*e*)	—
(610)	12	567	—	PL4/3 SA(*e*)	—
(611)	PL503/1	—	7/10	—	J10 Cons 60 (HF2)
(612)	2	—	—	—	—
(613)	3	—	9/9	—	K9 Cons 60 (HF2)
(614)	4	—	15/11	—	Mains input
(615)	5	—	9/10	—	K10 Cons 60 (HF3)
(616)	6	—	18/12	—	Mains input
(617)	7	551	11/4, 13/11, 13/3 *strapped*	PL2/11 SA(*e*)	N6 Cons 60 (HF3); SR19 & 29 13(3)
(618)	8	—	—	—	—
(619)	PL504/7	—	—	—	—
(620)	8	—	—	—	—
(621)	9	—	—	—	—
(622)	10	92	—	PL904/8 SU410	—
(623)	11	91	—	PL904/7SU410	—
(624)	12	—	—	Earth	—

Additional Connections Required

58/12 M9 S & L Cons 60
61/10 PLAL/10 CU619(1)
58/12 & 61/10 *to be strapped*
59/2 & 61/10 *to be strapped*

RACK ASSEMBLY TYPE 312B
(Ref. No. 10D/19398)

		Panel (Blanking) 4639 (Stores reference 10D/19663)		Rectifier unit Type 17 10D/17779 RU.17 (1)			
7 9		Control Unit Type 600 10L/16029 CU (*e*)		Switch Unit Type 410 10F/16163 SU401			
11 13 15		Amplifier (Servo) Type 297 10U/16054 SA (*e*)		Rectifier Unit Type 17 (2)			
17 19 21	18	Amplifier (Servo) Type 297 (*d*)		Amplifier (Servo) Type 297 (*a*)		51 54 56	52
23 25 28	26	Control Unit Type 600 (*c*) and (*d*)		Control Unit Type 600 (*a*) and (*b*)		57 59 61	58 60
30 32 34		Amplifier (Servo) Type 297 (*c*)		Amplifier (Servo) Type 297 (*b*)		63 65 67	68

Fig. 13. Rack assembly Type 312B, schematic

SCHEDULE 1

Rack assembly Type 312B—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit Type 17, Ref. No. 10D/17779(1)					
(1)	PL1/1	—	—	—	—
(2)	2	—	—	—	—
(3)	3	—	—	—	—
(4)	4	—	—	—	—
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	106	—	PL905/10 SU410	—
(11)	11	107	—	PL905/11 SU410	—
(12)	12	108	—	PL905/12 SU410	—
	Plugs 2 and 3 not used				
(13)	PL4/1	133	—	PL908/1 SU410	—
(14)	2	134	—	PL908/2 SU410	—
(15)	3	135	—	PL908/3 SU410	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	139	—	PL908/7 SU410	—
(20)	8	140	—	PL908/8 SU410	—
(21)	9	—	—	—	—
(22)	10	—	—	Earth	—
(23)	11	—	51/11	—	Mains input
(24)	12	—	51/12	—	Mains input
Connections to Rectifier Unit Type 17, Ref. No. 10D/17779(2)					
(25)	PL1/1	—	—	—	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	118	—	PL906/10 SU410	—
(35)	11	119	—	PL906/11 SU410	—
(36)	12	120	—	PL906/12 SU410	—
	Plugs 2 and 3 not used				
(37)	PL4/1	121	—	PL907/1 SU410	—
(38)	2	122	—	PL907/2 SU410	—
(39)	3	123	—	PL907/3 SU410	—
(40)	4	—	—	—	—
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	127	—	PL907/7 SU410	—
(44)	8	128	—	PL907/8 SU410	—
(45)	9	—	—	—	—
(46)	10	—	—	Earth	—
(47)	11	—	51/9	—	Mains input
(48)	12	—	51/10	—	Mains input
Connections to Switch Unit Type 410, Ref. No. 10F/16163					
(49)	PL901/1	—	—	—	—
(50)	2	—	—	—	—
(51)	3	—	—	—	—
(52)	4	—	—	—	—
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	56/1	—	PLAL/1 CU619(2)
(59)	11	166	54/10	PL2/10 SA(*a*)	SR28 14/9(1°)
(60)	12	—	56/2	—	PLAL/2 CU619(2)
(61)	PL902/1	198	—	PL5/6 SA(*a*)	—
(62)	2	238	—	PL504/10 CU(*a*)	—
(63)	3	197	—	PL5/5 SA(*a*)	—
(64)	4	325	—	PL5/1 SA(*b*)	—
(65)	5	193	—	PL5/1 SA(*a*)	—

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Switch Unit Type 410 10F/16163—(contd.)					
(66)	6	—	—	—	—
(67)	7	—	—	—	—
(68)	8	—	59/2	—	PLAJ/2 CU619(1)
(69)	9	—	60/2	—	PLAJ/2 CU619(2)
(70)	10	—	—	—	—
(71)	11	—	—	—	—
(72)	12	239	—	PL504/11 CU(*a*)	—
(73)	PL903/1	275	—	PL504/11 CU(*b*)	—
(74)	2	330	—	PL5/6 SA(*b*)	—
(75)	3	274	—	PL504/10 CU(*b*)	—
(76)	4	329	—	PL5/5 SA(*b*)	—
(77)	5	431	—	PL504/11 CU(*c*)	—
(78)	6	390	—	PL5/6 SA(*c*)	—
(79)	7	430	—	PL504/10 CU(*c*)	—
(80)	8	389	—	PL5/5 SA(*c*)	—
(81)	9	467	—	PL504/11 CU(*d*)	—
(82)	10	522	—	PL5/6 SA(*d*)	—
(83)	11	466	—	PL504/10 CU(*d*)	—
(84)	12	521	—	PL5/5 SA(*d*)	—
(85)	PL904/1	—	63/1	—	PLAL/1 CU619(1)
(86)	2	298	65/10	PL2/10 SA(*b*)	SR28 14/8
(87)	3	—	63/2	—	PLAL/2 CU619(1)
(88)	4	—	—	—	—
(89)	5	—	—	—	—
(90)	6	582	—	PL5/6 SA(*e*)	—
(91)	7	623	—	PL504/11 CU(*e*)	—
(92)	8	622	—	PL504/10 CU(*e*)	—
(93)	9	581	—	PL5/5 SA(*e*)	—
(94)	10	—	—	—	—
(95)	11	—	—	—	—
(96)	12	—	—	—	—
(97)	PL905/1	—	—	—	—
(98)	2	—	—	—	—
(99)	3	—	—	—	—
(100)	4	—	—	—	—
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	10	—	PL1/10 Rect.17(1)	—
(107)	11	11	—	PL1/11 Rect.17(1)	—
(108)	12	12	—	PL1/12 Rect.17(1)	—
(109)	PL906/1	—	—	—	—
(110)	2	—	—	—	—
(111)	3	—	—	—	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	34	—	PL1/10 Rect.17(2)	—
(119)	11	35	—	PL1/11 Rect.17(2)	—
(120)	12	36	—	PL1/12 Rect.17(2)	—
(121)	PL907/1	37	—	PL4/1 Rect.17(2)	—
(122)	2	38	—	PL4/2 Rect.17(2)	—
(123)	3	39	—	PL4/3 Rect.17(2)	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	43	—	—	—
(128)	8	44	—	PL4/8 Rect.17(2)	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	—	—	—
(132)	12	—	—	—	—
(133)	PL908/1	13	—	PL4/1 Rect.17(1)	—
(134)	2	14	—	PL4/2 Rect.17(1)	—
(135)	3	15	—	PL4/3 Rect.17(1)	—
(136)	4	—	—	—	—
(137)	5	—	—	—	—
(138)	6	—	—	—	—
(139)	7	19	—	PL4/7 Rect.17(1)	—
(140)	8	20	—	PL4/8 Rect.17(1)	—
(141)	9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	—	—	—
(144)	12	—	—	—	—
Plugs 909 and 910 not used					

SCHEDULE 1. Rack assembly Type 312B—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
	Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054(*a*)				
(145)	PL1/1	—	52/11	—	Plinth term 67
(146)	2	—	52/12	—	Plinth term 68 14/9 (½")
(147)	3	—	51/7	—	Mains input
(148)	4	—	—	Earth	—
(149)	5	—	—	—	—
(150)	6	—	51/8	—	Mains input
(151)	7	—	56/7	—	PLAI/7 CU619(2)
(152)	8	—	—	—	—
(153)	9	—	52/9	—	SR46 14/9(½")
(154)	10	—	56/8	—	PLAI/8 CU619(2)
(155)	11	—	56/6	—	PLAI/6 CU619(2)
(156)	12	—	52/10	—	SR38 14/9(½")
(157)	PL2/1	289	57/1 *strapped to* 57/4	PL2/1 SA(*b*)	—
(158)	2	290	57/2 *strapped to* 57/5 See note 1	PL2/2 SA(*b*)	—
(159)	3	291	57/3 *strapped to* 57/6	PL2/3 SA(*b*)	—
	Note 1*—*These leads from SA(a) are to be brought to a free Jones Socket SK57 which will plug into frame plug PL57. Strapping of 57/1 to 57/4 etc., to be done on PL57.*				
(160)	PL2/4	—	54/5	—	SR23 14/9(½")
(161)	5	—	54/4	—	SR22 14/9(½")
(162)	6	—	54/7	—	SR25 14/9(½")
(163)	7	—	54/6	—	SR24 14/9(½")
(164)	8	—	54/9	—	SR27 14/9(½")
(165)	9	—	54/8	—	SR26 14/9(½")
(166)	10	59	54/10	PL901/11 SU410	SR28 14/9(½")
(167)	11	233	56/4 *strapped to* 54/11 & 54/3)	PL503/7 CU(*a*)	SR19 & 29 14/9(½") PLAI/4 CU619(2) 60
(168)	12	—	54/12	—	SR30 14/9(½")
(169)	PL3/1	—	—	—	—
(170)	2	—	—	—	—
(171)	3*	—	52/1	—	Amplid X4 14/9(½")
(172)*	4*	—	52/2	—	Amplid X3 14/9(½")
(173)	5*	—	52/3	—	Amplid X2 14/9(½")
(174)	6*	—	52/4	—	Amplid X1 14/9(½")
(175)	7	—	52/5	—	Amplid X5 14/9(½")
(176)	8	—	52/6	—	Amplid X6 14/9(½")
(177)	9	—	52/7	—	Amplid A4 14/9(½")
(178)	10	—	—	—	—
(179)	11	—	52/8	—	Amplid A2 14/9(½")
(180)	12	—	—	—	—
(181)	PL4/1	—	60/3	—	PLAJ/3 CU619(2)
(182)	2	—	60/5	—	PLAJ/5 CU619(2)
(183)	3	226	—	PL502/12 CU(*a*)	—
(184)	4	—	54/1	—	SR36 14/9(½")
(185)	5	222	—	PL502/8 CU(*a*)	—
(186)	6	223	—	PL502/9 CU(*a*)	—
(187)	7	—	56/3	—	PLAI/3 CU619(2)
(188)	8	—	56/5 *strapped to* 54/2	—	SR34 14/9(½") PLA1/5 CU619(2)
(189)	9	220	—	PL502 CU(*a*)	—
(190)	10	—	60/12	—	PLAJ/12 CU619(2)
(191)	11	—	—	—	—
(192)	12	—	—	—	—
(193)	PL5/1	65	—	PL902/5 SU410	—
(194)	2	—	60/4	—	PLAJ/4 CU619(2)
(195)	3	—	60/7	—	PLAJ/7 CU619(2)
(196)	4	217	—	PL502/3 CU(*a*)	—
(197)	5	63	—	PL902/3 SU410	—
(198)	6	61	—	PL902/1 SU410	—
(199)	7	—	58/2	—	PLAI/2 CU619(2)
(200)	8	218	—	PL502/4 CU(*a*)	—
(201)	9	219	—	PL502/5 CU(*a*)	—
(202)	10	224	—	PL502/10 CU(*a*)	—
(203)	11	225	—	PL502/11 CU(*a*)	—
(204)	12	206	60/6	PL501/2 CU(*a*)	PLAJ/6 CU619(2)
(205)	PL501/1	—	60/1	—	PLAJ/1 CU619(2)
(206)	2	204	60/6	PL5/12 SA(*a*)	PLAJ/6 CU619(2)
(207)	3	—	58/4	—	PLAI/5 CU619(2)
(208)	4	—	—	—	—
(209)	5	—	58/6	—	PLAI/6 CU619(2)
(210)	6	—	—	—	—
(211)	7	—	58/8	—	PLAI/8 CU619(2)

SCHEDULE 1. Rack assembly Type 312B—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (Servo) Type 297 Ref. No. 10U/16054 (a)—(contd.)					
(212)	PL501/8	—	—	—	—
(213)	9	—	60/9	—	PLAJ/9 CU619(2)
(214)	10	—	60/11	—	PLAJ/11 CU619(2)
(215)	11	—	60/8	—	PLAJ/8 CU619(2)
(216)	12	—	58/1	—	PLAI/1
(217)	PL502/3	196	—	PL5/4 SA(*a*)	—
(218)	4	200	—	PL5/8 SA(*a*)	—
(219)	5	201	—	PL5/9 SA(*a*)	—
(220)	6	189	—	PL4/9 SA(*a*)	—
(221)	7	—	—	—	—
(222)	8	185	—	PL4/5 SA(*a*)	—
(223)	9	186	—	PL4/6 SA(*a*)	—
(224)	10	202	—	PL5/10 SA(*a*)	—
(225)	11	203	—	PL5/11 SA(*a*)	—
(226)	12	183	—	PL4/3 SA(*a*)	—
(227)	PL503/1	—	60/10	—	PLAJ/10 CU619(2)
(228)	2	—	—	—	—
(229)	3	—	58/3	—	PLAI/3
(230)	4	—	51/3	—	Mains input
(231)	5	—	58/5	—	PLAI/5 CU619(2)
(232)	6	—	51/4	—	Mains input
(233)	7	167	56/4 *strapped to* 54/11 & 54/3	PL2/11 SA(*a*)	SR19 & 29 14/9(1°) PLAL/4 CU619(2)
(234)	8	—	—	—	—
(235)	PL504/7	—	58/9	—	PLAI/9 CU619(2)
(236)	8	—	—	—	—
(237)	9	—	—	—	—
(238)	10	62	—	PL902/2 SU410	—
(239)	11	72	—	PL902/12 SU410	—
(240)	12	—	—	Earth	—
Connections to Control Unit Type 600, Ref. No. 10L/16029(*b*)					
(241)	PL501/1	—	59/1	—	PLAJ/1 CU619(1)
(242)	2	336	59/6	PL5/12 SA(*b*)	PLAJ/6 CU619(1)
(243)	3	—	61/4	—	PLAI/4 CU619(1)
(244)	4	—	—	—	—
(245)	5	—	61/6	—	PLAI/6 CU619(1)
(246)	6	—	—	—	—
(247)	7	—	61/8	—	PLAI/8 CU619(1)
(248)	8	—	—	—	—
(249)	9	—	59/9	—	PLAJ/9 CU619(1)
(250)	10	—	59/11	—	PLAJ/11 CU619(1)
(251)	11	—	59/8	—	PLAJ/8 CU619(1)
(252)	12	—	61/1	—	PLAI/1 CU619(1)
(253)	PL502/3	328	—	PL5/4 SA(*b*)	—
(254)	4	332	—	PL5/8 SA(*b*)	—
(255)	5	333	—	PL5/9 SA(*b*)	—
(256)	6	321	—	PL4/9 SA(*b*)	—
(257)	7	—	—	—	—
(258)	8	317	—	PL4/5 SA(*b*)	—
(259)	9	318	—	PL4/6 SA(*b*)	—
(260)	10	334	—	PL5/10 SA(*b*)	—
(261)	11	335	—	PL5/11 SA(*b*)	—
(262)	12	315	—	PL4/3 SA(*b*)	—
(263)	PL503/1	—	59/10	—	PLAJ/10 CU619(1)
(264)	2	—	—	—	—
(265)	3	—	61/3	—	PLAI/3 CU619(1)
(266)	4	—	—	—	—
(267)	5	—	61/5	—	PLAI/5 CU619(1)
(268)	6	—	—	—	—
(269)	7	299	63/4 *strapped to* 65/11 & 65/3	PL2/11 SA(*b*)	SR19 & 29 14/8 PLAL/4 CU619(1)
(270)	8	—	—	—	—
(271)	PL504/7	—	61/9	—	PLAI/9 CU619(1)
(272)	8	—	—	—	—
(273)	9	—	—	—	—
(274)	10	75	—	PL903/3 SU410	—
(275)	11	73	—	PL903/1 SU410	—
(276)	12	—	—	Earth	—

SCHEDULE 1. Rack assembly Type 312B—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054(*b*)					
(277)	PL1/1	—	67/11	—	Plinth term 67 14/8
(278)	2	—	67/12	—	Plinth term 68 14/8
(279)	3	—	51/1	—	Mains input
(280)	4	—	—	Earth	—
(281)	5	—	—	—	—
(282)	6	—	51/2	—	Mains input
(283)	7	—	63/7	—	PLAL/7 CU619(1)
(284)	8	—	—	—	—
(285)	9	—	67/9	—	SR46 14/8
(286)	10	—	63/8	—	PLAL/8 CU619(1)
(287)	11	—	63/6	—	PLAL/6
(288)	12	—	67/10	—	SR.38 14/8
(289)	PL2/1	157	57/4 *strapped to* 57/1	PL2/1 SA(*a*)	—
(290)		158	57/5 *strapped to* 57/2	PL2/2 SA(*a*)	—
(291)		159	57/6 *strapped to* 57/3	PL2/3 SA(*a*)	—
(292)	4	—	65/5	—	SR23 14/8
(293)	5	—	65/4	—	SR22 14/8
(294)	6	—	65/7	—	SR25 14/8
(295)	7	—	65/6	—	SR24 14/8
(296)	8	—	65/9	—	SR27 14/8
(297)	9	—	65/8	—	SR26 14/8
(298)	10	86	65/10	PL904/2 SU410	SR28 14/8
(299)	11	269	63/4 *Strapped to* 65/11 & 65/3	PL503/7 CU(*b*)	SR19 & 29 PLAL/4 CU619(1)
(300)	12	—	65/12	—	SR30 14/8
(301)	PL3/1*	—	—	—	—
(302)	2	—	—	—	—
(303)	3*	—	67/1	—	Amplid X4 14/8
(304)	4*	—	67/2	—	Amplid X3 14/8
(305)	5*	—	67/3	—	Amplid X2 14/8
(306)	6*	—	67/4	—	Amplid X11 14/8
(307)	7	—	67/5	—	Amplid X5 14/8
(308)	8	—	67/6	—	Amplid X6 14/8
	Note 2—*These leads from SA(b) are to be brought to a free Jones Socket SK57 which will plug into frame plug PL57. Strapping of* 57/4 *to* 57/1, *etc., to be done on PL57.*				
(309)	PL3/9	—	67/7	—	Amplid A4 14/8
(310)	10	—	—	—	—
(311)	11	—	67/8	—	Amplid A2 14/8
(312)	12	—	—	—	—
(313)	PL4/1	—	59/3	—	PLAJ/3 CU619(1)
(314)	2	—	59/5	—	PLAJ/5 CU619(1)
(315)	3	262	—	PL502/12 CU(*b*)	—
(316)	4	—	65/1	—	SR26 14/8
(317)	5	258	—	PL502/8 CU(*b*)	—
(318)	6	259	—	PL502/9 CU(*b*)	—
(319)	7	—	63/3	—	PLAL/3 CU619(1)
(320)	8	—	63/5 *strapped to* 65/2	—	PLAL/5 CU619(1)
(321)	9	256	—	PL502/6 CU(*b*)	—
(322)	10	—	59/12	—	PLAJ/12 CU619(1)
(323)	11	—	—	—	—
(324)	12	—	—	—	—
(325)	PL5/1	64	—	PL902/4 SU410	—
(326)	2	—	59/4	—	PLAJ/4 CU619(1)
(327)	3	—	59/7	—	PLAJ/7 CU619(1)
(328)	4	253	—	PL502/3 CU(*b*)	—
(329)	5	76	—	PL903/4 SU410	—
(330)	6	74	—	PL903/2 SU410	—
(331)	7	—	61/2	—	PLAJ/2 CU619(1)
(332)	8	254	—	PL502/4 CU(*b*)	—
(333)	9	255	—	PL502/5 CU(*b*)	—
(334)	10	260	—	PL502/10 CU(*b*)	—
(335)	11	261	—	PL502/11 CU(*b*)	—
(336)	12	242	59/6	PL501/2 CU(*b*)	PLAJ/6 CU619(1)
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054(*c*)					
(337)	PL1/1	—	34/11	—	Plinth terms 67 & 13(1)
(338)	2	—	34/12	—	Plinth terms 68
(339)	3	—	18/1	—	Mains input
(340)	4	—	—	Earth	—
(341)	5	—	—	—	—
(342)	6	—	18/2	—	Mains input
(343)	7	—	30/6	—	N8 Console 60 (HF1)
(344)	8	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054(c)—(contd.)					
(345)	PL1/9	—	34/9	—	SR46 13(1)
(346)	10	—	30/7	—	N9 Console 60 (HF1)
(347)	11	—	30/8	—	N10 Console 60 (HF1)
(348)	12	—	34/10	—	SR28 13(1)
(349)	PL2/1	—	—	—	—
(350)	2	—	—	—	—
(351)	3	—	—	—	—
(352)	4	—	32/5	—	AR23 13(1)
(353)	5	—	32/4	—	SR22 13(1)
(354)	6	—	32/7	—	SR25 13(1)
(355)	7	—	32/6	—	SR24 13(1)
(356)	8	—	32/9	—	SR27 13(1)
(357)	9	—	32/8	—	SR26 13(1)
(358)	10	379	32/10	PL4/7 SA(*c*)	SR28 13(1)
(359)	11	425	30/4 (*strapped to* 32/3 & 32/11)	PL503/7(*c*)	N6 Console 60 (HF1) SR's 19 & 29 13(1)
(360)	12	—	32/12	—	SR30 13(1)
(361)	PL3/1	—	—	—	—
(362)	2	—	—	—	—
(363)	3*	—	34/1	—	Amplid X4 13(1)
(364)	4*	—	34/2	—	Amplid X3 13(1)
(365)	5*	—	34/3	—	Amplid X2 13(1)
(366)	6*	—	34/4	—	Amplid X1 13(1)
(367)	7	—	34/5	—	Amplid X5 13(1)
(368)	8	—	34/6	—	Amplid X6 13(1)
(369)	9	—	34/7	—	Amplid A4 13(1)
(370)	10	—	—	—	—
(371)	11	—	34/8	—	Amplid A2 13(1)
(372)	12	—	—	—	—
(373)	PL4/1	—	26/3	—	J3 Console 60 (HF1)
(374)	2	—	26/5	—	J5 Console 60 (HF1)
(375)	3	418	—	PL502/12 CU(*c*)	—
(376)	4	—	32/1	—	SR36 13(1)
(377)	5	—	30/1	—	—
(378)	6	415	—	PL502/9 CU(*c*)	—
(379)	7	358	32/10	PL2/10 SA(*c*)	SR28 13(1)
(380)	8	—	30/5 *strapped to* 32/2	—	N7 Console 60 (HF1) SR34 13(1)
(381)	9	—	30/2	—	—
(382)	10	—	26/12	—	J12 Console 60 (HF1)
(383)	11	—	—	—	—
(384)	12	—	—	—	—
(385)	PL5/1	—	—	—	—
(386)	2	—	26/4	—	J4 Console 60 (HF1)
(387)	3	—	26/7	—	J7 Console 60 (HF1)
(388)	4	409	68/1	PL502/3 CU(*c*)	—
(389)	5	80	—	PL903/8 SU410	—
(390)	6	78	—	PL903/6 SU410	—
(391)	7	—	28/2	—	K2 Console 60 (HF1)
(392)	8	410	—	PL502/4 CU(*c*)	—
(393)	9	411	—	PL502/5 CU(*c*)	—
(394)	10	416	—	PL502/10 CU(*c*)	—
(395)	11	417	—	PL502/11 CU(*c*)	—
(396)	12	398	26/6	PL501/2 CU(*c*)	J6 Console 60 (HF1)
Connections to Control Unit Type 600, Ref. No. 10L/16029(*c*)					
(397)	PL501/1	—	—	—	—
(398)	2	396	26/6	PL5/12 SA(*c*)	J6 Console 60 (HF1)
(399)	3	—	28/4	—	K4 Console 60 (HF1)
(400)	4	—	—	—	—
(401)	5	—	28/6	—	K6 Console 60 (HF1)
(402)	6	—	—	—	—
(403)	7	—	28/8	—	K8 Console 60 (HF1)
(404)	8	—	—	—	—
(405)	9	—	26/9	—	J9 Console 60 (HF1)
(406)	10	—	26/11	—	J11 Console 60 (HF1)
(407)	11	—	26/8	—	J8 Console 60 (HF1)
(408)	12	—	28/1	—	K1 Console 60 (HF1)
(409)	PL502/3	388	68/1	PL5/4 SA(*c*)	—
(410)	4	392	—	PL5/8 SA(*c*)	—
(411)	5	393	—	PL5/9 SA(*c*)	—
(412)	6	—	30/11	—	—
(413)	7	—	—	—	—
(414)	8	—	30/9	—	—
(415)	9	378	—	PL4/6 SA(*c*)	—
(416)	10	394	—	PL5/10 SA(*c*)	—
(417)	11	395	—	PL5/11 SA(*c*)	—

SCHEDULE 1. Rack assembly Type 312B—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Control Unit Type 600, Ref. No. 10L/16029(*c*)—(contd.)					
(418)	PL502/12	375	—	PL4/3 SA(*c*)	—
(419)	PL503/1	—	26/10	—	J10 Console 60 (HF1)
(420)	2	—	—	—	—
(421)	3	—	28/9	—	K9 Console 60 (HF1)
(422)	4	—	—	—	—
(423)	5	—	28/10	—	K10 Console 60 (HF1)
(424)	6	—	—	—	—
(425)	7	539	30/4 *strapped to* 32/3 & 32/11	PL2/11 SA(*c*)	N6 Console 60 (HF1) SRs 19 & 29 13(1)
(426)	8	—	—	—	—
(427)	PL504/7	—	—	—	—
(428)	8	—	—	—	—
(429)	9	—	—	—	—
(430)	10	79	—	PL903/7 SU410	—
(431)	11	77	—	PL903/5 SU410	—
(432)	12	—	—	Earth	—
Connections to Control Unit Type 600, Ref. No. 10L/16029(*d*)					
(433)	PL501/1	—	—	—	—
(434)	2	528	25/6	PL5/12 SA(*d*)	J6 Console 60 (HF1)
(435)	3	—	23/4	—	K4 Console 60 (HF1)
(436)	4	—	—	—	—
(437)	5	—	23/6	—	K6 Console 60 (HF1)
(438)	6	—	—	—	—
(439)	7	—	23/8	—	K8 Console 60 (HF1)
(440)	8	—	—	—	—
(441)	9	—	25/9	—	J9 Console 60 (HF1)
(442)	10	—	25/11	—	J11 Console 60 (HF1)
(443)	11	—	25/8	—	J8 Console 60 (HF1)
(444)	12	—	23/1	—	K1 Console 60 (HF1)
(445)	PL502/3	520	68/3	PL5/4 SA(*d*)	—
(446)	4	524	—	PL5/8 SA(*d*)	—
(447)	5	525	—	PL5/9 SA(*d*)	—
(448)	6	—	21/11	—	—
(449)	7	—	—	—	—
(450)	8	—	21/9	—	—
(451)	PL502/9	510	—	PL4/6 SA(*d*)	—
(452)	10	526	—	PL8/10 SA(*d*)	—
(453)	11	527	—	PL8/11 SA(*d*)	—
(454)	12	507	—	PL4/3 SA(*d*)	—
(455)	PL503/1	—	25/10	—	J10 Cons. 60 (H.F.2)
(456)	2	—	—	—	—
(457)	3	—	23/9	—	K9 Cons. 60 (H.F.2)
(458)	4	—	18/3	—	Mains input
(459)	5	—	23/10	—	K10 Console 60 (HF2)
(460)	6	—	18/4	—	Mains input
(461)	7	491	21/4 (*strapped to* 19/3 & 19/11)	PL2/11 SA(*d*)	N6 Console 60 (HF2)
(462)	8	—	—	—	—
(463)	PL504/7	—	—	—	—
(464)	8	—	—	—	—
(465)	9	—	—	—	—
(466)	10	83	—	PL903/11 SU410	—
(467)	11	81	—	PL903/9 SU410	—
(468)	12	—	—	Earth	—
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054(*d*)					
(469)	PL1/1	—	17/11	—	Plinth term 67 15(2)
(470)	2	—	17/12	—	Plinth term 68 15(2)
(471)	3	—	18/7	—	Mains input
(472)	4	—	—	Earth	—
(473)	5	—	—	—	—
(474)	6	—	18/8	—	Mains input
(475)	7	—	21/6	—	N8 Console 60 (HF2)
(476)	8	—	—	—	—
(477)	9	—	17/9	—	SR46 13(2)
(478)	10	—	21/7	—	N9 Console 60 (HF2)
(479)	11	—	21/8	—	N10 Console 60 (HF2)
(480)	12	—	17/10	—	SR38 13(2)
(481)	PL2/1	—	—	—	—
(482)	2	—	—	—	—
(483)	3	—	—	—	—
(484)	4	—	19/5	—	SR23 13(2)
(485)	5	—	19/4	—	SR22 13(2)
(486)	6	—	19/7	—	SR25 13(2)

SCHEDULE 1. Rack assembly Type 312B—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054(*d*)—(contd.)						
(487)	PL2/7	—		19/6	—	SR24 13(2)
(488)	PL3/8	—		19/9	—	SR27 13(2)
(489)	9	—		19/8	—	SR26 13(2)
(490)	10	511		19/10	PL4/7 SA(*d*)	SR28 13(2)
(491)	11	461		21/4 *strapped to* 19/3 & 19/11	PL503/7 CU(*d*)	N6 Console 60 (HF2) SR's 19 & 29 13(2)
(492)	12	—		19/12	—	SR30 13(2)
(493)	PL3/1	—		—	—	—
(494)	2	—		—	—	—
(495)	3*	—		17/1	—	Amplid X4 13(2)
(496)	4*	—		17/2	—	Amplid X3 13(2)
(497)	5*	—		17/3	—	Amplid X2 13(2)
(498)	6*	—		17/4	—	Amplid X1 13(2)
(499)	7	—		17/5	—	Amplid X5 13(2)
(500)	8	—		17/6	—	Amplid X6 13(2)
(501)	9	—		17/7	—	Amplid A4 13(2)
(502)	10	—		—	—	—
(503)	11	—		17/8	—	Amplid A2 13(2)
(504)	12	—		—	—	—
(505)	PL4/1	—		25/3	—	J3 Console 60 (HF2)
(506)	2	—		25/5	—	J5 Console 60 (HF2)
(507)	3	454		—	PL502/12 CU(*d*)	—
(508)	4	—		19/1	—	SR36 13(2)
(509)	5	—		21/1	—	—
(510)	6	451		—	PL502/9 CU(*d*)	—
(511)	7	490		19/10	PL2/10 SA(*d*)	SR28 13(2)
(512)	8	—		21/5 *strapped to* 19/2	—	N7 Console 60 (HF2) SR34 13(2)
(513)	9	—		21/2	—	—
(514)	10	—		25/12	—	J12 Console 60 (HF2)
(515)	11	—		—	—	—
(516)	12	—		—	—	—
(517)	PL5/1	—		—	—	—
(518)	2	—		25/4	—	J4 Console 60 (HF2)
(519)	3	—		25/7	—	J7 Console 60 (HF2)
(520)	4	445		68/3	PL502/3 CU(*d*)	—
(521)	5	84		—	PL903/12 SU410	—
(522)	6	82		—	PL903/10 SU410	—
(523)	7	—		23/2	—	K2 Console 60 (HF2)
(524)	8	446		—	PL502/4 CU(*d*)	—
(525)	9	447		—	PL502/5 CU(*d*)	—
(526)	10	452		—	PL502/10 CU(*d*)	—
(527)	11	453		—	PL502/11 CU(*d*)	—
(528)	12	434		25/6	PL501/2 CU(*d*)	J6 Console 60 (HF2)
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054(*e*)						
(529)	PL1/1	—		15/11	—	Plinth term 67 13(3)
(530)	2	—		15/12	—	Plinth term 68 13(3)
(531)	3	—		18/9	—	Mains input
(532)	4	—		—	Earth	—
(533)	5	—		—	—	—
(534)	6	—		18/10	—	Mains input
(535)	7	—		11/6	—	N8 Console 60 (HF3)
(536)	8	—		—	—	—
(537)	9	—		15/9	—	SR46 13(3)
(538)	10	—		11/7	—	N9 Console 60 (HF3)
(539)	11	—		11/8	—	N10 Console 60 (HF3)
(540)	12	—		15/10	—	SR38 13(3)
(541)	PL2/1	—		—	—	—
(542)	2	—		—	—	—
(543)	3	—		—	—	—
(544)	4	—		13/5	—	SR23 13(3)
(545)	5	—		13/4	—	SR22 13(3)
(546)	6	—		13/7	—	SR25 13(3)
(547)	7	—		13/6	—	SR24 13(3)
(548)	8	—		13/9	—	SR27 13(3)
(549)	9	—		13/8	—	SR26 13(3)
(550)	10	571		13/10	PL4/7 SA(*e*)	SR28 13(3)
(551)	11	617		11/4 *strapped to* 13/11 & 13/3	PL503/7 CU(*e*)	N6 Console 60 (HF3) SR's 19 & 29 13(3)
(552)	12	—		13/12	—	SR30 13(3)
(553)	PL3/1	—		—	—	—
(554)	2	—		—	—	—
(555)	3*	—		15/1	—	Amplid X4 13(3)
(556)	4*	—		15/2	—	Amplid X3 13(3)
(557)	5*	—		15/3	—	Amplid X2 13(3)
(558)	6*	—		15/4	—	Amplid X1 13(3)

SCHEDULE 1. Rack assembly Type 312B—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054(*e*)—(contd.)					
(559)	PL3/7	—	15/5	—	Amplid X5 13(3)
(560)	8	—	15/6	—	Amplid X6 13(3)
(561)	9	—	15/7	—	Amplid A4 13(3)
(562)	10	—	—	—	—
(563)	11	—	15/8	—	Amplid A2 13(3)
(564)	12	—	—	—	—
(565)	PL4/1	—	7/3	—	J3 Console 60 (HF3)
(566)	2	—	7/5	—	J5 Console 60 (HF3)
(567)	3	610	—	PL502/12 CU(*e*)	—
(568)	4	—	13/1	—	SR36 13(3)
(569)	5	—	11/1	—	—
(570)	6	607	—	PL502/9 CU(*e*)	—
(571)	7	550	13/10	PL2/10 SA(*e*)	SR28 13(3)
(572)	8	—	11/5 *strapped to* 13/2	—	N7 Console 60 HF3) SR34 13(3)
(573)	9	—	11/2	—	—
(574)	10	—	7/12	—	J12 Console 60 (HF3)
(575)	11	—	—	—	—
(576)	12	—	—	—	—
(577)	PL5/1	—	—	—	—
(578)	2	—	7/4	—	J4 Console 60 (HF3)
(579)	3	—	7/7	—	J7 Console 60 (HF3)
(580)	4	601	68/5	PL502/3 CU(*e*)	—
(581)	5	93	—	PL904/9 SU410	—
(582)	6	90	—	PL904/6 SU410	—
(583)	7	—	9/2	—	K2 Console 60 (HF3)
(584)	8	602	—	PL502/4 CU(*e*)	—
(585)	9	603	—	PL502/5 CU(*e*)	—
(586)	10	608	—	PL502/10 CU(*e*)	—
(587)	11	609	—	PL502/11 CU(*e*)	—
(588)	12	590	7/6	PL501/2 CU(*e*)	J6 Console 60 (HF3)
Connections to Control Unit (Type 600), Ref. No. 10L/16029(*e*)					
(589)	PL501/1	—	—	—	—
(590)	2	588	7/6	PL5/12 SA(*e*)	J6 Console 60 (HF3)
(591)	3	—	9/4	—	K4 Console 60 (HF3)
(592)	4	—	—	—	—
(593)	5	—	9/6	—	K6 Console 60 (HF3)
(594)	6	—	—	—	—
(595)	7	—	9/8	—	K8 Console 60 (HF3)
(596)	8	—	—	—	—
(597)	9	—	7/9	—	J9 Console 60 (HF3)
(598)	10	—	7/11	—	J11 Console 60 (HF3)
(599)	11	—	7/8	—	J8 Console 60 (HF3)
(600)	12	—	9/1	—	K1 Console 60 (HF3)
(601)	PL502/3	580	68/5	PL5/4 SA(*e*)	—
(602)	4	584	—	PL5/8 SA(*e*)	—
(603)	5	585	—	PL5/9 SA(*e*)	—
(604)	6	—	11/11	—	—
(605)	7	—	—	—	—
(606)	8	—	11/9	—	—
(607)	9	570	—	PL4/6 SA(*e*)	—
(608)	10	586	—	PL5/10 SA(*e*)	—
(609)	11	587	—	PL5/11 SA(*e*)	—
(610)	12	567	—	PL4/3 SA(*e*)	—
(611)	PL503/1	—	7/10	—	J10 Console 60 (HF3)
(612)	2	—	—	—	—
(613)	3	—	9/9	—	K9 Console 60 (HF3)
(614)	4	—	18/11	—	Mains input
(615)	5	—	9/10	—	K10 Console 60 (HF3)
(616)	6	—	18/12	—	Mains input
(617)	7	551	11/4 *strapped to* 13/11 & 13/3	PL2/11 SA(*e*)	N6 Console 60 (HF3) SR's 19 & 29 13(3)
(618)	8	—	—	—	—
(619)	PL504/7	—	—	—	—
(620)	8	—	—	—	—
(621)	9	—	—	—	—
(622)	10	92	—	PL904/8 SU410	—
(623)	11	91	—	PL904/7 SU410	—
(624)	12	—	—	Earth	—
Additional connections required					
			58/10	PLA1/10 CU619(2)	
			61/10	PLA1/10 CU619(1)	
			58/10 & 61/10 *to be strapped*		

RACK ASSEMBLY TYPE 313A
(Ref. No. 10D/23334)

Panel (Blank) 4639 10D/19663	Rectifier Unit 17 Ref. 10D/17779 (1)
Panel (Blanking) 4639	Switch Unit 410 Ref. 10F/16163
Panel (Blanking) 4639	Rectifier Unit 17 Ref. 10D/17779 (2)
Panel (Blanking) 4639	Amplifier (Servo) 297A Ref. 10U/17508 (*a*)
Panel (Blanking) 4639	Control Unit 600 Ref. 10L/16029 (*a*) and (*b*)
Amplifier Unit (Pulse Splitter) 300 Ref. 10U/16057	Amplifier (Servo) 297A Ref. 10U/17508 (*b*)

Fig. 14. Rack assembly Type 313A, schematic

RACK ASSEMBLY TYPE 313A

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit 17 10D/17779(1)					
	Plugs 1, 2 and 3 are not used.				
(1)	PL4/1	—	—	—	—
(2)	2	—	—	—	—
(3)	3	—	—	—	—
(4)	4	—	—	—	—
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	55	—	PL908/7 } SW.U	—
(8)	8	56	—	PL908/8 } 410	—
(9)	9	—	—	—	—
(10)	10	—	57/11	Earth	—
(11)	11	—	51/11	—	Mains input
(12)	12	—	51/12	—	Mains input
Connections to Rectifier Unit 17, 10D/17779(2)					
	Plugs 1, 2 and 3 are used.				
(13)	PL4/1	—	—	—	—
(14)	2	—	—	—	—
(15)	3	—	—	—	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	43	—	PL907/7 } SW.U	—
(20)	8	44	—	PL907/8 } 410	—
(21)	9	—	—	—	—
(22)	10	—	57/1	Earth	—
(23)	11	—	51/9	—	Mains input
(24)	12	—	51/10	—	Mains input
Connections to Switch Unit, 410, 10F/16163					
	Plugs 901 and 902 not used				
(25)	PL903/1	253	—	PL504/11 CU(*b*)	—
(26)	2	212	—	PL5/6 AS(*b*)	—
(27)	3	252	—	PL504/10 CU(*b*)	—
(28)	4	211	—	PL5/5 AS(*b*)	—
(29)	5	157	—	PL504/11 CU(*a*)	—
(30)	6	114	—	PL5/6 AS(*a*)	—
(31)	7	156	—	PL504/10 CU(*a*)	—
(32)	8	113	—	PL5/5 AS(*a*)	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	—	—	—
(36)	12	—	—	—	—
	Plugs 904, 905 and 906 not used				
(37)	PL907/1	—	—	—	—
(38)	2	—	—	—	—
(39)	3	—	—	—	—
(40)	4	—	—	—	—
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	19	—	PL4/7 } RU17	—
(44)	8	20	—	PL4/8 } (2)	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	—	—	—
(48)	12	—	—	—	—
(49)	PL908/1	—	—	—	—
(50)	2	—	—	—	—
(51)	3	—	—	—	—
(52)	4	—	—	—	—
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	7	—	PL4/7 } RU17	—
(56)	8	8	—	PL4/8 } (1)	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	—	—	—
(60)	12	—	—	—	—
	Plugs 909 and 910 not used				

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Connections to Amplifier (Servo) 297A, 10U/17508(*a*)					
(61)	PL1/1	—	52/11	—	—
(62)	2	—	52/12	—	—
(63)	3	—	51/7	—	—
(64)	4	—	—	Earth	—
(65)	5	—	—	—	—
(66)	6	—	51/8	—	—
(67)	7	—	56/7	—	—
(68)	8	—	—	—	—
(69)	9	—	52/9	—	—
(70)	10	—	56/8	—	—
(71)	11	—	56/6	—	—
(72)	12	—	52/10	—	—
(73)	PL2/1	—	—	—	—
(74)	2	—	—	—	—
(75)	3	—	—	—	—
(76)	4	—	54/5	—	—
(77)	5	—	54/4	—	—
(78)	6	—	54/7	—	—
(79)	7	—	54/6	—	—
(80)	8	—	54/9	—	—
(81)	9	—	54/8	—	—
(82)	10	—	54/10	—	—
(83)	11	151	56/4, 54/3, 54/11 *strapped*	PL503/7 CU(*a*)	—
(84)	12	—	54/12	—	—
(85)	PL3/1	—	—	—	—
(86)	2	—	—	—	—
(87)	3	—	52/1	—	—
(88)	4	—	52/2	—	—
(89)	5	—	52/3	—	—
(90)	6	—	52/4	—	—
(91)	7	—	52/5	—	—
(92)	8	—	52/6	—	—
(93)	9	—	52/7	—	—
(94)	10	—	—	—	—
(95)	11	—	52/8	—	—
(96)	12	—	—	—	—
(97)	PL4/1	—	60/3	—	—
(98)	2	—	60/5	—	—
(99)	3	—	—	—	—
(100)	4	—	54/1	—	—
(101)	5	—	56/1	—	—
(102)	6	141	—	PL502/9 CU(*a*)	—
(103)	7	—	—	—	—
(104)	8	—	56/5, 54/2 *strapped*	—	—
(105)	9	138	—	PL502/6 CU(*a*)	—
(106)	10	—	56/3	—	—
(107)	11	—	—	—	—
(108)	12	—	61/9	—	Height Mark, Pass Wire
(109)	PL5/1	—	—	—	—
(110)	2	—	60/4	—	—
(111)	3	—	60/7	—	—
(112)	4	135	—	PL502/3 CU(*a*)	—
(113)	5	32	—	PL903/8 SU410	—
(114)	6	30	—	PL903/6 SU410	—
(115)	7	—	60/1	—	—
(116)	8	136	—	PL502/4 CU(*a*)	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	—	—	—
(120)	112	122	—	PL501/2 CU(*a*)	—
Connections to Control Unit 600, 10L/16029(*a*)					
(121)	PL501/1	—	—	—	—
(122)	2	120	—	PL5/12 AS(*a*)	—
(123)	3	125 & 127	57/4, 57/6 and 57/8 *strapped*	PL501/5 & PL501/7, CU(*a*)	—
(124)	4	—	—	—	—
(125)	5	123 & 127	57/6, 57/4 & 57/8 *strapped*	PL501/3 & PL501/7 CU(*a*)	—
(126)	6	—	—	—	—
(127)	7	125 & 123	57/8, 57/6 & 57/4 *strapped*	PL501/5 & PL501/3 CU(*a*)	—

RACK ASSEMBLY TYPE 313A (continued)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(128)	8	—	—	—	—
(129)	9	—	60/9	—	—
(130)	10	—	60/11	—	—
(131)	11	—	60/8	—	—
(132)	12	—	56/10	—	—
(133)	PL502/1	—	—	—	—
(134)	2	—	—	—	—
(135)	3	112	57/12	PL5/4 AS(*a*)	—
(136)	4	116	—	PL5/8 AS(*a*)	—
(137)	5	—	—	—	—
(138)	6	105	—	PL4/9 AS(*a*)	—
(139)	7	—	—	—	—
(140)	8	—	56/9	—	—
(141)	9	102	—	PL4/6 AS(*a*)	—
(142)	10	—	—	—	—
(143)	11	—	—	—	—
(144)	12	—	—	—	—
(145)	PL503/1	—	60/10	—	—
(146)	2	—	—	—	—
(147)	3	—	60/2	—	Mains input
(148)	4	—	51/3	—	—
(149)	5	—	60/6	—	Mains input
(150)	6	—	51/4	—	—
(151)	7	—	56/4, 54/3, 54/11 *strapped*	PL2/11 AS(*a*)	—
(152)	8	—	—	—	—
(153)	PL504/7	—	—	—	—
(154)	8	—	—	—	—
(155)	9	—	—	—	—
(156)	10	31	—	PL903/7 SU410	—
(157)	11	29	—	PL903/5 SU410	—
(158)	12	—	—	Earth	—
Connections to Amplifier (Servo) 297A 10U/17508(*b*)					
(159)	PL1/1	—	67/11	—	—
(160)	2	—	67/12	—	—
(161)	3	—	51/1	—	—
(162)	4	—	—	Earth	—
(163)	5	—	—	—	—
(164)	6	—	51/2	—	—
(165)	7	—	63/7	—	—
(166)	8	—	—	—	—
(167)	9	—	67/9	—	—
(168)	10	—	63/8	—	—
(169)	11	—	63/6	—	—
(170)	12	—	67/10	—	—
(171)	PL2/1	—	—	—	—
(172)	2	—	—	—	—
(173)	3	—	—	—	—
(174)	4	—	65/5	—	—
(175)	5	—	65/4	—	—
(176)	6	—	65/7	—	—
(177)	7	—	65/6	—	—
(178)	8	—	65/9	—	—
(179)	9	—	65/8	—	—
(180)	10	—	65/10	—	—
(181)	11	247	63/4, 65/3, 65/11 *strapped*	PL503/7 CU(*b*)	—
(182)	12	—	65/12	—	—
(183)	PL3/1	—	—	—	—
(184)	2	—	—	—	—
(185)	3	—	67/1	—	—
(186)	4	—	67/2	—	—
(187)	5	—	67/3	—	—
(188)	6	—	67/4	—	—
(189)	7	—	67/5	—	—
(190)	8	—	67/6	—	—
(191)	9	—	67/7	—	—
(192)	10	—	—	—	—
(193)	11	—	67/8	—	—
(194)	12	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(195)	PL4/1	—	59/3	—	—
(196)	2	—	59/5	—	—
(197)	3	—	—	—	—
(198)	4	—	65/1	—	—
(199)	5	—	63/1	—	—
(200)	6	237	—	PL502/9 CU(*b*)	—
(201)	7	—	—	—	—
(202)	8	—	63/5, 65/2 *strapped*	—	—
(203)	9	234	—	PL502/6 CU(*b*)	—
(204)	10	—	63/3	—	—
(205)	11	—	—	—	—
(206)	12	—	61/11	—	Height Mark, Pass Wire
(207)	PL5/1	—	—	—	—
(208)	2	—	59/4	—	—
(209)	3	—	59/7	—	—
(210)	4	231	—	PL502/3 CU(*b*)	—
(211)	5	28	—	PL903/4 SU410	—
(212)	6	26	—	PL903/2 SU410	—
(213)	7	—	59/1	—	—
(214)	8	232	—	PL502/4 CU(*b*)	—
(215)	9	—	—	—	—
(216)	10	—	—	—	—
(217)	11	—	—	—	—
(218)	12	220	—	PL501/2 CU(*b*)	—
Connections to Control Unit 600 10L/16029(*b*)					
(219)	PL501/1	—	—	—	—
(220)	2	218	—	PL5/12 AS(*b*)	—
(221)	3	223	61/4	PL501/5 CU(*b*)	—
		225	61/6, 61/8 *strapped*	PL501/7 CU(*b*)	—
(222)	4	—	—	—	—
(223)	5	221	61/6	PL501/3 CU(*b*)	—
		225	61/4, 61/8 *strapped*	PL501/7 CU(*b*)	—
(224)	6	—	—	—	—
(225)	7	221	61/8	PL501/3 CU(*b*)	—
		223	61/4, 61/6 *strapped*	PL501/5 CU(*b*)	—
(226)	8	—	—	—	—
(227)	9	—	59/9	—	—
(228)	10	—	59/11	—	—
(229)	11	—	59/8	—	—
(230)	12	—	63/10	—	—
(231)	PL502/3	210	57/2	PL5/4 AS(*b*)	—
(232)	4	214	—	PL5/8 AS(*b*)	—
(233)	5	—	—	—	—
(234)	6	203	—	PL4/9 AS(*b*)	—
(235)	7	—	—	PL4/9 AS(*b*)	—
(236)	8	—	63/9	—	—
(237)	9	200	—	PL4/6 AS(*b*)	—
(238)	10	—	—	—	—
(239)	11	—	—	—	—
(240)	12	—	—	—	—
(241)	PL503/1	—	59/10	—	—
(242)	2	—	—	—	—
(243)	3	—	59/2	—	—
(244)	4	—	—	—	—
(245)	5	—	59/6	—	—
(246)	6	—	—	—	—
(247)	7	181	63/4, 65/3, 65/11 *strapped*	PL2/11 AS(*b*)	—
(248)	8	—	—	—	—
(249)	PL504/7	—	—	—	—
(250)	8	—	—	—	—
(251)	9	—	—	—	—
(252)	10	27	—	PL903/3 SU410	—
(253)	11	25	—	PL903/1 SU410	—
(254)	12	—	—	Earth	—
Connections to Amplifier Unit (Pulse Splitter) 300 10U/16057					
(255)	PL1/1	—	—	Earth	—
(256)	2	—	—	—	—
(257)	3	—	—	—	—

RACK ASSEMBLY TYPE 313A (continued)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(258)		4 —	—	—	—
(259)		5 —	—	—	—
(260)		6 —	—	—	—
(261)		7 —	—	—	—
(262)		8 —	—	—	—
(263)		9 —	—	—	—
(264)		10 —	—	—	—
(265)		11 —	30/11	—	Mains input
(266)		12 —	30/12	—	Mains input

RACK ASSEMBLY TYPE 313B

(Ref. No. 10D/23812)

		Marker unit Type 27 A (Ref. No. 10D/21435) MU27A(A)	Rectifier unit Type 17 (Ref. No. 10D/17779) RU17(1)		
5 7 9	6 8 10	Marker unit Type 27A MU27A(B)	Switch unit Type 410 (Ref. No. 10F/16163) SU410	39 41 43	40 42 44
11 13 15	12 14 16	Network, pulse delay (N.S. No. 5915-99-944-7748) N.P.D.	Rectifier unit Type 17 RU17(2)	45 47 49	46 48 50
17 19 21	18 20 22	Amplifier (pulse splitter) Type 300 (Ref. No. 10U/16057) PSA300(X)	Amplifier (servo) Type 297A (Ref. No. 10U/17508) SA(a)	51 53 55	52 54 56
23 25 27	24 26 28	Panel, relay sync. selector (N.S. No. 5945-99-970-7044) P.R.	Control unit Type 600 (Ref. No. 10L/16029) CU600	57 59 61	58 60 62
29 31 33	30 32 34	Amplifier (pulse splitter) PSA300 (Y)	Amplifier (servo) Type 297A SA(b)	63 65 67	64 66 68

Fig. 15 Rack Assembly Type 313B, schematic

SCHEDULE 1

RACK ASSEMBLY TYPE 313B—WIRING

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(1)	Rectifier unit Type 17	PL1/1				
(2)	RU17 (1)	2				
(3)		3				
(4)		4	88	—	PL905/4(SU410)	
(5)		5	89	—	5	
(6)		6	90	—	6	
(7)		7	91	—	7	
(8)		8	92	—	8	
(9)		9	93	—	9	
(10)		10	94	—	10	
(11)		11	95	—	11	
(12)		12	96	—	12	
	Plugs 2 and 3 are not used					
(13)		PL4/1				
(14)		2				
(15)		3				
(16)		4				
(17)		5				
(18)		6				
(19)		7	127	—	PL908/7(SU410)	
(20)		8	128	—	PL908/8(SU410)	
(21)		9	—	—		
(22)		10	—	—	Earth	
(23)		11	—	51/11		Mains Input
(24)		12	—	51/12		Mains Input
(25)	Rectifier unit Type 17	PL1/1				
(26)	RU17 (2)	2				
(27)		3				
(28)		4	100	—	PL906/4(SU410)	
(29)		5	101	—	5	
(30)		6	102	—	6	
(31)		7	103	—	7	
(32)		8	104	—	8	
(33)		9	105	—	9	
(34)		10	106	—	10	
(35)		11	107	—	11	
(36)		12	108	—	12	
	Plugs 2 and 3 are not used					
(37)		PL4/1				
(38)		2				
(39)		3				
(40)		4				
(41)		5				
(42)		6				
(43)		7	115	—	PL907/7(SU410)	
(44)		8	116	—	PL907/8(SU410)	
(45)		9				
(46)		10	—	—		
(47)		11	—	51/9		Mains Input
(48)		12	—	51/10		Mains Input
(49)	Switch unit Type 410	PL901/1				
(50)	(SU410)	2				
(51)		3				

SCHEDULE 1

RACK ASSEMBLY TYPE 313B—WIRING—*Continued*

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(52)	4	—	39/1		
(53)	5	—	39/2		
(54)	6	—	39/3		
(55)	7	—	56/1		
(56)	8	166	54/10	PL2/10(SA(a))	
(57)	9	—	56/2		
(58)	10	—	63/1		
(59)	11	262	65/10	PL2/10(SA(b))	
(60)	12	—	63/2		
(61)	PL902/1	186	—	PL5/6(SA(a))	
(62)	2	228	—	PL504/10(CU600)	
(63)	3	185	—	PL5/5(SA(a))	
(64)	4	—	40/1		
(65)	5	279	—	PL5/1(SA(b))	
(66)	6	181	—	PL5/1(SA(a))	
(67)	7	—	39/4		
(68)	8				
(69)	9	—	59/2		
(70)	10	—	60/2		
(71)	11	—	39/5		
(72)	12	229	—	PL504/11(CU600)	
(73)	PL903/1				
(74)	2	284	—	PL5/6(SA(b))	
(75)	3				
(76)	4	283		PL5/5(SA(b))	
(77)	5				
(78)	6				
(79)	7				
(80)	8				
(81)	9				
(82)	10				
(83)	11				
(84)	12				
	Plug 904 not used				
(85)	PL905/1				
(86)	2				
(87)	3				
(88)	4	4	—	PL1/4 (RU17(1))	
(89)	5	5	—	PL1/5 (RU17(1))	
(90)	6	6	—	PL1/6 (RU17(1))	
(91)	7	7	—	PL1/7 (RU17(1))	
(92)	8	8	—	PL1/8 (RU17(1))	
(93)	9	9	—	PL1/9 (RU17(1))	
(94)	10	10	—	PL1/10(RU17(1))	
(95)	11	11	—	PL1/11(RU17(1))	
(96)	12	12	—	PL1/12(RU17(1))	
(97)	PL906/1				
(98)	2				
(99)	3				
(100)	4	28	—	PL1/4 (RU17(2))	
(101)	5	29	—	PL1/5 (RU17(2))	

SCHEDULE 1

RACK ASSEMBLY TYPE 313B—WIRING—*Continued*

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(102)		6	30	—	PL1/6 (RU17(2))	
(103)		7	31	—	PL1/7 (RU17(2))	
(104)		8	32	—	PL1/8 (RU17(2))	
(105)		9	33	—	PL1/9 (RU17(2))	
(106)		10	34	—	PL1/10(RU17(2))	
(107)		11	35	—	PL1/11(RU17(2))	
(108)		12	36	—	PL1/12(RU17(2))	
(109)		PL907/1				
(110)		2				
(111)		3				
(112)		4				
(113)		5				
(114)		6				
(115)		7	43	—	PL4/7(RU17(2))	
(116)		8	44	—	PL4/8(RU17(2))	
(117)		9				
(118)		10				
(119)		11				
(120)		12				
(121)		PL908/1				
(122)		2				
(123)		3				
(124)		4				
(125)		5				
(126)		6				
(127)		7	19	—	PL4/7(RU17(1))	
(128)		8	20	—	PL4/8(RU17(1))	
(129)		9				
(130)		10				
(131)		11				
(132)		12				
(133)	Amplifier (Servo) Type 297A	PL1/1	—	52/11		
(134)	SA(a)	2	—	52/12		
(135)		3	—	51/7		
(136)		4	—	—	Earth	
(137)		5				
(138)		6	—	51/8		
(139)		7	—	56/7		
(140)		8				
(141)		9	—	52/9		
(142)		10	—	56/8		
(143)		11	—	56/6		
(144)		12	—	52/10		
(145)		PL2/1	*243	57/1 strapped to 57/4	PL2/1(SA(b))	
(146)		2	*244	57/2 strapped to 57/5	PL2/2(SA(b))	
(147)		3	*245	57/3 strapped to 57/6	PL2/3(SA(b))	
(148)		4	—	54/5		
(149)		5	—	54/4		
(150)		6	—	54/7		

* *These leads from SA(a) are brought to a free Jones socket SK57 which plugs into frame plug PL57. Strapping of* 57/1 *to* 57/4 *etc. is done at PL57. (See also additional connections).*

SCHEDULE 1

RACK ASSEMBLY TYPE 313B—WIRING—*Continued*

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(151)		7	—	54/6		
(152)		8	—	54/9		
(153)		9	—	54/9		
(154)		10	56	54/10	PL901/8(SU410)	
(155)		11	223	56/4 strapped to 54/3 and 54/11	PL503/7(CU600)	
(156)		12	—	54/12		
(157)		PL3/1				
(158)		2				
(159)		3	—	52/1		
(160)		4	—	52/2		
(161)		5	—	52/3		
(162)		6	—	52/4		
(163)		7	—	52/5		
(164)		8	—	52/6		
(165)		9	—	52/7		
(166)		10				
(167)		11	—	52/8		
(168)		12				
(169)		PL4/1	—	60/3		
(170)		2	—	60/5		
(171)		3	216	—	PL502/12(CU600)	
(172)		4	—	54/1		
(173)		5	212	—	PL502/8(CU600)	
(174)		6	213	—	PL502/9(CU600)	
(175)		7	—	56/3		
(176)		8	—	56/5 strapped to 54/2		
(177)		9	209	—	PL502/6(CU600)	
(178)		10	—	60/12		
(179)		11				
(180)		12				
(181)		PL5/1	66	—	PL902/6(SU410)	
(182)		2	—	60/4		
(183)		3	—	60/7		
(184)		4	207	—	PL502/3(CU600)	
(185)		5	63	—	PL902/3(SU410)	
(186)		6	61	—	PL902/1(SU410)	
(187)		7	—	58/2		
(188)		8	208	—	PL502/4(CU600)	
(189)		9	209	—	PL502/5(CU600)	
(190)		10	214	—	PL502/10(CU600)	
(191)		11	215	—	PL502/11(CU600)	
(192)		12	194	60/6	PL501/2(CU600)	
(193)	Control unit Type 600	PL501/1	—	60/1		
(194)	(CU600)	2	192	60/6	PL5/12(SA(a))	
(195)		3	—	58/4		
(196)		4				
(197)		5	—	58/6		
(198)		6				

SCHEDULE 1

RACK ASSEMBLY TYPE 313B—WIRING—*Continued*

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(199)		7	—	58/8		
(200)		8				
(201)		9	—	60/9		
(202)		10	—	60/11		
(203)		11	—	60/8		
(204)		12	—	58/1		
(205)		PL502/1				
(206)		2				
(207)		3	184	—	PL5/4(SA(a))	
(208)		4	188	—	PL5/8(SA(a))	
(209)		5	189	—	PL5/9(SA(a))	
(210)		6	177	—	PL4/9(SA(a))	
(211)		7				
(212)		8	173	—	PL4/5(SA(a))	
(213)		9	174	—	PL4/6 (SA(a))	
(214)		10	190	—	PL5/10(SA(a))	
(215)		11	191	—	PL5/11(SA(a))	
(216)		12	171	—	PL4/3 (SA(a))	
(217)		PL503/1	—	60/10		
(218)		2				
(219)		3	—	58/3		
(220)		4	—	51/3		
(221)		5	—	58/5		
(222)		6	—			
(223)		7	155	56/4 strapped to 54/3 and 54/11	PL2/11(SA(a))	
(224)		8	—	51/4		
(225)		PL504/7	—	58/9		
(226)		8				
(227)		9				
(228)		10	62	—	PL902/2 (SU410)	
(229)		11	72	—	PL902/12(SU410)	
(230)		12	—	—	Earth	
(231)	Amplifier (Servo) Type 297A	PL1/1	—	67/11		
(232)	(SA(b))	2	—	67/12		
(233)		3	—	51/1		
(234)		4	—	—	Earth	
(235)		5				
(236)		6	—	51/2		
(237)		7	—	63/7		
(238)		8				
(239)		9	—	67/9		
(240)		10	—	63/8		
(241)		11	—	63/6		
(242)		12	—	67/10		
(243)		PL2/1	145**	57/4 strapped to 57/1	PL2/1 (SA(a))	
(244)		2	146**	57/5 strapped to 57/2	PL2/2 (SA(a))	
(245)		3	147**	57/6 strapped to 57/3	PL2/3 (SA(a))	

***These leads from SA (b) are brought to a free Jones socket SK57 which plugs into frame plug PL57. Strapping of 57/4 to 57/1 etc. is done at PL57. (See also additional connections).*

SCHEDULE 1

RACK ASSEMBLY TYPE 313B—WIRING—*Continued*

No.	Originating unit (short ref. title) and plug		Cross reference	Termination: Rack assembly Jones plug	Termination: Internal	Termination: External
(246)		4	—	65/5		
(247)		5	—	65/4		
(248)		6	—	65/7		
(249)		7	—	65/6		
(250)		8	—	65/9		
(251)		9	—	65/8		
(252)		10	59	65/10	PL901/11(SU410)	
(253)		11	—	63/4 strapped to 65/3 and 65/11		
(254)		12	—	65/12		
(255)		PL3/1				
(256)		2				
(257)		3	—	67/1		
(258)		4	—	67/2		
(259)		5	—	67/3		
(260)		6	—	67/4		
(261)		7	—	67/5		
(262)		8	—	67/6		
(263)		9	—	67/7		
(264)		10				
(265)		11	—	67/8		
(266)		12				
(267)		PL4/1	—	59/3		
(268)		2	—	59/5		
(269)		3				
(270)		4	—	65/1		
(271)		5				
(272)		6				
(273)		7	—	63/3		
(274)		8	—	63/5 strapped to 65/2		
(275)		9				
(276)		10	—	59/12		
(277)		11				
(278)		12				
(279)		PL5/1	65	—	PL902/5 (SU410)	
(280)		2	—	59/4		
(281)		3	—	59/7		
(282)		4				
(283)		5	76	—	PL903/4 (SU410)	
(284)		6	74	—	PL903/2 (SU410)	
(285)		7	—	61/2		
(286)		8				
(287)		9				
(288)		10				
(289)		11				
(290)		12	—	59/6		
	Marker unit 27A (MU27A(A)) Sockets 1 to 5 not used					

SCHEDULE 1

RACK ASSEMBLY TYPE 313B—WIRING—*Continued*

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(291)		SK6	304	—	SK5(MU27A(B))	
(292)		PL7/1	—	—	Earth	
(293)		2				
(294)		3				
(295)		4				
(296)		5				
(297)		6				
(298)		7				
(299)		8				
(300)		9				
(301)		10				
(302)		11	—	PL30/3		
(303)		12	—	PL30/4		
	Marker unit 27A (MU27A(B))					
	Sockets 1 to 4 not used					
(304)		SK5	291	—	SK6 (MU27A(A))	
	Socket 6 not used					
(305)		PL7/1	—	—	Earth	
(306)		2				
(307)		3				
(308)		4				
(309)		5				
(310)		6				
(311)		7				
(312)		8				
(313)		9				
(314)		10				
(315)		11	—	PL30/2		
(316)		12	—	PL30/1		
(317)	Network, pulse delay	SK1	332	—	SK3 (PSA300(X))	
(318)	N.P.D.	SK2	336	—	SK9 (PSA300(X))	
(319)		SK3	333	—	SK4 (PSA300(X))	
	Socket 4 not used					
(320)	Amplifier (pulse splitter) Type 300	PL1/1	—	—	Earth	
(321)	PSA300(X)	2				
(322)		3				
(323)		4				
(324)		5				
(325)		6				
(326)		7				
(327)		8				
(328)		9				
(329)		10				
(330)		11	—	PL30/5		
(331)		12	—	PL30/6		
	Socket 2 not used					
(332)		SK3	317	—	SK1 (N.P.D.)	
(333)		SK4	319	—	SK3 (N.P.D.)	
(334)		SK5	349	—	SK1 (P.R.)	
(335)		SK6	351	—	SK3 (P.R.)	
	Sockets 7 and 8 not used					
(336)		SK9	318	—	SK2 (N.P.D.)	
(337)		SK10	353	—	SK5 (P.R.)	

SCHEDULE 1

RACK ASSEMBLY TYPE 313B—WIRING—*Continued*

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(338)		SK11	355	—	SK7 (P.R.)	
(339)		SK12	357	—	SK9 (P.R.)	
	Sockets 13, 14 and 15 not used					
	Panel, relay sync. selector					
(340)	P.R.	PL1/1	—	—	Earth	
(341)		2		PL28/1		
(342)		3		2		
(343)		4		3		
(344)		5		4		
(345)		6		5		
(346)		7		6		
(347)		8		7		
(348)		9		8		
(349)		SK1	334	—	SK5 (PSA300(X))	
(350)		SK2	359	—	SK3 (PSA300(Y))	
(351)		SK3	335	—	SK6 (PSA300(X))	
(352)		SK4	360	—	SK4 (PSA300(Y))	
(353)		SK5	337	—	SK10(PSA300(X))	
(354)		SK6	361	—	SK10(PSA300(Y))	
(355)		SK7	338	—	SK11(PSA300(X))	
(356)		SK8	362	—	SK11(PSA300(Y))	
(357)		SK9	339	—	SK12(PSA300(X))	
(358)		SK10	363	—	SK12(PSA300(Y))	
	Sockets 11 to 15 not used					
	Amplifier (pulse splitter) Type 300 PSA300(Y)					
	PL1 not used					
	SK2 not used					
(359)		SK3	350	—	SK2 (P.R.)	
(360)		SK4	352	—	SK4 (P.R.)	
	Sockets 5 to 9 not used					
(361)		SK10	354	—	SK6 (P.R.)	
(362)		SK11	356	—	SK8 (P.R.)	
(363)		SK12	358	—	SK10(P.R.)	
	Sockets 13, 14 and 15 not used					

RACK ASSEMBLY TYPE 314A
(Ref. No. 10D/20009)

		Panel (Blanking) 4639 (Ref. No. 10D/19663)	Rectifier Unit Type 17 10D/17779 RU.17 (1)			
		Panel (Blanking) 4639	Switch Unit Type 410 10F/16163	39 43	40	
		Panel (Blanking) 4639	Rectifier Unit Type 17 (2)			
17 19 21	18	Amplifier (Servo) Type 297 (*d*)	Amplifier (Servo) Type 297 10U/16054 SA.297 (*a*)	51	52 54 56	
23 25	26 28	Control Unit Type 600 10L/16029 CU.600 (*c*) and (*d*)	Control Unit Type 600 (*a*) and (*b*)	59	58 60 61	
	30 32 34	Amplifier (Servo) Type 297 (*c*)	Amplifier (Servo) Type 297 (*b*)	63 65 67		

Fig. 17. Rack assembly Type 314A, schematic

SCHEDULE 1

Rack assembly Type 314A—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Rectifier Unit Type 17, Ref. No. 10D/17779 (1)					
(1)	PL1/1	—	—	—	—
(2)	2	—	—	—	—
(3)	3	—	—	—	—
(4)	4	—	—	—	—
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	91	—	PL905/7 SU410	—
(8)	8	92	—	PL905/8 SU410	—
(9)	9	93	—	PL905/9 SU410	—
(10)	10	94	—	PL905/10 SU410	—
(11)	11	95	—	PL905/11 SU410	—
(12)	12	96	—	PL905/12 SU410	—
Plugs 2 and 3 not used.					
(13)	PL4/1	—	—	—	—
(14)	2	—	—	—	—
(15)	3	—	—	—	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	127	—	PL908/7 SU410	—
(20)	8	128	—	PL908/8 SU410	—
(21)	9	—	—	—	—
(22)	10	—	—	Earth	—
(23)	11	—	51/11	—	—
(24)	12	—	51/12	—	—
Connections to Rectifier Unit Type 17, Ref. No. 10D/17779 (2)					
(25)	PL1/1	—	—	—	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	103	—	PL906/7 SU410	—
(32)	8	104	—	PL906/8 SU410	—
(33)	9	105	—	PL906/9 SU410	—
(34)	10	106	—	PL906/10 SU410	—
(35)	11	107	—	PL906/11 SU410	—
(36)	12	108	—	PL906/12 SU410	—
Plugs 2 and 3 not used.					
(37)	PL4/1	—	—	—	—
(38)	2	—	—	—	—
(39)	3	—	—	—	—
(40)	4	—	—	—	—
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	115	—	PL907/7 SU410	—
(44)	8	116	—	PL907/8 SU410	—
(45)	9	—	—	—	—
(46)	10	—	—	Earth	—
(47)	11	—	51/9	—	—
(48)	12	—	51/10	—	—
Connections to Switch Unit Type 410, Ref. No. 10F/16163					
(49)	PL901/1	—	—	—	—
(50)	2	—	—	—	—
(51)	3	—	—	—	—
(52)	4	—	—	—	—
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	39/1	—	—
(56)	8	—	39/2	—	—
(57)	9	—	39/3	—	—
(58)	10	—	56/1	—	—
(59)	11	178	54/10	PL2/10 SA(*a*)	—
(60)	12	—	56/2	—	—
(61)	PL902/1	210	—	PL5/6 SA(*a*)	—
(62)	2	250	—	PL504/10 CU(*a*)	—
(63)	3	209	—	PL5/5 SA(*a*)	—
(64)	4	—	40/1	—	—
(65)	5	205	—	PL5/1 SA(*a*)	—
(66)	6	—	39/4	—	—
(67)	7	—	—	—	—
(68)	8	—	—	—	—

SCHEDULE 1. Rack assembly Type 314A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Switch Unit Type 410, Ref. No. 10F/16163—(contd.)					
(69)	PL902/9	—	60/2	—	—
(70)	10	—	39/5	—	—
(71)	11	—	—	—	—
(72)	12	251	—	PL504/11 CU(*a*)	—
(73)	PL903/1	347	—	PL504/11 CU(*b*)	—
(74)	2	306	—	PL5/6 SA(*b*)	—
(75)	3	346	—	PL504/10 CU(*b*)	—
(76)	4	305	—	PL5/5 SA(*b*)	—
(77)	5	443	—	PL504/11 CU(*c*)	—
(78)	6	402	—	PL5/6 SA(*c*)	—
(79)	7	442	—	PL504/10 CU(*c*)	—
(80)	8	401	—	PL5/5 SA(*c*)	—
(81)	9	539	—	PL504/11 CU(*d*)	—
(82)	10	498	—	PL5/6 SA(*d*)	—
(83)	11	538	—	PL504/10 CU(*d*)	—
(84)	12	497	—	PL5/5 SA(*d*)	—
PL 904 not used					
(85)	PL905/1	—	—	—	—
(86)	2	—	—	—	—
(87)	3	—	—	—	—
(88)	4	—	—	—	—
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	7	—	PL1/7 Rect 17 (1)	—
(92)	8	8	—	PL1/8 Rect 17 (1)	—
(93)	9	9	—	PL1/9 Rect 17 (1)	—
(94)	10	10	—	PL1/10 Rect 17 (1)	—
(95)	11	11	—	PL1/11 Rect 17 (1)	—
(96)	12	12	—	PL1/12 Rect 17 (1)	—
(97)	PL906/1	—	—	—	—
(98)	2	—	—	—	—
(99)	3	—	—	—	—
(100)	4	—	—	—	—
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	31	—	PL1/7 Rect 17 (2)	—
(104)	8	32	—	PL1/8 Rect 17 (2)	—
(105)	9	33	—	PL1/9 Rect 17 (2)	—
(106)	10	34	—	PL1/10 Rect 17 (2)	—
(107)	11	35	—	PL1/11 Rect 17 (2)	—
Connections to Switch Unit Type 410, Ref. No. 10F/16163					
(108)	PL906/12	36	—	PL1/12 Rect 17 (2)	—
(109)	PL907/1	—	—	—	—
(110)	2	—	—	—	—
(111)	3	—	—	—	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	43	—	PL4/7 Rect 17 (2)	—
(116)	8	44	—	PL4/8 Rect 17 (2)	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	—	—	—
(120)	12	—	—	—	—
(121)	PL908/1	—	—	—	—
(122)	2	—	—	—	—
(123)	3	—	—	—	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	19	—	PL4/7 Rect 17 (1)	—
(128)	8	20	—	PL4/8 Rect 17 (1)	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	—	—	—
(132)	12	—	—	—	—
(133)	PL909/1	—	43/1	—	—
(134)	2	—	43/2	—	—
(135)	3	—	43/3	—	—
(136)	4	—	43/4	—	—
(137)	5	—	43/5	—	—
(138)	6	—	43/6	—	—
(139)	7	—	43/7	—	—
(140)	8	—	43/8	—	—
(141)	9	—	43/9	—	—

SCHEDULE 1. Rack assembly Type 314A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Switch Unit Type 410, Ref. No. 10F/16163—(contd.)					
(142)	PL909/10	—	43/10	—	—
(143)	11	—	43/11	—	—
(144)	12	—	43/12	—	—
(145)	PL910/1	—	39/6	—	—
(146)	2	—	39/7	—	—
(147)	3	—	39/8	—	—
(148)	4	—	39/9	—	—
(149)	5	—	—	—	—
(150)	6	—	—	—	—
(151)	7	—	—	—	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	—	—	—	—
(155)	11	—	—	—	—
(156)	12	—	40/10	—	—
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054 (*a*)					
(157)	PL1/1	—	52/11	—	—
(158)	2	—	52/12	—	—
(159)	3	—	51/7	—	—
(160)	4	—	—	Earth	—
(161)	5	—	—	—	—
(162)	6	—	51/8	—	—
(163)	7	—	56/7	—	—
(164)	8	—	—	—	—
(165)	9	—	52/9	—	—
(166)	10	—	56/8	—	—
(167)	11	—	56/6	—	—
(168)	12	—	52/10	—	—
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054 (*a*)					
(169)	PL2/1	—	40/2, 39/10, *strapped together*	—	—
(170)	2	—	40/4, 39/11, *strapped together*	—	—
(171)	3	—	40/6, 39/12 *strapped together*	—	—
(172)	4	—	54/5	—	—
(173)	5	—	54/4	—	—
(174)	6	—	54/7	—	—
(175)	7	—	54/6	—	—
(176)	8	—	54/9	—	—
(177)	9	—	54/8	—	—
(178)	10	59	54/10	PL901/11 SU410	—
(179)	11	245	56/4 54/3, 54/11, *strapped together*	PL503/7 CU(*a*)	—
(180)	12	—	54/12	—	—
(181)	PL3/1	—	—	—	—
(182)	2	—	—	—	—
(183)	3*	—	52/1	—	—
(184)	4*	—	52/2	—	—
(185)	5*	—	52/3	—	—
(186)	6*	—	52/4	—	—
(187)	7	—	52/5	—	—
(188)	8	—	52/6	—	—
(189)	9	—	52/7	—	—
(190)	10	—	—	—	—
(191)	11	—	52/8	—	—
(192)	12	—	—	—	—
(193)	PL4/1	—	60/3	—	—
(194)	2	—	60/5	—	—
(195)	3	238	—	PL502/12 CU(*a*)	—
(196)	4	—	54/1	—	—
(197)	5	234	—	PL502/8 CU(*a*)	—
(198)	6	235	—	P9502/9	—
(199)	7	—	56/3	—	—
(200)	8	—	56/5 *strapped to* 54/2	—	—
(201)	9	232	—	PL502/6 CU(*a*)	—
(202)	10	—	60/12	—	—
(203)	11	—	—	—	—
(204)	12	65	—	—	—

SCHEDULE 1. Rack assembly Type 314A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054 (*a*)—(contd.)					
(205)	PL5/1	65	—	PL902/5 SU410	—
(206)	2	—	60/4	—	—
(207)	3	—	60/7	—	—
(208)	4	229	—	PL502/3 CU(*a*)	—
(209)	5	63	—	PL902/3 SU410	—
(210)	6	61	—	PL902/1 SU410	—
(211)	7	—	58/2	—	—
(212)	8	230	—	PL502/4 CU(*a*)	—
(213)	9	231	—	PL502/5 CU(*a*)	—
(214)	10	236	—	PL502/10 CU(*a*)	—
(215)	11	237	—	PL502/11 CU(*a*)	—
(216)	12	218	60/6	PL501/2 CU(*a*)	—
Connections to Control Unit Type 600, Ref. No. 10L/16029 (*a*)					
(217)	PL501/1	—	60/1	—	—
(218)	2	216	60/6	PL5/12 SA(*a*)	—
(219)	3	—	58/4	—	—
(220)	4	—	—	—	—
(221)	5	—	58/6	—	—
(222)	6	—	—	—	—
(223)	7	—	58/8	—	—
(224)	8	—	—	—	—
(225)	9	—	60/9	—	—
(226)	10	—	60/11	—	—
(227)	11	—	60/8	—	—
(228)	12	—	58/1	—	—
(229)	PL502/3	208	—	PL5/4 SA(*a*)	—
(230)	4	212	—	PL5/8 SA(*a*)	—
(231)	5	213	—	PL5/9 SA(*a*)	—
(232)	6	201	—	PL4/9 SA(*a*)	—
(233)	7	—	—	—	—
(234)	8	197	—	PL4/5 SA(*a*)	—
(235)	9	198	—	PL4/6 SA(*a*)	—
(236)	10	214	—	PL5/10 SA(*a*)	—
(237)	11	215	—	PL5/11 SA(*a*)	—
(238)	12	195	—	PL4/3 SA(*a*)	—
(239)	PL503/1	—	60/10	—	—
(240)	2	—	—	—	—
(241)	3	—	58/3	—	—
(242)	4	—	51/3	—	—
(243)	5	—	58/5	—	—
(244)	6	—	51/4	—	—
(245)	7	179	56/4	PL2/11 SA(*a*)	
			54/3 & 54/11 *strapped together*		
(246)	8	—	—	—	—
(247)	PL504/7	—	58/9	—	—
(248)	8	—	—	—	—
(249)	9	—	—	—	—
(250)	10	62	—	PL902/2 SU410	—
(251)	11	72	—	PL902/12 SU410	—
(252)	12	—	—	Earth	—
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054 (*b*)					
(253)	PL1/1	—	67/11	—	—
(254)	2	—	67/12	—	—
(255)	3	—	51/1	—	—
(256)	4	—	—	Earth —	—
(257)	5	—	—	—	—
(258)	6	—	51/2	—	—
(259)	7	—	63/7	—	—
(260)	8	—	—	—	—
(261)	9	—	67/9	—	—
(262)	10	—	63/8	—	—
(263)	11	—	63/6	—	—
(264)	12	—	67/10	—	—
(265)	PL2/1	—	—	—	—
(266)	2	—	—	—	—
(267)	3	—	—	—	—
(268)	4	—	65/5	—	—
(269)	5	—	65/4	—	—
(270)	6	—	65/7	—	—
(271)	7	—	65/6	—	—
(272)	8	—	65/9	—	—
(273)	PL2/9	—	65/8	—	—
(274)	10	—	65/10	—	—

SCHEDULE 1. Rack assembly Type 314A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054 (*b*)—(contd.)					
(275)	PL2/11	341	63/4 65/3 & 65/11 *strapped together*	PL503/7 CU(*b*)	—
(276)	12	—	65/12	—	—
(277)	PL3/1	—	—	—	—
(278)	2	—	—	—	—
(279)	3*	—	67/1	—	—
(280)	4*	—	67/2	—	—
(281)	5*	—	67/3	—	—
(282)	6*	—	67/4	—	—
(283)	7	—	67/5	—	—
(284)	8	—	67/6	—	—
(285)	9	—	67/7	—	—
(286)	10	—	—	—	—
(287)	11	—	67/8	—	—
(288)	12	—	—	—	—
(289)	PL4/1	—	59/3	—	—
(290)	2	—	59/5	—	—
(291)	3	—	—	—	—
(292)	4	—	65/1	—	—
(293)	5	—	63/1	—	—
(294)	6	331	—	PL502/9 CU(*b*)	—
(295)	7	—	—	—	—
(296)	8	—	63/5, 65/2, *strapped together*	—	—
(297)	9	—	63/2	—	—
(298)	10	—	63/3	—	—
(299)	11	—	—	—	—
(300)	12	—	—	—	—
(301)	PL5/1	—	—	—	—
(302)	2	—	59/4	—	—
(303)	3	—	59/7	—	—
(304)	4	325	—	PL502/3 CU(*b*)	—
(305)	5	76	—	PL903/4 SU410	—
(306)	6	74	—	PL903/2 SU410	—
(307)	7	—	59/1	—	—
(308)	8	326	—	PL502/4 CU(*b*)	—
(309)	9	—	—	—	—
(310)	10	—	—	—	—
(311)	11	—	—	—	—
(312)	12	314	—	PL501/2 CU(*b*)	—
Connections to Control Unit Type 600, Ref. No. 10L/16029 (*b*)					
(313)	PL501/1	—	—	—	—
(314)	2	312	—	PL5/12 SA(*b*)	—
(315)	3	317, 319	61/4,61/6, 61/8, *strapped together*	PL501/5 & PL501/7 CU(*b*)	—
(316)	4	—	—	—	—
(317)	5	315, 319	61/6, 61/4, 61/8, *strapped together*	PL501/3 & PL501/7 CU(*b*)	—
(318)	6	—	—	—	—
(319)	7	315, 317	61/8, 61/4, 61/6, *strapped together*	PL501/3 & PL501/5 CU(*b*)	—
(320)	8	—	—	—	—
(321)	9	—	59/9	—	—
(322)	10	—	59/11	—	—
(323)	11	—	59/8	—	—
(324)	12	—	63/10	—	—
(325)	PL502/3	304	—	PL5/4 SA(*b*)	—
(326)	4	308	—	PL5/8 SA(*b*)	—
(327)	5	—	—	—	—
(328)	6	—	63/11	—	—
(329)	7	—	—	—	—
(330)	8	—	63/9	—	—
(331)	9	294	—	PL4/6 SA(*b*)	—
(332)	10	—	—	—	—
(333)	11	—	—	—	—
(334)	12	—	—	—	—
(335)	PL503/1	—	59/10	—	—
(336)	2	—	—	—	—
(337)	3	—	59/2	—	—
(338)	4	—	—	—	—
(339)	5	—	59/6	—	—

SCHEDULE 1. Rack assembly Type 314A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Control Unit Type 600, Ref. No. 10L/16029 (*b*)—(contd.)					
(340)	PL503/6	—	—	—	—
(341)	7	275	63/4, 65/3, 65/11, *strapped together*	PL2/11 SA(*b*)	—
(342)	8	—	—	—	—
(343)	PL504/7	—	—	—	—
(344)	8	—	—	—	—
(345)	9	—	—	—	—
(346)	10	75	—	PL903/3 SU410	—
(347)	11	73	—	PL903/1	—
(348)	12	—	—	Earth	—
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054 (*c*)					
(349)	PL1/1	—	34/11	—	—
(350)	2	—	34/12	—	—
(351)	3	—	18/1	—	—
(352)	4	—	—	Earth	—
(353)	5	—	—	—	—
(354)	6	—	18/2	—	—
(355)	7	—	30/7	—	—
(356)	8	—	—	—	—
(357)	9	—	34/9	—	—
(358)	10	—	30/8	—	—
(359)	11	—	30/6	—	—
(360)	12	—	34/10	—	—
(361)	PL2/1	—	—	—	—
(362)	2	—	—	—	—
(363)	3	—	—	—	—
(364)	4		32/5	—	—
(365)	5	—	32/4	—	—
(366)	6	—	32/7	—	—
(367)	7	—	32/6	—	—
(368)	8	—	32/9	—	—
(369)	9	—	32/8	—	—
(370)	10	—	32/10	—	—
(371)	11	437	30/4, 32/3, 32/11 *strapped together*	PL503/7 CU(*c*)	—
(372)	12	—	32/12	—	—
(373)	PL3/1	—	—	—	—
(374)	2	—	—	—	—
(375)	3*	—	34/1	—	—
(376)	4*	—	34/2	—	—
(377)	5*	—	34/3	—	—
(378)	6*	—	34/4	—	—
(379)	7	—	34/5	—	—
(380)	8	—	34/6	—	—
(381)	9	—	34/7	—	—
(382)	10	—	—	—	—
(383)	11	—	34/8	—	—
(384)	12	—	—	—	—
(385)	PL4/1	—	26/3	—	—
(386)	2	—	26/5	—	
(387)	3	—	—	—	—
(388)	4	—	32/1	—	—
(389)	5	—	30/1	—	—
(390)	6	427	—	PL502/9 CU(*c*)	—
(391)	7	—	—	—	—
(392)	8	—	30/5, 32/2, *strapped together*	—	—
(393)	9	—	30/2	—	—
(394)	10	—	30/3	—	—
(395)	11	—	—	—	—
(396)	12	—	—	—	—
(397)	PL5/1	—	—	—	—
(398)	2	—	26/4	—	—
(399)	3	—	26/7	—	—
(400)	4	421	—	PL502/3 CU(*c*)	—
(401)	5	80	—	PL903/8 SU410	—
(402)	6	78	—	PL903/6 SU410	—
(403)	7	—	26/1	—	—
(404)	8	422	—	PL502/4 CU(*c*)	—
(405)	9	—	—	—	—
(406)	10	—	—	—	—
(407)	11	—	—	—	—
(408)	12	410	—	PL501/2 CU(*c*)	—

SCHEDULE 1. Rack assembly Type 314A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connection to Control Unit Type 600, Ref. No. 10L/16029 (*c*)					
(409)	PL501/1	—	—	—	—
(410)	2	408	—	PL5/12 SA(*c*)	—
(411)	3	413, 415	28/4, 28/6, 28/8, *strapped together*	PL501/5 & PL501/7 CU(*c*)	—
(412)	4	—	—	—	—
(413)	5	411, 415	28/6, 28/4, 28/8, *strapped together*	PL501/3, PL501/3 & PL501/7 CU(*c*)	—
(414)	6	—	—	—	—
(415)	7	411, 413	28/8, 28/4, 28/6, *strapped together*	PL501/3 & PL501/5 CU(*c*)	—
(416)	8	—	—	—	—
(417)	9	—	26/9	—	—
(418)	10	—	26/11	—	—
(419)	11	—	26/8	—	—
(420)	12	—	30/10	—	—
(421)	PL502/3	400	—	PL5/4 SA(*c*)	—
(422)	4	404	—	PL5/8 SA(*c*)	—
(423)	5	—	—	—	—
(424)	6	—	30/11	—	—
(425)	7	—	—	—	—
(426)	8	—	30/9	—	—
(427)	9	390	—	PL4/6 SA(*c*)	—
(428)	10	—	—	—	—
(429)	11	—	—	—	—
(430)	12	—	—	—	—
(431)	PL503/1	—	26/10	—	—
(432)	2	—	—	—	—
(433)	3	—	26/2	—	—
(434)	4	—	—	—	—
(435)	5	—	26/6	—	—
(436)	6	—	—	—	—
(437)	7	371	30/4 32/3 & 32/11 *strapped together*	PL2/11 SA(*c*)	—
(438)	8	—	—	—	—
(439)	PL504/7	—	—	—	—
(440)	8	—	—	—	—
(441)	9	—	—	—	—
(442)	10	79	—	PL903/7 SU410	—
(443)	11	77	—	PL903/5 SU410	—
(444)	12	—	—	Earth	—
Connections to Amplifier (Servo) Type 297, Ref. No. 10U/16054 (*d*)					
(445)	PL1/1	—	17/11	—	—
(446)	2	—	17/12	—	—
(447)	3	—	18/7	—	—
(448)	4	—	—	Earth	—
(449)	5	—	—	—	—
(450)	6	—	18/8	—	—
(451)	7	—	21/7	—	—
(452)	8	—	—	—	—
(453)	9	—	17/9	—	—
(454)	10	—	21/8	—	—
(455)	11	—	21/6	—	—
(456)	12	—	17/10	—	—
(457)	PL2/1	—	—	—	—
(458)	2	—	—	—	—
(459)	3	—	—	—	—
(460)	4	—	19/5	—	—
(461)	5	—	19/4	—	—
(462)	6	—	19/7	—	—
(463)	7	—	19/6	—	—
(464)	8	—	19/9	—	—
(465)	9	—	19/8	—	—
(466)	10	—	19/10	—	—
(467)	11	533	21/4 19/3 & 19/11 *strapped together*	PL503/7 CU(*d*)	—
(468)	12	—	19/12	—	—
(469)	PL3/1	—	—	—	—
(470)	2	—	—	—	—
(471)	3*	—	17/1	—	—
(472)	4*	—	17/2	—	—
(473)	5*	—	17/3	—	—

SCHEDULE 1. Rack assembly Type 314A—Wiring (contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier Servo Type 297, Ref. No. 10U/16054 (*d*)—(contd.)					
(474)	PL3/6*	—	17/4	—	—
(475)	7	—	17/5	—	—
(476)	8	—	17/6	—	—
(477)	9	—	17/7	—	—
(478)	10	—	—	—	—
(479)	11	—	17/8	—	—
(480)	12	—	—	—	—
(481)	PL4/1	—	25/3	—	—
(482)	2	—	25/5	—	—
(483)	3	—	—	—	—
(484)	4	—	19/1	—	—
(485)	5	—	21/1	—	—
(486)	6	523	—	PL502/9 CU(*d*)	—
(487)	7	—	—	—	—
(488)	8	—	21/5, 19/2 *strapped together*	—	—
(489)	9	—	21/2	—	—
(490)	10	—	21/3	—	—
(491)	11	—	—	—	—
(492)	12	—	—	—	—
(493)	PL5/1	—	—	—	—
(494)	2	—	25/4	—	—
(495)	3	—	25/7	—	—
(496)	4	517	—	PL502/3 CU(*d*)	—
(497)	5	84	—	PL903/12 SU410	—
(498)	6	82	—	PL903/10 SU410	—
(499)	7	—	25/1	—	—
(500)	8	518	—	PL502/4 CU(*d*)	—
(501)	9	—	—	—	—
(502)	10	—	—	—	—
(503)	11	—	—	—	—
(504)	12	506	—	PL501/2 CU(*d*)	—
Connections to Control Unit Type 600, Ref. No. 10L/16029 (*d*)					
(505)	PL501/1	—	—	—	—
(506)	2	504	—	PL5/12 SA(*d*)	—
(507)	3	509, 511	23/4, 23/6, 23/8, *strapped together*	PL501/5 & PL501/7 CU(*d*)	—
(508)	4	—	—	—	—
(509)	5	507, 511	23/6, 23/4, 23/8, *strapped together*	PL501/3 & PL501/7 CU(*d*)	—
(510)	6	—	—	—	—
(511)	7	507, 509	23/8, 23/4, 23/6, *strapped together*	PL501/3 & PL501/5 CU(*d*)	—
(512)	8	—	—	—	—
(513)	9	—	25/9	—	—
(514)	10	—	25/11	—	—
(515)	11	—	25/8	—	—
(516)	12	—	21/10	—	—
(517)	PL502/3	496	—	PL5/4 SA(*d*)	—
(518)	4	500	—	PL5/8 SA(*d*)	—
(519)	5	—	—	—	—
(520)	6	—	21/11	—	—
(521)	7	—	—	—	—
(522)	8	—	21/9	—	—
(523)	9	486	—	PL4/6 SA(*d*)	—
(524)	10	—	—	—	—
(525)	11	—	—	—	—
(526)	12	—	—	—	—
(527)	PL503/1	—	25/10	—	—
(528)	2	—	—	—	—
(529)	3	—	25/2	—	—
(530)	4	—	18/3	—	—
(531)	5	—	25/6	—	—
(532)	6	—	18/4	—	—
(533)	7	467	21/4 19/3 & 19/11 *strapped together*	PL2/11 SA(*d*)	—
(534)	8	—	—	—	—
(535)	PL504/7	—	—	—	—
(536)	8	—	—	—	—
(537)	9	—	—	—	—
(538)	10	83	—	PL903/11 SU410	—
(539)	11	81	—	PL903/9 SU410	—
(540)	12	—	—	Earth	—
Additional connections required					
	—	—	58/10, 40/8, 40/11 *strapped together*	—	—

RACK ASSEMBLY TYPE 315A
(Ref. No. 10D/19692)

Panel (Blanking) 4639 (Stores reference 10D/19663)	Waveform Generator (Anit-Sea Clutter) 104 Ref. No. 10V/16079
Control Unit 600 Ref. No. 10L/16029 (*g*)	Rectifier Unit 15 Ref. No. 10D/17761 (6)
Amplifier (Servo) 297 Ref. No. 10U/16054	Amplifier Unit (Pulse Splitter) 300 Ref. No. 10U/16057
Amplifier (Servo) 297 Ref. No. 10U/16054 (*e*)	Rectifier Unit 15 Ref. No. 10D/17761 (3)
Control Unit 600 Ref. No. 10L/16029 (*e*) and (*f*)	Rectifier Unit 15 Ref. No. 10D/17761 (4)
Amplifier (Servo) 297 Ref. No. 10U/16054 (*f*)	Rectifier Unit 15 Ref. No. 10D/17761 (5)

Fig. 18. Rack assembly Type 315A, schematic

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
Connections to Amplifier (Servo) 297, Ref. No. 10U/16054(*e*)						
(1)	PL1/1	—		17/11	—	Plinth Term 67 14/9(1)
(2)	2	—		17/12	—	Plinth Term 68 14/9(1)
(3)	3	—		24/1	—	Mains input
(4)	4	—		—	Earth	—
(5)	5	—		—	—	—
(6)	6	—		24/2	—	Mains input
(7)	7	—		21/7	—	PLAL/7 CU619(2)
(8)	8	—		—	—	—
(9)	9	—		17/9	—	SR46 14/9(1)
(10)	10	—		21/8	—	PLAL/8 CU619(2)
(11)	11	—		21/6	—	PLAL/6 CU619(2)
(12)	12	—		17/10	—	SR38 14/9(1)
(13)	PL2/1	—		31/10	—	PL39/10 RA314
(14)	2	—		31/11	—	PL39/11 RA314
(15)	3	—		31/12	—	PL39/12 RA314
(16)	4	—		19/5	—	SR23 14/9(1)
(17)	5	—		19/4	—	SR22 14/9(1)
(18)	6	—		19/7	—	SR25 14/9(1)
(19)	7	—		19/6	—	SR24 14/9(1)
(20)	8	—		19/9	—	SR27 14/9(1)
(21)	9	—		19/8	—	SR26 14/9(1)
(22)	10	—		19/10 } *strapped*		SR28 14/9(1)
				31/2 } *strapped*		PL39/2 RA314
(23)	11	89		21/4 }	PL503/7 CU(*e*)	PLAL/4 CU619(2)
				19/3 } *strapped*		SR's 19 & 29 14/9(1)
				19/11 }		
(24)	12	—		19/12	—	SR30 14/9(1)
(25)	PL3/1	—		—	—	—
(26)	2	—		—	—	—
(27)	3	—		17/1	—	Amplid X4 14/9(1)
(28)	4	—		17/2	—	Amplid X3 14/9(1)
(29)	5	—		17/3	—	Amplid X2 14/9(1)
(30)	6	—		17/4	—	Amplid X1 14/9(1)
(31)	7	—		17/5	—	Amplid X5 14/9(1)
(32)	8	—		17/6	—	Amplid X6 14/9(1)
(33)	9	—		17/7	—	Amplid A4 14/9(1)
(34)	10	—		—	—	—
(35)	11	—		17/8	—	Amplid A2 14/9(1)
(36)	12	—		—	—	—
(37)	PL4/1	—		25/3	—	PLAJ/3 CU619(2)
(38)	2	—		25/5	—	PLAJ/5 CU619(2)
(39)	3	82		—	PL502/12 CU(*e*)	—
(40)	4	—		19/1	—	SR36 14/9(1)
(41)	5	78		—	PL502/8 CU(*e*)	—
(42)	6	79		—	PL502/9 CU(*e*)	—
(43)	7	—		21/3	—	PLAL/3 CU619(2)
(44)	8	—		21/5 } *strapped*	—	PLAL/5 CU619(2)
				19/2 } *strapped*		SR34 14/9(1)
(45)	9	76		—	PL502/6 CU(*e*)	—
(46)	10	—		25/12	—	PLAJ/12 CU619(2)
(47)	11	—		—	—	—
(48)	12	—		—	—	—
(49)	PL5/1	—		31/4	—	PL39/4 RA314
(50)	2	—		25/4	—	PLAJ/4 CU619(2)
(51)	3	—		25/7	—	PLAJ/7 CU619(2)
(52)	4	73		—	PL502/3 CU(*e*)	—
(53)	5	—		27/1	—	PL43/1 RA314
(54)	6	—		27/2	—	PL43/2 RA314
(55)	7	—		23/2	—	PLAI/2 CU619(2)
(56)	8	74		—	PL502/4 CU(*e*)	—
(57)	9	75		—	PL502/5 CU(*e*)	—
(58)	10	80		—	PL502/10 CU(*e*)	—
(59)	11	81		—	PL502/11 CU(*e*)	—
(60)	12	62		25/6	PL501/2 CU(*e*)	PLAJ/6 CU619(2)
Connections to Control Unit 600, Ref. No. 10L/16029(*e*)						
(61)	PL501/1	—		25/1	—	PLAJ/1 CU619(2)
(62)	2	60		25/6	PL5/12 SA(*e*)	PLAJ/6 CU619(2)
(63)	3	—		23/4	—	PLAI/4 CU619(2)
(64)	4	—		—	—	—
(65)	5	—		23/6	—	PLAI/6 CU619(2)
(66)	6	—		—	—	—
(67)	7	—		23/8	—	PLAI/8 CU619(2)
(68)	8	—		—	—	—
(69)	9	—		25/9	—	PLAJ/9 CU619(2)

RACK ASSEMBLY TYPE 315A—(continued)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(70)		10	—	25/11	—	PLAJ/11 CU619(2)
(71)		11	—	25/8	—	PLAJ/8 CU619(2)
(72)		12	—	23/1	—	PLAI/1 CU619(2)
(73)		PL502/3	52	—	PL5/4 SA(*e*)	—
(74)		4	56	—	PL5/8 SA(*e*)	—
(75)		5	57	—	PL5/9 SA(*e*)	—
(76)		6	45	—	PL4/9 SA(*e*)	—
(77)		7	—	—	—	—
(78)		8	41	—	PL4/5 SA(*e*)	—
(79)		9	42	—	PL4/6 SA(*e*)	—
(80)		10	58	—	PL5/10 SA(*e*)	—
(81)		11	59	—	PL5/11 SA(*e*)	—
(82)		12	39	—	PL4/3 SA(*e*)	—
(83)		PL503/1	—	25/10	—	PLAJ/10 CU619(2)
(84)		2	—	—	—	—
(85)		3	—	23/3	—	PLAI/3 CU619(2)
(86)		4	—	24/3	—	Mains input
(87)		5	—	23/5	—	PLAI/5 CU619(2)
(88)		6	—	24/4	—	Mains input
(89)		7	23	21/4, 19/3, 19/11 *strapped*	P12/11 SA(*e*)	PLAL/4 CU619(2) SR's 19 & 29 14/9(1)
(90)		8	—	—	—	—
(91)		PL504/7	—	23/9	—	PLAI/9 CU619(2)
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	27/3	—	PL43/3 RA314
(95)		11	—	27/4	—	PL43/4 RA314
(96)		12	—	—	Earth	—
Connections to Amplifier (Servo) 297, Ref. No. 10U/16054(*f*)						
(97)		PL1/1	—	34/11	—	Plinth Term 67 13(4)
(98)		2	—	34/12	—	Plinth Term 68 13(4)
(99)		3	—	24/5	—	Mains input
(100)		4	—	—	Earth	—
(101)		5	—	—	—	Mains input
(102)		6	—	24/6	—	—
(103)		7	—	30/7	—	P12/7 CU(T.13 Tr.)(4)
(104)		8	—	—	—	—
(105)		9	—	34/9	—	SR46 13(4)
(106)		10	—	30/8	—	PL2/8 CU(T.13 Tr.)(4)
(107)		11	—	30/6	—	PL2/6 CU(T.13 Tr.)(4)
(108)		12	—	34/10	—	SR38 13(4)
(109)		PL2/1	—	—	—	—
(110)		2	—	—	—	—
(111)		3	—	—	—	—
(112)		4	—	32/5	—	SR23 13(4)
(113)		5	—	32/4	—	SR22 13(4)
(114)		6	—	32/7	—	SR25 13(4)
(115)		7	—	32/6	—	SR24 13(4)
(116)		8	—	32/9	—	SR27 13(4)
(117)		9	—	32/8	—	SR26 13(4)
(118)		10	—	32/10	—	SR28 13(4)
(119)		11	185	30/4, 32/3, 32/11, 32/12 *strapped*	PL503/7 CU(*f*)	PL2/4 CU(T.13 Tr.)(4) SR's 19 & 29 13(4)
(120)		12	—		—	SR30 13(4)
(121)		PL3/1	—	—	—	—
(122)		2	—	—	—	—
(123)		3	—	34/1	—	Amplid X4 13(4)
(124)		4	—	34/2	—	Amplid X3 13(4)
(125)		5	—	34/3	—	Amplid X2 13(4)
(126)		6	—	34/4	—	Amplid X1 13(4)
(127)		7	—	34/5	—	Amplid X5 13(4)
(128)		8	—	34/6	—	Amplid X6 13(4)
(129)		9	—	34/7	—	Amplid A4 13(4)
(130)		10	—	—	—	—
(131)		11	—	34/8	—	Amplid A2 13(4)
(132)		12	—	—	—	—
(133)		PL4/1	—	26/3	—	PL1/3 CU(T.13 Tr.)(4)
(134)		2	—	26/5	—	PL1/5 CU(T.13 Tr.)(4)
(135)		3	—	—	—	—
(136)		4	—	32/1	—	SR36 13(4)
(137)		5	—	30/1	—	PL2/1 CU(T.13 Tr.)(4)
(138)		6	175	—	PL502/9 CU(*f*)	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plus	Termination Internal	Termination External
(139)		7	—	30/5 } *strapped*	—	{ PL2/5 CU(T.13 Tr.)(4)
(140)		8	—	32/2 }	—	{ SR34 13(4)
(141)		9	—	30/2	—	PL2/2 CU(T13 Tr.)(4)
(142)		10	—	30/3	—	PL2/3 CU(T.13 Tr.)(4)
(143)		11	—	—	—	—
(144)		12	—	—	—	—
(145)		PL5/1	—	—	—	—
(146)		2	—	26/4	—	PL1/4 CU(T.13 Tr.)(4)
(147)		3	—	26/7	—	PL1/7 CU(T.13 Tr.)(4)
(148)		PL5/4	169	—	PL502/3 CU(*f*)	—
(149)		5	—	27/5	—	PL43/5 RA314
(150)		6	—	27/6	—	PL43/6 RA314
(151)		7	—	26/1	—	PL1/1 CU(T.13 Tr.)(4)
(152)		8	170	—	PL502/4 CU(*f*)	—
(153)		9	—	—	—	—
(154)		10	—	—	—	—
(155)		11	—	—	—	—
(156)		12	158	—	PL501/2 CU(*f*)	—
Connections to Control Unit 600, Ref. No. 10L/16029(*f*)						
(157)		PL501/1	—	—	—	—
(158)		2	156	—	PL5/12 SA(*f*)	—
(159)		3	161 163	28/4 *strapped to* 28/6 & 28/8	PL501/5 & PL501/7 CU(*f*)	—
(160)		4	—	—	—	—
(161)		5	159 163	28/6 *strapped to* 28/4 & 28/8	PL501/3 & PL501/7 CU(*f*)	—
(162)		6	—	—	—	—
(163)		7	159 161	28/8 *strapped to* 28/4 & 28/6	PL501/3 & PL501/5 CU(*f*)	—
(164)		8	—	—	—	—
(165)		9	—	26/9	—	PL1/9 CU(T.13 Tr.)(4)
(166)		10	—	26/11	—	PL1/11 CU(T.13 Tr.)(4)
(167)		11	—	26/8	—	PL1/8 CU(T.13 Tr.)(4)
(168)		12	—	30/10	—	PL2/10 CU(T.13 Tr.)(4)
(169)		PL502/3	148	—	PL5/4 SA(*f*)	—
(170)		4	152	—	PL5/8 SA(*f*)	—
(171)		5	—	—	—	—
(172)		6	—	30/11	—	PL2/11 CU(T.13 Tr.)(4)
(173)		7	—	—	—	—
(174)		8	—	30/9	—	PL2/9 CU(T.13 Tr.)(4)
(175)		9	138	—	PL4/6 SA(*f*)	—
(176)		10	—	—	—	—
(177)		11	—	—	—	—
(178)		12	—	—	—	—
(179)		PL503/1	—	26/10	—	PL1/10 CU(T.13 Tr.)(4)
(180)		2	—	—	—	—
(181)		3	—	26/2	—	PL1/2 CU(T.13 Tr.)(4)
(182)		4	—	—	—	—
(183)		5	—	26/6	—	PL1/6 CU(T.13 Tr.)(4)
(184)		6	—	—	—	—
(185)		7	119	30/4 32/3 32/11 } *Strapped*	PL2/11 SA(*f*)	{ PL2/4 CU(T.13 Tr.)(4) { SR's 19 & 29 13(4)
(186)		8	—	—	—	—
(187)		PL504/7	—	—	—	—
(188)		8	—	—	—	—
(189)		9	—	—	—	—
(190)		10	—	27/7	—	PL43/7 RA314
(191)		11	—	27/8	—	PL43/8 RA314
(192)		12	—	—	Earth	—
Connections to Rectifier Unit 15, Ref. No. 10D/17761(3)						
(193)		PL1/1	—	—	Earth	—
(194)		2	—	51/1, 51/2, 51/3, 51/4, 51/5, 51/6, *strapped*	—	50V output (+ve)
(195)		3	—	51/7, 51/8, 51/9, 51/10, 51/11, 51/12, *strapped*	—	50V output (—ve)
(196)		4	—	55/1, 55/2, 55/3, 55/4, 55/5, 55/6, *strapped*	—	50V output (+ve)
(197)		5	—	55/7, 55/8, 55/9, 55/10, 55/11, & 55/12, *strapped*	—	50V ouput (—ve)

RACK ASSEMBLY TYPE 315A—(continued)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(198)		6 —	—	—	—
(199)		7 —	10/1 & 10/2	—	AFC Earth
(200)		8 —	—	—	—
(201)		9 —	—	—	—
(202)		10 —	—	—	—
(203)		11 —	24/7	—	Mains input
(204)		12 —	24/8	—	Mains input
	Plug 2 not used				
Connections to Rectifier Unit 15, Ref. No. 10D/17761(4)					
(205)		PL1/1 —	—	Earth	—
(206)		2 —	57/1, 57/2, 57/3, 57/4, 57/5, 57/6, *strapped*	—	50V output (+ve)
(207)		3 —	57/7, 57/8, 57/9, 57/10, 57/11, 57/12, *strapped*	—	50V output (—ve)
(208)		4 —	61/1, 61/2, 61/3, 61/4, 61/5, 61/6, *strapped*	—	50V output (+ve)
(209)		5 —	61/7, 61/8, 61/9, 61/10, 61/11, 61/12, *strapped*	—	50V output (—ve)
(210)		6 —	—	—	—
(211)		7 —	—	—	—
(212)		8 —	—	—	—
(213)		9 —	—	—	—
(214)		10 —	—	—	—
(215)		11 —	24/9	—	Mains input
(216)		12 —	24/10	—	Mains input
	Plug 2 not used				
Connections to Rectifier Unit 15 Ref. No. 10D/17761(5)					
(217)		PL1/1 —	—	Earth	—
(218)		2 —	63/1, 63/2, 63/3, 63/4, 63/5, 63/6, *strapped*	—	50V output (+ve)
(219)		3 —	63/7, 63/8, 63/9, 63/10, 63/11, 63/12, *strapped*	—	50V output (—ve)
(220)		4 —	67/1, 67/2, 67/3, 67/4, 67/5, 67/6, *strapped*	—	50V output (+ve)
(221)		5 —	67/7, 67/8, 67/9, 67/10, 67/11, 67/12, *strapped*	—	50V output (—ve)
(222)		6 —	—	—	—
(223)		7 —	—	—	—
(224)		8 —	—	—	—
(225)		9 —	—	—	—
(226)		10 —	—	—	—
(227)		11 —	24/11	—	Mains input
(228)		12 —	24/12	—	Mains input
Additional Connections Required:—					
			23/10		PLA1/10 CU619(2)
			20/11		PL40/11 RA314
			23/10 *strapped to* 20/11		
			31/1 *strapped to* 21/1		
			31/3 *strapped to* 21/2		
			31/5 *strapped to* 25/2		
					PLAJ/2 CU619(2)
Connections to Amplifier (Servo) 297, Ref. No. 10U/16054(*g*)					
(229)		PL1/1 —	16/11	—	Plinth Term 67 13(5)
(230)		2 —	16/12	—	Plinth Term 68 13(5)
(231)		3 —	6/1	—	Mains input
(232)		4 —	—	Earth	—
(233)		5 —	—	—	—
(234)		6 —	6/2	—	Mains input
(235)		7 —	12/7	—	PL2/7 CU(T.13 Tr.)(5)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(236)		8	—	—	—	—
(237)		9	—	16/9	—	SR46 13(5)
(238)		10	—	12/8	—	PL2/8 CU(T.13 Tr.)(5)
(239)		11	—	12/6	—	PL2/6 CU(T.13 Tr.)(5)
(240)		12	—	16/10	—	SR38 13(5)
(241)		PL2/1	—	—	—	—
(242)		2	—	—	—	—
(243)		3	—	—	—	—
(244)		4	—	14/5	—	SR23 13(5)
(245)		5	—	14/4	—	SR22 13(5)
(246)		6	—	14/7	—	SR25 13(5)
(247)		7	—	14/6	—	SR24 13(5)
(248)		8	—	14/9	—	SR27 13(5)
(249)		9	—	14/8	—	SR26 13(5)
(250)		10	—	14/10	—	SR28 13(5)
(251)		11	317	12/4 *strapped to* 14/3 & 14/11	PL503/7 CU(*g*)	PL2/4 CU(T.13 Tr.)(5) SR's 19 & 29 13(5)
(252)		12	—	14/12	—	SR30 13(5)
(253)		PL3/1	—	—	—	—
(254)		2	—	—	—	—
(255)		3	—	16/1	—	Amplid X4 13(5)
(256)		4	—	16/2	—	Amplid X3 13(5)
(257)		5	—	16/3	—	Amplid X2 13(5)
(258)		6	—	16/4	—	Amplid X1 13(5)
(259)		7	—	16/5	—	Amplid X5 13(5)
(260)		8	—	16/6	—	Amplid X6 13(5)
(261)		9	—	16/7	—	Amplid A4 13(5)
(262)		10	—	—	—	—
(263)		11	—	16/8	—	Amplid A2 13(5)
(264)		12	—	—	—	—
(265)		PL4/1	—	8/3	—	PL1/3 CU(T.13 Tr.)(5)
(266)		2	—	8/5	—	PL1/5 CU(T.13 Tr.)(5)
(267)		3	—	—	—	—
(268)		4	—	14/1	—	SR36 13(5)
(269)		5	—	12/1	—	PL2/1 CU(T.13 Tr.)(5)
(270)		6	307	—	PL502/9 CU(*g*)	—
(271)		7	—	—	—	—
(272)		8	—	12/5 } *strapped* 14/2 }	—	PL2/5 CU(T.13 Tr.)(5)
					—	SR34 13(5)
(273)		9	—	12/2	—	PL2/2 CU(T.13 Tr.)(5)
(274)		10	—	12/3	—	PL2/3 CU(T.13 Tr.)(5)
(275)		11	—	—	—	—
(276)		12	—	—	—	—
(277)		PL5/1	—	—	—	—
(278)		2	—	8/4	—	PL1/4 CU(T.13 Tr.)(5)
(279)		3	—	8/7	—	PL1/7 CU(T.13 Tr.)(5)
(280)		4	301	—	PL502/3 CU(*g*)	—
(281)		5	—	27/9	—	PL43/9 RA314
(282)		6	—	27/10	—	PL43/10 RA314
(283)		7	—	8/1	—	PL1/1 CU(T.13 Tr.)(5)
(284)		8	302	—	PL502/4 CU(*g*)	—
(285)		9	—	—	—	—
(286)		10	—	—	—	—
(287)		11	—	—	—	—
(288)		12	290	—	PL501/2 CU(*g*)	—
(289)		PL501/1	—	—	—	—
(290)		2	288	—	PL5/12 SA(*g*)	—
(291)		3	293	10/4 *strapped to*	PL501/5	—
			295	10/6 & 10/8	PL501/7 CU(*g*)	—
(292)		4	—	—	—	—
(293)		5	291	10/6 *strapped to*	PL501/3 &	—
			295	10/4 & 10/8	PL501/7 CU(*g*)	
(294)		6	—	—	—	—
(295)		7	291	10/8 *strapped to*	PL501/3 &	—
			293	10/4 & 10/6	PL501/5 CU(*g*)	
(296)		8	—	—	—	—
(297)		9	—	8/9	—	PL1/9 CU(T.13 Tr.)(5)
(298)		10	—	8/11	—	PL1/11 CU(T.13 Tr.)(5)
(299)		11	—	8/8	—	PL1/8 CU(T.13 Tr.)(5)
(300)		PL501/2	—	12/10	—	PL2/10 CU(T.13 Tr.)(5)
(301)		PL502/3	280	—	PL5/4 SA(*g*)	—
(302)		4	284	—	PL5/8 SA(*g*)	—
(303)		5	—	—	—	—
(304)		6	—	12/11	—	P12/11 CU(T.13 Tr.)(5)
(305)		7	—	—	—	—
(306)		8	—	12/9	—	PL2/9 CU(T.13 Tr.)(5)
(307)		9	270	—	PL4/6 SA(*g*)	—

RACK ASSEMBLY TYPE 315A—(continued)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(308)		10	—	—	—	—
(309)		11	—	—	—	—
(310)		12	—	—	—	—
(311)		PL503/1	—	8/10	—	PL1/10 CU(T.13 Tr.)(5)
(312)		2	—	—	—	—
(313)		3	—	8/2	—	PL1/2 CU(T.13 Tr.)(5)
(314)		4	—	6/3	—	Mains input
(315)		5	—	8/6	—	PL1/6 CU(T.13 Tr.)(5)
(316)		6	—	6/4	—	Mains input
(317)		7	251	12/4, 14/3, 4/11 *strapped*	PL2/11 SA(g)	PL2/4 CU(T.13 Tr.)(5) SR's 19 & 29 (13/5)
(318)		8	—	—	—	—
(319)		PL504/7	—	—	—	—
(320)		8	—	—	—	—
(321)		9	—	—	—	—
(322)		10	—	27/11	—	PL43/11 RA314
(323)		11	—	27/12	—	PL43/12 RA314
(324)		12	—	—	Earth	—
Connections to Amplifying Unit (Pulse Splitter) 300, Ref. No. 10U/16057						
(325)		PL1/1	—	—	Earth	—
(326)		2	—	—	—	—
(327)		3	—	—	—	—
(328)		4	—	—	—	—
(329)		5	—	—	—	—
(330)		6	—	—	—	—
(331)		7	—	—	—	—
(332)		8	—	—	—	—
(333)		9	—	—	—	—
(334)		10	—	—	—	—
(335)		11	—	6/5	—	Mains input
(336)		12	—	6/6	—	Mains input
Connections from Rectifier Unit 15, Ref. 10D/17761(3)						
(337)		PL2/1	—	10/9	AFC(1)	—
(338)		2	—	—	—	—
(339)		3	—	10/10	AFC(1)	—
(340)		4	—	10/11	AFC(2)	—
(341)		5	—	10/12	AFC(2)	—
(342)		6	—	—	—	—
(343)		7	—	—	—	—
(344)		8	—	—	—	—
(345)		9	—	—	—	—
(346)		10	—	—	—	—
(347)		11	—	—	—	—
(348)		12	—	—	—	—
Connections for Rectifier Unit 15, Ref. No. 10D/17761(6)						
(349)		PL1/1	—	—	Earth	—
(350)		2	—	45/2, 45/4, 45/6 *strapped*	—	50V output (+ve)
(351)		3	—	45/1, 45/3, 45/5 *strapped*	—	50V output (—ve)
(352)		4	—	45/8, 45/10, 45/11 *strapped*	—	50V output (+ve)
(353)		5	—	45/7, 45/9, 45/11 *strapped*	—	50V output (—ve)
(354)		6	—	—	—	—
(355)		7	—	—	—	—
(356)		8	—	—	—	—
(357)		9	—	—	—	—
(358)		10	—	—	—	—
(359)		11	—	49/1	—	Mains input
(360)		12	—	49/2	—	Mains input

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Waveform Generator (ASC) 104, Ref. No. 10V/16079					
(361)	PL1/1	—	—	Earth	—
(362)	2	—	—	—	—
(363)	3	—	—	—	—
(364)	4	—	—	—	—
(365)	5	—	—	—	—
(366)	6	—	—	—	—
(367)	7	—	—	—	—
(368)	8	—	—	—	—
(369)	9	—	—	—	—
(370)	10	—	—	—	—
(371)	11	—	49/3	—	Mains input
(372)	12	—	49/4	—	Mains input

RACK ASSEMBLY TYPE 316A
(Ref. No. 10D/19693)

	Panel (Blanking) 4639 (Stores reference 10D/19663)	Panel (Blanking) 4639	
	Panel (Blanking) 4639	Amplifying Unit (Pulse) 4279 Ref. No. 10U/16838	42
	Panel (Blanking) 4639	Panel (Blanking) 4639	45 48 49
17 19 21	Amplifying Unit (Servo) 297 Ref. No. 10U/16054 (*f*)	Amplifier A.3720 Ref. No. 10U/16789	51 55
23 24 25 26 27 28	Control Unit 600 Ref. No. 10L/16029 (*f*) and (*g*)	Transformer Unit (Selsyn) 175 Ref. No. 10D/17102 (*b*)	
30 32 34	Amplifying Unit (Servo) 297 Ref. No. 10U/16054 (*g*)	Transformer Unit (Selsyn) 175 Ref. No. 10D/17102 (*a*)	

Fig. 19. Rack assembly Type 316A, schematic

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Connections to Amplifying Unit (Servo) 297, Ref. No. 10U/16054(*f*)					
(1)	PL1/1	—	17/11	—	—
(2)	2	—	17/12	—	—
(3)	3	—	24/1	—	—
(4)	4	—	—	Earth	—
(5)	5	—	—	—	—
(6)	6	—	24/2	—	—
(7)	7	—	21/7	—	—
(8)	8	—	—	—	—
(9)	9	—	17/9	—	—
(10)	10	—	21/8	—	—
(11)	11	—	21/6	—	—
(12)	12	—	17/10	—	—
(13)	PL12/1	—	—	—	—
(14)	2	—	—	—	—
(15)	3	—	—	—	—
(16)	4	—	19/5	—	—
(17)	5	—	19/4	—	—
(18)	6	—	19/7	—	—
(19)	7	—	19/6	—	—
(20)	8	—	19/9	—	—
(21)	9	—	19/8	—	—
(22)	10	—	19/10	—	—
(23)	11	89	21/4, 19/3, 19/11 *strapped*	PL503/7 CU(*f*)	—
(24)	12	—	19/12	—	—
(25)	PL3/1	—	—	—	—
(26)	2	—	—	—	—
(27)	3	—	17/1	—	—
(28)	4	—	17/2	—	—
(29)	5	—	17/3	—	—
(30)	6	—	17/4	—	—
(31)	7	—	17/5	—	—
(32)	8	—	17/6	—	—
(33)	9	—	17/7	—	—
(34)	10	—	—	—	—
(35)	11	—	17/8	—	—
(36)	12	—	—	—	—
(37)	PL4/1	—	25/3	—	—
(38)	2	—	25/5	—	—
(39)	3	—	—	—	—
(40)	4	—	19/1	—	—
(41)	5	—	21/1	—	—
(42)	6	79	—	PL502/9 CU(*f*)	—
(43)	7	—	—	—	—
(44)	8	—	21/5, 19/2 *strapped*	—	—
(45)	9	—	21/2	—	—
(46)	10	—	21/3	—	—
(47)	11	—	—	—	—
(48)	12	—	—	—	—
(49)	PL5/1	—	—	—	—
(50)	2	—	25/4	—	—
(51)	3	—	25/7	—	—
(52)	4	73	—	PL502/3 CU(*f*)	—
(53)	5	—	27/1	—	—
(54)	6	—	27/2	—	—
(55)	7	—	25/1	—	—
(56)	8	74	—	PL502/4 CU(*f*)	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	—	—	—
(60)	12	62	—	PL501/2 CU(*f*)	—
Connections to Control Unit 600 Ref. No. 10L/16029(*f*)					
(61)	PL501/1	—	—	—	—
(62)	2	60	—	PL5/12 SA(*f*)	—
(63)	3	65, 67	23/4, 23/6, 23/8 *strapped*	PL501/5 and PL501/7 CU(*f*)	—
(64)	4	—	—	—	—
(65)	5	63, 67	23/6, 23/4, 23/8 *strapped*	PL501/3 and PL501/7 CU(*f*)	—
(66)	6	—	—	—	—

RACK ASSEMBLY TYPE 316A (continued)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug		Termination Internal	Termination External
(67)		7	63 65	23/8 23/4 23/6	*strapped*	PL501/3 and PL501/5 CU(*f*)	—
(68)		8	—	—		—	—
(69)		9	—	25/9		—	—
(70)		10	—	25/11		—	—
(71)		11	—	25/8		—	—
(72)		12	—	21/10		—	—
(73)		PL502/3	52	—		PL5/4 SA(*f*)	—
(74)		4	56	—		PL5/8 SA(*f*)	—
(75)		5	—	—		—	—
(76)		6	—	21/11		—	—
(77)		7	—	—		—	—
(78)		8	—	21/9		—	—
(79)		9	42	—		PL4/6 SA(*f*)	—
(80)		10	—	—		—	—
(81)		11	—	—		—	—
(82)		12	—	—		—	—
(83)		PL503/1	—	25/10		—	—
(84)		2	—	—		—	—
(85)		3	—	25/2		—	—
(86)		4	—	24/3		—	—
(87)		5	—	25/6		—	—
(88)		6	—	24/4		—	—
(89)		7	23	21/4 19/3 19/11	*strapped*	PL2/11 SA(*f*)	—
(90)		8	—	—		—	—
(91)		PL504/7	—	—		—	—
(92)		8	—	—		—	—
(93)		9	—	—		—	—
(94)		10	—	27/3		—	—
(95)		11	—	27/4		—	—
(96)		12	—	—		Earth	—
Connections to Amplifying Unit (Servo) 297, No. 10U/16054(*g*)							
(97)		PL1/1	—	34/11		—	—
(98)		2	—	34/12		—	—
(99)		3	—	24/5		—	—
(100)		4	—	—		Earth	—
(101)		5	—	—		—	—
(102)		6	—	24/6		—	—
(103)		7	—	30/7		—	—
(104)		8	—	—		—	—
(105)		9	—	34/9		—	—
(106)		10	—	30/8		—	—
(107)		11	—	30/6		—	—
(108)		12	—	34/10		—	—
(109)		PL2/1	—	—		—	—
(110)		2	—	—		—	—
(111)		3	—	—		—	—
(112)		4	—	32/5		—	—
(113)		5	—	32/4		—	—
(114)		6	—	32/7		—	—
(115)		7	—	32/6		—	—
(116)		8	—	32/9		—	—
(117)		9	—	32/8		—	—
(118)		10	—	32/10		—	—
(119)		11	185	30/4 32/3 32/11	*strapped*	PL503/7 CU(*g*)	—
(120)		12	—	32/12		—	—
(121)		PL3/1	—	—		—	—
(122)		2	—	—		—	—
(123)		3	—	34/1		—	—
(124)		4	—	34/2		—	—
(125)		5	—	34/3		—	—
(126)		6	—	34/4		—	—
(127)		7	—	34/5		—	—
(128)		8	—	34/6		—	—
(129)		9	—	34/7		—	—
(130)		10	—	—		—	—

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(131)	11	—	34/8	—	—
(132)	12	—	—	—	—
(133)	PL4/1	—	26/3	—	—
(134)	2	—	26/5	—	—
(135)	3	—	—	—	—
(136)	4	—	32/1	—	—
(137)	5	—	30/1	—	—
(138)	6	175	—	PL502/9 CU(*g*)	—
(139)	7	—	—	—	—
(140)	8	—	30/5, 32/2 *strapped*	—	—
(141)	9	—	30/2	—	—
(142)	10	—	30/3	—	—
(143)	11	—	—	—	—
(144)	12	—	—	—	—
(145)	PL5/1	—	—	—	—
(146)	2	—	26/4	—	—
(147)	3	—	26/7	—	—
(148)	4	169	—	PL502/3 CU(*g*)	—
(149)	5	—	27/5	—	—
(150)	6	—	27/6	—	—
(151)	7	—	26/1	—	—
(152)	8	170	—	PL502/4 CU(*g*)	—
(153)	9	—	—	—	—
(154)	10	—	—	—	—
(155)	11	—	—	—	—
(156)	12	158	—	PL501/2 CU(*g*)	—
Connections for Control Unit 600, Ref. No. 10L/16029(*g*)					
(157)	PL501/1	—	—	—	—
(158)	2	156	—	PL5/12 SA(*g*)	—
(159)	3	161, 163	28/4, 28/6, 28/8 *strapped*	PL501/5 and PL501/7 CU(*g*)	—
(160)	4	—	—	—	—
(161)	5	159, 163	28/6, 28/4, 28/8 *strapped*	PL501/3 and PL501/7 CU(*g*)	—
(162)	6	—	—	—	—
(163)	7	159, 161	28/8, 28/4, 28/6 *strapped*	PL501/3 and PL501/5 CU(*g*)	—
(164)	8	—	—	—	—
(165)	9	—	26/9	—	—
(166)	10	—	26/11	—	—
(167)	11	—	26/8	—	—
(168)	12	—	30/10	—	—
(169)	PL502/3	148	—	PL5/4 SA(*g*)	—
(170)	4	152	—	PL5/8 SA(*g*)	—
(171)	5	—	—	—	—
(172)	6	—	30/11	—	—
(173)	7	—	—	—	—
(174)	8	—	30/9	—	—
(175)	9	138	—	PL4/6 SA(*g*)	—
(176)	10	—	—	—	—
(177)	11	—	—	—	—
(178)	12	—	—	—	—
(179)	PL503/1	—	26/10	—	—
(180)	2	—	—	—	—
(181)	3	—	26/2	—	—
(182)	4	—	—	—	—
(183)	5	—	26/6	—	—
(184)	6	—	—	—	—
(185)	7	119	30/4, 32/3, 32/11 *strapped*	PL2/11 SA(*g*)	—
(186)	8	—	—	—	—
(187)	PL504/5	—	—	—	—
(188)	8	—	—	—	
(189)	9	—	—	—	
(190)	10	—	27/7	—	—
(191)	11	—	27/8	—	—
(192)	12	—	—	Earth	—

RACK ASSEMBLY TYPE 316A (continued)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connection for Transformer Unit (Selsyn) 175, Ref. No. 10D/17102(*a*)					
(193)	PL801/7	—	45/1	—	Rotor Output to Head Patching Panel Type 13
(194)	8	—	45/2	—	
(195)	9	—	49/1	—	Stator Outputs to Head Patching Panel Type 13
(196)	10	—	49/2	—	
(197)	11	—	49/3	—	
(198)	12	—	—	—	—
(199)	PL802/13	—	49/6	—	Stator Inputs from G.P.O. Board
(200)	14	—	49/9	—	
(201)	15	—	49/12	—	
(202)	16	—	—	—	—
(203)	PL803/13	—	45/6	—	Rotor Input from G.P.O. Board
(204)	14	—	45/10	—	
Connections for Transformer Unit (Selsyn) 175, Ref. No. 10D/17102(*b*)					
(205)	PL801/7	—	51/1	—	Rotor Output to Patching Panel
(206)	8	—	51/2	—	
(207)	9	—	55/1	—	Stator Output to Patching Panel
(208)	10	—	55/2	—	
(209)	11	—	55/3	—	
(210)	12	—	—	—	—
(211)	PL802/13	—	55/6	—	Stator Inputs from G.P.O. Board
(212)	14	—	55/9	—	
(213)	15	—	55/12	—	
(214)	16	—	—	—	—
(215)	PL803/13	—	51/6	—	Rotor Input from G.P.O. Board
(216)	14	—	51/10	—	
Connections for Amplifier A.3720, Ref. No. 10U/166789					
(217)	PL1/1	—	—	Earth	—
(218)	2	—	—	—	—
(219)	3	—	—	—	—
(220)	4	—	—	—	—
(221)	5	—	—	—	—
(222)	6	—	—	—	—
(223)	7	—	—	—	—
(224)	8	—	—	—	—
(225)	9	—	—	—	—
(226)	10	—	—	—	—
(227)	11	—	48/1	—	Mains Input
(228)	12	—	48/2	—	Mains input
Connections for Amplifying Unit (Pulse) 4279, Ref. No. 10U/16838					
(229)	PL1/1	—	—	Earth	—
(230)	2	—	—	—	—
(231)	3	—	—	—	—
(232)	4	—	—	—	—
(233)	5	—	42/1	—	Twisted Pair to G.P.O. Pair (Synch)
(234)	6	—	42/2	—	
(235)	7	—	—	—	—
(236)	8	—	—	—	—
(237)	9	—	—	—	—
(238)	10	—	—	—	—
(239)	11	—	48/3	—	Mains input
(240)	12	—	48/4	—	Mains input

RACK ASSEMBLY TYPE 317A
(Ref. No. 10D/19964)

Panel (Blanking) 4639 (Stores Reference 10D/19663)	Panel (Blanking) 4639
Panel (Blanking) 4639	Panel (Blanking) 4639
Panel (Blanking) 4639	Panel (Blanking) 4639
Amplifier (Servo) Type 297 Ref. 10U/16054 (*j*)	Amplifier (Servo) Type 297 Ref. 10U/16054 (*f*)
Control Unit Type 600 Ref. 10L/16029 (*h*) and (*j*)	Control Unit Type 600 Ref. 10L/16029 (*f*)
Amplifier (Servo) Type 297 Ref. 10U/16054 (*h*)	Panel (Blanking) 4639

Fig. 20. Rack assembly Type 317A, schematic

RACK ASSEMBLY TYPE 317A

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (Servo) Type 297 (10U/16054(*f*)					
(1)	PL1/1	—	52/11	—	—
(2)	2	—	52/12	—	—
(3)	3	—	51/7	—	—
(4)	4	—	—	Earth	—
(5)	5	—	—	—	—
(6)	6	—	51/8	—	—
(7)	7	—	56/7	—	—
(8)	8	—	—	—	—
(9)	9	—	52/9	—	—
(10)	10	—	56/8	—	—
(11)	11	—	56/6	—	—
(12)	12	—	52/10	—	—
(13)	PL2/1	—	55/10 & 46/6	—	—
(14)	2	—	55/11 & 46/7	—	—
(15)	3	—	55/12 & 46/8	—	—
(16)	4	—	54/5	—	—
(17)	5	—	54/4	—	—
(18)	6	—	54/7	—	—
(19)	7	—	54/6	—	—
(20)	8	—	54/9	—	—
(21)	9	—	54/8	—	—
(22)	10	—	54/10 *strapped to* 55/2 and 50/1	—	—
(23)	11	89	56/4 *strapped to* 54/3 and 54/11	PL503/7 CU(*f*)	—
(24)	12	—	54/12	—	—
(25)	PL3/1	—	—	—	—
(26)	2	—	—	—	—
(27)	3	—	52/1	—	—
(28)	4	—	52/2	—	—
(29)	5	—	52/3	—	—
(30)	6	—	52/4	—	—
(31)	7	—	52/5	—	—
(32)	8	—	52/6	—	—
(33)	9	—	52/7	—	—
(34)	10	—	—	—	—
(35)	11	—	52/8	—	—
(36)	12	—	—	—	—
(37)	PL4/1	—	60/3	—	—
(38)	2	—	60/5	—	—
(39)	3	82	—	PL502/12 CU(*f*)	—
(40)	4	—	54/1	—	—
(41)	5	78	—	PL502/8 CU(*f*)	—
(42)	6	79	—	PL502/9 CU(*f*)	—
(43)	7	—	56/3 *strapped to*	—	—
(44)	8	—	56/5 and 54/2	—	—
(45)	9	76	—	PL502/6 CU(*f*)	—
(46)	10	—	60/12	—	—
(47)	11	—	—	—	—
(48)	12	—	—	—	—
(49)	PL5/1	—	50/6	—	—
(50)	2	—	60/4	—	—
(51)	3	—	60/7	—	—
(52)	4	73	—	PL502/3 CU(*f*)	—
(53)	5	—	50/4	—	—
(54)	6	—	50/2	—	—
(55)	7	—	58/2	—	—
(56)	8	74	—	PL502/4 CU(*f*)	—
(57)	9	75	—	PL502/5 CU(*f*)	—
(58)	10	80	—	PL502/10 CU(*f*)	—
(59)	11	81	—	PL502/11 CU(*f*)	—
(60)	12	62	60/6	PL501/2 CU(*f*)	—
Connections to Control Unit Type 600 10K/16029(*f*)					
(61)	PL501/1	—	60/1	—	—
(62)	2	60	60/6	PL5/12 SA(*f*)	—
(63)	3	—	58/4	—	—
(64)	4	—	—	—	—
(65)	5	—	58/6	—	—
(66)	6	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(67)		7	—	58/8	—	—
(68)		8	—	—	—	—
(69)		9	—	60/9	—	—
(70)		10	—	60/11	—	—
(71)		11	—	60/8	—	—
(72)		12	—	58/1	—	—
(73)		PL502/3	52	—	PL5/4 SA(*f*)	—
(74)		4	56	—	PL5/8 SA(*f*)	—
(75)		5	57	—	PL5/9 SA(*f*)	—
(76)		6	45	—	PL4/9 SA(*f*)	—
(77)		7	—	—	—	—
(78)		8	41	—	PL4/5 SA(*f*)	—
(79)		9	42	—	PL4/6 SA(*f*)	—
(80)		10	58	—	PL5/10 SA(*f*)	—
(81)		11	59	—	PL5/11 SA(*f*)	—
(82)		12	39	—	PL4/3 SA(*f*)	—
(83)		PL503/1	—	60/10	—	—
(84)		2	—	—	—	—
(85)		3	—	58/3	—	—
(86)		4	—	51/3	—	—
(87)		5	—	58/5	—	—
(88)		6	—	51/4	—	—
(89)		7	23	56/4	PL2/11 SA(*f*)	—
				Strap to 54/3 & 54/11	—	—
(90)		8	—	—	—	—
(91)		PL504/7	—	58/9	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	50/3	—	—
(95)		11	—	50/8	—	—
(96)		12	—	—	Earth	—
(97) to (192)	Not used					
Connections to Amplifier (Servo) Type 297 10U/16054(*h*)						
(193)		PL1/1	—	34/11	—	—
(194)		2	—	34/12	—	—
(195)		3	—	18/1	—	—
(196)		4	—	—	Earth	—
(197)		5	—	—	—	—
(198)		6	—	18/2	—	—
(199)		7	—	30/7	—	—
(200)		8	—	—	—	—
(201)		9	—	34/9	—	—
(202)		10	—	30/8	—	—
(203)		11	—	30/6	—	—
(204)		12	—	34/10	—	—
(205)		PL2/1	—	—	—	—
(206)		2	—	—	—	—
(207)		3	—	—	—	—
(208)		4	—	32/5	—	—
(209)		5	—	32/4	—	—
(210)		6	—	32/7	—	—
(211)		7	—	32/6	—	—
(212)		8	—	32/9	—	—
(213)		9	—	32/8	—	—
(214)		10	—	32/10	—	—
(215)		11	281	30/4 *strapped to* 32/3 and 32/11	PL503/7 CU(*h*)	—
(216)		12	—	32/12	—	—
(217)		PL3/1	—	—	—	—
(218)		2	—	—	—	—
(219)		3	—	34/1	—	—
(220)		4	—	34/2	—	—
(221)		5	—	34/3	—	—
(222)		6	—	34/4	—	—
(223)		7	—	34/5	—	—
(224)		8	—	34/6	—	—
(225)		9	—	34/7	—	—
(226)		10	—	—	—	—
(227)		11	—	34/8	—	—
(228)		12	—	—	—	—
(229)		PL4/1	—	26/3	—	—
(230)		2	—	26/5	—	—
(231)		3	—	—	—	—
(232)		4	—	32/1	—	—

RACK ASSEMBLY TYPE 317A (continued)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(233)	5	—	30/1	—	—
(234)	6	271	—	PL502/9 CU(*h*)	—
(235)	7	—	—	—	—
(236)	8	—	30/5 *strapped to* 32/2	—	—
(237)	9	—	30/2	—	—
(238)	10	—	30/3	—	—
(239)	11	—	—	—	—
(240)	12	—	—	—	—
(241)	PL5/1	—	—	—	—
(242)	2	—	26/4	—	—
(243)	3	—	26/7	—	—
(244)	4	265	43/1	PL502/3 CU(*h*)	—
(245)	5	—	47/4	—	—
(246)	6	—	47/2	—	—
(247)	7	—	26/1	—	—
(248)	8	266	—	PL502/4 CU(*h*)	—
(249)	9	—	—	—	—
(250)	10	—	—	—	—
(251)	11	—	—	—	—
(252)	12	254	—	PL501/2 CU(*h*)	—
Connections to Control Unit Type 600 10L/16029(*h*)					
(253)	PL501/1	—	—	—	—
(254)	2	252	—	PL5/12 SA(*h*)	—
(255)	3	257	28/4 *strap to* 28/6 and 28/8	PL501/5 & PL501/7 CU(*h*)	—
		259			
(256)	4	—	—	—	—
(257)	5	255	28/6 *strap to*	PL501/2 & PL501/7	
		259	28/4 to 28/8	CU(*h*)	—
(258)	6	—	—	—	—
(259)	7	255	28/8 *strap to*	PL501/3 & PL501/5	
		257	28/4 & 28/6	CU(*h*)	—
(260)	8	—	—	—	—
(261)	9	—	26/9	—	—
(262)	10	—	26/11	—	—
(263)	11	—	26/8	—	—
(264)	12	—	30/10	—	—
(265)	PL502/3	244	—	PL5/4 SA(*h*)	—
(266)	4	248	—	PL5/8 SA(*h*)	—
(267)	5	—	—	—	—
(268)	6	—	30/11	—	—
(269)	7	—	—	—	—
(270)	8	—	30/9	—	—
(271)	9	234	—	PL4/6 SA(*h*)	—
(272)	10	—	—	—	—
(273)	11	—	—	—	—
(274)	12	—	—	—	—
(275)	PL503/1	—	26/10	—	—
(276)	2	—	—	—	—
(277)	3	—	26/2	—	—
(278)	4	—	—	—	—
(279)	5	—	26/6	—	—
(280)	6	—	—	—	—
(281)	7	215	30/4 *strapped to* 32/3 & 32/11	PL2/11 SA(*h*)	—
(282)	8	—	—	—	—
(283)	PL504/7	—	—	—	—
(284)	8	—	—	—	—
(285)	9	—	—	—	—
(286)	10	—	47/3	—	—
(287)	11	—	47/1	—	—
(288)	12	—	—	Earth	—
Connections to Amplifier (Servo) Type 297 10U/16054(*j*)					
(289)	PL1/1	—	17/11	—	—
(290)	2	—	17/12	—	—
(291)	3	—	18/7	—	—
(292)	4	—	—	Earth	—
(293)	5	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(294)		6	—	18/8	—	—
(295)		7	—	21/7	—	—
(296)		8	—	—	—	—
(297)		9	—	17/9	—	—
(298)		10	—	21/8	—	—
(299)		11	—	21/6	—	—
(300)		12	—	17/10	—	—
(301)		PL2/1	—	—	—	—
(302)		2	—	—	—	—
(303)		3	—	—	—	—
(304)		4	—	19/5	—	—
(305)		5	—	19/4	—	—
(306)		6	—	19/7	—	—
(307)		7	—	19/6	—	—
(308)		8	—	19/9	—	—
(309)		9	—	19/8	—	—
(310)		10	—	19/10	—	—
(311)		11	377	21/4 *strapped to* 19/3 & 19/11	PL503/7 CU(*j*)	—
(312)		12	—	19/12	—	—
(313)		PL3/1	—	—	—	—
(314)		2	—	—	—	—
(315)		3	—	17/1	—	—
(316)		4	—	17/2	—	—
(317)		5	—	17/3	—	—
(318)		6	—	17/4	—	—
(319)		7	—	17/5	—	—
(320)		8	—	17/6	—	—
(321)		9	—	17/7	—	—
(322)		10	—	—	—	—
(323)		11	—	17/8	—	—
(324)		12	—	—	—	—
(325)		PL4/1	—	25/3	—	—
(326)		2	—	25/5	—	—
(327)		3	—	—	—	—
(328)		4	—	19/1	—	—
(329)		5	—	21/1	—	—
(330)		6	367	—	PL502/9 CU(*j*)	—
(331)		7	—	—	—	—
(332)		8	—	21/5 *strapped to* 19/2	—	—
(333)		9	—	21/2	—	—
(334)		10	—	21/3	—	—
(335)		11	—	—	—	—
(336)		12	—	—	—	—
(337)		PL5/1	—	—	—	—
(338)		2	—	25/4	—	—
(339)		3	—	25/7	—	—
(340)		4	361	43/2	PL502/3 CU(*j*)	—
(341)		5	—	47/8	—	—
(342)		6	—	47/6	—	—
(343)		7	—	25/1	—	—
(344)		8	362	—	PL502/4 CU(*j*)	—
(345)		9	—	—	—	—
(346)		10	—	—	—	—
(347)		11	—	—	—	—
(348)		12	350	—	PL501/2 CU(*j*)	—
Connections to Control Unit Type 600 10L/16029(*j*)						
(349)		PL501/1	—	—	—	—
(350)		2	348	—	PL5/12 SA(*j*)	—
(351)		3	353	23/4 *strap to*	PL501/5 &	—
			355	23/6 & 23/8	PL501/7 CU(*j*)	—
(352)		4	—	—	—	—
(353)		5	351	23/6 Strap to	PL501/3 &	
			355	23/4 & 23/8	PL501/7 CU(*j*)	—
(354)		6	—	—	—	—
(355)		7	351	23/8 *strap to*	PL501/3 &	—
			353	23/4 & 23/6	PL501/5 CU(*j*)	
(356)		8	—	—	—	—
(357)		9	—	25/9	—	—
(358)		10	—	25/11	—	—
(359)		11	—	25/8	—	—
(360)		12	—	21/10	—	—
(361)		PL502/3	340	—	PL5/4 SA(*j*)	—
(362)		4	344	—	PL5/8 SA(*j*)	—

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(363)	5	—	—	—	—
(364)	6	—	21/11	—	—
(365)	7	—	—	—	—
(366)	8	—	21/9	—	—
(367)	9	330	—	PL4/6 SA(*j*)	—
(368)	10	—	—	—	—
(369)	11	—	—	—	—
(370)	12	—	—	—	—
(371)	PL503/1	—	25/10	—	—
(372)	2	—	—	—	—
(373)	3	—	25/2	—	—
(374)	4	—	18/3	—	—
(375)	5	—	25/6	—	—
(376)	6	—	18/4	—	—
(377)	7	311	21/4 *strapped to* 19/3 & 19/11	PL2/11 SA(*j*)	—
(378)	8	—	—	—	—
(379)	PL504/7	—	—	—	—
(380)	8	—	—	—	—
(381)	9	—	—	—	—
(382)	10	—	47/7	—	—
(383)	11	—	47/5	—	—
(384)	12	—	—	Earth	—

Additional Connections Required

Strap 50/5 to 46/9
Strap 58/10 to 47/10
Strap 50/2 to 46/10
Strap 43/3 to 46/10

RACK ASSEMBLY TYPE 318A
(Ref. No. 10D/19965)

	Panel (Blanking) 4639 (Stores reference 10D/19663)	Panel (Blanking) 4639
	Panel (Blanking) 4639	Panel (Blanking) 4639
	Amplifying Unit (Pulse) Type 4279 Ref. 10U/16838	Panel (Blanking) 4639
18 20 22	Rectifier Unit Type 17 Ref. 10D/17779	Transformer Unit (Selsyn) Type 175 Ref. 10K/17102
24 26 28	Control Unit Type 600 Ref. 10L/16029 (1)	Amplifier Type A.3719 Ref. 10U/16789
30 32 34	Amplifying Unit (Servo) Type 297 Ref. 10U/16054 (1)	Panel (Blanking) 4639

Fig. 21. Rack assembly Type 318A, schematic

RACK ASSEMBLY TYPE 318A

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
Connections to Rectifier Unit Type 17 10D/17779						
	Plugs 1, 2 and 3 not used					
(1)		PL4/1	—	—	—	—
(2)		2	—	—	—	—
(3)		3	—	—	—	—
(4)		4	—	—	—	—
(5)		5	—	—	—	—
(6)		6	66	—	PL5/6 SA(1)	—
(7)		7	107	—	PL504/11 CU(1)	—
(8)		8	65	—	PL5/5 SA(1)	—
(9)		9	106	28/10	PL504/10 CU(1)	—
(10)		10	—	—	Earth	—
(11)		11	—	22/1	—	—
(12)		12	—	22/2	—	—
Connections to Amplifier (Servo) Type 297 10U/16054(1)						
(13)		PL1/1	—	34/11	—	—
(14)		2	—	34/12	—	—
(15)		3	—	22/3	—	—
(16)		4	—	—	Earth	—
(17)		5	—	—	—	—
(18)		6	—	22/4	—	—
(19)		7	—	—	—	—
(20)		8	—	—	—	—
(21)		9	—	34/9	—	—
(22)		10	—	—	—	—
(23)		11	—	—	—	—
(24)		12	—	34/10	—	—
(25)		PL2/1	—	30/1	—	—
(26)		2	—	30/2	—	—
(27)		3	—	30/3	—	—
(28)		4	—	32/5	—	—
(29)		5	—	32/4	—	—
(30)		6	—	32/7	—	—
(31)		7	—	32/6	—	—
(32)		8	—	32/9	—	—
(33)		9	—	32/8	—	—
(34)		10	55	32/10 *strap to* 28/3	PL4/7 SA(1)	—
(35)		11	101	28/5 } *strapped* 32/3 } *strapped* 32/11	PL503/7 CU(1)	—
(36)		12	—	32/12	—	—
(37)		PL3/1	—	—	—	—
(38)		2	—	—	—	—
(39)		3	—	34/1	—	—
(40)		4	—	34/2	—	—
(41)		5	—	34/3	—	—
(42)		6	—	34/4	—	—
(43)		7	—	34/5	—	—
(44)		8	—	34/6	—	—
(45)		9	—	34/7	—	—
(46)		10	—	—	—	—
(47)		11	—	34/8	—	—
(48)		12	—	—	—	—
(49)		PL4/1	—	26/3	—	—
(50)		2	—	26/5	—	—
(51)		3	94	—	PL502/12 CU(1)	—
(52)		4	—	32/1	—	—
(53)		5	90	—	PL502/8 CU(1)	—
(54)		6	91	—	PL502/9 CU(1)	—
(55)		7	34	32/10 *strap to* 28/3	PL2/10 SA(1)	—
(56)		8	—	32/2	—	—
(57)		9	88	—	PL502/6 CU(1)	—
(58)		10	—	26/12	—	—
(59)		11	—	—	—	—
(60)		12	—	—	—	—
(61)		PL5/1	—	—	—	—
(62)		2	—	26/4	—	—
(63)		3	—	26/7	—	—
(64)		4	85	—	PL502/3 CU(1)	—
(65)		5	8	—	PL4/8 Rect. 17	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(66)		6	6	—	PL4/6 Rect. 17	—
(67)		7	—	28/2	—	—
(68)		8	86	—	PL502/4 CU(1)	—
(69)		9	87	—	PL502/5 CU(1)	—
(70)		10	92	—	PL502/10 CU(1)	—
(71)		11	93	—	PL502/11 CU(1)	—
(72)		12	74	26/6	PL501/2	—
Connections to Control Unit Type 600 10L/16029(1)						
(73)	PL501/1	—		—	—	—
(74)		2	72	26/6	PL5/12 SA(1)	—
(75)		3	—	28/4	—	—
(76)		4	—	—	—	—
(77)		5	—	28/6	—	—
(78)		6	—	—	—	—
(79)		7	—	28/8	—	—
(80)		8	—	—	—	—
(81)		9	—	26/9	—	—
(82)		10	—	26/11	—	—
(83)		11	—	26/8	—	—
(84)		12	—	28/1	—	—
(85)	PL502/3	64		—	PL5/4 SA(1)	—
(86)		4	68	—	PL5/8 SA(1)	—
(87)		5	69	—	PL5/9 SA(1)	—
(88)		6	57	—	PL4/9 SA(1)	—
(89)		7	—	—	—	—
(90)		8	53	—	PL4/5 SA(1)	—
(91)		9	54	—	PL4/6 SA(1)	—
(92)		10	70	—	PL5/10 SA(1)	—
(93)		11	71	—	PL5/11 SA(1)	—
(94)		12	51	—	PL4/3 SA(1)	—
(95)	PL503/1	—		26/10	—	—
(96)		2	—	—	—	—
(97)		3	—	28/11	—	—
(98)		4	—	22/5	—	—
(99)		5	—	28/12	—	—
(100)		6	—	22/6	—	—
(101)		7	35	28/5, 32/3, 32/11 *strapped*	PL2/11 SA(1)	—
(102)		8	—	—	—	—
(103)	PL504/7	—		28/9	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	9	—	PL4/9 Rect. 17	—
(107)		11	7	—	PL4/7 Rect. 17	—
(108)		12	—	—	Earth	—
Connections to Transformer Unit (Selsyn) Type 175 10D/17102						
(109)	PL801/7	—		18/1	—	—
(110)		8	—	18/2	—	—
(111)		9	—	18/3	—	—
(112)		10	—	18/4	—	—
(113)		11	—	18/5	—	—
(114)		12	—	—	—	—
(115)	PL802/13	—		18/6	—	—
(116)		14	—	18/7	—	—
(117)		15	—	18/8	—	—
(118)		16	—	—	—	—
(119)	PL803/13	—		18/11	—	—
(120)		14	—	18/12	—	—
Connections to Amplifier Type A.3719 Ref. No. 10U/16788						
(121)	PL1/1	—		—	Earth	—
(122)		2	—	—	—	—
(123)		3	—	—	—	—
(124)		4	—	—	—	—
(125)		5	—	—	—	—
(126)		6	—	—	—	—
(127)		7	—	—	—	—
(128)		8	—	—	—	—
(129)		9	—	—	—	—
(130)		10	—	—	—	—
(131)		11	—	22/7	—	—
(132)		12	—	22/8	—	—

RACK ASSEMBLY TYPE 318A—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(133)		—	—	—	—	—
(134)		—	—	—	—	—
(135)		—	—	—	—	—
(136)		—	—	—	—	—
(137)		—	—	—	—	—
(138)		—	—	—	—	—
(139)		—	—	—	—	—
(140)		—	—	—	—	—
(141)		—	—	—	—	—
(142)		—	—	—	—	—
(143)		—	—	—	—	—
(144)		—	—	—	—	—
Connections for Amplifying Unit (Pulse) Type 4279 10U/16838						
(145)	PL1/1	—		—	—	—
(146)	2	—		—	—	—
(147)	3	—		—	—	—
(148)	4	—		—	—	—
(149)	5	—		20/1	Balanced output	—
(150)	6	—		20/2	on twisted pair.	—
(151)	7	—		—	—	—
(152)	8	—		—	—	—
(153)	9	—		—	—	—
(154)	10	—		—	—	—
(155)	11	—		22/11	Mains input	—
(156)	12	—		22/12	Mains input	—
Coaxial Cable Connections						
(157)		—	—	—	—	—
(158)		—	—	—	—	—
Connections to Amplifier Type A.3719 10U/16788						
(159)	SK1	160		—	SK2 Attenuator 113	—
Connections to Attenuator Unit 113 10L/16055						
(160)	SK2	159		—	SK1 Amplifier Type A.3719	—

RACK ASSEMBLY TYPE 319A
(Ref. No. 10D/19399)

	(2) Waveform Generator (Anti-Sea Clutter) 104 Ref. No. 10V/16079		(*e*) Amplifier (NBW) A.3679 Ref. No. 10U/16026	
	(*d*) Amplifier (NBW) A.3679 Ref. No. 10U/16026		(*e*) Amplifier (IF & Vid.) A.3680 Ref. No. 10U/16027	
	(*d*) Amplifier (IF & Vid.) A.3680 Ref. No. 10U/16027		(*d*) and (*e*) Amplifier (AJ & Vid.) A.3681 Ref. No. 10U/16028	
Box Dis.1	(1) Waveform Generator (Anti-Sea Clutter) 104 Ref. No. 10V/16079		Amplifying Unit (Pulse Splitter) 300 Ref. No. 10U/16057	
Box Dis.2 Box Dis.3 Box Dis.4	(2) Rectifier Unit 15 Ref. No. 10D/17761		(1) Rectifier Unit 15 Ref. No. 10D/17761	61
29 31 32 33	Selector Unit (Type 7AE) 33 Ref. No. 10D/18570		(3) Rectifier Unit 15 Ref. No. 10D/17761	63 64 65 66 67 68

Fig. 22. Rack assembly Type 319A, schematic

RACK ASSEMBLY TYPE 319A

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Amplifier (NBW) A.3679, Ref. No. 10U/16026(*e*)					
(1)	PL9/1	—	—	Earth	—
(2)	2	14	—	PL10/2 Amp(IF & Vid)(*e*)	
(3)	3	15	—	PL10/3 Amp(IF & Vid)(*e*)	—
(4)	4	—	67/5	—	CU619.PLAK.5NBW
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	68/1	—	Mains input
(12)	12	—	68/2	—	Mains input
Connections from Amplifier (IF & Vid) A.3680, Ref. No. 10U/16027(*e*)					
(13)	PL10/1	—	—	Earth	—
(14)	2	2	—	PL9/2 Amp(NBW)(*e*)	
		26		PL11/2 Amp(AJ & Vid)(*d* & *e*)	
(15)	3	3	—	PL9/3 Amp(NBW)(*e*)	—
		27		PL11/3 Amp(AJ & Vid)(*d* & *e*)	
(16)	4	—	67/2	—	CU619.PLAK.51AGC
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	68/3	—	Mains input
(24)	12	—	68/4	—	Mains input
Connections from Amplifier (AJ & Vid) A.3681, Ref. No. 10U/16028 (*d* & *e*)					
(25)	PL11/1	—	—	Earth	—
(26)	2	14	—	PL10/2 Amp(IF & Vid)(*e*)	—
		50	—	PL1/2 Rect.15(1)	—
(27)	3	15	—	PL10/3 Amp(IF & Vid)(*e*)	—
		51	—	PL1/3 Rect.(15)(1)	—
(28)	4	—	67/4	—	CU619 PLAK.4 STC(*e*)
(29)	5	—	67/3	—	CU619 PLAK.3 LPF(*e*)
(30)	6	—	65/4	—	CU618 PLAH.4 STC(*d*)
(31)	7	—	65/3	—	CU618 PLAH.3 LPE(*d*)
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	68/5	—	Mains input
(36)	12	—	68/6	—	Mains input
Connections from Amplifying Unit (Pulse Splitter 300, Ref. No. 10U/16057					
(37)	PL1/1	—	—	Earth	—
(38)	2	—	—	—	—
(39)	3	—	—	—	—
(40)	4	—	—	—	—
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	68/7	—	Mains input
(48)	12	—	68/8	—	Mains input
Connections from Rectifier Unit, Ref. No. 10D/17761(1)					
(49)	PL1/1	—	—	Earth	—
(50)	2	26	61/1, 61/2, 61/3, 61/4, 61/5, 61/6 & 65/6, *strapped*	PL11/2 Amp (AJ & Vid) (*d* & *e*)	50V output (+ve)
(51)	3	27	61/7, 61/8, 61/9, 61/10, 61/11, 61/12, *strapped*	PL11/3 Amp (AJ & Vid)(*d* & *e*)	50V output (—ve)
(52)	4	—	63/1, 63/2, 63/3, 63/4, 63/5, 63/6, 61/6, *strapped*	—	50V output (+ve)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(53)		5	—	63/7, 63/8, 63/9, 63/10, 63/11, 63/12, *strapped*	—	50V output (—ve)
(54)		6	—	—	—	—
(55)		7	—	67/7, 67/9, 65/7 & 65/9 *strapped*	—	AFC(Earth)
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	68/9	—	Mains input
(60)		12	—	68/10	—	Mains input
(61)		PL2/1	—	67/11	—	AFC(*e*)
(62)		2	—	—	—	—
(63)		3	—	67/8	—	AFC(*e*)
(64)		4	—	67/10	—	AFC(1)
(65)		5	—	67/12	—	AFC(1)
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	65/6	—	AFC(2)
(69)		9	—	—	—	—
(70)		10	—	65/8	—	AFC(2)
(71)		11	—	65/10	—	AFC(3)
(72)		12	—	65/12	—	AFC(3)
Connections from Rectifier Unit 15, Ref. No. 10D/17761(3)						
(73)		PL1/1	—	—	Earth	—
(74)		2	—	64/1, 64/2, 64/3, 64/4, 64/5, 64/6, & 66/5, *strapped*	—	50V output (+ve)
(75)		3	—	64/7, 64/8, 64/9, 64/10, 64/11, 64/12, *strapped*	—	50V output (—ve)
(76)		4	—	66/1, 66/2, 66/3, 66/4, 66/5, 66/6, 64/6, *strapped*	—	50V output (+ve)
(77)		5	—	66/7, 66/8, 66/9, 66/10, 66/11, 66/12, *strapped*	—	50V output (—ve)
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	68/11	—	Mains input
(84)		12	—	68/12	—	Mains input
Connections from Amplifier (NBW) A.3679, Ref. No. 10U/16026(*g*)						
(85)		PL9/1	—	—	Earth	—
(86)		2	98	—	PL10/2 Amp(IF & Vid)(*d*)	
(87)		3	99	—	PL10/3 Amp(IF & Vid)(*d*)	
(88)		4	—	65/5	—	CU618 PLAH.5 NBW
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	33/1		Mains input
(96)		12	—	33/2	—	Mains input
Connections from Amplifier (IF & Vid) A.3680, Ref. No. 10U/16027(*d*)						
(97)		PL10/1	—	—	Earth	—
(98)		2	86	—	PL9/2 Amp(NBW)(*d*)	—
			110	—	PL1/2 Rect. 15(2)	
(99)		3	87	—	PL9/3 Amp(NBW)(*d*)	—
			111	—	PL1/3 Rect.15(2)	
(100)		4	—	65/2	—	CU618 PLAH.2 1AGC
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	33/3	—	Mains input
(108)		12	—	33/4	—	Mains input

RACK ASSEMBLY TYPE 319A—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
Connections from Rectifier Unit 15, Ref. No. 10D/17761(2)						
(109)		PL1/1	—	—	Earth	—
(110)		2	98	29/1, 29/2, 29/3, 29/4, 29/5, 29/6 & 31/6, *strapped*	PL10/2 Amp (IF & Vid)(*d*)	50V output (+ve)
(111)		3	99	29/7, 29/8, 29/9, 29/10, 29/11, 29/12, *strapped*	PL10/3 Amp (IF & Vid)(*d*)	50V output (—ve)
(112)		4	—	31/1, 31/2, 31/3, 31/4, 31/5, 31/6 & 29/6, *strapped*	—	50V ouput (+ve)
(113)		5	—	31/7, 31/8, 31/9, 31/10, 31/11, 31/12, *strapped*	—	50V output (—ve)
(114)		6	—	—	—	—
(115)		7	—	—	—	—
(116)		8	—	—	—	—
(117)		9	—	—	—	—
(118)		10	—	—	—	—
(119)		11	—	33/7	—	Mains input
(120)		12	—	33/8	—	Mains input
	PL2 Not Used.					
Connections from Selector Unit (Type 7AE) 33, Ref. No. 10D/18570						
(121)		PL1/1	—	—	Earth	—
(122)		2	—	—	—	—
(123)		3	—	—	—	—
(124)		4	—	—	—	—
(125)		5	—	—	—	—
(126)		6	—	—	—	—
(127)		7	—	32/9	—	Cap.Swt.'C' Sine Wave
(128)		8	—	32/10	—	Cap.Swt.'D' Sine Wave
(129)		9	—	32/7	—	Cap.Swt.'A' Sine Wave
(130)		10	—	32/8	—	Cap.Swt.'B' Sine Wave
(131)		11	—	33/9	—	Mains input
(132)		12	—	33/10	—	Mains input
(133)		—	—	67/1, 61/5 *strapped*	—	—
(134)		—	—	67/6, 61/7 *strapped*		
Connections from Waveform Generator (Anti-Sea Clutter) 104, Ref. No. 10V/16079(1)						
(135)		PL1/1	—	—	Earth	—
(136)		2	—	—	—	—
(137)		3	—	—	—	—
(138)		4	—	—	—	—
(139)		5	—	—	—	—
(140)		6	—	—	—	—
(141)		7	—	—	—	—
(142)		8	—	—	—	—
(143)		9	—	—	—	—
(144)		10	—	—	—	—
(145)		11	—	33/5	—	—
(146)		12	—	33/6	—	—
Connections from Waveform Generator (Anti-Sea Clutter) 104, Ref. No. 10V/316079(2)						
(147)		PL1/1	—	—	Earth	—
(148)		2	—	—	—	—
(149)		3	—	—	—	—
(150)		4	—	—	—	—
(151)		5	—	—	—	—
(152)		6	—	—	—	—
(153)		7	—	—	—	—
(154)		8	—	—	—	—
(155)		9	—	—	—	—
(156)		10	—	—	—	—
(157)		11	—	33/11	—	—
(158)		12	—	33/12	—	—

COAXIAL CABLE CONNECTIONS

(159)	SK2 Amplifier (NBW)(*d*) *to* SK4 Amplifier (IF & Vid)(*d*)
(160)	SK5 Amplifier (IF & Vid)(*d*) *to* SK6 Amplifier (AJ & Vid)(*d*)
(161)	SK7 Amplifier (AJ & Vid)(*d* & *e*) *to* SK6 Amplifier (IF & Vid)
(162)	SK2 Amplifier (NBW)(*e*) *to* SK4 Amplifier (IF & Vid)(*e*)
(163)	SK5 Amplifier (IF & Vid)(*e*) *to* SK1 Amplifier (AJ & Vid)(*d* & *e*)
(164)	SK2 (Amplifier (AJ & Vid)(*d* & *e*) *to* SK6 Amplifier (IF & Vid)
(165)	SK1 Selector Unit (Type 7 AE) *to* Box Distribution No. 3
(166)	SK5 Selector Unit (Type 7 AE) *to* Box Distribution No. 4
(167)	SK6 (Selector Unit (Type 7 AE) *to* Box Distribution No. 1
(168)	SK7 Selector Unit (Type 7 AE) *to* Box Distribution No. 2

RACK ASSEMBLY TYPE 322A
(Ref. No. 10D/19694)

		Waveform Generator (Anti-Sea Clutter) 104 Ref. No. 10V/16079		Amplifier (IF & Vid.) A.3680 (*b*) Ref. No. 10U/16027			
		Amplifier (NBW) A.3679 (*a*) Ref. No. 10U/16026		Amplifier (NBW) A.3679 (*b*) Ref. No. 10U/16026			
13		Amplifier (IF & Vid.) A.3680 (*a*) Ref. No. 10U/16027		Amplifier (AJ & Vid.) A.3681 Ref. No. 10U/16028 (*b*) (*a*)			
	18	Amplifier A.3720		Amplifying Unit			
21	22	Ref. No. 10U/16789		(Pulse Splitter) 300 Ref. No. 10U/16057			
23	24	Rectifier Unit 15		Rectifier Unit 15			
25	26	Ref. No. 10D/17761		Ref. No. 10D/17761			
27	28	(2)		(1)		61	
29		Selector Unit 33		Rectifier Unit 15		63	64
31	32	Ref. No. 10D/18570		Ref. No. 10D/17761		65	66
33				(3)		67	68

Fig. 23. Rack assembly Type 322A, schematic

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Amplifier (AJ & Vid.) A.3681, Ref. No. 10U/16028					
(1)	PL11/1	—	—	Earth	—
(2)	2	62	—	PL9/2 Amp (NBW)(*a*)	—
		26	—	PL1/2 Rect.15(1)	—
(3)	3	63	—	PL9/3 Amp. (NBW)(*a*)	—
		27	—	PL1/3 Rect.15(1)	—
(4)	4	—	65/4	—	CU618 PL.AH.4 STC
(5)	5	—	65/3	—	CU618 PL.AH.3 LPF
(6)	6	—	13/4	—	CU621 PL.AG/4 STC
(7)	7	—	13/3	—	CU621 PL.AG/3 LPE
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	68/5	—	Mains input
(12)	12	—	68/6	—	Mains input
Connections from Amplifying Unit (Pulse Splitter) 300, Ref. No. 10U/16057					
(13)	PL1/1	—	—	Earth	—
(14)	2	—	—	—	—
(15)	3	—	—	—	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	68/7	—	Mains input
(24)	12	—	68/8	—	Mains input
Connections from Rectifier Unit 15, Ref. No. 10D/17761(1)					
(25)	PL1/1	—	—	Earth	—
(26)	2	2	61/1, 61/2, 61/3, 61/4, 61/5, 61/6, 63/6, *strapped*	PL11/2 Amp. (AJ & Vid.)	50V output (+*ve*)
(27)	3	3	61/7, 61/8, 61/9, 61/10, 61/11, 61/12, *Strapped*	PL11/3 Amp. (AJ & Vid.)	50V output (—*ve*)
(28)	4	—	63/1, 63/2, 63/3, 63/4, 63/5, 63/6, 61/6, *strapped*	—	50V output (+*ve*)
(29)	5	—	63/7, 63/8, 63/9, 63/10, 63/11, 63/12, *strapped*	—	50V output (—*ve*)
(30)	6	—	—	—	—
(31)	7	—	67/3, 67/7, 67/9, *strapped*	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	68/9	—	Mains input
(36)	12	—	68/10	—	Mains input
(37)	PL2/1	—	67/6	—	A.F.C.(1)
(38)	2	—	—	—	—
(39)	3	—	67/8	—	A.F.C.(1)
(40)	4	—	67/10	—	A.F.C.(1)
(41)	5	—	67/12	—	A.F.C.(2)
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	67/2	—	A.F.C.(3)
(45)	9	—	—	—	—
(46)	10	—	67/4	—	A.F.C.(3)
(47)	11	—	—	—	—
(48)	12	—	—	—	—
Connections from Rectifier Unit 15, Ref. No. 10D/17761(3)					
(49)	PL/1	—	—	Earth	—
(50)	2	—	64/1, 64/2, 64/3, 64/4, 64/5, 64/6, 66/6, *Strapped*	—	50V output (+*ve*)
(51)	3	—	64/7, 64/8, 64/9, 64/10, 64/11, 64/12, *strapped*	—	50V output (—*ve*)
(52)	4	—	66/1, 66/2, 66/3, 66/4, 66/5, 66/6, 64/6, *strapped*	—	50V output (+*ve*)

RACK ASSEMBLY TYPE 322A (continued)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(53)		5	—	66/7, 66/8, 66/9, 66/10, 66/11, 66/12, *strapped*	—	50V output (—*ve*)
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	68/11	—	Mains input
(60)		12	—	68/12	—	Mains input
		PL2 not used				
Connections from Amplifier (NBW) A.3679, Ref. No. 10U/16026(*a*)						
(61)		PL9/1	—	—	Earth	—
(62)		2	2	—	PL11/2 Amp (AJ & Vid.)	—
			74	—	PL10/2 Amp (IF & Vid.) (*a*)	—
(63)		3	3	—	PL11/3 Amp (AJ & Vid.)	—
			75	—	PL10/3 Amp (IF & Vid.)(*a*)	—
(64)		4	—	65/5	—	CU618 PL.AH.5 NBW
(65)		5	—	—	—	—
(66)		6	—	—	—	—
(67)		7		—	—	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	33/1	—	Mains input
(72)		12	—	33/2	—	Mains input
Connections from Amplifier (IF & Video) A.3680, Ref. No. 10U/16027(*a*)						
(73)		PL10/1	—	—	Earth	—
(74)		2	62	—	PL9/2 Amp. (NBW)(*a*)	—
(75)		3	63	—	PL9/3 Amp. (NBW)(*a*)	—
(76)		4	—	65/2	—	CU618 PLAH 2 IAGC
(77)		5	—	—	—	—
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	33/3	—	Mains input
(84)		12	—	33/4	—	Mains Input
Connections from Rectifier 15, Ref. No. 10D/17761(2)						
(85)		PL1/1	—	—	Earth	—
(86)		2	134	29/1, 29/2, 29/3, 29/4, 29/5, 29/6, 31/6, *strapped*	PL9/2 Amp. (NBW)(*b*)	50V output (+*ve*)
(87)		3	135	29/7, 29/8, 29/9, 29/10, 29/11, 29/12, *strapped*	PL9/2 Amp. (NBW)(*b*)	50V output (—*ve*)
(88)		4	—	31/1. 31/2, 31/3, 31/4, 31/5, 31/6, 29/6, *strapped*	—	50V output (+*ve*)
(89)		5	—	31/7, 31/8, 31/9, 31/10, 31/11, 31/12, *strapped*	—	50V output (—*ve*)
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	33/7	—	Mains input
(96)		12	—	33/8	—	Mains input
		PL2 not used				
Connections from Selector Unit 33, Ref. No. 10D/18570						
(97)		PL11/1	—	—	Earth	—
(98)		2	—	—	—	—
(99)		3	—	—	—	—
(100)		4	—	—	—	—
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	32/9	—	Cap. Switch 'C' output
(104)		8	—	32/10	—	Cap. Switch 'D' output

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(105)	9	—	32/7	—	Cap. Switch 'A' output
(106)	10	—	32/8	—	Cap. Switch 'B' output
(107)	11	—	33/9	—	Mains input
(108)	12	—	33/10	—	Mains input
Connections for Amplifier A.3720, Ref. No. 10U/16789					
(109)	PL1/1	—	—	Earth	—
(110)	2	—	—	—	—
(111)	3	—	—	—	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	18/1	—	Mains input
(120)	12	—	18/2	—	Mains input
Connections for Waveform Generator (A.S.C.) 104, Ref. No. 10V/16079					
(121)	PL1/1	—	—	Earth	—
(122)	2	—	—	—	—
(123)	3	—	—	—	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	—	—	—	—
(128)	8	—	—	—	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	18/3	—	Mains input
(132)	12	—	18/4	—	Mains input
Connections for Amplifier (NBW) A.3679, Ref. No. 10U/16026(*b*)					
(133)	PL9/1	—	—	Earth	—
(134)	2	86 & 146	—	Rect.15(2) PL1/2	—
(135)	3	87 & 147	—	Rect.15(2) PL1/3	—
(136)	4	—	13/5	—	CU621 PL.AE/5
(137)	5	—	—	—	—
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	18/5	—	Mains input
(144)	12	—	18/6	—	Mains input
Connections for Amplifier (IF & Vid) A.3680, Ref. No. 10U/16027(*b*)					
(145)	PL10/1	—	—	Earth	—
(146)	2	134	—	PL9/2 Amp. (NBW)(*b*)	—
(147)	3	135	—	PL9/3 Amp (NBW)(*b*)	—
(148)	4	—	13/2	—	CU162 PL.AE/2 IAGC
(149)	5	—	—	—	—
(150)	6	—	—	—	—
(151)	7	—	—	—	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	—	—	—	—
(155)	11	—	18/7	—	Mains input
(156)	12	—	18/8	—	Mains input

Coaxial Connections

(157)	SK2	Amplifier (NBW)(*a*)	*to*	SK4 Amplifier (IF & Video)(*a*)
(158)	SK5	Amplifier (IF & Video)(*a*)	*to*	SK1 Amplifier (AJ & Video)
(159)	SK2	Amplifier (AJ & Video)	*to*	SK6 Amplifier (IF & Video)(*a*)
(160)	SK1	Selector Unit 33	*to*	Box Distribution No. 3
(161)	SK5	Selector Unit 33	*to*	Box Distribution No. 4
(162)	SK6	Selector Unit 33	*to*	Box Distribution No. 1
(163)	SK7	Selector Unit 33	*to*	Box Distribution No. 2
(164)	SK3	A.3720	*to*	SK1 Amplifier (NBW)(*b*)
(165)	SK2	Amplifier (NBW)(*b*)	*to*	SK4 Amplifier (IF & Vid)(*b*)
(166)	SK5	Amplifier (IF & Vid((*b*)	*to*	SK6 Amplifier (AJ & Vid)
(167)	SK7	Amplifier (AJ & Vid)	*to*	SK6 Amplifier (IF & Vid)(*b*)
(168)	SK10	Amplifier (IF & Vid)(*b*)	*to*	SK2 Waveform Generator ASC

Chapter 21

RACK ASSEMBLIES OF TYPE 4400 (I.G.) SERIES

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Introduction

1. Previous chapters in this Book have dealt with those rack assemblies ("information generator") which made their first appearance in connexion with the re-engineering programme for the United Kingdom radar defence system, static and mobile. Initially these racks bore the Type numbers from 307 to 322 (inclusive). Further developments brought about variants of those numbers, denoted by a suffix letter, as described in Chapter 20.

2. The installation of entirely new search and early warning apparatus brought into existence a new set of racks which, whilst they carry apparatus common to the initial series, also include entirely new units needed to work in conjunction with the new aerial heads. These new racks are described in subsequent pages together with new racks which contain entirely new combinations of units used with the initial aerial heads.

3. The same method of presentation has been adopted as for the racks included in Chapter 20. Wiring schedules will be issued as and when available.

RACK ASSEMBLY TYPE 4411

(Ref. No. 10D/19324)

	(5) Rectifier unit Type 15 10D/17761 RU15	Panel (blanking) 4639 (Ref. No. 10D/19663)	
	(1) Waveform generator (anti-sea clutter) Type 104 10V/16079	(4) Rectifier unit Type 15	
	(2) Waveform generator (anti-sea clutter) Type 104	Power unit Type 4415 10K/18032	
18	Power unit Type 4414 10K/18033	Amplifier (video) Type 4416 10U/16841	51 52
26	Trigger unit Type 4413 10D/19326	(1) Rectifier unit Type 15	57 58
30 32	(3) Rectifier unit Type 15	(2) Rectifier unit Type 15	63 64

Fig. 1. Rack assembly Type 4411, schematic

SCHEDULE 1

Rack assembly Type 4411—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Power Unit T4415, 10D/18032					
(1)	PL1/1	25	—	SK11/1 Amp Vid T4416	—
(2)	PL1/2	26	—	SK11/2 Amp Vid T4416	—
(3)*	PL1/3	27	—	SK11/3 Amp Vid T4416	—
(4)	PL1/4	28	—	SK11/4 Amp Vid T4416	—
(5)	PL1/5	29	—	SK11/5 Amp Vid T4416	—
(6)	PL1/6	30	—	SK11/6 Amp Vid T4416	—
(7)	PL1/7	31	—	SK11/7 Amp Vid T4416	—
(8)	PL1/8	32	—	SK11/8 Amp Vid T4416	—
(9)	PL1/9	33	—	SK11/9 Amp Vid T4416	—
(10)	PL1/10	34	—	SK11/10 Amp Vid T4416	—
(11)	PL1/11	35	—	SK11/11 Amp Vid T4416	—
(12)	PL1/12	36	—	SK11/12 Amp Vid T4416	—
Connections from Amplifier Video Type 4416, Ref. No. 10U/16841					
(13)	PL1/1	—	—	Earth	—
(14)	PL1/2	—	52/2	—	—
(15)	PL1/3	—	52/3	—	—
(16)	PL1/4	—	52/4	—	—
(17)	PL1/5	—	52/5	—	—
(18)	PL1/6	—	52/6	—	—
(19)	PL1/7	—	52/7	—	—
(20)	PL1/8	—	52/8	—	—
(21)	PL1/9	—	52/9	—	—
(22)	PL1/10	—	52/10	—	—
(23)	PL1/11	—	51/1	—	—
(24)	PL1/12	—	51/2	—	—
(25)	SK11/1	1	—	PL1/1 PU4415 & Earth	—
(26)	SK11/2	2	—	PL1/2 PU T4415	—
(27)*	SK11/3	3	—	PL1/3 PU T4415	—
(28)*	SK11/4	4	—	PL1/4 PU T4415	—
(29)	SK11/5	5	—	PL1/5 PU T4415	—
(30)	SK11/6	6	—	PL1/6 PU T4415	—
(31)*	SK11/7	7	—	PL1/7 PU T4415	—
(32)	SK11/8	8	—	PL1/8 PU T4415	—
(33)	SK11/9	9	—	PL1/9 PU T4415	—
(34)	SK11/10	10	—	PL1/10 PU T4415	—
(35)	SK11/11	11	—	PL1/11 PU T4415	—
(36)	SK11/12	12	—	PL1/12 PU T4415	—
Connections from Rectifier Unit T15 (1) Ref. No. 10D/17761					
(37)	PL1/1	—	—	Earth	—
(38)	PL1/2	—	57/5, 57/6, 57/7, 57/8 *strapped together*	—	—
(39)	PL1/3	—	57/1, 57/2, 57/3, 57/4 *strapped together*	—	—
(40)	PL1/4	—	57/5, 57/6, 57/7, 57/8 *strapped together*	—	—
(41)	PL1/5	—	57/9, 57/10, 57/11, 57/12 *strapped together*	—	—
(42)	PL1/6	—	—	—	—
(43)	PL1/7	—	58/1, 58/4, 58/7, 58/10 *strapped together*	—	—
(44)	PL1/8	—	—	—	—
(45)	PL1/9	—	—	—	—
(46)	PL1/10	—	—	—	—
(47)	PL1/11	—	51/3	—	—
(48)	PL1/12	—	51/4	—	—
(49)	PL2/1	—	58/2	—	—
(50)	PL2/2	—	—	—	—
(51)	PL2/3	—	58/3	—	—
(52)	PL2/4	—	58/5	—	—
(53)	PL2/5	—	58/6	—	—
(54)	PL2/6	—	—	—	—
(55)	PL2/7	—	—	—	—
(56)	PL2/8	—	58/9	—	—
(57)	PL2/9	—	—	—	—
(58)	PL2/10	—	58/8	—	—
(59)	PL2/11	—	58/11	—	—
(60)	PL2/12	—	58/12	—	—
Connections from Rectifier Unit T15 (2) Ref. No. 10D/17761					
(61)	PL1/1	—	—	Earth	—
(62)	PL1/2	—	63/5, 63/6, 63/7, 63/8, *strapped together*	—	—
(63)	PL1/3	—	63/1, 63/2, 63/3, 63/4, *strapped together*	—	—

SCHEDULE 1. Rack assembly Type 4411—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connection from Rectifier Unit T15 (2), Ref. No. 10D/17761—(contd.)					
(64)	PL1/4	—	63/5, 63/6, 63/7, 63/8, *strapped together*	—	—
(65)	PL1/5	—	63/9, 63/10, 63/11, 63/12 *strapped together*	—	—
(66)	PL1/6	—	—	—	—
(67)	PL1/7	—	64/1, 64/4, 64/7, 64/10, *strapped together*	—	—
(68)	PL1/8	—	—	—	
(69)	PL1/9	—	—	—	—
(70)	PL1/10	—	—	—	—
(71)	PL1/11	—	51/5	—	—
(72)	PL1/12	—	51/6	—	—
(73)	PL2/1	—	64/2	—	—
(74)	PL2/2	—	—	—	—
(75)	PL2/3	—	64/3	—	—
(76)	PL2/4	—	64/5	—	—
(77)	PL2/5	—	64/6	—	—
(78)	PL2/6	—	—	—	—
(79)	PL2/7	—	—	—	—
(80)	PL2/8	—	64/9	—	—
(81)	PL2/9	—	—	—	—
(82)	PL2/10	—	64/8	—	—
(83)	PL2/11	—	64/11	—	—
(84)	PL2/12	—	64/12	—	—
Connections from Rectifier T15 (3), Ref. No. 10D/17761					
(85)	PL1/1	—	—	Earth	—
(86)	PL1/2	—	30/5, 30/6, 30/7, 30/8, *strapped together*	—	—
(87)	PL1/3	—	30/1, 30/2, 30/3, 30/4, *strapped together*	—	—
(88)	PL1/4	—	30/5, 30/6, 30/7, 38/8, *strapped together*	—	—
(89)	PL1/5	—	30/9, 30/10, 30/11, 30/12 *strapped together*	—	—
(90)	PL1/6	—	—	—	—
(91)	PL1/7	—	32/1, 32/4, 32/7, 32/10, *strapped together*	—	—
(92)	PL1/8	—	—	—	—
(93)	PL1/9	—	—	—	—
(94)	PL1/10	—	—	—	—
(95)	PL1/11	—	18/1	—	—
(96)	PL1/12	—	18/2	—	—
(97)	PL2/1	—	32/2	—	—
(98)	PL2/2	—	—	—	—
(99)	PL2/3	—	32/3	—	—
(100)	PL2/4	—	32/5	—	—
(101)	PL2/5	—	32/6	—	—
(102)	PL2/6	—	—	—	—
(103)	PL2/7	—	—	—	—
(104)	PL2/8	—	32/9	—	—
(105)	PL2/9	—	—	—	—
(106)	PL2/10	—	32/8	—	—
(107)	PL2/11	—	32/11	—	—
(108)	PL2/12	—	32/12	—	—
Connection to Trigger Unit T4413, Ref. No. 10D/19326					
(109)	PL1/1	—	—	Earth	—
(110)	PL1/2	—	26/2	—	—
(111)	PL1/3	—	26/3	—	—
(112)	PL1/4	—	26/4	—	—
(113)	PL1/5	—	26/5	—	—
(114)	PL1/6	—	26/6	—	—
(115)	PL1/7	—	26/7	—	—
(116)	PL1/8	—	26/8	—	—
(177)	PL1/9	—	26/9	—	—
(118)	PL1/10	—	26/10	—	—
(119)	PL1/11	—	18/3	—	—
(120)	PL1/12	—	18/4	—	—
(121)	SK5/1	133	PL1/1 PU T4414	Earth	—
(122)	SK5/2	134	PL1/2 PU T4414	—	—
(123)*	SK5/3	135	PL1/3 PU T4414	—	—
(124)	SK5/4	136	PL1/4 PU T4414	—	—
(125)	SK5/5	137	PL1/5 PU T4414	—	—
(126)	SK5/6	138	PL1/6 PU T4414	—	—
(127)*	SK5/7	139	PL1/7 PU T4414	—	—
(128)	SK5/8	140	PL1/8 PU T4414	—	—
(129)	SK5/9	141	PL1/9 PU T4414	—	—
(130)	SK5/10	142	PL1/10 PU T4414	—	—
(131)	SK5/11	143	PL1/11 PU T4414	—	—
(132)	SK5/12	144	PL1/12 PU T4414	—	—

SCHEDULE 1. Rack assembly Type 4411—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
Connections to Power Unit T4414, Ref. No. 10K/18033						
(133)		PL1/1	121	SK5/1 TU T4413	Earth	—
(134)		PL1/2	122	SK5/2 TU T4413	—	—
(135)*		PL1/3	123	SK5/3 TU T4413	—	—
(136)		PL1/4	124	SK5/4 TU T4413	—	—
(137)		PL1/5	125	SK5/5 TU T4413	—	—
(138)		PL1/6	126	SK5/6 TU T4413	—	—
(139)*		PL1/7	127	SK5/7 TU T4413	—	—
(140)		PL1/8	128	SK5/8 TU T4413	—	—
(141)		PL1/9	129	SK5/9 TU T4413	—	—
(142)		PL1/10	130	SK5/10 TU T4413	—	—
(143)		PL1/11	131	SK5/11 TU T4413	—	—
(144)		PL1/12	132	SK5/12 TU T4413	—	—
Connections from Waveform Generator (anti-sea clutter) T104(2)						
(145)		PL1/1	—	—	Earth	—
(146)		PL1/2	—	—	—	—
(147)		PL1/3	—	—	—	—
(148)		PL1/4	—	—	—	—
(149)		PL1/5	—	—	—	—
(150)		PL1/6	—	—	—	—
(151)		PL1/7	—	—	—	—
(152)		PL1/8	—	—	—	—
(153)		PL1/9	—	—	—	—
(154)		PL1/10	—	—	—	—
(155)		PL1/11	—	18/7	—	—
(156)		PL1/12	—	18/8	—	—
Connection from Waveform Generator (anti-sea clutter) T104(1)						
(157)		PL1/1	—	—	Earth	—
(158)		PL1/2	—	—	—	—
(159)		PL1/3	—	—	—	—
(160)		PL1/4	—	—	—	—
(161)		PL1/5	—	—	—	—
(162)		PL1/6	—	—	—	—
(163)		PL1/7	—	—	—	—
(164)		PL1/8	—	—	—	—
(165)		PL1/9	—	—	—	—
(166)		PL1/10	—	—	—	—
(167)		PL1/11	—	18/5	—	—
(168)		PL1/12	—	18/6	—	—
Connections to Rectifier Unit 15(4), Ref. No. 10D/17761						
(169)		PL1/1	—	—	Earth	
(170)		PL1/2	—	59/5, 59/6, 59/7, 59/8 *strapped together*		+50V
(171)		PL1/3	—	59/1, 59/2, 59/3, 59/4, *strapped together*	—	−50V
(172)		PL1/4	—	59/5, 59/6, 59/7, 59/8, *strapped together*	—	+50V
(173)		PL1/5	—	59/9, 59/10, 59/11, 59/12, *strapped together*	—	−50V
(174)		PL1/6	—	—	—	—
(175)		PL1/7	—	—	—	—
(176)		PL1/8	—	—	—	—
(177)		PL1/9	—	—	—	—
(178)		PL1/10	—	—	—	—
(179)		PL1/11	—	18/11	—	Mains input
(180)		PL1/12	—	18/12	—	Mains input
Connections to Rectifier Unit 15(5), Ref. No. 10D/17761						
(181)		PL1/1	—	—	Earth	—
(182)		PL1/2	—	60/5, 60/6, 60/7, 60/8, *strapped together*	—	+50V
(183)		PL1/3	—	60/1, 60/2, 60/3, 60/4, *strapped together*	—	−50V
(184)		PL1/4	—	60/5, 60/6, 60/7, 60/8, *strapped together*	—	+50V
(185)		PL1/5	—	60/9, 60/10, 60/11, 60/12 *strapped together*	—	−50V
(186)		PL1/6	—	—	—	—
(187)		PL1/7	—	—	—	—
(188)		PL1/8	—	—	—	—
(189)		PL1/9	—	—	—	—
(190)		PL1/10	—	—	—	—
(191)		PL1/11	—	18/9	—	Mains input
(192)		PL1/12	—	18/10	—	Mains input

RACK ASSEMBLY TYPE 4412

(Ref. No. 10D/19325)

	(5) Rectifier unit Type 15 10D/17761 RU15		Panel (blanking) 4639 (Ref. No. 10D/19663)	
	Panel (blanking) 4639		(4) Rectifier unit Type 15 10D/17761 RU15	
	Panel (blanking) 4639		Power unit Type 4415 10K/18032	
18	Power unit Type 4414 10K/18033		Amplifier (video) Type 4416 10U/16841	51 52
26	Trigger unit Type 4413 10D/19326		(1) Rectifier unit Type 15	57 58 59 60
30 32	(3) Rectifier unit Type 15		(2) Rectifier unit Type 15	63 64

Fig. 2. Rack assembly Type 4412, schematic

SCHEDULE 1

Rack assembly Type 4412—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Power Unit T4415, Ref. No. 10D/18032					
(1)	PL1/1	25	—	SK11/1 Amp Vid T4416	—
(2)	2	26	—	SK11/2 Amp Vid T4416	—
(3)*	3	27	—	SK11/3 Amp Vid T4416	—
(4)*	4	28	—	SK11/4 Amp Vid T4416	—
(5)	5	29	—	SK11/5 Amp Vid T4416	—
(6)	6	30	—	SK11/6 Amp Vid T4416	—
(7)*	7	31	—	SK11/7 Amp Vid T4416	—
(8)	8	32	—	SK11/8 Amp Vid T4416	—
(9)	9	33	—	SK11/9 Amp Vid T4416	—
(10)	10	34	—	SK11/10 Amp Vid T4416	—
(11)	11	35	—	SK11/11 Amp Vid T4416	—
(12)	12	36	—	SK11/12 Amp Vid T4416	—
Connections from Amplifier Video Type 4416, Ref. No. 10U/16841					
(13)	PL1/1	—	—	Earth	—
(14)	2	—	52/2	—	—
(15)	3	—	52/3	—	—
(16)	4	—	52/4	—	—
(17)	5	—	52/5	—	—
(18)	6	—	52/6	—	—
(19)	7	—	52/7	—	—
(20)	8	—	52/8	—	—
(21)	9	—	52/9	—	—
(22)	10	—	52/10	—	—
(23)	11	—	51/1	—	—
(24)	12	—	51/2	—	—
(25)	SK11/1	1	—	PL1/1 PU 4415 & Earth	—
(26)	2	2	—	PL1/2 PU T4415	—
(27)*	3	3	—	PL1/3 PU T4415	—
(28)*	4	4	—	PL1/4 PU T4415	—
(29)	5	5	—	PL1/5 PU T4415	—
(30)	6	6	—	PL1/6 PU T4415	—
(31)*	7	7	—	PL1/7 PU T4415	—
(32)	8	8	—	PL1/8 PU T 4415	—
(33)	9	9	—	PL1/9 PU T4415	—
(34)	10	10	—	PL1/10 PU T4415	—
(35)	11	11	—	PL1/11 PU T4415	—
(36)	12	12	—	PL1/12 PU T4415	—
Connections from Rectifier Unit T15(1), Ref. No. 10D/17761					
(37)	PL1/1	—	—	Earth	—
(38)	2	—	57/5, 57/6, 57/7, 57/8, *strapped together*	—	—
(39)	3	—	57/1, 57/2, 57/3, 57/4, *strapped together*	—	—
(40)	4	—	57/5, 57/6, 57/7, 57/8, *strapped together*	—	—
(41)	5	—	57/9, 57/10, 57/11, 57/12, *strapped together*	—	—
(42)	6	—	—	—	—
(43)	7	—	58/1, 58/4, 58/7, 58/10, *strapped together*	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	51/3	—	—
(48)	12	—	51/4	—	—
(49)	PL2/1	—	58/2	—	—
(50)	2	—	—	—	—
(51)	3	—	58/3	—	—
(52)	4	—	58/5	—	—
(53)	5	—	58/6	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	58/9	—	—
(57)	9	—	—	—	—
(58)	10	—	58/8	—	—
(59)	11	—	58/11	—	—
(60)	12	—	58/12	—	—

SCHEDULE 1. Rack assembly Type 4412—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Rectifier Unit T15(e), Ref. No. 10D/17761					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	63/5, 63/6, 63/7, 63/8, *strapped together*	—	—
(63)	3	—	63/1, 63/2, 63/3, 63/4, *strapped together*	—	—
(64)	4	—	63/5, 63/6, 63/7, 63/8, *strapped together*	—	—
(65)	5	—	63/9, 63/10, 63/11, 63/12, *strapped together*	—	—
(66)	6	—	—	—	—
(67)	7	—	64/1, 64/4, 64/7, 64/10, *strapped together*	—	—
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	51/5	—	—
(72)	12	—	51/6	—	—
(73)	PL2/1	—	64/2	—	—
(74)	2	—	—	—	—
(75)	3	—	64/3	—	—
(76)	4	—	64/5	—	—
(77)	5	—	64/6	—	—
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	64/9	—	—
(81)	9	—	—	—	—
(82)	10	—	64/8	—	—
(83)	11	—	64/11	—	—
(84)	12	—	64/12	—	—
Connections from Rectifier T15(3), Ref. No. 10D/17761					
(85)	PL1/1	—	—	Earth	—
(86)	2	—	30/5, 30/6, 30/7, 30/8, *strapped together*	—	—
(87)	3	—	30/1, 30/2, 30/3, 30/4, *strapped together*	—	—
(88)	4	—	30/5, 30/6, 30/7, 30/8, *strapped together*	—	—
(89)	5	—	30/9, 30/10, 30/11, 30/12, *strapped together*	—	—
(90)	6	—	—	—	—
(91)	7	—	32/1, 32/4, 32/7, 32/10, *strapped together*	—	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	18/1	—	—
(96)	12	—	18/2	—	—
(97)	PL2/1	—	32/2	—	—
(98)	2	—	—	—	—
(99)	3	—	32/3	—	—
(100)	4	—	32/5	—	—
(101)	5	—	32/6	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	32/9	—	—
(105)	9	—	—	—	—
(106)	10	—	32/8	—	—
(107)	11	—	32/11	—	—
(108)	12	—	32/12	—	—
Connection to Trigger Unit T4413, Ref. No. 10D/19326					
(109)	PL1/1	—	—	Earth	—
(110)	2	—	26/2	—	—
(111)	3	—	26/3	—	—
(112)	4	—	26/4	—	—
(113)	5	—	26/5	—	—
(114)	6	—	26/6	—	—
(115)	7	—	26/7	—	—
(116)	8	—	26/8	—	—
(117)	9	—	26/9	—	—
(118)	10	—	26/10	—	—
(119)	11	—	18/3	—	—
(120)	12	—	18/4	—	—

SCHEDULE 1. Rack assembly Type 4412—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connection to Trigger Unit T4413, Ref. No. 10D/19326—(contd.)					
(121)	SK5/1	133	PL1/1 PU T4414	Earth	—
(122)	2	134	PL1/2 PU T4414	—	—
(123)*	3	135	PL1/3 PU T4414	—	—
(124)	4	136	PL1/4 PU T4414	—	—
(125)	5	137	PL1/5 PU T4414	—	—
(126)	6	138	PL1/6 PU T4414	—	—
(127)*	7	139	PL1/7 PU T4414	—	—
(128)	8	140	PL1/8 PU T4414	—	—
(129)	9	141	PL1/9 PU T4414	—	—
(130)	10	142	PL1/10 PU T4414	—	—
(131)	11	143	PL1/11 PU T4414	—	—
(132)	12	144	PL1/12 PU T4414	—	—
Connections to Power Unit T4414, Ref. No. 10K/18033					
(133)	PL1/1	121	SK5/1 TU T4413	Earth	—
(134)	2	122	SK5/2 TU T4413	—	—
(135)	3	123	SK5/3 TU T4413	—	—
(136)	4	124	SK5/4 TU T4413	—	—
(137)	5	125	SK5/5 TU T4413	—	—
(138)	6	126	SK5/6 TU T4413	—	—
(139)*	7	127	SK5/7 TU T4413	—	—
(140)	8	128	SK5/8 TU T4413	—	—
(141)	9	129	SK5/9 TU T4413	—	—
(142)	10	130	SK5/10 TU T4413	—	—
(143)	11	131	SK5/11 TU T4413	—	—
(144)	12	132	SK5/12 TU T4413	—	—

RACK ASSEMBLY TYPE 4417

(Ref. No. 10D/19327)

	Waveform Generator (anti-sea clutter) Type 104 Ref. No. 10V/16079		Panel (blanking) 4639 (Stores reference 10D/19663)		
	Amplifier (A. J. & Vid.) Type A.3681 Ref. No. 10U/16028		Amplifier Unit (servo) Type 297 Ref. No. 10U/16054 (1)		
	Amplifier (I.F. & Vid.) Type A.3680 Ref. No. 10U/16027	16	Control Unit Type 600 (1) Ref. No. 10L/16029 (2)		
20	Amplifier (N.B.W.) Type A.3679 Ref. No. 10U/16026	21	Amplifier Unit (servo) Type 297 Ref. No. 10U/16054 (2)	54 55	
24 25 28	Marker Unit (range) Type 27 Ref. No. 10D/18308		Rectifier Unit Type 17 Ref. No. 10D/17779	58 59	
29 32 33	Rectifier Unit Type 15 Ref. No. 10D/17761 (a)		Rectifier Unit Type 15 Ref. No. 10D/17761 (b)	63 66 67	

Fig. 3. Rack Assembly Type 4417, schematic

RACK ASSEMBLY TYPE 4417

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections for Rectifier or Unit Type 15 10D/17761(a)					
(1)	PL1/1	—	—	Earth	—
(2)	2	62	33/2	PL7/2	50V Output
		—	33/4 strapped	Marker Unit 27	+ ve
		—	33/6		
(3)	3	63	33/1	PL7/3	50V Output
		—	33/3 strapped	Marker Unit 27	— ve
		—	33/5		
(4)	4	—	33/8	—	50V Output
		—	33/10 strapped		+ ve
		—	33/12		
(5)	5	—	33/7	—	50V Output
		—	33/9 strapped		— ve
		—	33/11		
(6)	6	—	—	—	—
(7)	7	—	28/6	—	A.F.C.
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	32/11	—	Mains Input
(12)	12	—	32/12	—	Mains Input
(13)	PL2/1	—	28/10	—	A.F.C. (1)
(14)	2	—	—	—	—
(15)	3	—	28/9	—	A.F.C. (1)
(16)	4	—	28/12	—	A.F.C. (2)
(17)	5	—	28/11	—	A.F.C. (2)
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	—	—	—
(24)	12	—	—	—	—
Connections for Rectifier Unit Type 15 10D/17761(b)					
(25)	PL1/1	—	—	Earth	—
(26)	2	—	67/2		50V Output
		—	67/4 strapped		+ ve
		—	67/6		
(27)	3	—	67/1		50V Output
		—	67/3 strapped		— ve
		—	67/5		
(28)	4	—	67/8		50V Output
		—	67/10 strapped		+ ve
		—	67/12		
(29)	5	—	67/7		50V Output
		—	67/9 strapped		— ve
		—	67/11		
(30)	6	—	—	—	—
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	66/9	—	Mains Input
(36)	12	—	66/10	—	Mains Input
Plug 1 no connections					
Plug 2 no connections					
Connections for Rectifier Unit Type 17 10D/17779					
	PL1	No connections			
	PL2	No connections			
(37)	PL3/1	306	—	PL5/6 Amp. Servo (1)	—
(38)	2	251	—	PL504/11 C.U.600 (1)	—
(39)	3	250	—	PL504/10 C.U.600 (1)	—
(40)	4	305	—	PL5/5 Amp. Servo (1)	—
(41)	5	174	—	PL5/6 Amp. Servo (2)	—
(42)	6	215	—	PL504/11 C.U.600 (2)	—
(43)	7	214	—	PL504/10 C.U.600 (2)	—
(44)	8	173	—	PL5/5 Amp. Servo (2)	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	—	—	—
(48)	12	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(49)		PL4/1	—	—	—	—
(50)		2	—	—	—	—
(51)		3	—	—	—	—
(52)		4	—	—	—	—
(53)		5	—	—	—	—
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	Earth	—
(59)		11	—	66/11	—	Mains Input
(60)		12	—	66/12	—	Mains Input
	Connections for Marker Unit (Range) Type 27 10D/18308					
(61)		PL7/1	—	—	Earth	—
(62)		2	74	—	PL9/2 Amp. (N.B.W.)	—
			2	—	PL1/2 R.U.15	—
(63)		3	75	—	PL9/3 Amp. (N.B.W.)	—
			3	—	PL1/3 R.U.15	—
(64)		4	—	—	—	—
(65)		5	—	—	—	—
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	32/9	—	Mains Input
(72)		12	—	32/10	—	Mains Input
	Connections for Amplifier (N.B.W.) Type A.3679 10U/16026					
(73)		PL9/1	—	—	Earth	—
(74)		2	86	—	PL10/2 Amp. (I.F. & Vid.)	—
			62	—	PL7/2 Marker Unit 27	—
(75)		3	87	—	PL10/3 Amp. (I.F. & Vid.)	—
			63	—	PL7/3 Marker Unit 27	—
(76)		4	—	29/5	—	C.U.621 PLAE/5 N.B.W.
(77)		5	—	—	—	—
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	32/7	—	Mains Input
(84)		12	—	32/8	—	Mains Input
	Connections for Amplifier (I.F. & Vid.) Type A.3680 10U/16027					
(85)		PL10/1	—	—	Earth	—
(86)		2	98	—	PL11/2 Amp. (A.J. & Vid.)	—
			74		PL9/2 Amp. (N.B.W.)	—
(87)		3	99	—	PL11/3 Amp. (A.J. & Vid.)	—
			75		PL9/3 Amp. (N.B.W.)	
(88)		4	—	29/2	—	C.U.621 PLAE/2 IAGC
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	32/5	—	Mains Input
(96)		12	—	32/6	—	Mains Input
	Connections for Amplifier (A.J. & Vid.) Type A.3681 10U/16028					
(97)		PL11/1	—	—	Earth	—
(98)		2	86	—	PL10/2 Amp. (I.F. & Vid.)	—
(99)		3	87	—	PL10/3 Amp. (I.F. & Vid.)	—
(100)		4	—	29/4	—	C.U.621 PLAE/4 STC

Rack assembly Type 4417—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
(101)	5	—	29/3	—	C.U.621 PLAE/3 LPF
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	32/3	—	Mains Input
(108)	12	—	32/4	—	Mains Input
Connections for Waveform Generator (anti-sea clutter) Type 104 10V/16079					
(109)	PL1/1	—	—	Earth	—
(110)	2	—	—	—	—
(111)	3	—	—	—	—
(112)	4	—	—	—	—
(113)	5	—	—	—	—
(114)	6	—	—	—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	32/1	—	Mains Input
(120)	12	—	32/2	—	Mains Input
Connections for Amplifier (servo) Type 297 10U/16054 (2)					
(121)	PL1/1	—	63/11	—	Plinth Term Block 67
(122)	2	—	63/12	—	Plinth Term Block 68
(123)	3	—	66/3	—	Mains Input
(124)	4	—	—	Earth	—
(125)	5	—	—	—	—
(126)	6	—	66/4	—	Mains Input
(127)	7	—	59/6	—	Switch Unit PL1/3
(128)	8	—	—	—	—
(129)	9	—	63/9	—	S.R.46
(130)	10	—	59/7	—	Switch Unit PL1/4
(131)	11	—	59/8	—	Switch Unit PL1/5
(132)	12	—	63/10	—	S.R.38
(133)	PL2/1	—	—	—	—
(134)	2	—	—	—	—
(135)	3	—	—	—	—
(136)	4	—	58/5	—	S.R.25
(137)	5	—	58/4	—	S.R.22
(138)	6	—	58/7	—	S.R.25
(139)	7	—	58/6	—	S.R.24
(140)	8	—	58/9	—	S.R.27
(141)	9	—	58/8	—	S.R.26
(142)	10	163	58/10	PL4/7 Amp. Servo (2)	S.R.28
(143)	11	209	59/5, 58/3, 58/11 Strapped	PL503/7 CV 600 (2)	S.R.29 Switch Unit PL1/2
(144)	12	—	58/12	—	S.R.30
(145)	PL3/1	—	—	—	—
(146)	2	—	—	—	—
(147)	3*	—	63/1	—	Amplidyne X4
(148)	4*	—	63/2	—	Amplidyne X3
(149)	5*	—	63/3	—	Amplidyne X2
(150)	6*	—	63/4	—	Amplidyne X1
(151)	7	—	63/5	—	Amplidyne X5
(152)	8	—	63/6	—	Amplidyne X6
(153)	9	—	63/7	—	Amplidyne A4
(154)	10	—	—	—	—
(155)	11	—	63/8	—	Amplidyne A2
(156)	12	—	—	—	—
(157)	PL4/1	—	55/3	—	Console 3 J.3
(158)	2	—	55/5	—	Console 3 J.5
(159)	3	202	—	PL502/12 C.U.600 (2)	—
(160)	4	—	58/1	—	S.R.36
(161)	5	198	—	PL502/8 C.U.600 (2)	—
(162)	6	199	—	PL502/9 C.U.600 (2)	—
(163)	7	142	58/10	PL2/10 Amp. Servo (2)	S.R.28
(164)	8	—	59/4, 58/2 Strapped	—	Switch Unit PL1/1 S.R.34
(165)	9	196	—	PL502/6 C.U.600 (2)	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(166)		10	—	55/12	—	Console 3 J.12
(167)		11	—	—	—	—
(168)		12	—	—	—	—
(169)		PL5/1	—	—	—	—
(170)		2	—	55/4	—	Console 3 J.4
(171)		3	—	55/7	—	Console 3 J.7
(172)		4	193	—	PL502/3 C.U.600 (2)	—
(173)		5	44	—	PL703/8 Rect. 17	—
(174)		6	41	—	PL703/5 Rect. 17	—
(175)		7	—	54/2	—	Console 3 K.2
(176)		8	194	—	PL502/4 C.U.600 (2)	—
(177)		9	195	—	PL502/5 C.U.600 (2)	—
(178)		10	—	—	—	—
(179)		11	201	—	PL502/11 C.U.600 (2)	—
(180)		12	182	55/6	PL501/2 C.U.600 (2)	Console 3 J.6
Connections from Control Unit Type 600 10L/16029 (2)						
(181)		PL501/1	—	—	—	—
(182)		2	180	55/6	PL5/12 Amp. (Servo) (2)	Console 3 J.6
(183)		3	—	54/4	—	Console 3 K.4
(184)		4	—	—	—	—
(185)		5	—	54/6	—	Console 3 K.6
(186)		6	—	—	—	—
(187)		7	—	54/8	—	Console 3 K.8
(188)		8	—	—	—	—
(189)		9	—	55/9	—	Console 3 J.9
(190)		10	—	55/11	—	Console 3 J.11
(191)		11	—	55/8	—	Console 3 J.8
(192)		12	—	54/1	—	Console 3 K.1
(193)		PL502/3	172	—	PL5/4 Amp. (Servo) (2)	—
(194)		4	176	—	PL5/8 Amp. (Servo) (2)	—
(195)		5	177	—	PL5/9 Amp. (Servo) (2)	—
(196)		6	165	—	PL4/9 Amp. (Servo) (2)	—
(197)		7	—	—	—	—
(198)		8	161	—	PL4/5 Amp. (Servo) (2)	—
(199)		9	162	—	PL4/6 Amp. (Servo) (2)	—
(200)		10	—	—	—	—
(201)		11	179	—	PL5/11 Amp. (Servo) (2)	—
(202)		12	159	—	PL4/3 Amp. (Servo) (2)	—
(203)		PL503/1	—	55/10	—	Console 3 J.10
(204)		2	—	—	—	—
(205)		3	—	54/9	—	Console 3 K.9
(206)		4	—	66/5	—	Mains Input
(207)		5	—	54/10	—	Console 3 K.10
(208)		6	—	66/6	—	Mains Input
(209)		7	142	59/5, 58/3, 58/11 Strapped	PL2/11 Amp. (Servo) (2)	S.R.29, S.R.19, Switch Unit PL1/2
(210)		8	—	—	—	—
(211)		PL504/7	—	—	—	—
(212)		8	—	—	—	—
(213)		9	—	—	—	—
(214)		10	43	—	PL703/7 Rect. 17	—
(215)		11	42	—	PL703/6 Rect. 17	—
(216)		12	—	—	Earth	—
Connections for Control Unit Type 600 10L/16029 (1)						
(217)		PL501/1	—	—	—	—
(218)		2	312	24/6	PL5/12 Amp. Servo) (1)	Console 5 J.6
(219)		3	—	25/4	—	Console 5 K.4
(220)		4	—	—	—	—
(221)		5	—	25/6	—	Console 5 K.6
(222)		6	—	—	—	—
(223)		7	—	25/8	—	Console 5 K.8
(224)		8	—	—	—	—
(225)		9	—	24/9	—	Console 5 J.9
(226)		10	—	24/11	—	Console 5 J.11
(227)		11	—	24/8	—	Console 5 J.8
(228)		12	—	25/1	—	Console 5 K.1
(229)		Plug 502/3	304	—	PL5/4 Amp. (Servo) (1)	—
(230)		4	308	—	PL5/8 Amp. (Servo) (1)	—
(231)		5	309	—	PL5/9 Amp. (Servo) (1)	—
(232)		6	297	—	PL4/9 Amp. (Servo) (1)	—
(233)		7	—	—	—	—
(234)		8	293	—	PL4/5 Amp. (Servo) (1)	—
(235)		9	294	—	PL4/6 Amp. (Servo) (1)	—

Rack assembly Type 4417—(contd.)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(236)		10	—	—	—	—
(237)		11	311	—	PL5/11 Amp. (Servo) (1)	—
(238)		12	291	—	PL4/3 Amp. (Servo) (1)	—
(239)		PL503/1	—	24/10	—	Console 5 J.10
(240)		2	—	—	—	—
(241)		3	—	25/9	—	Console 5 K.9
(242)		4	—	—	—	—
(243)		5	—	25/10	—	Console 5 K.10
(244)		6	—	—	—	—
(245)		7	275	20/5, 21/3, 21/11 Strapped	PL2/11 Amp. (Servo) (1)	S.R.29 S.R.19 Console 5 N.7
(246)		8	—	—	—	—
(247)		PL504/7	—	—	—	—
(248)		8	—	—	—	—
(249)		9	—	—	—	—
(250)		10	39	—	PL703/3 Rect. 17	—
(251)		11	38	—	PL703/2 Rect. 17	—
(252)		12	—	—	—	—
Connections for Amplifier (servo) Type 297 10U/16054 (1)						
(253)		PL1/1	—	16/11	—	Plinth Term Block 67
(254)		2	—	16/12	—	Plinth Term Block 68
(255)		3	—	66/7	—	Mains Input
(256)		4	—	—	Earth	—
(257)		5	—	—	—	—
(258)		6	—	66/8	—	Mains Input
(259)		7	—	20/6	—	Console 5 N.8
(260)		8	—	—	—	—
(261)		9	—	16/9	—	S.R.46
(262)		10	—	20/7	—	Console 5 N.9
(263)		11	—	20/8	—	Console 5 N.10
(264)		12	—	16/10	—	S.R.38
(265)		PL2/1	—	—	—	—
(266)		2	—	—	—	—
(267)		3	—	—	—	—
(268)		4	—	21/5	—	S.R.23
(269)		5	—	21/4	—	S.R.22
(270)		6	—	21/7	—	S.R.25
(271)		7	—	21/6	—	S.R.24
(272)		8	—	21/9	—	S.R.27
(273)		9	—	21/8	—	S.R.26
(274)		10	295	21/10	PL4/7 Amp. (Servo) (1)	S.R.28
(275)		11	245	20/5, 21/3, 21/11 Strapped	PL503/7 C.U.600 (1)	S.R.29 S.R.19 Console 5 N.7
(276)		12	—	21/12	—	S.R.30
(277)		PL3/1	—	—	—	—
(278)		2	—	—	—	—
(279)		3*	—	16/1	—	Amplidyne X4
(280)		4*	—	16/2	—	Amplidyne X3
(281)		5*	—	16/3	—	Amplidyne X2
(282)		6*	—	16/4	—	Amplidyne X1
(283)		7	—	16/5	—	Amplidyne X5
(284)		8	—	16/6	—	Amplidyne X6
(285)		9	—	16/7	—	Amplidyne A4
(286)		10	—	—	—	—
(287)		11	—	16/8	—	Amplidyne A2
(288)		12	—	—	—	—
(289)		PL4/1	—	24/3	—	Console 5 J.3
(290)		2	—	24/5	—	Console 5 J.5
(291)		3	238	—	PL502/12 C.U.600 (1)	—
(292)		4	—	21/1	—	S.R.36
(293)		5	234	—	PL502/8 C.U.600 (1)	—
(294)		6	235	—	PL502/9 C.U.600 (1)	—
(295)		7	274	21/10	PL2/10 Amp. (Servo) (1)	S.R.28
(296)		8	—	20/4, 21/2 Strapped	—	S.R.34 Console 5 N.6
(297)		9	232	—	PL502/6 C.U.600 (1)	—
(298)		10	—	24/12	—	Console 5 J.12
(299)		11	—	—	—	—
(300)		12	—	—	—	—
(301)		PL5/1	—	—	—	—
(302)		2	—	24/4	—	Console 5 J.4

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(303)		3	—	24/7	—	Console 5 J.7
(304)		4	229	—	PL502/3 C.U.600 (1)	—
(305)		5	40	—	PL703/4 Rect. 17	—
(306)		PL5/6	37	—	PL703/1 Rect. 17	—
(307)		7	—	25/2	—	Console 5 K.2
(308)		8	230	—	PL502/4 C.U.600 (1)	—
(309)		9	231	—	PL502/5 C.U.600 (1)	—
(310)		10	—	—	—	—
(311)		11	237	—	PL502/11 C.U.600 (1)	—
(312)		12	218	24/6	PL501/2 C.U.600 (1)	Console 5 J.6
Coaxial Cable Connections						
Connections from Amplifier (A.J. & Vid.) Type A.3681 10U/16028						
(313)		SK.1	316	—	SK5 on Amp. (I.F. & Vid.)	
(314)		SK.2	317	—	SK6 on Amp. (I.F. & Vid.)	
Connections from Amplifier (I.F. & Vid.) Type A.3680 10U/16027						
(315)		SK.4	319	—	SK2 on Amp. (N.B.W.)	
(316)		SK.5	313	—	SK1 on Amp. (A.J. & Vid.)	
(317)		SK.6	314	—	SK2 on Amp. (A.J. & Vid.)	
(318)		SK.10	320	—	SK2 on Waveform Gen. (A.S.C.)	
Connections from Amplifier (N.B.W.) Type A.3679 (10U/16026						
(319)		SK.2	315	—	SK4 on Amp. (I.F. & Vid.)	
Connections from Waveform Generator (anti-sea clutter) Type 104 10V/16079						
(320)		SK.2	318	—	SK.10 on Amp. (I.F. & Vid.)	

RACK ASSEMBLY TYPE 4418

(Ref. No. 10D/19328)

Waveform Generator (anti-sea clutter) 104 10V/16079	Amplifier (A.J. & Vid.) A.3681 (a) 10U/16028
Panel (blanking) 4639 (Stores reference 10D/19663)	Amplifier (I.F. & Vid.) A.3680 (a) 10U/16027
Panel (blanking) 4639	Amplifier (N.B.W.) A.3679 (a) 10U/16026
Marker Unit (range) 27 10D/18308	Amplifier A.3720 (a) 10U/16789
Panel (blanking) 4639	Transformer Unit (selsyn) 175 10K/17102
Rectifier Unit 15 (a) 10D/17761	Rectifier Unit 15 (b) 10D/17761

25 33 57 58 59 62 67

Fig. 4. Rack Assembly Type 4418, schematic

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Connections for Rectifier Unit 15 (a)					
(1)	PL1/1	—	—	Earth	—
(2)	2	14	33/2, 33/4, 33/6 Strapped	Marker Unit (Range) PL7/2	50V output positive
(3)	3	15	33/1, 33/3, 33/5 Strapped	Marker Unit (Range) PL7/3	50V output negative
(4)	4	—	33/8, 33/10, 33/12 Strapped	—	50V output positive
(5)	5	—	33/9, 33/11, 33/7 Strapped	—	50V output negative
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	25/1	—	Mains Input
(12)	12	—	25/2	—	Mains Input
Connections for Marker Unit (range) 27					
(13)	PL7/1	—	—	Earth	—
(14)	2	2	—	PL1/2 Rect. 15 (a)	—
(15)	3	3	—	PL1/3 Rect. 15 (a)	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6		—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	25/3	—	Mains Input
(24)	12	—	25/4	—	Mains Input
Connections for Waveform Generator (anti-sea clutter) 104					
(25)	PL1/1	—	—	Earth	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	25/5	—	Mains Input
(36)	12	—	25/6	—	Mains Input
Connections for Rectifier Unit 15 (b)					
(37)	PL1/1	—	—	Earth	—
(38)	2	74	67/2, 67/4, 67/6 Strapped	Amp. (N.B.W.) PL9/2	50V output positive
(39)	PL1/3	75	67/1, 67/3, 67/5 Strapped	Amp. (N.B.W.) PL9/3	50V output negative
(40)	4	—	67/8, 67/10, 67/12 Strapped	—	50V output positive
(41)	5	—	67/7, 67/9, 67/11 Strapped	—	50V output negative
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	59/1	—	Mains Input
(48)	12	—	59/2	—	Mains Input
Connections for Transformer Unit 175					
(49)	PL801/7	—	58/1	—	Selsyn Rotor
(50)	8	—	58/2	—	Selsyn Rotor
(51)	9	—	62/1	—	Selsyn Stator
(52)	10	—	62/2	—	Selsyn Stator
(53)	11	—	62/3	—	Selsyn Stator

Rack assembly Type 4418—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(54)	12	—	—	—	—
(55)	PL802/13*	—	62/6	—	Output Line
(56)	14*	—	62/9	—	Output Line
(57)	15*	—	62/12	—	Output Line
(58)	16	—	—	—	—
(59)	PL803/13*	—	58/6	—	Output Line
(60)	14*	—	58/10	—	Output Line
Connections for Amplifier A.3720					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	—	—	—
(63)	3	—	—	—	—
(64)	4	—	—	—	—
(65)	5	—	—	—	—
(66)	6	—	—	—	—
(67)	7	—	—	—	—
(68)	8	—	—	—	
(69)	9	—	—	—	
(70)	10	—	—	—	
(71)	11	—	59/3	—	Mains Input
(72)	12	—	59/4	—	Mains Input
Connections for Amplifier (N.B.W.) A.3679					
(73)	PL9/1	—	—	Earth	—
(74)	2	38	—	Rect. 15 (b) PL1/2	—
(75)	3	39	—	Rect. 15 (b) PL1/3	—
(76)	4	—	57/5	—	CU.621 PLAE/5 N.B.W.
(77)	5	—	—	—	—
(78)	6	—	—	—	—
(79)	7	—	—	—	
(80)	8	—	—	—	—
(81)	PL9/9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	59/5	—	Mains Input
(84)	12	—	59/6	—	Mains Input
Connections for Amplifier (I.F. & Vid.) A.3680					
(85)	PL10/1	—	—	Earth	—
(86)	2	74	—	Amp. (N.B.W.) PL9/2	—
(87)	3	75	—	Amp. (N.B.W.) PL9/3	—
(88)	4	—	57/2	—	CU.621 PLAE/2 IAGC
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	59/7	—	Mains Input
(96)	12	—	59/8	—	Mains Input
Connections for Amplifier (A.J. & Vid.) A.3681					
(97)	PL11/1	—	—	Earth	—
(98)	2	86	—	Amp. (I.F. & Vid.) PL10/2	—
(99)	3	87	—	Amp. (I.F. & Vid.) PL10/3	—
(100)	4	—	57/4	—	CU.621 PLAE/4 STC
(101)	5	—	57/3	—	CU.621 PLAE/3 IPF
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	59/9	—	Mains Input
(108)	12	—	59/10	—	Mains Input
(109)	SK.1	—	SK5 on Amp. (I.F. & Vid.)		
(110)	SK.2	—	SK6 on Amp. (I.F. & Vid.)		

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Amplifier (I.F. & Vid. Type A.3680)					
(111)	SK.4	—	SK2 on Amp. (N.B.W.)		
(112)	SK.5	—	SK1 on Amp. (A.J. & Vid.)		
(113)	SK.6	—	SK2 on Amp. (A.J. & Vid.)		
(114)	SK.10	—	SK2 on Waveform Generator (A.S.C.)		
Connections for Amplifier (N.B.W.) Type 3679					
(115)	SK.2	—	SK4 on Amp. (I.F. & Vid.)		
Connections from Waveform Generator (A.S.C.) Type 104					
(116)	SK.2	—	SK10 on Amp. (I.F. & Vid.)		

RACK ASSEMBLY TYPE 4492

(Ref. No. 10D/19351)

	Panel (blanking) 4639 (Store reference 10D/19663)		Waveform Generator (anti-sea clutter) 104 10V/16079	
	Trigger Unit 4413/A 10D/20897		Rectifier Unit 17 (1) 10D/17779	
	Power Unit 4414/A 10K/19986		Switch Unit 410 10F/16163	46 47 50
	Power Unit 4415/A		Rectifier Unit 17 (2)	52 53
21	10K/19917		10D/17779	56
	Amplifying Unit (video) 4416/A		Rectifier Unit 15 (3)	
25	10U/17047		10D/17761	59
	Rectifier Unit 15 (1)		Rectifier Unit 15 (2)	63
33	10D/17761		10D/17761	67

Fig. 5. Rack assembly Type 4492, schematic

SCHEDULE 1

Rack assembly Type 4492—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Rectifier Unit Type 15 (1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	—	33/2, 33/4, 33/6, *strapped together*	—	+50V output
(3)	3	—	33/1, 33/3, 33/5, *strapped together*	—	−50V output
(4)	4	—	33/8, 33/10, 33/12 *strapped together*	—	+50V output
(5)	5	—	33/9, 33/11, 33/7, *strapped together*	—	−50V output
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	25/1*M*	—	Mains input
(12)	12	—	25/2*M*	—	Mains input
Plug 2 not used.					
Connections for Amplifying Unit (Video) 4416/A					
(13)	SK11/1	—	—	Earth	—
(14)	2	—	—	—	—
(15)	3	39	—	PU4415A PL1/3	—
(16)	4	40	—	PU4415A PL1/4	—
(17)	5	—	—	—	—
(18)	6	42	—	PU4415A PL1/6	—
(19)	7	43	—	PU4415A PL1/7	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	46	—	PU4415A PL1/10	—
(23)	11	47	—	PU4415A PL1/11*M*	—
(24)	12	48	—	PU4415A PL1/12*M*	—
(25)	PL1/1	—	—	Earth	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	25/3*M*	—	Mains input
(36)	12	—	25/4*M*	—	Mains input
Connections for Power Unit 4415/A					
(37)	PL1/1	—	—	Earth	—
(38)	2	—	—	—	—
(39)	3	15	—	Amp 4416A SK11/3	—
(40)	4	16	—	Amp 4416A SK11/4	—
(41)	5	—	—	—	—
(42)	6	18	—	Amp 4416A SK11/6	—
(43)	7	19	—	Amp 4416A SK11/7	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	22	—	Amp 4416A SK11/10	—
(47)	11	23	—	Amp 4416A SK11/11*M*	—
(48)	12	24	—	Amp 4416A SK11/12*M*	—
Connections for Power Unit 4414/A					
(49)	PL1/1	—	—	Earth	—
(50)	2	—	—	—	—
(51)	3	63	—	Trigger unit 4413A SK/53	—
(52)	4	—	—	—	—
(53)	5	—	—	—	—
(54)	6	66	—	Trigger unit 4413A SK5/6	—
(55)	7	67	—	Trigger unit 4413A SK5/7	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	70	—	Trigger unit 4413A SK5/10	—
(59)	11	71	—	Trigger unit 4413A SK5/11*M*	—
(60)	12	72	—	Trigger unit 4413A SK5/12*M*	—

SCHEDULE 1. Rack assembly Type 4492—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
Connections for Trigger Unit 4413/A						
(61)		SK5/1	—	—	Earth	—
(62)		2	—	—	—	—
(63)		3	51	—	PU4414A PL1/3	—
(64)		4	—	—	—	—
(65)		5	—	—	—	—
(66)		6	54	—	PU4414A PL1/6	—
(67)		7	55	—	PU4414A PL1/7	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	58	—	PU4414A PL1/10	—
(71)		11	59	—	PU4414A PL1/11*M*	—
(72)		12	60	—	PU4414A PL1/12*M*	—
(73)		PL1/1	—	—	Earth	—
(74)		2	—	21/2	—	MTU PL1/2
(75)		3	—	21/1	—	MTU PL1/1
(76)		4	—	—	—	—
(77)		5	—	—	—	—
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	25/5*M*	—	Mains input
(84)		12	—	25/6*M*	—	Mains input
Connections for Rectifier Unit 15(2)						
(85)		PL1/1	—	—	Earth —	—
(86)		2	—	67/2, 67/4, 67/6, *strapped together*	—	+50V output
(87)		3	—	67/1, 67/3, 67/5, *strapped together*	—	−50V output
(88)		4	—	67/8, 67/10, 67/12, *strapped together*	—	+50V output
(89)		5	—	67/7, 67/9, 67/11, *strapped together*	—	−50V output
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	—	—
(95)		11	—	59/1*M*	—	Mains input
(96)		12	—	59/2*M*	—	Mains input
Connections for Rectifier Unit 15 (3)						
(97)		PL1/1	—	—	Earth	—
(98)		2	—	63/2, 63/4, 63/6, *strapped together*	—	+50V output
(99)		3	—	63/1, 63/3, 63/5, *strapped together*	—	−50V output
(100)		4	—	63/8, 63/10, 63/12, *strapped together*	—	+50V output
(101)		5	—	63/7, 63/9, 63/11, *strapped together*	—	−50V output
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	59/3*M*	—	Mains input
(108)		12	—	59/4*M*	—	Mains input
Connections for Rectifier Unit 17 (2)						
(109)		PL1/1	—	—	—	—
(110)		2	—	—	—	—
(111)		3	—	—	—	—
(112)		4	—	—	—	—
(113)		5	—	—	—	—
(114)		6	—	—	—	—
(115)		7	—	—	—	—
(116)		8	—	—	—	—
(117)		9	—	—	—	—
(118)		10	202	—	PL906/10 SU410	—
(119)		11	203	—	11 SU410	—
(120)		12	204	—	12 SU410	—

Plugs 2 and 3 not used.

SCHEDULE 1. Rack assembly Type 4492—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Rectifier Unit 17 (2)—(contd.)					
(121)	PL4/1	205	—	PL907/1 SU410	—
(122)	2	206	—	2 SU410	—
(123)	3	207	—	3 SU410	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	211	—	PL907/7 SU410	—
(128)	8	212	—	8 SU410	—
(129)	9	—	—	—	—
(130)	10	—	—	Earth	—
(131)	11	—	PL53/1*M*	—	Mains input
(132)	12	—	PL53/2*M*	—	Mains input
Connections for Switch Unit 410					
(133)	PL901/1	—	—	—	—
(134)	2	—	—	—	—
(135)	3	—	—	—	—
(136)	4	—	—	—	—
(137)	5	—	—	—	—
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	—	52/1	—	PLAL/1 CU619(1)
(143)	11	—	50/1	—	(SR28 14/9½) (PL2/10 SA(*a*)
(144)	12	—	52/2	—	PLAL/2 CU619(1)
(145)	PL902/1	—	50/2	—	PL5/6 SA(*a*) 14/9½
(146)	2	—	50/3	—	PL504/10 CU(*a*)
(147)	3	—	50/4	—	PL5/5 SA(*a*)
(148)	4	—	50/5	—	CU4571 PL2/9
(149)	5	—	50/6	—	PL5/1 SA(*a*) 14/9½
(150)	6	—	50/7	—	PL5/1 SA(*b*) MR2
(151)	7	—	—	—	—
(152)	8	—	47/10	—	No. 1 Synch Line
(153)	9	—	52/3	—	PLAJ/2 CU619(1)
(154)	10	—	56/3	—	PLAJ/2 CU619(2)
(155)	11	—	—	—	—
(156)	12	—	50/8	—	PL504/11 CU(*a*)
(157)	PL903/1	—	50/9	—	PL504/11 CU(*b*)
(158)	2	—	50/10	—	PL5/6 SA(*b*)
(159)	3	—	50/11	—	PL504/10 CU(*b*)
(160)	4	—	50/12	—	PL5/5 SA(*b*)
(161)	5	—	47/1	—	PL504/11 CU(*c*)
(162)	6	—	47/2	—	PL5/6 SA(*c*)
(163)	7	—	47/3	—	PL504/10 CU(*c*)
(164)	8	—	47/4	—	PL5/5 SA(*c*)
(165)	9	—	47/5	—	PL504/11 CU(*d*)
(166)	10	—	47/6	—	PL5/6 SA(*d*)
(167)	11	—	47/7	—	PL504/10 CU(*d*)
(168)	12	—	47/8	—	PL5/5 SA(*d*)
(169)	PL904/1	—	56/1	—	PLAL/1 CU619(2)
(170)	2	—	47/9	—	PL2/10 SA(*b*) SR28 MR2
(171)	3	—	56/2	—	PLAL/2 CU619(2)
(172)	4	—	—	—	—
(173)	5	—	—	—	—
(174)	6	—	46/1	—	PL5/6 SA(*e*)
(175)	7	—	46/2	—	PL504/11 CU(*e*)
(176)	8	—	46/3	—	PL5/5 SA(e)
(177)	9	—	46/4	—	PL504/10 CU(*e*)
(178)	10	—	—	—	—
(179)	11	—	—	—	—
(180)	12	—	—	—	—
(181)	PL905/1	—	—	—	—
(182)	2	—	—	—	—
(183)	3	—	—	—	—
(184)	4	—	—	—	—
(185)	5	—	—	—	—
(186)	6	—	—	—	—
(187)	7	—	—	—	—
(188)	8	—	—	—	—
(189)	9	—	—	—	—
(190)	10	238	—	PL1/10 RU17(1)	—
(191)	11	239	—	11 RU17(1)	—
(192)	12	240	—	12 RU17(1)	—

SCHEDULE 1. Rack assembly Type 4492—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Switch Unit 410—(contd.)					
(193)	PL906/1	—	—	—	—
(194)	2	—	—	—	—
(195)	3	—	—	—	—
(196)	4	—	—	—	—
(197)	5	—	—	—	—
(198)	6	—	—	—	—
(199)	7	—	—	—	—
(200)	8	—	—	—	—
(201)	9	—	—	—	—
(202)	10	118	—	PL1/10 RU17(2)	—
(203)	11	119	—	11 RU17(2)	—
(204)	12	120	—	12 RU17(2)	—
(205)	PL907/1	121	—	PL4/1 RU17(2)	—
(206)	2	122	—	2 RU17(2)	—
(207)	3	123	—	3 RU17(2)	—
(208)	4	—	—	—	—
(209)	5	—	—	—	—
(210)	6	—	—	—	—
(211)	7	127	—	PL4/7 RU17(2)	—
(212)	8	128	—	8 RU17(2)	—
(213)	9	—	—	—	—
(214)	10	—	—	—	—
(215)	11	—	—	—	—
(216)	12	—	—	—	—
(217)	PL908/1	241	—	PL4/1 Rect 17(1)	—
(218)	2	242	—	2 Rect 17(1)	—
(219)	PL908/3	243	—	3 Rect 17(1)	—
(220)	4	—	—	—	—
(221)	5	—	—	—	—
(222)	6	—	—	—	—
(223)	7	247	—	PL4/7 RU17(1)	—
(224)	8	248	—	8 RU17(1)	—
(225)	9	—	—	—	—
(226)	10	—	—	—	—
(227)	11	—	—	—	—
(228)	12	—	—	—	—
Plugs 909 and 910 are not used.					
Connections for Rectifier Unit 17(1)					
(229)	PL1/1	—	—	—	—
(230)	2	—	—	—	—
(231)	3	—	—	—	—
(232)	4	—	—	—	—
(233)	5	—	—	—	—
(234)	6	—	—	—	—
(235)	7	—	—	—	—
(236)	8	—	—	—	—
(237)	9	—	—	—	—
(238)	10	190	—	PL905/10 SU410	—
(239)	11	191	—	11 SU410	—
(240)	12	192	—	12 SU410	—
Plugs 2 and 3 not used.					
(241)	PL4/1	217	—	PL908/1 SU410	—
(242)	2	218		2 SU410	—
(243)	3	219	—	3 SU410	—
(244)	4	—	—	—	—
(245)	5	—	—	—	—
(246)	6	—	—	—	—
(247)	7	223	—	PL908/7 SU410	—
(248)	8	224	—	8 SU410	—
(249)	9	—	—	—	—
(250)	10	—	—	Earth	—
(251)	11	—	53/3*M*	—	Mains input
(252)	12	—	53/4*M*	—	Mains input
Connections for Waveform Generator 104					
(253)	PL1/1	—	—	Earth	—
(254)	2	—	—	—	—
(255)	3	—	—	—	—
(256)	4	—	—	—	—
(257)	5	—	—	—	—
(258)	6	—	—	—	—
(259)	7	—	—	—	—
(260)	8	—	—	—	—
(261)	9	—	—	—	—
(262)	10	—	—	—	—
(263)	11	—	59/5*M*	—	Mains input
(264)	12	—	59/6*M*	—	Mains input

Chapter 22

RACK ASSEMBLIES OF TYPE 4700 (I.G.) SERIES

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Introduction

1. The rack assemblies of the Type 4700 (I.G.) series of which make-up particulars are given in this Chapter are all new racks brought into existence by the needs of the later Stages of the re-engineering and re-planning of the ground radar defence system. With the exception of the rack Type 4720 they are to be found on the Stage 3 plan.

2. The same system of presentation has been used as applied to the racks described in previous Chapters of this Book.

RACK ASSEMBLY TYPE 4719

(Ref. No. 10D/19710)

Panel (blanking) 4639 (Stores reference 10D/19663)	Panel (blanking) 4639 (Stores reference 10D/19663)
Panel (blanking) 4639	Monitoring Unit 75 10T/6136
Test Set 402 10S/16157	Power Unit 741 10K/16091
Panel (blanking) 4639	Panel (blanking) 4639
Panel (blanking) 4639	Panel (blanking) 4639
Panel (blanking) 4639	Rectifier Unit 15 10D/17761

64
67 68

Fig. 1. Rack Assembly Type 4719, schematic

RACK ASSEMBLY TYPE 4719

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections for Test Set 402					
(1)	PL3/1	—	—	Earth	—
(2)	2	—	—	—	—
(3)	3	—	—	—	—
(4)	4	—	—	—	—
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	—	64/1	—	180V 500 c/s
(8)	8	—	64/2	—	180V 500 c/s
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	68/1	—	Mains Input
(12)	12	—	68/2	—	Mains Input
Connections for Rectifier Unit 15					
(13)	PL1/1	—	—	Earth	—
(14)	2	—	67/2		50V positive
		—	67/4 } strapped	—	Output
		—	67/6		
(15)	3	—	67/1		50V negative
		—	67/3 } strapped	—	Output
		—	67/5		
(16)	4	—	67/8		50V positive
		—	67/10 } strapped	—	Output
		—	67/12		
(17)	5	—	67/7		50V negative
		—	67/9 } strapped	—	Output
		—	67/11		
(18)	PL1/6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	68/3	—	Mains Input
(24)	12	—	68/4	—	Mains Input
Plug 2 no connections					
Connections for Power Unit 741					
(25)	PL2/1	—	—	Earth	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	52	—	PL8/4 Mon. U.	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	—	—	—
(36)	12	—	—	—	—
(37)	PL3/1	—	—	Earth	—
(38)	2	62	—	PL9/2 Mon. U	—
(39)	3	—	—	—	—
(40)	4	64	—	PL9/4 Mon. U	—
(41)	5	—	—	—	—
(42)	6	66	—	PL9/6 Mon. U	—
(43)	7	67	—	PL9/7 Mon. U	—
(44)	8	68	—	PL9/8 Mon. U	—
(45)	9	69	—	PL9/9 Mon. U	—
(46)	10	70	—	PL9/10 Mon. U	—
(47)	11	—	68/5	—	Mains Input
(48)	12	—	68/6	—	Mains Input
Connections for Monitoring Unit 75					
(49)	PL8/1	—	—	Earth	—
(50)	2	—	—	—	—
(51)	3	—	—	—	—
(52)	4	28	—	PL2/4 P.U.	—
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—

Rack assembly Type 4719—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(58)		10	—	—	—	—
(59)		11	—	—	—	—
(60)		12	—	—	—	—
(61)		PL9/1	—	—	Earth	—
(62)		2	38	—	PL3/2 P.U.	—
(63)		3	—	—	—	—
(64)		4	40	—	PL3/4 P.U.	—
(65)		5	—	—	—	—
(66)		6	42	—	PL3/6 P.U.	—
(67)		7	43	—	PL3/7 P.U.	—
(68)		8	44	—	PL3/8 P.U.	—
(69)		9	45	—	PL3/9 P.U.	—
(70)		10	46	—	PL3/10 P.U.	—
(71)		11	—	—	—	—
(72)		12	—	—	—	—

E.H.T. Connections

PL4 Power Unit 741 to PL.5 Monitoring Unit 75
PL5 Power Unit 741 to PL.6 Monitoring Unit 75

RACK ASSEMBLY TYPE 4720

(Ref. No. 10D/19711)

Rectifier Unit 15 (3) 10D/17761	Panel (blanking) 4639 10D/19663
Amplifier (A.J. & Vid.) A.3681 10U/16028	Amplifying Unit (1) (servo) 297 10U/16054
Amplifier (I.F. & Vid.) A.3680 10U/16027	Control Unit 600 10L/16029 (1) (2)
Amplifier (N.B.W.) A.3679 10U/16026	Amplifying Unit (2) (servo) 297 10L/16029
Marker Unit (range) 27 10D/18308	Rectifier Unit 17 10D/17779
Rectifier Unit 15 (1) 10D/17761	Rectifier Unit 15 (2) 10D/17761

Fig. 2. Rack Assembly Type 4720, schematic

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug		Termination Internal	Termination External
Connections for Rectifier Unit 15 (1)							
(1)		PL1/1	—	—		Earth	—
(2)		2	26	33/2, 33/4, 33/6	strapped	Amp. (NBW) PL9/2	50V+
(3)		3	27	33/1, 33/3, 33/5	strapped	Amp. (NBW) PL9/3	50V—
(4)		4	14	33/8, 33/10, 33/12	strapped	RM.27 PL7/2	50V+
(5)		5	15	33/7, 33/9, 33/11	strapped	RM.27 PL7/3	50V—
(6)		6	—	—		—	—
(7)		7	—	—		—	—
(8)		8	—	—		—	—
(9)		9	—	—		—	—
(10)		10	—	—		—	—
(11)		11	—	32/1		—	Mains Input
(12)		12	—	32/2		—	Mains Input
Plug 2 is not used.							
Connections for Marker Unit (range) 27							
(13)		PL7/1	—	—		Earth	—
(14)		2	4	—		Rect. 15(1) PL1/4	—
(15)		3	5	—		Rect. 15(1) PL1/5	—
(16)		4	—	—		—	—
(17)		5	—	—		—	—
(18)		6	—	—		—	—
(19)		7	—	—		—	—
(20)		8	—	—		—	—
(21)		9	—	—		—	—
(22)		10	—	—		—	—
(23)		11	—	32/3		—	Mains Input
(24)		12	—	32/4		—	Mains Input
Connections for Amplifier (NBW) A.3679							
(25)		PL9/1	—	—		Earth	—
(26)		2	2	—		Rect. 15(1) PL1/2	—
			38	—		Amp. (I.F. & Vid.) PL10/2	—
(27)		3	3	—		Rect. 15(1) PL1/3	—
		—	39	—		Amp. (I.F. & Vid.) PL10/3	—
(28)		4	—	28/5		—	C.U.618 PLAH/5
(29)		5	—	—		—	—
(30)		6	—	—		—	—
(31)		7	—	—		—	—
(32)		8	—	—		—	—
(33)		9	—	—		—	—
(34)		10	—	—		—	—
(35)		11	—	32/5		—	Mains Input
(36)		12	—	32/6		—	Mains Input
Connections for Amplifier (I.F. and Vid.) A.3680)							
(37)		PL10/1	—	—		Earth	—
(38)		2	26	—		Amp. (N.B.W.) PL9/2	—
			50	—		Amp. (A.J. & Vid.) PL11/2	—
(39)		3	27	—		Amp. (N.B.W.) PL9/3	—
			51	—		Amp. (A.J. & Vid.) PL11/3	—
(40)		4	—	28/2		—	C.U.618 PLAH/2
(41)		5	—	—		—	—
(42)		6	—	—		—	—
(43)		7	—	—		—	—
(44)		8	—	—		—	—
(45)		9	—	—		—	—
(46)		10	—	—		—	—
(47)		11	—	32/7		—	Mains Input
(48)		12	—	32/8		—	Mains Input
Connections for Amplifier (A.J. & Vid.) A.3681							
(49)		PL11/1	—	—		Earth	—
(50)		2	38	—		Amp. (I.F. & Vid.) PL10/2	—

Rack assembly Type 4720—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(51)		3	39	—	Amp. (I.F. & Vid.) PL10/3	—
(52)		4	—	28/4	—	C.U.618 PLAH/4
(53)		5	—	28/3	—	C.U.618 PLAH/3
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	32/9	—	Mains Input
(60)		12	—	32/10	—	Mains Input
	Connections for Rectifier Unit 15 (2)					
(61)		PL1/1	—	—	Earth	—
(62)		2	—	68/2, 68/4, 68/6 strapped		50V+
(63)		3	—	68/1, 68/3, 68/5 strapped		50V—
(64)		4	—	68/8, 68/10, 68/12 strapped		50V+
(65)		5	—	68/7, 68/9, 68/11 strapped		50V—
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	65/1	—	Mains Input
(72)		12	—	65/2	—	Mains Input
	Plug 2 is not used.					
	Connections for Rectifier Unit 17					
	Plugs 1 and 2 are not used.					
(73)		PL3/1	—	—	—	—
(74)		2	150	—	S.A.(2) PL5/6	—
(75)		3	149	—	S.A.(2) PL5/5	—
(76)		4	190	—	C.U.(2) PL504/10	—
(77)		5	191	—	C.U.(2) PL504/11	—
(78)		6	227	—	C.U.(1) PL504/11	—
(79)		7	226	—	C.U.(1) PL504/10	—
(80)		8	281	—	S.A.(1) PL5/5	—
(81)		9	282	—	S.A.(1) PL5/6	—
(82)		10	—	—	—	—
(83)		11	—	57/10	—	C.U.620 PLAS/10
(84)		12	—	—	—	—
(85)		PL4/1	—	—	—	—
(86)		2	—	—	—	—
(87)		3	—	—	—	—
(88)		4	—	—	—	—
(89)		5	—	—	—	—
(90)		6	—	—	—	—
(91)		7	—	—	—	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	—	—	Earth	—
(95)		11	—	65/3	—	Mains Input
(96)		12	—	65/4	—	Mains Input
	Connections for Amplifying Unit (servo) 297 (2)					
(97)		PL1/1	—	64/11	—	Plinth Term 67
(98)		2	—	64/12	—	Plinth Term 68
(99)		3	—	65/5	—	Mains Input
(100)		4	—	—	Earth	—
(101)		5	—	—	—	—
(102)		6	—	65/6	—	Mains Input
(103)		7	—	—	—	—
(104)		8	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(105)		9	—	64/9	—	S.R. 46 Type 79
(106)		10	—	—	—	—
(107)		11	—	—	—	—
(108)		12	—	64/10	—	S.R. 38 Type 79
(109)		PL2/1	—	62/1	—	Type 79
(110)		2	—	62/2	—	Cabin Selsyn
(111)		3	—	62/3	—	Leads
(112)		4	—	61/5	—	S.R.23
(113)		5	—	61/4	—	S.R.22
(114)		6	—	61/7	—	S.R.25
(115)		7	—	61/6	—	S.R.24
(116)		8	—	61/9	—	S.R.27
(117)		9	—	61/8	—	S.R.26
(118)		10	139	61/10 } strapped 57/3 }	PL4/7 S.A. (2)	S.R.28 C.U.620 PLAS/3
(119)		11	185	61/3 strapped to 61/11 and 57/5	PL503/7 C.U. (2)	S.R.19 C.U.620 PLAS/5
(120)		12	—	61/12	—	S.R.30
(121)		PL3/1	—	—	—	—
(122)		2	—	—	—	—
(123)		3	—	60/1	—	Amplid X4
(124)		4	—	60/2	—	Amplid X3
(125)		5	—	60/3	—	Amplid X2
(126)		6	—	60/4	—	Amplid X1
(127)		7	—	60/5	—	Amplid X5
(128)		8	—	60/6	—	Amplid X6
(129)		9	—	60/7	—	Amplid A4
(130)		10	—	—	—	—
(131)		11	—	60/8	—	Amplid A2
(132)		12	—	—	—	—
(133)		PL4/1	—	56/3	—	C.U.620 PLAD/3
(134)		2	—	56/5	—	C.U.620 PLAD/5
(135)		3	178	—	PL502/12 C.U. (2)	—
(136)		4	—	61/1	—	S.R.36
(137)		5	174	—	PL502/8 C.U. (2)	—
(138)		6	175	—	PL502/9 C.U. (2)	—
(139)		7	118	—	PL2/10 S.A. (2)	—
(140)		8	—	61/2	—	S.R.34
(141)		9	172	—	PL502/6 C.U. (2)	—
(142)		10	—	56/12	—	C.U.620 PLAD/12
(143)		11	—	—	—	—
(144)		12	—	—	—	—
(145)		PL5/1	—	—	—	—
(146)		2	—	56/4	—	C.U.620 PLAD/4
(147)		3	—	56/7	—	C.U.620 PLAD/7
(148)		4	169	—	PL502/3 C.U. (2)	—
(149)		5	75	—	R.U.17 PL3/3	—
(150)		6	74	—	R.U.17 PL3/2	—
(151)		7	—	57/2	—	C.U.620 PLAS/2
(152)		8	170	—	PL502/4 C.U. (2)	—
(153)		9	171	—	PL502/6 C.U. (2)	—
(154)		10	176	—	PL502/10 C.U. (2)	—
(155)		11	177	—	PL502/11 C.U. (2)	—
(156)		12	158	56/6	PL501/2 C.U. (2)	C.U.620 PLAD/6
Connections for Control Unit 600 (2)						
(157)		PL501/1	—	—	—	—
(158)		2	156	—	PL5/12 S.A. (2)	—
(159)		3	—	57/4	—	C.U.620 PLAS/4
(160)		4	—	—	—	—
(161)		5	—	57/6	—	C.U.620 PLAS/6
(162)		6	—	—	—	—
(163)		7	—	57/8	—	C.U.620 PLAS/8
(164)		8	—	—	—	—
(165)		9	—	56/9	—	C.U.620 PLAD/9
(166)		10	—	56/11	—	C.U.620 PLAD/11
(167)		11	—	56/8	—	C.U.620 PLAD/8
(168)		12	—	57/1	—	C.U.620 PLAS/1
(169)		PL502/3	148	—	PL5/4 S.A. (2)	—
(170)		4	152	—	PL5/8 S.A. (2)	—
(171)		5	153	—	PL5/9 S.A. (2)	—
(172)		6	141	—	PL4/9 S.A. (2)	—
(173)		7	—	—	—	—
(174)		8	137	—	PL4/5 S.A. (2)	—
(175)		9	138	—	PL4/6 S.A. (2)	—
(176)		10	154	—	PL5/10 S.A. (2)	—
(177)		11	155	—	PL5/11 S.A. (2)	—
(178)		12	135	—	PL4/3 S.A. (2)	—
(179)		PL503/1	—	56/10	—	C.U.620 PLAD/10

Rack assembly Type 4720—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(180)		2	—	—	—	—
(181)		3	—	57/11	—	C.U.620 PLAS/11
(182)		4	—	65/7	—	Mains Input
(183)		5	—	57/12	—	C.U.610 PLAS/12
(184)		6	—	65/8	—	Mains Input
(185)		7	119	—	PL2/11 S.A. (2)	—
(186)		8	—	—	—	—
(187)		7	—	57/9	—	—
(188)		8	—	—	—	C.U.620 PLAS/9
(189)		9	—	—	—	—
(190)		10	76	—	R.U.17 PL3/4	—
(191)		11	77	—	R.U.17 PL3/5	—
(192)		12	—	—	Earth	—
	Connections for Control Unit 600 (1)					
(193)		PL501/1	—	—	—	—
(194)		2	288	—	PL5/12 S.A. (1)	—
(195)		3	—	—	PL501/5 & 7 C.U. (1)	Jumpered in SK.501
(196)		4	—	—	—	
(197)		5	—	—	PL501/3 & 7 C.U. (1)	
(198)		6	—	—	—	
(199)		7	—	—	PL501/5 & 3 C.U. (1)	
(200)		8	—	—	—	—
(201)		9	—	53/9	—	S.U.100 PL1/9
(202)		10	—	53/11	—	S.U.100 PL1/11
(203)		11	—	53/8	—	S.U.100 PL1/8
(204)		12	—	52/10	—	S.U.100 PL2/10
(205)		PL502/3	280	54/10	PL5/4 S.A. (1)	Joystick Slew
(206)		4	284	—	PL5/8 S.A. (1)	
(207)		5	285	—	PL5/9 S.A. (1)	
(208)		6	—	52/11	—	S.U.100 PL2/11
(209)		7	—	—	—	—
(210)		8	—	52/1	—	S.U.100 PL2/1
(211)		9	270	—	PL4/6 S.A. (1)	—
(212)		10	286	—	PL5/10 S.A. (1)	—
(213)		11	287	—	PL5/11 S.A. (1)	—
(214)		12	267	—	PL4/3 S.A. (1)	—
(215)		PL503/1	—	53/10	—	S.U.100 PL1/10
(216)		2	—	—	—	—
(217)		3	—	53/2	—	S.U.100 PL1/2
(218)		4	—	—	—	—
(219)		5	—	53/6	—	S.U.100 PL1/6
(220)		6	—	—	—	—
(221)		7	251	52/4	PL2/11 S.A. (1)	Selsyn D Joystick
(222)		8	—	—	—	—
(223)		PL504/7	—	—	—	—
(224)		8	—	—	—	—
(225)		9	—	—	—	—
(226)		10	79	—	R.U.17 PL3/7	—
(227)		11	78	—	R.U.17 PL3/6	—
(228)		12	—	—	Earth	—
	Connections for Amplifying Unit (servo) 297 (1)					
(229)		PL1/1	—	49/11	—	Term 67 Type 13
(230)		2	—	49/12	—	Term 68 Type 13
(231)		3	—	65/9	—	Mains Input
(232)		4	—	—	Earth	—
(233)		5	—	—	—	—
(234)		6	—	65/10(M)	—	Mains Input
(235)		7	—	52/7	—	SEL.100 PL2/7 Selsyn A. Joystick
(236)		8	—	—	—	—
(237)		9	—	49/9	—	SR.46 Type 13 SEL.100 PL2/8
(238)		10	—	52/8	—	Selsyn B. Joystick SEL.100 PL2/6
(239)		11	—	52/6	—	Selsyn C. Joystick
(240)		12	—	49/10	—	S.R.38 Type 13
(241)		PL2/1	—	—	—	—
(242)		2	—	—	—	—
(243)		3	—	—	—	—
(244)		4	—	48/5	—	S.R.23 Type 13
(245)		5	—	48/4	—	S.R.22 Type 13
(246)		6	—	48/7	—	S.R.25 Type 13
(247)		7	—	48/6	—	S.R.24 Type 13

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(248)		8	—	48/9	—	S.R.27 Type 13
(249)		9	—	48/8	—	S.R.26 Type 13
(250)		10	271	48/10	PL4/7 S.A. (1)	S.R.28 Type 13
(251)		11	221	48/3	PL503/7 C.U. (1)	S.R.29 Type 13
			—		—	SEL.100 PL2/4
			—	48/11	—	Selsyn D
			—	52/4	—	Joystick
(252)		12	—	48/12	—	S.R.30 Type 13
(253)		PL3/1	—	—	—	—
(254)		2	—	—	—	—
(255)		3	—	49/1	—	Amplid X4 Type 13
(256)		4	—	49/2	—	Amplid X3 Type 13
(257)		5	—	49/3	—	Amplid X2 Type 13
(258)		6	—	49/4	—	Amplid X1 Type 13
(259)		7	—	49/5	—	Amplid X5 Type 13
(260)		8	—	49/6	—	Amplid X6 Type 13
(261)		9	—	49/7	—	Amplid A4 Type 13
(262)		10	—	—	—	—
(263)		11	—	49/8	—	Amplid A2 Type 13
(264)		12	—	—	—	—
(265)		PL4/1	—	53/3	—	SEL.100 1/3
(266)		2	—	53/5	—	SEL.100 1/5
(267)		3	214	—	PL502/12 C.U. (1)	—
(268)		4	—	48/1	—	S.R.36 Type 13
(269)		5	—	52/9	—	SEL.100 2/9
(270)		6	211	—	PL502/9 C.U. (1)	—
(271)		7	250	48/10	PL2/10 S.A. (1)	S.R.28 Type 13
(272)		8	—	52/5	—	SEL.100 2/5
			—	48/2	—	S.R.34 Type 13
(273)		9	—	52/2	—	SEL.100 2/2
(274)		10	—	52/3	—	SEL.100 2/3
(275)		11	—	—	—	—
(276)		12	—	—	—	—
(277)		PL5/1	—	—	—	—
(278)		2	—	53/4	—	SEL.100 1/4
(279)		3	—	53/7	—	SEL.100 1/7
(280)		4	205	—	PL502/3 C.U. (1)	—
(281)		5	80	—	R.U.17 PL3/8	—
(282)		6	81	—	R.U.17 PL3/9	—
(283)		7	—	53/1	—	SEL.100 1/1
(284)		8	206	—	PL502/4 C.U. (1)	—
(285)		9	207	—	PL502/5 C.U. (1)	—
(286)		10	212	—	PL502/10 C.U. (1)	—
(287)		11	213	—	PL502/11 C.U. (1)	—
(288)		12	194	—	PL501/2 C.U. (1)	—

Coaxial Connections

(289) SK2 Amplifier N.B.W.—SK4 Amplifier (I.F. and Video)
(290) SK5 Amplifier (I.F. and Video)—SK1 Amplifier (A.J. and Video)
(291) SK2 (Amplifier (A.J. and Video)—SK6 Amplifier (I.F. and Video)

Connections for Rectifier Unit 15 (3)

(292)	PL1/1	—	—	Earth		—
(293)	2	—	29/2			
		—	29/4	strapped	50V+	
		—	29/6			
(294)	3	—	29/1			
		—	29/3	strapped	50V—	
		—	29/5			
(295)	4	—	29/8			
		—	29/10	strapped	50V+	
		—	29/12			
(296)	5	—	29/7			
		—	29/9	strapped	50V—	
		—	29/11			
(297)	6	—	—	—		—
(298)	7	—	—	—		—
(299)	8	—	—	—		—
(300)	9	—	—	—		—
(301)	10	—	—	—		—
(302)	11	—	32/11	—	Mains Input	
(303)	12	—	32/12	—	Mains Input	
Plug 2 is not used.						
(304)	—	—	57/7	Earth	C.U.620 PLAS/7	

RACK ASSEMBLY TYPE 4721

(Ref. No. 10D/19712)

Panel (blanking) 4639 (Stores reference 10D/19663)	Panel (blanking) 4639
Panel (blanking) 4639 (Stores reference 10D/19663)	Panel (blanking) 4639
Amplifying Unit (pulse) 4279 10U/16838	Panel (blanking) 4639
Panel (blanking) 4639	Panel (blanking) 4639
Amplifier A.3720 10U/16789	Panel (blanking) 4639
Transformer Unit 175 10K/17102	Panel (blanking) 4639

Fig. 3. Rack Assembly Type 4721, schematic

RACK ASSEMBLY TYPE 4721

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Transformer Unit 175					
(1)	PL801/7	—	30/1	—	Rotor Output to Head Patching Panel
(2)	8	—	30/2	—	
(3)	9	—	31/1	—	Stator Inputs to Head Patching Panel
(4)	10	—	31/2	—	
(5)	11	—	31/3	—	
(6)	12	—	—	—	—
(7)	PL802/13	—	31/6	—	Stator Inputs from G.P.O. Board
(8)	14	—	31/9	—	
(9)	15	—	31/12	—	
(10)	16	—	—	—	—
(11)	PL803/13	—	30/6	—	Rotor Input from G.P.O. Board
(12)	14	—	30/10	—	
Connections for Amplifier A.3720					
(13)	PL1/1	—	—	Earth	—
(14)	2	—	—	—	—
(15)	3	—	—	—	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	34/1	—	Mains Input
(24)	12	—	34/2	—	Mains Input
Connections for Amplifying Unit (pulse) 4279					
(25)	PL1/1	—	—	Earth	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	27/1	—	Twisted Pair to G.P.O. Sync. Pair
(30)	6	—	27/2	—	
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	34/3		Mains Input
(36)	12	—	34/4	—	Mains Input

RACK ASSEMBLY TYPE 4722

(Ref. No. 10D/19713)

Amplifying Unit (3Kc/s) 4727 10U/16920	Panel (blanking) 4639 (Stores Reference 10D/19663)
Switch Unit (monitor) 4729 10F/18120	Amplifier A.3719 (b) 10U/16788
Amplifying Unit (servo) 297 (b) 10U/16054	Amplifying Unit (45 Mc/s) 4728 (a) 10U/16921 (b)
Control Unit (b) 600 10L/16029	Amplifier A.3719 (a) 10U/16788
Transformer Unit (selsyn) 175 (a) 10K/17102	Transformer Unit (selsyn) 175 (b) 10K/17102
Rectifier Unit 17 10D/17779	Panel (blanking) 4639

Fig. 4. Rack assembly Type 4722, schematic

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
Connections for Rectifier Unit 17						
(1)	PL3/1	—		—	—	—
(2)	2	—		—	—	—
(3)	3	—		—	—	—
(4)	4	—		—	—	—
(5)	5	71		—	PL504/11 CU.600	—
(6)	6	126		—	PL5/6 S.A.	—
(7)	7	70		—	PL504/10 CU.600	—
(8)	8	125		—	PL5/5 S.A.	—
(9)	9	—		—	—	—
(10)	10	—		—	—	—
(11)	11	—		—	—	—
(12)	12	—		—	—	—
(13)	PL4/1	—		—	—	—
(14)	2	—		—	—	—
(15)	3	—		—	—	—
(16)	4	—		—	—	—
(17)	5	—		—	—	—
(18)	6	—		—	—	—
(19)	7	—		—	—	—
(20)	8	—		—	—	—
(21)	9	—		—	—	—
(22)	10	—		—	Earth	—
(23)	11	—		26/5	—	Mains Input
(24)	12	—		26/6	—	Mains Input
Connections for Transformer Unit (selsyn) 175 (a)						
(25)	PL801/7	—		8/1	—	Rotor Input } Type 54
(26)	8	—		8/2	—	Rotor Input } Type 54
(27)	9	—		10/1	—	Stator Input } Type 54
(28)	10	—		10/2	—	Stator Input } Type 54
(29)	11	—		10/3	—	Stator Input } Type 54
(30)	12	—		—	—	—
(31)	PL802/13*	—		10/6	—	Stator Output
(32)	14*	—		10/9	—	Stator Output
(33)	15*	—		10/12	—	Stator Output
(34)	16	—		—	—	—
(35)	PL803/13*	—		8/6	—	Rotor Output
(36)	14*	—		8/10	—	Rotor Output
Connections for Control Unit 600 (b)						
(37)	PL501/1	—		33/1	—	PLAJ/1 CU.619
(38)	2	132		33/6	PL5/12 S.A.	PLAJ/6 CU.619
(39)	3	—		31/4	—	PLAI/4 CU.619
(40)	4	—		—	—	—
(41)	5	—		31/6	—	PLAI/6 CU.619
(42)	6	—		—	—	—
(43)	7	—		31/8	—	PLAI/8 CU.619
(44)	8	—		—	—	—
(45)	9	—		33/9	—	PLAJ/9 CU.619
(46)	10	—		33/11	—	PLAJ/11 CU.619
(47)	11	—		33/8	—	PLAJ/8 CU.619
(48)	12	—		31/1	—	PLAI/1 CU.619
(49)	PL502/3	124		—	PL5/4 S.A.	—
(50)	4	128		—	PL5/8 S.A.	—
(51)	5	129		—	PL5/9 S.A.	—
(52)	6	117		—	PL4/9 S.A.	—
(53)	7	—		—	—	—
(54)	8	113		—	PL4/9 S.A.	—
(55)	9	—		114	PL4/6 S.A.	—
(56)	10	130		—	PL5/10 S.A.	—
(57)	11	131		—	PL5/11 S.A.	—
(58)	12	111		—	PL4/3 S.A.	—
(59)	PL503/1	—		33/10	—	PLAJ/10 CU.619
(60)	2	—		—	—	—
(61)	3	—		31/3	—	PLAI/3 CU.619
(62)	4	—		25/3	—	Mains Input
(63)	5	—		31/5	—	PLAI/5 CU.619
(64)	6	—		25/4	—	Mains Input
(65)	7	95		14/3, 14/11, 15/4 } Strapped	PL2/11 S.A.	SR.19 & 29 Type 13 Control Selsyn D
(66)	8	—		—	—	—
(67)	PL504/7	—		31/9	—	PLAI/9 CU.619
(68)	8	—		—	—	—
(69)	9	—		—	—	—
(70)	10	7		—	PL3/7 RU.17	—
(71)	11	5		—	PL3/5 RU.17	—
(72)	12	—		—	Earth	—

Rack assembly Type 4722—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Connections for Amplifying Unit (servo) 297					
(73)	PL1/1	—	11/11	—	Plinth Term 67
(74)	2	—	11/12	—	Plinth Term 68
(75)	3	—	25/1	—	Mains Input
(76)	4	—	—	Earth	—
(77)	5	—	—	—	—
(78)	6	—	25/2	—	Mains Input
(79)	7	—	15/1	—	Control Selsyn A
(80)	8	—	—	—	—
(81)	9	—	11/9	—	SR.46 Type 13
(82)	10	—	15/2	—	Control Selsyn B
(83)	11	—	15/3	—	Control Selsyn C
(84)	12	—	11/10	—	SR.38 Type 13
(85)	PL2/1	—	—	—	—
(86)	2	—	—	—	—
(87)	3	—	—	—	—
(88)	4	—	14/5	—	SR.23 Type 13
(89)	5	—	14/4	—	SR.22 Type 13
(90)	6	—	14/7	—	SR.25 Type 13
(91)	7	—	14/6	—	SR.24 Type 13
(92)	8	—	14/9	—	SR.27 Type 13
(93)	9	—	14/8	—	SR.26 Type 13
(94)	10	115	14/10	PL4/7 S.A.	SR.28 Type 13
(95)	11	65	14/3 }	503/7 C.U.	SR.19 Type 13
			14/11 } strapped	—	SR.29 Type 13
			15/4 }	—	Control Selsyn D
(96)	12	—	14/12	—	SR.30 Type 13
(97)	PL3/1	—	—	—	—
(98)	2	—	—	—	—
(99)	3*	—	11/1	—	Amplid X4
(100)	4*	—	11/2	—	Amplid X3
(101)	5*	—	11/3	—	Amplid X2
(102)	6*	—	11/4	—	Amplid X1
(103)	7	—	11/5	—	Amplid X5
(104)	8	—	11/6	—	Amplid X6
(105)	9	—	11/7	—	Amplid A4 Type 13
(106)	10	—	—	—	—
(107)	11	—	11/8	—	Amplid A2 Type 13
(108)	12	—	—	—	—
Connections for Amplifying Unit (servo) 297					
(109)	PL4/1	—	33/3	—	PLAJ/3 CU.619
(110)	2	—	33/5	—	PLAJ/5 CU.619
(111)	3	58	—	502/12 C.U.	—
(112)	4	—	14/1	—	SR.36 Type 13
(113)	5	54	—	502/8 C.U.	—
(114)	6	55	—	502/9 C.U.	—
(115)	7	94	14/10	PL2/10 S.A.	SR.28 Type 13
(116)	8	—	15/5 } Strapped	—	Control Selsyn E.
			14/2 }	—	SR.34 Type 13
(117)	9	52	—	502/6 C.U.	—
(118)	10	—	33/12	—	PLAJ/12 CU.61
(119)	11	—	—	—	—
(120)	12	—	—	—	—
(121)	PL5/1	—	—	—	—
(122)	2	—	33/4	—	PLAJ/4 CU.619
(123)	3	—	33/7	—	PLAJ/7 CU.619
(124)	4	49	—	502/3 C.U.	—
(125)	5	8	—	PL3/8 RU.17	—
(126)	6	6	—	PL3/6 RU.17	—
(127)	7	—	31/2	—	PLAI/2 CU.619
(128)	8	50	—	502/4 C.U.	—
(129)	9	51	—	502/5 C.U.	—
(130)	10	56	—	502/10 C.U.	—
(131)	11	57	—	502/11 C.U.	—
(132)	12	38	33/6	PL501/2 C.U.	PLAJ/6 CU.619
Connections for Amplifying Unit (3Kc/s) 4727					
(133)	PL1/1	—	—	Earth	—
(134)	2	—	—	—	—
(135)	3	—	—	—	—
(136)	4	—	—	—	—
(137)	5	—	9/5 }	—	3Kc/s balanced
(138)	6	—	9/6 }	—	—
(139)	7	—	—	—	—

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination	
					Internal	External
(140)		8	—	—	—	—
(141)		9	—	—	—	—
(142)		10	—	—	—	—
(143)		11	—	25/5	—	Mains Input
(144)		12	—	25/6	—	Mains Input
	Connections for Transformer Unit 175 (b)					
(145)		PL801/7	—	63/1	—	Rotor Input }
(146)		8	—	63/2	—	Rotor Input }
(147)		9	—	62/1	—	Stator Input } Type
(148)		10	—	62/2	—	Stator Input } 13
(149)		11	—	62/3	—	Stator Input }
(150)		12	—	—	—	—
(151)		PL802/13*	—	62/6	—	Stator Input
(152)		14*	—	62/9	—	Stator Input
(153)		15*	—	62/12	—	Stator Input
(154)		16	—	—	—	—
(155)		PL803/13*	—	63/6	—	Rotor Output
(156)		14*	—	63/10	—	Rotor Output
	Connections for Amplifier A.3719 (a)					
(157)		PL1/1	—	—	Earth	—
(158)		2	—	—	—	—
(159)		3	—	—	—	—
(160)		4	—	—	—	—
(161)		5	—	—	—	—
(162)		6	—	—	—	—
(163)		PL1/7	—	—	—	—
(164)		8	—	—	—	—
(165)		9	—	—	—	—
(166)		10	—	—	—	—
(167)		11	—	59/1	—	Mains Input
(168)		12	—	59/2	—	Mains Input
	Connections for Amplifying Unit (45 Mc/s)					
(169)		PL1/1	—	—	Earth	—
(170)		2	—	—	—	—
(171)		3	—	—	—	—
(172)		4	—	—	—	—
(173)		5	—	—	—	—
(174)		6	—	—	—	—
(175)		7	—	—	—	—
(176)		8	—	—	—	—
(177)		9	—	—	—	—
(178)		10	—	—	—	—
(179)		11	—	59/3	—	Mains Input
(180)		12	—	59/4	—	Mains Input
	Connections for Amplifier A.3719 (b)					
(181)		PL1/1	—	—	Earth	—
(182)		2	—	—	—	—
(183)		3	—	—	—	—
(184)		4	—	—	—	—
(185)		5	—	—	—	—
(186)		6	—	—	—	—
(187)		7	—	—	—	—
(188)		8	—	—	—	—
(189)		9	—	—	—	—
(190)		10	—	—	—	—
(191)		11	—	59/5	—	Mains Input
(192)		12	—	59/6	—	Mains Input

Coaxial Connections		Cross Ref.
205	SK.1 A.3719 (a) to SK2 Attenuator 113 (a)	216
206	SK.3 A.3719 (a) to SK1 Switch Unit 4729	211
207	SK.1 A.3719 (b) to SK2 Attenuator 113 (b)	218
208	SK.3 A.3719 (b) to SK2 Switch Unit 4729	212
211	SK.1 S.U.4729 to SK3 Amp. A.3719 (a)	206
212	SK.2 S.U.4729 to SK3 Amp. A.3719 (b)	208
215	SK.1 Att. 113(a) to SK3 Amp. 4728	219
216	SK.2 Att. 113(a) to SK1 Amp. A.3719 (a)	205
217	SK.1 Att. 113(b) to SK4 Amp. 4728	220
218	SK.2 Att. 113(b) to SK1 Amp. A.3719 (b)	207
219	SK.3 Amp. 4728 to SK1 Attenuator 113 (a)	215
220	SK.4 Amp. 4728 to SK1 Attenuator 113 (b)	217

Rack assembly Type 4722—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Switch Unit (monitor) 4729					
(221)		PL1/1	To Earth on Racks		
(222)		2			
(223)		3			
(224)		4			
(225)		5			
(226)		6			
(227)		7			
(228)		8			
(229)		9			
(230)		10			
(231)		11	Mains Input from	PL59/7	
(232)		12		PL59/8	

RACK ASSEMBLY TYPE 4723

(Ref. No. 10D/1914)

Panel (blanking) 4639 (Stores reference 10D/19663)	Panel (blanking) 4639
Panel (blanking) 4639	Panel (blanking) 4639
Panel (blanking) 4639	Panel (blanking) 4639
Trigger Unit 4413A 10D/20879	Panel (blanking) 4639
Power Unit 4414A 10K/19986	Amplifying Unit (video) 4416A 10U/17047
Rectifier Unit 15 10D/17761	Power Unit 4415A 10K/19917

Fig. 5. Rack Assembly Type 4723, schematic

RACK ASSEMBLY TYPE 4723

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections for Rectifier Unit 15					
(1)	PL1/1	—	—	Earth	—
(2)	2	—	33/2, 33/4, 33/6 Strapped		50V Output Positive
(3)	3	—	33/1, 33/3, 33/5 Strapped		50V Output Negative
(4)	4	—	33/8, 33/10, 33/12 Strapped		50V Output Positive
(5)	5	—	33/7, 33/9, 33/11 Strapped		50V Output Negative
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	25/1	—	Mains Input
(12)	12	—	25/2	—	Mains Input
Plug 2 not used.					
Connections for Power Unit 4414A					
(13)	PL1/1	—	—	Earth	—
(14)	2	—	—	—	—
(15)	3	27	—	Trigger U.4413A SK5/3	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	30	—	Trigger U.4413A SK5/6	—
(19)	7	31	—	Trigger U.4415A SK5/7	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	34	—	Trigger U.4413A SK5/10	—
(23)	11	35	—	Trigger U.4413A SK5/11	—
(24)	12	36	—	Trigger U.4413A SK5/12	—
Connections for Trigger 4413A					
(25)	SK5/1	—	—	Earth	—
(26)	2	—	—	—	—
(27)	3	15	—	P.U.4414A PL1/3	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	18	—	P.U.4414A PL1/6	—
(31)	7	19	—	P.U.4414A PL1/7	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	22	—	P.U.4414A PL1/10	—
(35)	11	23	—	P.U.4414A PL1/11	—
(36)	12	24	—	P.U.4414A PL1/12	—
(37)	PL1/1	—	—	Earth	—
(38)	2	—	21/2	—	M.T.U. PL1/2
(39)	3	—	21/1	—	M.T.U. PL1/1
(40)	4	—	—	—	—
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	25/3	—	Mains Input
(48)	12	—	25/4	—	Mains Input
Connections for Power Unit 4415A					
(49)	PL1/1	—	—	Earth	—
(50)	2	—	—	—	—
(51)	3	63	—	Amp. 4416A SK11/3	—
(52)	4	64	—	Amp. 4416A SK11/4	—
(53)	5	—	—	—	—
(54)	6	66	—	Amp. 4416A SK11/6	—
(55)	7	67	—	Amp. 4416A SK11/7	—
(56)	8	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(57)	9	—	—	—	—
(58)	10	70	—	Amp. 4416A SK11/10	—
(59)	11	71	—	Amp. 4416A SK11/11	—
(60)	12	72	—	Amp. 4416A SK11/12	—
Connections for Amplifying Unit (video) 4416A					
(61)	SK11/1	—	—	Earth	—
(62)	2	—	—	—	—
(63)	3	51	—	P.U. 4415A PL1/3	—
(64)	4	52	—	P.U. 4415A PL1/4	—
(65)	5	—	—	—	—
(66)	6	54	—	P.U.4415A PL1/6	—
(67)	7	55	—	P.U. 4415A PL1/7	—
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	58	—	P.U. 4415A PL1/10	—
(71)	11	59	—	P.U. 4415A PL1/11	—
(72)	12	60	—	P.U. 4415A PL1/12	—
(73)	PL1/1	—	—	Earth	—
(74)	2	—	—	—	—
(75)	3	—	—	—	—
(76)	4	—	—	—	—
(77)	5	—	—	—	—
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	25/5	—	Mains Input
(84)	12	—	25/6	—	Mains Input

RACK ASSEMBLY TYPE 4724

(Ref. No. 10D/19715)

(c) Rectifier Unit Type 15 10D/17761 RU15			Panel (blanking) 4639 10D/19663
(a) Rectifier Unit Type 15			(b) Rectifier Unit Type 15
(a) Trigger Unit 4890 10D/20203		Box junction 6024 10D/20204	(b) Trigger Unit 4890
(a) Power Unit Type 4889 10K/18923			(b) Power Unit Type 4889
(a) Amplifying Unit (video) Type 4416 (10U/16841			(b) Amplifying Unit (video) Type 4416
(a) Power Unit Type 4415 10K/18033			(b) Power Unit Type 4415

Fig. 6. Rack assembly Type 4724, schematic

SCHEDULE 1

Rack assembly Type 4724—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Rectifier Unit 15(a), Ref. No. 10D/17761					
(1)	PL1/1	—	—	Earth	—
(2)	2	—	24/2, 24/4, 24/6, *strapped together*	—	+50V
(3)	3	—	24/1, 24/3, 24/5, *strapped together*	—	−50V
(4)	4	—	24/8, 24/10, 24/12, *strapped together*	—	+50V
(5)	5	—	24/7, 24/9, 24/11, *strapped together*	—	−50V
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	25/5	—	Mains input
(12)	12	—	25/6	—	Mains input
Connections 13–36 not used					
Connections for Power Unit 4889 (a), Ref. No. 10K/18923					
(37)	PL1/1	—	—	Earth	—
(38)	2	62	—	TU4890(*a*) SK5/2	—
(39)	3	63	—	TU4890(*a*) SK5/3	—
(40)	4	64	—	TU4890(*a*) SK5/4	—
(41)	5	65	—	TU4890(*a*) SK5/5	—
(42)	6	66	—	TU4890(*a*) SK5/6	—
(43)	7	67	—	TU4890(*a*) SK5/7	—
(44)	8	68	—	TU4890(*a*) SK5/8	—
(45)	9	69	—	TU4890(*a*) SK5/9	—
(46)	10	70	—	TU4890(*a*) SK5/10	—
(47)	11	71	—	TU4890(*a*) SK5/11	—
(48)	12	72	—	TU4890(*a*) SK5/12	—
Connections for Trigger Unit 4890, Ref. No. 10D/20203 (*a*)					
(49)	PL1/1	—	—	Earth	—
(50)	2	—	30/2	—	+50V Supply 1
(51)	3	—	30/3	—	−50V Supply 1
(52)	4	136	—	TU4890(*b*) PL1/5	—
(53)	5	137	—	TU4890(*b*) PL1/4	—
(54)	6	—	21/1	—	250c/s input
(55)	7	—	21/2	—	250c/s input
(56)	8	—	21/3	—	Spare
(57)	9	—	21/4	—	Spare
(58)	10	—	21/5	—	Spare
(59)	11	—	25/3	—	Mains input
(60)	12	—	25/4	—	Mains input
(61)	SK5/1	—	—	Earth	—
(62)	2	38	—	PU4889(*a*) PL1/2	—
(63)	3	39	—	PU4889(*a*) PL1/3	—
(64)	4	40	—	PU4889(*a*) PL1/4	—
(65)	5	41	—	PU4889(*a*) PL1/5	—
(66)	6	42	—	PU4889(*a*) PL1/6	
(67)	7	43	—	PU4889(*a*) PL1/7	—
(68)	8	44	—	PU4889(*a*) PL1/8	—
(69)	9	45	—	PU4889(*a*) PL1/9	—
(70)	10	46	—	PU4889(*a*) PL1/10	—
(71)	11	47	—	PU4889(*a*) PL1/11	—
(72)	12	48	—	PU4889(*a*) PL1/12	—
Connections for Power Unit 4415, Ref. No. 10K/18033 (*b*)					
(73)	PL1/1	—	—	Earth	—
(74)	2	—	—	—	—
(75)	3	87	—	SK11/3 Vid U4416(*b*)	—
(76)	4	88	—	SK11/4 Vid U4416(*b*)	—
(77)	5	—	—	—	—
(78)	6	90	—	SK11/6 Vid U4416(*b*)	—
(79)	7	91	—	SK11/7 Vid U4416(*b*)	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	94	—	SK11/10 Vid U4416(*b*)	—
(83)	11	95	—	SK11/11 Vid U4416(*b*)	—
(84)	12	96	—	SK11/12 Vid U4416(*b*)	—

SCHEDULE 1. Rack assembly Type 4724—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Amplifying Unit (Video) 4416, Ref. No. 10U/16841(*b*)					
(85)	SK11/1	—	—	Earth	—
(86)	2	—	—	—	—
(87)	3	75	—	PL1/3 PU4415(*b*)	—
(88)	4	76	—	PL1/4 PU4415(*b*)	—
(89)	5	—	—	—	—
(90)	6	78	—	PL1/6 PU4415(*b*)	—
(91)	7	79	—	PL1/7 PU4415(*b*)	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	82	—	PL1/10 PU4415(*b*)	—
(95)	11	83	—	PL1/11 PU4415(*b*)	—
(96)	12	84	—	PL1/12 PU4415(*b*)	—
(97)	PL1/1	—	—	Earth	—
(98)	2	—	—	—	—
(99)	3	—	—	—	—
(100)	4	—	—	—	—
(101)	5	—	—	—	—
(102)	PL1/6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	59/1	—	Mains input
(108)	12	—	59/2	—	Mains input
Connections for Power Unit 4889, Ref. No. 10K/18923 (*b*)					
(109)	PL1/1	—	—	Earth	—
(110)	2	122	—	SK5/2 TU4890(*b*)	—
(111)	3	123	—	SK5/3 TU4890(*b*)	—
(112)	4	124	—	SK5/4 TU4890(*b*)	—
(113)	5	125	—	SK5/5 TU4890(*b*)	—
(114)	6	126	—	SK5/6 TU4890(*b*)	—
(115)	7	127	—	SK5/7 TU4890(*b*)	—
(116)	8	128	—	SK5/8 TU4890(*b*)	—
(117)	9	129	—	SK5/9 TU4890(*b*)	—
(118)	10	130	—	SK5/10 TU4890(*b*)	—
(119)	11	131	—	SK5/11 TU4890(*b*)	—
(120)	12	132	—	SK5/12 TU4890(*b*)	—
Connections for Trigger Unit 4890, Ref. No. 10D/20203 (*b*)					
(121)	SK5/1	—	—	Earth	—
(122)	2	110	—	PL1/2 PU4889(*b*)	—
(123)	3	111	—	PL1/3 PU4889(*b*)	—
(124)	4	112	—	PL1/4 PU4889(*b*)	—
(125)	5	113	—	PL1/5 PU4889(*b*)	—
(126)	6	114	—	PL1/6 PU4889(*b*)	—
(127)	7	115	—	PL1/7 PU4889(*b*)	—
(128)	8	116	—	PL1/8 PU4889(*b*)	—
(129)	9	117	—	PL1/9 PU4889(*b*)	—
(130)	10	118	—	PL1/10 PU4889(*b*)	—
(131)	11	119	—	PL1/11 PU4889(*b*)	—
(132)	12	120	—	PL1/12 PU4889(*b*)	—
(133)	PL1/1	—	—	Earth	—
(134)	2	—	65/2	—	+50V Supply 2
(135)	3	—	65/3	—	−50V Supply 2
(136)	4	52	—	Trigger U4890(*a*) PL1/5	—
(137)	5	53	—	Trigger U4890(*a*) PL1/4	—
(138)	6	—	21/1	—	250c/s input
(139)	7	—	21/2	—	250c/s input
(140)	8	—	21/6	—	Spare
(141)	9	—	21/7	—	Spare
(142)	10	—	21/8	—	Spare
(143)	11	—	59/3	—	Mains input
(144)	12	—	59/4	—	Mains input

Co-axial Connections

Trigger U(*a*)	to	Junction box
SK1		SK01
SK2		SK02
SK3		SK03
SK6		SK06
SK7		SK07
Trigger U(*b*)	to	Junction box
SK1		SK11
SK2		SK12
SK3		SK13
SK6		SK16
SK7		SK17

SCHEDULE 1. Rack assembly Type 4724—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Junction Box Outputs to External Connectors					
		SK21	Prepulse out		
		SK22	Prepulse out		
		SK23	Trigger pulse to MTU		
		SK26	Pulse in from A4279		
Jones SK25/1					
2					
3					
4					
5	Balanced Sync. Out to G.P.O. Board				
6	Balanced Sync. Out to G.P.O. Board				
7					
8					
9					
10					
11					
12					
These two leads to be in twisted pair.					
Connections for Power Unit 4415, Ref. No. 10K/18033(*a*)					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	—	—	—
(147)	3	159	—	SK11/3 Vid Amp 4416(*a*)	—
(148)	4	160	—	SK11/4 Vid Amp 4416(*a*)	—
(149)	5	—	—	—	—
(150)	6	162	—	SK11/6 Vid Amp 4416(*a*)	—
(151)	7	163	—	SK11/7 Vid Amp 4416(*a*)	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	166	—	SK11/10 Vid Amp 4416(*a*)	—
(155)	11	167	—	SK11/11 Vid Amp 4416(*a*)	—
(156)	12	168	—	SK11/12 Vid Amp 4416(*a*)	—
Connections for Amplifying Unit (Video) 4416, Ref. No. 10U/164841(*a*)					
(157)	SK11/1	—	—	Earth	—
(158)	2	—	—	—	—
(159)	3	147	—	PL1/3 PU4415(*a*)	—
(160)	4	148	—	PL1/4 PU4415(*a*)	—
(161)	5	—	—	—	—
(162)	6	150	—	PL1/6 PU4415(*a*)	—
(163)	7	151	—	PL1/7 PU4415(*a*)	—
(164)	8	—	—	—	—
(165)	9	—	—	—	—
(166)	10	154	—	PL1/10 PU4415(*a*)	—
(167)	11	155	—	PL1/11 PU4415(*a*)	—
(168)	12	156	—	PL1/12 PU4415(*a*)	—
(169)	PL1/1	—	—	Earth	—
(170)	2	—	—	—	—
(171)	3	—	—	—	—
(172)	4	—	—	—	—
(173)	5	—	—	—	—
(174)	6	—	—	—	—
(175)	7	—	—	—	—
(176)	8	—	—	—	—
(177)	9	—	—	—	—
(178)	10	—	—	—	—
(179)	11	—	25/1	—	Mains input
(180)	12	—	25/2	—	Mains input
Connections to Rectifier Unit 15(*b*), Ref. No. 10D/17761					
(201)	PL1/1	—	—	Earth	—
(202)	2	—	61/2, 61/4, 61/6, *strapped together*	—	+50V
(203)	3		61/1, 61/3, 61/5, *strapped together*	—	−50V
(204)	4	—	61/8, 61/10, 61/12 *strapped together*	—	+50V
(205)	5	—	61/7, 61/9, 61/11, *strapped together*	—	−50V
(206)	6	—	—	—	—
(207)	7	—	—	—	—
(208)	8	—	—	—	—
(209)	9	—	—	—	—
(210)	10	—	—	—	—
(211)	11	—	59/5	—	Mains input
(212)	12	—	59/6	—	Mains input

SCHEDULE 1. Rack assembly Type 4724—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Rectifier Unit 15(*c*), Ref. No. 10D/17761					
(213)	PL1/1	—	—	Earth	—
(214)	2	—	28/2, 28/4, 28/6, *strapped together*	—	+50V
(215)	3	—	28/1, 28/3, 28/5, *strapped together*	—	−50V
(216)	4	—	28/8, 28/10, 28/12 *strapped together*	—	+50V
(217)	5	—	28/7, 28/9, 28/11	—	−50V
(218)	6	—	*strapped together*	—	—
(219)	7	—	—	—	—
(220)	8	—	—	—	—
(221)	9	—	—	—	—
(222)	10	—	—	—	—
(223)	11	—	25/7	—	Mains input
(224)	12	—	25/8	—	Mains input

RACK ASSEMBLY TYPE 4724A

(Ref. No. 10D/20986)

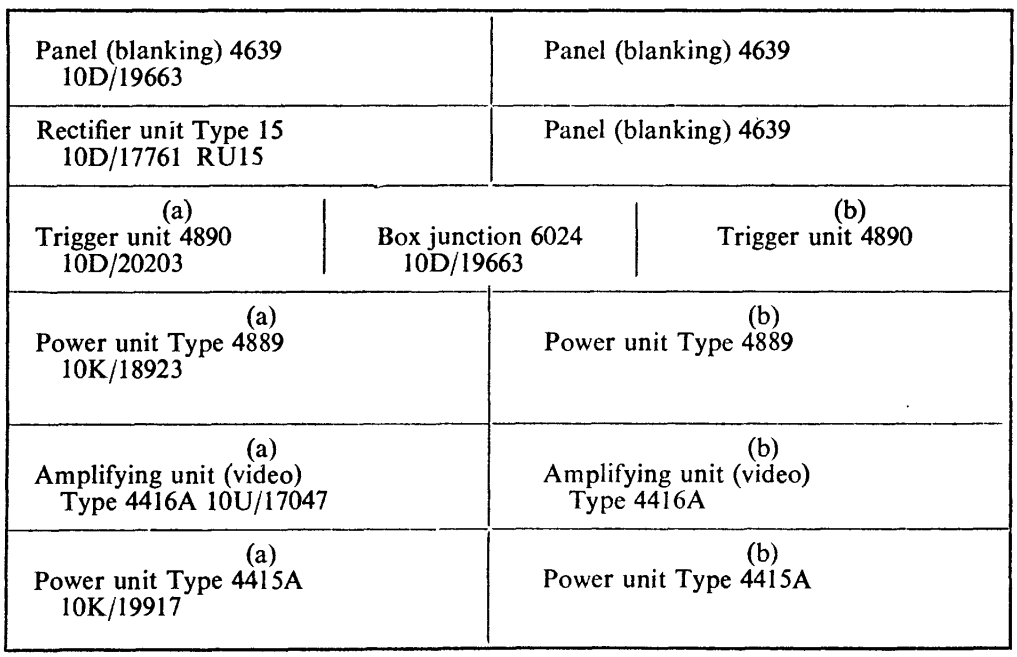


Fig. 7. Rack assembly Type 4724A, schematic

SCHEDULE 1

Rack assembly Type 4724A—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
Connections for Rectifier Unit 15, Ref. No. 10D/17761						
(1)		PL1/1	—	—	Earth	—
(2)		2	—	24/2, 24/4, 24/6, *strapped together*	—	+50V
(3)		3	—	24/1, 24/3, 24/5, *strapped together*	—	−50V
(4)		4	—	24/8, 24/10, 24/12, *strapped together*	—	+50V
(5)		5	—	24/7, 24/9, 24/11, *strapped together*	—	−50V
(6)		6	—	—	—	—
(7)		7	—	—	—	—
(8)		8	—	—	—	—
(9)		9	—	—	—	—
(10)		10	—	—	—	—
(11)		11	—	25/5	—	Mains input
(12)		12	—	25/6	—	Mains input
Connections 13–36 not used.						
Connections for Power Unit 4889(*a*), Ref. No. 10K/18923						
(37)		PL1/1	—	—	Earth	—
(38)		2	62	—	TU4890(*a*) SK5/2	—
(39)		3	63	—	TU4890(*a*) SK5/3	—
(40)		4	64	—	TU4890(*a*) SK5/4	—
(41)		5	65	—	TU4890(*a*) SK5/5	—
(42)		6	66	—	TU4890(*a*) SK5/6	—
(43)		7	67	—	TU4890(*a*) SK5/7	—
(44)		8	68	—	TU4890(*a*) SK5/8	—
(45)		9	69	—	TU4890(*a*) SK5/9	—
(46)		10	70	—	TU4890(*a*) SK5/10	—
(47)		11	71	—	TU4890(*a*) SK5/11	—
(48)		12	72	—	TU4890(*a*) SK5/12	—
Connections for Trigger Unit 4890, Ref. No. 10D/20203(*a*)						
(49)		PL1/1	—	—	Earth	—
(50)		2	—	30/2	—	+50V Supply 1
(51)		3	—	30/3	—	−50V Supply 1
(52)		4	137	—	TU4890(*b*) PL1/5	—
(53)		5	136	—	TU4890(*b*) PL1/4	—
(54)		6	—	21/1	—	250c/s input
(55)		7	—	21/2	—	250c/s input
(56)		8	—	21/3	—	Spare
(57)		9	—	21/4	—	Spare
(58)		10	—	21/5	—	Spare
(59)		11	—	25/3	—	Mains input
(60)		12	—	25/4	—	Mains input
(61)		SK5/1	—	—	Earth	—
(62)		2	38	—	PU4889(*a*) PL1/2	—
(63)		3	39	—	PU4889(*a*) PL1/3	—
(64)		4	40	—	PU4889(*a*) PL1/4	—
(65)		5	41	—	PU4889(*a*) PL1/5	—
(66)		6	42	—	PU4889(*a*) PL1/6	—
(67)		7	43	—	PU4889(*a*) PL1/7	—
(68)		8	44	—	PU4889(*a*) PL1/8	—
(69)		9	45	—	PU4889(*a*) PL1/9	—
(70)		10	46	—	PU4889(*a*) PL1/10	—
(71)		11	47	—	PU4889(*a*) PL1/11	—
(72)		12	48	—	PU4889(*a*) PL1/12	—
Connections for Power Unit 4415A, Ref. No. 10K/19917(*b*)						
(73)		PL1/1	—	—	Earth	—
(74)		2	—	—	—	—
(75)		3	87	—	SK11/3 Vid U4416A(*b*)	—
(76)		4	88	—	SK11/4 Vid U4416A(*b*)	—
(77)		5	—	—	—	—
(78)		6	90	—	SK11/6 Vid U4416A(*b*)	—
(79)		7	91	—	SK11/7 Vid U4416A(*b*)	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	94	—	SK11/10 Vid U4416A(*b*)	—
(83)		11	95	—	SK11/11 Vid U4416A(*b*)	—
(84)		12	96	—	SK11/12 Vid U4416A(*b*)	—

SCHEDULE 1. Rack assembly Type 4724A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Amplifying Unit (Video) 4416A, Ref. No. 10U/17047(*b*)					
(85)	SK11/1	—	—	Earth	—
(86)	2	—	—	—	—
(87)	3	75	—	PL1/3 PU4415A(*b*)	—
(88)	4	76	—	PL1/4 PU4415A(*b*)	—
(89)	5	—	—	—	—
(90)	6	78	—	PL1/6 PU4415A(*b*)	—
(91)	7	79	—	PL1/7 PU4415A(*b*)	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	82	—	PL1/10 PU4415A(*b*)	—
(95)	11	83	—	PL1/11 PU4415A(*b*)	—
(96)	12	84	—	PL1/12 PU4415A(*b*)	—
(97)	PL1/1	—	—	Earth	—
(98)	2	—	—	—	—
(99)	3	—	—	—	—
(100)	4	—	—	—	—
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	59/1	—	Mains input
(108)	12	—	59/2	—	Mains input
Connections for Power Unit 4889, Ref. No. 10K/18923(*b*)					
(109)	PL1/1	—	—	Earth	—
(110)	2	122	—	SK5/2 TU4890(*b*)	—
(111)	3	123	—	SK5/3 TU4890(*b*)	—
(112)	4	124	—	SK5/4 TU4890(*b*)	—
(113)	5	125	—	SK5/5 TU4890(*b*)	—
(114)	6	126	—	SK5/6 TU4890(*b*)	—
(115)	7	127	—	SK5/7 TU4890(*b*)	—
(116)	8	128	—	SK5/8 TU4890(*b*)	—
(117)	9	129	—	SK5/9 TU4890(*b*)	—
(118)	10	130	—	SK5/10 TU4890(*b*)	—
(119)	11	131	—	SK5/11 TU4890(*b*)	—
(120)	12	132	—	SK5/12 TU4890(*b*)	—
Connections for Trigger Unit 4890, Ref. No. 10D/20203(*b*)					
(121)	SK5/1	—	—	Earth	—
(122)	2	110	—	PL1/2 PU4889(*b*)	—
(123)	3	111	—	PL1/3 PU4889(*b*)	—
(124)	4	112	—	PL1/4 PU4889(*b*)	—
(125)	5	113	—	PL1/5 PU4889(*b*)	—
(126)	6	114	—	PL1/6 PU4889(*b*)	—
(127)	7	115	—	PL1/7 PU4889(*b*)	—
(128)	8	116	—	PL1/8 PU4889(*b*)	—
(129)	9	117	—	PL1/9 PU4889(*b*)	—
(130)	10	118	—	PL1/10 PU4889(*b*)	—
(131)	11	119	—	PL1/11 PU4889(*b*)	—
(132)	12	120	—	PL1/12 PU4889(*b*)	—
(133)	PL1/1	—	—	Earth	—
(134)	2	—	65/2	—	+50V Supply 2
(135)	3	—	65/3	—	−50V Supply 2
(136)	4	53	—	Trigger U4890(*a*) PL1/5	—
(137)	5	52	—	Trigger U4890(*a*) PL1/4	—
(138)	6	—	21/1	—	250c/s input
(139)	7	—	21/2	—	250c/s input
(140)	8	—	21/6	—	Spare
(141)	9	—	21/7	—	Spare
(142)	10	—	21/8	—	Spare
(143)	11	—	59/3	—	Mains input
(144)	12	—	59/4	—	Mains input

Co-axial Connections

Trigger U(*a*)	to	Junction box
SK1		SK01
SK2		SK02
SK3		SK03
SK6		SK06
SK7		SK07
Trigger U(*b*)	to	Junction box
SK1		SK11
SK2		SK12
SK3		SK13
SK6		SK16
SK7		SK17

SCHEDULE 1. Rack assembly Type 4724A—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Junction Box Outputs to External Connectors					
	SK21	Prepulse out			
	SK22	Prepulse out			
	SK23	Trigger pulse to MTU			
	SK26	Pulse in from A4279			
	Jones SK25/1				
	2				
	3				
	4				
	5	Balanced Sync. out to G.P.O. Board			
	6	Balanced Sync. out to G.P.O. Board			
	7				
	8				
	9				
	10				
	11				
	12				
These two leads to be in twisted pair.					
Connections for Power Unit 4415A, Ref. No. 10K/19917(*a*)					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	—	—	—
(147)	3	159	—	SK11/3 Vid Amp 4416A(*a*)	—
(148)	4	160	—	SK11/4 Vid Amp 4416A(*a*)	—
(149)	5	—	—	—	—
(150)	6	162	—	SK11/6 Vid Amp 4416A(*a*)	—
(151)	7	163	—	SK11/7 Vid Amp 4416A(*a*)	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	166	—	SK11/10 Vid Amp 4416A(*a*)	—
(155)	11	167	—	SK11/11 Vid Amp 4416A(*a*)	—
(156)	12	168	—	SK11/12 Vid Amp 4416A(*a*)	—
Connections for Amplifying Unit (Video) 4416A, Ref. No. 10U/17047(*a*)					
(157)	SK11/1	—	—	Earth	—
(158)	2	—	—	—	—
(159)	3	147	—	PL1/3 PU4415A(*a*)	—
(160)	4	148	—	PL1/4 PU4415A(*a*)	—
(161)	5	—	—	—	—
(162)	6	150	—	PL1/6 PU4415A(*a*)	—
(163)	7	151	—	PL1/7 PU4415A(*a*)	—
(164)	8	—	—	—	—
(165)	9	—	—	—	—
(166)	10	154	—	PL1/10 PU4415A(*a*)	—
(167)	11	155	—	PL1/11 PU4415A(*a*)	—
(168)	12	156	—	PL1/12 PU4415A(*a*)	—
(169)	PL1/1	—	—	Earth	—
(170)	2	—	—	—	—
(171)	3	—	—	—	—
(172)	4	—	—	—	—
(173)	5	—	—	—	—
(174)	6	—	—	—	—
(175)	7	—	—	—	—
(176)	8	—	—	—	—
(177)	9	—	—	—	—
(178)	10	—	—	—	—
(179)	11	—	25/1	—	Mains input
(180)	12	—	25/2	—	Mains input

RACK ASSEMBLY TYPE 4724B

(Ref. No. 10D/23335)

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10D/19663</td><td colspan="2">Panel (blanking) 4639</td></tr>
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Trigger unit 4890
10D/20203</td><td colspan="2">Box junction 6024
10D/20204</td><td>(b)
Trigger unit 4890</td></tr>
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Power unit Type 4889
10K/18923</td><td colspan="2">(b)
Panel unit Type 4889</td></tr>
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Amplifying unit (video)
Type 4416A 10U/17047</td><td colspan="2">(b)
Amplifying unit (video)
Type 4416A</td></tr>
<tr><td colspan="2">(a)
Power unit Type 4415A
10K/19917</td><td colspan="2">(b)
Power unit Type 4415A</td></tr>
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Fig. 8. Rack assembly Type 4724B, schematic

SCHEDULE 1

Rack assembly Type 4724B—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections 1–36 not used.					
Connections for Power Unit 4889(*a*), Ref. No. 10K/18923					
(37)	PL1/1	—	—	Earth	—
(38)	2	62	—	TU4890(*a*) SK5/2	—
(39)	3	63	—	TU4890(*a*) SK5/3	—
(40)	4	64	—	TU4890(*a*) SK5/4	—
(41)	5	65	—	TU4890(*a*) SK5/5	—
(42)	6	66	—	TU4890(*a*) SK5/6	—
(43)	7	67	—	TU4890(*a*) SK5/7	—
(44)	8	68	—	TU4890(*a*) SK5/8	—
(45)	9	69	—	TU4890(*a*) SK5/9	—
(46)	10	70	—	TU4890(*a*) SK5/10	—
(47)	11	71	—	TU4890(*a*) SK5/11	—
(48)	12	72	—	TU4890(*a*) SK5/12	—
(49)	PL1/1	—	—	Earth	—
(50)	2	—	30/2	—	+50V Supply 1
(51)	3	—	30/3	—	−50V Supply 1
(52)	4	137	—	TU4890(*b*) PL1/5	—
(53)	5	136	—	TU4890(*b*) PL1/4	—
(54)	6	—	21/1	—	250c/s Input
(55)	7	—	21/2	—	250c/s Input
(56)	8	—	21/3	—	Spare
(57)	9	—	21/4	—	Spare
(58)	10	—	21/5	—	Spare
(59)	11	—	25/3	—	Mains input
(60)	12	—	25/4	—	Mains input
(61)	SK5/1	—	—	Earth	—
(62)	2	38	—	PU4889(*a*) PL1/2	—
(63)	3	39	—	PU4889(*a*) PL1/3	—
(64)	4	40	—	PU4889(*a*) PL1/4	—
(65)	5	41	—	PU4889(*a*) PL1/5	—
(66)	6	42	—	PU4889(*a*) PL1/6	—
(67)	7	43	—	PU4889(*a*) PL1/7	—
(68)	8	44	—	PU4889(*a*) PL1/8	—
(69)	9	45	—	PU4889(*a*) PL1/9	—
(70)	10	46	—	PU4889(*a*) PL1/10	—
(71)	11	47	—	PU4889(*a*) PL1/11	—
(72)	12	48	—	PU4889(*a*) PL1/12	—
Connections for Power Unit 4415A, Ref. No. 10K/19917(*b*)					
(73)	PL1/1	—	—	Earth	—
(74)	2	—	—	—	—
(75)	3	87	—	SK11/3 Vid U4416A(*b*)	—
(76)	4	88	—	SK11/4 Vid U4416A(*b*)	—
(77)	5	—	—	—	—
(78)	6	90	—	SK11/6 Vid U4416A(*b*)	—
(79)	7	91	—	SK11/7 Vid U4416A(*b*)	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	94	—	SK11/10 Vid U4416A(*b*)	—
(83)	11	95	—	SK11/11 Vid U4416A(*b*)	—
(84)	12	96	—	SK11/12 Vid U4416A(*b*)	—
Connections for Amplifying Unit (Video) 4416A, Ref. No. 10U/17047(*b*)					
(73)	PL1/1	—	—	Earth	—
(74)	2	—	—	—	—
(75)	3	87	—	SK11/3 Vid U4416A(*b*)	—
(76)	4	88	—	SK11/4 Vid U4416A(*b*)	—
(77)	5	—	—	—	—
(78)	6	90	—	SK11/6 Vid U4416A(*b*)	—
(79)	7	91	—	SK11/7 Vid U4416A(*b*)	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	94	—	SK11/10 Vid U4416A(*b*)	—
(83)	11	95	—	SK11/11 Vid U4416A(*b*)	—
(84)	12	96	—	SK11/12 Vid U4416A(*b*)	—

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Connections for Amplifying Unit (Video) 4416A, Ref. No. 10U/17047(*b*)					
(85)	SK11/1	—	—	Earth	—
(86)	2	—	—	—	—
(87)	3	75	—	PL1/3 PU4415A(*b*)	—
(88)	4	76	—	PL1/4 PU4415A(*b*)	—
(89)	5	—	—	—	—
(90)	6	78	—	PL1/6 PU4415A(*b*)	—
(91)	7	79	—	PL1/7 PU4415A(*b*)	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	82	—	PL1/10 PU4415A(*b*)	—
(95)	11	83	—	PL1/11 PU4415A(*b*)	—
(96)	12	84	—	PL1/12 PU4415A(*b*)	—
(97)	PL1/1	—	—	Earth	—
(98)	2	—	—	—	—
(99)	3	—	—	—	—
(100)	4	—	—	—	—
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	59/1	—	Mains input
(108)	12	—	59/2	—	Mains input
Connections for Power Unit 4889, Ref. No. 10K/18923(*b*)					
(109)	PL1/1	—	—	Earth	—
(110)	2	122	—	SK5/2 TU4890(*b*)	—
(111)	3	123	—	SK5/3 TU4890(*b*)	—
(112)	4	124	—	SK5/4 TU4890(*b*)	—
(113)	5	125	—	SK5/5 TU4890(*b*)	—
(114)	6	126	—	SK5/6 TU4890(*b*)	—
(115)	7	127	—	SK5/7 TU4890(*b*)	—
(116)	8	128	—	SK5/8 TU4890(*b*)	—
(117)	9	129	—	SK5/9 TU4890(*b*)	—
(118)	10	130	—	SK5/10 TU4890(*b*)	—
(119)	11	131	—	SK5/11 TU4890(*b*)	—
(120)	12	132	—	SK5/12 TU4890(*b*)	—
Connections for Trigger Unit 4890, Ref. No. 10D/20203(*b*)					
(121)	SK5/1	—	—	Earth	—
(122)	2	110	—	PL1/2 PU4889(*b*)	—
(123)	3	111	—	PL1/3 PU4889(*b*)	—
(124)	4	112	—	PL1/4 PU4889(*b*)	—
(125)	5	113	—	PL1/5 PU4889(*b*)	—
(126)	6	114	—	PL1/6 PU4889(*b*)	—
(127)	7	115	—	PL1/7 PU4889(*b*)	—
(128)	8	116	—	PL1/8 PU4889(*b*)	—
(129)	9	117	—	PL1/9 PU4889(*b*)	—
(130)	10	118	—	PL1/10 PU4889(*b*)	—
(131)	11	119	—	PL1/11 PU4889(*b*)	—
(132)	12	120	—	PL1/12 PU4889(*b*)	—
(133)	PL1/1	—	—	Earth	—
(134)	2	—	65/2	—	+50V Supply 2
(135)	3	—	65/3	—	−50V Supply 2
(136)	4	53	—	Trigger U4890(*a*) PL1/5	—
(137)	5	52	—	Trigger U4890(*a*) PL1/4	—
(138)	6	—	21/1	—	250c/s input
(139)	7	—	21/2	—	250c/s input
(140)	8	—	21/6	—	Spare
(141)	9	—	21/7	—	Spare
(142)	10	—	21/8	—	Spare
(143)	11	—	59/3	—	Mains input
(144)	12	—	59/4	—	Mains input

Co-axial Connections

Trigger U(*a*)		to	Junction box
SK1			SK01
SK2			SK02
SK3			SK03
SK6			SK06
SK7			SK07
Trigger U(*b*)		to	Junction box
SK1			SK11
SK2			SK12
SK3			SK13
SK6			SK16
SK7			SK17

SCHEDULE 1. Rack assembly Type 4724B—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Junction Box outputs to External Connectors					
		SK21	Prepulse out		
		SK22	Prepulse out		
		SK23	Trigger pulse to MTU		
		SK26	Pulse in from A4279		
Jones	SK25/1				
	2				
	3				
	4				
	5	Balanced Sync. out to G.P.O. Board			
	6	Balanced Sync. out to G.P.O. Board			
	7				
	8				
	9				
	10				
	11				
	12				
These two leads to be in twisted pair.					
Connections for Power Unit 4415A, Ref. No. 10K/19917(a)					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	—	—	—
(147)	3	159	—	SK11/3 Vid Amp. 4416A(a)	—
(148)	4	160	—	SK11/4 Vid Amp. 4416A(a)	—
(149)	5	—	—	—	—
(150)	6	162	—	SK11/6 Vid Amp. 4416A(a)	—
(151)	7	163	—	SK11/7 Vid Amp. 4416A(a)	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	166	—	SK11/10 Vid Amp. 4416A(a)	—
(155)	11	167	—	SK11/11 Vid Amp. 4416A(a)	—
(156)	12	168	—	SK11/12 Vid Amp. 4416A(a)	—
Connections for Amplifying Unit (Video) 4416A, Ref. No. 10U/17047(a)					
(157)	SK11/1	—	—	Earth	—
(158)	2	—	—	—	—
(159)	3	147	—	PL1/3 PU4415A(a)	—
(160)	4	148	—	PL1/4 PU4415A(a)	—
(161)	5	—	—	—	—
(162)	6	150	—	PL1/6 PU4415A(a)	—
(163)	7	151	—	PL1/7 PU4415A(a)	—
(164)	8	—	—	PL1/8 PU4415A(a)	—
(165)	9	—		—	—
(166)	10	154	—	PL1/10 PU4415A(a)	—
(167)	11	155	—	PL1/11 PU4415A(a)	—
(168)	12	156	—	PL1/12 PU4415A(a)	—
(169)	PL1/1	—	—	Earth	—
(170)	2	—	—	—	—
(171)	3	—	—	—	—
(172)	4	—	—	—	—
(173)	5	—	—	—	—
(174)	6	—	—	—	—
(175)	7	—	—	—	—
(176)	8	—	—	—	—
(177)	9	—	—	—	—
(178)	10	—	—	—	—
(179)	11	—	25/1	—	Mains input
(180)	12	—	25/2	—	Mains input

RACK ASSEMBLY TYPE 4724C

(Ref. No. 10D/23710)

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10K/18032</td><td>(b)
Power Unit Type 4414</td></tr>
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Trigger Unit Type 4413A
10D/20897</td><td>(b)
Trigger Unit Type 4413A</td></tr>
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10D/23708</td><td>Box junction 6024A
10D/23709</td><td>(b)
Trigger Unit 4890A</td></tr>
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10K/18923</td><td>(b)
Power Unit Type 4889</td></tr>
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Type 4416A 10U/17047</td><td>(b)
Amplifying Unit (video)
Type 4416A</td></tr>
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Power Unit Type 4415A
10K/19917</td><td>(b)
Power Unit Type 4415A</td></tr>
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Fig. 9. Rack assembly Type 4724C, schematic

SCHEDULE 1

Rack assembly Type 4724C—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
	Connections for Power Unit 4889(*a*), Ref. No. 10K/18923					
(36)	Not used					
(37)		PL1/1	—	—	Earth	—
(38)		2	62	—	TU4890A(*a*) SK5/2	—
(39)		3	63	—	TU4890A(*a*) SK5/3	—
(40)		4	64	—	TU4890A(*a*) SK5/4	—
(41)		5	65	—	TU4890A(*a*) SK5/5	—
(42)		6	66	—	TU4890A(*a*) SK5/6	—
(43)		7	67	—	TU4890A(*a*) SK5/7	—
(44)		8	68	—	TU4890A(*a*) SK5/8	—
(45)		9	69	—	TU4890A(*a*) SK5/9	—
(46)		10	70	—	TU4890A(*a*) SK5/10	—
(47)		11	71	—	TU4890A(*a*) SK5/11	—
(48)		12	72	—	TU4890A(*a*) SK5/12	—
	Connections for Trigger Unit 4890A(*a*), Ref. No. 10D/23708					
(49)		PL1/1	—	—	Earth	—
(50)		2	—	30/2	—	+50V Supply 1
(51)		3	—	30/3	—	−50V Supply 1
(52)		4	137	—	TU4890A(*b*) PL1/5	—
(53)		5	136	—	TU4890A(*b*) PL1/4	—
(54)		6	—	21/1	—	250c/s input
(55)		7	—	21/2	—	250c/s input
(56)		8	—	21/3	—	Spare
(57)		9	—	21/4	—	Spare
(58)		10	—	21/5	—	Spare
(59)		11	—	25/3	—	Mains input
(60)		12	—	25/4	—	Mains input
(61)		SK/1	—	—	Earth	—
(62)		2	38	—	PU4889(*a*) PL1/2	—
(63)		3	39	—	PU4889(*a*) PL1/3	—
(64)		4	40	—	PU4889(*a*) PL1/4	—
(65)		5	41	—	PU4889(*a*) PL1/5	—
(66)		6	42	—	PU4889(*a*) PL1/6	—
(67)		7	43	—	PU4889(*a*) PL1/7	—
(68)		8	44	—	PU4889(*a*) PL1/8	—
(69)		9	45	—	PU4889(*a*) PL1/9	—
(70)		10	46	—	PU4889(*a*) PL1/10	—
(71)		11	47	—	PU4889(*a*) PL1/11	—
(72)		12	48	—	PU4889(*a*) PL1/12	—
	Connections for Power Unit 4415A(*b*), Ref. No. 10K/19917					
(73)		PL1/1	—	—	Earth	—
(74)		2	—	—	—	—
(75)		3	87	—	SK11/3 Vid U4416A(*b*)	—
(76)		4	88	—	SK11/4 Vid U4416A(*b*)	—
(77)		5	—	—	—	—
(78)		6	90	—	SK11/6 Vid U4416A(*b*)	—
(79)		7	91	—	SK11/7 Vid U4416A(*b*)	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	94	—	SK11/10 Vid U4416A(*b*)	—
(83)		11	95	—	SK11/11 Vid U4416A(*b*)	—
(84)		12	96	—	SK11/12 Vid U4416A(*b*)	—
(85)		SK11/1	—	—	Earth	—
(86)		2	—	—	—	—
(87)		3	75	—	PL1/3 PU4415A(*b*)	—
(88)		4	76	—	PL1/4 PU4415A(*b*)	—
(89)		5	—	—	—	—
(90)		6	78	—	PL1/6 PU4415A(*b*)	—
(91)		7	79	—	PL1/7 PU4415A(*b*)	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	82	—	PL1/10 PU4415A(*b*)	—
(95)		11	83	—	PL1/11 PU4415A(*b*)	—
(96)		12	84	—	PL1/12 PU4415A(*b*)	—
(97)		PL1/1	—	—	Earth	—
(98)		2	—	—	—	—
(99)		3	—	—	—	—
(100)		4	—	—	—	—
(101)		5	—	—	—	—
(102)		6	—	—	—	—
(103)		7	—	—	—	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	—	—	—	—
(107)		11	—	59/1	—	Mains input
(108)		12	—	59/2	—	Mains input

SCHEDULE 1. Rack assembly Type 4724C—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Power Unit 4889(*b*), Ref. No. 10K/18923					
(109)	PL1/1	—	—	Earth	—
(110)	2	122	—	SK5/2 TU4890A(*b*)	—
(111)	3	123	—	SK5/3 TU4890A(*b*)	—
(112)	4	124	—	SK5/4 TU4890A(*b*)	—
(113)	5	125	—	SK5/5 TU4890A(*b*)	—
(114)	6	126	—	SK5/6 TU4890A(*b*)	—
(115)	7	127	—	SK5/7 TU4890A(*b*)	—
(116)	8	128	—	SK5/8 TU4890A(*b*)	—
(117)	9	129	—	SK5/9 TU4890A(*b*)	—
(118)	10	130	—	SK5/10 TU4890A(*b*)	—
(119)	11	131	—	SK5/11 TU4890A(*b*)	—
(120)	12	132	—	SK5/12 TU4890A(*b*)	—
Connections for Trigger Unit 4890A(*b*), Ref. No. 10D/23708					
(121)	SK5/1	—	—	Earth	—
(122)	2	110	—	PL1/2 PU4889(*b*)	—
(123)	3	111	—	PL1/3 PU4889(*b*)	—
(124)	4	112	—	PL1/4 PU4889(*b*)	—
(125)	5	113	—	PL1/5 PU4889(*b*)	—
(126)	6	114	—	PL1/6 PU4889(*b*)	—
(127)	7	115	—	PL1/7 PU4889(*b*)	—
(128)	8	116	—	PL1/8 PU4889(*b*)	—
(129)	9	117	—	PL1/9 PU4889(*b*)	—
(130)	10	118	—	PL1/10 PU4889(*b*)	—
(131)	11	119	—	PL1/11 PU4889(*b*)	—
(132)	12	120	—	PL1/12 PU4889(*b*)	—
(133)	PL1/1	—	—	Earth	—
(134)	2	—	65/2	—	+50V Supply 2
(135)	3	—	65/3	—	−50V Supply 2
(136)	4	53	—	TU4890A(*a*) PL1/5	—
(137)	5	52	—	TU4890A(*a*) PL1/4	—
(138)	6	—	21/1	—	250c/s input
(139)	7	—	21/2	—	250c/s input
(140)	8	—	21/6	—	Spare
(141)	9	—	21/7	—	Spare
(142)	10	—	21/8	—	Spare
(143)	11	—	59/3	—	Mains input
(144)	12	—	59/4	—	Mains input

Co-axial Connections

TU4890A(*a*)	to	Junction box	6024A, Ref. No. 10D/23709
SK1		SK01	
SK2		SK02	
SK3		SK03	
SK6		SK06	
SK7		SK07	
TU4890A(*b*)	to	Junction box	6024A, Ref. No. 10D/23709
SK1		SK11	
SK2		SK12	
SK3		SK13	
SK6		SK16	
SK7		SK17	

Junction Box outputs to External Connectors

SK21	Prepulse out
SK22	Prepulse out
SK23	Trigger pulse to MTU
SK26	Pulse in from A4279

Jones	SK25/1	
	2	
	3	
	4	
	5	Balanced Sync. out to G.P.O. Board
	6	Balanced Sync. out to G.P.O. Board
	7	
	8	
	9	
	10	
	11	
	12	

These two leads to be in twisted pair.

SCHEDULE 1—Rack assembly Type 4724C—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Power Unit 4415A(*a*), Ref. No. 10K/19917					
(145)	PL1/1	—	—	Earth	—
(146)	2	—	—	—	—
(147)	3	159	—	SK11/3 Vid Amp 4416A(*a*)	—
(148)	4	160	—	SK11/4 Vid Amp 4416A(*a*)	—
(149)	5	—	—	—	—
(150)	6	162	—	SK11/6 Vid Amp 4416A(*a*)	—
(151)	7	163	—	SK11/7 Vid Amp 4416A(*a*)	—
(152)	8	—	—	—	—
(153)	9	—	—	—	—
(154)	10	166	—	SK11/10 Vid Amp 4416A(*a*)	—
(155)	11	167	—	SK11/11 Vid Amp 4416A(*a*)	—
(156)	12	168	—	SK11/12 Vid Amp 4416A(*a*)	—
Connections for Amplifying Unit (Video) 4416A(*a*), Ref. No. 10U/17047					
(157)	SK11/1	—	—	Earth	—
(158)	2	—	—	—	—
(159)	3	147	—	PL1/3 PU4415A(*a*)	—
(160)	4	148	—	PL1/4 PU4415A(*a*)	—
(161)	5	—	—	—	—
(162)	6	150	—	PL1/6 PU4415A(*a*)	—
(163)	7	151	—	PL1/7 PU4415A(*a*)	—
(164)	8	—	—	—	—
(165)	9	—	—	—	—
(166)	10	154	—	PL1/10 PU4415A(*a*)	—
(167)	11	155	—	PL1/11 PU4415A(*a*)	
(168)	12	156	—	PL1/12 PU4415A(*a*)	—
(169)	PL/1	—	—	Earth	—
(170)	2	—	—	—	—
(171)	3	—	—	—	—
(172)	4	—	—	—	—
(173)	5	—	—	—	—
(174)	6	—	—	—	—
(175)	7	—	—	—	—
(176)	8	—	—	—	—
(177)	9	—	—	—	—
(178)	10	—	—	—	—
(179)	11	—	25/1	—	Mains input
(180)	12	—	25/2	—	Mains input
Connections 181–199 not used					
Connections for Trigger Unit 4413A(*a*), Ref. No. 10D/20897					
(200)	PL1/1	—	—	Earth	—
(201)	PL1/11	—	25/5	—	Mains input
(202)	PL1/12	—	25/6	—	Mains input
(203)	—	—	—	—	—
(204)	—	—	—	—	—
(205)	—	—	—	—	—
(206)	SK5/1	—	—	Earth	—
(207)	2	—	—	—	—
(208)	3	242	—	PU4414(*a*) PL1/3	—
(209)	4	—	—	—	—
(210)	5	—	—	—	—
(211)	6	—	—	—	—
(212)	7	246	—	PU4414(*a*) PL1/7	—
(213)	8	—	—	—	—
(214)	9	—	—	—	—
(215)	10	—	—	—	—
(216)	11	250	—	PU4414(*a*) PL1/11	—
(217)	12	251	—	PU4414(*a*) PL1/12	—
(218)	—	—	—	—	—
(219)	—	—	—	—	—

SCHEDULE 1—Rack assembly Type 4724C—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Trigger Unit 4413A(*b*), Ref. No. 10D/20897					
(220)	PL1/1	—	—	Earth	—
(221)	PL1/11	—	59/5	—	Mains input
(222)	PL1/12	—	59/6	—	Mains input
(223)	—	—	—	—	—
(224)	—	—	—	—	—
(225)	—	—	—	—	—
(226)	SK5/1	—	—	Earth	—
(227)	2	—	—	—	—
(228)	3	162	—	PU4414(*b*) PL1/3	—
(229)	4	—	—	PU4414(*b*) PL1/3	—
(230)	5	—	—	—	—
(231)	6	—	—	—	—
(232)	7	266	—	PU4414(*b*) PL1/7	—
(233)	8	—	—	—	—
(234)	9	—	—	—	—
(235)	10	—	—	—	—
(236)	11	270	—	PU4414(*b*) PL1/11	—
(237)	12	271	—	PU4414(*b*) PL1/12	—
(238)	—	—	—	—	—
(239)	—	—	—	—	—
Connections for Power Unit 4414(*a*), Ref. No. 10K/18032					
(240)	PL1/1	—	—	Earth	—
(241)	2	—	—	—	—
(242)	3	208	—	TU4413A(*a*) SK5/3	—
(243)	4	—	—	—	—
(244)	5	—	—	—	—
(245)	6	—	—	—	—
(246)	7	212	—	TU4413A(*a*) SK5/7	—
(247)	8	—	—	—	—
(248)	9	—	—	—	—
(249)	10	—	—	—	—
(250)	11	216	—	TU4413A(*a*) SK5/11	—
(251)	12	217	—	TU4413A(*a*) SK5/12	—
Connections 252–259 not used.					
Connections for Power Unit 4414(*b*), Ref. No. 10K/18032					
(260)	PL1/1	—	—	Earth	—
(261)	2	—	—	—	—
(262)	3	228	—	TU4413A(*b*) SK5/3	—
(263)	4	—	—	—	—
(264)	5	—	—	—	—
(265)	6	—	—	—	—
(266)	7	232	—	TU4413A(*b*) SK5/7	—
(267)	8	—	—	—	—
(268)	9	—	—	—	—
(269)	10	—	—	—	—
(270)	11	236	—	TU4413A(*b*) SK5/11	—
(271)	12	237	—	TU4413A(*b*) SK5/12	—

Co-axial Connections

Trigger Unit 4413A(*a*) SK1	to	Trigger Unit 4890A(*a*) SK20
Trigger Unit 4413A(*b*) SK1		Trigger Unit 4890A(*b*) SK20
Trigger Unit 4413A(*a*) SK2		Trigger Unit 4890A(*b*) SK20
Trigger Unit 4413A(*b*) SK2		Trigger Unit 4890A(*a*) SK20

RACK ASSEMBLY TYPE 4725

(Ref. No. 10D/19716)

Amplifying Unit (3Kc/s) 4727 10U/16920	Panel (blanking) 4639 (Stores Reference 10D/19663)
Switch Unit (monitor) 4729 10F/18120	Amplifier A.3719 (b) 10U/16788
Amplifying Unit (servo) 297 (b) 10U/16054	Amplifying Unit (45Mc/s) 4728 (a) 10U/16921 (b)
Control Unit (b) 600 (a) 10L/16029	Amplifier A.3719 (a) 10U/16788
Amplifying Unit (servo) 297 (a) 10U/16054	Transformer Unit (selsyn) 175 (b) 10K/17102
Rectifier Unit 17 10D/17779	Transformer Unit (selsyn) 175 (a) 10K/17102

Fig. 10. Rack assembly Type 4725, schematic

SCHEDULE 1

RACK ASSEMBLY TYPE 4725

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections for Rectifier Unit 17					
Plugs 1 and 2 not connected.					
(1)	PL3/1	119	—	PL504/11 C.U. (a)	—
(2)	2	78	—	PL5/6 S.A. (a)	—
(3)	3	118	—	PL504/10 C.U. (a)	—
(4)	4	77	—	PL5/5 S.A. (a)	—
(5)	5	155	—	PL504/11 C.U. (b)	—
(6)	6	210	—	PL5/6 S.A. (b)	—
(7)	7	154	—	PL504/10 C.U. (b)	—
(8)	8	209	—	PL5/5 S.A. (b)	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	—	—	—	—	—
(12)	—	—	—	—	—
(13)	PL4/1	—	34/1	—	PLAL/1 C.U.619
(14)	2	46	—	PL2/10 S.A. (a)	S.R.28 14/9(½°)
(15)	3	—	34/2	—	PLAL/2 C.U.619
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	Earth	—
(23)	11	—	26/5 } See note	—	Mains Input
(24)	12	—	26/6 } 1	—	Mains Input
Connections for Amplifying Unit (servo) 297 (a)					
(25)	PL1/1	—	27/11	—	Plinth Term 67 14/9(½°)
(26)	2	—	27/12	—	Plinth Term 68 14/9(½°)
(27)	3	—	26/7 (See note 1)	—	Mains Input
(28)	4	—	—	Earth	—
(29)	5	—	—	—	—
(30)	6	—	26/8(M) (See note 1)	—	Mains Input
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	27/9	—	S.R.46 14/9(½°)
(34)	10	—	—	—	—
(35)	11	—	—	—	—
(36)	12	—	27/10	—	S.R.38 14/9(½°)
(37)	PL2/1	—	32/1 } Strapped 32/2 }	—	—
(38)	2	—	32/3 } Strapped 32/4 }	—	—
(39)	3	—	32/5 } Strapped 32/6 }	—	—
(40)	4	—	29/5	—	S.R.23 14/9 (½°)
(41)	5	—	29/4	—	S.R.22 14/9 (½°)
(42)	6	—	29/7	—	S.R.25 14/9(½°)
(43)	7	—	29/6	—	S.R.24 14/9(½°)
(44)	8	—	29/9	—	S.R.27 14/9(½°)
(45)	9	—	29/8	—	S.R.26 14/9(½°)
(46)	10	14	29/10	PL4/2 R.U.17	S.R.28 14/9(½°)
(47)	11	113	29/3 } 29/11 } Strapped 34/4 }	PL503/7 C.U.(a)	S.R.19 29 14/9(½°) PLAL/4 C.U.619
(48)	12	—	29/12	—	S.R.30 14/9(½°)
(49)	PL3/1	—	—	—	—
(50)	2	—	—	—	—
(51)	3*	—	27/1	—	Amplid X4 14/9(½°)
(52)	4*	—	27/2	—	Amplid X3 14/9(½°)
(53)	5*	—	27/3	—	Amplid X2 14/9(½°)
(54)	6*	—	27/4	—	Amplid X1 14/9(½°)
(55)	7	—	27/5	—	Amplid X5 14/9(½°)
(56)	8	—	27/6	—	Amplid X6 14/9(½°)
(57)	9	—	27/7	—	Amplid A4 14/9(½°)
(58)	10	—	—	—	—
(59)	11	—	27/8	—	Amplid A2 14/9(½°)
(60)	12	—	—	—	—
(61)	PL4/1	—	33/3	—	PLAJ/3 CU.619
(62)	2	—	33/5	—	PLAJ/5 CU.619
(63)	3	106	—	PL502/12 C.U.(a)	—
(64)	4	—	29/1	—	S.R.36 14/9(½°)
(65)	5	102	—	PL502/8 C.U.(a)	—
(66)	6	103	—	PL502/9 C.U.(a)	—
(67)	7	—	34/3	—	PLAL/3 C.U.619

SCHEDULE 1. Rack assembly Type 4725—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(68)		8	—	34/5 } Strapped 29/2 }	—	PLAL/5 CU.619 S.R.34 14/9(½°)
(69)		9	100	—	PL502/6 C.U.(a)	—
(70)		10	—	33/12	—	PLAJ/12 CU.619
(71)		11	—	—	—	—
(72)		12	—	—	—	—
(73)		PL5/1	—	—	—	—
(74)		2	—	33/4	—	PLAJ/4 CU.619
(75)		3	—	33/7	—	PLAJ/7 CU.619
(76)		4	97	—	PL502/3 C.U.(a)	—
(77)		5	4	—	PL3/4 R.U.17	—
(78)		6	2	—	PL3/2 R.U.17	—
(79)		7	—	31/2	—	PLAJ/2 CU.619
(80)		8	98	—	PL502/4 C.U.(a)	—
(81)		9	99	—	PL502/5 C.U.(a)	—
(82)		10	104	—	PL502/10 C.U.(a)	—
(83)		11	105	—	PL502/11 C.U.(a)	—
(84)		12	86	33/6	PL501/2 C.U.(a)	PLAJ/6 CU.619
Connections for Control Unit 600 (a)						
(85)		PL501/1	—	33/1	—	PLAJ/1 CU.619
(86)		2	84	33/6	PL5/12 S.A.(a)	PLAJ/6 CU.619
(87)		3	—	31/4	—	PLAI/4 CU.619
(88)		4	—	—	—	—
(89)		5	—	31/6	—	PLAI/6 CU.619
(90)		6	—	—	—	—
(91)		7	—	31/8	—	PLAI/8 CU.619
(92)		8	—	—	—	—
(93)		9	—	33/9	—	PLAJ/9 CU.619
(94)		10	—	33/11	—	PLAJ/11 CU.619
(95)		11	—	33/8	—	PLAJ/8 CU.619
(96)		12	—	31/1	—	PLAI/1 CU.619
(97)		PL502/3	76	—	PL5/4 S.A.(a)	—
(98)		4	80	—	PL5/8 S.A.(a)	—
(99)		5	81	—	PL5/9 S.A.(a)	—
(100)		6	69	—	PL4/9 S.A.(a)	—
(101)		7	—	—	—	—
(102)		8	65	—	PL4/5 S.A.(a)	—
(103)		9	66	—	PL4/6 S.A.(a)	—
(104)		10	82	—	PL5/10 S.A.(a)	—
(105)		PL502/11	83	—	PL5/11 S.A.(a)	—
(106)		12	63	—	PL4/3 S.A.(a)	—
(107)		PL503/1	—	33/10	—	PLAJ/10 CU.619
(108)		2	—	—	—	—
(109)		3	—	31/3	—	PLAI/3 CU.619
(110)		4	—	25/3	—	Mains Input
(111)		5	—	31/5	—	PLAI/5 CU.619
(112)		6	—	25/4	—	Mains Input
(113)		7	47	29/3 } 29/11 } Strapped 34/4 }	PL2/11 S.A.(a)	SR.19 & 29 14/9(½°) PLAL/4 CU.619
(114)		8	—	—	—	—
(115)		PL504/7	—	31/9	—	PLAI/9 CU.619
(116)		8	—	—	—	—
(117)		9	—	—	—	—
(118)		10	3	—	PL3/3 R.U.17	—
(119)		11	1	—	PL3/1 R.U.17	—
(120)		12	—	—	Earth	—
Connections for Control Unit 600 (b)						
(121)		PL501/1	—	—	—	—
(122)		2	—	—	PL5/12 S.A.(b)	—
(123)		3	—	—	PL501/5 & 7 CU600b }	
(124)		4	—	—	— }	
(125)		5	—	—	PL501/3 & 7 CU600b }	Jumpered in Jones Plug 501
(126)		6	—	—	— }	
(127)		7	—	—	PL501/3 & 5 CU600b }	
(128)		8	—	—	—	—
(129)		9	—	21/11	—	CU.4744 PL1/11
(130)		10	—	20/2	—	CU.4744 PL2/2
(131)		11	—	21/12	—	CU.4744 PL1/12
(132)		12	—	21/2	—	CU.4744 PL1/2
(133)		PL502/3	208	15/10	PL5/4 S.A.(b)	Joystick Slew
(134)		4	212	—	PL5/8 S.A.(b)	—
(135)		5	213	—	PL5/9 S.A.(b)	—

SCHEDULE 1. Rack assembly Type 4725—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(136)		6	—	20/9	—	CU.4744 PL2/9
(137)		7	—	—	—	—
(138)		8	—	21/9	—	CU.4744 PL1/9
(139)		9	198	—	PL4/6 S.A.(b)	—
(140)		10	214	—	PL5/10 S.A.(b)	—
(141)		11	215	—	PL5/11 S.A.(b)	—
(142)		12	195	—	PL4/3 S.A.(b)	—
(143)		PL503/1	—	20/3	—	CU.4774 PL2/3
(144)		2	—	—	—	—
(145)		3	—	21/7	—	CU.4744 PL1/7
(146)		4	—	—	—	—
(147)		5	—	21/8	—	CU.4744 PL1/8
(148)		6	—	—	—	—
(149)		7	179	15/4, 14/3, 14/11	PL2/11 S.A.(b)	Selsyn D. Joystick
(150)		8	—	—	—	—
(151)		PL504/7	—	—	—	—
(152)		8	—	—	—	—
(153)		9	—	—	—	—
(154)		10	7	—	PL3/7 R.U.17	—
(155)		11	5	—	PL3/5 R.U.17	—
(156)		12	—	—	Earth	—
	Connections for Amplifying Unit (servo) 297 (b)					
(157)		PL1/1	—	11/11	—	Plinth Term 67 Type 13
(158)		2	—	11/12	—	Plinth Term 68 Type 13
(159)		3	—	25/1	—	Mains Input
(160)		4	—	—	Earth	—
(161)		5	—	—	—	—
(162)		6	—	25/2	—	Mains Input
(163)		7	—	15/1	—	Selsyn A. Joystick
(164)		8	—	—	—	—
(165)		9	—	11/9	—	S.R.46 Type 13
(166)		10	—	15/2	—	Selsyn B. Joystick
(167)		11	—	15/3	—	Selsyn C. Joystick
(168)		12	—	11/10	—	S.R.38 Type 13
(169)		PL2/1	—	—	—	—
(170)		2	—	—	—	—
(171)		3	—	—	—	—
(172)		4	—	14/5	—	S.R.23 Type 13
(173)		5	—	14/4	—	S.R.22 Type 13
(174)		6	—	14/7	—	S.R.25 Type 13
(175)		7	—	14/6	—	S.R.24 Type 13
(176)		8	—	14/9	—	S.R.27 Type 13
(177)		9	—	14/8	—	S.R.26 Type 13
(178)		10	199	14/10	PL4/7 S.A.(b)	S.R.28 Type 13
(179)		11	149	14/3 14/11 15/4	503/7 C.U.(b)	S.R.19 Type 13 S.R.29 Type 13 Selsyn D. Joystick
(180)		12	—	14/12	—	S.R.30 Type 13
(181)		PL3/1	—	—	—	—
(182)		2	—	—	—	—
(183)		3*	—	11/1	—	Amplid X4 Type 13
(184)		4*	—	11/2	—	Amplid X3 Type 13
(185)		5*	—	11/3	—	Amplid X2 Type 13
(186)		6*	—	11/4	—	Amplid X1 Type 13
(187)		7	—	11/5	—	Amplid X5 Type 13
(188)		8	—	11/6	—	Amplid X6 Type 13
(189)		9	—	11/7	—	Amplid A4 Type 13
(190)		10	—	—	—	—
(191)		11	—	11/8	—	Amplid A2 Type 13
(192)		12	—	—	—	—
(193)		PL4/1	—	21/5	—	C.U.4744 PL1/5
(194)		2	—	21/4	—	C.U.4744 PL1/4
(195)		3	142	—	PL502/12 C.U.(b)	—
(196)		4	—	14/1	—	S.R.36 Type 13
(197)		5	—	21/10	—	C.U.4744 PL1/10
(198)		6	139	—	PL502/9 C.U.(b)	—
(199)		7	178	14/10	PL2/10 S.A.(b)	S.R.28
(200)		8	—	15/5 14/2	— —	Selsyn E. Joystick S.R.34 Type 13
(201)		9	—	20/7	—	C.U.4744 PL2/7
(202)		10	—	20/4	—	C.U.4744 PL2/4
(203)		11	—	—	—	—
(204)		12	—	—	—	—
(205)		PL5/1	—	—	—	—
(206)		2	—	21/6	—	C.U.4744 PL1/6
(207)		3	—	21/5	—	C.U.4744 PL1/3
(208)		4	133	15/10	PL502/3 C.U.(b)	Joystick Slew
(209)		5	8	—	PL3/8 R.U.17	—

SCHEDULE 1. Rack assembly Type 4725—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(210)		6	6	—	PL3/6 R.U.17	—
(211)		7	—	21/1	—	C.U.4744 PL1/1
(212)		8	134	—	PL502/4 C.U.(b)	—
(213)		9	135	—	PL502/5 C.U.(b)	—
(214)		PL5/10	140	—	PL502/10 C.U.(b)	—
(215)		11	141	—	PL502/11 C.U.(b)	—
(216)		12	122	—	PL501/2 C.U.(b)	—
	Connections for Amplifying Unit (3 Kc/s) 4727					
(217)		PL1/1	—	—	Earth	—
(218)		2	—	—	—	—
(219)		3	—	—	—	—
(220)		4	—	—	—	—
(221)		5	—	9/5	—	(3 Kc/s balanced)
(222)		6	—	9/6		
(223)		7	—	—	—	—
(224)		8	—	—	—	—
(225)		9	—	—	—	—
(226)		10	—	—	—	—
(227)		11	—	25/5	—	Mains Input
(228)		12	—	25/6	—	Mains Input
	Connections for Transformer Unit (selsyn) 175					
(229)		PL801/7	—	67/1	—	Rotor Input }
(230)		8	—	67/2	—	Rotor Input }
(231)		9	—	66/1	—	Stator Input } Type
(232)		10	—	66/2	—	Stator Input } 14
(233)		11	—	66/3	—	Stator Input }
(234)		12	—	—	—	—
(235)		PL802/13*	—	66/6	—	Stator Output
(236)		14*	—	66/9	—	Stator Output
(237)		15*	—	66/12	—	Stator Output
(238)		16	—	—	—	—
(239)		PL803/13*	—	67/6	—	Rotor Output
(240)		14*	—	67/10	—	Rotor Output
	Connections for Transformer Unit (selsyn) 175 (b)					
(241)		PL801/7	—	63/1	—	Rotor Input }
(242)		8	—	63/2	—	Rotor Input }
(243)		9	—	62/1	—	Stator Input } Type
(244)		10	—	62/2	—	Stator Input } 13
(245)		11	—	62/3	—	Stator Input }
(246)		12	—	—	—	—
(247)		PL802/13*	—	62/6	—	Stator Output
(248)		14*	—	62/9	—	Stator Output
(249)		15*	—	62/12	—	Stator Output
(250)		16	—	—	—	—
(251)		PL803/13*	—	63/6	—	Rotor Output
(252)		14*	—	63/10	—	Rotor Output
	Connections for Amplifier A.3719 (a)					
(253)		PL1/1	—	—	Earth	—
(254)		2	—	—	—	—
(255)		3	—	—	—	—
(256)		4	—	—	—	—
(257)		5	—	—	—	—
(258)		6	—	—	—	—
(259)		7	—	—	—	—
(260)		8	—	—	—	—
(261)		9	—	—	—	—
(262)		10	—	—	—	—
(263)		11	—	59/1	—	Mains Input
(264)		12	—	59/2	—	Mains Input
	Connections for Amplifying Unit (45 Mc/s)					
(265)		PL1/1	—	—	Earth	—
(266)		2	—	—	—	—
(267)		3	—	—	—	—
(268)		4	—	—	—	—
(269)		5	—	—	—	—
(270)		6	—	—	—	—
(271)		7	—	—	—	—
(272)		8	—	—	—	—
(273)		9	—	—	—	—

SCHEDULE 1. Rack assembly Type 4725—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(274)		10	—	—	—	—
(275)		11	—	59/3	—	Mains Input
(276)		12	—	59/4	—	Mains Input
Connections for Amplifier A.3719 (b)						
(277)		PL1/1	—	—	Earth	—
(278)		2	—	—	—	—
(279)		3	—	—	—	—
(280)		4	—	—	—	—
(281)		5	—	—	—	—
(282)		6	—	—	—	—
(283)		7	—	—	—	—
(284)		8	—		—	—
(285)		9	—	—	—	—
(286)		10	—	—	—	—
(287)		11	—	59/5	—	Mains Input
(288)		12	—	59/6	—	Mains Input

Note 1:

Power Supplies for R.U.17 and S.A.(a) must be from the Red Phase of The Main Radar Office via PL.26. Coaxial Connections.

Connections for Amplifier A.3719 (a)					
(301)		SK.1	312	—	SK2 Attenuator 113(a)
(302)		SK.3	307	—	SK1 Monitor Switch Unit
Connections for Amplifier A.3719 (b)					
(303)		SK.1	314	—	SK2 Attenuator 113 (b)
(304)		SK.3	308	—	SK2 Monitor Switch Unit

RACK ASSEMBLY TYPE 4726

(Ref. No. 10D/19719)

Panel (blanking) 4639 (Stores Ref. 10D/19663)	Panel (blanking) 4639
Panel (blanking) 4639	Amplifying Unit (pulse splitter) Type 300 10U/16057
Trigger Unit Type 4413 10D/19326	Amplifying Unit (video) Type 4416 10U/16841
Power Unit Type 4414 10K/18032	Power Unit Type 4415 10K/18033
Rectifier Unit Type 15 (a) 10D/17761	Rectifier Unit Type 15 (b)
Rectifier Unit Type 15 (c)	Rectifier Unit Type 15 (d)

29 32 33 63 66 67

Fig. 11. Rack assembly Type 4726, schematic

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections for Rectifier 15(c)					
(1)	PL1/1	—	—	Earth	—
(2)	2	—	32/2, 32/4, 32/6 Strapped	—	50V +
(3)	3	—	32/1, 32/3, 32/5 Strapped	—	50V —
(4)	4	—	32/8, 32/10, 32/12 Strapped	—	50V +
(5)	5	—	32/7, 32/9, 32/11 Strapped	—	50V —
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	33/1	—	Mains Input
(12)	12	—	33/2	—	Mains Input
Plug 2 not used.					
Connections for Rectifier 15(a)					
(13)	PL1/1	—	—	Earth	—
(14)	2	—	29/2, 29/4, 29/6 Strapped	—	50V +
(15)	3	—	29/1, 29/3, 29/5 Strapped	—	50V —
(16)	4	—	29/8, 29/10, 29/12 Strapped	—	50V +
(17)	5	—	29/7, 29/9, 29/11 Strapped	—	50V —
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	33/3	—	Mains Input
(24)	12	—	33/4	—	Mains Input
Connections for Power Unit 4414					
(25)	PL1/1	—	—	Earth	—
(26)	2	—	—	—	—
(27)	3	39	—	T.U.4413 SK5/3	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	42	—	T.U.4413 SK5/6	—
(31)	7	43	—	T.U.4413 SK5/7	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	46	—	T.U.4413 SK5/10	—
(35)	11	47	—	T.U.4413 SK5/11	—
(36)	12	48	—	T.U.4413 SK5/12	—
Connections for Trigger Unit 4413					
(37)	SK5/1	—	—	Earth	—
(38)	2	—	—	—	—
(39)	3	27	—	P.U.4414 PL1/3	—
(40)	4	—	—	—	—
(41)	5	—	—	—	—
(42)	6	30	—	P.U.4414 PL1/6	—
(43)	7	31	—	P.U.4414 PL1/7	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	34	—	P.U.4414 PL1/10	—
(47)	11	35	—	P.U.4414 PL1/11	—
(48)	12	36	—	P.U.4414 PL1/12	—
(49)	PL1/1	—	—	Earth	—
(50)	2	—	28/2	—	M.T.U. PL1/2
(51)	3	—	28/1	—	M.T.U. PL1/1
(52)	4	—	—	—	—
(53)	5	—	—	—	—

Rack assembly Type 4726—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	33/5	—	Mains Input
(60)		12	—	33/6	—	Mains Input
	Connections for Rectifier 15(d)					
(61)		PL1/1	—	—	Earth	—
(62)		2	—	66/2, 66/4, 66/6 Strapped	—	50V +
(63)		3	—	66/1, 66/3, 66/5 Strapped	—	50V —
(64)		4	—	66/8, 66/10, 66/12 Strapped	—	50V +
(65)		5	—	66/7, 66/9, 66/11 Strapped	—	50V —
(66)		6	—	—	—	—
(67)		7	—	—	—	—
(68)		8	—	—	—	—
(69)		9	—	—	—	—
(70)		10	—	—	—	—
(71)		11	—	67/1	—	Mains Output
(72)		12	—	67/2	—	Mains Output
	Plug 2 is not used.					
	Connections for Rectifier 15(b)					
(73)		PL1/1	—	—	Earth	—
(74)		2	—	63/2, 63/4, 63/6 Strapped	—	50V +
(75)		3	—	63/1, 63/3, 63/5 Strapped	—	50V —
(76)		4	—	63/8, 63/10, 63/12 Strapped	—	50V +
(77)		5	—	63/7, 63/9, 63/11 Strapped	—	50V —
(78)		6	—	—	—	—
(79)		7	—	—	—	—
(80)		8	—	—	—	—
(81)		9	—	—	—	—
(82)		10	—	—	—	—
(83)		11	—	67/3	—	Mains Input
(84)		12	—	67/4	—	Mains Input
	Plug 2 is not used.					
	Connections for Power Unit 4415					
(85)		PL1/1	—	—	Earth	—
(86)		2	—	—	—	—
(87)		3	99	—	Amp. 4416 SK11/3	—
(88)		4	100	—	Amp. 4416 SK11/4	—
(89)		5	—	—	—	—
(90)		6	102	—	Amp. 4416 SK11/6	—
(91)		7	103	—	Amp. 4416 SK11/7	—
(92)		8	—	—	—	—
(93)		9	—	—	—	—
(94)		10	106	—	Amp. 4416 SK11/10	—
(95)		11	107	—	Amp. 4416 SK11/11	—
(96)		12	108	—	Amp. 4416 SK11/12	—
	Connections for Amplifying Unit (Video) 4416					
(97)		SK11/1	—	—	Earth	—
(98)		2	—	—	—	—
(99)		3	87	—	P.U.4415 PL1/3	—
(100)		4	88	—	P.U.4415 PL1/4	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(101)		5	—	—	—	—
(102)		6	90	—	P.U.4415 PL1/6	—
(103)		7	91	—	P.U.4415 PL1/7	—
(104)		8	—	—	—	—
(105)		9	—	—	—	—
(106)		10	94	—	P.U.4415 PL1/10	—
(107)		11	95	—	P.U.4415 PL1/11	—
(108)		12	96	—	P.U.4415 PL1/12	—
(109)		PL1/1	—	—	Earth	—
(110)		2	—	—	—	—
(111)		3	—	—	—	—
(112)		4	—	—	—	—
(113)		5	—	—	—	—
(114)		6	—	—	—	—
(115)		7	—	—	—	—
(116)		8	—	—	—	—
(117)		9	—	—	—	—
(118)		10	—	—	—	—
(119)		11	—	67/5	—	Mains Input
(120)		12	—	67/6	—	Mains Input
Connections for Amplifying Unit (Pulse Splitter) 300						
(121)		PL1/11	—	67/7	—	Mains Input
(122)		12	—	67/8	—	Mains Input
(123)		1	—	—	Earth	—

Chapter 23

RACK ASSEMBLIES OF TYPE 6300 (IG) SERIES

LIST OF ILLUSTRATIONS

	Fig.		*Fig.*
Rack assembly Type 6340, *schematic* ...	1	*Rack assembly Type* 6342, *schematic* ...	3
Rack assembly Type 6341, *schematic* ...	2	*Rack assembly Type* 6343, *schematic* ...	4

RACK ASSEMBLY TYPE 6340

(Ref. No. 10D/20358)

Panel (blanking) 4639 10D/19663	Panel (blanking) 4639
(1) Rectifier Unit Type 15 10D/17761 RU15	(2) Rectifier Unit Type 15
(1) Trigger Unit Type 4413 10D/19326	(2) Trigger Unit Type 4413
(1) Power Unit Type 4414 10K/18032	(2) Power Unit Type 4414
Marker Unit (range) Type 27 10D/18308	Amplifying Unit (video) Type 4416 10U/16841
Amplifier Unit (pulses splitter) Type 300 10U/16057	Power Unit Type 4415 10K/18033

28 61 29 64 33 68

Fig. 1. Rack assembly Type 6340, schematic

SCHEDULE 1

Rack assembly Type 6340—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
Connections for rectifier Unit 15 (1)						
(1)		PL1/1	—	—	Earth	—
(2)		2	50	29/2, 29/4, 29/6, strapped together	M.U.27 PL7/2	+50V
(3)		3	51	29/1, 29/3, 29/5, strapped together	M.U.27 PL7/3	−50V
(4)		4	—	29/8, 29/10, 29/12, strapped together	—	+50V
(5)		5	—	29/7, 29/9, 29/11, strapped together	—	−50V
(6)		6	—	—	—	—
(7)		7	—	—	—	—
(8)		8	—	—	—	—
(9)		9	—	—	—	—
(10)		10	—	—	—	—
(11)		11	—	33/3M	—	Mains input
(12)		12	—	33/4M	—	Mains input
Plug 2 is not used.						
Connections for Trigger Unit 4413(1)						
(13)		PL1/1	—	—	Earth	—
(14)		2	—	Pins 2 & 6 strapped together	—	—
(15)		3	—	Pins 3 & 7 strapped together	—	—
(16)		4	77	—	T.U.4413(2) PL1/5	—
(17)		5	76	—	T.U.4413(2) PL1/4	
(18)		6	—	28/1M	—	Spare
(19)		7	—	28/2M	—	Spare
(20)		8	—	28/3	—	Spare
(21)		9	—	28/4	—	Spare
(22)		10	—	28/5	—	Spare
(23)		11	—	33/5M	—	Mains input
(24)		12	—	33/6M	—	Mains input
(25)		SK7/1	—	—	Earth	—
(26)		2	38	—	P.U.4414(1) PL1/2	—
(27)		3	39	—	P.U.4414(1) PL1/3	—
(28)		4	40	—	P.U.4414(1) PL1/4	—
(29)		5	41	—	P.U.4414(1) PL1/5	—
(30)		6	42	—	P.U.4414(1) PL1/6	—
(31)		7	43	—	P.U.4414(1) PL1/7	—
(32)		8	44	—	P.U.4414(1) PL1/8	—
(33)		9	45	—	P.U.4414(1) PL1/9	—
(34)		10	46	—	P.U.4414(1) PL1/10	—
(35)		11	47	—	P.U.4414(1) PL1/11M	—
(36)		12	48	—	P.U.4414(1) PL1/12M	—
Connections for Power Unit 4414(1)						
(37)		L1/1	—	—	Earth	—
(38)		2	26	—	T.U.4413(1) SK7/2	—
(39)		3	27	—	T.U.4413(1) SK7/3	—
(40)		4	28	—	T.U.4413(1) SK7/4	—
(41)		5	29	—	T.U.4413(1) SK7/5	—
(42)		6	30	—	T.U.4413(1) SK7/6	—
(43)		7	31	—	T.U.4413(1) SK7/7	—
(44)		8	32	—	T.U.4413(1) SK7/8	—
(45)		9	33	—	T.U.5513(1) SK7/9	—
(46)		10	34	—	T.U.4413(1) SK7/10	—
(47)		11	35	—	T.U.4413(1) SK7/11M	—
(48)		12	36	—	T.U.4413(1) SK7/12M	—
Connections for Marker Unit (Range) 27						
(49)		PL7/1	—	—	Earth	—
(50)		2	2	—	PL1/2 Rect. 15 (1)	—
(51)		3	3	—	PL1/3 Rect. 15 (1)	—
(52)		4	—	—	—	—
(53)		5	—	—	—	—
(54)		6	—	—	—	—
(55)		7	—	—	—	—
(56)		8	—	—	—	—
(57)		9	—	—	—	—
(58)		10	—	—	—	—
(59)		11	—	33/1M	—	Mains input
(60)		12	—	33/2M	—	Mains input

SCHEDULE 1. Rack assembly Type 6340—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Rectifier Unit 15 (2)					
(61)	PL1/1	—	—	Earth	—
(62)	2	—	64/2, 64/4, 64/6 *strapped together*	—	+50V
(63)	3	—	64/1, 64/3, 64/5, *strapped together*	—	−50V
(64)	4	—	64/8, 64/10, 64/12, *strapped together*	—	+50V
(65)	5	—	64/7, 64/9, 64/11, *strapped together*	—	−50V
(66)	6	—	—	—	—
(67)	7	—	—	—	—
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	68/3*M*	—	Mains input
(72)	12	—	68/4*M*	—	Mains input
Connections for Trigger Unit 4413 (2)					
(73)	PL1/1	—	—	Earth	—
(74)	2	—	Pins 2 & 6 *strapped together*	—	—
(75)	3	—	Pins 3 & 7 *strapped together*	—	—
(76)	4	17	—	TU4413(1) PL1/5	—
(77)	5	16	—	TU4413(1) PL1/4	—
(78)	6	—	61/1*M*	—	—
(79)	7	—	61/2*M*	—	—
(80)	8	—	61/3	—	—
(81)	9	—	61/4	—	—
(82)	10	—	61/5	—	—
(83)	11	—	68/5*M*	—	Mains input
(84)	12	—	68/6*M*	—	Mains input
(85)	SK7/1	—	—	Earth	—
(86)	2	98	—	PU4414(2) PL1/2	—
(87)	3	99	—	PU4414(2) PL1/3	—
(88)	4	100	—	PU4414(2) PL1/4	—
(89)	5	101	—	PU4414(2) PL1/5	—
(90)	6	102	—	PU4414(2) PL1/6	—
(91)	7	103	—	PU4414(2) PL1/7	—
(92)	8	104	—	PU4414(2) PL1/8	—
(93)	9	105	—	PU4414(2) PL1/9	—
(94)	10	106	—	PU4414(2) PL1/10	—
(95)	11	107	—	PU4414(2) PL1/11*M*	—
(96)	12	108	—	PU4414(2) PL1/12*M*	—
Connections for Power Unit 4414 (2)					
(97)	PL1/1	—	—	Earth	—
(98)	2	86	—	PU4413(2) SK7/2	—
(99)	3	87	—	TU4413(2) SK7/3	—
(100)	4	88	—	TU4413(2) SK7/4	—
(101)	5	89	—	TU4413(2) SK7/5	—
(102)	6	90	—	TU4413(2) SK7/6	—
(103)	7	91	—	TU4413(2) SK7/7	—
(104)	8	92	—	TU4413(2) SK7/8	—
(105)	9	93	—	TU4413(2) SK7/9	—
(106)	10	94	—	TU4413(2) SK7/10	—
(107)	11	95	—	TU4413(2) SK7/11*M*	—
(108)	12	96	—	TU4413(2) SK7/12*M*	—
Connections for Amplifier Unit Video 4416					
(109)	SK1/1	—	—	Earth	—
(110)	2	—	—	—	—
(111)	3	135	—	PU4415 PL1/3	—
(112)	4	136	—	PU4415 PL1/4	—
(113)	5	—	—	—	—
(114)	6	138	—	PU4415 PL1/6	—
(115)	7	139	—	PU4415 PL1/7	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	142	—	PU4415 PL1/10	—
(119)	11	143	—	PU4415 PL1/11*M*	—
(120)	12	144	—	PU4415 PL1/12*M*	—

SCHEDULE 1. Rack assembly Type 6340—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jonés plug	Termination	
				Internal	External
Connections for Amplifier Unit Video 4416—(contd.)					
(121)	PL1/1	—	—	—	—
(122)	2	—	—	—	—
(123)	3	—	—	—	—
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	—	—	—	—
(128)	8	—	—	—	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	68/7*M*	—	Mains input
(132)	12	—	68/8*M*	—	Mains input
Connections for Power Unit 4415					
(133)	PL1/1	—	—	—	Earth
(134)	2	—	—	—	—
(135)	3	111	—	AU4416 SK11/3	—
(136)	4	112	—	AU4416 SK11/4	—
(137)	5	—	—	—	—
(138)	6	114	—	AU4416 SK11/6	—
(139)	7	115	—	AU4416 SK11/7	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	118	—	AU4416 SK11/10	—
(143)	11	119	—	AU4416 SK11/11	—
(144)	12	120	—	AU4416 SK11/12	—
Co-axial Connections					
(145)	SK2	Trigger Unit 4413(1) to Box Junction 100 (1)		Leads from either	
(146)	SK2	Trigger Unit 4413(2) to Box Junction 100 (1)		TU1 or TU2 only	
(147)	SK3	Trigger Unit 4413(1) to Box Junction 100 (2)		Should be connected to	
(148)	SK3	Trigger Unit 4413(2) to Box Junction 100 (2)		Box Junction 100 The other TU leads being disconnected	
Connections for Amplifying Unit (Pulse Splitter) 300					
(149)	PL1/1	—	—	Earth	—
(150)	2	—	—	—	—
(151)	3	—	—	—	—
(152)	4	—	—	—	—
(153)	5	—	—	—	—
(154)	6	—	—	—	—
(155)	7	—	—	—	—
(156)	8	—	—	—	—
(157)	9	—	—	—	—
(158)	10	—	—	—	—
(159)	11	—	33/7*M*	—	Mains input
(160)	12	—	33/8*M*	—	Mains input

RACK ASSEMBLY TYPE 6341

(Ref. No. 10D/20359)

		Amplifier (servo) 297 10U/16054 (c)		Rectifier Unit 17 Ref. No. 10D/17779 (1)	
5		Control Unit 600 10L/16029 (c) & (d)		Switch Unit 410 Ref. 10F/16163	39
	8				42
9					43
	12	Amplifier (servo) 297 10U/16054 (d)		Rectifier Unit 17 Ref. No. 10D/17779 (2)	46
					49
17		Amplifier (servo) 297 10U/16054 (e)		Amplifier (servo) 297 Ref. No. 10U/16054 (a)	51
	20				52
21					54
					56
	24	Control Unit 600 10L/16029 (e) & (f)		Control Unit 600 Ref. 10L/16029 (a) & (b)	57
25					60
	28				61
29		Amplifier (servo) 297 10U/16054 (f)		Amplifier (servo) 297 Ref. 10U/16054 (b)	63
	32				66
					68

Fig. 2. Rack Assembly Type 6341, schematic

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Rectifier Unit 17(1)					
Plugs 1, 2 and 3 not used.					
(1)	PL4/1	—	—	—	—
(2)	2	—	—	—	—
(3)	3	—	—	—	—
(4)	4	—	—	—	—
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	19	—	PL907/7 S.U.410	—
(8)	8	20	—	PL908/8 S.U.410	—
(9)	9	—	—	—	—
(10)	10	—	—	Earth	—
(11)	11	—	51/1	—	Mains Input
(12)	12	—	51/1	—	Mains Input
Connections for Switch Unit 410					
Plugs 901, 902, 903, 904, 905, 906, are not used.					
(13)	PL907/1	—	—	—	—
(14)	2	—	—	—	—
(15)	3	—	—	—	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	7	—	R.U.17 (1) PL4/7	—
(20)	8	8	—	R.U.17 (1) PL4/8	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	—	—	—
(24)	12	—	—	—	—
(25)	PL908/1	—	—	—	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	67	—	R.U.17(2) PL4/7	—
(32)	8	68	—	R.U.17(2) PL4/8	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	—	—	—
(36)	12	—	—	—	—
(37)	PL909/1	125	—	PL5/5 S.A.(a)	—
(38)	2	126	—	PL5/6 S.A.(a)	—
(39)	3	166	—	PL504/10 C.U.(a)	—
(40)	4	167	—	PL504/11 C.U.(a)	—
(41)	5	262	—	PL504/10 C.U.(b)	—
(42)	6	263	—	PL504/11 C.U.(b)	—
(43)	7	221	—	PL5/5 S.A.(b)	—
(44)	8	222	—	PL5/6 S.A.(b)	—
(45)	9	317	—	PL5/5 S.A.(c)	—
(46)	10	318	—	PL5/6 S.A.(c)	—
(47)	11	358	—	PL504/10 C.U.(c)	—
(48)	12	359	—	PL504/11 C.U.(c)	—
(49)	PL910/1	413	—	PL5/5 S.A.(d)	—
(50)	2	414	—	PL5/6 S.A.(d)	—
(51)	3	454	—	PL504/10 C.U.(d)	—
(52)	4	455	—	PL504/11 C.U.(d)	—
(53)	5	509	—	PL5/5 S.A.(e)	—
(54)	6	510	—	PL5/6 S.A.(e)	—
(55)	7	550	—	PL504/10 C.U.(e)	—
(56)	8	551	—	PL504/11 C.U.(e)	—
(57)	9	605	—	PL5/5 S.A.(f)	—
(58)	10	606	—	PL5/6 S.A.(f)	—
(59)	11	646	—	PL504/10 C.U.(f)	—
(60)	12	647	—	PL504/11 C.U.(f)	—
Connections for Rectifier Unit 17(2)					
Plugs 1, 2, and 3 not used.					
(61)	PL14/1	—	—	—	—
(62)	2	—	—	—	—
(63)	3	—	—	—	—
(64)	4	—	—	—	—
(65)	5	—	—	—	—
(66)	6	—	—	—	—
(67)	7	31	—	S.U.410 PL908/7	—
(68)	8	32	—	S.U.410 PL908/8	—
(69)	9	—	—	—	—

Rack assembly Type 6341—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(70)		10	—	—	Earth	—
(71)		11	—	51/3	—	Mains Input
(72)		12	—	51/4	—	Mains Input
	Connections for Amplifier (servo) 297(a)					
(73)		PL1/1	—	52/11	—	Plinth Term. 67A
(74)		2	—	52/12	—	Plinth Term. 68A
(75)		3	—	51/5	—	Mains Input
(76)		4	—	—	Earth	—
(77)		5	—	—	—	—
(78)		6	—	51/6	—	Mains Input
(79)		7	—	56/7	—	PLA2/7 Sel. U.100
(80)		8	—	—	—	—
(81)		9	—	52/9	—	S.R.46A
(82)		10	—	56/8	—	PLA2/8 Sel. U.100
(83)		11	—	56/6	—	PLA2/6 Sel. U.100
(84)		12	—	52/10	—	S.R.38A
(85)		PL2/1	—	—	—	—
(86)		2	—	—	—	—
(87)		3	—	—	—	—
(88)		4	—	54/5	—	S.R.23A
(89)		5	—	54/4	—	S.R.22A
(90)		6	—	54/7	—	S.R.25A
(91)		7	—	54/6	—	S.R.24A
(92)		8	—	54/9	—	S.R.27A
(93)		9	—	54/8	—	S.R.26A
(94)		10	115	54/10	PL4/7 S.A.(a)	S.R.28A
(95)		11	161	54/3, 56/11, 56/4 Strapped	PL503/7 C.U.(a)	S.R.19 & 29A
(96)		12	—	54/12	—	S.R.30A
(97)		PL3/1	—	—		—
(98)		2	—	—	—	—
(99)		3	—	52/1	—	Amplid X4 A
(100)		4	—	52/2	—	Amplid X3 A
(101)		5	—	52/3	—	Amplid X2 A
(102)		6	—	52/4	—	Amplid X1 A
(103)		7	—	52/5	—	Amplid X5 A
(104)		8	—	52/6	—	Amplid X6 A
(105)		9	—	52/7	—	Amplid A4 A
(106)		10	—	—	—	—
(107)		11	—	52/8	—	Amplid A2 A
(108)		12	—	—	—	—
	Connections for Amplifier (servo) 297(a)					
(109)		PL4/1		60/3		PLA1/3 Sel. 100
(110)		2	—	60/5	—	PLA1/5 Sel. 100
(111)		3	154	—	PL502/12 C.U.(a)	
(112)		4	—	54/1	—	S.R.36A
(113)		5		56/9	—	PLA2/9 Sel. 100
(114)		6	151	—	PL502/9 C.U.(a)	
(115)		7	94	54/10	PL2/10 S.A.(a)	S.R.28A
(116)		8		54/2, 56/5 Strapped	—	S.R.34A, PLA2/5 Sel. 100
(117)		9		56/2		PLA2/2 Sel. 100
(118)		10	—	56/3	—	PLA2/3 Sel. 100
(119)		11	—	—	—	—
(120)		12	—	—	—	—
(121)		PL5/1	—	—	—	—
(122)		2	—	60/4	—	PLA1/4 Sel. 100
(123)		3	—	60/7	—	PLA1/7 Sel. 100
(124)		4	145	68/1	PL502/3 C.U.(a)	Joystick Slew.
(125)		5	37	—	PL909/1 S.U.410	
(126)		6	38	—	PL909/2 S.U.410	
(127)		7	—	60/1	—	PLA1/1 Sel. 100
(128)		8	146	—	PL502/4 C.U.(a)	—
(129)		9	147	—	PL502/5 C.U. (a)	—
(130)		10	152	—	PL502/10 C.U. (a)	—
(131)		11	153	—	PL502/11 C.U. (a)	—
(132)		12	134	—	PL501/2 C.U. (a)	—
	Connections for Control Unit 600(a)					
(133)		PL501/1	—	—	—	—
(134)		2	132	—	PL5/12 S.A. (a)	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(135)		3	—	501/5, 501/7 Strapped	—	—
(136)		4	—	—	—	—
(137)		5	—	501/3, 501/7 Strapped	—	—
(138)		6	—	—	—	—
(139)		7	—	501/3, 501/5 Strapped	—	—
(140)		8	—	—	—	—
(141)		9	—	60/9	—	PLA1/9 Sel. 100
(142)		10	—	60/11	—	PLA1/11 Sel. 100
(143)		11	—	60/8	—	PLA1/8 Sel. 100
(144)		12	—	56/10	—	PLA2/10 Sel. 100
(145)		PL502/3	124	68/1	PL5/4 S.A. (a)	—
(146)		4	128	—	PL5/8 S.A. (a)	—
(147)		5	129	—	PL5/9 S.A. (a)	—
(148)		6	—	56/11	—	PLA2/11 Sel. 100
(149)		7	—	—	—	—
(150)		8	—	56/1	—	PLA2/1 Sel. 100
(151)		9	114	—	PL4/6 S.A. (a)	—
(152)		10	130	—	PL5/10 S.A. (a)	—
(153)		11	131	—	PL5/11 S.A. (a)	—
(154)		12	111	—	PL4/3 S.A. (a)	—
(155)		PL503/1	—	60/10	—	PLA1/10 Sel. 100
(156)		2	—	—	—	—
(157)		3	—	60/2	—	PLA1/2 Sel. 100
(158)		4	—	51/7	—	Mains
(159)		5	—	60/6	—	PLA1/6 Sel. 100
(160)		6	—	51/8	—	Mains
(161)		7	95	56/4, 54/3, 54/11 Strapped	PL2/11 S.A. (a)	PLA2/4 Sel. 100
(162)		8	—	—	—	—
(163)		PL504/7	—	—	—	—
(164)		8	—	—	—	—
(165)		9	—	—	—	—
(166)		10	39	—	PL909/3 S.U.410	—
(167)		11	40	—	PL909/4 S.U.410	—
(168)		12	—	—	Earth	—
Connections for Amplifier (servo) 297(b)						
(169)		PL1/1	—	57/11	—	Plinth Term 67B
(170)		2	—	57/12	—	Plinth Term 68B
(171)		3	—	51/9	—	Mains Input
(172)		4	—	—	Earth	—
(173)		5	—	—	—	—
(174)		6	—	51/10	—	Mains Input
(175)		7	—	66/7	—	PLB2/7 Sel. V.100
(176)		8	—	—	—	—
(177)		9	—	57/9	—	S.R.46B
(178)		10	—	66/8	—	PLB.2/8
(179)		11	—	66/6	—	PLB.2/6
(180)		12	—	57/10	—	S.R.38B
(181)		PL2/1	—	—	—	—
(182)		2	—	—	—	—
(183)		3	—	—	—	—
(184)		4	—	61/5	—	S.R.23.B
(185)		5	—	61/4	—	S.R.22.B
(186)		6	—	61/7	—	S.R.25.B
(187)		7	—	61/6	—	S.R.24.B
(188)		8	—	61/9	—	S.R.27.B
(189)		9	—	61/8	—	S.R.26.B
(190)		10	211	61/10	PL4/7 S.A.(b)	S.R.28.B
(191)		11	257	66/4, 61/3, 61/11 Strapped	PL503/7 C.U.(b)	S.R.19 & 29B, PLB2/4 Sel. 100
(192)		12	—	61/12	—	S.R.30.B
(193)		PL3/1	—	—	—	—
(194)		2	—	—	—	—
(195)		3	—	57/1	—	Amplid X4 B
(196)		4	—	57/2	—	Amplid X3 B
(197)		5	—	57/3	—	Amplid X2 B
(198)		6	—	57/4	—	Amplid X1 B
(199)		7	—	57/5	—	Amplid X5 B
(200)		8	—	57/6	—	Amplid X6 B
(201)		9	—	57/7	—	Amplid A4 B
(202)		10	—	—	—	—
(203)		11	—	57/8	—	Amplid A2 B

Rack assembly Type 6341—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(204)		12	—	—	—	—
(205)		PL4/1	—	63/3	—	PLB1/3 Sel. 100
(206)		2	—	63/5	—	PLB1/5 Sel. 100
(207)		3	250	—	PL502/12 C.U.(b)	—
(208)		4	—	61/1	—	S.R.36B
(209)		5	—	66/9	—	PLB2/9 Sel. 100
(210)		6	247	—	PL502/9 C.U.(b)	—
(211)		7	190	61/10	PL2/10 S.A.(b)	S.R.28B
(212)		8	—	61/2, 66/5 Strapped	—	S.R.34B, PLB2/5 Sel. 100
(213)		9	—	66/2	—	PLB2/2 Sel. 100
(214)		10	—	66/3	—	PLB2/3 Sel. 100
(215)		11	—	—	—	—
(216)		12	—	—	—	—
(217)		PL5/1	—	—	—	—
(218)		2	—	63/4	—	PLB1/4 Sel. 100
(219)		3	—	63/7	—	PLB1/7 Sel. 100
(220)		4	241	68/2	PL502/3 C.U.(b)	Joystick Slew.
(221)		5	43	—	PL909/7 S.U.410	—
(222)		6	44	—	PL909/8 S.U.410	—
(223)		7	—	63/1	—	PLB1/1 Sel. 100
(224)		8	242	—	PL502/4 C.U.(b)	—
(225)		9	243	—	PL502/5 C.U.(b)	—
(226)		10	248	—	PL502/10 C.U.(b)	—
(227)		11	249	—	PL502/11 C.U.(b)	—
(228)		12	230	—	PL501/2 C.U.(b)	—
	Connections for Control Unit 600(b)					
(229)		PL501/1	—	—	—	—
(230)		2	228	—	PL5/12 S.A.(b)	—
(231)		3	—	501/7, 501/5 Strapped	—	—
(232)		4	—	—	—	—
(233)		5	—	501/7, 501/3 Strapped	—	—
(234)		6	—	—	—	—
(235)		7	—	501/5, 501/3 Strapped	—	—
(236)		8	—	—	—	—
(237)		9	—	63/9	—	PLB1/9 Sel. 100
(238)		10	—	63/11	—	PLB1/11 Sel. 100
(239)		11	—	63/8	—	PLB1/10 Sel. 100
(240)		12	—	66/10	—	PLB2/10 Sel. 100
(241)		PL502/3	220	68/2	PL5/4 S.A.(b)	—
(242)		4	224	—	PL5/8 S.A.(b)	—
(243)		5	225	—	PL5/9 S.A.(b)	—
(244)		6	—	66/11	—	PLB2/11 Sel. 100
(245)		7	—	—	—	—
(246)		8	—	66/1	—	PLB2/1 Sel. 100
(247)		9	210	—	PL4/6 S.A.(b)	—
(248)		10	226	—	PL5/10 S.A.(b)	—
(249)		11	227	—	PL5/11 S.A.(b)	—
(250)		12	207	—	PL4/3 S.A.(b)	—
(251)		PL503/1	—	63/10	—	PLB1/10 Sel. 100
(252)		2	—	—	—	—
(253)		3	—	63/2	—	PLB1/2 Sel. 100
(254)		4	—	—	—	—
(255)		5	—	63/6	—	PLB1/6 Sel. 100
(256)		6	—	—	—	—
(257)		7	191	66/4	PL2/11 S.A.(b)	PLB2/4 Sel. 100, S.R.19 & 29B
		Strapped to 61/3 and 61/11				
(258)		PL503/8	—	—	—	—
(259)		PL504/7	—	—	—	—
(260)		8	—	—	—	—
(261)		9	—	—	—	—
(262)		10	41	—	PL909/5 S.U.410	—
(263)		11	42	—	PL909/6 S.U.410	—
(264)		12	—	—	Earth	—
	Connections for Amplifier (servo) 297(c)					
(265)		PL1/1	—	29/11	—	Plinth Term 67C
(266)		2	—	29/12	—	Plinth Term 68C
(267)		3	—	51/11	—	Mains Input
(268)		4	—	—	Earth	—
(269)		5	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(270)		6	—	51/12	—	Mains Input
(271)		7	—	12/7	—	PLC2/7 Sel. U.100
(272)		8	—	—	—	—
(273)		9	—	29/9	—	S.R.46C
(274)		10	—	12/8	—	PLC2/8
(275)		11	—	12/6	—	PLC2/6
(276)		12	—	29/10	—	S.R.38C
(277)		PL2/1	—	—	—	—
(278)		2	—	—	—	—
(279)		3	—	—	—	—
(280)		4	—	32/5	—	S.R.23C
(281)		5	—	32/4	—	S.R.22C
(282)		6	—	32/7	—	S.R.25C
(283)		7	—	32/6	—	S.R.24C
(284)		8	—	32/9	—	S.R.27C
(285)		9	—	32/8	—	S.R.26C
(286)		10	307	32/10	PL4/7 S.A.(c)	S.R.28C
(287)		11	353	32/3, 32/11, 12/4 Strapped	PL503/7 C.U.(c)	S.R.19 & 29C; PLC2/4 Sel. 100
(288)		12	—	32/12	—	S.R.30C
(289)		PL3/1	—	—	—	—
(290)		2	—	—	—	—
(291)		3	—	29/1	—	Amplid X4C
(292)		4	—	29/2	—	Amplid X3C
(293)		5	—	29/3	—	Amplid X2C
(294)		6	—	29/4	—	Amplid X1C
(295)		7	—	29/5	—	Amplid X5C
(296)		8	—	29/6	—	Amplid X6C
(297)		9	—	29/7	—	Amplid A4C
(298)		10	—	—	—	—
(299)		11	—	29/8	—	Amplid A2C
(300)		12	—	—	—	—
(301)		PL4/1	—	9/3	—	PLC1/3 Sel. 100
(302)		2	—	9/5	—	PLC1/5 Sel. 100
(303)		3	346	—	PL502/12 C.U.(c)	—
(304)		4	—	32/1	—	S.R.36C
(305)		5	—	12/9	—	PLC2/9 Sel. 100
(306)		6	343	—	PL502/9 C.U.(c)	—
(307)		7	286	32/10	PL2/10 S.A.(c)	S.R.28C
(308)		8	—	32/2, 12/5 Strapped	—	S.R.34C; PLC2/5 Sel. 100
(309)		9	—	12/2	—	PLC2/2 Sel. 100
(310)		10	—	12/3	—	PLC2/3 Sel. 100
(311)		11	—	—	—	—
(312)		12	—	—	—	—
(313)		PL5/1	—	—	—	—
(314)		2	—	9/4	—	PLC1/4 Sel. 100
(315)		3	—	9/7	—	PLC1/7 Sel. 100
(316)		4	337	68/3	PL502/3 C.U.(c)	Joystick Slew.
(317)		5	45	—	PL909/9 S.U.410	—
(318)		6	46	—	PL909/10 S.U.410	—
(319)		7	—	9/1	—	PLC1/1 Sel. 100
(320)		8	338	—	PL502/4 C.U.(c)	—
(321)		9	339	—	PL502/5 C.U.(c)	—
(322)		10	344	—	PL502/10 C.U.(c)	—
(323)		11	345	—	PL502/11 C.U.(c)	—
(324)		12	326	—	PL501/2 C.U.(c)	—
Connections for Control Unit 600(c)						
(325)		PL501/1	—	—	—	—
(326)		2	324	—	PL5/12 S.A.(c)	—
(327)		3	—	501/5, 501/7 Strapped	—	—
(328)		4	—	—	—	—
(329)		5	—	501/3, 501/7 Strapped	—	—
(330)		6	—	—	—	—
(331)		7	—	501/5, 501/3 Strapped	—	—
(332)		8	—	—	—	—
(333)		9	—	9/9	—	PLC1/9 Sel. 100
(334)		10	—	9/11	—	PLC/11 Sel. 100
(335)		11	—	9/8	—	PLC1/8 Sel. 100
(336)		12	—	12/10	—	PLC2/10 Sel. 100
(337)		PL502/3	316	68/3	PL5/4 S.A.(c)	Joystick Slew.
(338)		4	320	—	PL5/8 S.A.(c)	—
(339)		5	321	—	PL5/9 S.A.(c)	—
(340)		6	—	12/11	—	PLC2/11 Sel. 100

Rack assembly Type 6341—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(341)		7	—	—	—	—
(342)		8	—	12/1	—	PLC2/1 Sel. 100
(343)		9	306	—	PL4/6 S.A.(c)	—
(344)		10	322	—	PL5/10 S.A.(c)	—
(345)		11	323	—	PL5/11 S.A.(c)	—
(346)		12	303	—	PL4/3 S.A.(c)	—
(347)		PL503/1	—	9/10	—	PLC1/10 Sel. 100
(348)		2	—	—	—	—
(349)		3	—	9/2	—	PLC1/2 Sel. 100
(350)		4	—	49/1	—	Mains Input
(351)		5	—	9/6	—	PLC1/6 Sel. 100
(352)		6	—	49/2	—	Mains Input
(353)		7	287	12/4, 32/3, 32/11 Strapped	PL2/11 S.A.(c)	PLC2/4 Sel. 100; S.R.19 & 29C
(354)		8	—	—	—	—
(355)		PL504/7	—	—	—	—
(356)		8	—	—	—	—
(357)		9	—	—	—	—
(358)		10	47	—	PL909/11 S.U.410	—
(359)		11	48	—	PL909/12 S.U.410	—
(360)		12	—	—	Earth	—
	Connections for Amplifier (servo) 297(d)					
(361)		PL1/1	—	25/11	—	Plinth Term 67D
(362)		2	—	25/12	—	Plinth Term 68D
(363)		3	—	49/3	—	Mains Input
(364)		4	—	—	Earth	—
(365)		5	—	—	—	—
(366)		6	—	49/4	—	Mains Input
(367)		7	—	8/7	—	PLD2/7 Sel. 100
(368)		8	—	—	—	—
(369)		9	—	25/9	—	S.R.46D
(370)		10	—	8/8	—	PLD2/8 Sel. 100
(371)		11	—	8/6	—	PLD2/6 Sel. 100
(372)		12	—	25/10	—	S.R.38D
(373)		PL2/1	—	—	—	—
(374)		2	—	—	—	—
(375)		3	—	—	—	—
(376)		4	—	28/5	—	S.R.23D
(377)		5	—	28/4	—	S.R.22D
(378)		6	—	28/7	—	S.R.25D
(379)		7	—	28/6	—	S.R.24D
(380)		8	—	28/9	—	S.R.27D
(381)		9	—	28/8	—	S.R.26D
(382)		10	403	28/10	PL4/7 S.A.(d)	S.R.28D
(383)		11	449	8/4, 28/3, 28/11 Strapped	PL503/7 C.U.(d)	S.R.19 & 29D; PLD2/4 Sel. 100
(384)		12	—	28/12	—	S.R.30D
(385)		PL3/1	—	—	—	—
(386)		2	—	—	—	—
(387)		3	—	25/1	—	Amplid X4D
(388)		4	—	25/2	—	Amplid X3
(389)		5	—	25/3	—	Amplid X2
(390)		6	—	25/4	—	Amplid X1
(391)		7	—	25/5	—	Amplid X5
(392)		8	—	25/6	—	Amplid X6
(393)		9	—	25/7	—	Amplid A4
(394)		10	—	—	—	—
(395)		11	—	25/8	—	Amplid A2
(396)		12	—	—	—	—
(397)		PL4/1	—	5/3	—	PLD1/3 Sel. 100
(398)		2	—	5/5	—	PLD1/5 Sel. 100
(399)		3	442	—	PL502/12 C.U.(d)	—
(400)		4	—	28/1	—	S.R.36D
(401)		5	—	8/9	—	PLD2/9 Sel. 100
(402)		6	439	—	PL502/9 C.U.(d)	—
(403)		7	382	28/10	PL2/10 S.A.(d)	S.R.2D
(404)		8	—	28/2, 8/5 Strapped	—	S.R.34D; PLD2/5 Sel. 100
(405)		9	—	8/2	—	PLD2/2 Sel. 100
(406)		10	—	8/3	—	PLD2/3 Sel. 100
(407)		11	—	—	—	—
(408)		12	—	—	—	—
(409)		PL5/1	—	—	—	—

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(410)		2	—	5/4	—	PLD1/4 Sel. 100
(411)		3	—	5/7	—	PLD1/7 Sel. 100
(412)		4	433	68/4	PL502/3 C.U.(d)	Joystick Slew.
(413)		5	49	—	PL910/1 S.U.410	—
(414)		6	50	—	PL910/2 S.U.410	—
(415)		7	—	5/1	—	PLD1/1 Sel. 100
(416)		PL5/8	434	—	PL502/4 C.U.(d)	—
(417)		9	435	—	PL502/5 C.U.(d)	—
(418)		10	440	—	PL502/10 C.U.(d)	—
(419)		11	441	—	PL502/11 C.U.(d)	—
(420)		12	422	—	PL501/2 C.U.(d)	—
Connections for Control Unit 600(d)						
(421)		PL501/1	—	—	—	—
(422)		2	420	—	PL5/12 S.A.(d)	—
(423)		3	—	501/5, 501/7 Strapped	—	—
(424)		4	—	—	—	—
(425)		5	—	501/3, 501/7 Strapped	—	—
(426)		6	—	—	—	—
(427)		7	—	501/3, 501/5 Strapped	—	—
(428)		8	—	—	—	—
(429)		9	—	5/9	—	PLD1/9 Sel. 100
(430)		10	—	5/11	—	PLD1/11 Sel. 100
(431)		11	—	5/8	—	PLD1/8 Sel. 100
(432)		12	—	8/10	—	PLD2/10 Sel. 100
(433)		PL502/3	412	68/4	PL5/4 S.A.(d)	Joystick Slew.
(434)		4	416	—	PL5/8 S.A.(d)	—
(435)		5	419	—	PL5/9 S.A.(d)	—
(436)		6	—	8/11	—	PLD2/11 Sel. 100
(437)		7	—	—	—	—
(438)		8	—	8/1	—	PLD2/1 Sel. 100
(439)		9	402	—	PL4/6 S.A.(d)	—
(440)		10	418	—	PL5/10 S.A.(d)	—
(441)		11	419	—	PL5/11 S.A.(d)	—
(442)		12	399	—	PL4/3 S.A.(d)	—
(443)		PL503/1	—	5/10	—	PLD1/10 Sel. 100
(444)		2	—	—	—	—
(445)		3	—	5/2	—	PLD1/2 Sel. 100
(446)		4	—	—	—	—
(447)		5	—	5/6	—	PLD1/6 Sel. 100
(448)		6	—	—	—	—
(449)		7	383	8/4, 28/3, 28/11 Strapped	PL2/11 S.A.(b)	PLD2/4 Sel. 100 S.R.19 & 29D
(450)		8	—	—	—	—
(451)		PL504/7	—	—	—	—
(452)		8	—	—	—	—
(453)		9	—	—	—	—
(454)		10	51	—	PL910/3 S.U.410	—
(455)		11	52	—	PL910/4 S.U.410	—
(456)		12	—	—	Earth	—
Connections for Amplifier (servo) 297(e)						
(457)		PL1/1	—	21/11	—	Plinth Term 67E
(458)		2	—	21/12	—	Plinth Term 68E
(459)		3	—	49/5	—	Mains Input
(460)		4	—	—	Earth	—
(461)		5	—	—	—	—
(462)		6	—	49/6	—	Mains Input
(463)		7	—	42/7	—	PLE2/7 Sel. 100
(464)		8	—	—	—	—
(465)		9	—	21/9	—	S.R.46E
(466)		10	—	42/8	—	PLE2/8 Sel. 100
(467)		11	—	42/6	—	PLE2/6 Sel. 100
(468)		12	—	21/10	—	S.R.38E
(469)		PL2/1	—	—	—	—
(470)		2	—	—	—	—
(471)		3	—	—	—	—
(472)		4	—	24/5	—	S.R.23E
(473)		5	—	24/4	—	S.R.22E
(474)		6	—	24/7	—	S.R.25E
(475)		7	—	24/6	—	S.R.24E
(476)		8	—	24/9	—	S.R.27E
(477)		9	—	24/8	—	S.R.26E
(478)		10	499	24/10	PL4/7 S.A.(e)	S.R.28E

Rack assembly Type 6341—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(479)		11	545	42/4, 24/3, 24/11 Strapped	PL503/7 C.U.(e)	PLE2/4 Sel. 100, S.R.19 & 29E
(480)		12	—	24/12	—	S.R.30E
(481)		PL3/1	—	—	—	—
(482)		2	—	—	—	—
(483)		3	—	21/1	—	Amplid X4E
(484)		4	—	21/2	—	Amplid X3
(485)		5	—	21/3	—	Amplid X2
(486)		6	—	21/4	—	Amplid X1
(487)		7	—	21/5	—	Amplid X5
(488)		8	—	21/6	—	Amplid X6
(489)		9	—	21/7	—	Amplid A4
(490)		10	—	—	—	—
(491)		11	—	21/8	—	Amplid A2
(492)		12	—	—	—	—
(493)		PL4/1	—	39/3	—	PLE1/3 Sel. 100
(494)		2	—	39/5	—	E.1/5
(495)		3	538	—	PL502/12 C.U.(e)	—
(496)		4	—	24/1	—	S.R.36E
(497)		5	—	42/9	—	PLE2/9 Sel. 100
(498)		6	535	—	PL502/9 C.U.(e)	—
(499)		7	478	24/10	PL2/10 S.A.(e)	S.R.28E
(500)		8	—	24/2, 42/5 Strapped	—	S.R.34E, PLE2/5 Sel. 100
(501)		9	—	42/2	—	PLE2/2 Sel. 100
(502)		10	—	42/3	—	PLE2/3 Sel. 100
(503)		11	—	—	—	—
(504)		12	—	—	—	—
(505)		PL5/1	—	—	—	—
(506)		2	—	39/4	—	PLE1/4 Sel. 100
(507)		3	—	39/7	—	E.1/7
(508)		4	529	68/5	PL502/3 C.U.(e)	Joystick Slew.
(509)		5	53	—	PL910/5 S.U.410	—
(510)		6	54	—	PL910/6 S.U.410	—
(511)		7		39/1	—	PLE1/1 Sel. 100
(512)		8	530	—	PL502/4 C.U.(e)	—
(513)		9	531	—	PL502/5 C.U.(e)	—
(514)		10	536	—	PL502/10 C.U.(e)	—
(515)		11	537	—	PL502/11 C.U.(e)	—
(516)		12	518	—	PL501/2 C.U.(e)	—
	Connections for Control Unit 600(e)					
(517)		PL501/1	—	—	—	—
(518)		2	516	—	PL5/12 S.A.(e)	—
(519)		3	—	501/5, 501/7 Strapped	—	—
(520)		4	—	—	—	—
(521)		5	—	501/3, 501/7 Strapped	—	—
(522)		6	—	—	—	—
(523)		7	—	501/3, 501/5 Strapped	—	—
(524)		8	—	—	—	—
(525)		9	—	39/9	—	PLE1/9 Sel. 100
(526)		10	—	39/11	—	PLE1/11 Sel. 100
(527)		11	—	39/8	—	PLE1/8 Sel. 100
(528)		12	—	42/10	—	PLE2/10 Sel. 100
(529)		PL502/3	508	68/5	PL5/4 S.A.(e)	—
(530)		4	512	—	PL5/8 S.A.(e)	—
(531)		5	513	—	PL5/9 S.A.(e)	—
(532)		6	—	42/11	—	PLE2/11 Sel. 100
(533)		7	—	—	—	—
(534)		8	—	42/1	—	PLE2/1 Sel. 100
(535)		9	498	—	PL4/6 S.A.(e)	—
(536)		10	514	—	PL5/10 S.A.(e)	—
(537)		11	515	—	PL5/11 S.A.(e)	—
(538)		12	495	—	PL4/3 S.A.(e)	—
(539)		PL503/1	—	39/10	—	PLE1/10 Sel. 100
(540)		2	—	—	—	—
(541)		3	—	39/2	—	PLE1/2 Sel. 100
(542)		4	—	49/7	—	Mains Input
(543)		5	—	39/6	—	PLE1/6 Input
(544)		6	—	49/8	—	Mains Input

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(545)	7	479	42/4, 24/3, 24/11 Strapped		PL2/11 S.A.(e)	PLE2/4 Input, S.R.19 & 29E
(546)	8	—	—		—	—
(547)	PL504/7	—	—		—	—
(548)	8	—	—		—	—
(549)	9	—	—		—	—
(550)	10	55	—		PL910/7 S.U.410	—
(551)	11	56	—		PL910/8 S.U.410	—
(552)	12	—	—		Earth	—
Connections for Amplifier (servo) 297(f)						
(553)	PL1/1	—	17/11		—	Plinth Term 67F
(554)	2	—	17/12		—	Plinth Term 68F
(555)	3	—	49/9		—	Mains Input
(556)	4	—	—		Earth	—
(557)	5	—	—		—	—
(558)	6	—	49/10		—	Mains Input
(559)	7	—	46/7		—	PLF2/7 Sel. 100
(560)	8	—	—		—	—
(561)	9	—	17/9		—	S.R.46F
(562)	10	—	46/8		—	PLF2/8 Sel. 100
(563)	11	—	46/6		—	F2/6 Sel. 100
(564)	12	—	17/10		—	S.R.38F
(565)	PL2/1	—	—		—	—
(566)	2	—	—		—	—
(567)	3	—	—		—	—
(568)	4	—	20/5		—	S.R.23F
(569)	5	—	20/4		—	S.R.22F
(570)	6	—	20/7		—	S.R.25F
(571)	7	—	20/6		—	S.R.24F
(572)	8	—	20/9		—	S.R.27F
(573)	9	—	20/8		—	S.R.26F
(574)	10	595	20/10		PL4/7 S.A.(f)	S.R.28F
(575)	11	641	46/4, 20/3, 20/11 Strapped		PL503/7 C.U.(f)	PLF2/4 Sel. 100, S.R.19 & 29F
(576)	12	—	20/12		—	S.R.30F
(577)	PL3/1	—	—		—	—
(578)	2	—	—		—	—
(579)	3	—	17/1		—	Amplid X4F
(580)	4	—	17/2		—	Amplid X3
(581)	5	—	17/3		—	Amplid X2
(582)	6	—	17/4		—	Amplid X1
(583)	7	—	17/5		—	Amplid X5
(584)	8	—	17/6		—	Amplid X6
(585)	9	—	17/7		—	Amplid A4
(586)	10	—	—		—	—
(587)	11	—	17/8		—	Amplid A2
(588)	12	—	—		—	—
(589)	PL4/1	—	43/3		—	PLF1/3 Sel. 100
(590)	2	—	43/5		—	F1/5 Sel. 100
(591)	3	634	—		PL502/12 C.U.(f)	—
(592)	4	—	20/1		—	S.R.36F
(593)	5	—	46/9		—	PLF2/9 Sel. 100
(594)	6	631	—		PL502/9 C.U.(f)	—
(595)	7	574	20/10		PL2/10 S.A.(f)	S.R.28F
(596)	8	—	20/2, 46/5 Strapped		—	PLF2/2 Sel. 100, S.R.34F
(597)	9	—	46/2		—	PLF2/2 Sel. 100
(598)	10	—	46/3		—	F2/3 Sel. 100
(599)	11	—	—		—	—
(600)	12	—	—		—	—
(601)	PL5/1	—	—		—	—
(602)	2	—	43/4		—	PLF1/4 Sel. 100
(603)	3	—	43/7		—	F1/7 Sel. 100
(604)	4	625	68/6		PL502/3 C.U.(f)	Joystick Slew.
(605)	5	57	—		PL910/9 S.U.410	—
(606)	6	58	—		PL910/10 S.U.410	—
(607)	7	—	43/1		—	PLF1/1 Sel. 100
(608)	8	626	—		PL502/4 C.U.(f)	—
(609)	9	627	—		PL502/5 C.U.(f)	—
(610)	10	632	—		PL502/11 C.U.(f)	—
(611)	11	633	—		PL502/11 C.U.(f)	—
(612)	12	614	—		PL501/2 C.U.(f)	—
Connections for Control Unit 600(f)						
(613)	PL501/1	—	—		—	—
(614)	2	612	—		PL5/12 S.A.(f)	—

Rack assembly Type 6341—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(615)	3	—	501/5, 501/7 Strapped		—	—
(616)	4	—	—		—	—
(617)	5	—	501/3, 501/7 Strapped		—	—
(618)	6	—	—		—	—
(619)	7	—	501/3, 501/5 Strapped		—	—
(620)	8	—	—		—	—
(621)	PL501/9	—	43/9		—	PLF1/9 Sel. 100
(622)	10	—	43/11		—	PLF1/11 Sel. 100
(623)	11	—	43/8		—	PLF1/8 Sel. 100
(624)	12	—	46/10		—	PLF2/10 Sel. 100
(625)	PL502/3	604	68/6		PL5/4 S.A.(f)	—
(626)	4	608	—		PL5/8 S.A. (f)	—
(627)	5	609	—		PL5/9 S.A. (f)	—
(628)	6	—	46/11		—	PLF2/11 Sel. 100
(629)	7	—	—		—	—
(630	8	—	46/1		—	F.2/1 Sel. 100
(631)	9	594	—		PL4/6 S.A. (f)	—
(632)	10	610	—		PL5/10 S.A. (f)	—
(633)	11	611	—		PL5/11 S.A. (f)	—
(634)	12	591	—		PL4/3 S.A. (f)	—
(635)	PL503/1	—	43/10		—	PLF/10 Sel. 100
(636)	2	—	—		—	—
(637)	3	—	43/2		—	F.1/2 Sel. 100
(638)	4	—	—		—	—
(639)	5	—	43/6		—	F.1/6 Sel. 100
(640)	6	—	—		—	—
(641)	7	575	46/4, 20/3, 20/11 Strapped		PL2/11 S.A. (f)	F.2/4 Sel. 100, S.R. 19 & 29F
(642)	8	—	—		—	—
(643)	PL504/7	—	—		—	—
(644)	8	—	—		—	—
(645)	9	—	—		—	—
(646)	10	59	—		PL910/11 S.U. 410	—
(647)	11	60	—		PL910/12 S.U.410	—
(648)	12	—	—		Earth	—

Additional Connections

Straps 68/7, 68/8, 68/9, 68/10, 68/11, 68/12 to Earth.

RACK ASSEMBLY TYPE 6342

(Ref. No. 10D/20360)

	Panel (blanking) 4639 (Stores Reference 10D/19663)	Panel (blanking) 4639
	Panel (blanking) 4639	Panel (blanking) 4639
	Panel (blanking) 4639	Panel (blanking) 4639
	Panel (blanking) 4639	Panel (blanking) 4639
26 27	Rectifier Unit 15 (1) 10D/17761	Rectifier Unit 15 (2) 10D/17761
29 32 33	Rectifier Unit 15 (3) 10D/17761	Rectifier Unit 15 (4) 10D/17761

Fig. 3. Rack Assembly Type 6342, schematic

RACK ASSEMBLY TYPE 6342

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
Connections for Rectifier Unit 15(1)					
(1)	PL1/1	—	—	Earth	—
(2)	2	—	32/2, 32/4, 32/6 Strapped	—	50V +
(3)	3	—	32/1, 32/3, 32/5 Strapped	—	50V —
(4)	4	—	32/8, 32/10, 32/12 Strapped	—	50V +
(5)	5	—	32/7, 32/9, 32/11 Strapped	—	50V —
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	33/1	—	Mains Input
(12)	12	—	33/2	—	Mains Input
Plug 2 is not used.					
Connections for Rectifier Unit 15(3)					
(13)	PL1/1	—	—	Earth	—
(14)	2	—	29/2, 29/4, 29/6 Strapped	—	50V +
(15)	3	—	29/1, 29/3, 29/5 Strapped	—	50V —
(16)	4	—	29/8, 29/10, 29/12 Strapped	—	50V +
(17)	5	—	29/7, 29/8, 29/11 Strapped	—	50V —
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	33/3	—	Mains Input
(24)	12	—	33/4	—	Mains Input
Plug 2 is not used.					
Connections for Rectifier Unit 15(2)					
(25)	PL1/1	—	—	Earth	—
(26)	2	—	27/2, 27/4, 27/6 Strapped	—	50V +
(27)	3	—	27/1, 27/3, 27/5 Strapped	—	50V —
(28)	4	—	27/8, 27/10, 27/12 Strapped	—	50V +
(29)	5	—	27/7, 27/9, 27/11 Strapped	—	50V —
(30)	6	—	—	—	—
(31)	7	—	—	—	—
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	33/5	—	Mains Input
(36)	12	—	33/6	—	Mains Input
Plug 2 is not used.					
Connections for Rectifier Unit 15(4)					
(37)	PL1/1	—	—	Earth	—
(38)	2	—	26/2, 26/4, 26/6 Strapped	—	50V +

Rack assembly Type 6342—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(39)		3 —	26/1, 26/3, 26/5 Strapped	—	50V —
(40)		4 —	26/8, 26/10, 26/12 Strapped	—	50V +
(41)		5 —	26/7, 26/9, 26/12 Strapped	—	50V —
(42)		6 —	—	—	—
(43)		7 —	—	—	—
(44)		8 —	—	—	—
(45)		9 —	—	—	—
(46)		10 —	—	—	—
(47)		11 —	33/7	—	Mains Input
(48)		12 —	33/8	—	Mains Input

Plug 2 is not used.

RACK ASSEMBLY TYPE 6343

(Ref. No. 10D/20361)

Amplifying Unit (servo) 297 (a) 10U/16054	Rectifier Unit 17 (1) 10D/17779
Control Unit 600 (a and b) 10L/16029	Switch Unit 410 10F/16163
Amplifying Unit (servo) 297 (b) 10U/16054	Rectifier Unit 17 (2) 10D/17779
Amplifying Unit (servo) 297 10U/16054	Panel (blanking) 4639 (Store reference 10D/19663)
Control Unit 600 (c and d) 10U/16029	Panel (blanking) 4639
Amplifying Unit (servo) 297 10U/16054	Panel (blanking) 4639

Fig. 4. Rack Assembly Type 6343, schematic

SCHEDULE 1

RACK ASSEMBLY TYPE 6343

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
	Connections for Rectifier Unit 17(1)				
	Plugs 1, 2 and 3 not used.				
(1)	PL4/1	—	—	—	—
(2)	2	—	—	—	—
(3)	3	—	—	—	—
(4)	4	—	—	—	—
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	19	—	PL907/7 S.U.410	—
(8)	8	20	—	PL907/8 S.U.410	—
(9)	9	—	—	—	—
(10)	10	—	—	Earth	—
(11)	11	—	51/1	—	Mains Input
(12)	12	—	51/2	—	Mains Input
	Connections for Switch Unit 410				
	Plugs 901, 902, 903, 904, 905, 906 are not used.				
(13)	PL907/1	—	—	—	—
(14)	2	—	—	—	—
(15)	3	—	—	—	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	7	—	R.U.17 (1) PL4/7	—
(20)	8	8	—	R.U.17 (1) PL4/8	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	—	—	—
(24)	12	—	—	—	—
(25)	PL908/1	—	—	—	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	67	—	R.U.17 (2) PL4/7	—
(32)	8	68	—	R.U.17 (2) PL4/8	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	—	—	—
(36)	12	—	—	—	—
(37)	PL909/1	125	—	PL5/5 S.A. (a)	—
(38)	2	126	—	PL5/6 S.A. (a)	—
(39)	3	166	—	PL504/10 C.U. (a)	—
(40)	4	167	—	PL504/11 C.U. (a)	—
(41)	5	262	—	PL504/10 C.U. (b)	—
(42)	6	263	—	PL504/11 C.U. (b)	—
(43)	7	221	—	PL5/5 S.A. (b)	—
(44)	8	222	—	PL5/6 S.A. (b)	—
(45)	9	317	—	PL5/5 S.A. (c)	—
(46)	10	318	—	PL5/6 S.A. (c)	—
(47)	11	358	—	PL504/10 C.U. (c)	—
(48)	12	359	—	PL504/11 C.U. (c)	—
(49)	PL910/1	413	—	PL5/5 S.A. (d)	—
(50)	2	414	—	PL5/6 S.A. (d)	—
(51)	3	454	—	PL504/10 C.U. (d)	—
(52)	4	455	—	PL504/11 C.U. (d)	—
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	—	—	—
(60)	12	—	—	—	—
	Connections for Rectifier Unit 17(2)				
	Plug 1, 2 and 3 not used.				
(61)	PL4/1	—	—	—	—
(62)	2	—	—	—	—
(63)	3	—	—	—	—
(64)	4	—	—	—	—
(65)	5	—	—	—	—
(66)	6	—	—	—	—
(67)	7	31	—	S.U.410 PL908/7	—
(68)	8	32	—	S.U.410 PL908/8	—

SCHEDULE 1. Rack assembly Type 6343—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(69)		9	—	—	—	—
(70)		10	—	—	Earth	—
(71)		11	—	51/3	—	Mains Input
(72)		12	—	51/4	—	Mains Input
	Connections for Amplifier (servo) 297(a)					
(73)		PL1/1	—	52/11	—	Plinth Term 67(A)
(74)		2	—	52/12	—	Plinth Term 68A
(75)		3	—	51/5	—	Mains Input
(76)		4	—	—	Earth	—
(77)		5	—	—	—	—
(78)		6	—	51/6	—	Mains Input
(79)		7	—	56/7	—	PLA2/7 Sel. U.100
(80)		8	—	—	—	—
(81)		9	—	52/9	—	S.R.46A
(82)		10	—	56/8	—	PLA2/8 Sel. U.100
(83)		11	—	56/6	—	PLA2/6 Sel. U.100
(84)		12	—	52/10	—	S.R.38A
(85)		PL2/1	—	—	—	—
(86)		2	—	—	—	—
(87)		3	—	—	—	—
(88)		4	—	54/5	—	S.R.23A
(89)		5	—	54/4	—	S.R.22A
(90)		6	—	54/7	—	S.R.25A
(91)		7	—	54/6	—	S.R.24A
(92)		8	—	54/9	—	S.R.27A
(93)		9	—	54/8	—	S.R.26A
(94)		10	115	54/10	PL4/7 S.A.(a)	S.R.28A
(95)		11	161	54/3, 54/11, 56/4 } Strapped	PL503/7 C.U.(a)	S.R.19 & 29A —
(96)		12	—	54/12	—	S.R.30A
(97)		PL3/1	—	—	—	—
(98)		2	—	—	—	—
(99)		3	—	52/1	—	Amplid X4A
(100)		4	—	52/2	—	Amplid X3A
(101)		5	—	52/3	—	Amplid X2A
(102)		6	—	52/4	—	Amplid X1A
(103)		7	—	52/5	—	Amplid X5A
(104)		8	—	52/6	—	Amplid X6A
(105)		9	—	52/7	—	Amplid X4A
(106)		10	—	—	—	—
(107)		11	—	52/8	—	Amplid A2A
(108)		12	—	—	—	—
	Connections for Amplifier (servo) 297(a)					
(109)		PL4/1	—	60/3	—	PLA1/3 Sel.100
(110)		2	—	60/5	—	PLA1/5 Sel. 100
(111)		3	154	—	PL502/12 C.U. (a)	—
(112)		4	—	54/1	—	S.R.36A
(113)		5	—	56/9	—	PLA2/ Sel.100
(114)		6	151	—	PL502/9 C.U.(a)	—
(115)		7	94	54/10	PL2/10 S.A.(a)	S.R.28A —
(116)		8	—	54/2, 56/5 } Strapped	—	S.R.34A, PLA2/5 Sel.100
(117)		9	—	56/2	—	PLA2/2 Sel.100
(118)		10	—	56/3	—	PLA2/3 Sel.100
(119)		11	—	—	—	—
(120)		12	—	—	—	—
(121)		PL5/1	—	—	—	—
(122)		2	—	60/4	—	PLA1/4 Sel.100
(123)		3	—	60/7	—	PLA1/7 Sel.100
(124)		4	145	68/1	PL502/3 C.U.(a)	Joystick Slew.
(125)		5	37	—	PL909/1 S.U.410	—
(126)		6	—	—	PL909/2 S.U.410	—
(127)		7	—	60/1	—	PLA1/1 Sel.100
(128)		8	146	—	PL502/4 C.U.(a)	—
(129)		9	147	—	PL502/5 C.U.(a)	—
(130)		10	152	—	PL502/10 C.U.(a)	—
(131)		11	153	—	PL502/11 C.U.(a)	—
(132)		12	134	—	PL501/2 C.U.(a)	—
	Connections for Control Unit 600(a)					
(133)		PL501/1	—	—	—	—
(134)		2	132	—	PL5/12 S.A. (a)	—

SCHEDULE 1. Rack assembly Type 6343—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
(135)	3	—	501/5, 501/7 Strapped		—	—
(136)	4	—	—		—	—
(137)	5	—	501/3, 501/7 Strapped		—	—
(138)	6	—	—		—	—
(139)	7	—	501/3, 501/5 Strapped		—	—
(140)	8	—	—		—	—
(141)	9	—	60/9		—	PLA1/9 Sel.100
(142)	10	—	60/11		—	PLA1/11 Sel.100
(143)	11	—	60/8		—	PLA1/8 Sel.100
(144)	12	—	56/10		—	PLA2/10 Sel.100
(145)	PL502/3	124	68/1		PL5/4 S.A.(a)	—
(146)	4	128	—		PL5/8 S.A.(a)	—
(147)	5	129	—		PL5/9 S.A.(a)	—
(148)	6	—	56/11		—	PLA2/11 Sel.100
(149)	7	—	—		—	—
(150)	8	—	56/1		—	PLA2/1 Sel. 100
(151)	9	114	—		PL4/6 S.A.(a)	—
(152)	10	130	—		PL5/10 S.A.(a)	—
(153)	11	131	—		PL5/11 S.A.(a)	—
(154)	12	111	—		PL4/3 S.A.(a)	—
(155)	PL503/1	—	60/10		—	PLA1/10 Sel.100
(156)	2	—	—		—	—
(157)	3	—	60/2		—	PLA1/2 Sel.100
(158)	4	—	51/7		—	Mains Input
(159)	5	—	60/6		—	PLA1/6 Sel.100
(160)	6	—	51/8		—	Mains Input
(161)	7	95	56/4, 54/11, 54/3 Strapped		PL2/11 S.A.(a)	PLA2/4 Sel.100 S.R.19 and 29A
(162)	8	—	—		—	—
(163)	PL504/7	—	—		—	—
(164)	8	—	—		—	—
(165)	9	—	—		—	—
(166)	10	39	—		PL909/3 S.U.410	—
(167)	11	40	—		PL909/4 S.U.410	—
(168)	12	—	—		Earth	—
Connections for Amplifier (servo) 297(b)						
(169)	PL1/1	—	57/11		—	Plinth Term 67B
(170)	2	—	57/11		—	Plinth Term 68B
(171)	3	—	51/9		—	Mains Input
(172)	4	—	—		Earth	—
(173)	5	—	—		—	—
(174)	6	—	51/10		—	Mains Input
(175)	7	—	66/7		—	PLB2/7 Sel. U.100
(176)	8	—	—		—	—
(177)	9	—	57/9		—	S.R.46B
(178)	10	—	66/8		—	PLB.2/8
(179)	11	—	66/6		—	PLB.2/6
(180)	12	—	57/10		—	S.R.38B
(181)	PL2/1	—	—		—	—
(182)	2	—	—		—	—
(183)	3	—	—		—	—
(184)	4	—	61/5		—	S.R.23B
(185)	5	—	61/4		—	S.R.22B
(186)	6	—	61/7		—	S.R.25B
(187)	7	—	61/6		—	S.R.24B
(188)	8	—	61/9		—	S.R.27B
(189)	9	—	61/8		—	S.R.26B
(190)	10	211	61/10		PL4/7 S.A.(b)	S.R.28B
(191)	11	257	66/4, 61/11, 61/3 Strapped		PL503/7 C.U.(b)	S.R.19 & 29B, PLB2/4 Sel.100
(192)	12	—	61/12		—	S.R.30B
(193)	PL3/1	—	—		—	—
(194)	2	—	—		—	—
(195)	3	—	57/1		—	Amplid X4B
(196)	4	—	57/2		—	Amplid X3B
(197)	5	—	57/3		—	Amplid X2B
(198)	6	—	57/4		—	Amplid X1B
(199)	7	—	57/5		—	Amplid X5B
(200)	8	—	57/6		—	Amplid X6B
(201)	9	—	57/7		—	Amplid A4B
(202)	10	—	—		—	—
(203)	11	—	57/8		—	Amplid A2B
(204)	12	—	—		—	—
(205)	PL4/1	—	63/3		—	PLB1/3 Sel.100

SCHEDULE 1. Rack assembly Type 6343—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination: Internal	Termination: External
(206)		2	—	63/5	—	PLB1/5 Sel.100
(207)		3	250	—	PL502/12 C.U.(b)	—
(208)		4	—	61/1	—	S.R.36B
(209)		5	—	66/9	—	PLB2/9 Sel.100
(210)		6	247	—	PL502/9 C.U.(b)	—
(211)		7	190	61/10	PL2/10 S.A.(b)	S.R.28B
(212)		8	—	61/2, 66/5 Strapped	—	S.R.34B, PLB2/5 Sel.100
(213)		9	—	66/2	—	PLB2/2 Sel.100
(214)		10	—	66/3	—	PLB2/3 Sel.100
(215)		11	—	—	—	—
(216)		12	—	—	—	—
(217)		PL5/1	—	—	—	—
(218)		2	—	63/4	—	PLB1/4 Sel.100
(219)		3	—	63/7	—	PLB1/7 Sel.100
(220)		4	241	68/2	PL502/3 C.U.(b)	Joystick Slew.
(221)		5	43	—	PL909/7 S.U.410	—
(222)		6	44	—	PL909/8 S.U.410	—
(223)		7	—	63/1	—	PLB1/1 Sel.100
(224)		8	242	—	PL502/4 C.U.(b)	—
(225)		9	243	—	PL502/5 C.U.(b)	—
(226)		10	248	—	PL502/10 C.U.(b)	—
(227)		11	249	—	PL502/11 C.U.(b)	—
(228)		12	230	—	PL501/2 C.U.(b)	—
	Connections for Control Unit 600(b)					
(229)		PL501/1	—	—	—	—
(230)		2	228	—	PL5/12 S.A.(b)	—
(231)		3	—	501/7, 501/5 Strapped	—	—
(232)		4	—	—	—	—
(233)		5	—	501/7, 501/3 Strapped	—	—
(234)		6	—	—	—	—
(235)		7	—	501/5, 501/3 Strapped	—	—
(236)		8	—	—	—	—
(237)		9	—	63/9	—	PLB1/9 Sel.100
(238)		10	—	63/11	—	PLB/11 Sel.100
(239)		11	—	63/8	—	PLB1/10 Sel.100
(240)		12	—	66/10	—	PLB2/10 Sel.100
(241)		PL502/3	220	68/2	PL5/4 S.A.(b)	—
(242)		4	224	—	PL5/8 S.A.(b)	—
(243)		5	225	—	PL5/9 S.A.(b)	—
(244)		6	—	66/11	—	PLB2/11 Sel.100
(245)		7	—	—	—	—
(246)		8	—	66/1	—	PLB2/1 Sel.100
(247)		9	210	—	PL4/6 S.A.(b)	—
(248)		10	226	—	PL5/10 S.A.(b)	—
(249)		11	227	—	PL5/11 S.A.(b)	—
(250)		12	207	—	PL4/3 S.A.(b)	—
(251)		PL503/1	—	63/10	—	PLB1/10 Sel.100
(252)		2	—	—	—	—
(253)		3	—	63/2	—	PLB1/2 Sel.100
(254)		4	—	—	—	—
(255)		5	—	63/6	—	PLB1/6 Sel.100
(256)		6	—	—	—	—
(257)		7	191	66/4, 61/11, 61/3 Strapped	PL2/11 S.A.(b)	PLB2/4 Sel.100, S.R.19 & 29B
(258)		8	—	—	—	—
(259)		PL504/7	—	—	—	—
(260)		8	—	—	—	—
(261)		9	—	—	—	—
(262)		10	41	—	PL909/5 S.U.410	—
(263)		11	42	—	PL909/6 S.U.410	—
(264)		12	—	—	Earth	—
	Connections for Amplifier (servo) 297(c)					
(265)		PL1/1	—	29/11	—	Plinth Term 67C
(266)		2	—	29/12	—	Plinth Term 68C
(267)		3	—	51/11	—	Mains Input
(268)		4	—	—	Earth	—
(269)		5	—	—	—	—

SCHEDULE 1. Rack assembly Type 6343—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination Internal	Termination External
(270)	6	—		51/12	—	Mains Input
(271)	7	—		12/7	—	PLC2/7 Sel. U.100
(272)	8	—		—	—	—
(273)	9	—		29/9	—	S.R.46C
(274)	10	—		12/8	—	PLC2/8
(275)	11	—		12/6	—	PLC2/6
(276)	12	—		29/10	—	S.R.38C
(277)	PL2/1	—		—	—	—
(278)	2	—		—	—	—
(279)	3	—		—	—	—
(280)	4	—		32/5	—	S.R.23C
(281)	5	—		32/4	—	S.R.22C
(282)	6	—		32/7	—	S.R.25C
(283)	7	—		32/6	—	S.R.24C
(284)	8	—		32/9	—	S.R.27C
(285)	9	—		32/8	—	S.R.26C
(286)	10	307		32/10	PL4/7 S.A.(c)	S.R.28C
(287)	11	353		32/3, 32/11, 12/4 Strapped to 32/12	PL503/7 C.U.(c)	S.R.19 & 29C; PLC2/4 Sel.100
(288)	12	—		32/12	—	S.R.30C
(289)	PL3/1	—		—	—	—
(290)	2	—		—	—	—
(291)	3	—		29/1	—	Amplid X4C
(292)	4	—		29/2	—	Amplid X3C
(293)	5	—		29/3	—	Amplid X2C
(294)	6	—		29/4	—	Amplid X1C
(295)	7	—		29/5	—	Amplid X5C
(296)	8	—		29/6	—	Amplid X6C
(297)	9	—		29/7	—	Amplid X4C
(298)	10	—		—	—	—
(299)	11	—		29/8	—	Amplid A2C
(300)	12	—		—	—	—
(301)	PL4/1	—		9/3	—	PLC1/3 Sel.100
(302)	2	—		9/5	—	PLC1/5 Sel.100
(303)	3	346		—	PL502/12 C.U.(c)	—
(304)	4	—		32/1	—	S.R.36C
(305)	5	—		12/9	—	PLC2/9 Sel.100
(306)	6	343		—	PL502/9 C.U.(c)	—
(307)	7	286		32/10	PL2/10 S.A.(c)	S.R.28C
(308)	8	—		32/2, 12/5 Strapped	—	S.R.34C; PLC2/5 Sel.100
(309)	9	—		12/2	—	PLC2/2 Sel.100
(310)	10	—		12/3	—	PLC2/3 Sel.100
(311)	11	—		—	—	—
(312)	12	—		—	—	—
(313)	PL5/1	—		—	—	—
(314)	2	—		9/4	—	PLC1/4 Sel.100
(315)	3	—		9/7	—	PLC1/7 Sel.100
(316)	4	337		68/3	PL502/3 C.U.(c)	Joystick Slew.
(317)	5	45		—	PL909/9 S.U.410	—
(318)	6	46		—	PL909/10 S.U.410	—
(319)	7	—		9/1	—	PLC1/1 Sel.100
(320)	8	338		—	PL502/4 C.U.(c)	—
(321)	9	339		—	PL502/5 C.U.(c)	—
(322)	10	344		—	PL502/10 C.U.(c)	—
(323)	11	345		—	PL502/11 C.U.(c)	—
(324)	12	326		—	PL501/2 C.U.(c)	—
Connections for Control Unit 600(c)						
(325)	PL501/1	—		—	—	—
(326)	2	324		—	PL5/12 S.A.(c)	—
(327)	3	—		501/7, 501/5 Strapped	—	—
(328)	4	—		—	—	—
(329)	5	—		501/7, 501/3 Strapped	—	—
(330)	6	—		—	—	—
(331)	7	—		501/3, 501/5 Strapped	—	—
(332)	8	—		—	—	—
(333)	9	—		9/9	—	PLC1/9 Sel.100
(334)	10	—		9/11	—	PLC/11 Sel.100
(335)	11	—		9/8	—	PLC1/8 Sel.100
(336)	12	—		12/10	—	PLC2/10 Sel.100
(337)	PL502/3	316		68/3	PL5/4 S.A.(c)	Joystick Slew.
(338)	4	320		—	PL5/8 S.A.(c)	—

SCHEDULE 1. Rack assembly Type 6343—(contd.)

No.	Originating unit (short ref. title) and plug		Cross reference	Rack assembly Jones plug	Termination Internal	Termination External
(339)		5	321	—	PL5/9 S.A.(c)	—
(340)		6	—	12/11	—	PLC2/11 Sel.100
(341)		7	—	—	—	—
(342)		8	—	12/1	—	PLC2/1 Sel.100
(343)		9	306	—	PL4/6 S.A.(c)	—
(344)		10	322	—	PL5/10 S.A.(c)	—
(345)		11	323	—	PL5/11 S.A.(c)	—
(346)		12	303	—	PL4/3 S.A.(c)	—
(347)		PL503/1	—	9/10	—	PLC1/10 Sel.100
(348)		2	—	—	—	—
(349)		3	—	9/2	PLC1/2 Sel.100	PLC1/2 Sel.100
(350)		4	—	49/1	—	Mains Input
(351)		5	—	9/6	—	PLC1/6 Sel.100
(352)		6	—	49/2	—	Mains Input
(353)		7	287	12/4, 32/3, 32/11 Strapped	PL2/11 S.A.(c)	PLC2/4 Sel.100; S.R.19 & 29C
(354)		8	—	—	—	—
(355)		PL504/7	—	—	—	—
(356)		8	—	—	—	—
(357)		9	—	—	—	—
(358)		10	47	—	PL909/11 S.U.410	—
(359)		11	48	—	PL909/12 S.U.410	—
(360)		12	—	—	Earth	—
	Connections for Amplifier (servo) 297(d)					
(361)		PL1/1	—	25/11	—	Plinth Term 67D
(362)		2	—	25/12	—	Plinth Term 68D
(363)		3	—	49/3	—	Mains Input
(364)		4	—	—	Earth	—
(365)		5	—	—	—	—
(366)		6	—	49/4	—	Mains Input
(367)		7	—	8/7	—	PLD2/7 Sel.100
(368)		8	—	—	—	—
(369)		9	—	25/9	—	S.R.46D
(370)		10	—	8/8	—	PLD2/8 Sel.100
(371)		11	—	8/6	—	PLD2/6 Sel.100
(372)		12	—	25/10	—	S.R.38D
(373)		PL2/1	—	—	—	—
(374)		2	—	—	—	—
(375)		3	—	—	—	—
(376)		4	—	28/5	—	S.R.23D
(377)		5	—	28/4	—	S.R.22D
(378)		6	—	28/7	—	S.R.25D
(379)		7	—	28/6	—	S.R.24D
(380)		8	—	28/9	—	S.R.27D
(381)		9	—	28/8	—	S.R.26D
(382)		10	403	28/10	PL4/7 S.A.(d)	S.R.28D
(383)		11	449	8/4, 28/3, 28/11 Strapped	PL503/7 C.U.(d)	S.R.19 & 29D; PLD2/4 Sel.100
(384)		12	—	28/12	—	S.R.30D
(385)		PL3/1	—	—	—	—
(386)		2	—	—	—	—
(387)		3	—	25/1	—	Amplid X4D
(388)		4	—	25/2	—	Amplid X3
(389)		5	—	25/3	—	Amplid X2
(390)		6	—	25/4	—	Amplid X1
(391)		7	—	25/5	—	Amplid X5
(392)		8	—	25/6	—	Amplid X6
(393)		9	—	25/7	—	Amplid A4
(394)		10	—	—	—	—
(395)		11	—	25/8	—	Amplid A2
(396)		12	—	—	—	—
(397)		PL4/1	—	5/3	—	PLD1/3 Sel.100
(398)		2	—	5/5	—	PLD1/5 Sel.100
(399)		3	442	—	PL502/12 C.U.(d)	—
(400)		4	—	28/1	—	S.R.36D
(401)		5	—	8/9	—	PLD2/9 Sel.100
(402)		6	439	—	PL502/9 C.U.(d)	—
(403)		7	382	28/10	PL2/10 S.A.(d)	S.R.28D
(404)		8	—	28/2, 8/5 Strapped	—	S.R.34D; PLD2/5 Sel.100
(405)		9	—	8/2	—	PLD2/2 Sel.100
(406)		10	—	8/3	—	PLD2/3 Sel.100

SCHEDULE 1. Rack assembly Type 6343—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
(407)	11	—	—	—	—
(408)	12	—	—	—	—
(409)	PL5/1	—	—	—	—
(410)	2	—	5/4	—	PLD1/4 Sel.100
(411)	3	—	5/7	—	PLD1/7 Sel.100
(412)	4	433	68/4	PL502/3 C.U.(d)	Joystick Slew.
(413)	5	49	—	PL910/1 S.U.410	—
(414)	6	50	—	PL910/2 S.U.410	—
(415)	7	—	5/1	—	PLD/1 Sel.100
(416)	8	434	—	PL502/4 C.U.(d)	—
(417)	9	435	—	PL502/5 C.U.(d)	—
(418)	10	440	—	PL502/10 C.U.(d)	—
(419)	11	441	—	PL502/11 C.U.(d)	—
(420)	12	422	—	PL501/2 C.U.(d)	—
Connections for Control Unit 600(d)					
(421)	PL501/1	—	—	—	—
(422)	2	420	—	PL5/12 S.A.(d)	—
(423)	3	—	501/5, 501/7 Strapped	—	—
(424)	4	—	—	—	—
(425)	5	—	501/3, 501/7 Strapped	—	—
(426)	6	—	—	—	—
(427)	7	—	501/3, 501/5 Strapped	—	—
(428)	8	—	—	—	—
(429)	9	—	5/9	—	PLD1/9 Sel.100
(430)	10	—	5/11	—	PLD1/11 Sel.100
(431)	11	—	5/8	—	PLD1/8 Sel.100
(432)	12	—	8/10	—	PLD2/10 Sel.100
(433)	PL502/3	412	684/4	PL5/4 S.A.(d)	Joystick Slew.
(434)	4	416	—	PL5/8 S.A.(d)	—
(435)	5	419	—	PL5/9 S.A.(d)	—
(436)	6	—	8/11	—	PLD2/11 Sel.100
(437)	7	—	—	—	—
(438)	8	—	8/1	—	PLD2/1 Sel.100
(439)	9	402	—	PL4/6 S.A.(d)	—
(440)	10	418	—	PL5/10 S.A.(d)	—
(441)	11	419	—	PL5/11 S.A.(d)	—
(442)	12	399	—	PL4/3 S.A.(d)	—
(443)	PL503/1	—	5/10	—	PLD1/10 Sel.100
(444)	2	—	—	—	—
(445)	3	—	5/2	—	PLD1/2 Sel.100
(446)	4	—	—	—	—
(447)	5	—	5/6	—	PLD1/6 Sel.100
(448)	6	—	—	—	—
(449)	7	383	8/4, 28/3, 28/11 Strapped	PL2/11 S.A.(b) —	PLD2/4 Sel.100 S.R.19 & 29D
(450)	8	—	—	—	—
(451)	PL504/7	—	—	—	—
(452)	8	—	—	—	—
(453)	9	—	—	—	—
(454)	10	51	—	PL910/3 S.U.410	—
(455)	11	52	—	PL910/4 S.U.410	—
(456)	12	—	—	Earth	—

Additional Connections.

Straps 68/7, 68/8, 68/9, 68/10, 68/11, 68/12 to Earth.

Chapter 24

RACK ASSEMBLIES OF TYPE 16600 (IG) SERIES

LIST OF ILLUSTRATIONS

	Fig.		Fig.
Rack assembly Type 16629, *schematic* ...	1	*Rack assembly Type* 16652, *schematic* ...	3
Rack assembly Type 16651, *schematic* ...	2		

RACK ASSEMBLY TYPE 16629
(Ref. No. 10/22458)

Panel (blanking) 4639 10D/19663	Rectifier unit Type 17 10D/17779 RU17
Panel (blanking) 4639	Switch unit Type 410 10F/16163
Marker unit (range) Type 27A 10D/21435 MU27A	(2) Rectifier unit Type 17
(1) Rectifier unit Type 15 10D/17761 RU15	(a) Amplifier (servo) Type 297 10U/16054 SA297
(2) Rectifier unit Type 15	(a and b) Control unit Type 600 10L/16029
(3) Rectifier unit Type 15	(b) Amplifier servo Type 297

Fig. 1. Rack assembly Type 16629, schematic

SCHEDULE 1

Rack assembly Type 16629—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Rectifier Unit 17 (1)					
Plugs 1, 2 and 3 not used					
(1)	PL4/1	—	—	—	—
(2)	2	—	—	—	—
(3)	3	—	—	—	—
(4)	4	—	—	—	—
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	19	—	PL907/7 SU410	—
(8)	8	20	—	PL907/8 SU410	—
(9)	9	—	—	—	—
(10)	10	—	—	Earth	—
(11)	11	—	51/1*M*	—	Mains input
(12)	12	—	51/2*M*	—	Mains input
Connections for Switch Unit 410					
Plugs 901, 902, 903, 904, 905, 906, are not used					
(13)	PL907/1	—	—	—	—
(14)	2	—	—	—	—
(15)	3	—	—	—	—
(16)	4	—	—	—	—
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	7	—	RU17(1) PL4/7	—
(20)	8	8	—	RU17(1) PL4/8	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	—	—	—
(24)	12	—	—	—	—
(25)	PL908/1	—	—	—	—
(26)	2	—	—	—	—
(27)	3	—	—	—	—
(28)	4	—	—	—	—
(29)	5	—	—	—	—
(30)	6	—	—	—	—
(31)	7	67	—	RU17(2) PL4/7	—
(32)	8	68	—	RU17(2) PL4/8	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	—	—	—
(36)	12	—	—	—	—
(37)	PL909/1	125	—	PL5/5 SA(*a*)	—
(38)	2	126	—	PL5/6 SA(*a*)	—
(39)	3	166	—	PL504/10 CU(*a*)	—
(40)	4	167	—	PL504/11 CU(*a*)	—
(41)	5	262	—	PL504/10 CU(*b*)	—
(42)	6	263	—	PL504/11 CU(*b*)	—
(43)	7	221	—	PL5/5 SA(*b*)	—
(44)	8	222	—	PL5/6 SA(*b*)	—
(45)		—	—	—	—
(46)		—	—	—	—
(47)		—	—	—	—
(48)		—	—	—	—
(49)		—	—	—	—
(50)		—	—	—	—
(51)		—	—	—	—
(52)		—	—	—	—
(53)		—	—	—	—
(54)		—	—	—	—
(55)		—	—	—	—
(56)		—	—	—	—
(57)		—	—	—	—
(58)		—	—	—	—
(59)		—	—	—	—
(60)		—	—	—	—
Connections for Rectifier Unit 17 (2)					
Plugs 1, 2 and 3 not used					
(61)	PL4/1	—	—	—	—
(62)	2	—	—	—	—
(63)	3	—	—	—	—
(64)	4	—	—	—	—
(65)	5	—	—	—	—
(66)	6	—	—	—	—
(67)	7	31	—	SU410 PL908/7	—
(68)	8	32	—	SU410 PL908/8	—
(69)	9	—	—	—	—
(70)	10	—	—	Earth	—
(71)	11	—	51/3*M*	—	Mains input
(72)	12	—	51/4*M*	—	Mains input

SCHEDULE 1. Rack assembly Type 16629—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
	Connections for Amplifier (Servo) 297 (*a*)				
(73)	PL1/1	—	52/11	—	Plinth Term 67A
(74)	2	—	52/12	—	Plinth Term 68A
(75)	3	—	51/5	—	Mains input
(76)	4	—	—	Earth	—
(77)	5	—	—	—	—
(78)	6	—	51/6	—	Mains input
(79)	7	—	56/7	—	PLA2/7 Sel U 100
(80)	8	—	—	—	—
(81)	9	—	52/9	—	SR46A
(82)	10	—	56/8	—	PLA2/8 Sel U 100
(83)	11	—	56/6	—	PLA2/6 Sel U 100
(84)	12	—	52/10	—	SR38A
(85)	PL2/1	—	—	—	—
(86)	2	—	—	—	—
(87)	3	—	—	—	—
(88)	4	—	54/5	—	SR23A
(89)	5	—	54/4	—	SR22A
(90)	6	—	54/7	—	SR25A
(91)	7	—	54/6	—	SR24A
(92)	8	—	54/9	—	SR27A
(93)	9	—	54/8	—	SR26A
(94)	10	115	54/10	PL4/7 SA(*a*)	SR28A
(95)	11	161	54/3, 54/11, 56/4 *strapped together*	PL503/7 CU(*a*)	—
(96)	12	—	54/12	—	SR30A
(97)	PL3/1	—	—	—	—
(98)	2	—	—	—	—
(99)	3	—	52/1	—	Amplid X4A
(100)	4	—	52/2	—	Amplid X3A
(101)	5	—	52/3	—	Amplid X2A
(102)	6	—	52/4	—	Amplid X1A
(103)	7	—	52/5	—	Amplid X5A
(104)	8	—	52/6	—	Amplid X6A
(105)	9	—	52/7	—	Amplid A4A
(106)	10	—	—	—	—
(107)	11	—	52/8	—	Amplid A2A
(108)	12	—	—	—	—
	Connections for Amplifier (Servo) 297 (*a*)				
(109)	PL4/1	—	60/3	—	PLA1/3 Sel 100
(110)	2	—	60/5	—	PLA1/5 Sel 100
(111)	3	154	—	PL502/12 CU(*a*)	—
(112)	4	—	54/1	—	SR36A
(113)	5	—	56/9	—	PLA2/9 Sel 100
(114)	6	151	—	PL502/9 CU(*a*)	—
(115)	7	94	54/10	PL2/10 SA(*a*)	SR28A
(116)	8	—	54/2 *strapped*	—	SR34A
			to 56/5	—	PLA2/5 Sel 100
(117)	9	—	56/2	—	PLA2/2 Sel 100
(118)	10	—	56/3	—	PLA2/3 Sel 100
(119)	11	—	—	—	—
(120)	12	—	—	—	—
(121)	PL5/1	—	—	—	—
(122)	2	—	60/4	—	PLA1/4 Sel 100
(123)	3	—	60/7	—	PLA1/7 Sel 100
(124)	4	145	68/1	PL502/3 CU(*a*)	Joystick Slew
(125)	5	37	—	PL909/1 SU410	—
(126)	6	38	—	PL909/2 SU410	—
(127)	7	—	60/1	—	PLA1/1 Sel 100
(128)	8	146	—	PL502/4 CU(*a*)	—
(129)	9	147	—	PL502/5 CU(*a*)	—
(130)	PL5/10	152	—	PL502/10 CU(*a*)	—
(131)	11	153	—	PL502/11 CU(*a*)	—
(132)	12	134	—	PL501/2 CU(*a*)	—

SCHEDULE 1. Rack assembly Type 16629—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination: Internal	Termination: External
Connections for Control Unit 600 (*a*)					
(133)	PL501/1	—	—	—	—
(134)	2	132	—	PL5/12 SA(*a*)	—
(135)	3	—	Strap to 501/5 & 501/7	—	—
(136)	4	—	—	—	—
(137)	5	—	Strap to 501/3 & 501/7	—	—
(138)	6	—	—	—	—
(139)	7	—	Strap to 501/3 & 501/5	—	—
(140)	8	—	—	—	—
(141)	9	—	60/9	—	PLA1/9 Sel 100
(142)	10	—	60/11	—	PLA1/11 Sel 100
(143)	11	—	60/8	—	PLA1/8 Sel 100
(144)	12	—	56/10	—	PLA2/10 Sel 100
(145)	PL502/3	124	68/1	PL5/4 SA(*a*)	—
(146)	4	128	—	PL5/8 SA(*a*)	—
(147)	5	129	—	PL5/9 SA(*a*)	—
(148)	6	—	56/11	—	PLA2/11 Sel 100
(149)	7	—	—	—	—
(150)	8	—	56/1	—	PLA2/1 Sel 100
(151)	9	114	—	PL4/6 SA(*a*)	—
(152)	10	130	—	PL5/10 SA(*a*)	—
(153)	11	131	—	PL5/11 SA(*a*)	—
(154)	12	111	—	PL4/3 SA(*a*)	—
(155)	PL503/1	—	60/10	—	PLA1/10 Sel 100
(156)	2	—	—	—	—
(157)	3	—	60/2	—	PLA1/2 Sel 100
(158)	4	—	51/7	—	Mains
(159)	5	—	60/6	—	PLA1/6 Sel 100
(160)	6	—	51/8	—	Mains
(161)	7	95	56/4 Strapped to 54/3 & 54/11	PL2/11 SA(*a*) —	PLA2/4 Sel 100 SR19 & 29A
(162)	8	—	—	—	—
(163)	PL504/7	—	—	—	—
(164)	8	—	—	—	—
(165)	9	—	—	—	—
(166)	10	39	—	PL909/3 SU410	—
(167)	11	40	—	PL909/4 SU410	—
(168)	12	—	—	Earth	—
Connections for Amplifier (Servo) 297 (*b*)					
(169)	L1/1	—	57/11	—	Plinth Term 67B
(170)	2	—	57/12	—	Plinth Term 68B
(171)	3	—	51/9	—	Mains input
(172)	4	—	—	Earth	—
(173)	5	—	—	—	—
(174)	6	—	51/10	—	Mains input
(175)	7	—	66/7	—	PLB2/7 Sel V 100
(176)	8	—	—	—	—
(177)	9	—	57/9	—	S.R.46B
(178)	10	—	66/8	—	PL52/8
(179)	11	—	66/6	—	PLB2/6
(180)	12	—	57/10	—	SR38B
(181)	PL2/1	—	—	—	—
(182)	2	—	—	—	—
(183)	3	—	—	—	—
(184)	4	—	61/5	—	SR23B
(185)	5	—	61/4	—	SR22B
(186)	6	—	61/7	—	SR25B
(187)	7	—	61/6	—	SR24B
(188)	8	—	61/9	—	SR27B
(189)	9	—	61/8	—	SR26B
(190)	10	211	61/10	PL4/7 SA(*b*)	SR28B
(191)	11	257	66/4 Strapped to 61/3 & 61/11	PL503/7 CU(*b*)	SR19 & 29B PLB2/4 Sel 100
(192)	12	—	61/12	—	SR30B
(193)	PL3/1	—	—	—	—
(194)	2	—	—	—	—
(195)	3	—	57/1	—	Amplid X4B
(196)	4	—	57/2	—	Amplid X3B
(197)	5	—	57/3	—	Amplid X2B
(198)	6	—	57/4	—	Amplid X1B
(199)	7	—	57/5	—	Amplid X5B
(200)	8	—	57/6	—	Amplid X6B
(201)	9	—	57/7	—	Amplid A4B
(202)	10	—	—	—	—
(203)	11	—	57/8	—	Amplid A2B
(204)	12	—	—	—	—

SCHEDULE 1. Rack assembly Type 16629—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Amplifier (Servo) 297 (*b*)—(contd.)					
(205)	PL4/1	—	63/3	—	PLB1/3 Sel 100
(206)	2	—	63/5	—	PLB1/5 Sel 100
(207)	3	250	—	PL502/12 CU(*b*)	—
(208)	4	—	61/1	—	SR36B
(209)	5	—	66/9	—	PLB2/9 Sel 100
(210)	6	247	—	PL502/9 CU(*b*)	—
(211)	7	190	61/10	PL2/10 SA(*b*)	SR28B
(212)	8	—	61/2, 66/5, *strapped together*	—	SR34B PLB2/5 Sel 100
(213)	9	—	66/2	—	PLB2/2 Sel 100
(214)	10	—	66/3	—	PLB2/3 Sel 100
(215)	11	—	—	—	—
(216)	12	—	—	—	—
(217)	PL5/1	—	—	—	—
(218)	2	—	63/4	—	PLB1/4 Sel 100
(219)	3	—	63/7	—	PLB1/7 Sel 100
(220)	4	241	68/2	PL502/3 CU(*b*)	Joystick Slew
(221)	5	43	—	PL909/7 SU410	—
(222)	6	44	—	PL909/8 SU410	—
(223)	7	—	63/1	—	PLB1/1 Sel 100
(224)	8	242	—	PL502/4 CU(*b*)	—
(225)	9	243	—	PL502/5 CU(*b*)	—
(226)	10	248	—	PL502/10 CU(*b*)	—
(227)	11	249	—	PL502/11 CU(*b*)	—
(228)	12	230	—	PL501/2 CU(*b*)	—
Connections for Control Unit 600 (*b*)					
(229)	PL501/1	—	—	—	—
(230)	2	228	—	PL5/12 SA(*b*)	—
(231)	3	—	501/5 & 501/7 *strapped together*	—	—
(232)	4	—	—	—	—
(233)	5	—	501/3 & 501/7 *strapped together*	—	—
(234)	6	—	—	—	—
(235)	7	—	501/3 & 501/5 *strapped together*	—	—
(236)	8	—	—	—	—
(237)	9	—	63/9	—	PLB1/9 Sel 100
(238)	10	—	63/11	—	PLB1/11 Sel 100
(239)	11	—	63/8	—	PLB1/10 Sel 100
(240)	12	—	66/10	—	PLB2/10 Sel 100
(241)	PL502/3	220	68/2	PL5/4 SA(*b*)	—
(242)	4	224	—	PL5/8 SA(*b*)	—
(243)	5	225	—	PL5/9 SA(*b*)	—
(244)	6	—	66/11	—	PLB2/11 Sel 100
(245)	7	—	—	—	—
(246)	8	—	66/1	—	PLB2/1 Sel 100
(247)	9	210	—	PL4/6 SA(*b*)	—
(248)	10	226	—	PL5/10 SA(*b*)	—
(249)	11	227	—	PL5/11 SA(*b*)	—
(250)	12	207	—	PL4/3 SA(*b*)	—
(251)	PL503/1	—	63/10	—	PLB1/10 Sel 100
(252)	2	—	—	—	—
(253)	3	—	63/2	—	PLB1/2 Sel 100
(254)	4	—	—	—	—
(255)	5	—	63/6	—	PLB1/6 Sel 100
(256)	6	—	—	—	—
(257)	7	191	66/4 *strapped to* 61/3 & 61/11	PL2/11 SA(*b*)	PLB2/4 Sel 100 SR19 & 29B
(258)	PL503/8	—	—	—	—
(259)	7	—	—	—	—
(260)	8	—	—	—	—
(261)	9	—	—	—	—
(262)	10	41	—	PL909/5 SU410	—
(263)	11	42	—	PL909/6 SU410	—
(264)	12	—	—	Earth	—

SCHEDULE 1. Rack assembly Type 16629—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections for Marker Unit (Range) 27A					
(265)	PL7/1	—	—	Earth	—
(266)	2	278	15/5, 15/6, *strapped together*	RU15(1) PL1/2	—
(267)	3	279	15/1, 15/2, *strapped together*	RU15(1) PL1/3	—
(268)	4	—	—	—	—
(269)	5	—	—	—	—
(270)	6	—	—	—	—
(271)	7	—	—	—	—
(272)	8	—	—	—	—
(273)	9	—	—	—	—
(274)	10	—	—	—	—
(275)	11	—	49/3	—	Mains input
(276)	12	—	49/4	—	Mains input
Connections for Rectifier Unit 15 (1)					
(277)	PL1/1	—	—	Earth	—
(278)	2	266	21/5, 21/6, *strapped together*	MU27A PL7/2	50V output (+ve)
(279)	3	267	21/1, 21/2, 21/3, 21/4, *strapped together*	MU27A PL7/3	50V output (−ve)
(280)	4	—	21/7, 21/8, *strapped together*	—	50V output (+ve)
(281)	5	—	21/9, 21/10, 21/11, 21/12 *strapped together*	—	50V ouput (−ve)
(282)	6	—	—	—	—
(283)	7	—	—	—	—
(284)	8	—	—	—	—
(285)	9	—	—	—	—
(286)	10	—	—	—	—
(287)	11	—	49/5	—	Mains input
(288)	12	—	49/6	—	Mains input
Connections for Rectifier Unit 15 (2)					
(289)	PL1/1	—	—	Earth	—
(290)	2	—	27/5, 27/6, *strapped together*	—	50V output (+ve)
(291)	3	—	27/1, 27/2, 27/3, 27/4, *strapped together*	—	50V output (−ve)
(292)	4	—	27/7, 27/8, *strapped together*	—	50V output (+ve)
(293)	5	—	27/9, 27/10, 27/11, 27/12, *strapped together*	—	50V output (−ve)
(294)	6	—	—	—	—
(295)	7	—	—	—	—
(296)	8	—	—	—	—
(297)	9	—	—	—	—
(298)	10	—	—	—	—
(299)	11	—	49/7	—	Mains input
(300)	12	—	49/8	—	Mains input
Connections for Rectifier Unit 15 (3)					
(301)	PL1/1	—	—	Earth	—
(302)	2	—	33/5, 33/6, *strapped together*	—	50V output (+ve)
(303)	3	—	33/1, 33/2, 33/3, 33/4, *strapped together*	—	50V output (−ve)
(304)	4	—	33/7, 33/8, *strapped together*	—	50V output (+ve)
(305)	5	—	33/9, 33/10, 33/11, 33/12, *strapped together*	—	50V output (−ve)
(306)	6	—	—	—	—
(307)	7	—	—	—	—
(308)	8	—	—	—	—
(309)	9	—	—	—	—
(310)	10	—	—	—	—
(311)	11	—	49/9	—	Mains input
(312)	12	—	49/10	—	Mains input

RACK ASSEMBLY TYPE 16651
(Ref. No. 10D/22482)

(d) Amplifier Type A3720 10U/16789	(c) Amplifier (N.B.W.) Type A3679 10U/16026
(d) Amplifier (N.B.W.) Type A3679	(c) Amplifier (IF and Vid.) Type A3679 10U/16027
(d) Amplifier (IF and Vid.) Type A3680	(c and d) Amplifier (AJ and Vid.) Type A3681
(d) Amplifier unit (pulse) Type 4279 10U/16838	(c) Waveform generator Type 104 10V/16079
(1) Marker unit (range) Type 27A 10D/21435	(1) Amplifier (IF and Vid.) Type A3680
(2) Marker unit (range) Type 27A	(2) Amplifier (IF and Vid.) Type A3680

Fig. 2. Rack assembly Type 16651, schematic

SCHEDULE 1

Rack assembly Type 16651—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Amplifier (N.B.W.) Type A3679 (*c*)					
(1)	PL9/1	—	—	—	Earth
(2)	2	14	—	PL10/2 Amp (IF & Vid)(*c*)	—
(3)	3	15	—	PL10/3 Amp (IF & Vid)(*c*)	—
(4)	4	—	67/5	—	CU621 PL AE5 NBW
(5)	5	—	—	—	—
(6)	6	—	—	—	—
(7)	7	—	—	—	—
(8)	8	—	—	—	—
(9)	9	—	—	—	—
(10)	10	—	—	—	—
(11)	11	—	68/1	—	Mains input
(12)	12	—	68/2	—	Mains input
Connections from Amplifier (IF & Vid) Type A3680 (*c*)					
(13)	PL10/1	—	—	—	Earth
(14)	2	2	—	PL9/2 Amp (NBW)(*c*)	—
		26	—	PL11/2 Amp (AJ & Vid) (*c* & *d*)	—
(15)	3	3	—	PL9/3 Amp (NBW) (*c*)	—
		27	—	PL11/3 Amp (AJ & Vid) (*c* & *d*)	—
(16)	4	—	67/2	—	CU621 PL AE 2 IAGC
(17)	5	—	—	—	—
(18)	6	—	—	—	—
(19)	7	—	—	—	—
(20)	8	—	—	—	—
(21)	9	—	—	—	—
(22)	10	—	—	—	—
(23)	11	—	68/3	—	Mains input
(24)	12	—	68/4	—	Mains input
Connections from Amplifier (AJ & Video) Type A3681 (*c* & *d*)					
(25)	PL11/1	—	—	—	Earth
(26)	2	14	—	PL10/2 Amp (IF & Vid)(*c*)	—
			31/9		+ve 50V Supply
(27)	3	15	—	PL10/3 Amp (IF & Vid)(*c*)	—
			31/10	—	−ve 50V Supply
(28)	4	—	67/4	—	CU621 PL AE4 STC(*a*)
(29)	5	—	67/3	—	CU621 PL AE3 LPF(*c*)
(30)	6	—	65/4	—	CU618 PL AH4 STC(*d*)
(31)	7	—	65/3	—	CU618 PL AH3 LPF(*d*)
(32)	8	—	—	—	—
(33)	9	—	—	—	—
(34)	10	—	—	—	—
(35)	11	—	68/5	—	Mains input
(36)	12	—	68/6	—	Mains input
Connections from Waveform Generator T104 (*c*)					
(37)	PL1/1	—	—	—	Earth
(38)	2	—	—	—	—
(39)	3	—	—	—	—
(40)	4	—	—	—	—
(41)	5	—	—	—	—
(42)	6	—	—	—	—
(43)	7	—	—	—	—
(44)	8	—	—	—	—
(45)	9	—	—	—	—
(46)	10	—	—	—	—
(47)	11	—	68/7	—	Mains input
(48)	12	—	68/8	—	Mains input

SCHEDULE 1. Rack assembly Type 16651—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Amplifying Unit (IF & Vid) Type A3680 (1)					
(49)	PL10/1	—	—	—	Earth
(50)	2	62	—	PL10/2 Amp Type A3680(2)	—
			31/5	—	+ve 50V supply
(51)	3	63	—	PL10/3 Amp Type A3680(2)	—
			31/6	—	−ve 50V supply
(52)	4	—	61/2	—	—
(53)	5	—	—	—	—
(54)	6	—	—	—	—
(55)	7	—	—	—	—
(56)	8	—	—	—	—
(57)	9	—	—	—	—
(58)	10	—	—	—	—
(59)	11	—	68/9	—	Mains input
(60)	12	—	68/10	—	Mains input
Connections from Amplifying Unit (IF & Vid) Type A3680 (2)					
(61)	PL10/1	—	—	—	Earth
(62)	2	50	—	PL10/2 Amp Type A3680(1)	—
(63)	3	51	—	PL10/3 Amp Type A3680(1)	—
(64)	4	—	61/8	—	—
(65)	5	—	—	—	—
(66)	6	—	—	—	—
(67)	7	—	—	—	—
(68)	8	—	—	—	—
(69)	9	—	—	—	—
(70)	10	—	—	—	—
(71)	11	—	68/11	—	Mains input
(72)	12	—	68/12	—	Mains input
Connections from Amplifier Type A3720 (*d*)					
(73)	PL1/1	—	—	—	Earth
(74)	2	86	—	PL9/2 Amp (NBW) Type A3679(*d*)	—
			31/1		+ve 50V supply
(75)	3	87	—	PL9/3 Amp (NBW) Type A3679(*d*)	—
		—	31/2	—	−ve 50V supply
(76)	4	—	—	—	—
(77)	5	—	—	—	—
(78)	6	—	—	—	—
(79)	7	—	—	—	—
(80)	8	—	—	—	—
(81)	9	—	—	—	—
(82)	10	—	—	—	—
(83)	11	—	33/5	—	Mains input
(84)	12	—	33/6	—	Mains input
Connections from Amplifier (NBW) Type 3679 (*d*)					
(85)	PL9/1	—	—	—	Earth
(86)	2	98	—	PL10/2 Amp (IF & Vid) Type A3680(*d*)	—
		74	—	PL1/2 Amp Type A3720(*d*)	—
(87)	3	99	—	PL10/3 Amp (IF & Vid) Type A3680(*d*)	—
		75	—	PL1/3 Amp Type A3720(*d*)	—
(88)	4	—	65/5	—	CU618 PLAH5 NBW
(89)	5	—	—	—	—
(90)	6	—	—	—	—
(91)	7	—	—	—	—
(92)	8	—	—	—	—
(93)	9	—	—	—	—
(94)	10	—	—	—	—
(95)	11	—	33/1	—	Mains input
(96)	12	—	33/2	—	Mains input

SCHEDULE 1. Rack assembly Type 16651—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Amplifying Unit (IF & Vid) Type A3680 (*d*)					
(97)	PL10/1	—	—	—	Earth
(98)	2	86	—	PL9/2 Amp (NBW) Type A3679(*d*)	—
	—	—	31/3	—	+ve 50V supply
(99)	3	87	—	PL9/3 Amp (NBW) Type A3679(*d*)	—
	—	—	31/4	—	−ve 50V supply
(100)	4	—	65/2	—	CU618 PLA H2IAGC
(101)	5	—	—	—	—
(102)	6	—	—	—	—
(103)	7	—	—	—	—
(104)	8	—	—	—	—
(105)	9	—	—	—	—
(106)	10	—	—	—	—
(107)	11	—	33/3	—	Mains input
(108)	12	—	33/4	—	Mains input
Connections from Amplifying Unit (Pulse) Type 4279 (*d*)					
(109)	PL1/1	—	—	—	Earth
(110)	2	—	—	—	—
(111)	3	—	—	—	—
(112)	4	—	—	—	—
(113)	5	—	32/1, 32/2, Twisted pair to P.O. cable	—	—
(114)	6	—		—	—
(115)	7	—	—	—	—
(116)	8	—	—	—	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	33/11	—	Mains input
(120)	12	—	33/12	—	Mains input
Connections from Marker Unit (Range) 27A (1)					
(121)	PL7/1	—	—	—	Earth
(122)	2	134	—	PL7/2 Marker Unit (Range) 27A(2)	—
	—	—	31/7	—	+ve 50V supply
(123)	3	135	—	PL7/3 Marker Unit (Range) 27A(2)	—
	—	—	31/8	—	−ve 50V supply
(124)	4	—	—	—	—
(125)	5	—	—	—	—
(126)	6	—	—	—	—
(127)	7	—	—	—	—
(128)	8	—	—	—	—
(129)	9	—	—	—	—
(130)	10	—	—	—	—
(131)	11	—	33/7	—	Mains input
(132)	12	—	33/8	—	Mains input
Connections from Marker Unit (Range) Type 27A(2)					
(133)	PL7/1	—	—	—	Earth
(134)	2	122	—	PL7/2 Marker Unit (Range) 27A(1)	—
(135)	3	123	—	PL7/3 Marker Unit (Range) 27A(1)	—
(136)	4	—	—	—	—
(137)	5	—	—	—	—
(138)	6	—	—	—	—
(139)	7	—	—	—	—
(140)	8	—	—	—	—
(141)	9	—	—	—	—
(142)	10	—	—	—	—
(143)	11	—	33/9	—	Mains input
(144)	12	—	33/10	—	Mains input

Co-axial Cable Connections

(145)	SK2 Amplifier (NBW) (*d*)	to SK4 Amplifier (IF & Vid)(*d*)
(146)	SK5 Amplifier (IF & Vid)(*d*)	to SK1 Amplifier (AJ & Vid)(*c* & *d*)
(147)	SK2 Amplifier (AJ & Vid)(*c* & *d*)	to SK6 Amplifier (IF & Vid)(*d*)
(149)	SK2 Amplifier (NBW) (*c*)	to SK4 Amplifier (IF & Vid) (*c*)
(150)	SK5 Amplifier (IF & Vid)(*c*)	to SK6 Amplifier (AJ & Vid)(*c* & *d*)
(151)	SK7 Amplifier (AJ & Vid)(*c* & *d*)	to SK6 Amplifier (IF & Vid)(*c*)
(152)	SK2 Waveform Generator 104	to SK10 Amplifier (IF & Vid)(*c*)
(153)	SK6 MU27A (2)	to SK5 MU27A (1)
(154)	SK3 Amplifier (A3720)	to SK1 Amplifier NBW (*d*)

RACK ASSEMBLY TYPE 16652
(Ref. No. 10D/22483)

Panel (blanking) 4639 10D/19663	(1) Rectifier unit Type 17 10D/17779 RU17	
Panel (blanking) 4639	Switch unit Type 410 10F/16163	
Panel (blanking) 4639	(2) Rectifier unit Type 17	
Panel (blanking) 4639	(a) Amplifier (servo) Type 297A 10U/17508 SA297A	51 52 54 56
Panel (blanking) 4639	(a and b) Control unit Type 600 10L/16029	57 58 59 60 61
Panel (blanking) 4639	(b) Amplifier (servo) Type 297A 10U/17508	63 65 67

Fig. 3. Rack assembly Type 16652, schematic

SCHEDULE 1

Rack assembly Type 16652—Wiring

No.	Originating unit (short ref. title) and plug	Cross reference		Rack assembly Jones plug	Termination	
					Internal	External
Connections to Rectifier Unit 17, Ref. No. 10D/17779 (1)						
Plugs 1, 2 & 3 not used.						
(1)	PL4/1	—		—	—	—
(2)	2	—		—	—	—
(3)	3	—		—	—	—
(4)	4	—		—	—	—
(5)	5	—		—	—	—
(6)	6	—		—	—	—
(7)	7	55		—	PL908/7 SW U410	—
(8)	8	56		—	PL908/8 SW U410	—
(9)	9	—		—	—	—
(10)	10	—		57/11	Earth	—
(11)	11	—		51/11*M*	—	Mains
(12)	12	—		51/12*M*	—	Mains
Connections to Rectifier Unit 17, Ref. No. 10D/1779 (2)						
Plugs 1, 2 & 3 not used.						
(13)	PL4/1	—		—	—	—
(14)	2	—		—	—	—
(15)	3	—		—	—	—
(16)	4	—		—	—	—
(17)	5	—		—	—	—
(18)	6	—		—	—	—
(19)	7	43		—	PL907/7 SW U410	—
(20)	8	44		—	PL907/8 SW U410	—
(21)	9	—		—	—	—
(22)	10	—		57/1	Earth	—
(23)	11	—		51/9*M*	—	Mains —
(24)	12	—		51/10*M*	—	Mains
Connections to Switch Unit 410, Ref. No. 10F/16163						
Plugs 901 & 902 not used.						
(25)	PL903/1	253		—	PL504/11 CU(*b*)	—
(26)	2	212		—	PL5/6 AS(*b*)	—
(27)	3	252		—	PL504/10 CU(*b*)	—
(28)	4	211		—	PL5/5 AS(*b*)	—
(29)	5	157		—	PL504/11 CU(*a*)	—
(30)	6	114		—	PL5/6 AS(*a*)	—
(31)	7	156		—	PL504/10 CU(*a*)	—
(32)	8	113		—	PL5/5 AS(*a*)	—
(33)	9	—		—	—	—
(34)	10	—		—	—	—
(35)	11	—		—	—	—
(36)	12	—		—	—	—
Plugs 904, 905, & 906 not used.						
(37)	PL907/1	—		—	—	—
(38)	2	—		—	—	—
(39)	3	—		—	—	—
(40)	4	—		—	—	—
(41)	5	—		—	—	—
(42)	6	—		—	—	—
(43)	7	19		—	PL4/7 RU17(2)	—
(44)	8	20		—	PL4/8 RU17(2)	—
(45)	9	—		—	—	—
(46)	10	—		—	—	—
(47)	11	—		—	—	—
(48)	12	—		—	—	—
(49)	PL908/1	—		—	—	—
(50)	2	—		—	—	—
(51)	3	—		—	—	—
(52)	4	—		—	—	—
(53)	5	—		—	—	—
(54)	6	—		—	—	—
(55)	7	7		—	PL4/7 RU17(1)	—
(56)	8	8		—	PL4/8 RU17(1)	—
(57)	9	—		—	—	—
(58)	10	—		—	—	—
(59)	11	—		—	—	—
(60)	12	—		—	—	—
Plugs 909 & 910 not used.						

SCHEDULE 1. Rack assembly Type 16652—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (Servo) 297A, Ref. No. 10U/17508 (*a*)					
(61)	PL1/1	—	52/11	—	—
(62)	2	—	52/12	—	—
(63)	3	—	51/7	—	—
(64)	4	—	—	Earth	—
(65)	5	—	—	—	—
(66)	6	—	51/8	—	—
(67)	7	—	56/7	—	—
(68)	8	—	—	—	—
(69)	9	—	52/9	—	—
(70)	10	—	56/8	—	—
(71)	11	—	56/6	—	—
(72)	12	—	52/10	—	—
(73)	PL2/1	—	—	—	—
(74)	2	—	—	—	—
(75)	3	—	—	—	—
(76)	4	—	54/5	—	—
(77)	5	—	54/4	—	—
(78)	6	—	54/7	—	—
(79)	7	—	54/6	—	—
(80)	8	—	54/9	—	—
(81)	9	—	54/8	—	—
(82)	10	—	54/10	—	—
(83)	11	151	56/4, 54/3, 54/11, *strapped together*	PL503/7 CU(*a*)	—
(84)	12	—	54/12	—	—
(85)	PL3/1	—	—	—	—
(86)	2	—	—	—	—
(87)	3	—	52/1	—	—
(88)	4	—	52/2	—	—
(89)	5	—	52/3	—	—
(90)	6	—	52/4	—	—
(91)	7	—	52/5	—	—
(92)	8	—	52/6	—	—
(93)	9	—	52/7	—	—
(94)	10	—	—	—	—
(95)	11	—	52/8	—	—
(96)	12	—	—	—	—
(97)	PL4/1	—	60/3	—	—
(98)	2	—	60/5	—	—
(99)	3	—	—	—	—
(100)	4	—	54/1	—	—
(101)	5	—	56/1	—	—
(102)	6	141	—	PL502/9 CU(*a*)	—
(103)	7	—	—	—	—
(104)	8	—	56/5, 54/2, *strapped together*	—	—
(105)	9	138	—	PL502/6 CU(*a*)	—
(106)	10	—	56/3	—	—
(107)	11	—	—	—	—
(108)	12	—	61/9	—	Height mark pass wire
(109)	PL5/1	—	—	—	—
(110)	2	—	60/4	—	—
(111)	3	—	60/7	—	—
(112)	4	135	—	PL502/3 CU(*a*)	—
(113)	5	32	—	PL903/8 SU410	—
(114)	6	30	—	PL903/6 SU410	—
(115)	7	—	60/1	—	—
(116)	8	136	—	PL502/4 CU(*a*)	—
(117)	9	—	—	—	—
(118)	10	—	—	—	—
(119)	11	—	—	—	—
(120)	12	122	—	PL501/2 CU(*a*)	—
Connections to Control Unit 600, Ref. No. 10L/16029 (*a*)					
(121)	PL501/1	—	—	—	—
(122)	2	120	—	PL5/12 AS(*a*)	—
(123)	3	125 & 127	57/4, 57/6, 57/8, *strapped together*	PL501/5 & PL501/7 CU(*a*)	—
(124)	4	—	—	—	—
(125)	5	123 & 127	57/6, 57/4, 57/8, *strapped together*	PL501/3 & PL501/7 CU(*a*)	—
(126)	6	—	—	—	—
(127)	7	125 & 123	57/8, 57/6, 57/4, *strapped together*	PL501/5 & PL501/3 CU(*a*)	—
(128)	8	—	—	—	—
(129)	9	—	60/9	—	—

SCHEDULE 1. Rack assembly Type 16652—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections from Control Unit 600, Ref. No. 10L/16029 (*a*) —(contd.)					
(130)	PL501/10	—	60/11	—	—
(131)	11	—	60/8	—	—
(132)	12	—	56/10	—	—
(133)	PL502/1	—	—	—	—
(134)	2	—	—	—	—
(135)	3	112	57/12	PL5/4	—
(136)	4	116	—	PL5/8 AS(*a*)	—
(137)	5	—	—	—	—
(138)	6	105	—	PL4/9 AS(*a*)	—
(139)	7	—	—	—	—
(140)	8	—	56/9	—	—
(141)	9	102	—	PL4/6 AS(*a*)	—
(142)	10	—	—	—	—
(143)	11	—	—	—	—
(144)	12	—	—	—	—
(145)	PL503/1	—	60/10	—	—
(146)	2	—	—	—	—
(147)	3	—	60/2	—	Mains
(148)	4	—	51/3	—	—
(149)	5	—	60/6	—	Mains
(150)	6	—	51/4	—	—
(151)	7	—	56/4, 54/3, 54/11, *strapped together*	PL2/11 AS(*a*)	—
(152)	8	—	—	—	—
(153)	PL504/7	—	—	—	—
(154)	8	—	—	—	—
(155)	9	—	—	—	—
(156)	10	31	—	PL903/7 SU410	—
(157)	11	29	—	PL903/5 SU410	—
(158)	12	—	—	Earth	—
Connections to Amplifier (Servo) 297A, Ref. No. 10U/17508 (*b*)					
(159)	PL1/1	—	67/11	—	—
(160)	2	—	67/12	—	—
(161)	3	—	51/1	—	—
(162)	4	—	—	Earth	—
(163)	5	—	—	—	—
(164)	6	—	51/2	—	—
(165)	7	—	63/7	—	—
(166)	8	—	—	—	—
(167)	9	—	67/9	—	—
(168)	10	—	63/8	—	—
(169)	11	—	63/6	—	—
(170)	12	—	67/10	—	—
(171)	PL2/1	—	—	—	—
(172)	2	—	—	—	—
(173)	3	—	—	—	—
(174)	4	—	65/5	—	—
(175)	5	—	65/4	—	—
(176)	6	—	65/7	—	—
(177)	7	—	65/6	—	—
(178)	8	—	65/9	—	—
(179)	9	—	65/8	—	—
(180)	10	—	65/10	—	—
(181)	11	247	63/4, 65/3, 65/11, *strapped together*	PL503/7 CU(*b*)	—
(182)	12	—	65/12	—	—
(183)	PL3/1	—	—	—	—
(184)	2	—	—	—	—
(185)	3	—	67/1	—	—
(186)	4	—	67/2	—	—
(187)	5	—	67/3	—	—
(188)	6	—	67/4	—	—
(189)	7	—	67/5	—	—
(190)	8	—	67/6	—	—
(191)	9	—	67/7	—	—
(192)	10	—	—	—	—
(193)	11	—	67/8	—	—
(194)	12	—	—	—	—
(195)	PL4/1	—	59/3	—	—
(196)	2	—	59/5	—	—
(197)	3	—	—	—	—
(198)	4	—	65/1	—	—

SCHEDULE 1. Rack assembly Type 16652—Wiring—(contd.)

No.	Originating unit (short ref. title) and plug	Cross reference	Rack assembly Jones plug	Termination	
				Internal	External
Connections to Amplifier (Servo) 297A, 10U/17508 (*b*) —(contd.)					
(199)	PL4/5	—	63/1	—	—
(200)	6	237	—	PL502/9 CU(*b*)	—
(201)	7	—	—	—	—
(202)	8	—	63/5, 65/2, *strapped together*	—	—
(203)	9	234	—	PL502/6 CU(*b*)	—
(204)	10	—	63/3	—	—
(205)	11	—	—	—	—
(206)	12	—	61/11	—	Height mark pass wire
(207)	PL5/1	—	—	—	—
(208)	2	—	59/4	—	—
(209)	3	—	59/7	—	—
(210)	4	231	—	PL502/3 CU(*b*)	—
(211)	5	28	—	PL903/4 SU410	—
(212)	6	26	—	PL903/2 SU410	—
(213)	7	—	59/1	—	—
(214)	8	232	—	PL502/4 CU(*b*)	—
(215)	9	—	—	—	—
(216)	10	—	—	—	—
(217)	11	—	—	—	—
(218)	12	220	—	PL501/2 CU(*b*)	—
Connections to Control Unit 600, Ref. No. 10L/16029 (*b*)					
(219)	PL501/1	—	—	—	—
(220)	2	218	—	PL5/12 AS(*b*)	—
(221)	3	223	61/4, 61/6, 61/8,	PL501/5 CU(*b*)	—
		225	*strapped together*	PL501/7 CU(*b*)	—
(222)	4	—	—	—	—
(223)	5	221	61/6, 61/4, 61/8,	PL501/3 CU(*b*)	—
		225	*strapped together*	PL501/7 CU(*b*)	—
(224)	6	—	—	—	—
(225)	7	221	61/8, 61/4, 61/6	PL501/3 CU(*b*)	—
		223	*strapped together*	PL501/5 CU(*b*)	—
(226)	8	—	—	—	—
(227)	9	—	59/9	—	—
(228)	10	—	59/11	—	—
(229)	11	—	59/8	—	—
(230)	12	—	63/10	—	—
(231)	PL502/3	210	57/2	PL5/4 AS(*b*)	—
(232)	4	214	—	PL5/8 AS(*b*)	—
(233)	5	—	—	—	—
(234)	6	203	—	PL4/9 AS(*b*)	—
(235)	7	—	—	—	—
(236)	8	—	63/9	—	—
(237)	9	200	—	PL4/6 AS(*b*)	—
(238)	10	—	—	—	—
(239)	11	—	—	—	—
(240)	12	—	—	—	—
(241)	PL503/1	—	59/10	—	—
(242)	2	—	—	—	—
(243)	3	—	59/2	—	—
(244)	4	—	—	—	—
(245)	5	—	59/6	—	—
(246)	6	—	—	—	—
(247)	7	181	63/4, 65/3, 65/11, *strapped together*	PL2/11 AS(*b*)	—
(248)	8	—	—	—	—
(249)	PL504/7	—	—	—	—
(250)	8	—	—	—	—
(251)	9	—	—	—	—
(252)	10	27	—	PL903/3 SU410	—
(253)	11	25	—	PL903/1 SU410	—
(254)	12	—	–	Earth	

Chapter 25

RACK ELECTRICAL EQUIPMENT
5975-99-001-2719

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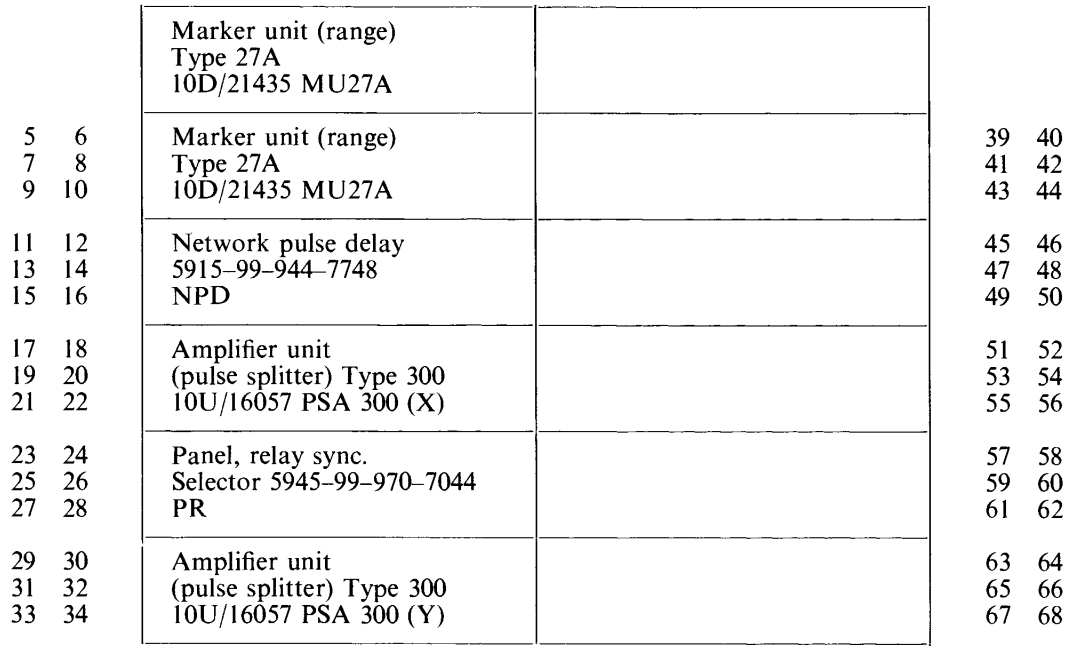


Fig. 1. Disposition of units and plugs, schematic.

Detailed description

1. The Rack Electrical Equipment 5975-99-001-2719 is a conversion from a Rack Assembly Type 307. The conversion uses different units within the rack and a completely new cable and wiring layout so that there is no similarity between the racks except the outer shell. The accompanying schedule provides details of the new wiring.

2. The units in the rack provide some interface facilities for a remote primary radar. A sync. selection relay panel distributes sync. in the radar office with a pulse relay network providing fixed delay compensation. A pulse splitting amplifier matches and distributes sync. pulses for the console displays, and marker units Type 27A supply 5- and 10-mile range markers for extra long range timebase operation.

SCHEDULE 1

RACK ELECTRICAL EQUIPMENT—WIRING
(5975-99-001-2719)

No.	Originating unit (short ref. title) and plug		Cross Reference	Rack Assembly Jones plug	Termination	
					Internal	External
	Marker unit Type 27A MU27A(1)					
	Sockets 1 to 4 not used					
(1)		SKT5	49	—	SKT13	(PSA300(X))
(2)		SKT6	15	—	SKT5	(MU27A(2))
(3)		PL7/1	—	—	Earth	
(4)		2				
(5)		3				
(6)		4				
(7)		5				
(8)		6				
(9)		7				
(10)		8				
(11)		9				
(12)		10				
(13)		11	—	PL7/3		
(14)		12	—	PL7/4		
	Marker unit Type 27A MU27A(2)					
	Sockets 1 to 4 not used					
(15)		SKT5	2	—	SKT6	(MU27A(1))
	Socket 6 not used					
(16)		PL7/1	—	—	Earth	
(17)		2				
(18)		3				
(19)		4				
(20)		5				
(21)		6				
(22)		7				
(23)		8				
(24)		9				
(25)		10				
(26)		11	—	PL7/2		
(27)		12	—	PL7/1		
(28)	Network, pulse delay	SKT1	43	—	SKT3	(PSA300(X))
(29)	NPD	SKT2	45	—	SKT9	(PSA300(X))
(30)		SKT3	44	—	SKT4	(PSA300(X))
	Socket 4 not used					
	Amplifier (pulse splitter)					
(31)	Type 300 PSA300(X)	PL1/1	—	—	Earth	
(32)		2				
(33)		3				
(34)		4				
(35)		5				
(36)		6				
(37)		7				
(38)		8				
(39)		9				
(40)		10				
(41)		11	—	PL7/5		
(42)		12	—	PL7/6		
	Socket 2 not used					
(43)		SKT3	28	—	SKT1	(NPD)
(44)		SKT4	30	—	SKT3	(NPD)

SCHEDULE 1

RACK ELECTRICAL EQUIPMENT—WIRING
(5975-99-001-2719)

No.	Originating unit (short ref. title) and plug		Cross Reference	Rack Assembly Jones plug	Termination	
					Internal	External
	Socket 5 to 8 not used					
(45)		SKT9	29	—	SKT2	(NPD)
(46)		SKT10	59	—	SKT5	(PR)
(47)		SKT11	61	—	SKT7	(PR)
(48)		SKT12	63	—	SKT9	(PR)
(49)		SKT13	1	—	SKT5	(MU27A(1))
	Socket 14 and 15 not used					
	Panel, relay sync. selector					
(50)	PR	PL/1	—	—	Earth	
(51)		PL/2	—	PL9/1		
(52)		3	—	2		
(53)		4	—	3		
(54)		5	—	4		
(55)		6	—	5		
(56)		7	—	6		
(57)		8	—	7		
(58)		9	—	8		
	Socket 2 to 4 not used					
(59)		SKT5	46	—	SKT10	(PSA300(X))
(60)		SKT6	77	—	SKT3	(PSA300(Y))
(61)		SKT7	47	—	SKT11	(PSA300(X))
(62)		SKT8	78	—	SKT4	(PSA300(Y))
(63)		SKT9	48	—	SKT12	(PSA300(X))
(64)		SKT10	79	—	SKT5	(PSA300(Y))
	Socket 11 to 15 not used					
	Amplifier (pulse splitter)					
(65)	Type 300 PSA300(Y)	PL/1	—	—	Earth	
(66)		2				
(67)		3				
(68)		4				
(69)		5				
(70)		6				
(71)		7				
(72)		8				
(73)		9				
(74)		10				
(75)		11	—	PL7/7		
(76)		12	—	PL7/8		
	Socket 2 not used					
(77)		SKT3	60	—	SKT6	(PR)
(78)		SKT4	62	—	SKT8	(PR)
(79)		SKT5	64	—	SKT10	(PR)
	Socket 6 to 15 not used					

Chapter 3

AMPLIFIER (NB-W) TYPE A.3679

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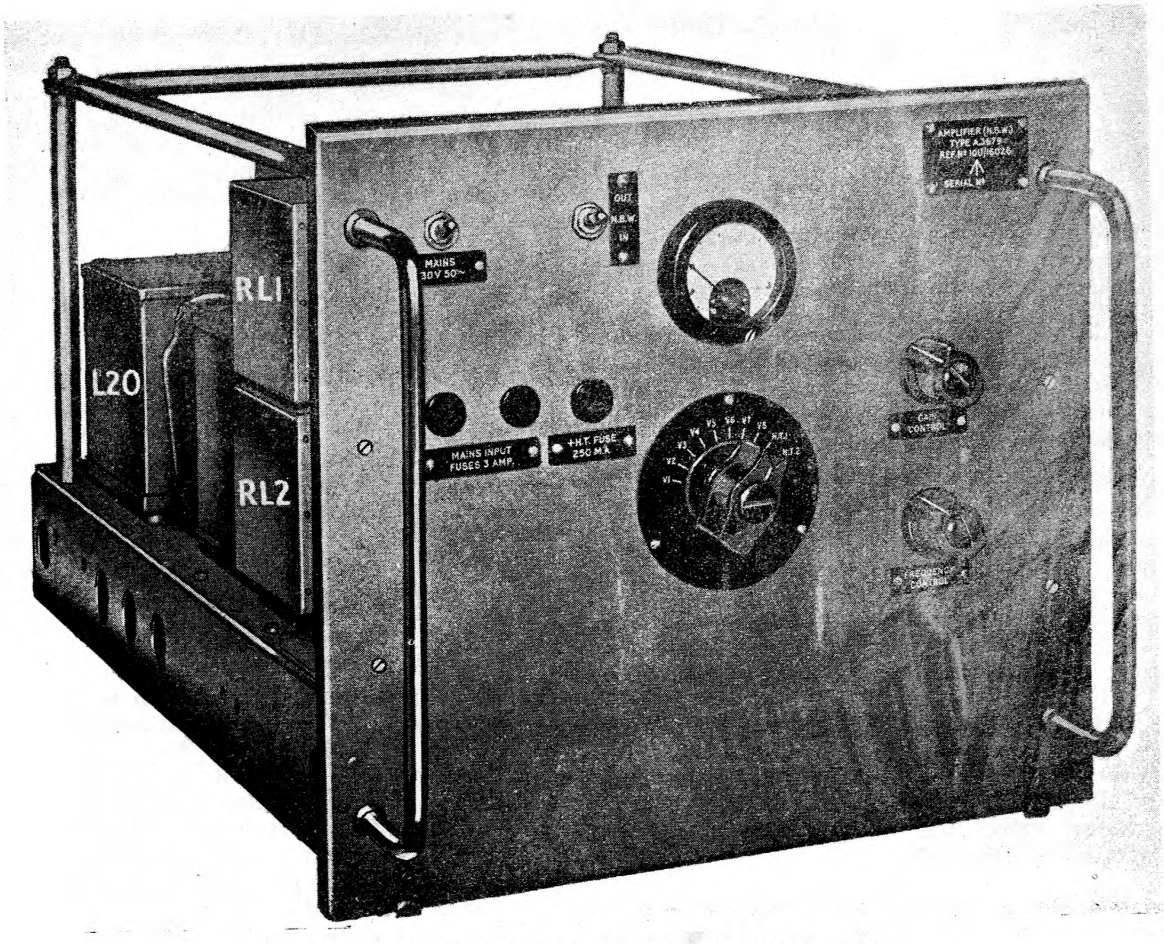


Fig. 1. Amplifier (NB-W) Type A.3679—Front panel

SECTION 2

AMPLIFIERS AND AMPLIFYING UNITS

Introduction

1. The amplifier (NB-W) Type A.3679 (Stores Ref. 10U/16026) is a narrow bandwidth amplifier (NB-W) which, when switched into circuit by energization of RL1 and RL2 introduces a narrow pass-band into the overall frequency response of the radar signal chain. Outside this band signals suffer great attenuation so that interference at frequencies differing from that of the transmitter is eliminated. The centre point of the pass-band can be preset to any point in the pass-band of the main IF amplifier Type A.3678 (*Chap. 2 of this Sect. 2*), that is, in the range 43 to 47 Mc/s.

2. A front panel view of the amplifier is shown in fig. 1. Fig. 2 is a schematic, fig. 3 a plan view and fig. 4 an under-chassis view, with screening cans removed. Fig. 5 is the circuit diagram.

3. The pentode valves V4 to V8 form the band-pass amplifier. Of these, V5, V6 and V7 are normal amplifiers, while V4 and V8 are frequency-changers. The pentode V2 is a local oscillator which feeds the cathode of V8 directly from an RF transformer in its anode circuit, while the mixer V4 is fed via an RF transformer in the anode circuit of the buffer valve V3. V1 is a reactance valve which provides a fine control of the frequency generated by V2. Valves Type CV1091 are used throughout the stages mentioned.

4. A power pack stabilized by a Stabilivolt V10 (Type CV1068) and requiring a 230V 50c/s input is built into the unit. Valve currents and HT potentials can be observed by means of a meter mounted on the front panel of the unit.

5. The mid-point of the pass-band is normally set to an IF of 45 Mc/s. Bandwidth is set to about 500 kc/s, which is a reasonable compromise between selectivity and fidelity of pulse reproduction under interference conditions.

Circuit description

Reactance valve

6. The pentode V1 has its anode connected to its control grid by R3 in series with C2. This is a short-circuit to RF but blocks DC. Variations in anode voltage, after a phase change by R3 and grid-to-earth stray capacitance, are fed back to the grid. The resulting grid voltage fluctuations of V1 cause changes in anode current which are out of phase with the anode voltage. As the current lags on the voltage, the anode-cathode path behaves as an inductance which, since it is virtually across part of the tuned circuit of the oscillator valve V2, controls the frequency generated by this valve.

7. The value of this simulated inductance can be varied by altering the cathode bias of V1 by means of the potentiometer RV2.

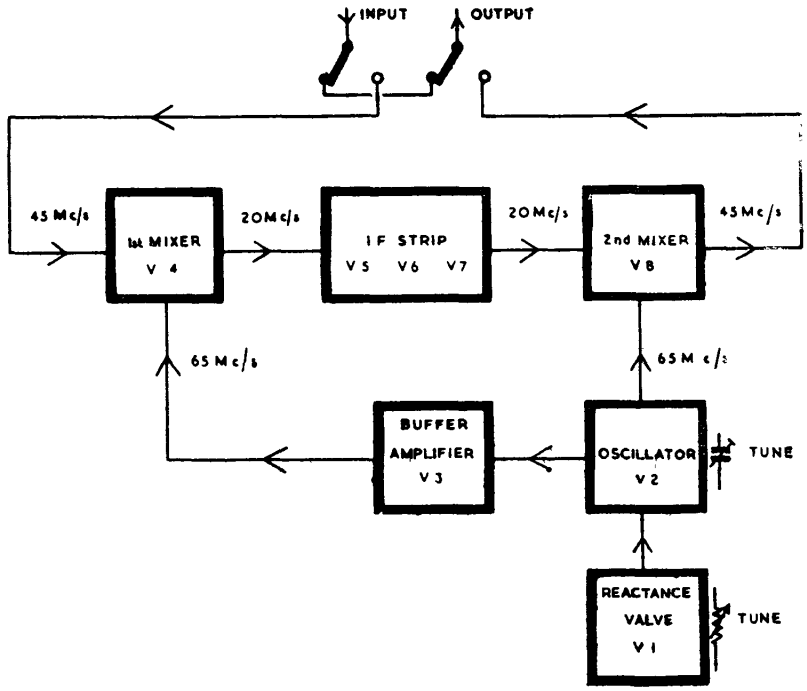


Fig. 2. Amplifier (NB-W) Type A.3679—Schematic

Oscillator

8. The valve V2 operates by cathode feedback, a cathode tap being effected by the grid-cathode capacitance and stray capacitance between cathode and earth. The frequency can be varied from 60 to 70 Mc/s by means of C7, while V1 has a fine range of control over about 1 Mc/s. Normally, the oscillator frequency is set at 65 Mc/s. The anode circuit is tuned by a dust-cored trimmer L3 and the output is taken to the mixer valve V8 by a low impedance coupling coil.

Buffer-amplifier

9. The buffer valve V3 feeds signals from the oscillator V2 to the mixer V4. The anode is tuned by a dust-cored inductor L5 and its output is taken to the cathode of the mixer V4 via a low impedance coupling coil. Since the purpose of the narrow bandwidth amplifier is to exclude signals outside its pass-band it is essential to reduce to a minimum any break-through from input to output. The buffer V3 is therefore employed to feed 65 Mc/s to V4, as if the two mixers were fed from the same source a ready path would be provided for signals to break through.

First frequency-changer

10. When the NBW IN switch is operated, the 45 Mc/s input from the head amplifier is fed via SK1 to the grid of the first frequency-changer V4. This valve is operated with low screen-grid voltage and a large cathode bias and consequently operates on the curved part of its grid characteristic. The 65 Mc/s output from the buffer valve V3 is injected at the cathode of V4 at between 1 and 2 volts RMS. It mixes with the 45Mc/s signals to produce an IF of 20Mc/s which is fed to the band-pass circuits of V5, V6 and V7.

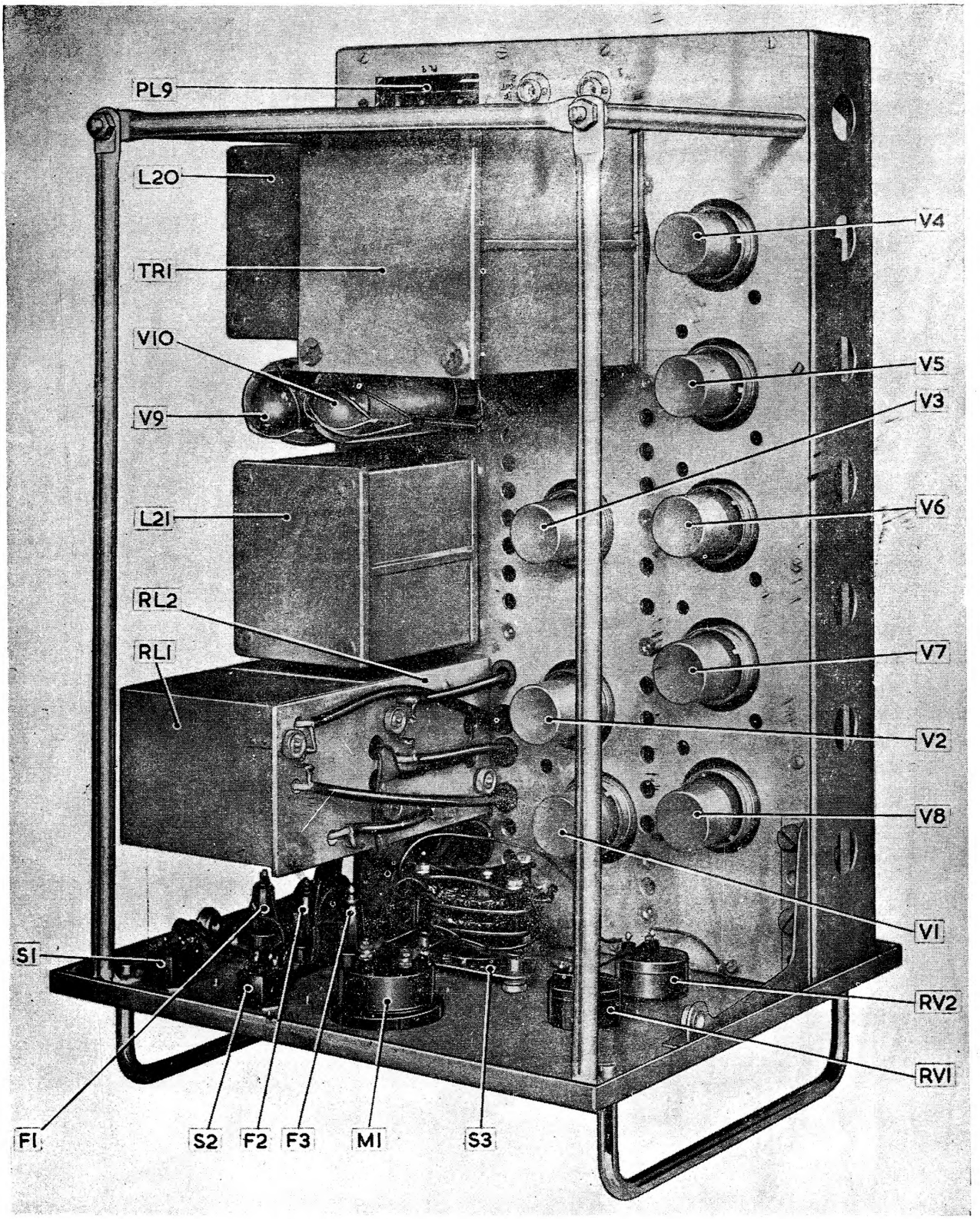


Fig. 3. Amplifier (NBW)—Type A.3679—Plan view

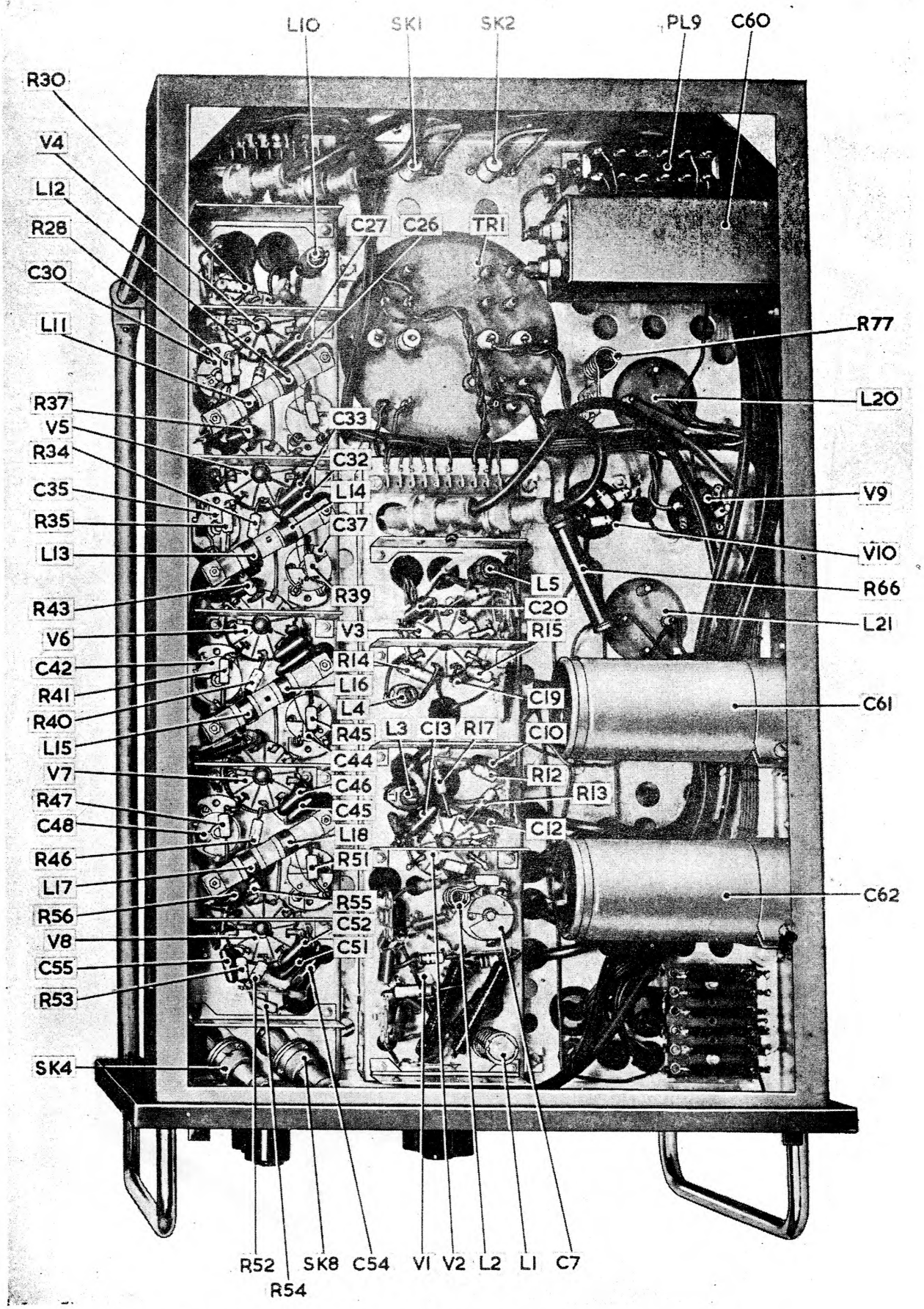


Fig. 4. Amplifier (NB-W) Type A.3679—Under chassis with screening cans removed

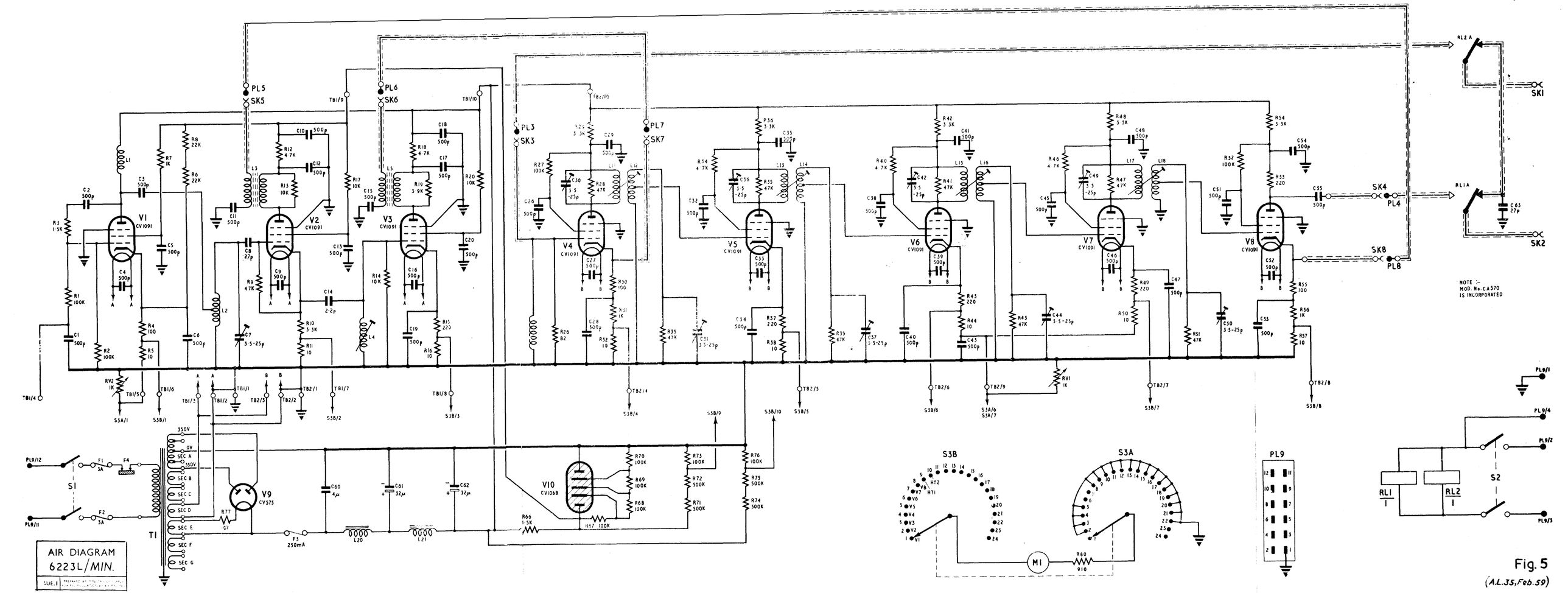
IF amplifier-stages

11. The valves V5, V6 and V7 constitute normal 20 Mc/s IF amplifiers and are biased in the linear part of their characteristics curve. The band-pass circuits, which consist of a pair of air-cored coils with fixed coupling tuned by air-dielectric trimmers, are designed to give a sensibly flat response over a band of 500 kc/s centred on 20 Mc/s.

12. These amplifiers give a certain amount of gain which is not wanted. To counteract this, the grid of each of the valves is tapped near the earthy end of the tuning inductance, while V6 and V7 have a cathode bias gain control RV1, which enables the overall gain of the amplifiers to be preset to unity.

Second frequency-changer

13. The pentode V8 receives the 65 Mc/s output from the oscillator V2 on its cathode. The 20 Mc/s output from the IF amplifier chain is fed to the grid of V8, where it is mixed with the 65 Mc/s signals to produce a frequency of 45 Mc/s free from unwanted interfering frequencies.



Amplifier (NBW) Type A.3679 – circuit

Fig. 5
(A.L.35, Feb. 59)

Chapter 4

AMPLIFIER (IF AND VID.) TYPE A.3680

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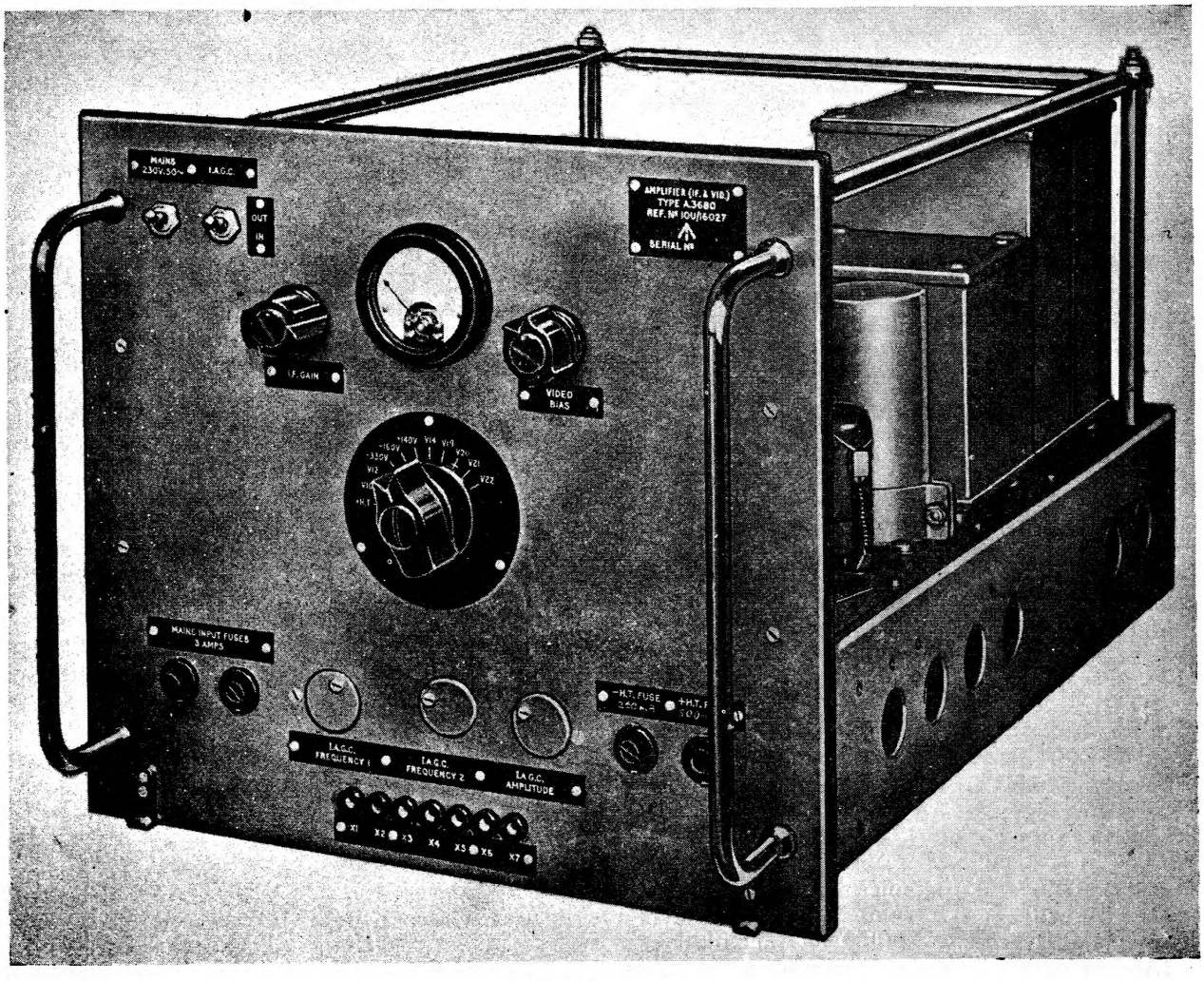


Fig. 1. Front view

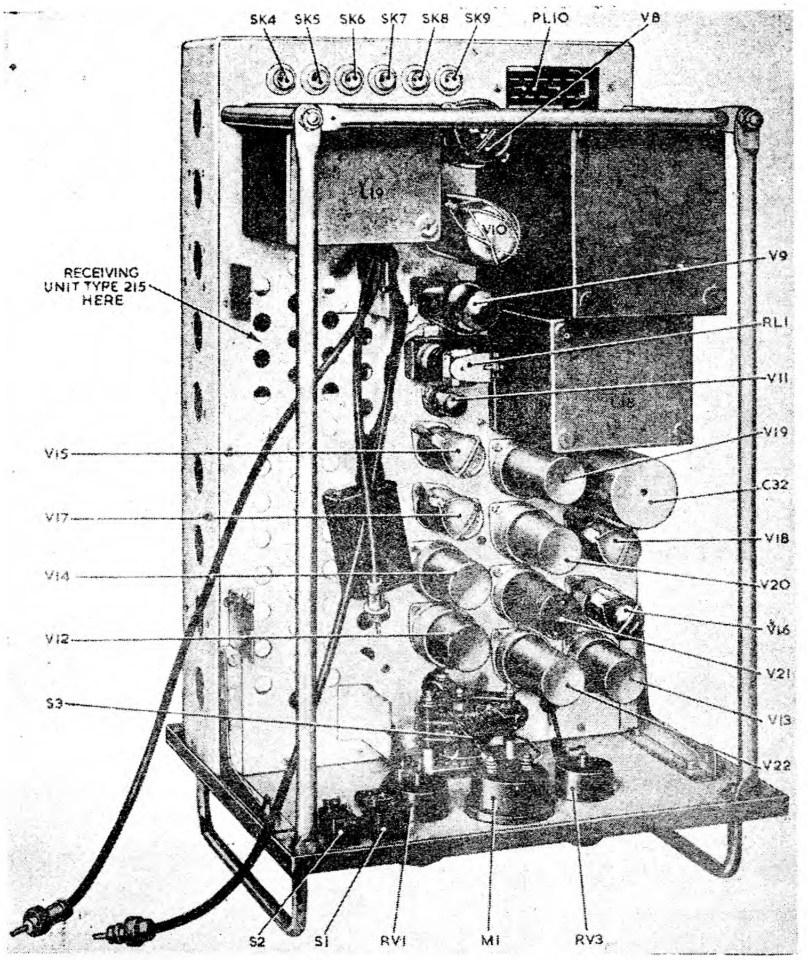


Fig. 2. Plan view

Introduction

1. The amplifier (IF and Video) Type A.3680 (Stores Ref. 10U/16027) can be divided into three main sections :—

(1) The IF strip, receiving unit Type 215 (Stores Ref. 10P/16036) described in Chap. 5 of this Section.

(2) The video amplifier and cathode-follower outputs.

(3) The IAGC circuit which may be switched in or out as desired.

2. Front and plan views of the unit are shown in fig. 1 and 2 respectively. An under-chassis view is given in fig. 3 and a circuit diagram in fig. 4. The schematic and idealized waveforms are shown in fig. 5.

3. The receiving unit Type 215 is mounted on a removable sub-chassis on the main chassis and is connected by means of three coaxial plugs and sockets and a 12-pole Jones plug and socket.

4. The IF and video amplifier requires an input of 230V, 50 c/s for the built-in power supply circuits and negative 50 VDC operation of the IAGC in/out relay. Provision is made for monitoring the video signals at output sockets on the front panel of the unit. Valve currents in the video circuits and HT may be checked by means of a meter mounted on the front panel.

Circuit description

Video amplifier and cathode-followers

5. The circuit diagram (*fig.* 4) shows the power pack which delivers positive 350V DC from the full-wave rectifier V8 (CV.575) for the IF strip and V10, V12, V13, V19, V20, V21, V22 and half of V16 on the video unit. The valve V10 (CV.1068) supplies a stabilized positive voltage of 200 for the IF gain control and a positive stabilized voltage of 140 for V14 and one half of V16. The power unit also delivers negative 370V DC for the IF unit, negative 7V for V17 from the junction of R47 anf R48, negative 150V stabilized from R53 and V11 (CV.287) for the IF strip and approximately negative 3V also from V11 for the video bias control.

6. The valve V12 (CV.1091) supplies the variable positive voltage of 20 to 200 for the screens of the first four IF stages from its cathode. The potentiometer RV1, IF GAIN, by supplying a variable DC voltage of from 0 to 200 from Stabilivolt V10 (CV.1068) to the grid of V12, controls its cathode current and therefore the voltage developed at its cathode and applied to the four IF stages.

7. The signals from the cathode-follower V7 on the receiving unit Type 215 are fed to V17 (CV.1054) where large signals are first limited. The signals are then DC-restored by V15 (CV.1054) and fed to the grid of V14 (CV.1091) where further limiting takes place. With only 140V supply to the anode and screen of this valve, it has a short grid base (about 3V). Thus, by varying RV3, the video bias control which supplies up to negative 3V to the grid of V14, it is possible to cut off the valve. Adjustment of the video bias control, therefore, sets the level at which signals will drive V14 into cut-off.

8. The positive-going limited signals from the anode of V14 are then passed to the grid of the cathode-follower valve V19 (CV.173) which feeds the amplifier (AJ and Vid.) Type A.3681 via Sk5 (Chap. 6 of this Section).

9. The pentodes V20, V21 and V22 (all CV. 173) are three cathode-followers fed in parallel via SK6 from the output of the amplifier (AJ and Vid.) Type A.3681 and these feed the limited signals out for display purposes.

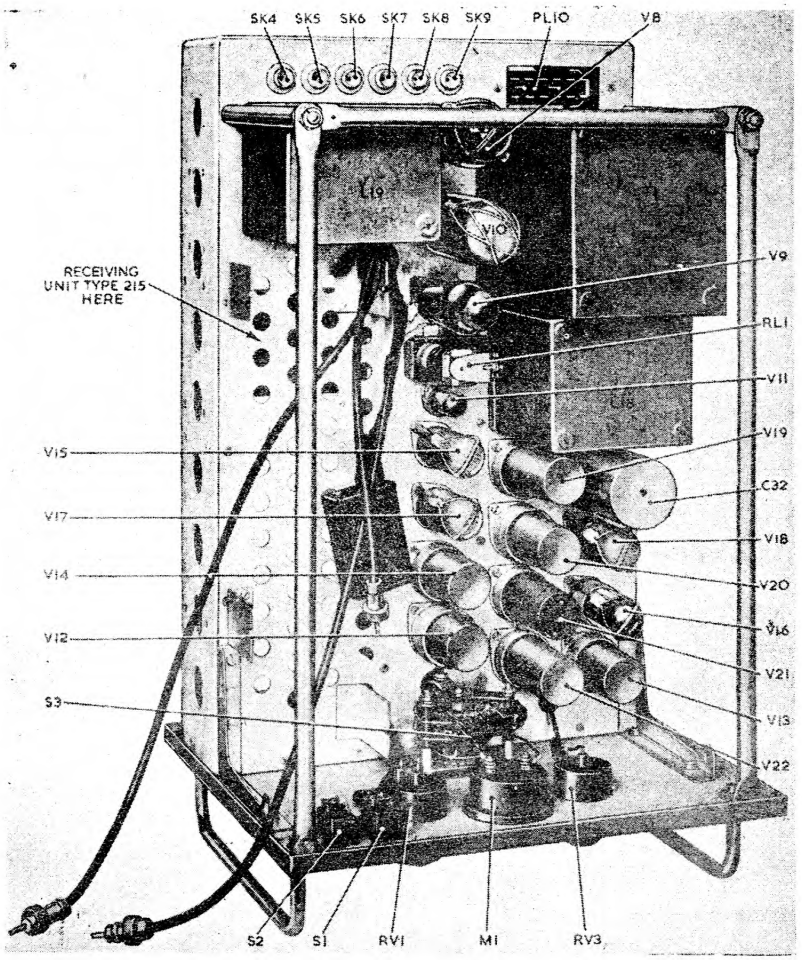


Fig. 2. Plan view

Introduction

1. The amplifier (IF and Video) Type A.3680 (Stores Ref. 10U/16027) can be divided into three main sections :—

(1) The IF strip, receiving unit Type 215 (Stores Ref. 10P/16036) described in Chap. 5 of this Section.

(2) The video amplifier and cathode-follower outputs.

(3) The IAGC circuit which may be switched in or out as desired.

2. Front and plan views of the unit are shown in fig. 1 and 2 respectively. An under-chassis view is given in fig. 3 and a circuit diagram in fig. 4. The schematic and idealized waveforms are shown in fig. 5.

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6. The valve V12 (CV.1091) supplies the variable positive voltage of 20 to 200 for the screens of the first four IF stages from its cathode. The potentiometer RV1, IF GAIN, by supplying a variable DC voltage of from 0 to 200 from Stabilivolt V10 (CV.1068) to the grid of V12, controls its cathode current and therefore the voltage developed at its cathode and applied to the four IF stages.

7. The signals from the cathode-follower V7 on the receiving unit Type 215 are fed to V17 (CV.1054) where large signals are first limited. The signals are then DC-restored by V15 (CV.1054) and fed to the grid of V14 (CV.1091) where further limiting takes place. With only 140V supply to the anode and screen of this valve, it has a short grid base (about 3V). Thus, by varying RV3, the video bias control which supplies up to negative 3V to the grid of V14, it is possible to cut off the valve. Adjustment of the video bias control, therefore, sets the level at which signals will drive V14 into cut-off.

8. The positive-going limited signals from the anode of V14 are then passed to the grid of the cathode-follower valve V19 (CV.173) which feeds the amplifier (AJ and Vid.) Type A.3681 via Sk5 (Chap. 6 of this Section).

9. The pentodes V20, V21 and V22 (all CV. 173) are three cathode-followers fed in parallel via SK6 from the output of the amplifier (AJ and Vid.) Type A.3681 and these feed the limited signals out for display purposes.

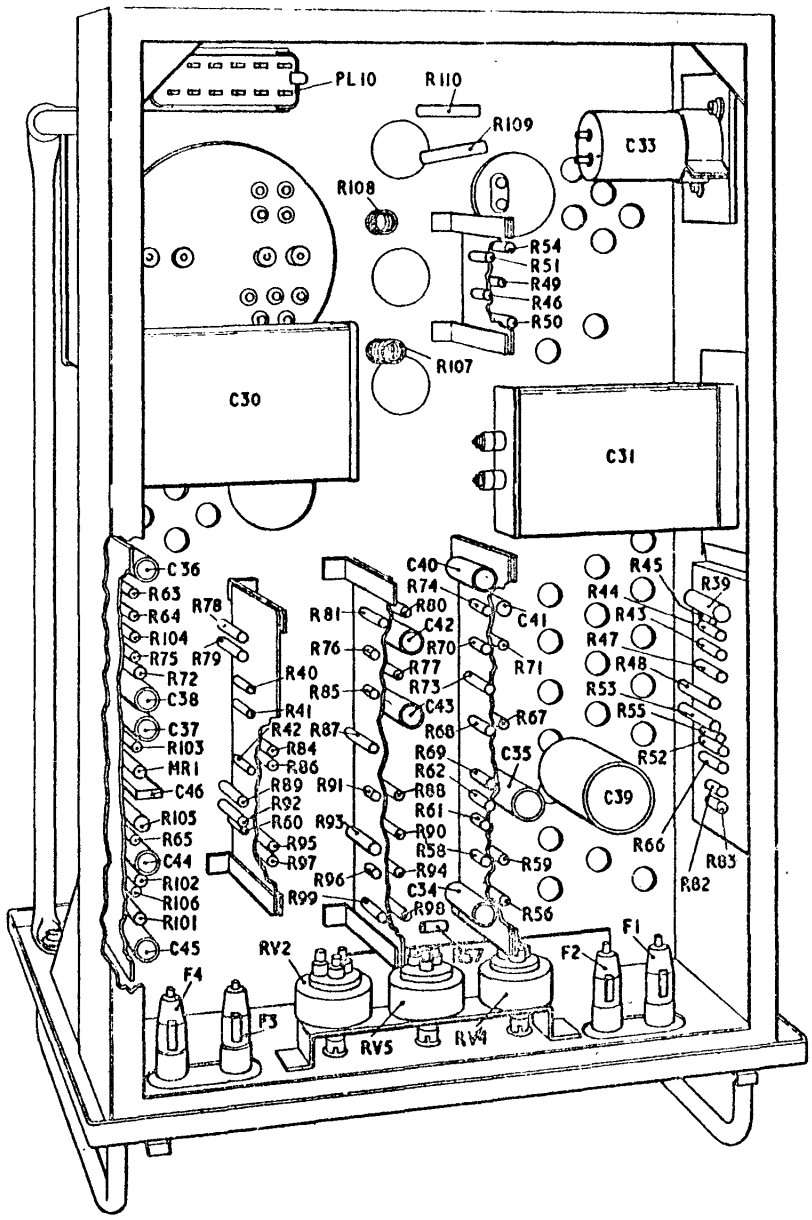


Fig. 3. Under chassis

IAGC

10. The video output from the IF strip cathode-follower is applied, via screened cable, to the matching cathode-follower (first half of V16 (CV.1988)) which is in parallel with the grid input of the low-gain amplifier V14. The negative-going signal from the cathode of V16 (first half) is applied to the grid of V16 (second half). This grid is normally held at a negative potential, preset by RV2, IAGC AMP. ; hence, incoming signals will be limited when they drive V16 grid negative to cut-off. The positive-going output is amplified and phase-reversed in V13 (CV.1091) and the output from V13 is DC-restored by the crystal rectifier MR1, and applied to the rectifier system consisting of V18 (CV.1054), RV4, RV5, R105 and C46. C46 is the control potential reservoir condenser.

11. In the absence of any signals, C46 is held discharged by R105. The cathode of V18 (first half) and anode of V18 (second half) are strapped and are at earth potential ; therefore neither half of V18 will be conducting.

12. When a negative-going signal appears at the anode of V13, the cathode of V18 (first half) will go negative with the leading edge of the signal, V18 (first half) will conduct, and V46 will charge negatively on a time-constant of up to about 50 μS determined by the setting of RV5, IAGC FREQ. I.

13. While the signal remains at a negative value, C46 will remain negatively charged. This negative potential is taken via PL11 and an IF filter to prevent IF feedback to the grid of the first stage in the receiving unit Type 215 and biases it back, thus reducing the sensitivity of the IF strip.

14. This action affects the signals passing through the IAGC circuits and hence the bias presented to the grid of V1 in the IF strip, and the system takes up a stable position which is determined by the IAGC AMP. control RV2.

15. While the signal remains negative, C45 will only charge very slowly through R103 and the parallel circuits, the effect on the feedback bias being negligible.

16. The lagging edge of the signal causes the anode of V18 (second half) to go positive with respect to its cathode, that is, it returns to earth. C46 discharges through RV4, IAGC FREQ. 2, the rate of discharge being variable.

17. It will be appreciated that the IAGC circuits can reduce the sensitivity of the IF strip to signals producing long video pulses, for example, CW or blocks of CW, ground waves, etc., but have no effect on short pulses such as signals which may appear by themselves or superimposed on the unwanted signals.

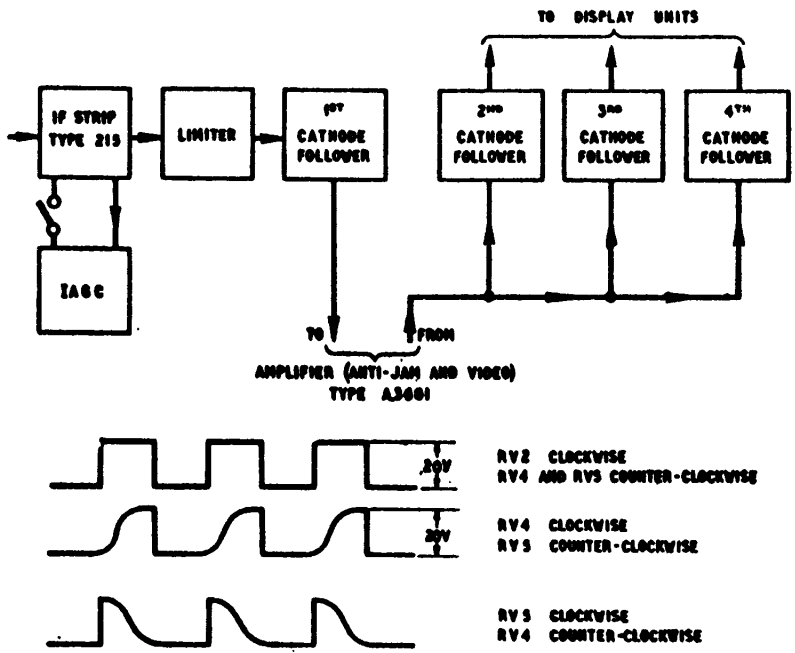


Fig. 5. Schematic and waveforms

AIR DIAGRAM
6223F/MIN.
ISSUE.2 | PREPARED BY MINISTRY OF SUPPLY FOR PROMULGATION BY AIR MINISTRY

TR1 · F1 3A · F2 3A · F3 250m A · F4 500m A · F5 · SW1 · SW2 · RL1 · PL10 · -50V · +50V · 6·3V D 3A · 6·5V C 3A · 6·7V B 5A · R107 ·07 · A 350V R109 33 · 310V · 220mA · 310V · A 350V R110 33 · 5V E · 6A R108 ·07 · 6·3V F 1A · 6·3V G 1A · V8 CV575 · V9 CV574 · L18 10H · L19 100H · R30 220 · GAIN → SK3/7 · +330V → SK3/4 · +140V · X2 · R50 6·8K · R58 100 · R59 100 · R46 270K · R40 500K · R41 500K · R42 100K · R49 270K · RV1 100K · R54 1K · R51 10 · R52 10 · SW367 · R43 100K · R47 1K · R44 500K · R45 500K · R48 47K · R53 33K · R53 500K · C50 8μ · C32 32μ · SW3 a3 · SW3 a4 · C51 8μ · C33 8μ · V10 CV1068 · V11 CV287 · V12 CV1091 · V14 CV1091 · C39 8μ · R57 1K · R56 39K · C35 0·5μ · C34 0·1μ · R61 220K · R62 10 · R67 500K · R68 500K · R69 100K · R73 47K · R74 10 · SW3 a5 · SW3 a8 · SW3 a9 · RV3 5K · R71 470K · C40 ·05μ · R66 100K · C42 0·1μ · R77 33 · R76 470K · C41 0·1μ · V15 CV1054 · V17 CV1054 · V19 CV175 · V20 CV175 · V21 CV175 · V22 CV175 · R78 100 · R79 100 · R84 100 · R86 100 · R89 100 · R92 100 · R95 100 · R97 100 · R85 33 · R90 33 · R96 33 · C43 0·1μ · R80 1K · R87 1K · R91 470K · R93 1K · R98 1K · SW3 a10 · SW3 a11 · SW3 a12 · SW3 a13 · R81 10 · R88 10 · R94 10 · R99 10 · R82 15K · R83 330K · X3 · X4 · X5 · X6 · X7 · SK5 · SK6 · SK7 · SK8 · SK9 · VIDEO OUTPUT. · RJ · PL2 · PL11 · PL1 · SK2 VIDEO OUTPUT · SK11 · UNIVERSAL IF STRIP RECEIVING UNIT TYPE 215 · SK1 IF INPUT · PL3 · SK4 · V3 G3 · SK3 · -160V · -330V · +330V · 6·3V D · SK10 · PL12

HT+ · V10 · V12 · +140V · V14 · V19 · V20 · V21 · V22 · -330V · -160V · SW3a · SW3b · R100 910 · M1 · SWITCH WAFERS AS VIEWED FROM FRONT

SK3/4 · V16 CV1068 · V13 CV1091 · V18 CV1054 · R72 47K · C37 0·1μ · R101 10K · R65 68K · C45 0·1μ · C36 0·1μ · R60 33 · C38 0·1μ · R63 1M · R64 22K · R73 470K · R106 470K · R102 1K · C44 0·1μ · R103 1M · MR1 · R105 470K · RV4 25K · RV5 100K · RL1a · C46 470P · RV2 25K · R104 150K

KEY
CONNECTIONS TO SW3 :- → SW3 a 4
TEST POINTS:- ○K3 -
MODS INCORPORATED
CA287
CA510

Amplifier (IF and Video) Type A.3680 — circuit

Fig. 4

Chapter 5

RECEIVING UNIT TYPE 215

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Introduction

1. The receiving unit Type 215 (Stores Ref. 10P/16036) forms the IF strip of amplifier (IF and video) Type A.3680 (Chapter 4 of this Section). It consists of five stages of amplification at 45 Mc/s with a detector and cathode-follower output and has a band-width of 4 Mc/s at 3 dB down.

2. The unit is normally mounted as a sub-chassis on the amplifier, from which it takes the following power supplies :—

Positive 330 volts DC
Negative 160 volts DC (stabilized)
6·3 volts AC
20 to 200 volts DC variable for gain control on the screens.

3. The output from the IAGC circuits is taken to the grid of V1 via an R/F filter, which prevents feedback of IF from the IF strip to the main chassis. Views of the strip are shown in fig. 1, 2 and 3. Fig. 4 is a circuit diagram.

Performance

4. The first three stages of the IF amplifier have each a gain of 8 times at 45 Mc/s. The mutual coupling tertiary windings have been adjusted to give a slightly overcoupled response with slight double peaking at 43 Mc/s and 47 Mc/s. The fourth stage gives a gain of 7 times with a single peaked response at 45 Mc/s.

The figures mentioned for these first four stages were taken at a screen voltage of positive 170 volts DC.

The fifth stage has a gain of 9 times at 45 Mc/s and is arranged to give a double peaked response.

The response of these five stages is proportioned to give an overall response which is as flat as possible over the range of 43 Mc/s to 47 Mc/s.

Circuit

5. The second, third and fourth stages are run with a fixed negative bias derived from a potentiometer chain consisting of R28, R33 and R34 on the IF strip and R53 on the video amplifier chassis.

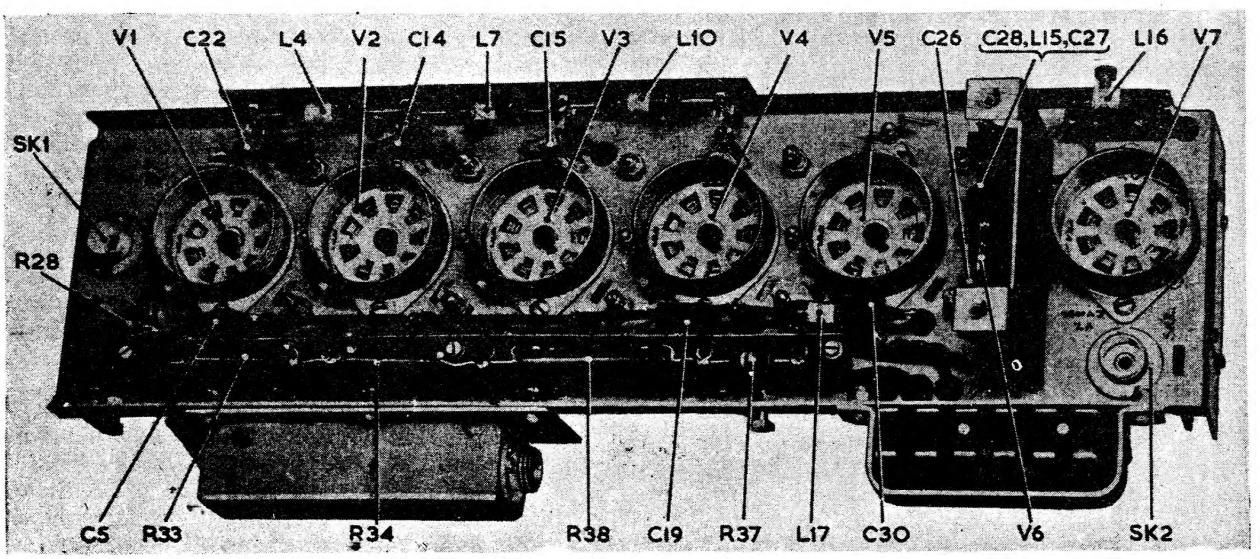


Fig. 1. Receiving unit Type 215 — plan view

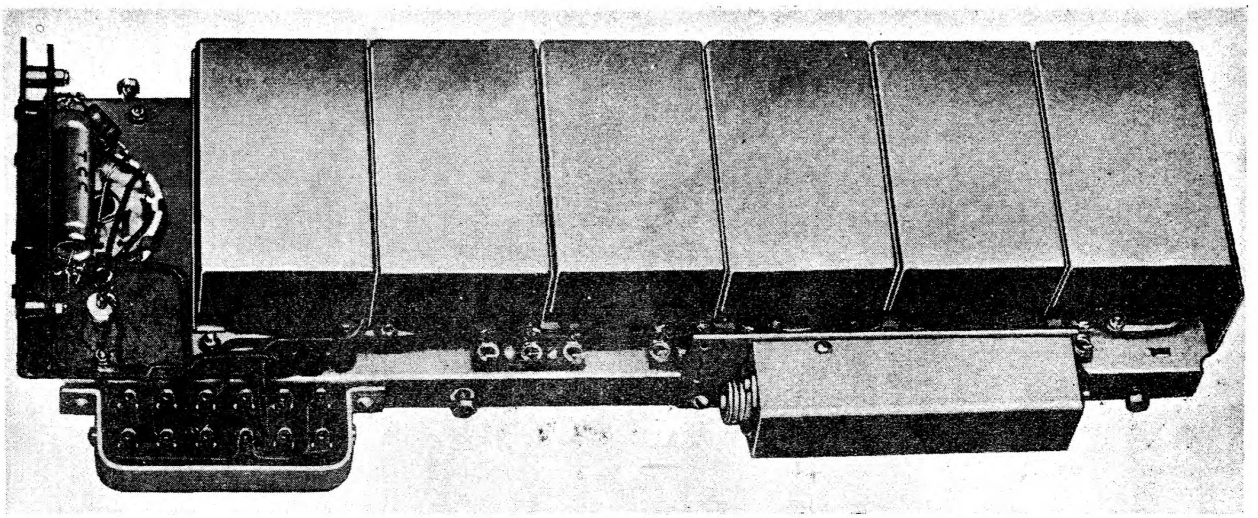


Fig. 2. Receiving unit Type 215—chassis underside with screening cans

A stabilizing neon valve Type CV287 (V11 on the video section) is connected to earth from the junction of R53 on the video amplifier section and the junction of R33 and R34 on the IF strip. The voltage at this point is therefore stabilized at *negative* 160 volts DC. The negative bias for the second to fourth stages is obtained from the junction of R28 and R33 and is *negative* 1·5 volts DC and stabilized. This voltage is fed to the earthy ends of the grid coils through decoupling circuits of 270 ohms resistors and 0·001 mfd. by-pass condensers.

6. The gain of these three stages is controlled by applying a variable voltage of from *positive* 20 to *positive* 200 volts DC to all three screens together. This voltage is obtained from the cathode of V12 on the video unit, and is variable by RV1.

7. The cathode circuits of the four valves V1 to V4 consist of a 33-ohm resistor. The resulting feedback ensures that the input capacitance of the valves remains reasonably constant as the slope is changed by the gain control. This feedback also increases the input resistance of the valves so that the damping of the circuits is made less dependent upon the valves and more rigidly defined by the resistors.

The fifth stage is not controlled and operates with fixed screen volts and with self-bias.

8. The single diode second-detector negative-going output operates through a filter (consisting of two chokes and C27 and C28) which separates out modulation frequencies from IF and harmonics, into a load which is AC-coupled with a time constant of 0·1 sec. to a cathode-follower Type CV1091 which can handle very large negative-going signals.

9. Due to the fact that the anode of the cathode-follower is connected to *positive* 330 volts DC and

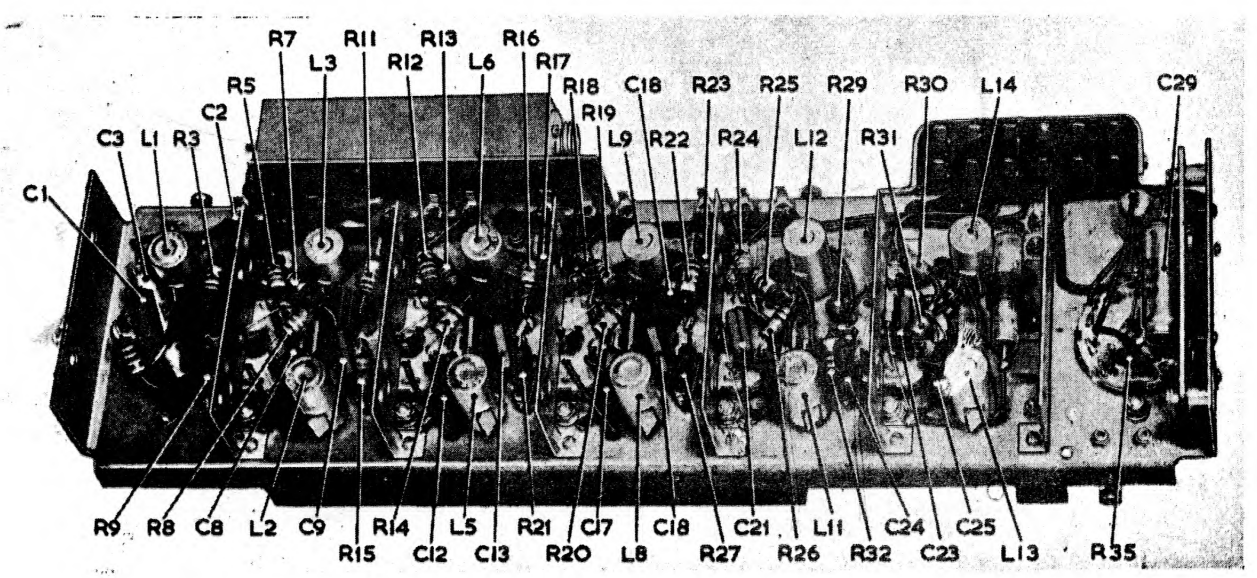
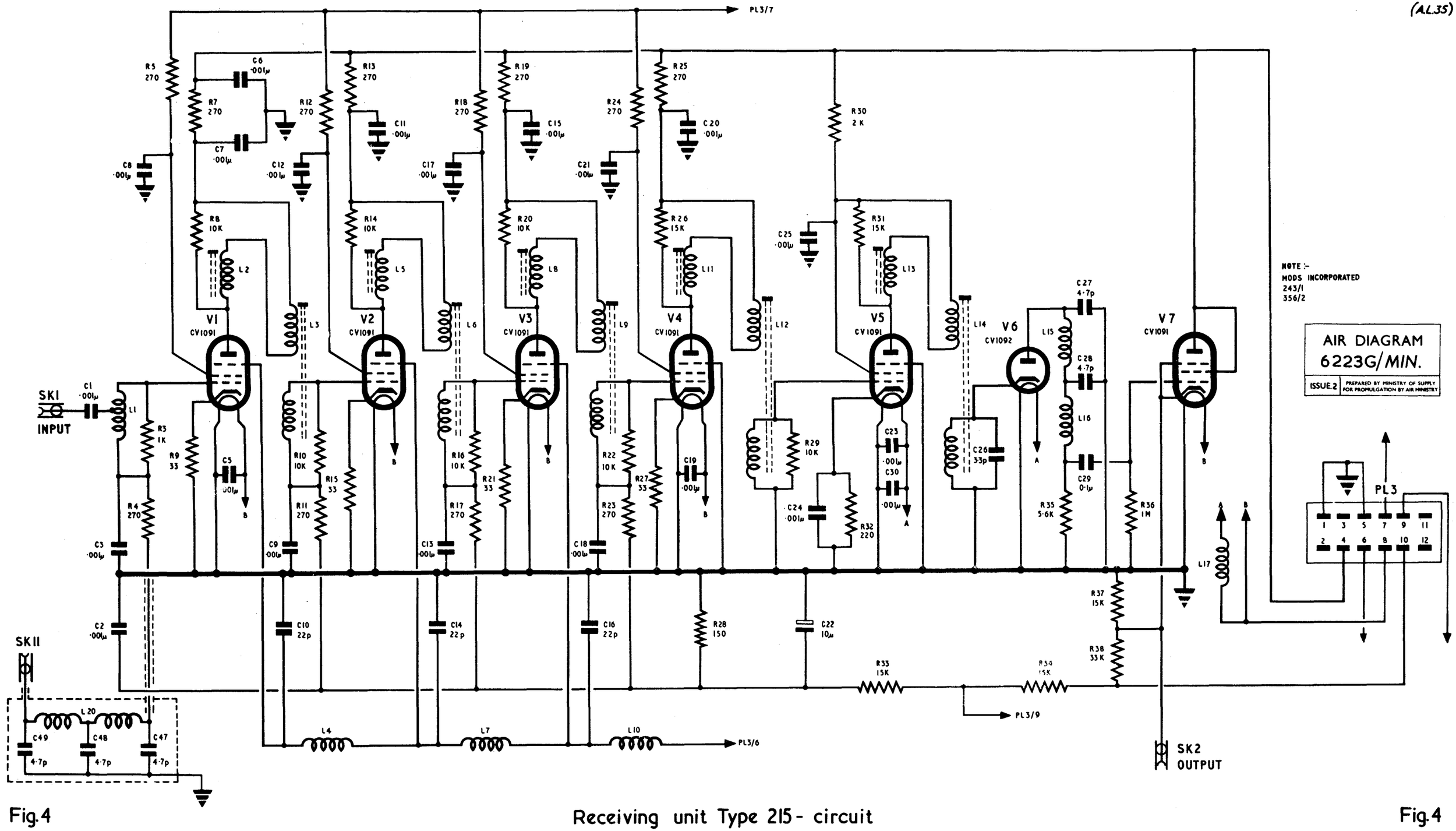


Fig. 3. Receiving unit Type 215—chassis underside with screening cans removed

its cathode to *negative* 330 volts DC through R38, and also to the fact that it is passing approximately 10 mA. the no-signal potential at the output plug is zero. It thus acts as a DC-restorer, making all negative-going signals applied to the grid drive the cathode from zero volts to a negative value depending on the amplitude of the signal applied to the grid. R37 completes the grid-cathode circuit and, as the cathode is driven negative, supplies the requisite feedback voltage to the grid.

10. All the supplies mentioned previously are obtained from the power pack on the amplifier Type A.3680 chassis and fed into the IF unit via a 12-way Jones plug and socket, the plug being mounted on the side of the IF unit.

11. Since no IF suppression is required, the suppressors of V1, V2 and V3 are earthed on the Jones plug. Should suppression be necessary, a negative voltage of about 80 volts would be required to cut off these valves.



NOTE :-
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Fig.4

Receiving unit Type 215 - circuit

Fig.4

Chapter 6

AMPLIFIER (AJ AND VID.) TYPE A.3681

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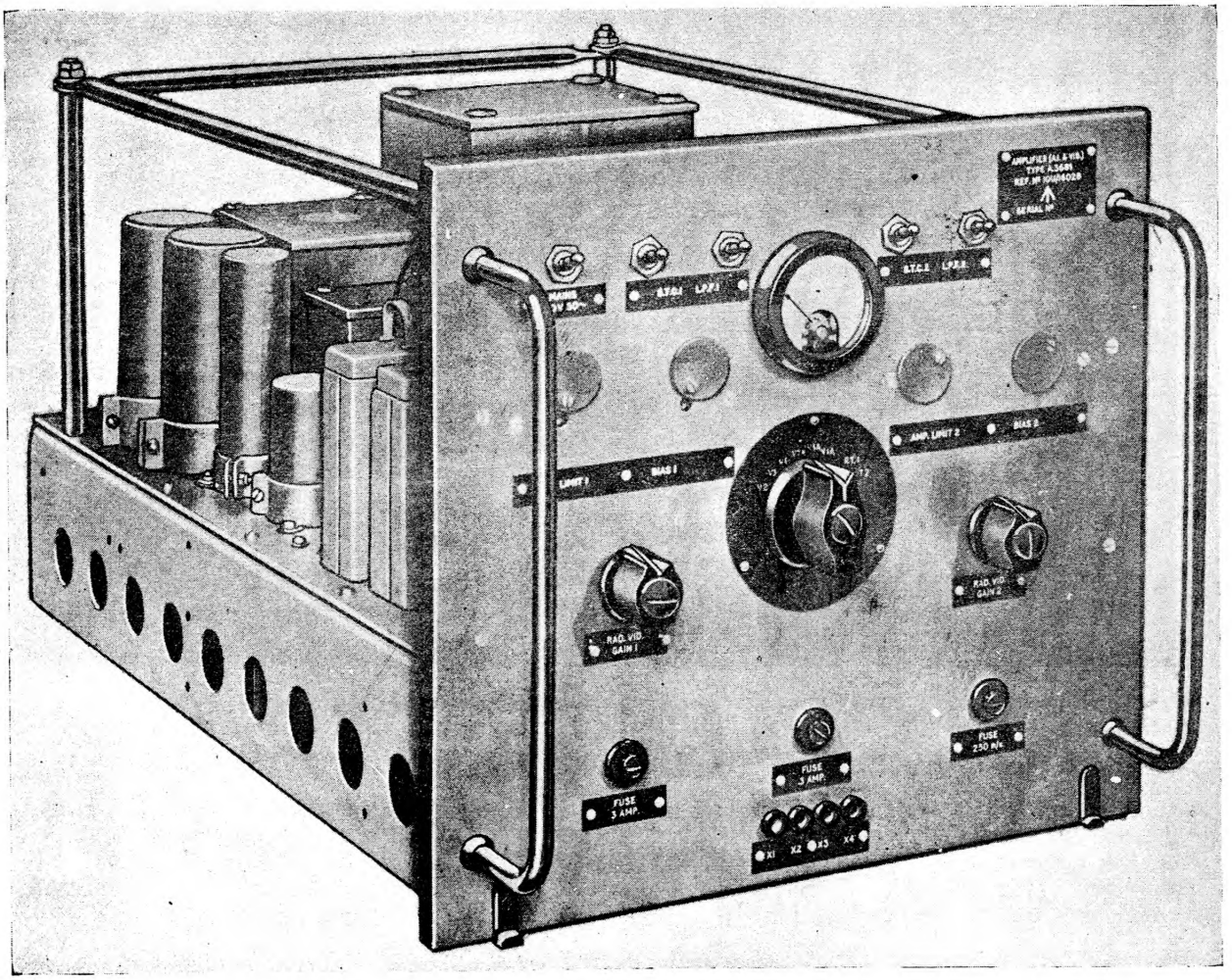


Fig. 1. Amplifier (AJ and Vid.) Type A.3681, front panel

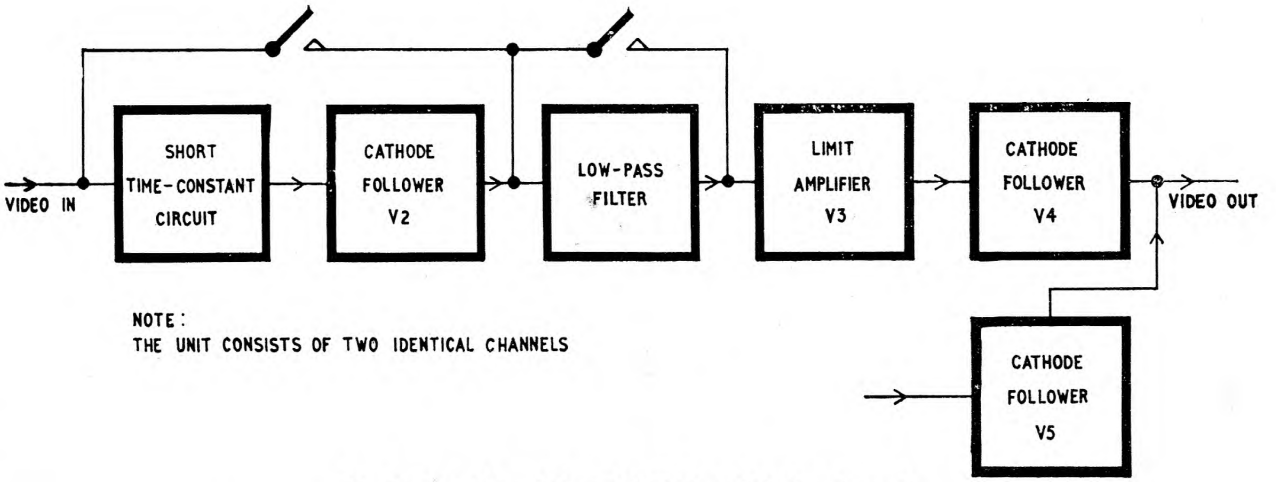


Fig. 2. Amplifier (AJ and Vid.) Type A.3681, schematic

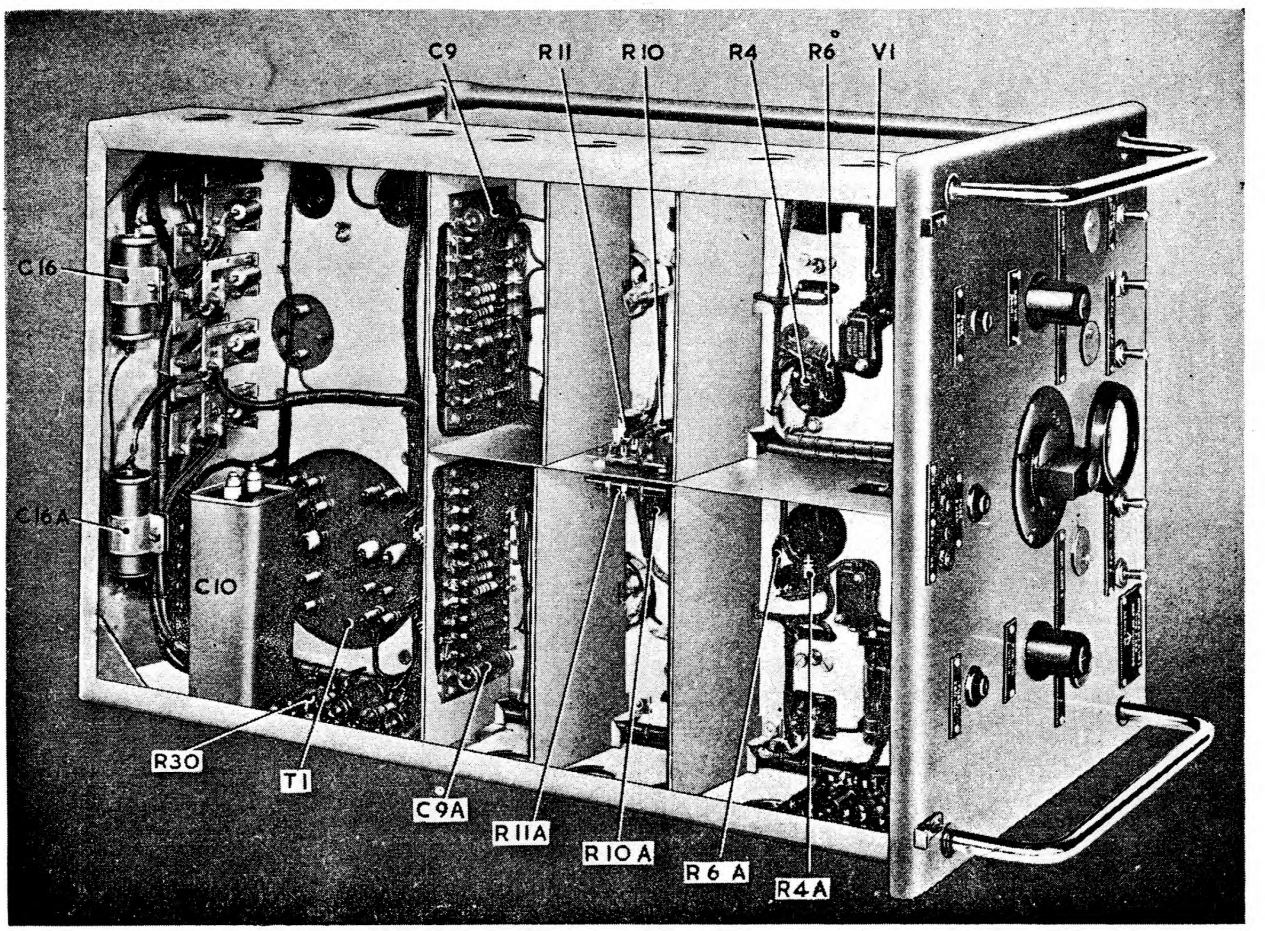


Fig. 3. Amplifier (AJ and Vid.) Type A.3681, chassis underside (1)

Introduction

1. The amplifier (AJ and Vid.) Type A.3681 (Stores Ref. 10U/16028) consists of two identical and independent sets of anti-jamming (AJ) and limiting circuits fed from a common power supply on the same chassis. The signal source is the amplifier (IF and Vid.) Type A.3680. One circuit only will be described in this text.

2. The anti-jamming facilities consist of :—

(1) A short time-constant (STC) circuit.

(2) A low-pass filter (LPF).

Either of these can be by-passed or switched into circuit by a relay as required.

3. The limiter consists of a pre-set top limit control for setting-up the required signal-to-noise ratio. The output is taken from a cathode-follower and is fed back to three cathode-followers with a common feed in the amplifier (IF and Vid.) Type A.3680.

4. Certain facilities in connection with the display of A- and G-band IFF, which are no longer required, are retained in this unit.

5. There are facilities for observing valve currents and HT voltages on a meter mounted on the front panel. Signal waveforms may be displayed on an oscilloscope by connection to monitoring sockets on the front panel. Front panel, schematic, underside and plan views of the amplifier are shown in fig. 1 to 5. Annotations sufficient to locate sub-panels, etc., are included, but wherever possible components are sign-written on the chassis.

Circuits

Limiter

6. The circuit diagram of the complete amplifier is given in fig. 6. Normally the STC and LPF are by-passed and the input is taken direct to the cathode of the pentode V3 (Type CV1091). This point is therefore directly connected to the cathode of the valve V19 on the amplifier (IF and Vid.) Type A.3680 (*Chap. 4 of this Section*).

7. The voltage on the grid of V3 is adjusted by the potentiometer R.19 AMP. LIMIT control to be below cathode potential.

8. When signals are received, the positive voltage on the cathode of V3 rises and the valve takes less current, thus producing a positive output at its anode. When the input exceeds a certain fixed value, V3 cuts off and further increases in input cause no increase in output. The amplitude limit control, R19, controls the peak output at the anode. Reference should be made to the setting-up instructions in Sect. 8 of this Part for the exact working conditions of this control.

9. The output from the limiter valve V3 is fed back to the cathode-followers in the amplifier (IF and Vid.) Type A.3680 via the cathode-follower V4 (Type CV124).

Short time-constant

10. The effect of a large CW overload is to produce a *positive* DC output from the amplifier (IF and Vid.) Type A.3680 and if this is great enough, V3 will cut off and all signals will be lost. To avoid this, an STC circuit can be interposed between the amplifier (IF and Vid.) and the limiter valve V3. It is introduced by operation of the STC IN switch which operates the relay A/1, closing A1 and A2.

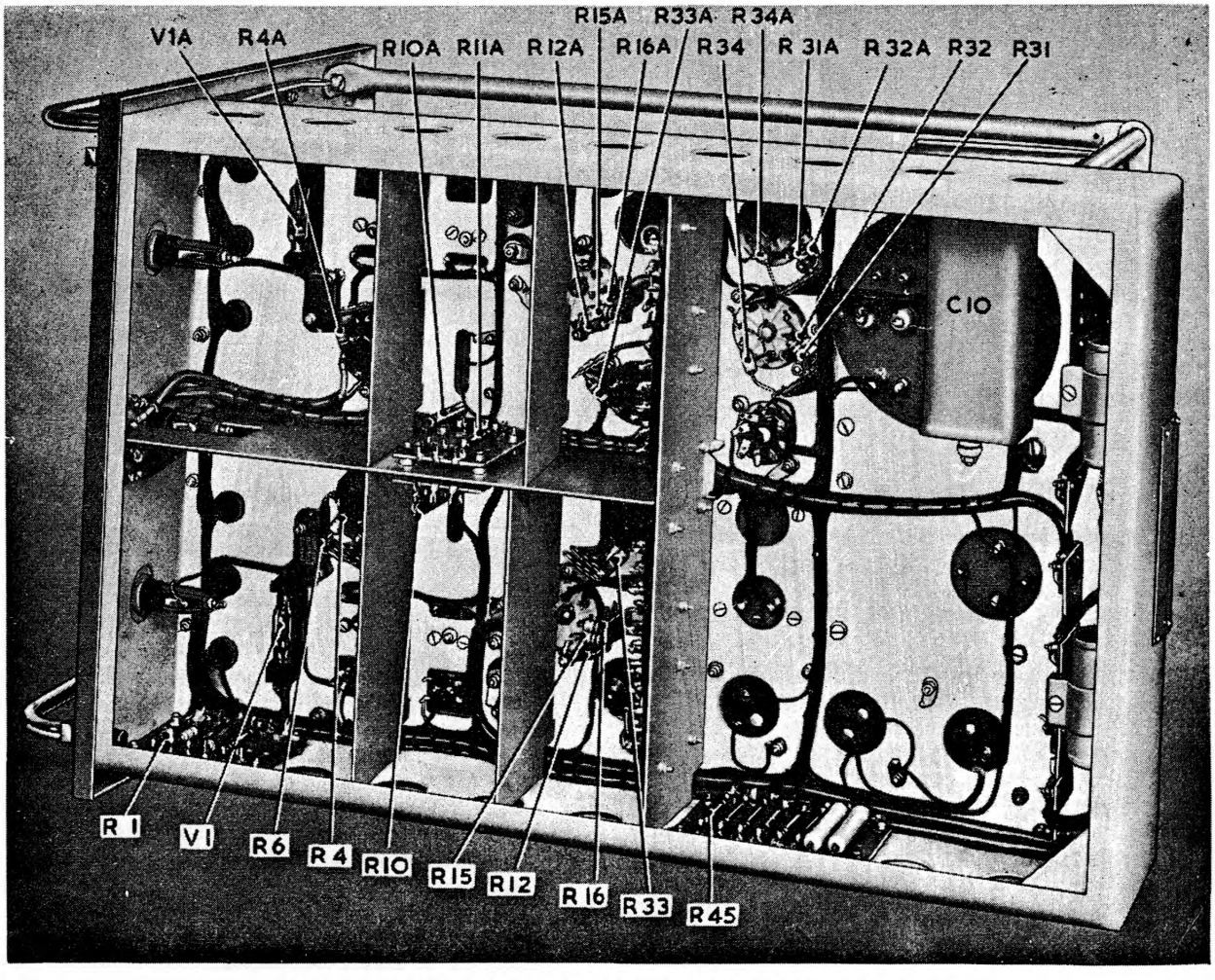


Fig. 4. Amplifier (AJ and Vid.) Type 3681, chassis underside (2)

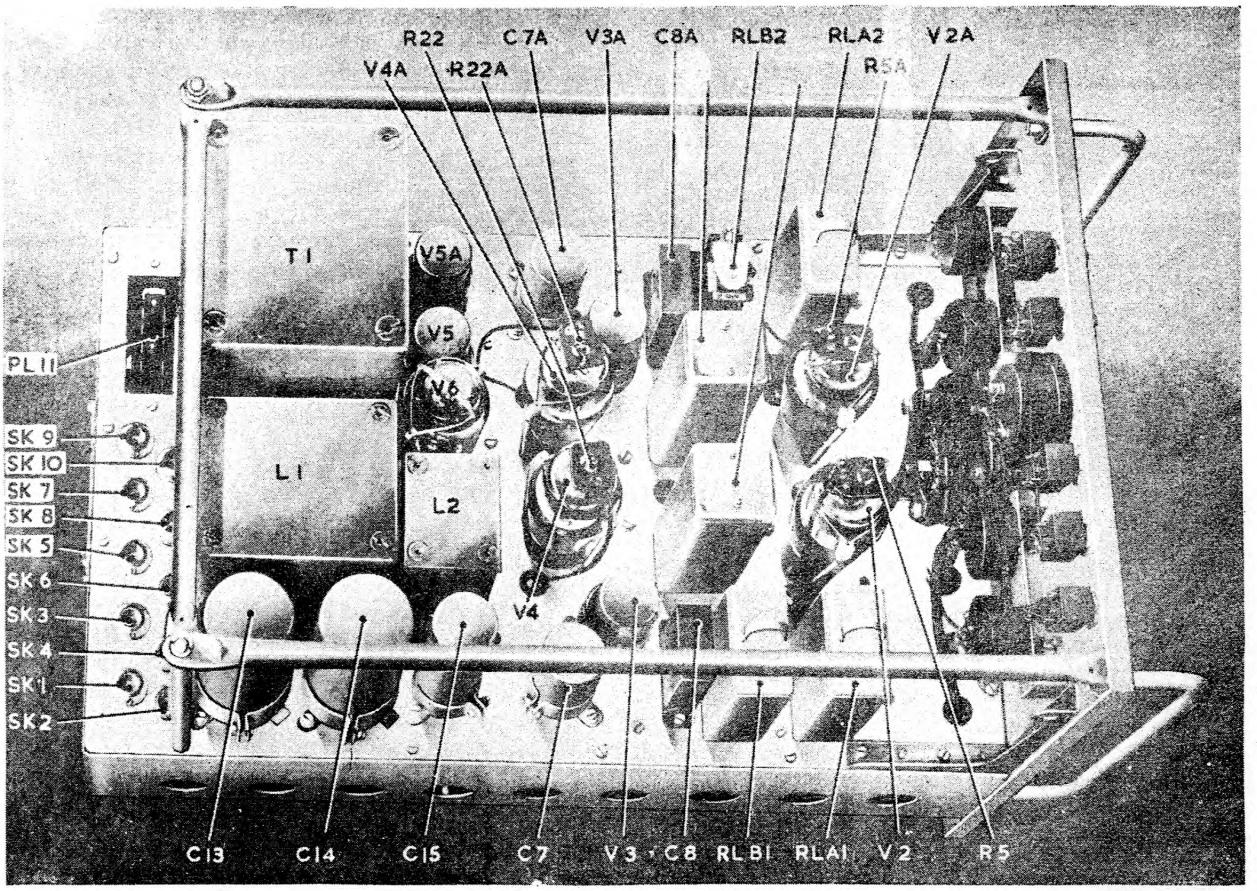


Fig. 5. Amplifier (AJ and Vid.) Type A.3681, plan view

11. The signal then passes to the STC circuit C1, R2 and to the control grid of the cathode-follower V2 (Type CV124). This valve feeds the limiter from its cathode. The diode V1 (Type CV1092) limits the " kick-back " resulting from use of the STC circuit.

Low-pass filter

12. This circuit, consisting of the chokes L1 to L5, resistors R8, R9 and various condensers, cuts out frequencies above 500 kc/s. Introduction of this filter through the relay B/1 produces some pulse distortion, but under certain interference conditions its use can prove advantageous.

13. The pentode V5 (Type CV1091) is in parallel with the output cathode follower V4 (Type CV124). The standing grid voltage of V5 can be adjusted by R35, the BIAS control. The cathode of this valve, being connected to the cathode of V4, is normally at about 30 volts *positive*, and when radar signals are received it is driven still further *positive*. The bias is adjusted until the valve is just cut off. Radar signals drive the valve into the conducting state and are therefore passed through in the usual manner.

14. In the amplifier Type 264 which formed part of the original " information generator," rack assembly Type 151, the IFF signals were received at a transformer Type 1787 and this load was used to match the 80-ohm cable to the grid circuit of the valve. The positive-going output from this transformer was applied to the grid of V6, now V5. IFF signals therefore drove the grid *positive* and rendered it conducting so that the cathode was driven *positive*. Hence, at the common cathode of V6 and V7 (now V4 and V5) appeared a mixture of IFF and radar signals, which was passed on to the PPI tube. The transformer has been removed but the sockets are still available.

15. Facilities which were used for the introduction of a negative strobe to the grid of the former V4 (now V3) have been incorporated, using the socket Sk3. It is possible to tap off a variable output from the cathode of V4 by means of R25 RAD. VID. and the socket Sk5.

Power supply

16. The power supplies for the amplifier are derived via the transformer T1 which has seven secondary windings and is fused and switched on its primary side by F2, F3 and S1. The centre-tapped 350-0-350 volts winding is full-wave rectified by V6 (Type CV575) and smoothed through a condenser-input π-type filter which supplies the anodes and screens of V2, V4 and V5. A further section feeds the anode of V3.

Chapter 7

AMPLIFIERS TYPE A.3719 and A.3720

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Introduction

1. Amplifier Type A.3719 (Stores Ref. 10U/16788) is used on stations employing radar Type 7 Mk. 3 (*remote*). Its function is to amplify the 45 Mc/s IF output from the radar receiver (amplifier Type A.3694) and to combine the resulting signal with the G-band IFF video from radar Type 79 Mk. 1 located on the remote site. The combined signals are then fed, over the same coaxial cable, to the radar office in the central operations building where they are received by the amplifier Type A.3720 (Stores Ref. 10U/16789).

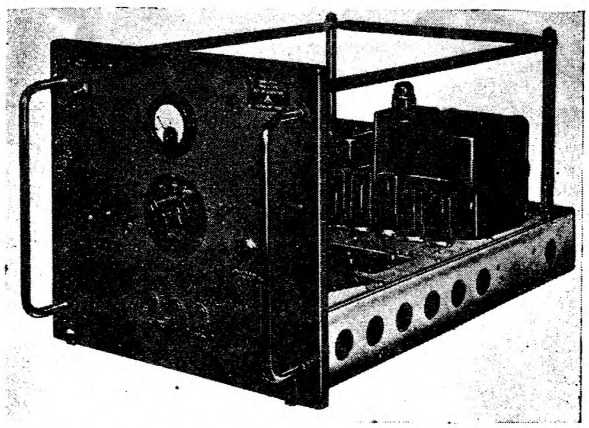


Fig. 1. Amplifier Type A.3719, general view

2. Amplifier Type A.3720 isolates the radar IF from the G-band IFF video signals. ◀ It amplifies the radar IF only. ▶ Both signals are then fed into other units in the radar office.

3. Both amplifiers are of standard AIR MINISTRY "information generator" chassis construction, Type A.3719 forming a part of rack assembly Type 318 and Type A.3720 of rack assemblies Type 320 and 321. Rack assembly Type 318 is located in the apparatus room of the remote transmitter well and the remaining two racks in the radar office. On GCI the remote site is normally about 4,000 yards distant from the operations block. General views of the amplifiers are shown in fig. 1 and 2.

AMPLIFIER TYPE A.3719.

General

4. Views of the chassis layout are shown in fig. 3, 4, 5 and 6. A circuit diagram is given in fig. 13. The IF output from the radar receiver is injected at SK.1 and is then passed through

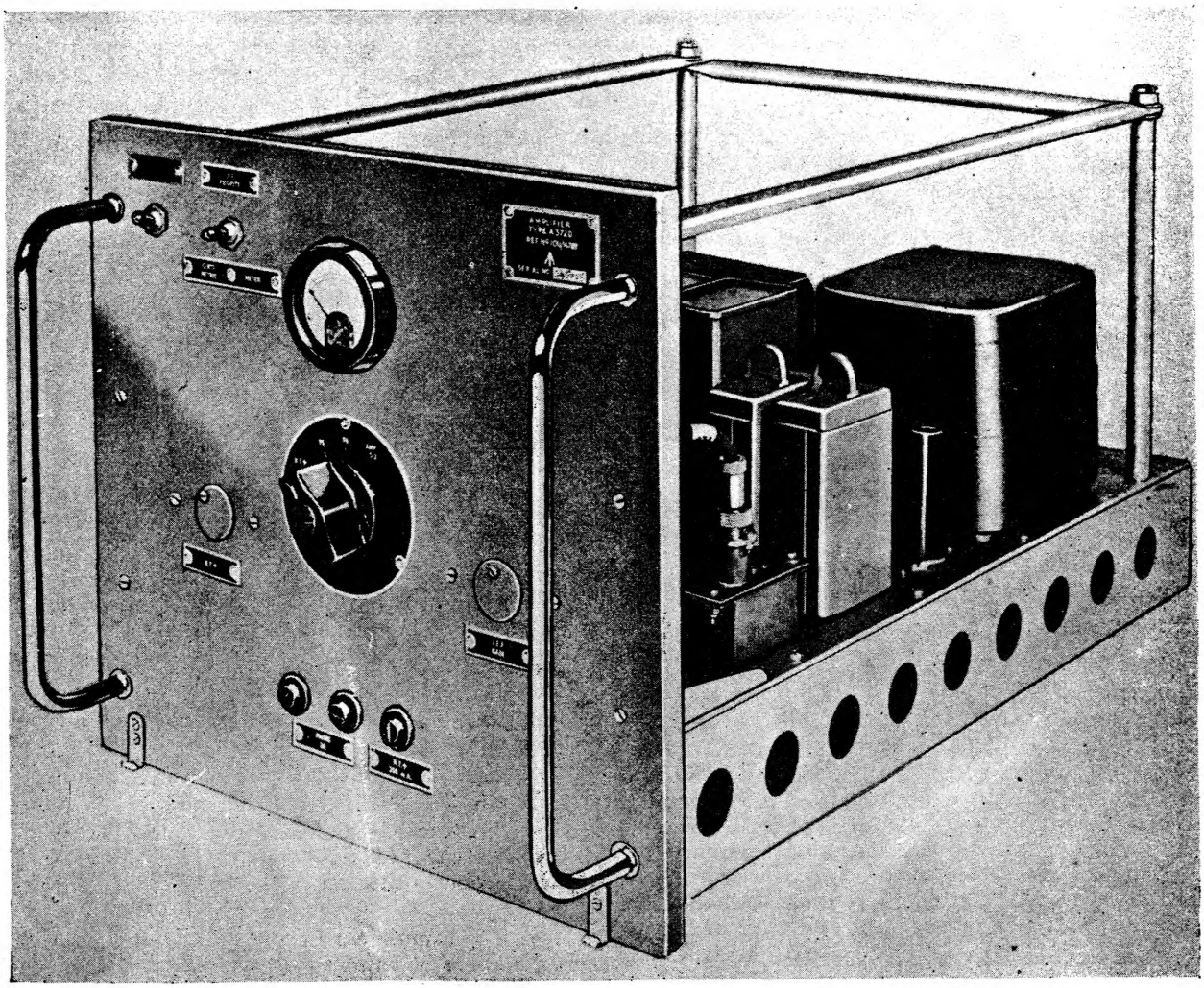


Fig. 2. Amplifier Type A.3720, general view

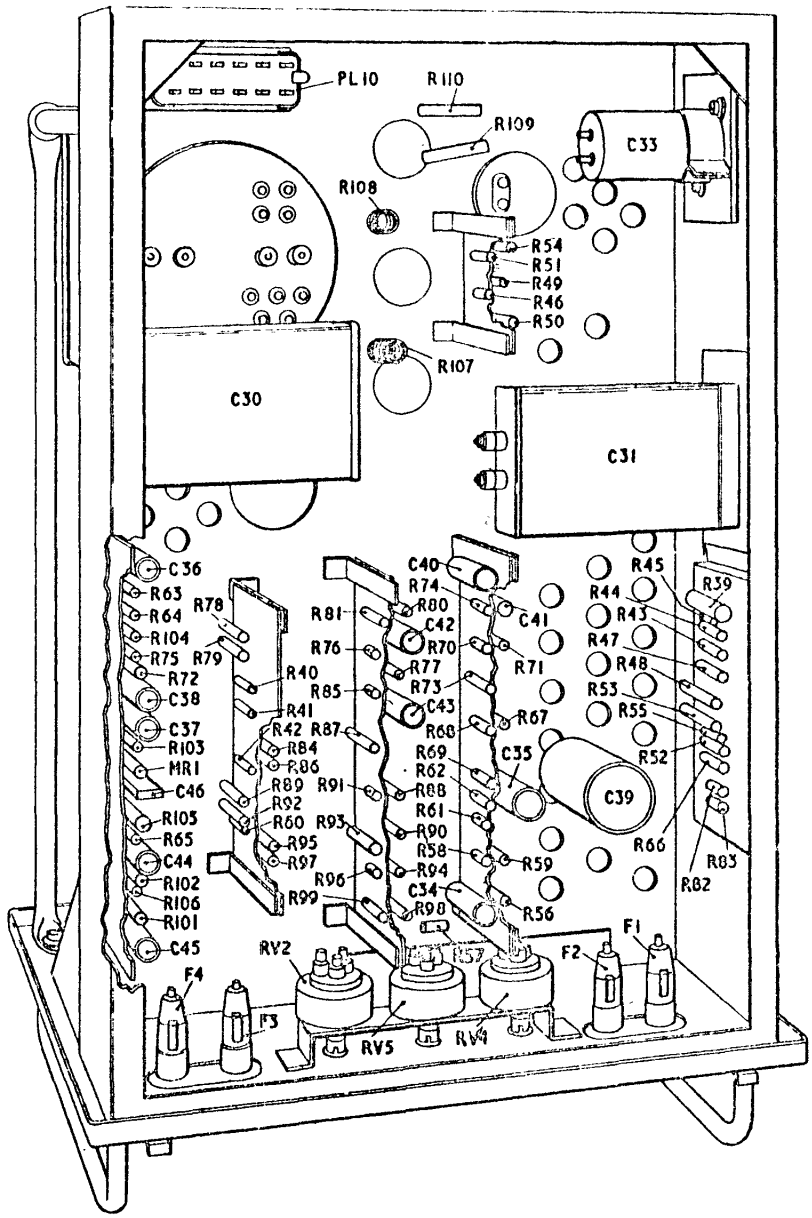


Fig. 3. Under chassis

IAGC

10. The video output from the IF strip cathode-follower is applied, via screened cable, to the matching cathode-follower (first half of V16 (CV.1988)) which is in parallel with the grid input of the low-gain amplifier V14. The negative-going signal from the cathode of V16 (first half) is applied to the grid of V16 (second half). This grid is normally held at a negative potential, preset by RV2, IAGC AMP. ; hence, incoming signals will be limited when they drive V16 grid negative to cut-off. The positive-going output is amplified and phase-reversed in V13 (CV.1091) and the output from V13 is DC-restored by the crystal rectifier MR1, and applied to the rectifier system consisting of V18 (CV.1054), RV4, RV5, R105 and C46. C46 is the control potential reservoir condenser.

11. In the absence of any signals, C46 is held discharged by R105. The cathode of V18 (first half) and anode of V18 (second half) are strapped and are at earth potential ; therefore neither half of V18 will be conducting.

12. When a negative-going signal appears at the anode of V13, the cathode of V18 (first half) will go negative with the leading edge of the signal, V18 (first half) will conduct, and V46 will charge negatively on a time-constant of up to about 50 μS determined by the setting of RV5, IAGC FREQ. I.

13. While the signal remains at a negative value, C46 will remain negatively charged. This negative potential is taken via PL11 and an IF filter to prevent IF feedback to the grid of the first stage in the receiving unit Type 215 and biases it back, thus reducing the sensitivity of the IF strip.

14. This action affects the signals passing through the IAGC circuits and hence the bias presented to the grid of V1 in the IF strip, and the system takes up a stable position which is determined by the IAGC AMP. control RV2.

15. While the signal remains negative, C45 will only charge very slowly through R103 and the parallel circuits, the effect on the feedback bias being negligible.

16. The lagging edge of the signal causes the anode of V18 (second half) to go positive with respect to its cathode, that is, it returns to earth. C46 discharges through RV4, IAGC FREQ. 2, the rate of discharge being variable.

17. It will be appreciated that the IAGC circuits can reduce the sensitivity of the IF strip to signals producing long video pulses, for example, CW or blocks of CW, ground waves, etc., but have no effect on short pulses such as signals which may appear by themselves or superimposed on the unwanted signals.

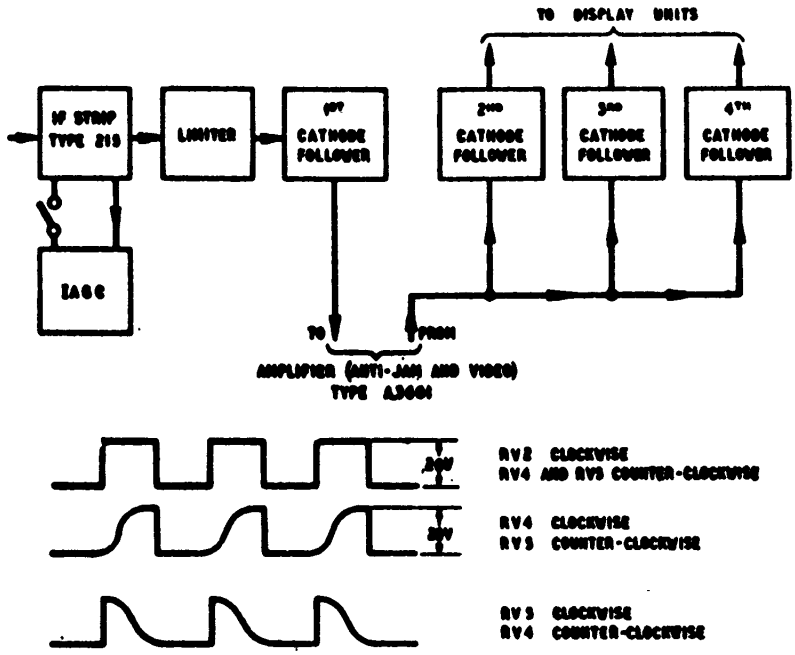


Fig. 5. Schematic and waveforms

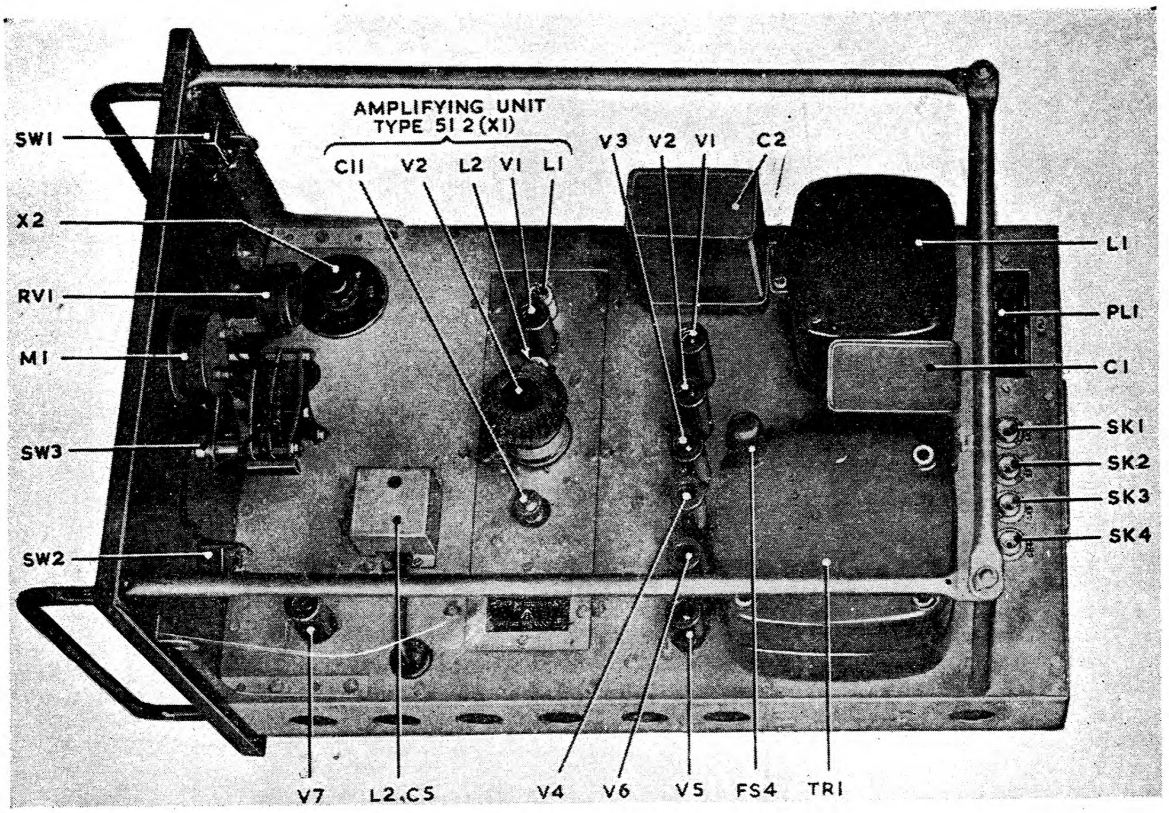


Fig. 3. Amplifier Type 3719, top chassis

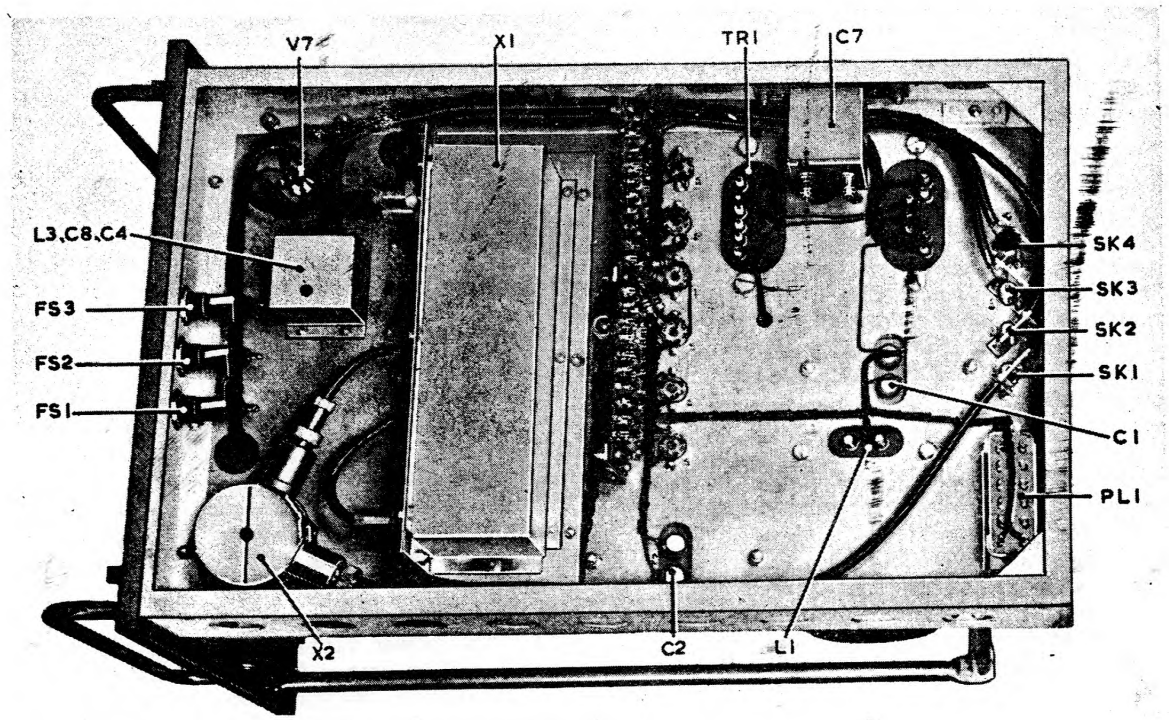


Fig. 4. Amplifier Type 3719, chassis underside (1)

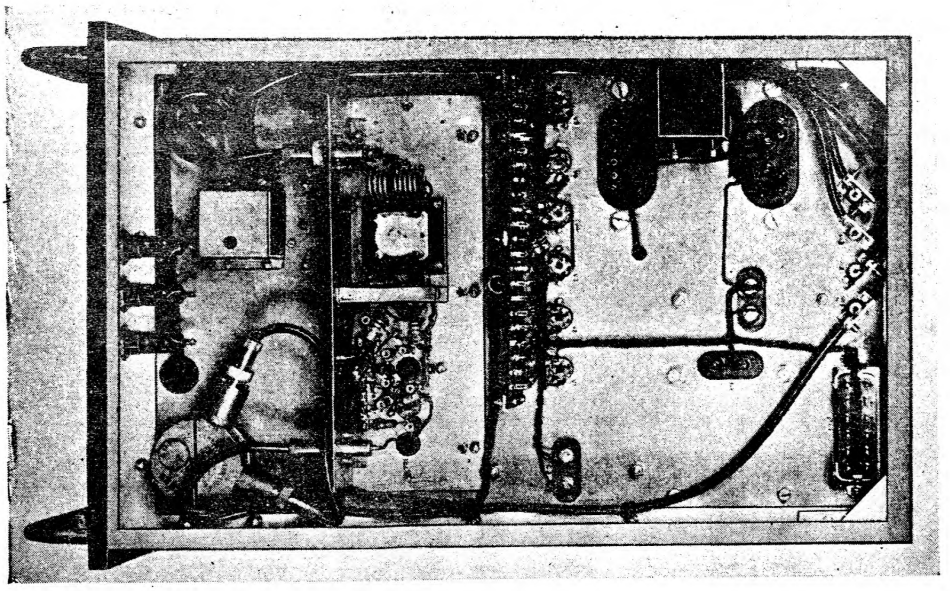


Fig. 5. Amplifier Type 3719, chassis underside (2)

a preset attenuator unit Type 119, annotated X2 on fig. 3, to the amplifying unit Type 512 (Stores Ref. 10U/16782) which is a separate sub-assembly on the main chassis. The attenuator is variable between approximately 4dB and 16dB attenuation and is used to set the level of the input from the radar receiver for optimum performance of the amplifier.

Amplifying unit Type 512

5. This unit, the circuit diagram of which is shown in fig. 11, consists of two stages, a phase-splitting circuit using an RF pentode and a double-tetrode connected in push-pull. The band-width of the unit is 1·5 Mc/s or more at 3dB down whilst its gain is not less than 26dB. The amplifying unit is annotated as X1.

Note . . .

Components of this sub-assembly are annotated serially from 1 *upwards (for example V*1, *R*1, *C*1), *in the same manner as are the components of the main amplifier. As components are sign-written it has not been thought advisable to depart from this annotation in the diagrams of this Chapter. In the text, however, differentiation is obtained by prefixing X*1 *or X*2 *to components of the sub-assemblies. Main unit components are not so prefixed.*

6. The RF pentode stage X1 V1 (Type CV.136) has dust-core tuned circuits in grid and anode. The input to the amplifier is connected to a tapping on the grid inductor X1 L1 which is tuned to resonate with its self-capacitance at 45 Mc/s. The tuned circuit in the anode is balanced, HT being fed to the centre-tap of the inductor X1 L2 which is tuned to 45 Mc/s with its self- and stray-capacitances.

7. From the opposite ends of X1 L2, voltages in anti-phase are injected into the two halves of a double-tetrode X1 V2 (Type CV.415) connected in push-pull. The anode circuit of this stage consists of an air-cored inductor X1 L3 tuned by a split-stator capacitor X1 C11.

8. The output from X1 L3 is taken from a winding on the inductor direct to the sub-assembly socket X1 SK2 and thence via PL4 and C4 to the main output socket SK4.

9. The output from X1 SK2 is also taken through a 100 : 1 step-down potentiometer formed by X1 R12 (6·8K ohms) and X1 R13 (68 ohms) to a MONITOR SOCKET X1 SK3 and thence through PL5 to SK3 from which a monitoring output is taken to the radar Type 7 transmitter monitor.

IFF video

10. IFF video is fed into socket SK2 and is taken through a band-stop filter C7, L3—C6, L2—C5 tuned to 45 Mc/s (to prevent RF output from the IF amplifier being fed to the IFF circuit), to the output socket SK4 where the mixed signals are fed to the coaxial cable connecting the remote well and the radar office.

11. Connected to the output circuit of the unit there is a diode V7 (Type CV.140) used as a detector to measure IF output in conjunction with the internal meter M1. Due to differing tolerances between valves the meter reading is not directly proportional to output and it must always be calibrated before setting-up.

Power circuits

12. The power supply circuit for the amplifier Type A.3719 uses a full-wave rectifier fed from a 420-0-420V winding on transformer TR1. Two full-wave rectifiers V1 and V2 (both Type CV.493) are used, their anodes being strapped so that each is effectively a half-wave rectifier.

13. The rectifiers are followed by a capacitance input smoothing network C1, L1, C2 and a voltage regulating circuit consisting of two triode-connected pentodes V3 and V4 (Type CV.2179) connected, in parallel, as a series impedance in the HT line. The impedance is controlled by a DC amplifier V6 (Type CV.138) in conjunction with a neon stabilizer V5 (Type CV.449) by varying the grid voltage of the valves. The stabilized supply is at 300V, 100 mA with a ripple of less than 0·1V peak-to-peak.

14. The action of the stabilizing circuit is as follows. A change in the HT output, produced either by a change in load or in mains voltage, produces a change on the grid of V6 due to the potentiometer chain R15 to R17 and RV1. The cathode potential of V6 being stabilized by V5, a change in bias on the valve results in a change in anode potential. The latter change is in opposite phase to that on the grid but is considerably amplified. Due to this amplification, changes in the HT supply voltage to V6 have little effect on the magnitude of the voltage change at the anode. The anode of V6 is connected to the grids of V3 and V4 and the effect of the voltage change is to swing the impedance of the valves in such a direction as to compensate for the original voltage change.

Meter circuit

15. The HT voltage and current taken by the amplifier unit, and also the deflector current, can be measured by a 0-500 μA meter and switch on the front panel of the unit.

AMPLIFIER TYPE A.3720

General

16. At the radar office, the combined signals of 45 Mc/s IF and IFF video are accepted at the input socket SK1 of the amplifier Type A.3720, where they are separated. Chassis views and component layouts of the amplifier Type A.3720 are shown in fig. 7 to 10. The circuit diagram is fig. 14.

17. The IFF video passes through a double section band-stop filter formed by the inductors L2 and L3 associated with C8 and C9. The signals are then passed directly to the output socket SK2. It should be noted that the IFF video was formerly amplified by V5 and V6 (*fig.* 14). As will be seen from fig. 14, these valves are now disconnected from the circuit; in future productions of this amplifier the circuitry of V5 and V6 will be omitted entirely.

18. The 45 Mc/s IF signals are fed through C10 which effectively attenuates the video

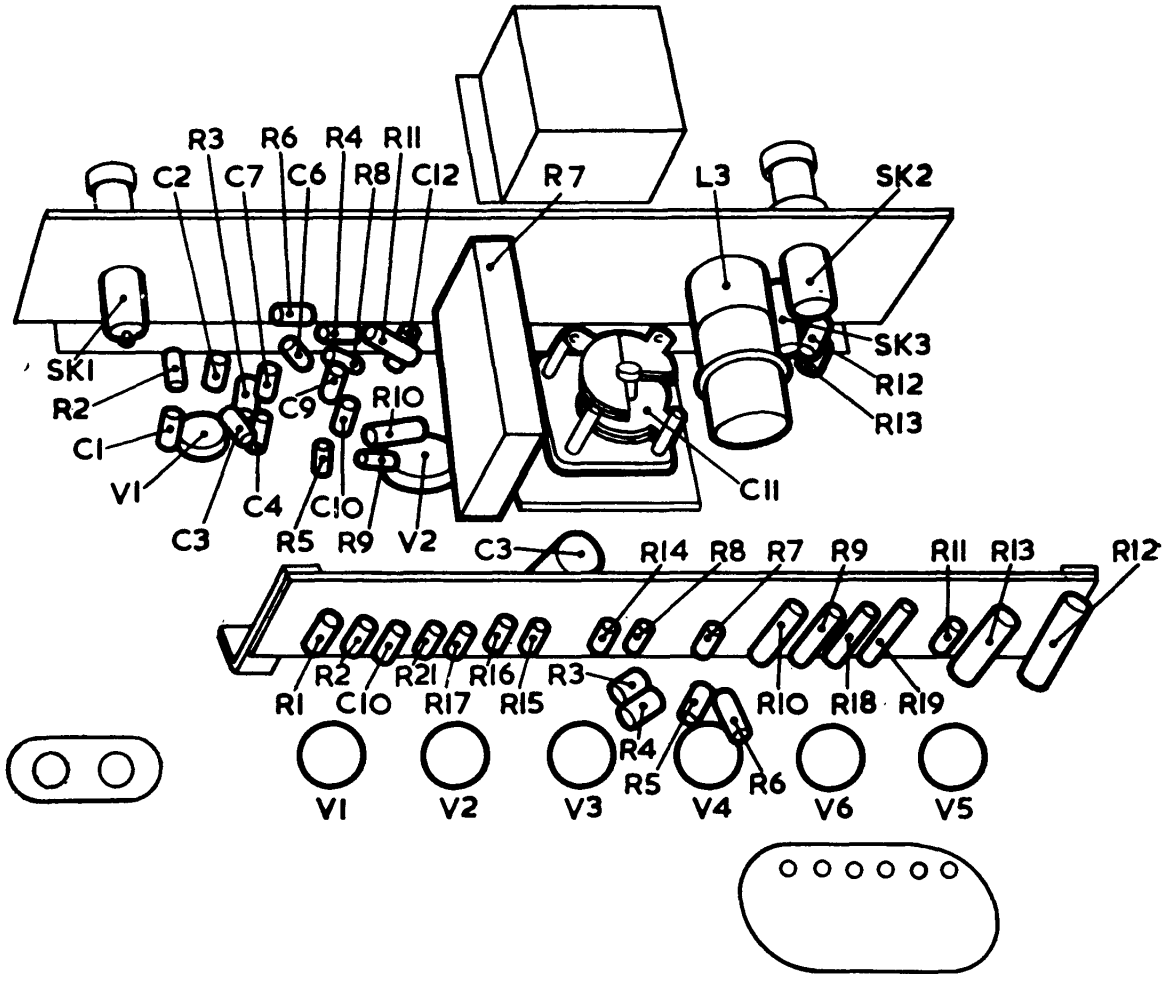


Fig. 6. Amplifier Type 3719, tagboard layout

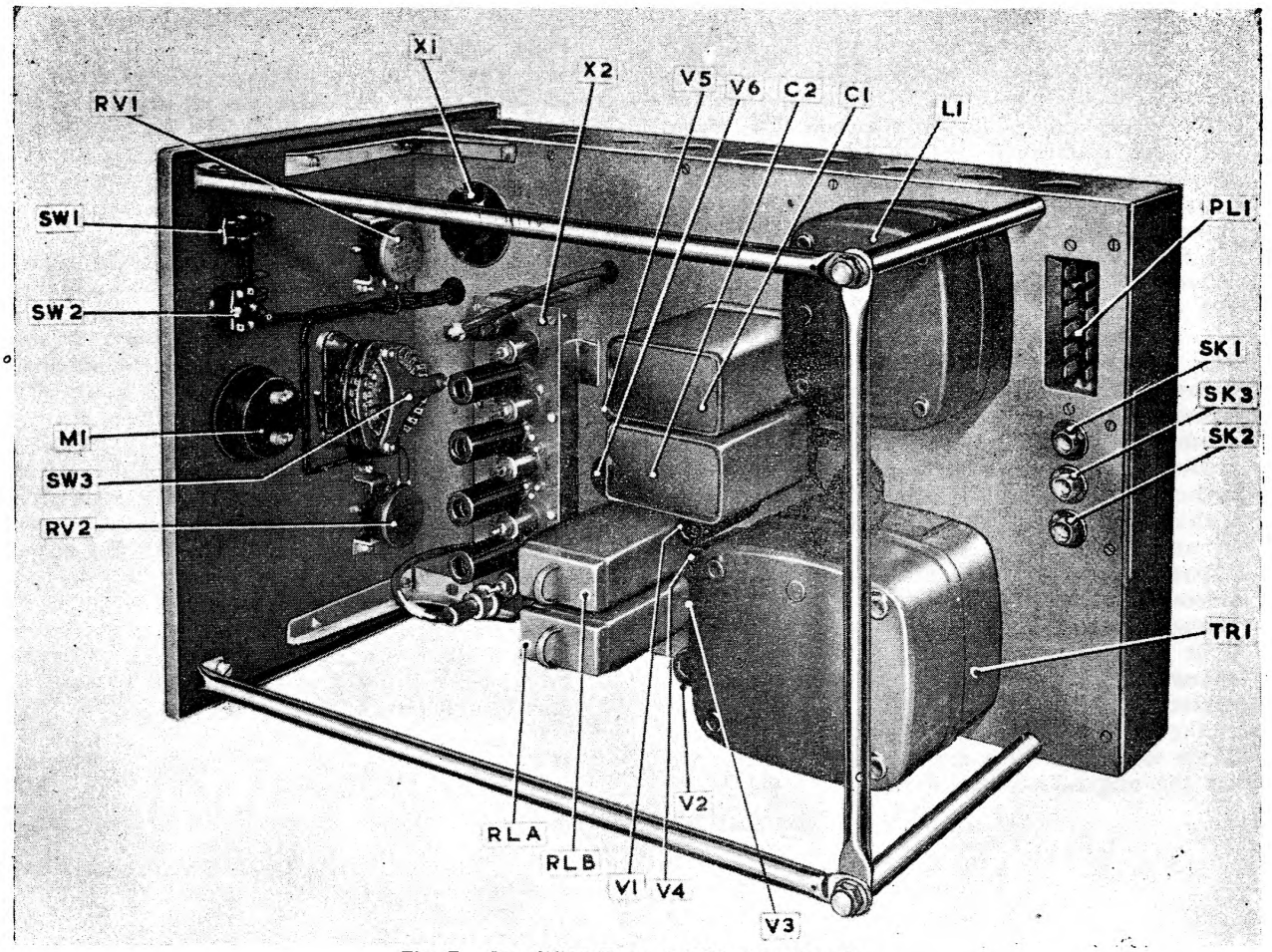


Fig. 7. Amplifier Type A.3720, top chassis

signals. The IF then passes through the RF attenuator unit Type 113, annotated X1. The attenuator is adjustable between 4 dB and 62·5 dB in steps of 12·5 dB. It is used to compensate for differing cable lengths between sites.

19. The attenuator unit output is passed via socket X1 SK2, PL3 and PL5 into X2 SK1 of the four-stage 45 Mc/s IF amplifying unit Type 513, annotated as X2.

Amplifying unit Type 513 (*fig. 11 and 12*)

20. The amplifying unit is a sub-assembly mounted upon the main unit, and consists of X2 V1 (CV 408) and X2 V2 (CV 417) in a cascode circuit followed by two pentode valves X2 V3 and X2 V4 (both CV 138) operating as Class A amplifiers. The unit is designed for 68-ohm input and output and has an overall gain of at least 40 dB and a bandwidth of 4 Mc/s at 3 dB down. Full details of the circuitry of the unit will be found in Chapter 13 of this Section, wherein it is described as a sub-assembly of amplifying unit 4728.

21. There is no gain adjustment on the unit, the level at the output being controlled by the setting of the attenuator before the input. The output from the IF unit is fed via plug X2 SK2 and plug PL4 to socket SK3 for distribution in the radar office. The overall bandwidth of the system from socket X1 SK1 to SK3 is 4 Mc/s

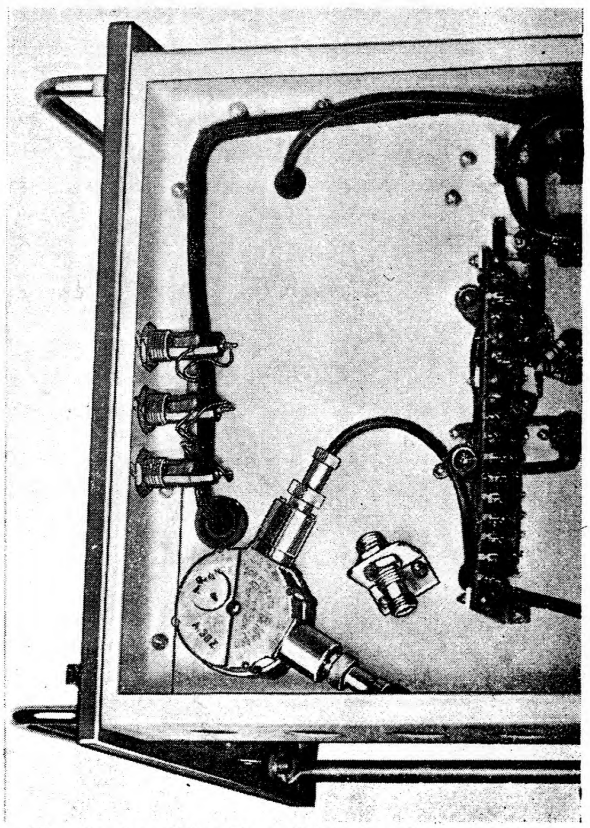


Fig. 8. Amplifier Type 3720, chassis underside, attenuator in circuit

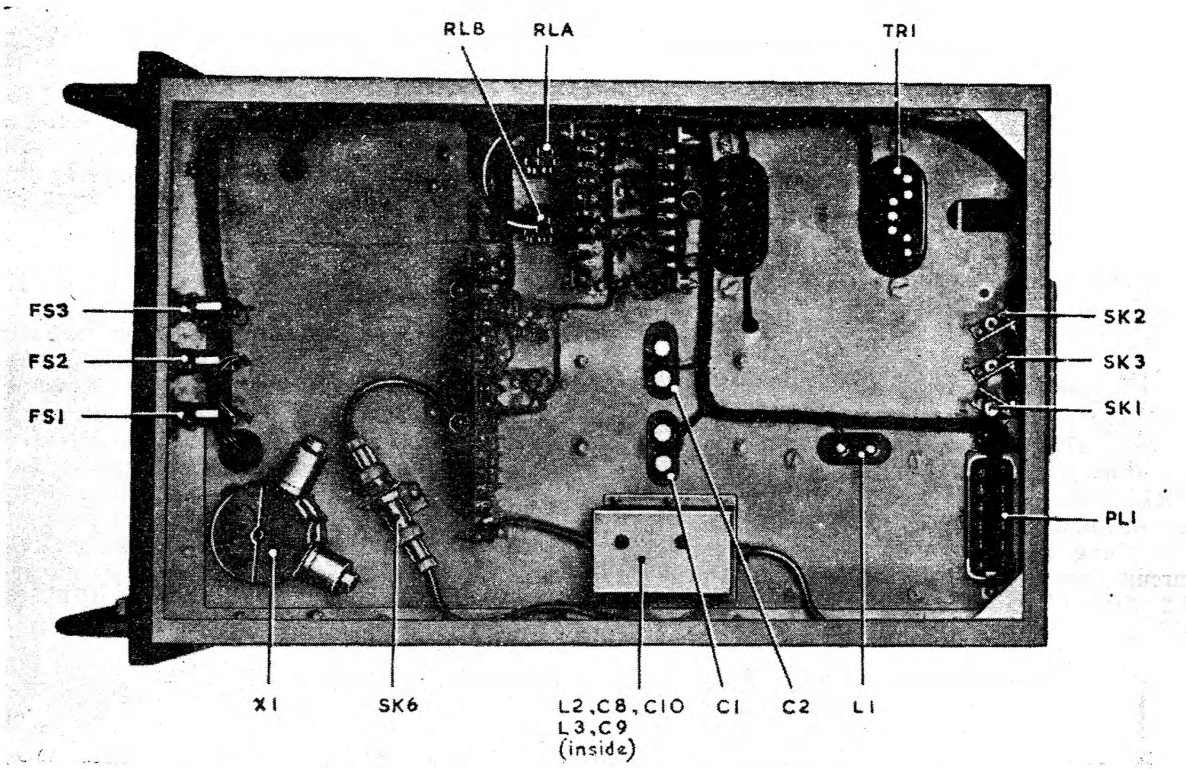


Fig. 9. Amplifier Type 3720, chassis underside, attenuator out of circuit

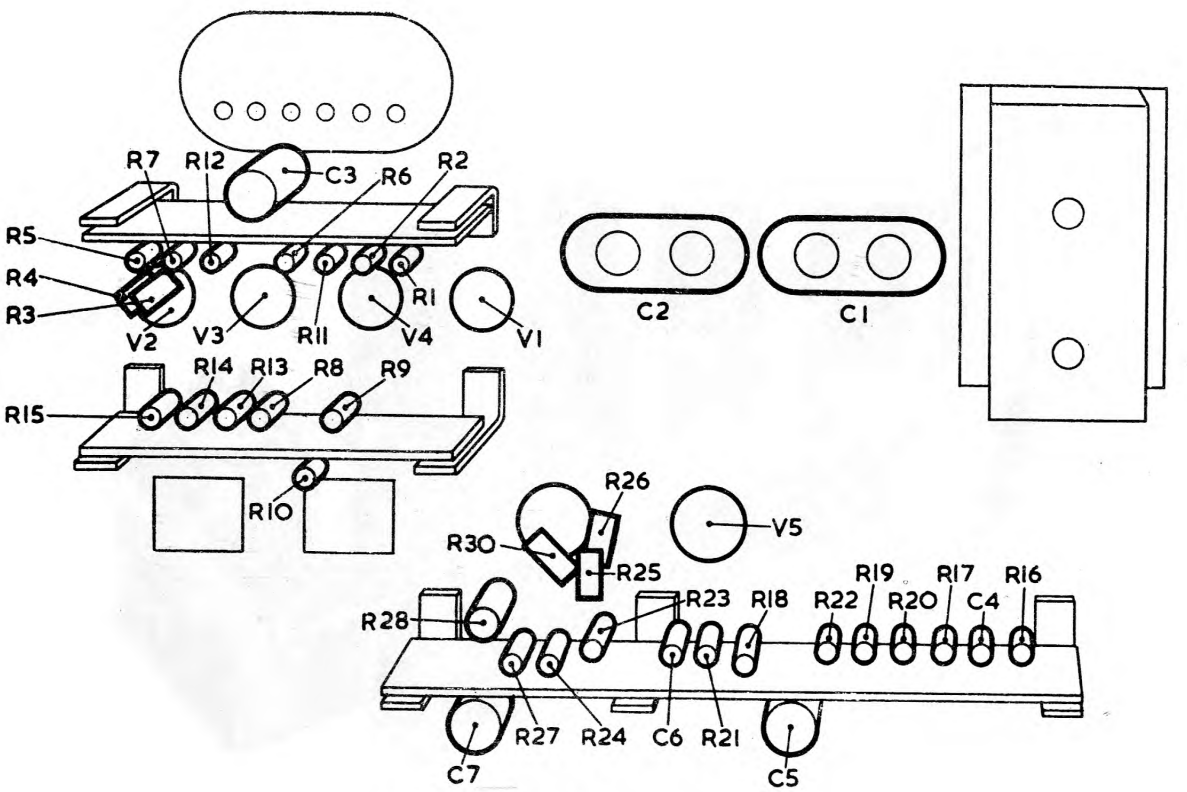


Fig. 10. Amplifier A.3720, tagboard layout

at 3 dB down while the maximum overall gain is at least 36 dB.

IFF video

22. IFF video is separated from the IF signal by the band-stop filter (*para.* 17) which is tuned to 45 Mc/s with an attenuation of at least 60 dB and a pass-band of 3 Mc/s at an attenuation of 3dB less than that at 45 Mc/s.

23. The output of the filter is fed ◀ directly to the output socket SK2.▶

Power circuits

24. The power supply circuit for the amplifier Type A.3720 uses a full-wave rectifier circuit fed from a 420-0-420V winding on transformer TR1. One full-wave rectifier V1 (Type CV.493) is used and is followed by a capacitance input smoothing network and a voltage regulating circuit consisting of a triode-connected pentode V2 (Type CV.2179) as a series impedance in the HT line.

25. The impedance is controlled by a DC amplifier V4 (Type CV.138) in conjunction with a neon stabilizer V3 (Type CV.449). The stabilized output is at 300V 50 mA with a ripple of less than 0·1V peak-to-peak. The basic circuit of the power supply is the same as that in the amplifier Type A.3719 except that, as the power requirement is less, only one rectifier and one series regulator valve are used instead of two. The operation of the circuit is the same as that described in para. 12.

IFF priority

26. This unit also carries the circuits associated with G-band IFF priority on GCI stations. In certain GCI stations there are G-band IFF systems associated both with the forward-looking radar Type 14 head and the remote radar Type 7. As both of these systems operate on the same frequency it is essential that only one should be operating at a time. The circuit on this unit ensures this, and, in addition, arranges that either of the systems is given priority depending on the setting of the IFF priority switch SW2.

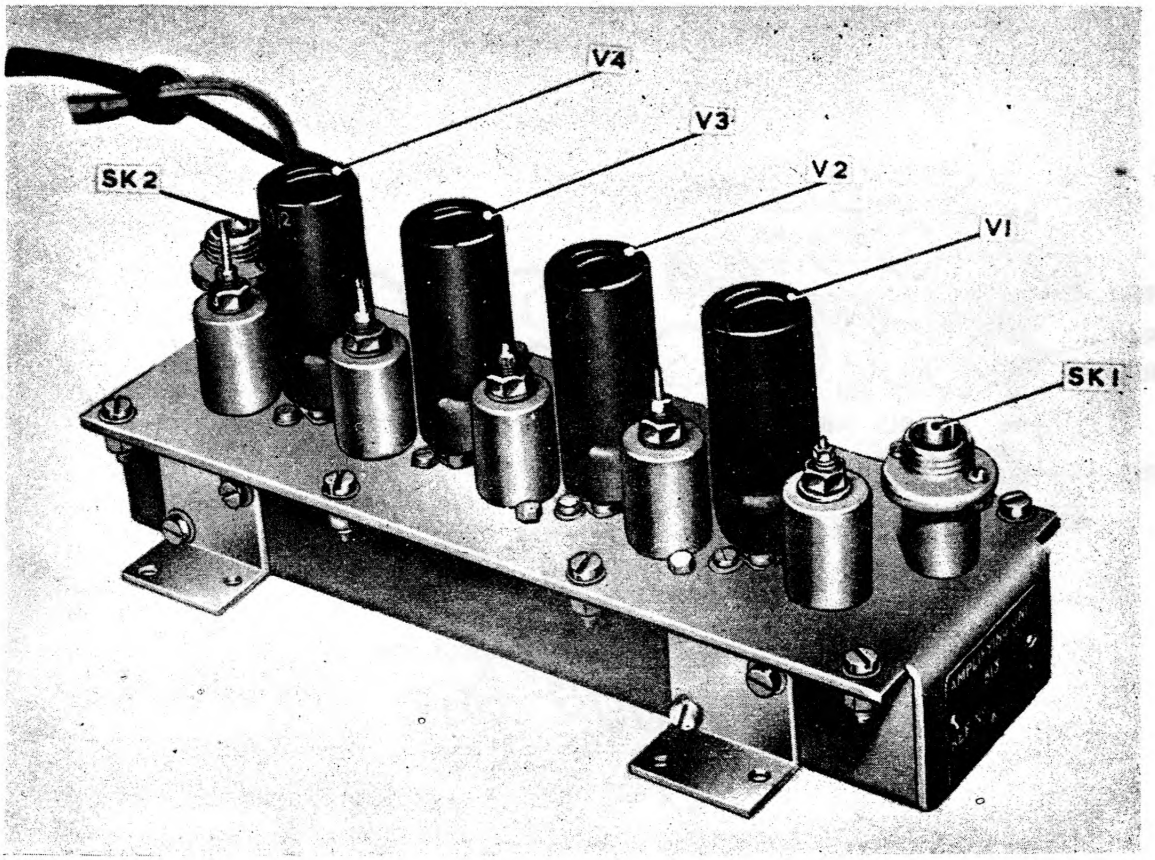


Fig. 11. Amplifying unit Type 513, top chassis

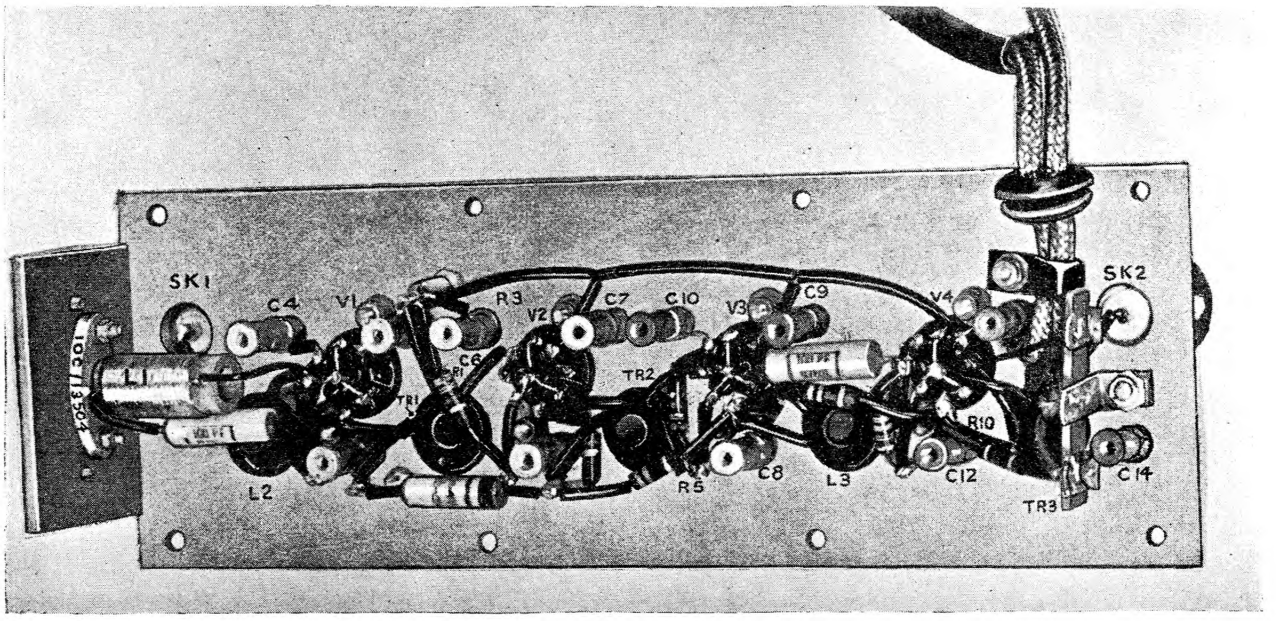
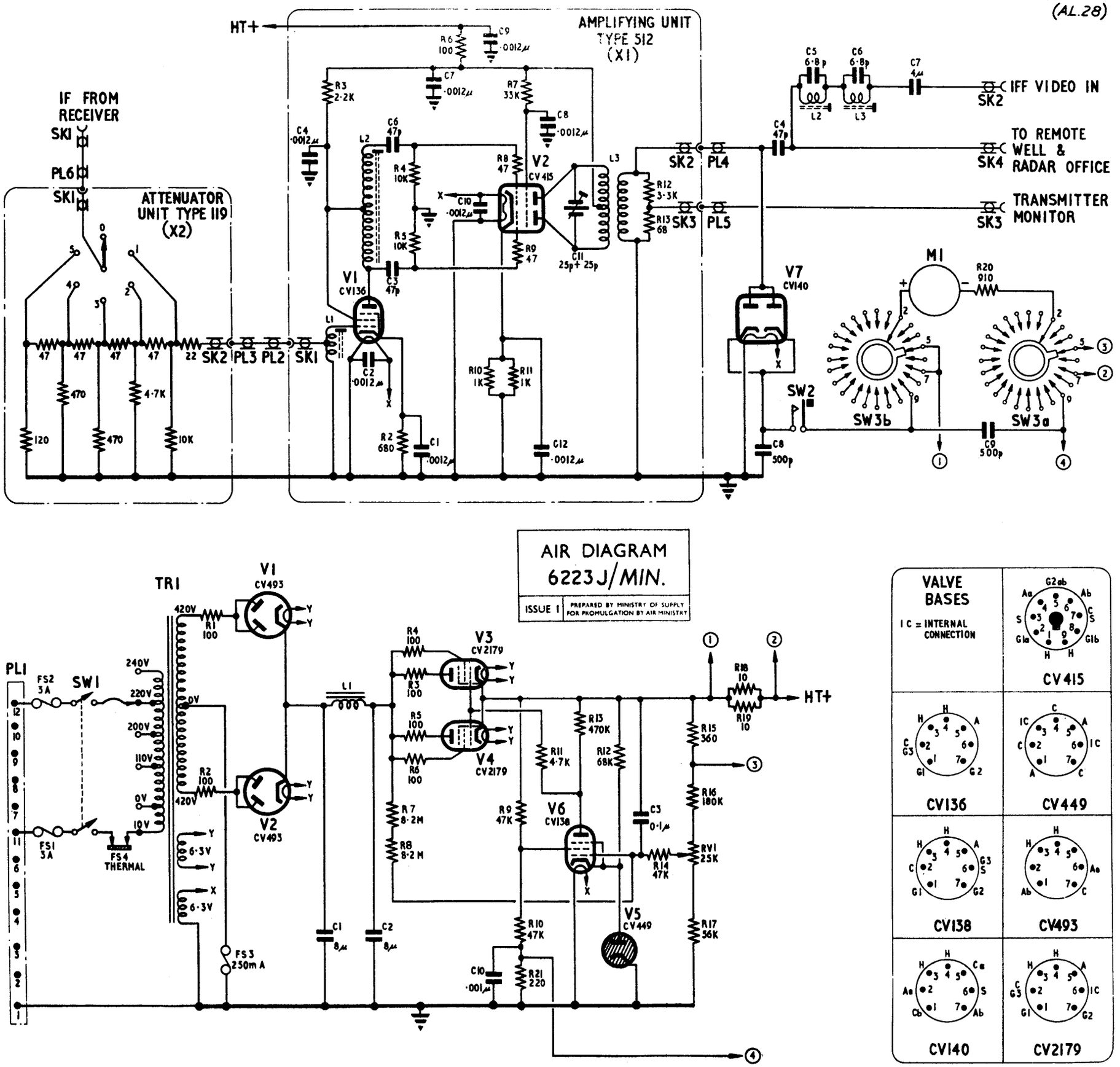
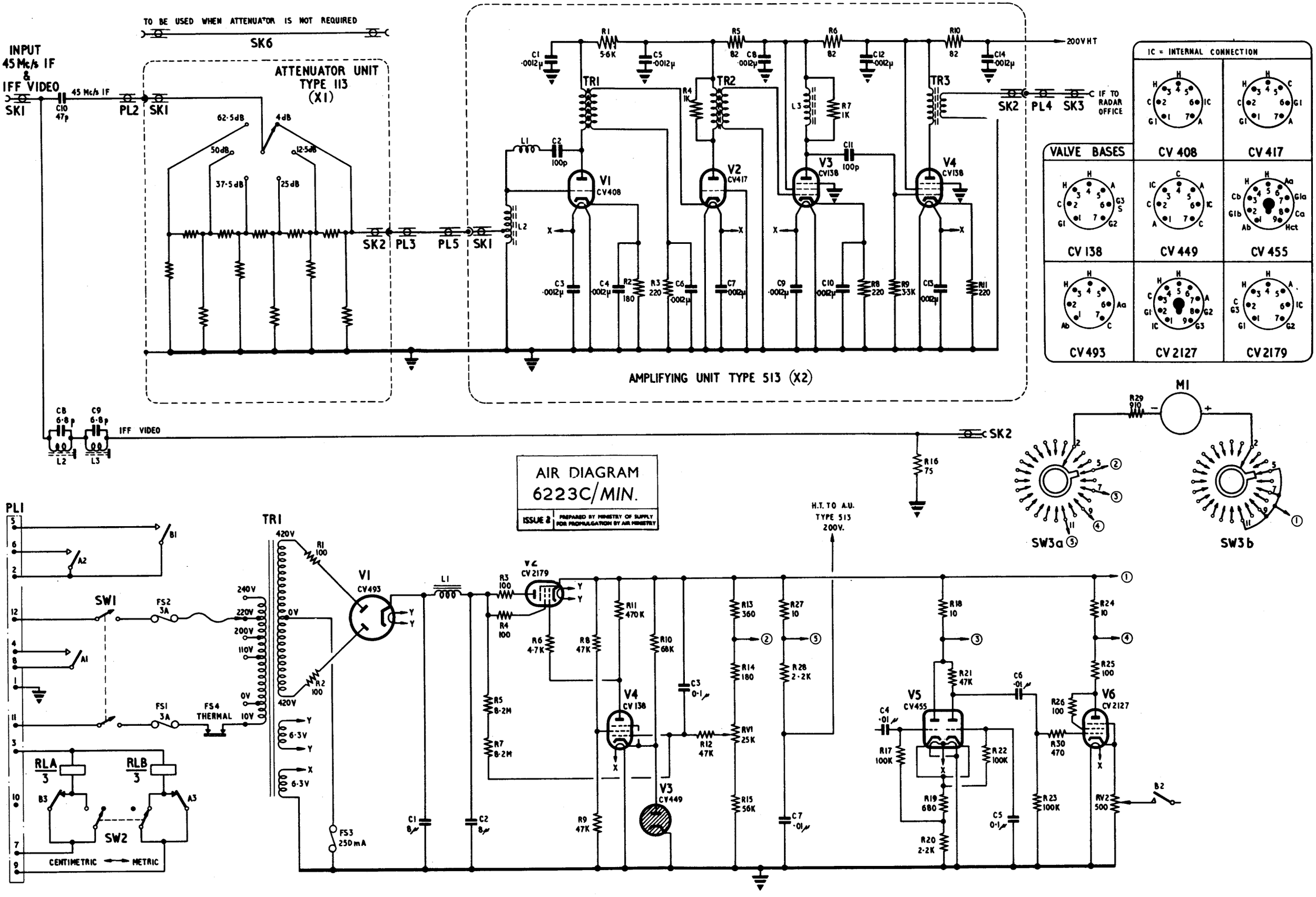


Fig. 12. Amplifying unit Type 513, chassis underside



Amplifier Type A.3719 — circuit

Fig.13



AIR DIAGRAM
6223C/MIN.
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Amplifier Type A. 3720 — circuit

Fig.14

Chapter 8

AMPLIFIER UNIT (PULSE SPLITTER) TYPE 300

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Introduction

1. The amplifier unit (pulse splitter) Type 300, Stores Ref. 10U/16057, is designed to provide trigger pulses for a number of units from a single input. The unit receives a pulse of 20V 4μS wide, at 500 p.p.s. from the rack assembly Type 181 or 182 at one input socket, and a pulse of 20V 4μS wide at 250 p.p.s. from the same unit at the second input socket. From these two inputs twelve outputs are produced :—

(1) Six at 250 p.p.s.

(2) Six at 500 p.p.s.

Each output is 20V 4μS wide, when fed into an output termination of 68 ohms.

Description

General

2. The unit takes the form of a standard Air Ministry " information generator " type chassis

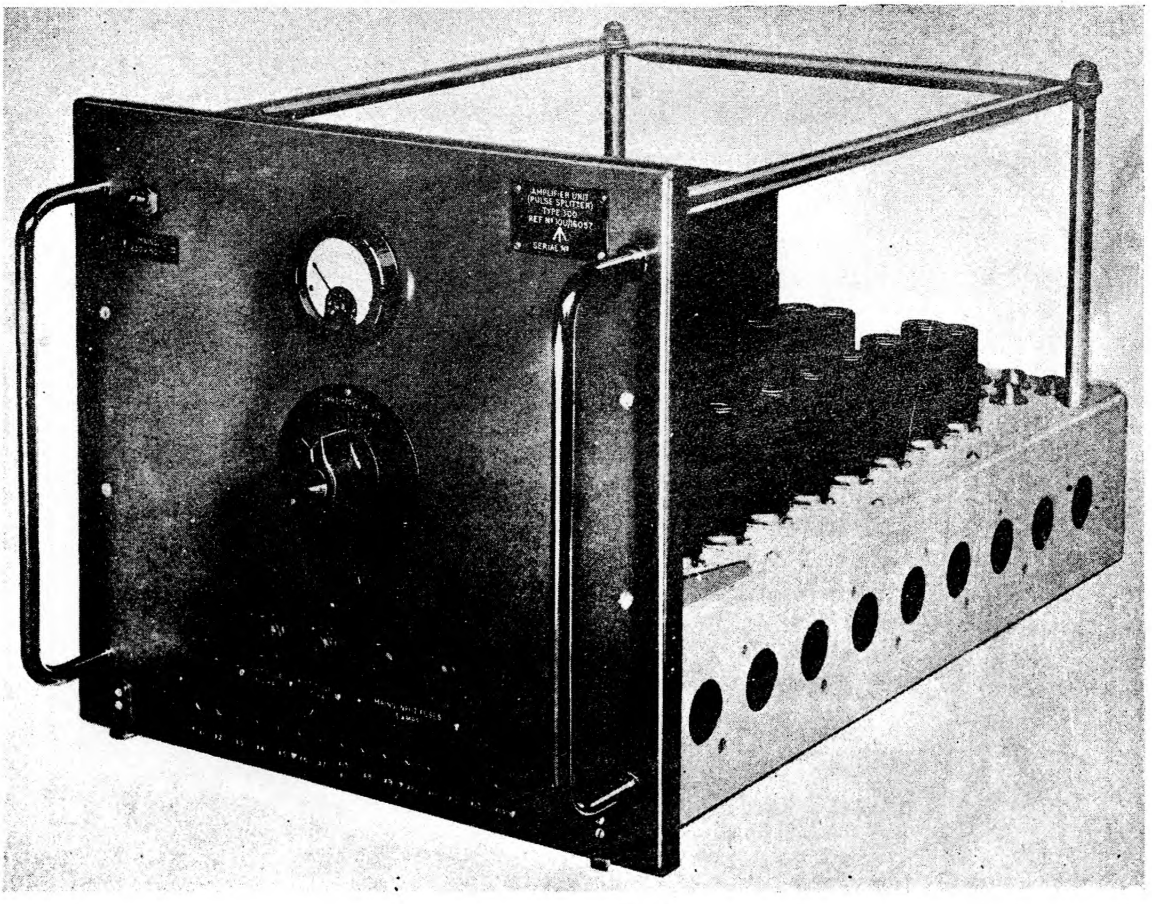


Fig. 1. Front panel

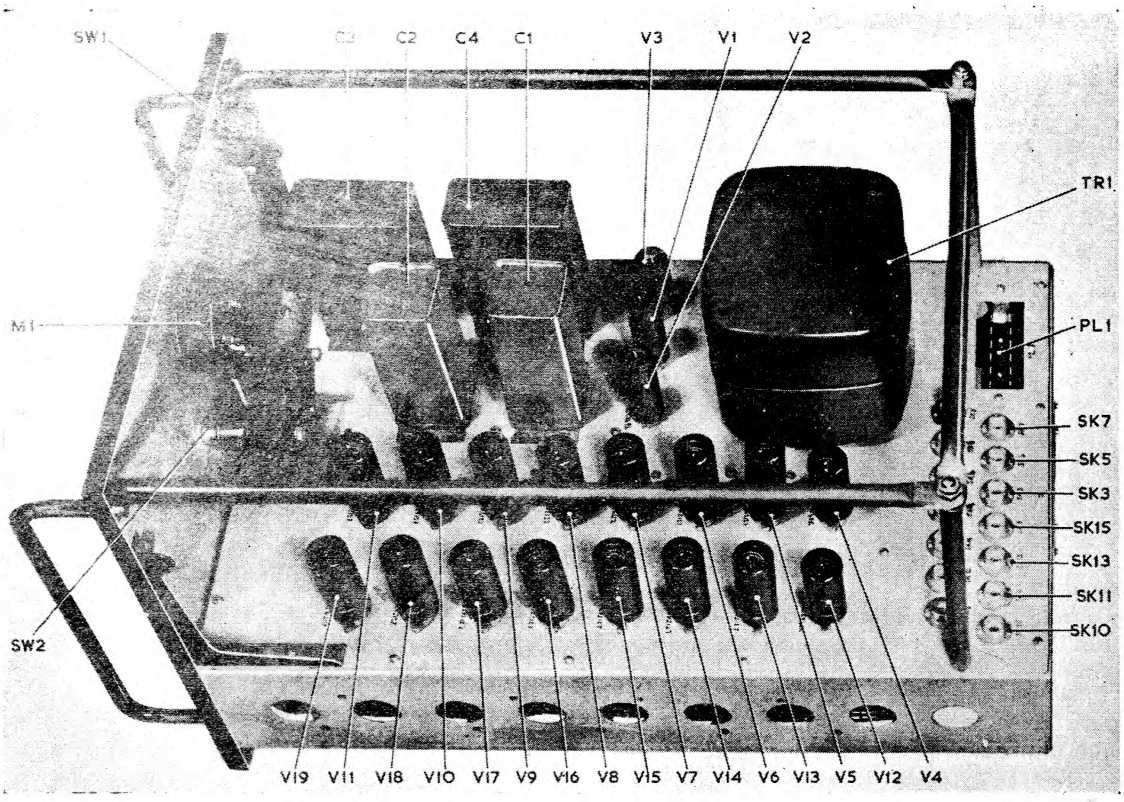


Fig. 2. Plan view

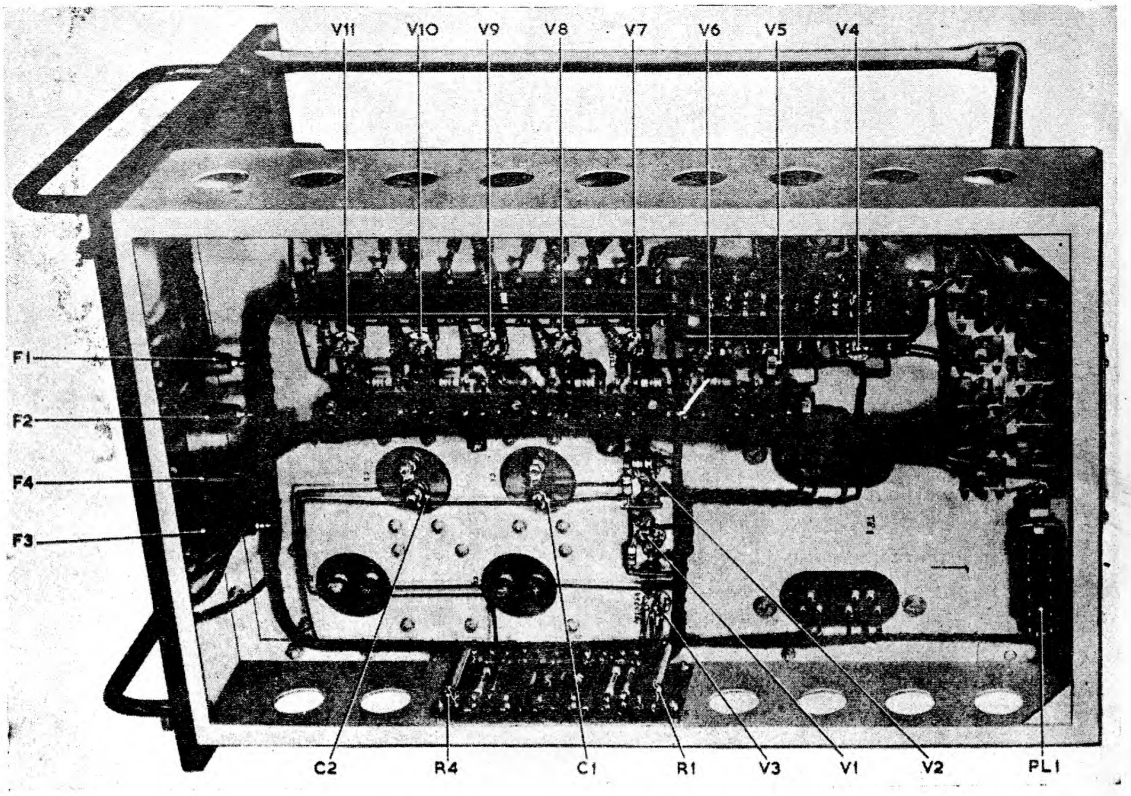


Fig. 3. Chassis underside (1)

with mains switch, fuses, meter and meter switch mounted on the front panel, together with monitor points to facilitate easy checking in operation.

3. The unit derives its power supplies from the 230V AC mains, this being taken into the unit by a Jones plug at the rear. Fig. 1 shows a front view of the unit ; top and underside views are given in fig. 2, 3 and 4. A circuit diagram is shown in fig. 5.

Circuit

4. The circuit consists of two identical channels of eight valves each, V4 to V11, and V12 to V19. For the purpose of this description, the former channel only will be mentioned.

5. A positive-going 20V 4μS pulse at either 250 p.p.s. or 500 p.p.s. is fed into the socket SK2, the line being terminated by a 68-ohm resistor R15

6. From this point the input is coupled through C5 and R17 into a cathode-follower, one half of a double triode V4 ; the other half of V4 acts as a cathode-coupled amplifier. By this method no additional loading is reflected to the input socket and no phase-reversal occurs.

7. The output from the anode of V4 is applied to the grid of the pentode V5 which is connected as a cathode-follower driving six further cathode-follower stages V6 to V11 connected in parallel.

8. V6 to V11 are biased beyond cut-off from a stabilized negative bias supply. With the application of the input pulse, each valve conducts hard and develops a positive-going pulse of 20V across the 68-ohm load which appears across the output when the unit is actually in operation. Inspection points are provided at each output socket so that the waveforms can be checked when in use.

Power

9. The HT power supplies of *positive* 300V and *negative* 70V are obtained from the full-wave rectifier V2, followed by a condenser-input filter. A half-wave rectifier V1 supplies a *negative* voltage which is stabilized at 70V by V3. The correct bias potentials are obtained from the potentiometer networks R8, R9, and R13, R14 across this stabilized supply. Current consumption from the 230V AC mains is approximately 0·45A.

Meter

10. The meter M1 can be switched by the 4-way switch SW2 to provide voltage checks on the HT and bias supplies, and also to measure the individual currents drawn by V4 and V12 (the input cathode-followers and amplifiers of the two separate channels).

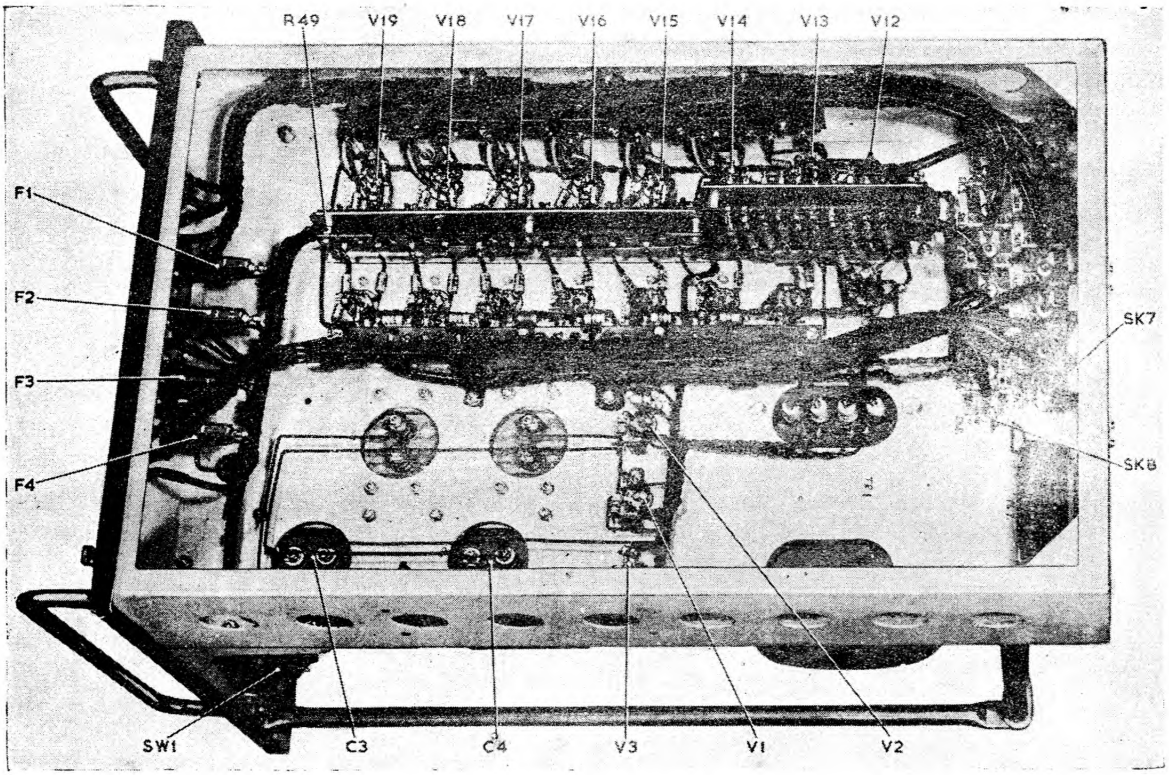


Fig. 4. Chassis underside (2)

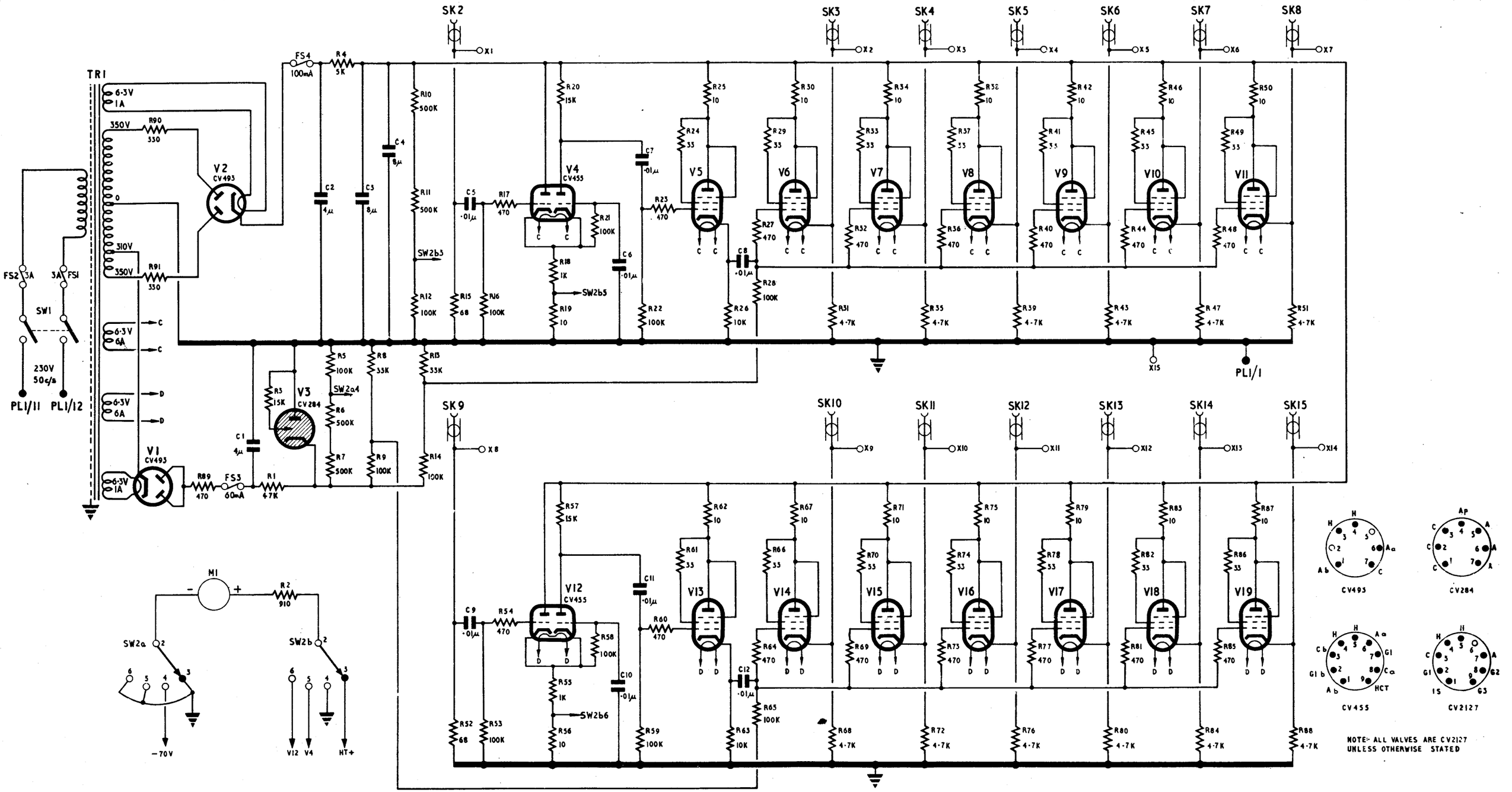


Fig.5. Amplifier unit (pulse splitter) Type 300 — circuit Fig.5.

Chapter 9

AMPLIFYING UNIT (SERVO) TYPE 297

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Introduction

1. The amplifying unit (servo) Type 297 (10U/16054) is used in the amplidyne turning gear systems of radars Type 13, 14 and 79 on static ground radar installations. In mobile applications of the turning gear the amplifying unit (servo) Type 278 is used. The Type 297 has the same circuit and performs the same function in the amplidyne system as the Type 278, but the physical layouts of the two chassis are different to enable the 297 to fit into a standard information generator rack assembly, and the 278 into the amplidyne box of the radar vehicle.

2. One amplifier Type 297 is required in the control circuit for each Type 13, 14 or 79 head. The amplifiers for the Type 13 and 14 heads on the main site are housed in the information generator rack (e.g. Types 307 and 311 to 317) in the radar office. For the Type 79 head the amplifier is housed in rack assembly Type 318 at the remote radar Type 7 site.

GENERAL DESCRIPTION

3. The unit is illustrated in fig. 1, 2 and 3. Mounted on the front panel are various preset controls for adjusting the operating conditions of the turning gear. A meter and associated switch are provided to facilitate the setting-up.

4. The control input is made to a differential amplifier V1a and V1b, feeding an output stage V3 and V4. V2 forms part of a current limiting circuit. The HT supply is AC to enable the amplifier to work from inputs which vary either in phase or voltage. In addition to the basic amplifier circuit the unit houses relays for the rest of the amplidyne control system.

Principle of operation

5. The servo system, of which the amplifier Type 297 forms part, may be described as an error-actuated closed-cycle system for controlling the rotation of aerial turning gear. This closed-cycle system is used because it gives greater accuracy of correspondence between the input and the output of the servo system than the alternative open-cycle system.

6. In the open-cycle system a certain input is fed into the system to provide an output, the magnitude of which depends upon both the magnitude of the input and the characteristics of the system. These characteristics are not normally sufficiently stable over long periods to maintain the required correspondence between input and output.

7. In the closed-cycle system, part of the output is fed back to the input, where the error between input and output actuates a correcting cycle to cancel the error. A block diagram to illustrate this is given in fig. 4.

Position Control

8. When the turning gear is on POSITION CONTROL there are two error feedback loops :—

(1) A selsyn servo loop for comparing the angular positions of the aerial and control selsyn rotors (the angular divergence between the rotors produces an input voltage to V1b in the servo amplifier).

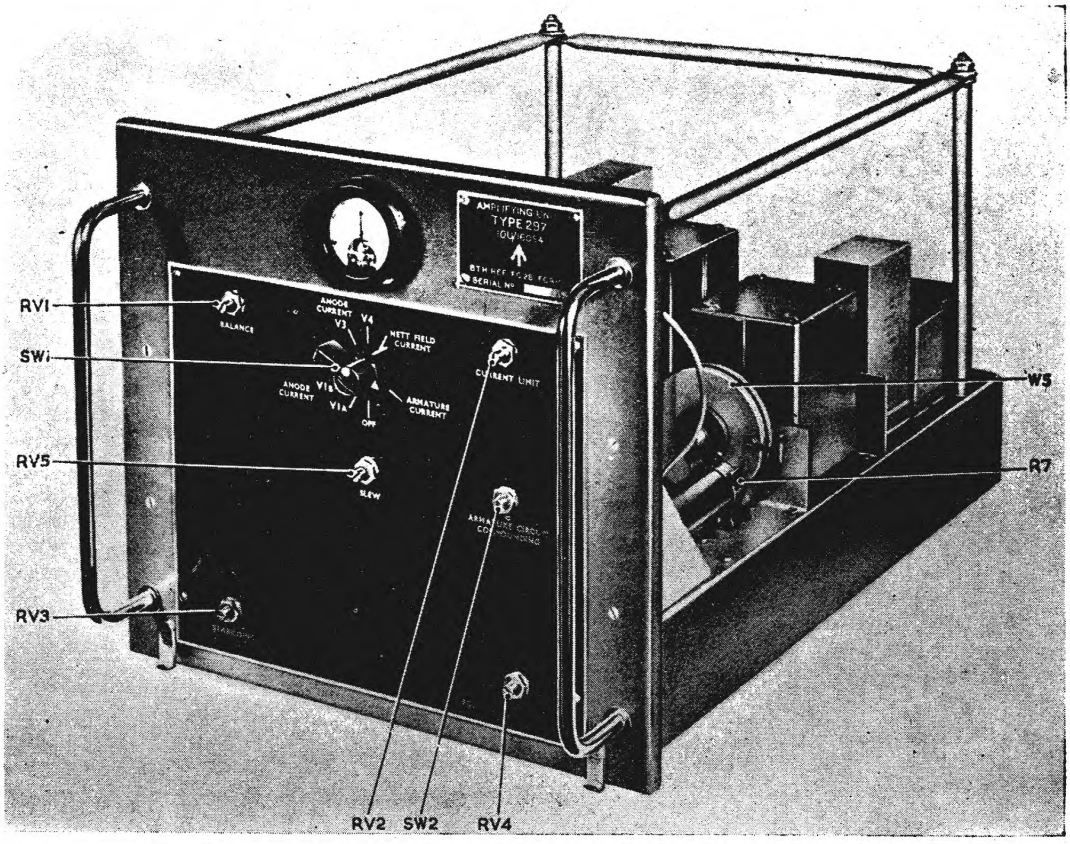


Fig. 1. Servo amplifier Type 297—front view

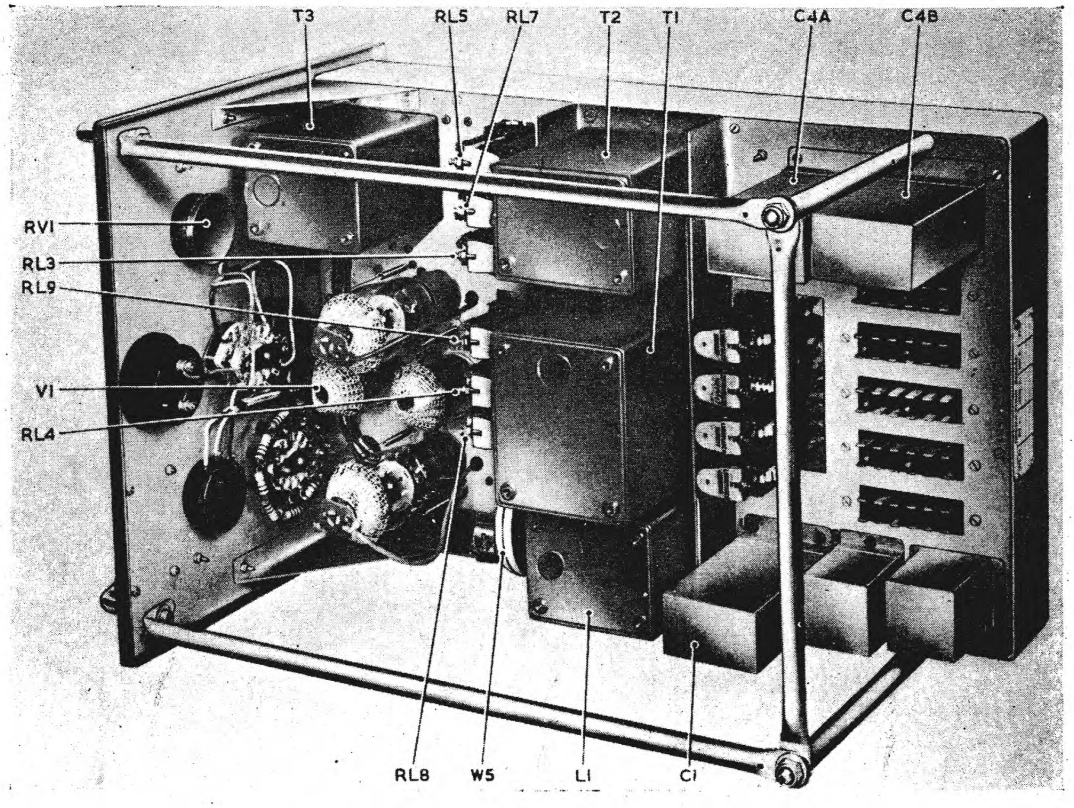


Fig. 2. Servo amplifier Type 297—top view

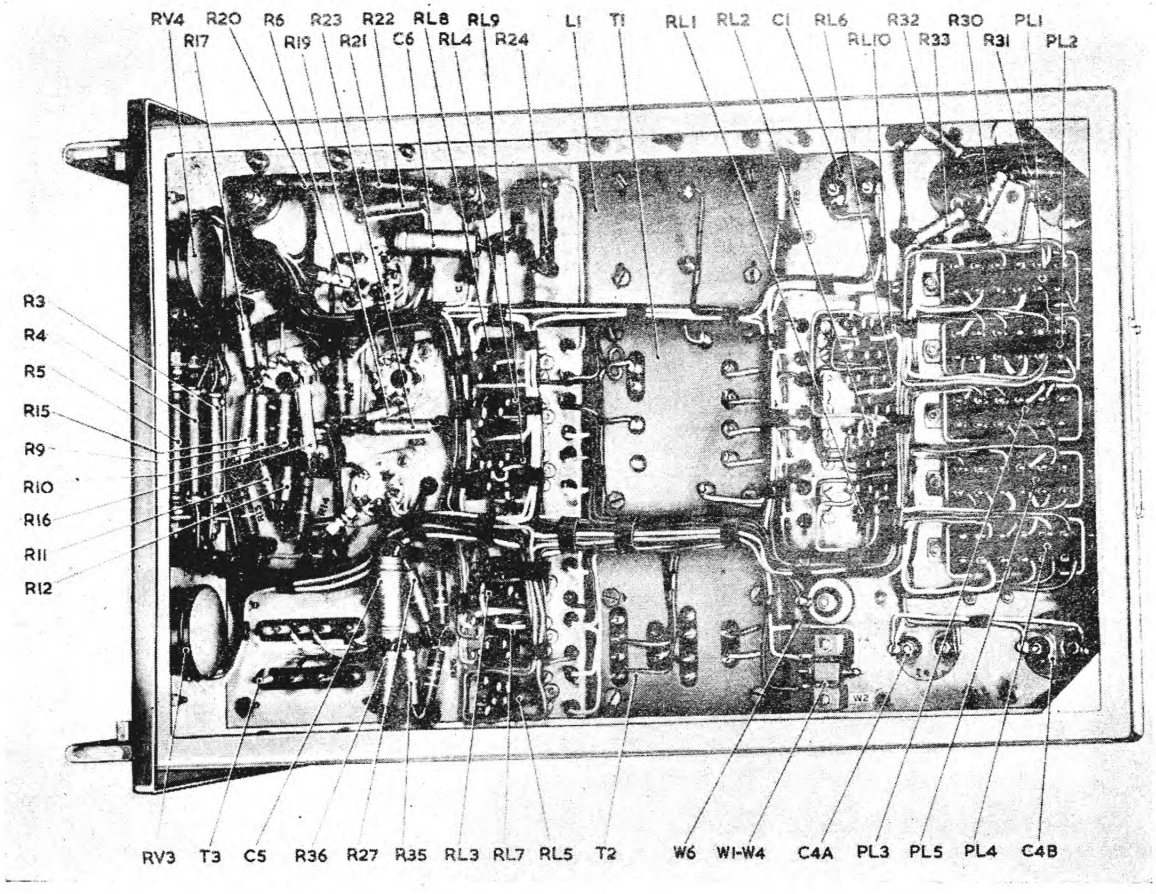


Fig. 3. Servo amplifier Type 297—underneath view

(2) A voltage feedback loop for comparing the amplidyne output with the input to V1b.

9. V1 feeds the push-pull output stage V3-V4 and causes current to flow in the amplidyne generator field coils in such a direction as to vary the amplidyne output in the manner necessary to reduce the angle of divergence, by turning the aerial until the servo and control selsyn rotors are in alignment. Initially the input to V1b is large, in proportion to the angle of divergence, and in an open-cycle system this input would be amplified to produce the amplidyne field current directly. With the closed cycle system, however, a tapping in the amplidyne armature circuit feeds back a voltage in opposition to the input voltage and compares the output and input in the grid circuit of V1b. The error between the two then determines the effective input to V1b. Due to the feedback the error voltage remains substantially constant over a wide range of angular divergence, so the head is turned at a constant speed until the selsyn rotors are in alignment.

10. Since the error is small compared with the original input, a considerable degree of power amplification is necessary to enable the error to actuate the control system. By comparison, an open-cycle system requires much less amplification, because the input itself is amplified to produce the control output. It should be noted that with an incorrectly adjusted closed-cycle servo system, instability may occur, which, coupled with the high gain, may produce self-maintained oscillation, or "hunting", as the feedback alternately swamps the input, so that the output is reduced too much, and then boosts the input so that the output is increased too much. With the feedback correctly adjusted, the overall gain of the amplifier is such as to provide smooth response of the head to the control without oscillation.

11. The amplifier also has a CURRENT LIMIT feedback circuit to prevent excessive current being driven through the amplidyne and turning motor circuit. When this circuit is operating the normal voltage feedback circuit from the amplidyne armature circuit to V1b is inoperative, so an additional stabilizing circuit (*not shown in fig.* 4) is provided from the amplidyne quadrature field to V1a.

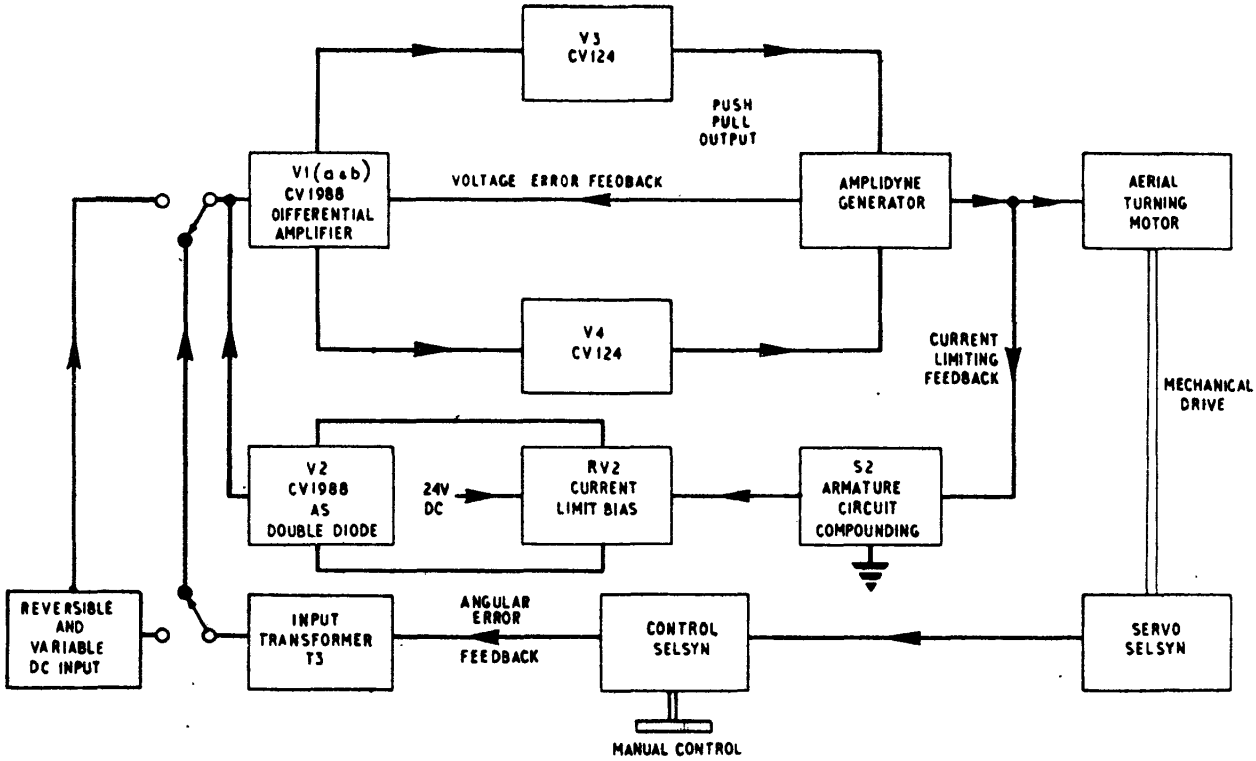


Fig. 4. Servo amplifier block diagram

Velocity control

12. When the system is switched to *continuous rotation*, the speed of the turning motor is controlled by a DC input to V1b from a potentiometer on the associated control panel, and the selsyn input to V1b is switched out of circuit. The turning motor therefore rotates at a speed dependent upon the amplitude, and in the direction determined by the polarity, of the input voltage.

13. The full negative feedback voltage from the amplidyne is fed back to the input circuit, not to stabilize response, as in position control, but to stabilize the speed of rotation. Thus the original input causes the amplidyne output to build up to the value at which the feedback almost balances the input, and the residual voltage at V1 is then just sufficient to maintain the required speed, any tendency for the voltage to fluctuate being automatically suppressed by servo effect.

Sweeping

14. When the system is used to cause the aerial to sweep back and forth over a selected arc, a DC voltage is injected into the servo amplifier, as for velocity control, but the selsyn system is also in circuit to provide an error voltage which is used to actuate a relay for reversing the DC input voltage when the head has reached the required limit of sweep. The reversed input causes the head to make the return sweep, at the end of which the cycle is repeated.

DETAILED DESCRIPTION

15. The servo system cannot be described fully without reference to the control units Type 600 and Type 602, and other units according to the application. For such description, reference may be made to A.P.2527B or A.P.2886H. The following paragraphs expand the brief description of the servo amplifier, given in para. 3 and 4. The amplifier chassis houses the following items:—

(1) The ARMATURE CIRCUIT COMPOUNDING resistors and switch (S2) from which the output feedback is tapped.
(2) The double-diode (V2) CURRENT LIMIT clamp circuit.
(3) The comparison circuit (V1) for comparing the output and input quantities, to produce the error voltage.
(4) The amplifier stage (V3 and V4), for providing amplidyne field current.
(5) Controlling relays for the complete servo system.
(6) Metering facilities for setting-up and test purposes.

Controls

16. The front panel switch S1, in conjunction with the meter M1, permits readings to be taken as follows :—

(1) V1A ANODE CURRENT
(2) V1B ANODE CURRENT
(3) V3 ANODE CURRENT
(4) V4 ANODE CURRENT
(5) NETT FIELD CURRENT
(6) ARMATURE CURRENT

The circuits for these measurements are not fully completed until the servo amplifier is connected into the servo system.

17. The following preset controls are provided for setting up the system :—

(1) RV1 (BALANCE) is adjusted to give zero nett field current with zero input to the servo system via V1b.

(2) RV2 (CURRENT LIMIT) is adjusted to give the required armature current in the amplidyne (approx. 20A at the minimum setting of RV2 and 55A under normal operating conditions).

(3) RV3 (STABILIZING SLAVE CONTROL OPERN.) controls the response of a slave head when the speed of the master is changed suddenly; counter-clockwise rotation will make the response faster and more oscillatory, while clockwise rotation will make the response more sluggish and stable.

(4) RV4 (STABILIZING POSITION CONTROL OPERN.)—this potentiometer is used in conjunction with item (5), on POSITION CONTROL.

(5) S2 (ARMATURE CIRCUIT COMPOUNDING switch) for adjusting the response of the aerial head to the control mechanisms, to prevent " hunting ".

(6) RV5 (SLEW) controls the speed at which the head approaches its final position on POSITION CONTROL. Thus, clockwise rotation decreases the speed at which the aerial approaches this position, while counter-clockwise rotation increases the speed, so that incorrect adjustment may alternatively cause the head to stop too soon, or to overshoot.

Circuit (*fig. 5*)

18. It is not proposed to describe in full the operation of the relays in this chapter, because, although they are housed in the servo amplifier chassis, they form part of the complete amplidyne system (A.P.2527B or A.P.2886H). The scope of this present chapter is therefore mainly to explain the valve circuits on the chassis.

19. When the operating coil of relay RL8 is energized, via PL1/12 and 9, from the external switching circuit, relay contacts RL8/1 and 2 complete the 230V, 50 c/s mains circuit to the primary windings of the heater transformer T2 and HT transformer T1. To enable the amplifier to cope with both DC and AC inputs, no HT rectification is employed and the valves V1a, V1b, V3 and V4 pass current on positive half cycles only.

20. In the quiescent state the series-connected diodes of V2 are cut off and have no effect on the circuit. V2 is a Type CV1988 double-triode, with each half diode-connected to meet possible demands for current carrying capacity. The control grid of the first amplifier stage V1b (half CV1988) is effectively earthed via relay contacts RL3/4, and resistors R31, R32, R28 and R27 (*fig.* 5), there being no input from the amplidyne armature circuit via PL3/9. The grid of V1a is also returned to the junction of R27 and R28, and the two valves have a common cathode load R17 (24K), returned to that end of the secondary of T1 which is effectively 100V negative to earth during the half cycles in which current flows. The anodes are both returned to a tapping on T1 which is effectively 300V above earth. Thus both halves of V1 pass current as determined by cathode bias. The anode currents of the two halves may be balanced by adjustment of RV1, which permits the grid of V1a to be made either positive or negative relative to earth (to a limit of 2V positive or negative) to compensate for slightly different characteristics in V1b. Switch S1 has positions to give anode current readings for V1a and V1b on meter M1, across the 30-ohm metering resistors R14 and R13, respectively.

21. With the anode currents of V1a and V1b balanced, equal inputs are made to V4 and V3 in the output stage. The control grid and cathode returns of this push-pull, cathode-coupled tetrode (Type CV124) stage are both made to the effectively 100V negative to earth end of T1 secondary, while the anode returns are to the effectively 400V positive end. Thus both valves pass currents as determined by the equal grid inputs and the cathode bias developed across R8 (1·5K).

22. Although the currents through the field coils (X3-X4 and X2-X1) are equal, the coils are of opposite polarities so the nett field current is zero. The individual anode currents of V3 and V4 may be read across R1 and R2 (0·45 ohm), respectively, using switch S1 and meter M1. With S1 on the NETT FIELD CURRENT position, the meter is connected between the two anode circuits and therefore records any difference in potential between them. The anode resistors R3 and R4, across the field coils (PL3/3 to 6), damp the transient voltages which result from the half-wave pulses of anode current (due to the AC HT supply). The anode circuits are decoupled by two 0·05μF capacitors in the amplidyne terminal box.

Input circuits

23. The servo amplifier can receive inputs from five sources, viz.:—

(1) AC input from the control selsyn via T3 and relay contacts RL3/4, on POSITION CONTROL.

(2) An alternative DC input from the SPEED control (in the control unit Type 600 circuit) via RL3/4, on CONTINUOUS ROTATION and SECTOR SWEEP.

(3) CURRENT LIMIT feedback, as determined by potentiometer RV2.

(4) Negative feedback voltage from the amplidyne, via PL3/9 and R32, adjustable by S2, RV3, RV4 and RV5, as appropriate.

(5) Stabilizing feedback, from the amplidyne quadrature feedback winding, via PL3/7 and 8.

Position control

24. On POSITION CONTROL relays RL1, RL3, RL6, RL7, RL8, RL9 and RL10 are energized and T3 and RV4 are in circuit. The AC voltage across T3 secondary is applied to the control grid

of V1b. This voltage is in proportion to the angular divergence between the aerial and control selsyn rotors. Excessive voltages are limited by the Metrosil W6 across T3 secondary.

25. The servo amplifier HT transformer T2 and the aerial selsyn rotor are fed from the same AC supply, so that the phase of the input signal may be the same as, or opposite to, the voltage on the anodes of V1, V3 and V4 in the servo amplifier. An in-phase voltage at the grid of V1b appears as a positive-going signal, while an anti-phase voltage appears as a negative-going signal. Since the phase of the input voltage reflects clockwise or counter-clockwise rotation of the control selsyn, it causes a corresponding movement of the head by producing amplidyne field current in the required direction.

26. The movement of the head is stabilized by negative feedback from the amplidyne circuit via S2 (ARMATURE CIRCUIT COMPOUNDING) and RV4 (STABILIZING POSITION CONTROL OPERN.) to V1b.

27. Switch S2 has two functions :—

(1) It varies the earth tapping in the amplidyne armature circuit and so varies the feedback via PL3/9.

(2) It selects, and connects in the CURRENT LIMIT circuit (*para.* 35), part of the load in the amplidyne armature circuit.

28. For movements of the head of less than 11 deg. the feedback from PL3/9 is applied to RV4 via contacts RL9/1. Adjustment of S2 (*coarse control*) and RV4 (*fine control*) regulates the feedback so that it almost cancels the input. The error between the two then produces a steady turning torque at the aerial head until the aerial selsyn rotor and the control selsyn rotor are in correspondence.

29. The selsyn error voltage (between PL2/11 and PL4/6) is rectified and applied to relay RL501 in the control unit Type 600. For movements greater than 11 deg. this voltage is able to overcome a preset bias and to operate RL501, which brings in RL4 in the servo amplifier.

30. The SLEW potentiometer RV5 is brought into circuit by contacts RL4/1 and 3 while RV4 is disconnected by RL4/2. At the same time RV3 is short-circuited by RL4/4. The input voltage to V1b is reduced because only half the secondary of T3 is left in circuit, while a modified negative feedback voltage is applied via RV5. At two deg. from the final position, the error input to RL501 is too small to hold in the relay, so the SLEW circuit is disconnected. This arrangement provides a braking system for the head for movements greater than 11 deg., but ensures a firm pull in for movements less than two deg.

Continuous rotation and sweeping

31. For these modes of operation the relay connections are the same as for POSITION CONTROL except that RL3 is not energized, so T3 secondary, RV3, RV4 and RV5 are out of circuit and the control grid of V1b is connected to PL4/10 via contacts RL3/4. The input via PL4/10 is then a DC voltage from a SPEED control on the appropriate control panel. The speed and direction of rotation of the head depends on the amplitude and polarity of the input voltage. This is opposed by negative feedback from PL3/9 via R32 (decoupled by C2) and R31, so the final input to V1b is only the small error between the original input and the feedback. Surges of input voltage drive current through Metrosil W5 and are dropped across R23 (47K), limiting the signal to 15-20V.

32. When the head is required to sweep back and forth about a selected heading, it is turned to this heading on POSITION CONTROL and the mode of operation switch is then turned to SECTOR SWEEP. The head then turns as in CONTINUOUS ROTATION, but the selsyn voltage (which is present between PL2/11 and PL4/6, connected to that part of the primary of T3 which is centre-tapped at PL4/5) is rectified and used to control a reversing relay (RL502 via RL501) in the control unit Type 600, so that the DC input to the servo amplifier is reversed at the desired limit of sweep, and the reverse sweep is begun. R30, R31 and C3 prevent a violent reversal by slowing down the change-over of polarities.

Current limit circuit

33. But for the current limit circuit, which is centred on V2, it would be possible for the current through the amplidyne and aerial turning motor circuits to build up to a dangerous value. However, the operation of the limit circuit prevents the current from exceeding about 80A at maximum aerial turning speed.

34. The current level through the amplidyne field coils, which determines the amplidyne and turning motor currents, is adjusted by RV2 (CURRENT LIMIT) in conjunction with S2 (ARMATURE CIRCUIT COMPOUNDING).

35. Switch S2 selects, and connects in the V2 diode circuit, part of the resistive load in the amplidyne armature circuit. The total resistance selected always amounts to 450 ohms (three of the armature circuit compounding resistors R37 to R44) so that a fixed percentage of the voltage developed across the load is always injected into the diode circuit, no matter what the setting of S2 may be (*para.* 27 *and* 28). This voltage increases in proportion to the current through the armature circuit.

36. The function of the circuit is as follows. The 24V potential across secondary winding *a—a* of transformer T2 is rectified by the bridge W1 to W4 and smoothed by the filter C1-L1, before being applied to the bridge circuit RV2, R22, R21 and R20. The voltage output from the bridge may be varied by RV2 and is applied to the two diodes of V2, connected in series. The polarity of the voltage output from the bridge rectifier is such that no current flows through the diodes in the quiescent state. In the operational state the voltage applies a bias to the diodes.

37. With no current passing through the armature circuit, switch S2 effectively connects the junction of R20 and R21 to earth. When current passes through the armature circuit the junction is shifted from earth potential by an amount equal to the voltage drop across the three resistors in circuit, selected by S2. The polarity of the shift is opposite to that of the input to V1b.

38. Since R20 and R21 are of equal value (1·2K), the bias voltage across them is equal, the amplitude being determined by RV2. Thus the anode of the diode connected to the junction of RV2 and R20 is the same amount below earth (in the quiescent state) as the cathode of the diode connected to the junction of R21 and R22 is above it. When a positive input is applied to V1b (and the junction of the diodes) the junction of R20 and R21 is driven negative by feedback from S2, thus reducing the positive bias at the junction of R21 and R22. When the feedback exceeds the bias, the right-hand diode (*fig.* 5) passes current and so limits the input by producing a voltage drop across R19 (270K). For a negative input with positive-going feedback the other diode passes current. The input is thus clamped to the preset limit for both polarities.

Amplifiers

39. The input to V1b produces paraphase outputs at the anodes of V1b and V1a due to the cathode coupling. In the quiescent state the two halves of V1 pass equal currents (balanced by RV1). A positive input causes a negative output from V1b and an equal but positive output from V1a, while a negative input has the opposite effect. The outputs from V1 are DC-coupled to the output stage V3-V4, which drives current through the amplidyne field coils. In the quiescent state these currents are equal but in opposite directions so that the nett field current is zero. With a push-pull input the current through one field coil goes up whilst the other goes down. The difference produces an effective field current and therefore an output from the amplidyne, with polarity corresponding with the input. This output drives the aerial head in the required direction.

Slave operation

40. When aerial heads are being used in the master and slave capacities, the master head turns under CONTINUOUS ROTATION conditions, while the slave turns on POSITION CONTROL, with a servo voltage injected across T3 (PL4/7 and PL2/11) from the rotor of the slave aerial selsyn. The master and slave aerial selsyn stators are connected so that the voltage across T3 gives a measure of the angular divergence between the heads. On the master head relays RL/1, 2, 6, 7, 8 and 10 are energized, while on the slave only RL/2, 3 and 8 are energized, to provide the required connections.

41. On the slave head, RL7/4 is closed to complete the input circuit to the primary of T3 and to permit the input to be varied, by the external phasing control, for synchronizing the slave to the master head. Contacts RL3/3 are open to make potentiometer RV3 (STABILIZING SLAVE CONTROL OPERN.) operational. Its function may be compared with that of RV4 (*para.* 26-28).

180 degrees displaced rotation

42. When a slave head is required to rotate back-to-back with the master, relay RL5 is energized and contacts RL5/1 and 2 reverse the secondary connections from T3 to the servo amplifier. The input to the amplifier is rendered 180 degrees out of phase, but is brought back in phase by turning the slave head through 180 degrees. The slave then turns in synchronism with the master, but back-to-back with it.

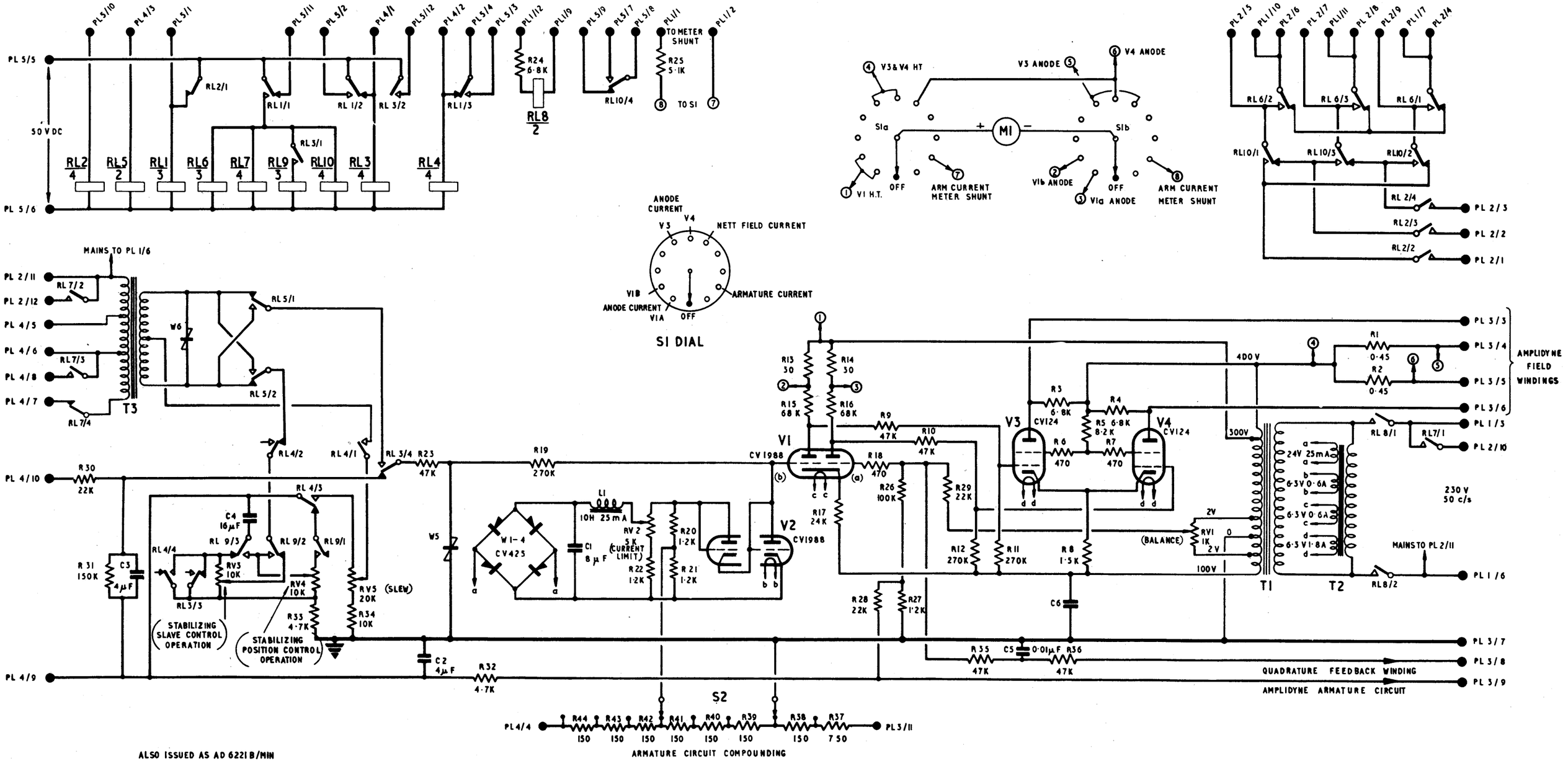


Fig. 5

Servo amplifier Type 297 – circuit

Fig. 5

Chapter 10

AMPLIFYING UNIT (PULSE) TYPE 4279

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Plan view	2	Waveforms	5
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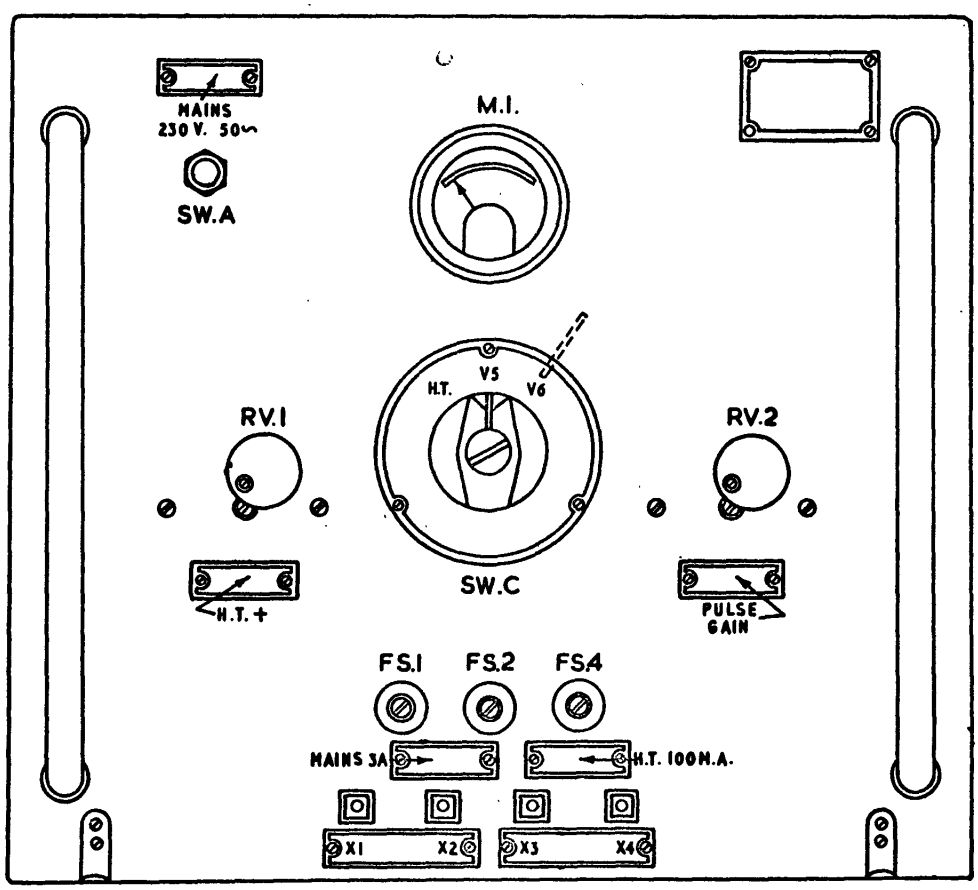


Fig. 1. Front panel

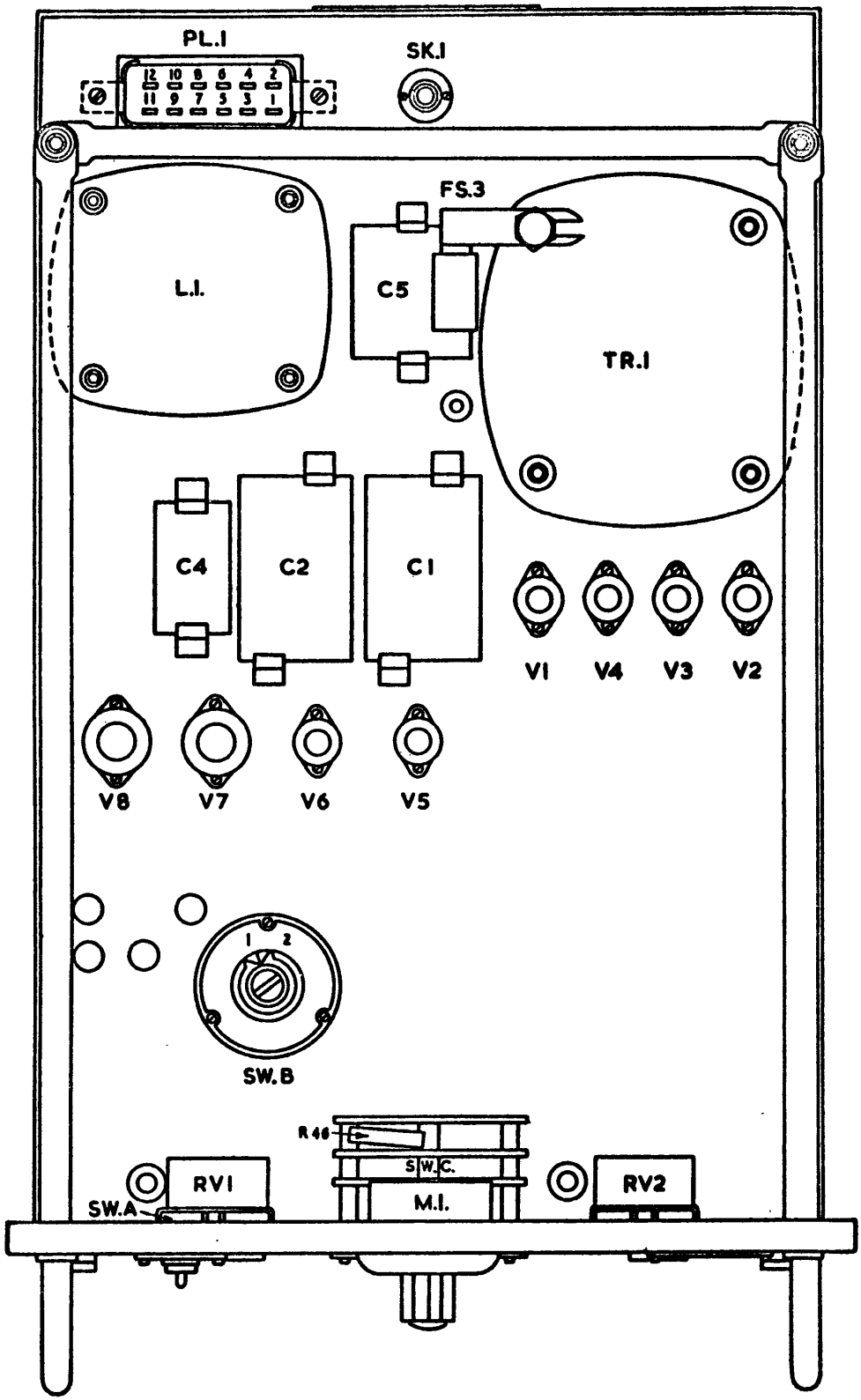


Fig. 2. Plan view

Introduction

1. The amplifying unit (pulse) Type 4279 (Stores Ref. 10U/16838) consists of a three-stage pulse amplifier with a self-contained power pack. The unit is constructed on a standard A.M. information generator chassis and housed in the rack assembly Type 320 or Type 321 according to the type of station.

2. The unit is used in conjunction with the transformer unit Type 4278, located in rack assembly Type 183 in the well of the radar Type 7, on GCI stations where the radar Type 7 is at a remote site. Positive-going synchronizing pulses, 4 microseconds wide at a p.r.f. of 500, generated in the R.A.183 are converted to balanced signals in the transformer unit Type 4278 for transmission over a balanced pair in the G.P.O. cable to the operations building.

3. In the radar office, the output from the G.P.O. line is fed into the amplifying unit (pulse) Type 4279 where it is passed through one of two equalizers to a balance-to-unbalance transformer feeding a two-stage wide-band amplifier and cathode-follower output stage. The output pulses from the unit are fed to the rack assembly Type 182 which is now switched to operate under Type 11 (i.e. pulse input) conditions.

4. The self-contained power pack, operating from a 230V, 50c/s mains supply, provides all heater requirements and a stabilized 325V output for HT and bias. There are facilities for measurement of valve currents and HT voltage on a built-in meter. Monitoring points, for the display of internal waveforms, are brought out to sockets on the front panel. A diagram of the front panel is given in fig. 1 and plan views of the chassis in fig. 2 and fig. 3. Component layout of the tag-boards is shown in fig. 4.

Circuit description

Equalizing filters

5. A circuit diagram of the complete unit is given in fig. 6. The input, from poles 5 and 6 of PL1, is passed through one of the two balanced filter circuits, selected by the four-pole two-way switch SW B, to the pulse transformer TR2 which converts the balanced input signals to unbalanced positive-going pulses, of approximately 1V amplitude, at the control grid of the first amplifying valve V5 (CV 138).

6. Correct termination of the G.P.O. balanced-pair line, which has a characteristic impedance of 100 ohms, is achieved by shunting R28 across the secondary of the 1:6 step-up transformer TR2. Balance of the input line is maintained by an artificial centre tap to earth, using R26 and R27, across the primary of TR2.

7. The constants of the filter circuits are designed to equalize the frequency response of the G.P.O. line up to at least 500 kc/s, for nominal line lengths of 2,800 yd. and 4,600 yd. respectively, with an insertion loss such that the signal applied to the grid of V5 is approximately the same for any length of line normally used. The switch SW B is set to position 1 for lines up to 3,000 yd. long and to position 2 for line lengths over 3,000 yd.

Pulse amplifier

8. The valves V5 and V6 (both CV 138) form a two-stage pulse amplifier with a maximum gain of approximately 36 dB. The overall gain may be varied over a range of some 10 dB by means of the pre-set PULSE GAIN control RV2 in the cathode circuit of V5.

9. The output appearing at the anode of V6 is a 500 c.p.s. positive-going pulse, with an amplitude of about 45V, which is capacitance fed to the output stage via C12.

Output stage

10. The output stage is a cathode-follower circuit consisting of two CV 2127's, V7 and V8, fed in parallel with a common cathode load. The control grids of these valves are returned to a fixed negative voltage of 25V developed across R19. This ensures that the standing current through these valves is reduced to a low value between pulses.

11. The output at the socket SK1, when correctly terminated with a 68-ohm load, consists of steep fronted square pulses with an amplitude of 20V and a rise time of less than 0·8 microseconds. This output is fed by coaxial cable to the waveform generator in rack assembly Type 182 which must now be switched from TYPE 7 to TYPE 11 (i.e. pulse input) operation.

Power supplies

12. The built-in power pack is energized from the 230V, 50c/s regulated mains supply which is fed in at pins 11 and 12 of the Jones plug PL 1 and applied to the primary of the mains transformer TR1 via the double-pole switch SW A. HT is obtained from the 420-0-420V winding, rectified by V1 (CV 493), smoothed by a condenser-input π-section filter and regulated at 325V by a triode-connected pentode V2 (CV 2179) acting as a series impedance in the HT positive line. The impedance of V2 is controlled by a D.C. amplifier V4 (CV 138) in conjunction with a neon stabilizer V3 (CV 449), the value of the stabilized output being determined by the setting of RV1 in the feedback loop.

13. Resistor R19 is introduced between the negative HT rail and chassis to provide a 25V negative bias for the control grids of the output valves V7 and V8. The final HT supply for the amplifier is thus 300V positive to chassis.

14. Two 6·3V windings are provided; one for the heaters of V1 and V2, the other supplying the heater requirements of the remaining valves.

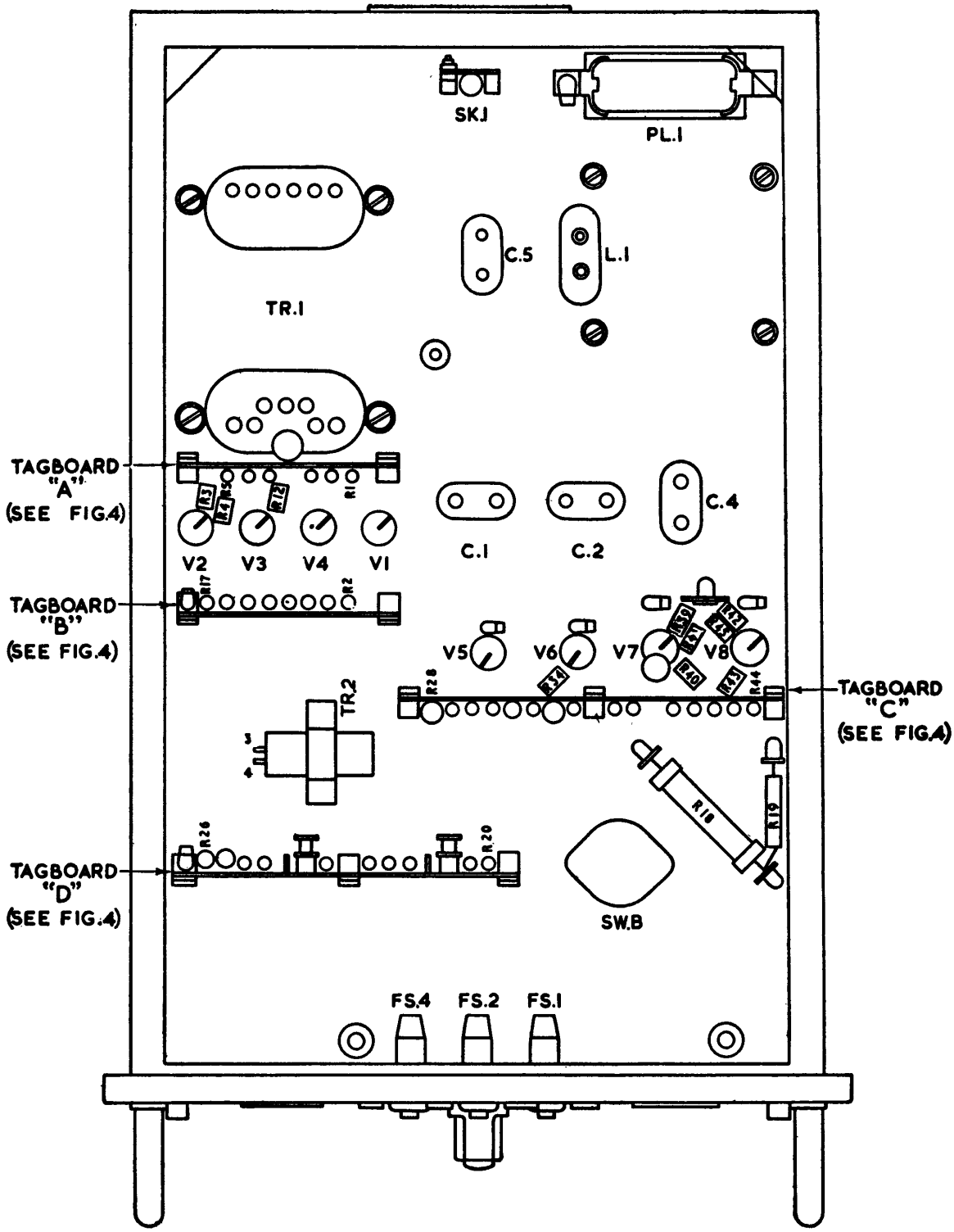
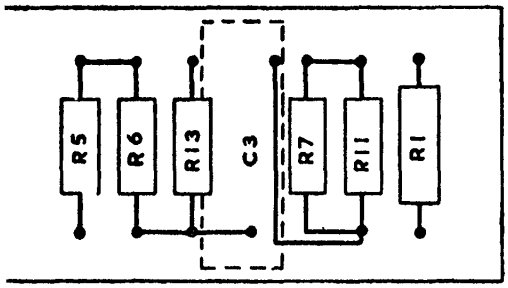
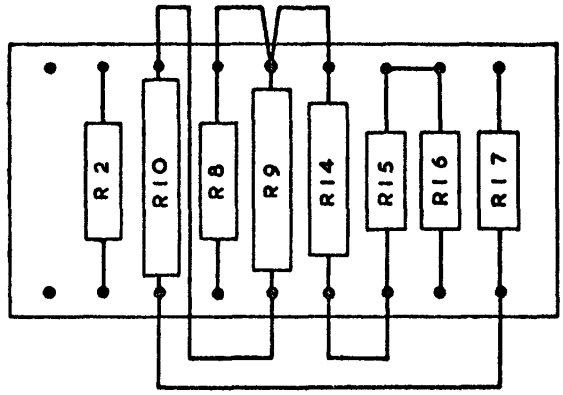


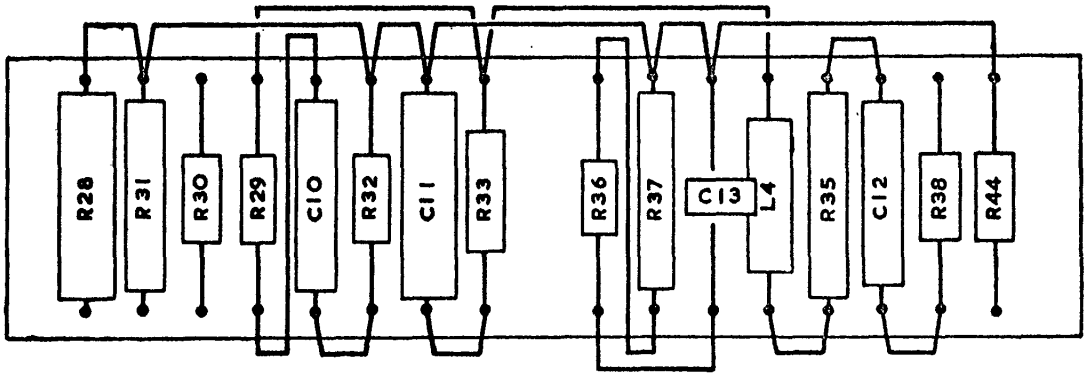
Fig. 3. Under chassis view



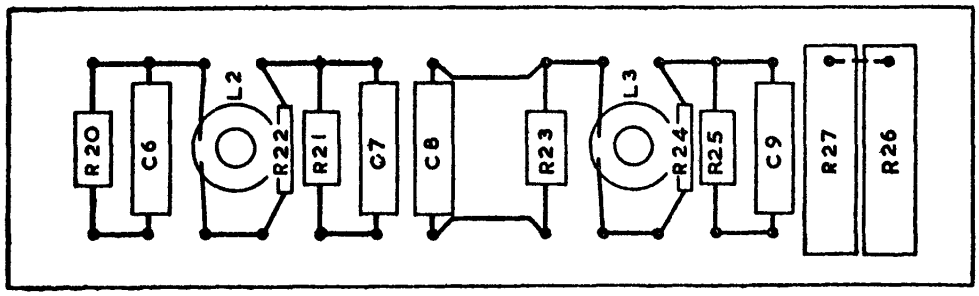
TAGBOARD A



TAGBOARD B



TAGBOARD C



TAGBOARD D

Fig. 4. Layout of tagboards

Monitoring

15. Waveforms can be monitored at four points within the unit (*viz.* X1 *to* X4 *in fig.* 6) which are brought out to the monitoring sockets on the front panel. Typical waveforms are given in fig. 5. The figures of magnitude quoted against the waveforms are intended only as a guide, the criteria being the satisfactory operation of the unit as a whole.

Metering

16. The meter M1 is mounted on the front panel and can be switched by SW C to measure the stabilized HT voltage or the cathode currents of the pulse amplifier valves V5 and V6. Meter readings are given in Table 1.

TABLE 1

Meter readings

Switch position	*Reading*	*Remarks*
HT	3·15	Set by RV1
V5	0·7 to 1·1	With RV2 at max. setting
V6	0·8 to 1·2	With RV2 at max. setting

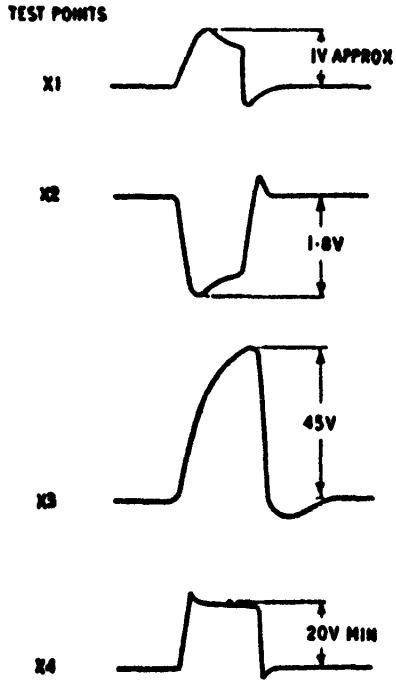


Fig. 5. Waveforms

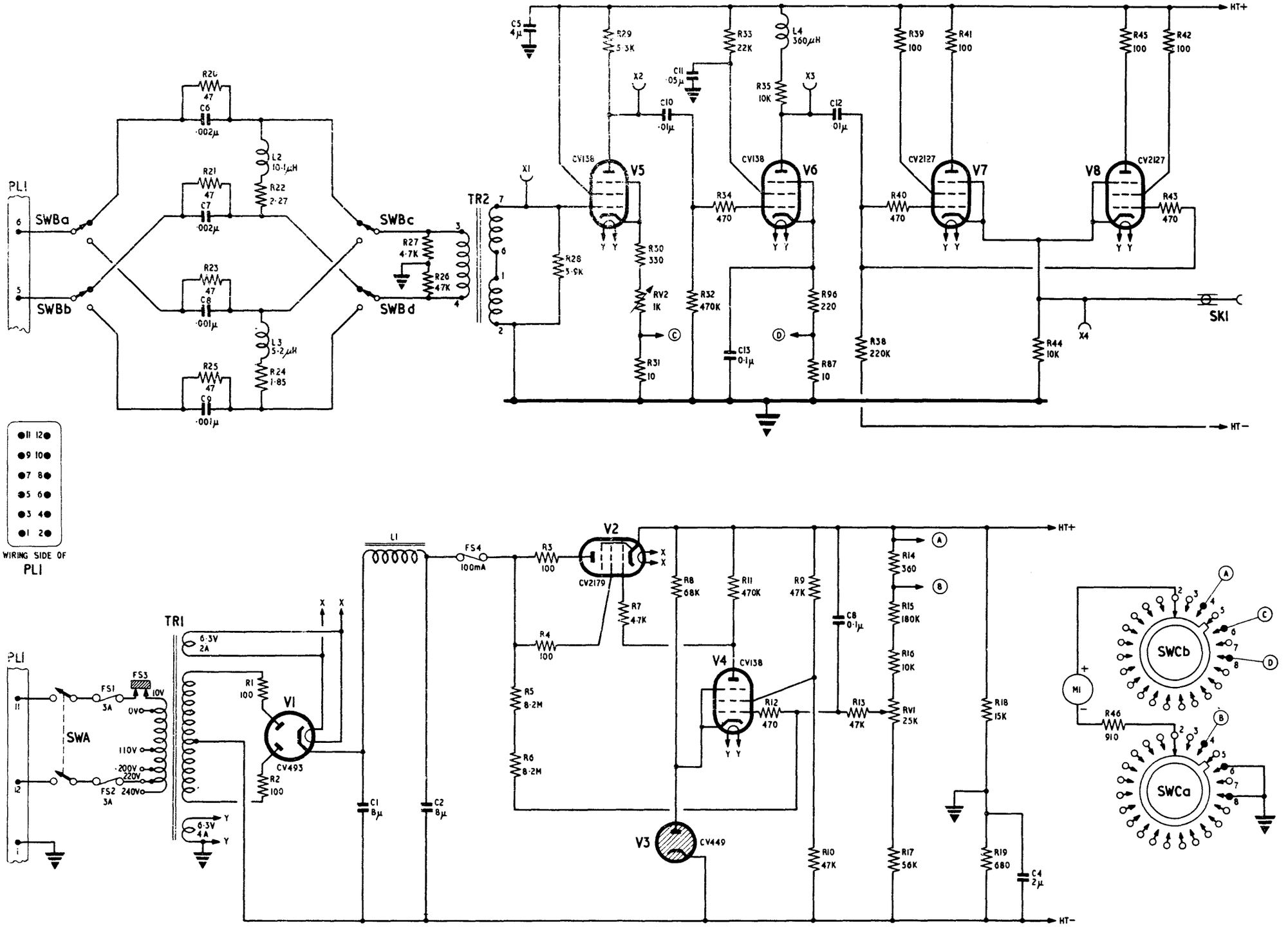


Fig. 6 Amplifying unit (pulse) Type 4279 — circuit Fig. 6

Chapter 11

AMPLIFYING UNIT (VIDEO) TYPE 4416

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General	1	R-C amplifier and limiter	8
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Input circuit	4	Log. channel	11
Longtailed pair	6	Power supplies	12

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Amplifying unit (video) 4416 : top of chassis	2	Amplifying unit (video) 4416 : circuit	4

GENERAL

1. Amplifying unit (video) 4416 (*fig.* 1, 2 *and* 3) contains two separate but similar video amplifier channels. One channel (A) accepts the output from amplifying unit (linear) 4141 and the other channel (B) accepts the output of amplifying unit (logarithmic) 4142 (*A.P.2527Q, Vol.* 1, *Part* 1, *Sect.* 6, *Chap.* 3). Both amplify and limit the signals from Radar Type 80 before passing them to the display consoles.

2. The linear channel has an overall effective bandwidth of 1 Mc/s, achieved by the use of R-C coupled stages with low values of anode loads. The log channel provides a larger amount of amplification with reduction in overall bandwidth to 0·5 Mc/s. Limiting circuits are included in both to ensure that strong returns do not overload the display circuits. As a long length of coaxial cable may be necessary to carry the video from the radar head to the radar office, an unbalanced to balanced input circuit is used to minimize hum voltages picked up by the cable. Each channel provides four low impedance outputs to the display consoles with a minimum overall gain of approximately 10 on signals which do not limit for channel A and of approximately 20 for channel B.

3. The unit contains heater transformers but HT is obtained from power unit 4415 which provides stabilized supplies of +250V and −250V. The following circuit description applies mainly to channel A. The differences to be met in channel B are discussed in paragraph 11.

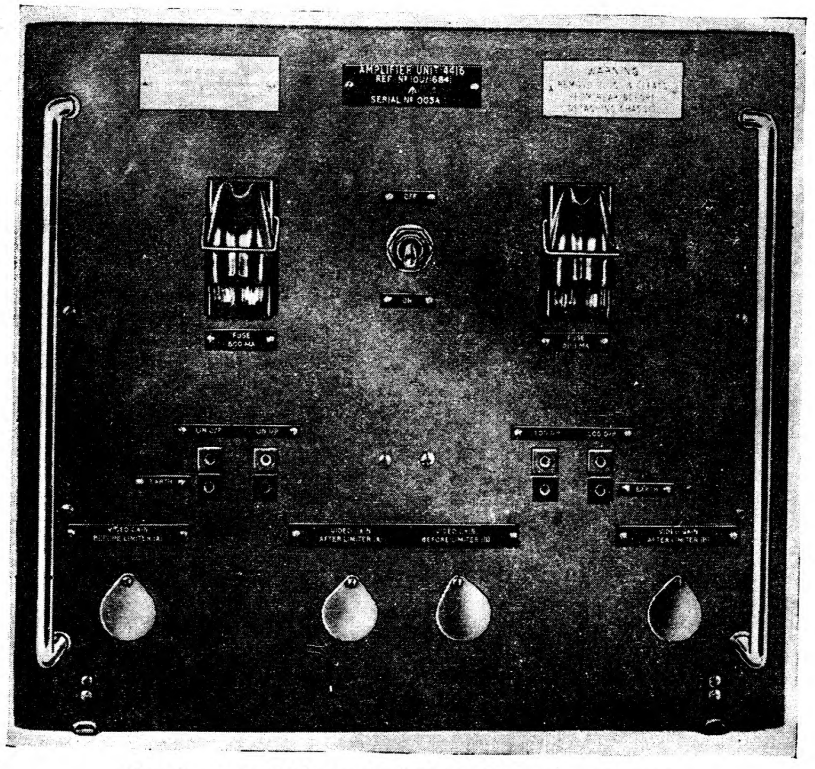


Fig. 1. Amplifying unit (video) 4416 : front panel

CIRCUIT DESCRIPTION

Input circuits

4. V1 and V2 are connected as a long tailed pair with the variation that V2 grid instead of being connected to chassis (*A.P.* 1093*E*, *Chap.* 7, *Sect.* 23) is connected via C3 to the outer of the video coaxial cable (*fig.* 4). This connection ensures that pickup on the cables is cancelled out or minimized.

5. The cable (of 75 ohm impedance) is terminated by R1, a 75 ohm resistor connected across the coaxial socket SK1. Now, since the outer is earthed only at the linear amplifier, we can suppose pick up appears on both the inner and outer of the cable in the same phase and of approximately the same amplitude. Thus, considering the noise voltages as positive-going,

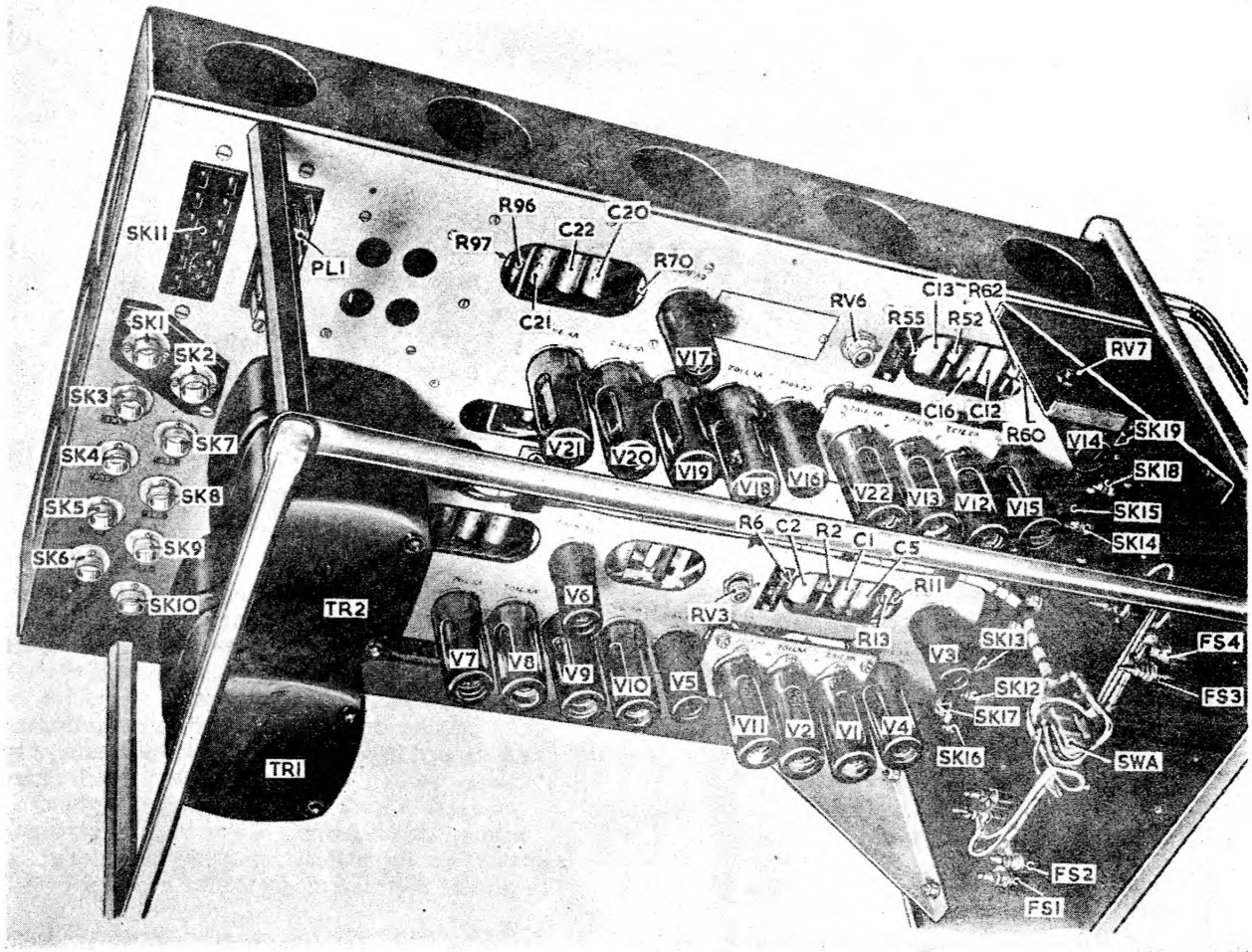


Fig. 2. Amplifying unit (video) 4416 : top of chassis

the grids of V1 and V2 will rise together, and both valves will try to draw more current. A rise in current in V2 causes a rise in voltage on V2 cathode. Now the cathodes of V1 and V2 are connected together so that V1 cathode rises in step and the net result is that, if the voltages on V1 and V2 grids are equal, there is no rise in current in V1 and consequently no output from V1's anode circuit.

Long-tailed pair

6. Signals appear on the inner only and are positive-going so that the current in V1 increases, producing a voltage across the anode load, while that in V2 decreases by the same amount due to the common cathode connection. The voltage drop across the cathode load as a result of this connection remains constant and it is possible to use a valve, V11, as the cathode load. The advantage of using a valve is that it has a high AC impedance, a desirable feature in a long-tailed pair, and the valve has a low DC volts drop across it, enabling V1 and V2 to work at higher current levels than would be possible if the cathode load were a pure resistance.

7. The output is taken from the anode load of V1. The load is a variable resistor, RV1, in parallel with a fixed resistor, R5. The variable resistor provides a preset gain control (VIDEO GAIN BEFORE LIMITER) and the negative-going output from the slider of RV1 is taken via C4 to the grid of V4.

R-C amplifier and limiter

8. V4 is an R-C coupled amplifier whose grid is returned to a negative bias voltage derived from a resistance chain across the −250V supply. The voltage across R45 is about −0·25V which keeps the working point of V4 on the linear part of the characteristic. V4 grid is DC restored to the −0·25V level by a diode V3 which is connected across the grid leak, R11.

9. The screen grid voltage of V4 is obtained from a cathode follower, V5, which provides a low impedance source and keeps the voltage substantially constant. The control grid of V5 is connected to the slider of RV3 whose setting fixes V4's screen potential. This varies the grid base of the valve. Large pulses on the grid of V4 take the valve beyond cut-off and, as cut-off is determined by the screen volts, the only variable, RV3, is a SET LIMITER control. The positive-going signals on the anode of V4 are tapped off from RV2 (VIDEO GAIN AFTER LIMITER) and taken by C6 and C23 in parallel to the grids of the four output cathode followers. It should

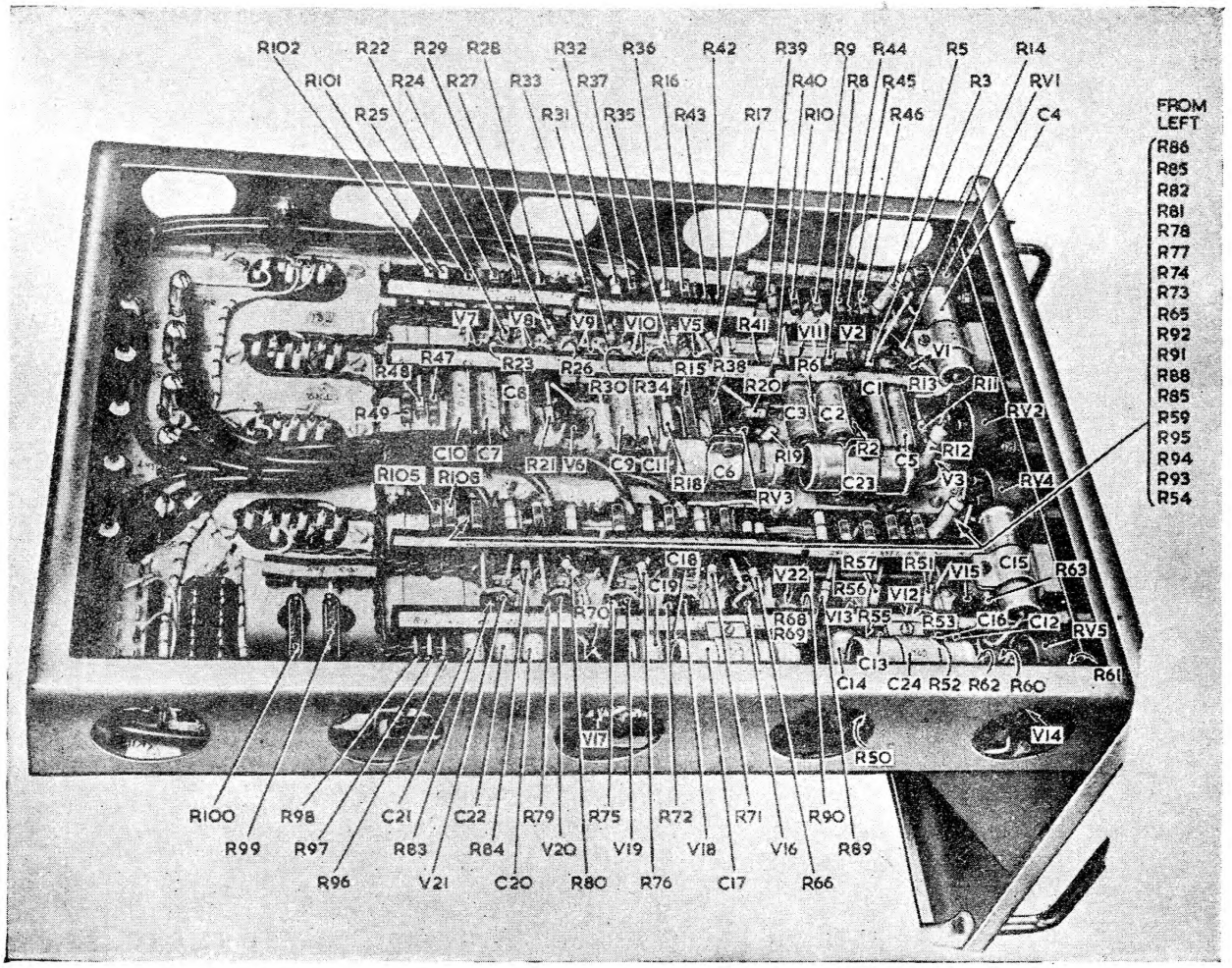


Fig. 3. Amplifying unit (video) 4416 : underneath

be noted that the preset controls will interact to a certain extent.

Output stages

10. V7-V10 are four identical cathode followers whose grids are DC restored to about −5V (across R48) by diode V6. The outputs are taken from the cathodes by coaxial cable to four coaxial sockets SK3—SK6. The log outputs are available on SK7 to SK10. Monitoring sockets SK16 and SK18 are also provided but in using them it should be remembered that appearance of pulses at SK16 and SK18 does not imply outputs at SK3—SK10. When monitoring it is advisable to remove the earth connection on the power lead to the oscilloscope because of the " floating earth " in-put. The outputs are taken off to a maximum of four head selector units which then feed the consoles.

Log. channel

11. Channel B is similar to channel A but is designed to " antilog " the differentiated output of the log. receiver and thus restore the signal-to-noise ratio of the log. channel which otherwise would not meet the requirements of the displays. This is achieved by having a greater overall gain and biasing the cathode followers below cut-off so that noise is clipped and amplified non-linearly. The gain is increased by raising the value of the anode load of the first stage (V12) and the screen volts of V15 to raise the limiting level. Adjustable bias on V18 to V21 is obtained by the inclusion of RV7, the VIDEO NOISE CLIPPER preset.

Power supplies

12. Stabilized HT supplies from power unit 4415 (*Sect.* 6, *Chap.* 6) are fed in at SK11. Mains supplies (240V, 50c/s) for the heater transformers are fed in on PL1. Current surge limiters R99 and R100 are connected in series with the transformer primary windings to protect the fuses which are indicated by lamps in the usual manner. It should be noted that the mains to the power unit is switched by SWA on the amplifier.

13. Fig. 4 is marked with voltages measured on a multimeter Type 1 under no-signal conditions.

SK12 FRONT PANEL MONITORING "LIN INPUT"
SK13
SK1 LIN INPUT VIDEO (A)
R1 75
C1 0·1μ
C2 0·5μ
C3 0·5μ
R2 1·5M
R3 470
R4 470
R5 2·7K
RV1 5K
VIDEO GAIN BEFORE LIMITER (A)
C4 1·0
225V
V1
6·5V
R6 1·5M
R7 470
R8 470
R9 1K
R10 1K
210V
V2
V3 CV 4025
R11 1·5M
R12 820
R13 120
VIDEO GAIN AFTER LIMITER (A)
RV2 500
C6 1μ
C23 1μ
245V
V4
55V
V5 CV4014 OR CV138
R14 470
R15 22K
C5 0·1μ
R16 1K
R17 470
R18 33K
245V
SET LIMITER (A)
RV3 50K
R20 47K
-2·5V
V6 CV 4025
R19 2·2K
R21 330K
R22 470
R23 470
R24 470
C7 0·1μ
240V
V7
R25 1K
R26 470
1·25V
R27 470
R28 470
C8 0·1μ
240V
V8
R29 1K
R30 470
1·25V
R31 470
R32 470
C9 0·1μ
240V
V9
R33 1K
R34 470
1·25V
R35 470
R36 470
C11 0·1μ
240V
V10
R37 1K
C10 0·1μ
1·25V
SK11 +250V
SK16 FRONT PANEL
SK17 MONITORING "LIN OUTPUT"
SK6
SK5
SK4
SK3
LIN OUTPUT VIDEO (A)

R39 330
R40 470
R42 150K
R45 56
-3·5V
4·5V
-0·25V
V11
R41 470
-125V
R44 120K
R46 120K
R38 3·3K
R43 150K
-125V
R103 5·6K
R48 1·5K
-5V
R47 120K
R49 120K
-250V

NOTE:- ALL VALVES ARE VX8135, CV2127 OR VX7102 UNLESS OTHERWISE STATED
LAMPS 1, 2, 3 & 4 ARE X96101

PL1
240V AC MAINS NEUTRAL 11
240V AC MAINS LINE 12
SWA ON OFF
X1
IN
OUT
FS1 500mA LP1
FS2 500mA LP2
FS3 500mA LP3
FS4 500mA LP4
R99 47
R100 47
TR1
TR2
+10V
0
200V
220V
240V
6·3V 3A
5V 3A
SK11
X2
R101 220K
R102 68K
-250V
+250V SK11/4
R106 220K
R105 100K

SK11
1 EARTH
7 -250V
4 +250V

SK14 FRONT PANEL MONITORING "LOG INPUT"
SK15
SK2 LOG INPUT VIDEO (B)
R50 75
C12 0·1μ
C13 0·5μ
C14 0·5μ
R51 470
R52 1·5M
R53 470
R54 2·7K
RV4 5K
VIDEO GAIN BEFORE LIMITER (B)
C15 1·0
200V
V12
7V
R55 1·5M
R56 470
R57 470
R58 1K
R59 1K
225V
V13
V14 CV 4025
R60 1·5M
R61 820
R62 120
VIDEO GAIN AFTER LIMITER (B)
RV5 500
C16 0·1μ
C17 1μ
C24 1μ
245V
V15
110V
V16 CV4014 OR CV138
R63 470
R64 22K
R65 1K
R66 470
R67 15K
245V
SET LIMITER (B)
RV6 50K
R69 47K
-5·3V
V17 CV 4025
R68 2·2K
R70 330K
R71 470
R72 470
R73 470
C18 0·1μ
V18
R74 1K
R75 470
R76 470
R77 470
C19 0·1μ
V19
R78 1K
R79 470
R80 470
R81 470
C20 0·1μ
V20
R82 1K
R83 470
C21 0·1μ
R84 470
C22 0·1μ
V21
R86 1K
R85 470
0V
SK18 FRONT PANEL
SK19 MONITORING "LOG OUTPUT"
SK7
LOG OUTPUT VIDEO (B)

R88 330
R89 470
R91 150K
R94 56
-4V
4·5V
-0·25V
V22
R90 470
-125V
R93 120K
R95 120K
R87 3·3K
R92 150K
-125V
R104 5·6K
R97 1·5K
RV7 5K
VIDEO NOISE CLIPPER
-14·5V
R96 120K
R98 120K
-250V

SK8
SK9
SK10

ALSO ISSUED AS A.D. 6156 AF/MIN

VX7102 VX8135 CV2127	CV4014 CV138	CV 2179
B9A	B7G	B7G

Fig.4

Amplifying unit(video) 4416 - circuit

Fig.4

Chapter 12

AMPLIFYING UNIT 4727

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Introduction

1. The amplifying unit 4727 (Stores Ref. 10U/16920) consists of a 3 kc/s oscillator, an audio amplifier and power output stage, together with a self-contained power pack. The unit is constructed on a standard A.M. information generator chassis and housed in the rack assembly 4722 or 4725, according to the type of station.

Application

2. The unit is used at the remote radar Type 13 site on GCI stations having a remote CHEL rôle. It operates in conjunction with the radar Type 13 and a console Type 61 in feeding relevant information concerning the aerial elevation angles. The oscillator output is fed to the magslip on the radar Type 13 and the amplitude modulated output from the Type 13 is fed into the amplifier section of this unit. The incorporation of a power output stage enables the final output to be fed, via a low impedance balanced line, to the main site. At the main site, the balanced output is fed to transformer unit 6003, a balance-to-unbalance transformer, which is mounted on panel control Type 643, on the console Type 61.

General

3. The self-contained power pack, operating from a 230V 50 c/s supply, provides all heater requirements and a stabilized 300V output for HT supply. There are facilities for measurement of valve currents and HT voltage on a built-in meter. Monitoring points for the display of internal waveforms are brought out to sockets on the front panel. A diagram of the front panel is given in fig. 1, and plan and underside views of the chassis in fig. 2 and fig. 3.

Circuit description

4. A circuit diagram of the complete unit is given in fig. 4.

Oscillator

5. V7 (CV 138) is used in a four-mesh phase-shift oscillator circuit which has a fixed frequency of 3 kc/s ± 750 c/s.

6. The output of the phase-shift oscillator is limited by a diode V8 (CV 140) and fed to a cathode follower V9 (CV 138). The front panel control marked AMPLITUDE, which is RV2, in the grid circuit of V9, enables the amplitude of oscillation to be varied. The output from the cathode follower is taken to SK1 for feeding to the radar Type 13 magslip.

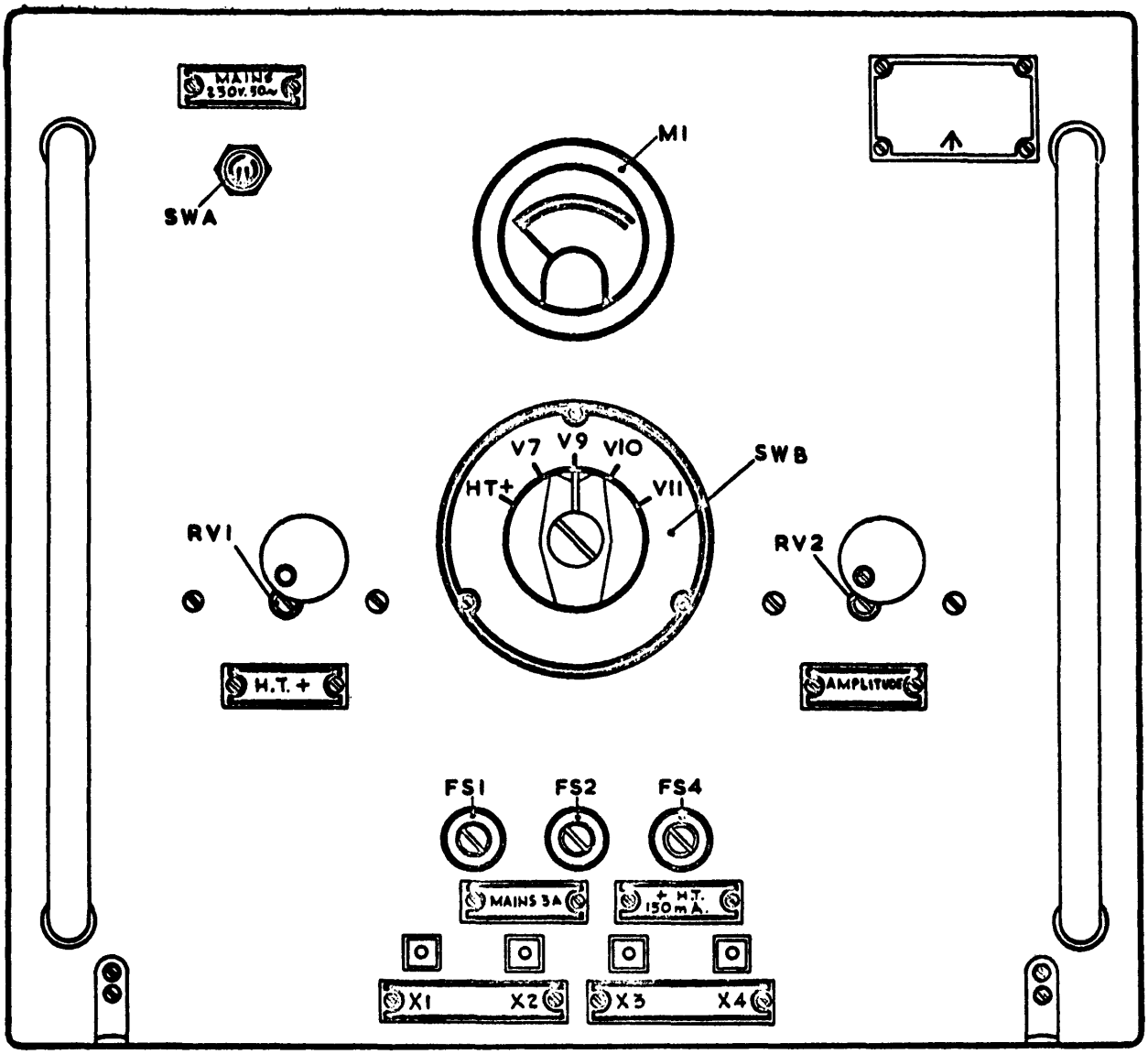


Fig. 1. Amplifying unit 4727—front panel

Amplifier

7. The amplitude modulated output from the radar Type 13 magslip is fed to SK2, whence it is fed to a conventional two-stage amplifier consisting of the first half of V10 (CV 491) and V11 (CV 2136).

8. Negative feedback is applied to the second half of V10 from the secondary of the output transformer TR2. The circuit employed to do this ensures that the negative feedback connection has negligible effect on the balance of the output from TR2. The balanced output is taken to pins 5 and 6 of PL1.

Power supplies

9. The built-in power pack is energized from the 230V 50 c/s mains supply which is fed in at pins 11 and 12 of the Jones plug PL1; the supply is applied to the primary of the mains transformer TR1 via the double-pole switch SWA. HT is obtained from the 420-0-420V winding, rectified by V1 and V2 (both CV 493) in parallel and smoothed by a condenser input pi-section filter. The HT is regulated at 300V by a triode-connected pentode V3 (CV 391) acting as a series impedance in the HT positive line. The impedance of V3 is controlled by a DC amplifier V6 (CV 139) in conjunction with neon stabilizers V4 (CV 284) and V5 (CV 449).

10. The action of the stabilizing circuit is as follows. A change in the HT output, produced either by a change in load or in mains voltage, produces a change on the grid of V6 due to the potentiometer chain consisting of R15, RV1, R16, R56 and R17. The cathode potential of V6 being stabilized by V5, a change in bias on the valve results in a change in anode potential. The latter change is in opposite phase to that on the grid, but is considerably amplified. Due to this amplification, changes in the HT supply voltage to V6 have little effect on the magnitude of the voltage change at the anode. The anode of V6 is connected to the grid of V3 and the effect of the voltage change is to swing the impedance of V3 to compensate for the original voltage change.

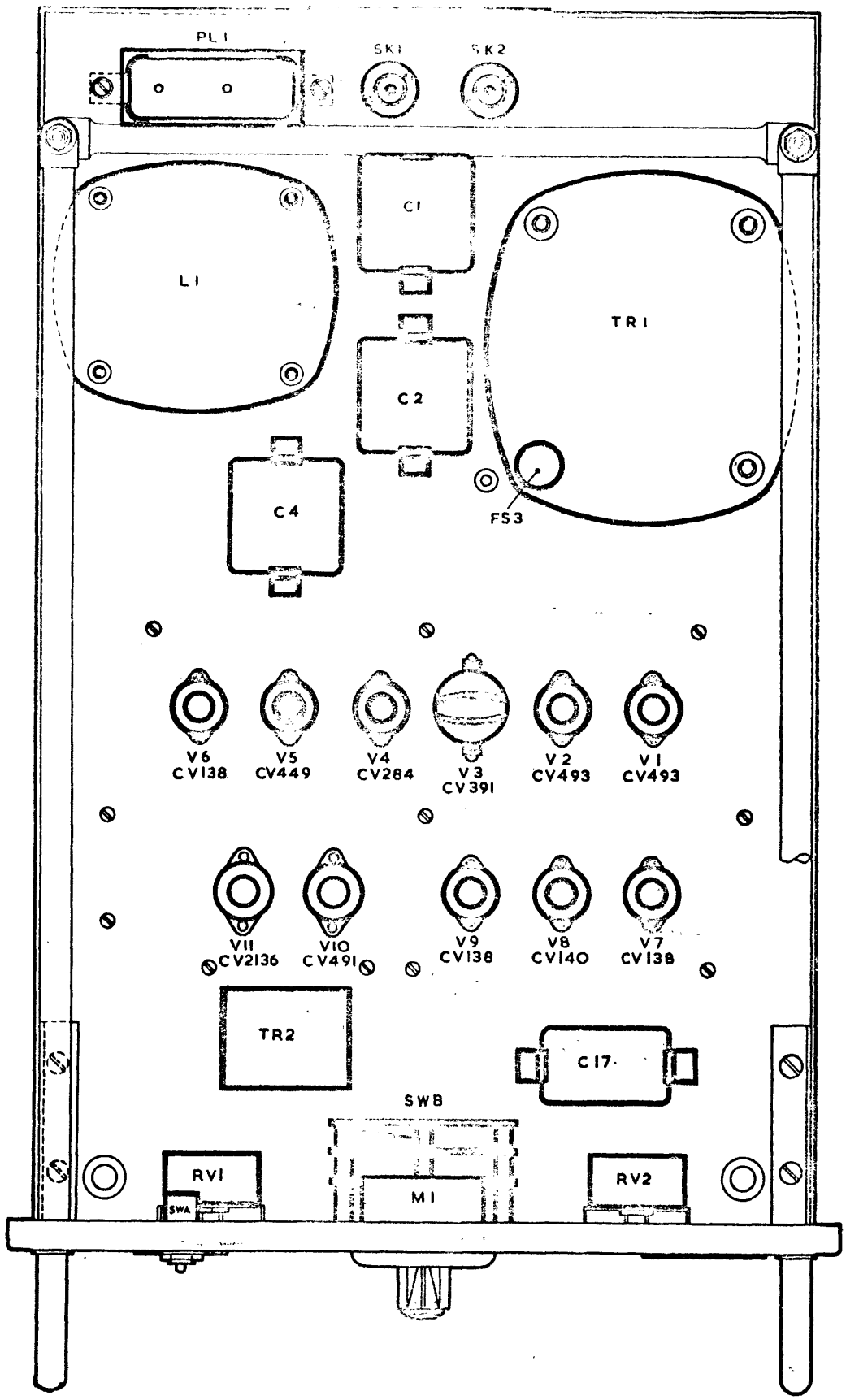


Fig. 2. Amplifying unit 4727—plan view

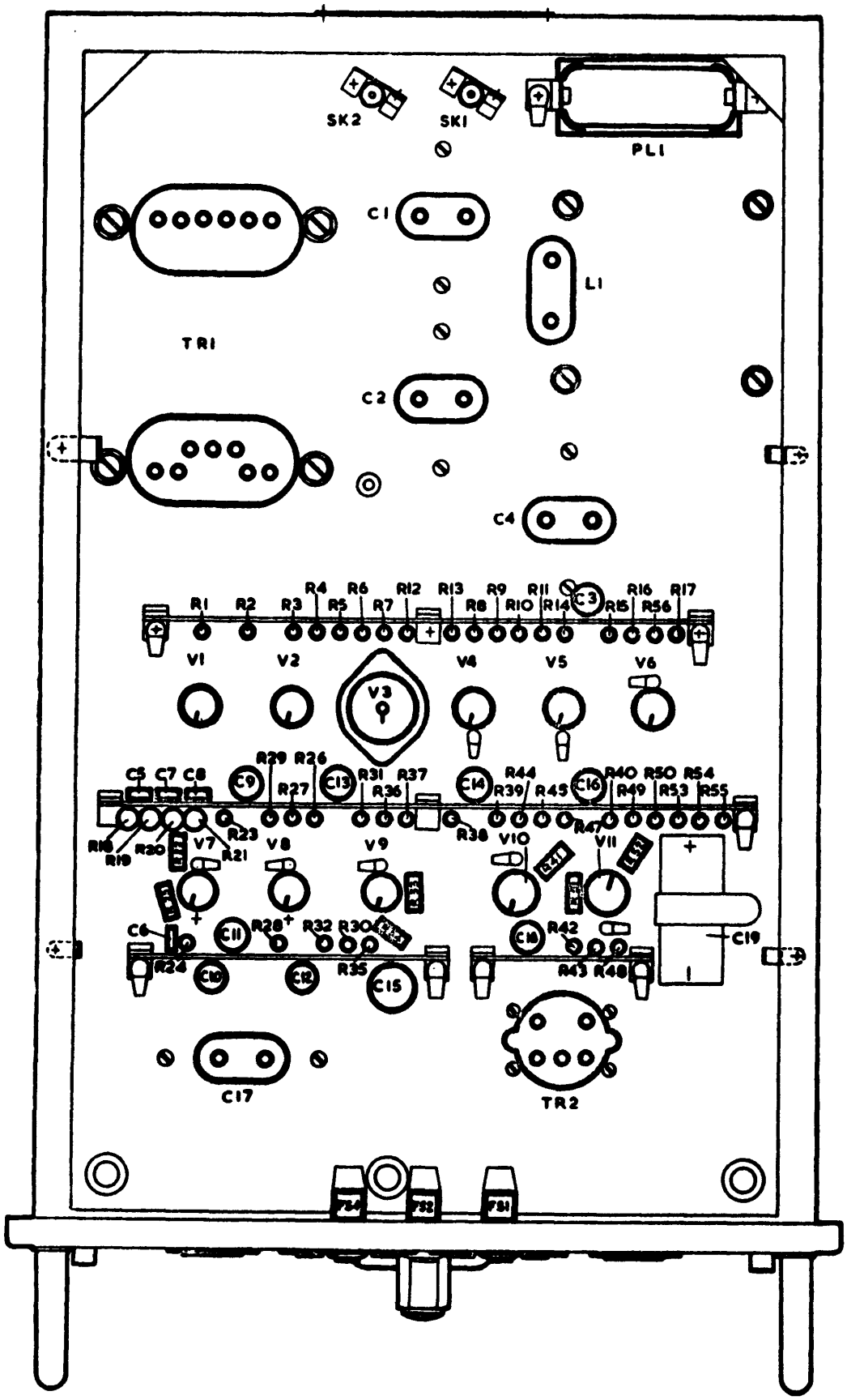
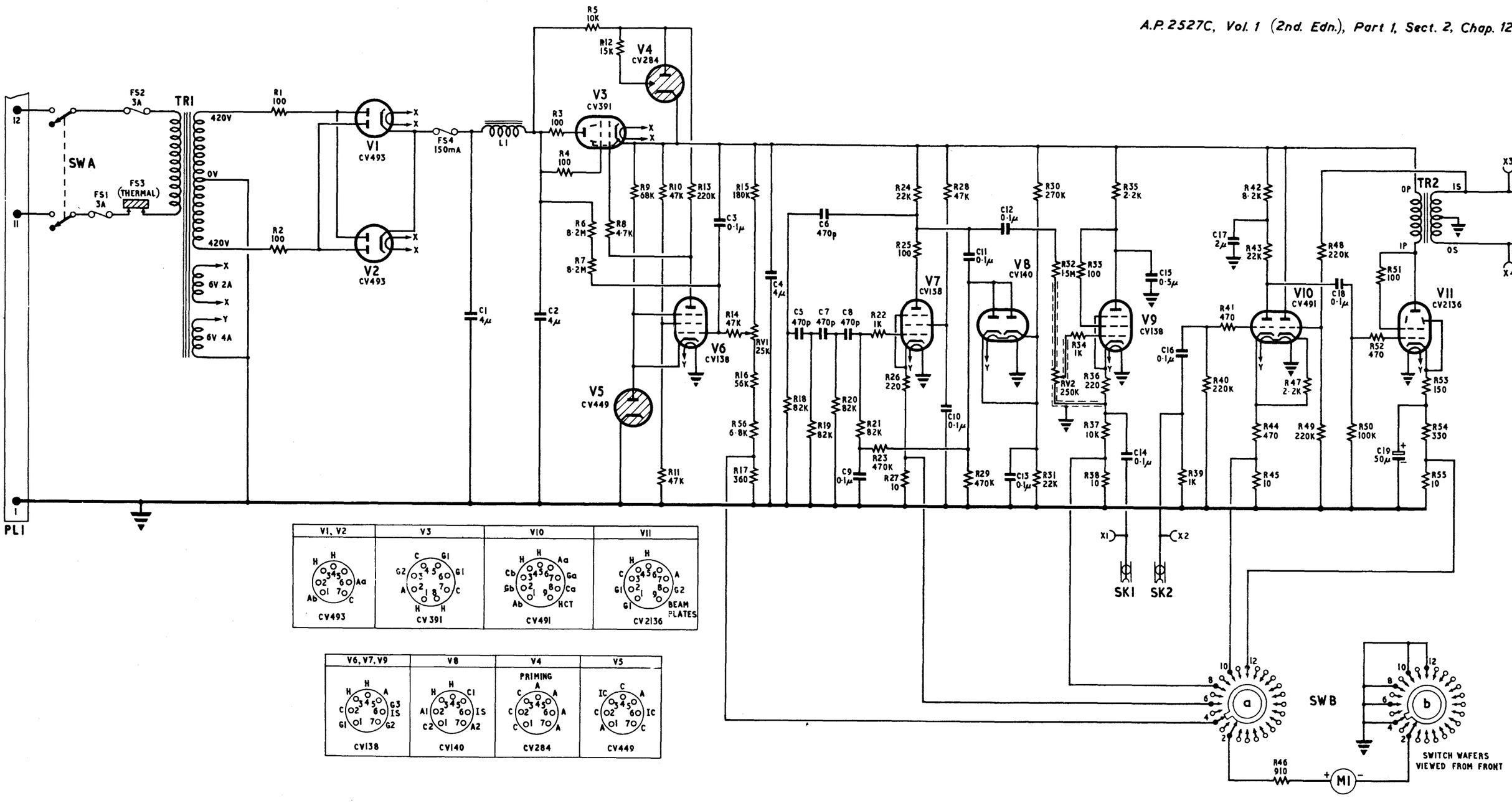


Fig. 3. Amplifying unit 4727—under chassis view



V1, V2	V3	V10	V11
CV493	CV391	CV491	CV2136

V6, V7, V9	V8	V4	V5
CV138	CV140	CV284	CV449

Fig.4

Amplifying unit 4727 — circuit

Fig.4

Chapter 13

AMPLIFYING UNIT 4728

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Introduction

1. The amplifying unit 4728 (Stores Ref. 10U/16921) consists of two IF amplifiers (amplifying units 513), two attenuator units Type 113 and a self-contained power pack. The unit is constructed on a standard A.M. information generator chassis and housed in the rack assembly 4722 or 4725 according to the type of station.

Application

2. The unit is used at the remote radar Type 13 or Type 14 sites on Rotor stations having a remote CHEL role. Its function is to raise the signal level output from the head amplifier on either the radar Type 13 or Type 14 before the outputs are fed into amplifier Type A.3719 and thence via the single coaxial cable to the main site.

General

3. The self-contained power pack, operating from a 230V 50 c/s supply, provides all heater requirements and a stabilized 280V output for HT supply. There are facilities for measurement of HT supplies on a built-in meter. Monitoring points for the display of internal waveforms are brought out to sockets on the front panel. A diagram of the front panel is given in fig. 1 and plan and under chassis views of the chassis in fig. 2 and fig. 3 respectively.

CIRCUIT DESCRIPTION

4. A circuit diagram of the complete unit is given in fig. 5. A circuit diagram of the amplifying unit 513 is given in fig. 4.

5. The unit consists of two identical 45 Mc/s amplifiers, amplifying units 513, each of which is preceded by an attenuator unit Type 113 ; the setting of these attenuators controls the level at the output, there being no gain adjustments provided on the amplifying units. Facilities are provided for disconnecting the attenuator units when no attenuation is required.

6. Referring to fig. 5, the input for the first channel is connected to SK1 whence it is routed via PL2, SK1 and SK2 (on attenuator unit 113, X1), PL4 and PL5 to SK1 (on amplifying unit 513, X3). The output from SK2 (on amplifying unit 513, X3) is taken to PL8 and thence to SK3, which is the output socket for the first channel. When no attenuation is required plugs

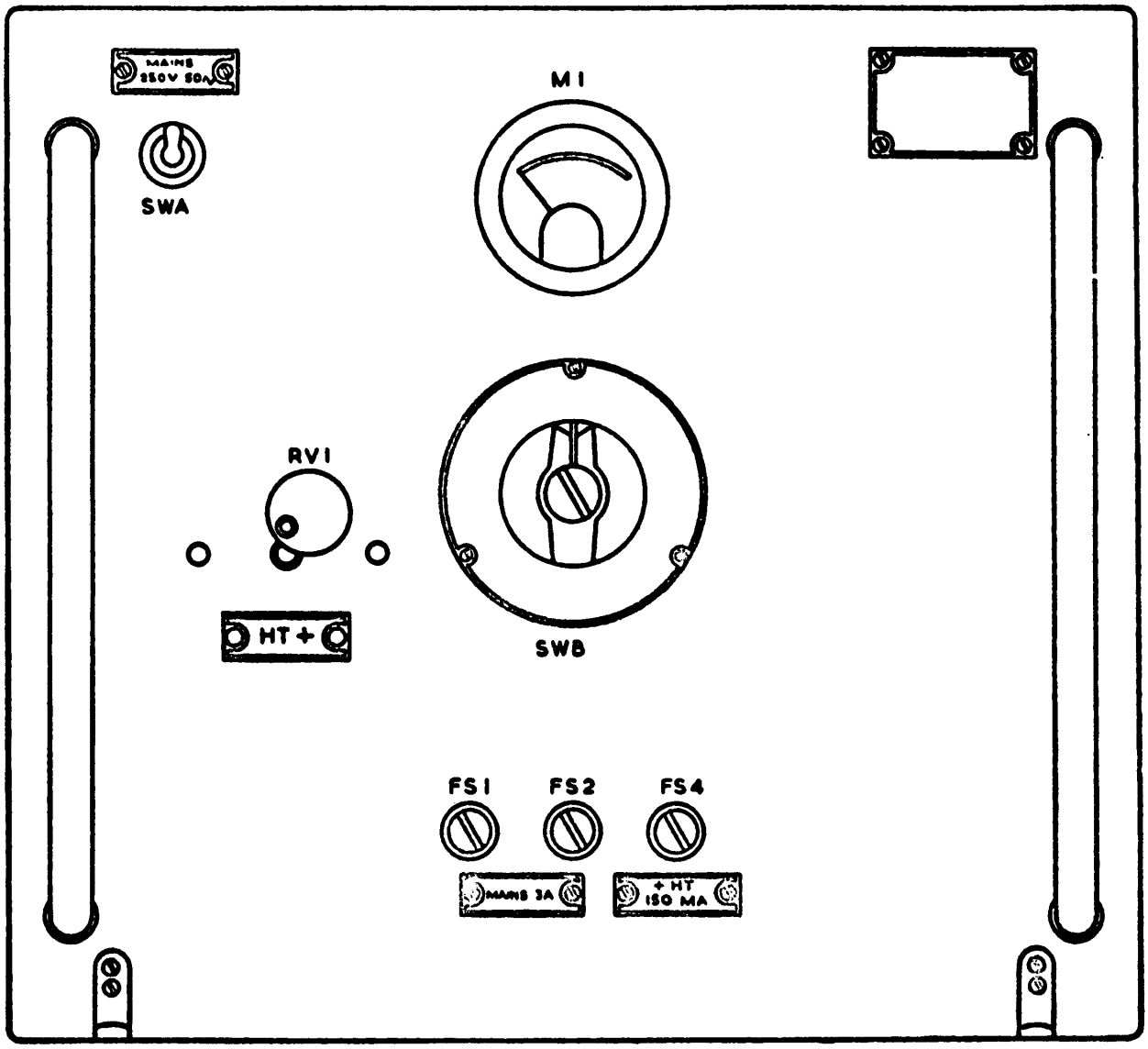


Fig. 1. Amplifying unit 4728—Front panel

PL2 and PL4 are disconnected from the attenuator unit 113 and inserted into the double-ended socket SK5 which is mounted underneath the chassis near the attenuator unit. Similar routeing and facilities are provided for the second channel, the input in this instance being at SK2 and the output at SK4.

Amplifying unit 513

7. As this unit has recently been considerably modified and bears little resemblance to the unit formerly carrying this title, the description of its circuit (fig. 4) will be given in detail in the following paragraphs.

8. The input to the amplifying unit is connected to a 63-ohm tap on the input inductor L2, which is broadly resonant at 45 Mc/s. The RF voltage developed across the inductor is applied to the grid of the triode V1.

Cascode stage

9. Valves V1 and V2 form a cascode RF amplifier. This type of circuit consists basically of a neutralized triode amplifier, V1, the output of which is coupled to the input circuit of a grounded grid triode, V2. The cascode amplifier is widely used in VHF applications, the chief advantages being the low noise factor and the inherent stability of the circuit. The two triode valves have an overall gain approximately equivalent to that obtained from a single pentode stage, with a noise factor reduced by approximately one half.

10. The reduction in noise is mainly due to the absence of the partition noise that occurs in a pentode valve; stability is achieved by the damping imposed on the anode circuit of the first valve by the low input impedance of the grounded grid stage.

11. V1 is transformer coupled through TR1 to V2. TR1 is a bifilar-wound transformer giving unity coupling between the circuits and

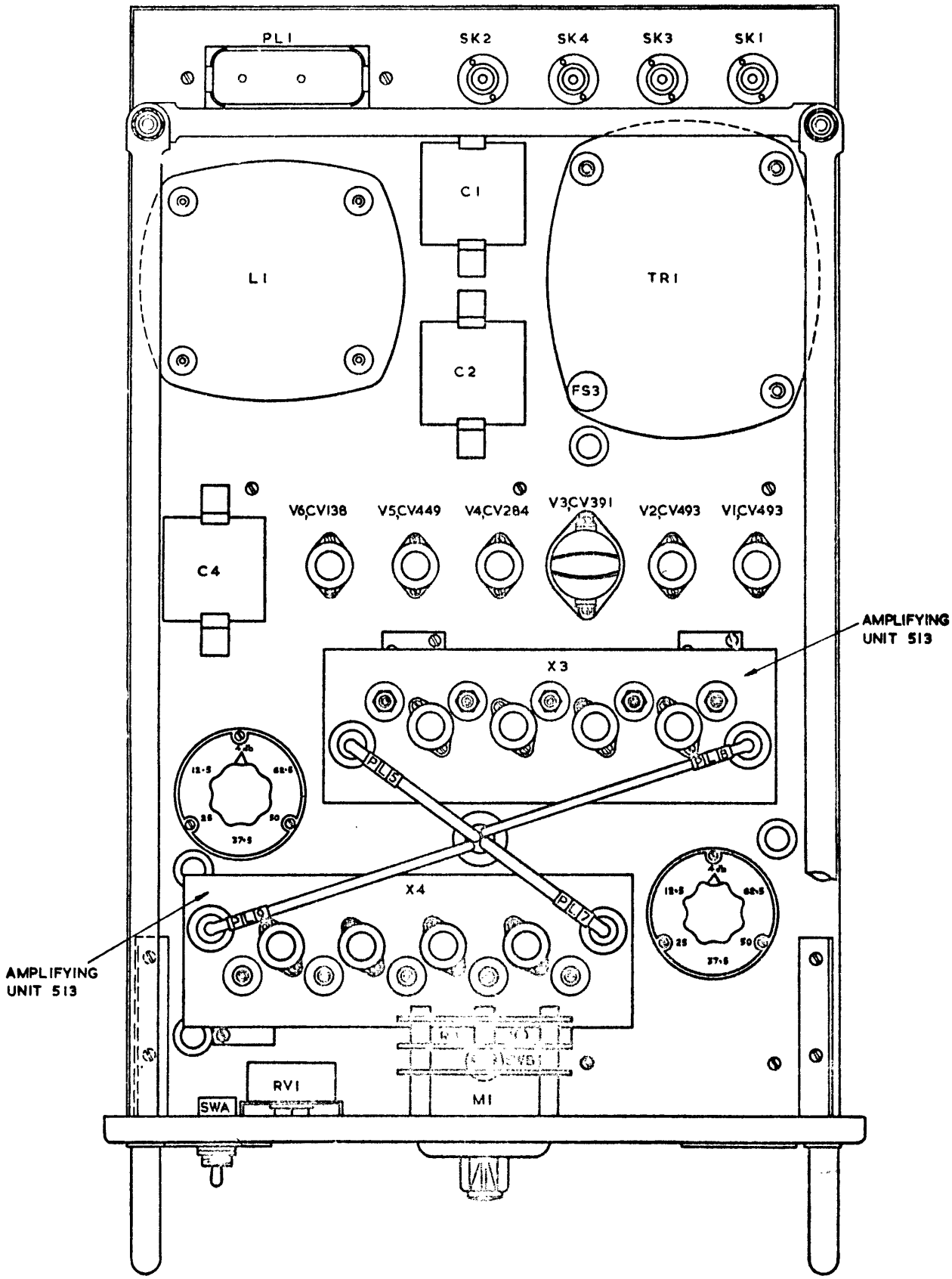


Fig. 2. Amplifying unit 4728—Plan view

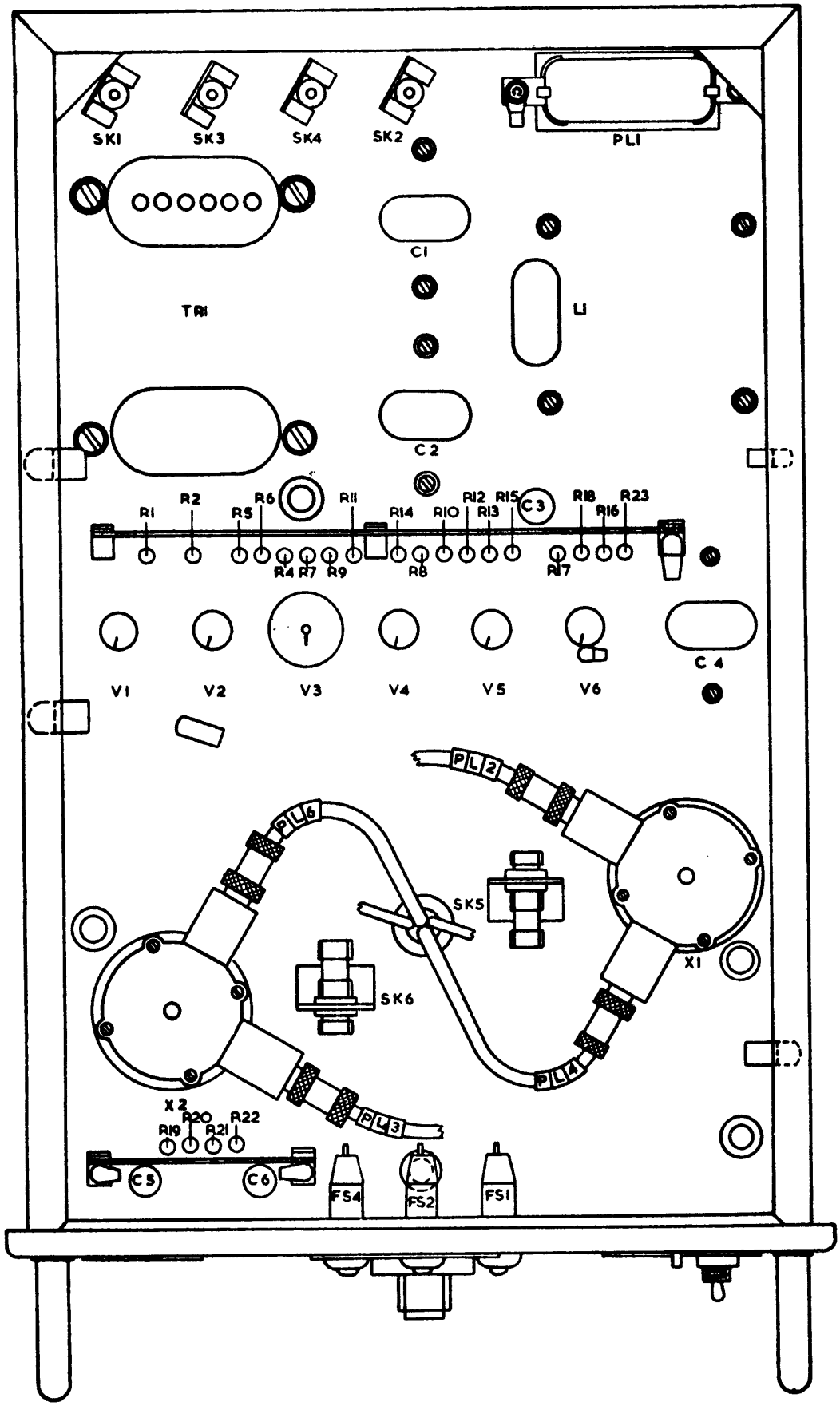


Fig. 3. Amplifying unit 4728—Under chassis view

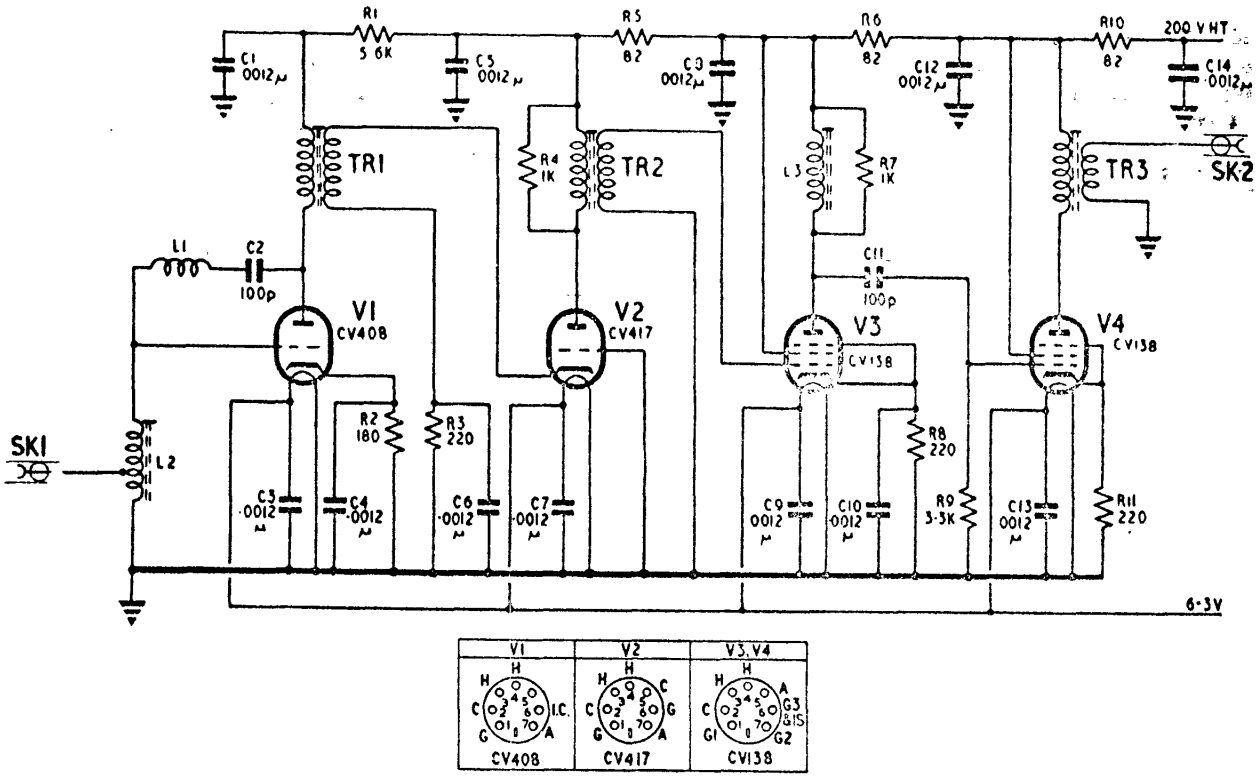


Fig. 4. Amplifying unit 513—Circuit

consequently has a response similar to that of a single tuned circuit. The transformer is permeability-tuned to resonate with its self-capacitance and stray circuit capacitances to 45 Mc/s; the low input impedance of V2 damps the transformer to give the desired wide-band response. This type of transformer is employed to eliminate the need for a coupling capacitor and grid resistor, with their associated time constant, as the amplifier has to deal with short RF pulses.

12. Grid bias for V1 and V2 is derived from the cathode resistors R2 and R3 respectively, decoupled by C4 and C6.

Pentode stages

13. The cascode stage is followed by two pentode amplifiers, V3 and V4. The anode circuit of V2 is coupled to the grid of V3 through a bifilar-wound transformer TR2. In this instance the damping imposed by the grid circuit of V3 is insufficient to give the required bandwidth and additional damping is introduced by R4, connected across the primary of TR2.

14. The anode load of V3 consists of L3 damped by R7. The anode of V3 is capacitance-coupled via C11 to the grid of V4, R9 being the grid resistor for this valve. The anode circuit of V4 is transformer-coupled through TR3 to the output socket SK2.

15. Grid bias for V3 and V4 is derived from the cathode resistors R8 and R11 respectively. R8 is decoupled to RF by C10.

HT and heater supply circuits

16. The HT supply to each valve is decoupled by the resistors R1, R5, R6 and R10 and the associated bypass capacitors C1, C5, C8, C12 and C14. R1 also lowers the voltage applied to the anode of V1 to achieve optimum operating conditions for this stage. The valve heaters are decoupled by the capacitors C3, C7, C9 and C13.

Power unit

17. The built-in power pack is energized from the 230V 50 c/s mains supply which is fed in at pins 11 and 12 of the Jones plug PL1; the supply is applied to the primary of the mains transformer TR1 via the double pole switch SW A. HT is obtained from the 420-0-420V winding, rectified by V1 and V2 (both CV 493) in parallel and smoothed by a condenser input pi-section filter. The HT is regulated at 280V by a triode-connected pentode V3 (CV 391) acting as a series impedance in the HT positive line. The impedance of V3 is controlled by a DC amplifier V6 (CV 138) in conjunction with neon stabilizers V4 (CV 284) and V5 (CV 449).

18. The action of this type of stabilizing circuit is described in detail in Chapter 12 of this section.

19. The value of the stabilized HT output is determined by the setting of the front panel control marked HT + (RV1). Variation of RV1 gives a control of HT voltage over the range 230V to 300V, and this control is normally set to give a voltage of 280. Due to the action of the stabilizing circuit, this HT voltage remains

constant within ± 2V if the mains input is varied from 217V to 244V.

20. Two 6·3V windings are provided on TR1; one for the heaters of V1, V2 and V3, the other supplying the heater requirements of the other valves.

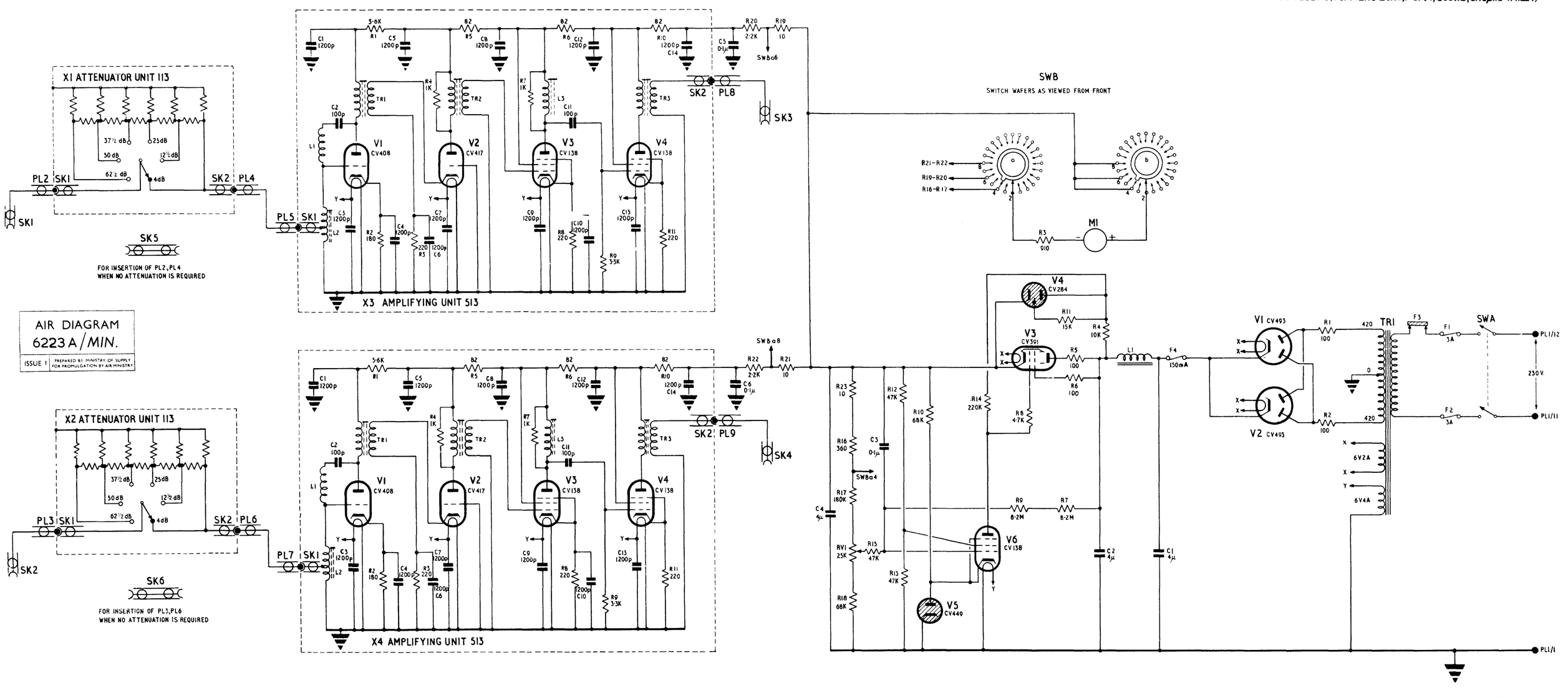
Metering

21. The meter M1 is mounted on the front panel and can be switched by SW B to measure the stabilized HT voltage or the HT supply to either amplifying unit 513. Meter readings are given in Table 1. It should be noted that the readings are taken with the HT + control set to give 280V.

TABLE 1

Meter readings

Switch position	*Reading*
HT +	2·66 to 2·94
AMP 1	2·88 to 3·52
AMP 2	2·88 to 3·52



Amplifying unit 4728 – circuit

Fig.5

Chapter 14

AMPLIFYING UNIT (VIDEO) 4416A

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GENERAL

1. Amplifying unit (video) 4416A (*fig.* 1, 2 *and* 3) contains two separate but similar video amplifier channels. The lin. channel accepts the output from amplifying unit (linear) 4141A and the other channel, the log. channel accepts the output of amplifying unit (logarithmic) 4142A. Both amplify and limit the signals from Radar Type 80 before passing them to the display consoles. This unit is similar to amplifying unit (video) 4416 (Chap. 11).

2. The linear channel has an overall effective bandwidth of 1 Mc/s, achieved by the use of R-C coupled stages with low values of anode loads. The log. channel provides a larger amount of amplification with an overall bandwidth of 0·5 Mc/s. Limiting circuits are included in both channels to ensure that strong returns do not overload the display circuits. Since a long length of coaxial cable may be necessary to carry the video from the radar head to the radar office, an unbalanced-to-balanced input circuit is used to minimize hum voltages picked up by the cable. Each channel provides four low impedance outputs to the display consoles with a minimum overall gain of approximately 10 on signals which do not limit for the linear channel and of approximately 20 for the logarithmic channel. The log channel provides bottom of the noise clipping and non-linear amplification for antilogging.

3. The unit contains heater transformers, but HT is obtained from power unit 4415A, which provides stabilized supplies of +250V and −250V. The following circuit description applies mainly to the linear channel. The differences to be met in the logarithmic channel are discussed in paragraphs 11 and 12.

CIRCUIT DESCRIPTION

Input circuit

4. V1 and V2 are connected as a long-tailed pair with the variation that V2 grid, instead of being connected to chassis (*A.P.* 1093*E*, *Chap.* 7, *Sect.* 23) is connected via C3 to the outer of the video coaxial cable (*fig.* 4). This connection ensures that pick-up on the cables is cancelled out or minimized.

5. The cable (of 75-ohm impedance) is terminated by R1, a 75-ohm resistor connected across the coaxial socket SK1. Now, since the outer is earthed only at the linear amplifier, we can suppose pick-up appears on both the inner and outer of the cable in the same phase and of approximately the same amplitude. Thus, considering the noise voltages as positive-going, the grids of V1 and V2 will rise together, and both valves will try to draw more current. A rise in current in V2 causes a rise in voltage on V2 cathode. Now the cathodes of V1 and V2 are connected together so that V1 cathode rises in step and the net result is that, if the voltages on V1 and V2 grids are equal, there is no rise in current in V1 and consequently no output from V1's anode circuit.

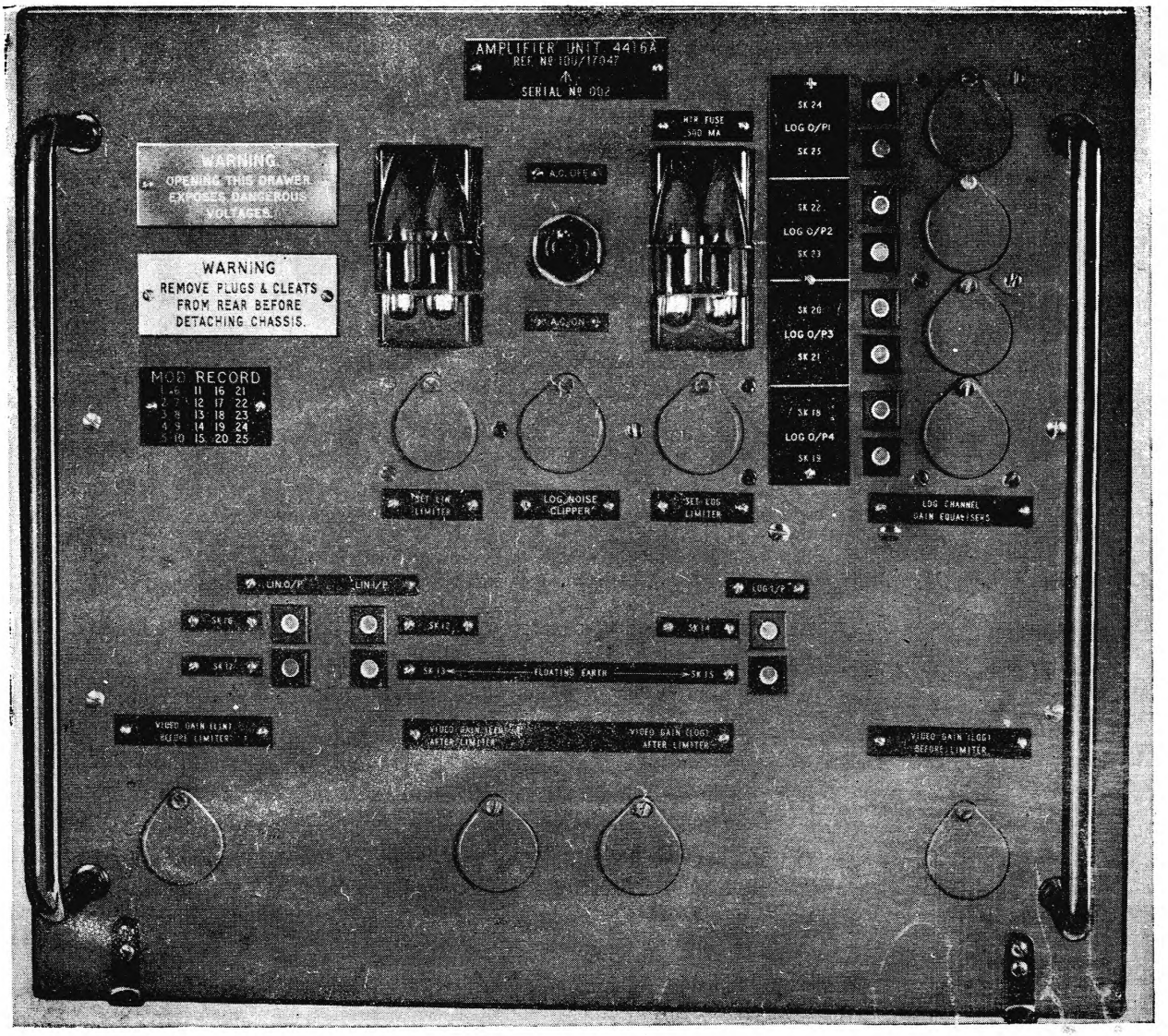


Fig. 1. Amplifying unit (video) 4416A : front panel

Long-tailed pair

6. Signals appear on the inner only and are positive-going so that the current in V1 increases, producing a voltage across the anode load, while that in V2 decreases nearly by the same amount due to the common cathode connection. The advantage of using the valve V11 as the common cathode load is that it has a high AC impedance, a desirable feature in the cathode load of a long-tailed pair. The valve also has a low DC low volts drop across it, enabling V1 and V2 to work at higher current levels than would be possible if the cathode load were a pure resistance.

7. The output is taken from the anode load of V1. The load is a variable resistor, RV1, in parallel with a fixed resistor, R5. The variable resistor provides a preset gain control, VIDEO GAIN (LIN.) BEFORE LIMITER, and the negative-going output from the slider of RV1 is taken via C4 to the grid of V4.

R-C amplifier and limiter

8. V4 is an R-C coupled amplifier whose grid is returned to a negative bias voltage derived from a resistance chain across the —250V supply. The voltage across R45 is about —0·25V, which keeps the anode and screen dissipation of V4 within limits. V4 grid is DC restored to the —0·25V level by a double diode V3 which is connected as a single diode across the grid leak R11.

9. The screen grid voltage of V4 is obtained from a cathode-follower V5, which provides a low impedance source and keeps the voltage substantially constant. The control grid of V5 is connected to the slider of RV3, whose settings fixes V4's screen potential. This varies the grid base of the valve. Large pulses on the grid of V4 take the valve beyond cut-off and, as cut-off is determined by the screen volts, the only variable is the SET LIN. LIMITER control RV3. The positive-going signals on the anode of V4 are tapped off from RV2, VIDEO GAIN LIN. AFTER LIMITER, and taken by C6 and C23 in parallel to the grids of the four output cathode-followers.

It should be noted that the preset controls will interact to a certain extent.

Output stages

10. V7-V10 are four identical cathode-followers whose grids are DC restored to about −5V (across R48) by diode V6. The outputs are taken from the cathodes by coaxial cable to four coaxial sockets SK3-SK6. Monitoring sockets SK16 and SK17 are also provided, but in using them it should be remembered that the appearance of pulses at SK16 does not imply outputs at SK3-SK5. When monitoring it is advisable to remove the earth connection on the power lead to the oscilloscope because of the " floating earth " input. The outputs are taken off to a maximum of four head selector units which then feed the consoles.

Log. Channel

11. This channel is similar to the linear channel but is designed to " antilog " the differentiated output of the log. receiver and thus restore the signal-to-noise ratio of the log. channel which otherwise would not meet the requirements of the displays. This is achieved by having a greater overall gain and biasing the cathode followers below cut-off so that noise is clipped and amplified non-linearly. The gain is increased by raising the value of the anode load of the first stage (V12) and the screen volts of V15 to raise the limiting level. Adjustable bias on V18 to V21 is obtained by the inclusion of RV7, the LOG. NOISE CLIPPER preset.

Output stages

12. The four cathode followers V18 to V21 have their individual outputs taken to monitoring points on the front panel (*fig.* 1). Their outputs are equalized by the potentiometers RV8 to RV11 connected in the screen HT supply to the respective cathode followers.

Power supplies

13. Stabilized HT supplies from power unit 4415 are fed in at SK11. Mains supplies (240V, 50 c/s) for the heater transformers are fed in on PL1. Current surge limiters R99 and R100 are connected in series with the transformer primary windings to protect the fuses which are indicated by lamps in the usual manner. It should be noted that the mains to the power unit is switched by SWA on the amplifying unit (video) 4416A.

SETTING UP

General

14. The setting up procedure is included in this chapter pending the issue of Vol. 5 servicing procedures. It is intended to serve as an aid to identify the various controls and monitoring points of the amplifying unit 4416A but, for completeness, the setting up procedure of the receiver unit 6124 (*Sect.* 6, *Chap.* 3 of *A.P.*2527*QA*) is also included.

15. In setting up the receiver 6124 and amplifying unit (video) 4416A the object is to provide outputs, to the display consoles, which are above the noise level in the case of minimum detectable signals, whilst strong signals are limited in amplitude. The linear and logarithmic channels of the amplifying unit (video) 4416A are adjusted to give similar noise and limited signal outputs. The linear channel is set up first and used as a reference for the log. channel. Before setting up, the signals must be available at the input to receiver unit 6124 and amplifying unit (video) 4416A.

Rotating cabin

16. With the local oscillator on tune and the tuning motor off; switch off the transmitter. Check that the noise factor of the Type 80 Mk. 3 is less than 8·5 dB.

Linear amplifier

17. Adjust the RECEIVER GAIN LINEAR control on receiver unit 6124 for 110 μA second detector current.

18. To check that the local oscillator is correctly on tune, run up the transmitter, switch on the spectrum analyser and ensure that the local oscillator lobe on the display is in the centre of the transmitter main lobe.

Log. amplifier

19. Using the CT316, in rack assembly test 6100, set the Y SENSITIVITY to 1V, T.B. COARSE to position 2 and the INPUT IMPEDANCE TO Y AMPLIFIER switch to HIGH IMP. Proceed as follows :—

(1) Monitor the output of the log. amplifier on the front panel of receiver unit 6124 (bottom right).

(2) Set the gain control on the log amplifier chassis to minimum (fully counter-clockwise).

(3) Slowly increase the gain control until the noise output appears to limit (on the CT316). This usually occurs at about 2 on the gain control scale of a new log. amplifier.

Radar office

20. The following items of test gear will be required for setting up :—

(1) Oscilloscope CT316

(2) Oscilloscope 8165

(3) Five 68-ohm terminating units. (Terminating unit Type 34.)

21. Switch on power unit 4415A and amplifying unit (video) 4416A and allow a 15-minute warming up period.

Power unit 4415A

22. Check by means of the voltmeter and selector switch on the front panel of the power unit 4415A (*Sect.* 6, *Chap.* 8) that the output voltages are correct to within ±2 per cent.

Amplifying unit (video) 4416A

23. Terminate all four lin. channels (SK3 to SK6) with terminating units type 34. Terminate

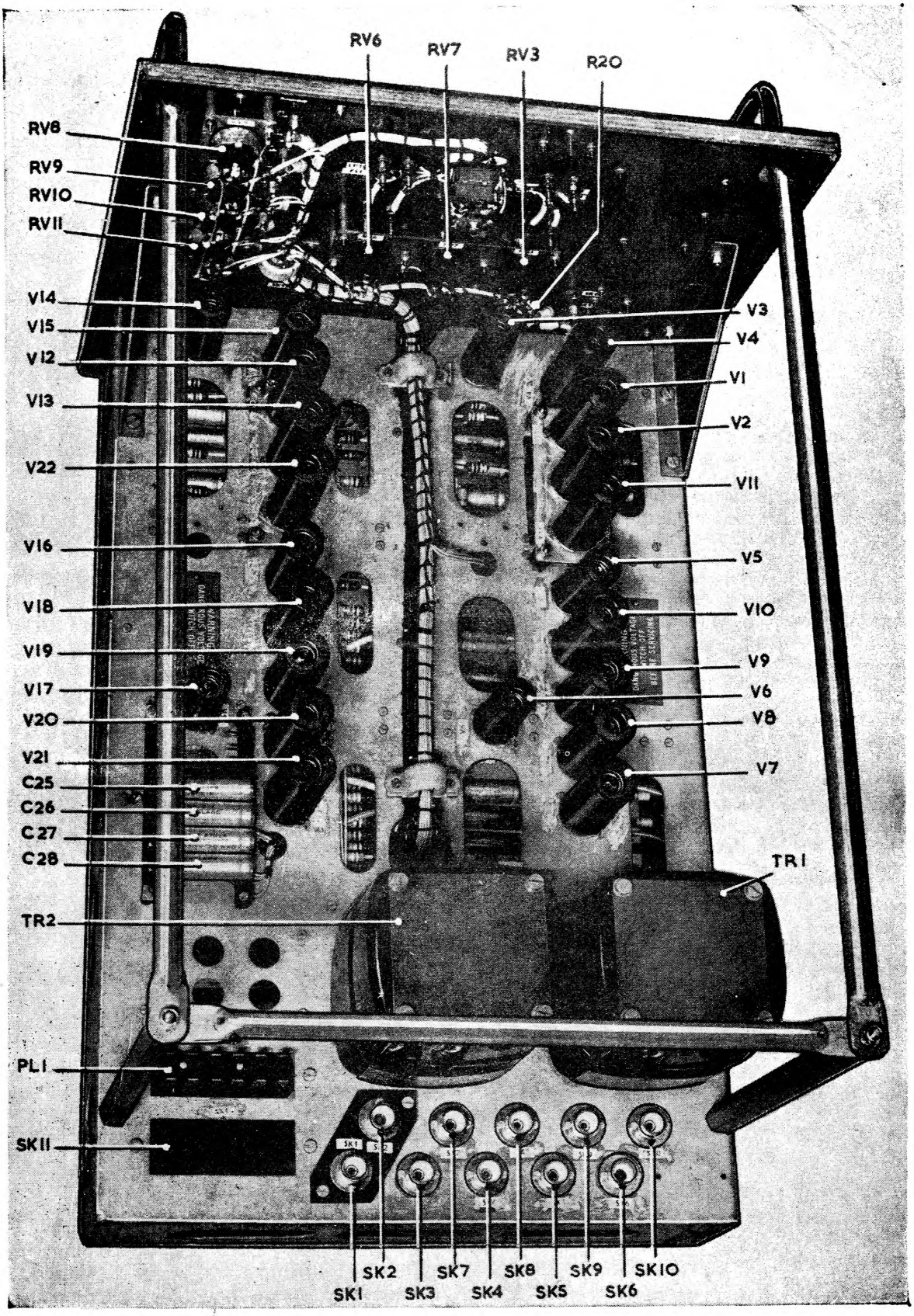


Fig. 2. Amplifying unit (video) 4416A : top of chassis

SK7 in the log. channel with the remaining terminating unit and remove connecting cables to SK8, 9 and 10. With the CT316 set to Y SENSITIVITY to IV and TB COARSE set to 2, trigger the CT316 either from the PRE PULSE monitor point on trigger unit 4413, or from the T.80 PRIMARY SUB-TRIGGER 1 (or 2) monitoring points on trigger unit 4890 where the Type 80 is triggered from the Type 7. Proceed as follows :—

(1) Connect the CT316 input between SK12 and SK13 and monitor the lin. channel input. The input should have a shoulder level of between 0·25 and 0·5V noise.

(2) Transfer the CT316 input connections to SK14 and SK15 and monitor the log. channel input. The input should have a shoulder level of between 0·18 and 0·5V noise.

24. To set up the lin. channel of the amplifying unit (video) 4416A, proceed as follows :—

(1) Connect the CT316 between SK16 and SK17.

(2) Turn the VIDEO GAIN (LIN.) BEFORE LIMITER and SET LIN. LIMITER controls for maximum output (*clockwise*).

(3) Adjust the VIDEO GAIN (LIN.) BEFORE LIMITER control to give a shoulder level noise of 0·5V.

(4) Adjust the SET LIN. LIMITER control for a maximum limited signal of 2V.

(5) Adjust the VIDEO GAIN (LIN.) AFTER LIMITER control for a maximum limited signal level from permanent echoes of 1·8V.

(6) Readjust, if necessary, the VIDEO GAIN (LIN.) BEFORE LIMITER control for a noise shoulder level of 0·6V.

(7) Check that outputs at SK3, 4 and 5 are 0·6V±0·1V ; if they are not within these limits change the output valves.

(8) Remove the terminating units and restore the lin. channel cables to their normal position. The lin. channel is now set up.

25. The log. channel is set up using the CT316, adjusted as in the lin. channel procedure (*para.* 24), as follows :—

(1) Connect the CT316 between LOG. O/P 4, (SK18 and SK19).

(2) Turn the VIDEO GAIN (LOG.) BEFORE LIMITER, VIDEO GAIN, VIDEO GAIN (LOG.) AFTER LIMITER and SET LOG. LIMITER controls to maximum signal output (*fully clockwise*).

(3) Adjust the VIDEO GAIN (LOG.) BEFORE LIMITER control to give shoulder level noise of 4·5V.

(4) Adjust the LOG NOISE CLIPPER control to give a shoulder level noise of 0·6V.

(5) Adjust the SET LOG. LIMITER control for a maximum limited signal level from permanent echoes of 1·8V.

(6) Readjust, if necessary, the VIDEO GAIN (LOG.) BEFORE LIMITER control to give a shoulder level noise of 0·6V.

(7) Readjust, if necessary, the SET LOG. LIMITER control as in (5).

26. Match up the cathode follower output channels as follows :—

(1) Connect the terminating units Type 34 to SK8, 9 and 10.

(2) Check that the noise level is 0·6V±0·1V at SK8, 9 and 10. This is done by connecting the CT316 to the log. output channel monitoring points on the front panel.

(3) Adjust the relative LOG. CHANNEL GAIN EQUALISER control if the noise level is not 0·6V±0·1V.

(4) Remove all four terminating units and return the connecting cables to their original positions.

Console 64

27. The final setting for the noise levels in the log. and lin. channels is obtained by comparing the noise patterns on the PPI display. The aim is to balance the noise levels in the two channels so that when the Head Selector switch on the console 64 selects log. or lin. signals the noise pattern is about optimum on both channels without readjusting the signal levels. This is done by adjusting the video GAIN BEFORE LIMIT controls on both channels and keeping the noise within 0·6V±0·1V.

Hum level

28. To ensure that no undue hum is generated within the amplifying unit 4416A, or picked up by the cables connecting the receiver unit 6124 outputs to amplifying unit (video) 4416A, disconnect cables 191 and 192 from the receiver unit 6124. Using oscilloscope 8165 (Cossor oscilloscope 1035) with the T.B. switch to REPETITIVE Y1 and 20 MILLISECS., set the A1 amplifier sensitivity to 50 MV. Measure the hum outputs of the lin. and log. channels at the monitoring points on the front panel of amplifying unit (video) 4416A by connecting them to the A1 AC INPUT terminals of the oscilloscope. The hum displayed must be less than 20 mV peak-to-peak for each channel.

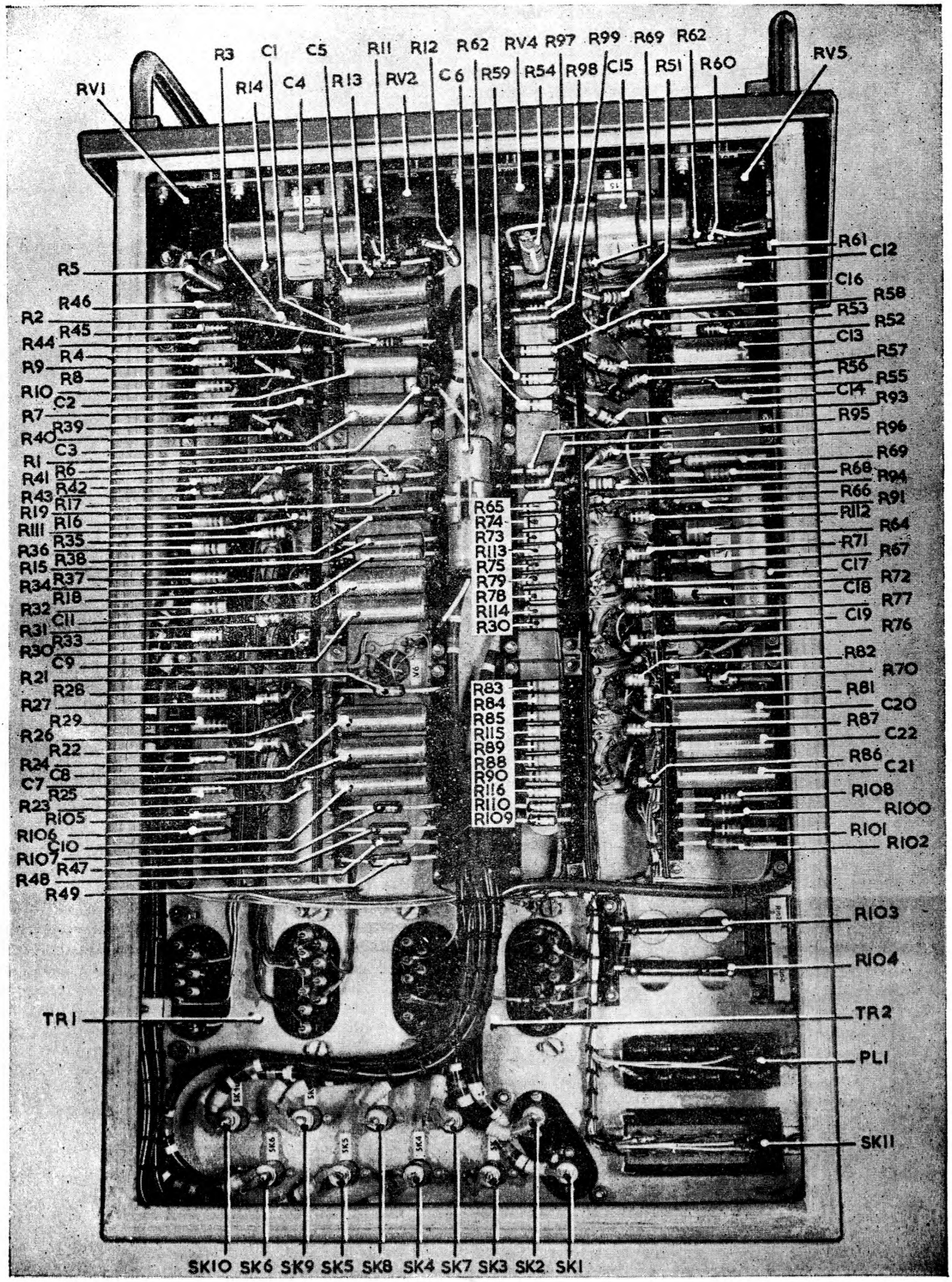


Fig. 3. Amplifying unit (video) 4416A : underneath

SECTION 3

MARKER PULSE AND WAVEFORM GENERATORS

SECTION 3

MARKER, PULSE AND WAVEFORM GENERATORS

LIST OF CHAPTERS

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1 **Marker unit (azimuth) Type 26**

2 **Marker unit (range) Type 27**

3 **Multivibrator unit Type 52**

4 **Selector unit Type 33 (radar Type 7 aerial)**

5 **Waveform generator (anti-sea clutter) Type 104**

6 **Trigger unit Type 4413** ~~(to be issued later)~~ (A.L. 17)

7 Trigger unit 4890 (A.L. 21)

Chapter 1

MARKER UNIT (AZIMUTH) TYPE 26

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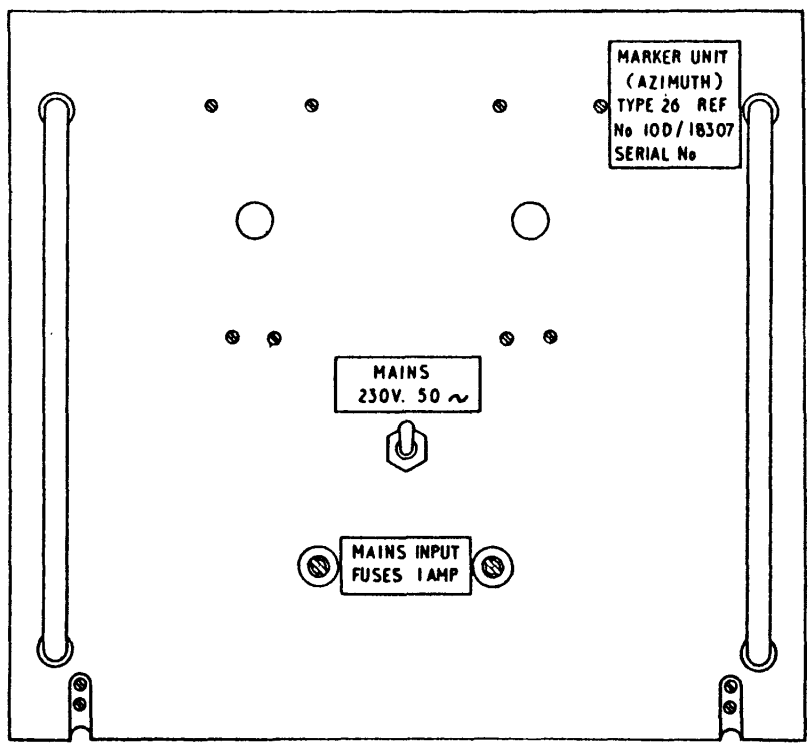


Fig. 1. Marker unit (azimuth) Type 26—front panel

Introduction

1. The marker unit (azimuth) Type 26, Stores Ref. 10D/18307, provides pulses which are used to "flash", by means of radial lines, the timebase on the plan-position display units every ten degrees of azimuth as the aerials rotate. The result on the displays shows up as thin radial lines of afterglow spaced ten degrees of azimuth apart. The azimuth mark pulses are of approximately four milliseconds duration.

2. A front panel view of the marker unit is shown in fig. 1, and a plan view is given in fig. 2. The circuit is shown in fig. 3.

Description

3. The azimuth pulses are generated by allowing a beam of light, interrupted by a rotating slotted disc synchronized to the rotating aerials, to fall upon a photo-electric cell. As the unit consists of two identical channels, only one of these will be

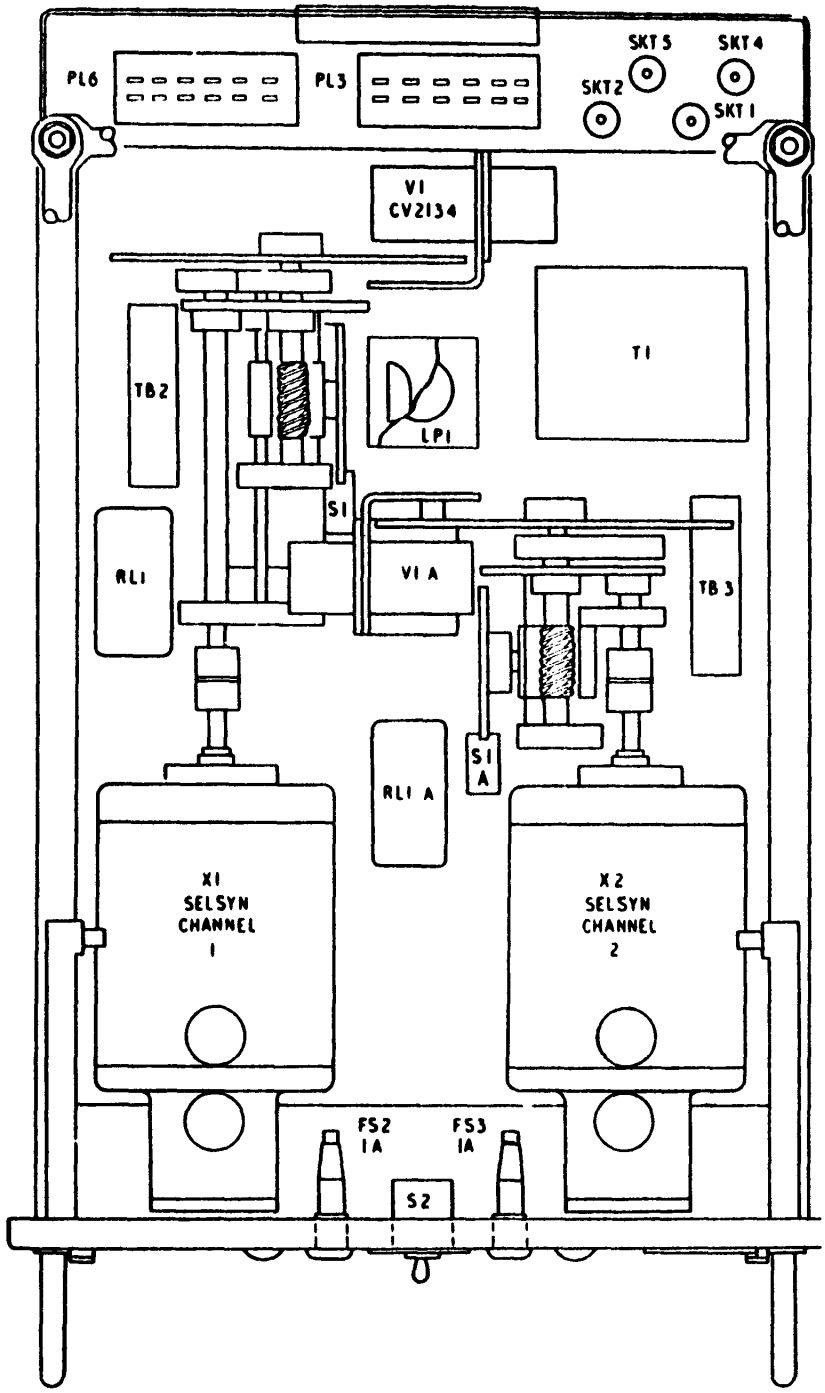


Fig. 2. Marker unit (azimuth) Type 26—plan

described, that associated with CHANNEL 2 shown on the left-hand side of the circuit diagram fig. 3. The associated photo-electric cell is V1 (Type CV2132).

4. The slotted disc carries three slots spaced at intervals of 120 deg. and is driven by a step-down gear chain from a Type S1406 B2 selsyn linked to the aerial selsyn. The driving selsyn in the aerial cabin is geared to run at 30 times the speed of aerial rotation so that the slotted disc is rotating 12 times for each cycle of the aerial. Since there are three slots, the light beam will be interrupted 36 times for one aerial cycle, that is, every 10 degrees of rotation.

5. The light beam is derived from the 6-volt, 12-volt, pygmy lamp 1LP1 located in a housing, the side facing the photo-electric cell being slotted. The cell housing is also slotted. The collimation slot which lies between the lamp housing and the interruptor disc narrows down the beam and can be adjusted to permit the beam, further narrowed by passing through the slots in the disc, to fall directly on the slot cut in the photo-electric cell housing.

6. The positive-going output pulses from the photo-electric cell, which obtains its positive energizing voltage from the amplifier (azimuth marks) Type A3678 (Chap. 2 of Sect. 2), are then fed into the same amplifier where the pulses are amplified and squared before being fed to the display units.

Auto-align system

7. The aerial array and the marker unit selsyn are each geared to cams which rotate at aerial speed, the latter through a worm drive. Suppose the cam contacts on the aerial and marker unit selsyns to be open and RL A1 to be closed. Consider the marker unit selsyn to be rotating until the cam makes contact. Current will flow through RL1. operating the relay contacts and bringing the marker selsyn to a halt. The aerial selsyn will continue to rotate until its cam makes contact, causing current to flow through its associated relay, breaking the relay contact which cuts off the supply to RL1. This releases the relay contacts and once again connects aerial and marker unit selsyns so rotation re-commences. In the course of subsequent rotation the two cams rotate in synchronism and the supply to RL1 is simultaneously broken on one side and made on the other; hence RL1 does not become energized. For further particulars on auto-align consult A.P.2527B, Vol. 1, Part 1, Sect. 2, Chap. 4.

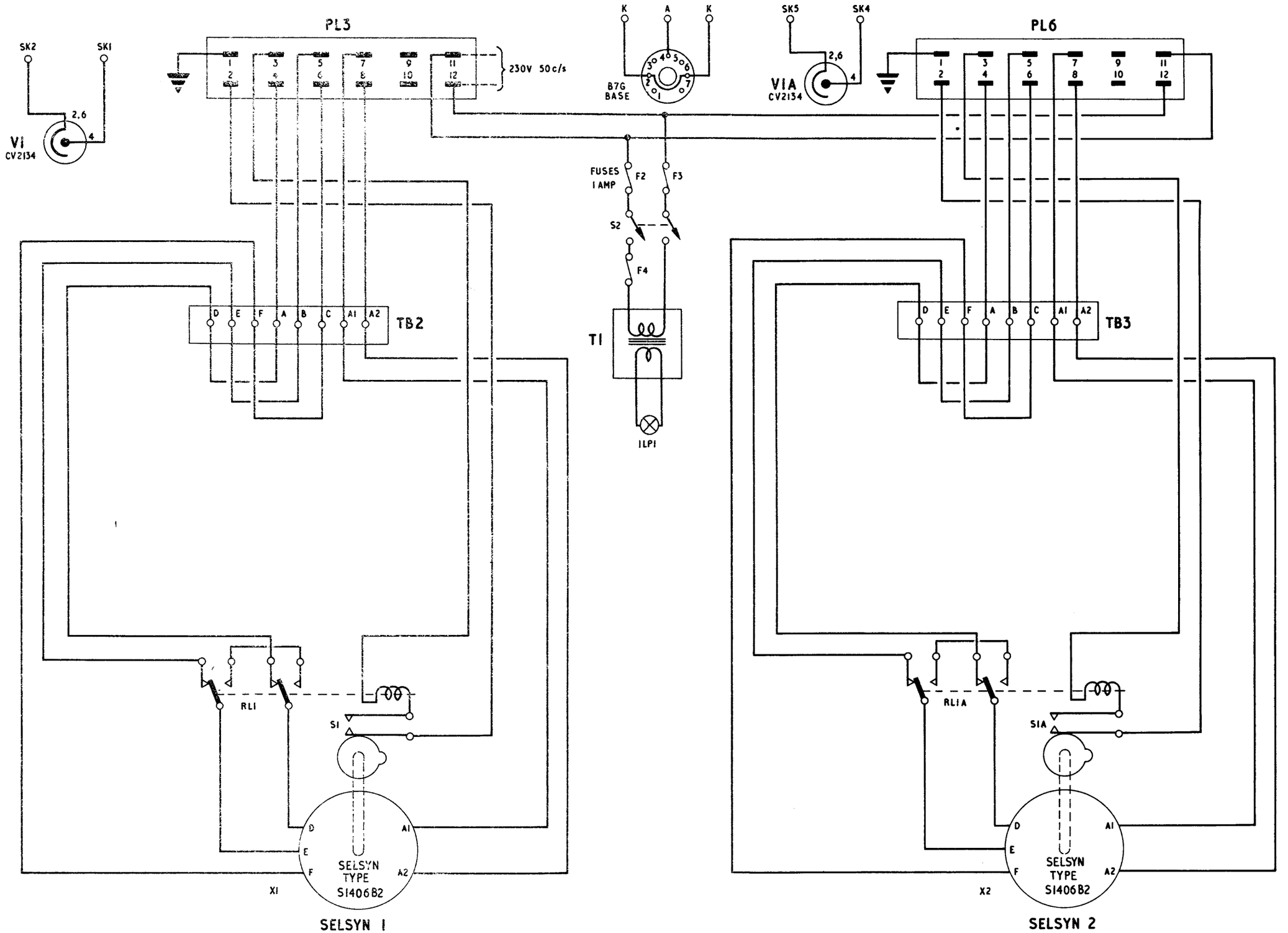


Fig. 3 Marker unit (Az) Type 26 – circuit Fig. 3

The pulsed oscillator and squarer

14. The valve V5 (Type CV1091) and its associated tuned circuits generates trains of large amplitude sine waves at a frequency of ◄ 16·39 ► kc/s corresponding to intervals of 5 ◄ data ► miles. The duration of these trains is controlled by the width of the actuating square-wave obtained from the anode of V2.

15. In the static condition V5 is passing current and its suppressor grid is at earth potential, being held there by the diode V4A. The potentiometer chain, R4, R14, R16 would normally produce a positive voltage on the suppressor of V5 when V2 is cut off, that is, in the static condition of V2. The anode current through V5 and L4 produces sufficient damping to prevent any tendency for the tuned circuit to oscillate.

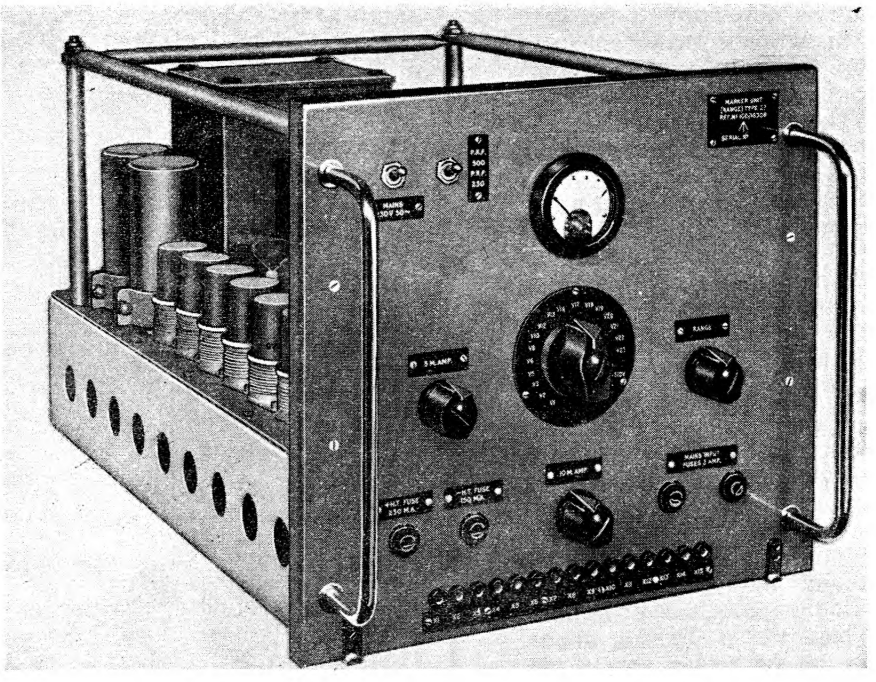


Fig. 2. Marker unit (range) Type 27, front panel

16. Coincident with the leading edge of the trigger pulse on V2 the potential at its anode drops to 30 volts and reduces the potential via the network R14, R16 at the suppressor of V5 to about *negative* 100 volts. This cuts off the suppressor, anode current ceases and the anode is effectively isolated from the other electrodes. The tuned circuit, L4-C13, however, is connected to the grid of V5 via C14 and there is now the normal circuit of a self-maintaining triode oscillator with L5 in the screen circuit and L4-C13 in the grid circuit and large amplitude oscillations are generated at a frequency of ◄ 16·39 ► kc/s.

17. These oscillations are maintained until the end of the square-wave on the suppressor of V5, that is, when the anode of V2 rises to its static condition. This, as mentioned previously, would drive the suppressor of V5 positive but it is held at earth potential by the diode V4A. The resultant anode current through V5 damps out the oscillations and the circuit reverts to its static condition to await the next square-wave from the anode of V2.

18. These oscillations, which are approximately 165 volts in amplitude (fig. 5), are passed via C15 to the grid of V6. This valve is a conventional squaring valve Type CV1091 specially designed to generate a very rapid fall on the negative-going edge of the output waveform. The valve is biased to cut-off by virtue of a fixed negative voltage applied to its control grid. The first cycle, and each successive positive cycle, of the input sine wave rapidly takes the control grid through the grid base to zero bias, where grid current prevents any further change in grid voltage during the positive half-cycle. The condenser C16 is wired in parallel with the grid stopper R22 to neutralize the effects of grid-cathode capacity and to obviate any tendency to introduce phase shift.

19. The amplitude of the square-waves generated at the anode of V6 is limited to about 85 volts by the diode V4B. This further contributes to the steepness of the leading negative-going edge of each square-wave and also effects an improvement in the width. It will be noticed that, due to the large anode resistance R27 and the condensers C21 and C22, the rising back edges are not as steep as the leading edges. However, this is unimportant, as only the leading edge performs a useful function, as will be seen in the operation of the following circuits.

20. There is now being generated from the anode of V6 blocks of negative-going pulses and with very steep leading edges which are at 5-mile intervals. The width of each block is controlled by the width of the square-wave generated by the flip-flop and initiated by the locking voltage.

The 5-mile and 10-mile marker generating circuits

21. Coincident with the negative-going edge of each square-wave from the anode of V6, the control grid of V12 (Type CV1091) is rapidly driven beyond cut-off. As C22 and R49 constitute a very short time-constant, the grid of V12 tends to rise rapidly towards HT as soon as the anode of V6 ceases to fall. This rise, however, continues only until the grid of V12 is caught at earth potential by the diode V11A (Type CV1054).

22. The positive-going edge of each square-wave has no effect on the grid of V12 since it is already

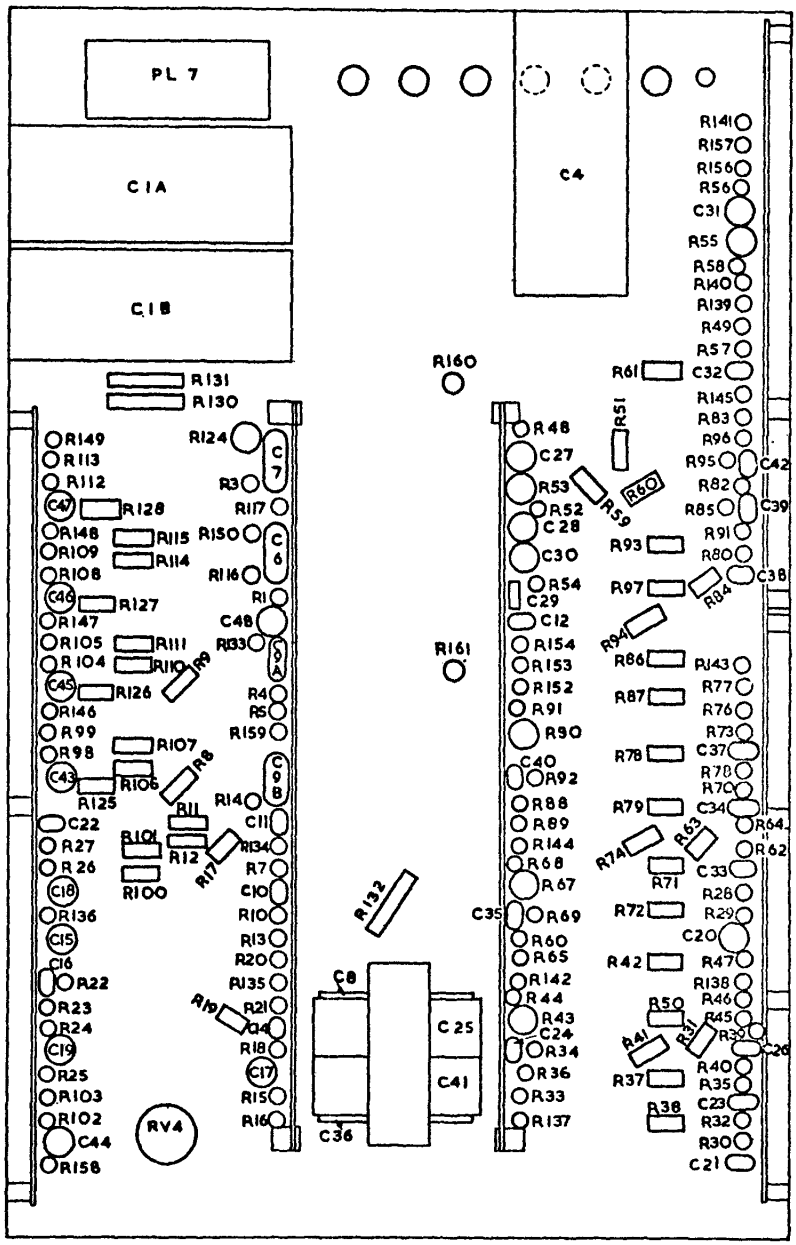


Fig. 4. Marker unit (range) Type 27, chassis underside

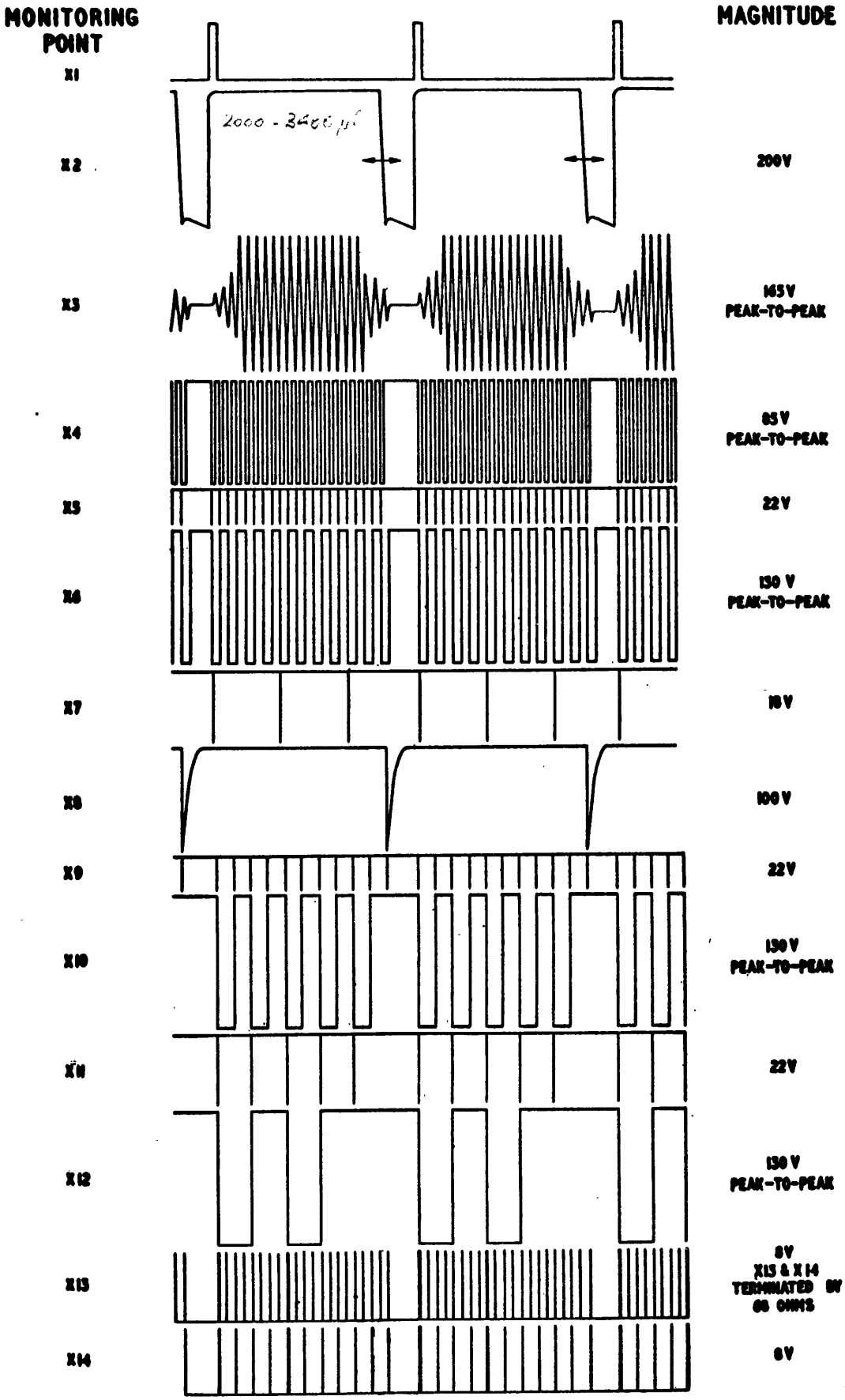


Fig. 5. Marker unit (range) type 27, waveforms

fed to V13 to provide the 10-mile range marker pulses and are also fed to the second divider circuit. This stage generates pulses 20 miles apart and these pulses in turn actuate the third divider stage to produce pulses 40 miles apart. These pulses, having a 40-mile recurrence period, are then fed to the suppressors of V12 and V13, where they are differentiated to provide the 4-microseconds-width doubling pulses which follow the 5-mile and 10-mile marker pulses from V12 and V13 at intervals of 40 miles, the delay of about 2 microseconds being inherent in the circuits.

30. The three divider stages are identical in operation and only the first one V8, V10 will be described. The divider consists of two valves Type CV1091 cross-connected by means of two resistance networks R35, R34, R43 and R39 and R44. Two conditions of equilibrium exist, one in which V8 is conducting and V10 is cut off, and the other when V8 is cut off and V10 conducting. These two conditions are perfectly stable and the changeover from one condition to the other and vice versa can only occur when a negative pulse is received at the grid of V8.

31. To complete the explanation it is necessary to assume that the condition required to exist before the arrival of the trigger pulses is the one in which V8 is conducting and V10 cut off. Should the last trigger pulse in the train leave V8 cut off and V10 conducting, provision is made for the injection of a negative resetting pulse into the suppressor of V10, which resets the divider to the required condition. Should the divider be in the right condition this resetting pulse has no effect.

32. In considering the action of the divider stage no attention need be paid to the condensers C23, C24 and C26. Their only function is to improve the waveform involved at these points by reducing phase-shift tendencies caused by the inter-electrode capacitance of the valves.

33. The operation of the divider circuit is as follows. Commencing with the condition in which V8 is conducting and V10 cut off, since V8 is conducting, the potential drop along the chain R32, R35, R34 and R43 is such that the voltage obtained at the junction of R35, R34 and impressed on the grid of V10, is sufficiently negative to cut off V10. This means that the potential drop along the chain R46, R45, R39 and R44 is due solely to the resistors themselves. The suppressor of V8 which is connected to the junction of R39 and R44 would therefore be positive to earth but it is held at earth potential by the diode V7B (Type CV1054).

34. At this point a negative sync. pulse, produced by differentiating the square-wave from the anode of V6, arrives on the grid of V8. This pulse is amplified by V8 and the resultant rise of voltage at its anode is transferred by the network R32 R35, R34, R43 to the grid of V10, causing V10 to take current. This causes the potential existing at R39, R44 to drop to such a value that the suppressor of V8 is cut off and anode current in V8 ceases, although the screen continues to take current. With no anode current flowing in V8 the potential applied to the grid of V10 from the resistor network assumes a value which keeps V10 conducting and therefore maintains the conditions for keeping the suppressor of V8 cut off.

35. The second state of equilibrium has now been reached and the new conditions can be summarized as follows. The grid of V8 has returned to earth potential after cessation of the sync. pulse, the screen is taking current, the suppressor is cut off and also the anode current. Due to the resistor network from V8 to V10, the grid of V10 is conducting and the anode is passing current and, through the network V10 to V8, maintaining the suppressor of V8 cut off.

36. It should be noted that when the negative sync. pulse was applied to the grid of V8 it was cathode-followed to the grid of V10 via R36 and R34, but the amplified positive sync. pulse from the anode of V8 was sufficiently large to override it. The next sync. pulse to arrive on the grid of V8 causes the divider to revert to the condition existing before the action described above, in the manner outlined in the next paragraph.

37. Since only the screen of V8 is conducting, V8 acts as a cathode-follower transmitting the negative pulse to the grid of V10 from R33 through R36 and R34. This causes V10 to be cut off and the anode to rise towards HT. The suppressor grid of V8 simultaneously rises, through the network V10-V8, until it reaches earth potential where it is held by the diode V7B. This permits V8 to pass anode current and the resultant drop is transferred by the V8-V10 network to the grid of V10 to maintain V10 cut off and the suppressor of V8 positive.

The original state of equilibrium has now been reached and the conditions then existing are restored.

38. This changeover from one state of equilibrium to the other will continue as long as there are negative sync. pulses applied to grid V8 and it may happen that the last sync. pulse of the train may leave the divider in the condition where V8 is cut off and V10 conducting. To correct this a 100-volt, 50-microseconds negative-going pulse, obtained by differentiating the back edge of the square-wave from V3, is fed into the suppressor of V10. This will cut off V10 and cause V8 to conduct and the divider will now be ready for the first pulse of the next train.

39. There is, in consequence, a series of square-waves being generated at the anode of V10 with the negative-going edges coincident in time with every second input trigger pulse. These square-waves are fed :—

(1) to V13 where they are differentiated to produce the 10-mile range marker pulses in the same manner as described for V12, and

(2) to V16 where differentiation again takes place to provide the negative-going trigger pulse for the second divider.

The output square-wave from this second divider V16, V17 is in turn differentiated to trigger the third divider V18, V19.

40. In the static condition of the range marks generator all three dividers are in the condition where V8, V16 and V18 are passing current. On the arrival from V6 of the first 5-mile negative-going pulse corresponding to zero miles, No 1 divider operates to produce a negative-going voltage from V10. Since it is negative-going it will operate No. 2 divider and produce a similar waveform to operate No. 3 divider. The negative-going output from V10 feeds V13, the 10-mile marker generator, and the negative output from V19, after differentiation by C29, R54 and V11B, provides the doubling pulse for V12 and V13 so that the first 5-mile and 10-mile marker pulses at zero miles are doubled.

41. The second triggering pulse on V8 returns the No. 1 divider to its static condition and the output from it is therefore positive-going. This will not operate No. 2 divider, which therefore stays as it is and consequently No. 3 divider does not change.

42. The third triggering pulse of V8 causes it to operate and produce a negative-going pulse which reverts No. 2 divider to its static condition and produces a 10-mile marker pulse from V13. The output from No. 2, being positive, does not actuate No. 3.

43. It will be appreciated that since each divider requires a negative-going trigger pulse, No. 1 divider operates on each 5-mile pulse from V6, that is 0, 5, 10, 15 etc. miles. But No. 1 divider only produces a negative trigger pulse for No. 2 divider at intervals of 0, 10, 20 etc. miles. No. 2 divider, in turn, only produces a negative trigger pulse for No. 3 divider at intervals of 0, 20, 40, 60 etc. miles and therefore No. 3 divider only produces the negative pulse for broadening purposes on V12 and V13 at intervals of 0, 40, 80 etc. miles.

44. The situation may arise where the last 5-mile triggering pulse in the block of pulses from V6 does not occur at 35, 75, 115, 155, 195 etc. miles. A triggering pulse from V6 occurring at the ranges specified will reset the dividers in preparation for the next pulse to initiate the chain of events described. However, the width of the controlling square-wave from the multivibrator V2, V3, cannot be guaranteed to initiate a train of pulses which contain an exact multiple of eight pulses and it is therefore necessary to reset the dividers to the static condition in readiness for the commencement of each train.

45. This resetting is achieved during the quiescent period of the pulsed oscillator V5, by applying a large negative-going pulse to the suppressors of V10, V17, V19. If at the end of a train of triggering pulses any of these three valves are conducting, they are immediately cut off by the resetting pulse, leaving V8, V16, V18 conducting in readiness for the first triggering pulse of the succeeding train. The resetting pulse is obtained by differentiating the negative-going edge of the square-wave at the anode of V3 and is 100 volts in amplitude and 50 microseconds in duration.

The cathode-follower output

46. Two sets of two outputs are provided by the four cathode-followers V20 to V23. V20 and V21 are fed with the 5-mile marker pulses, every 40 miles, from the anode of V12. V22 and V23 are fed with the 10-mile marker pulses, doubled every 40 miles, from the anode of V13.

47. These four cathode-followers are designed to work into a cable termination of 70 ohms to ensure that the pulse shape of the range marker pulses is preserved down the cables to the display unit, and produce outputs of up to 10 volts in amplitude across 70 ohms.

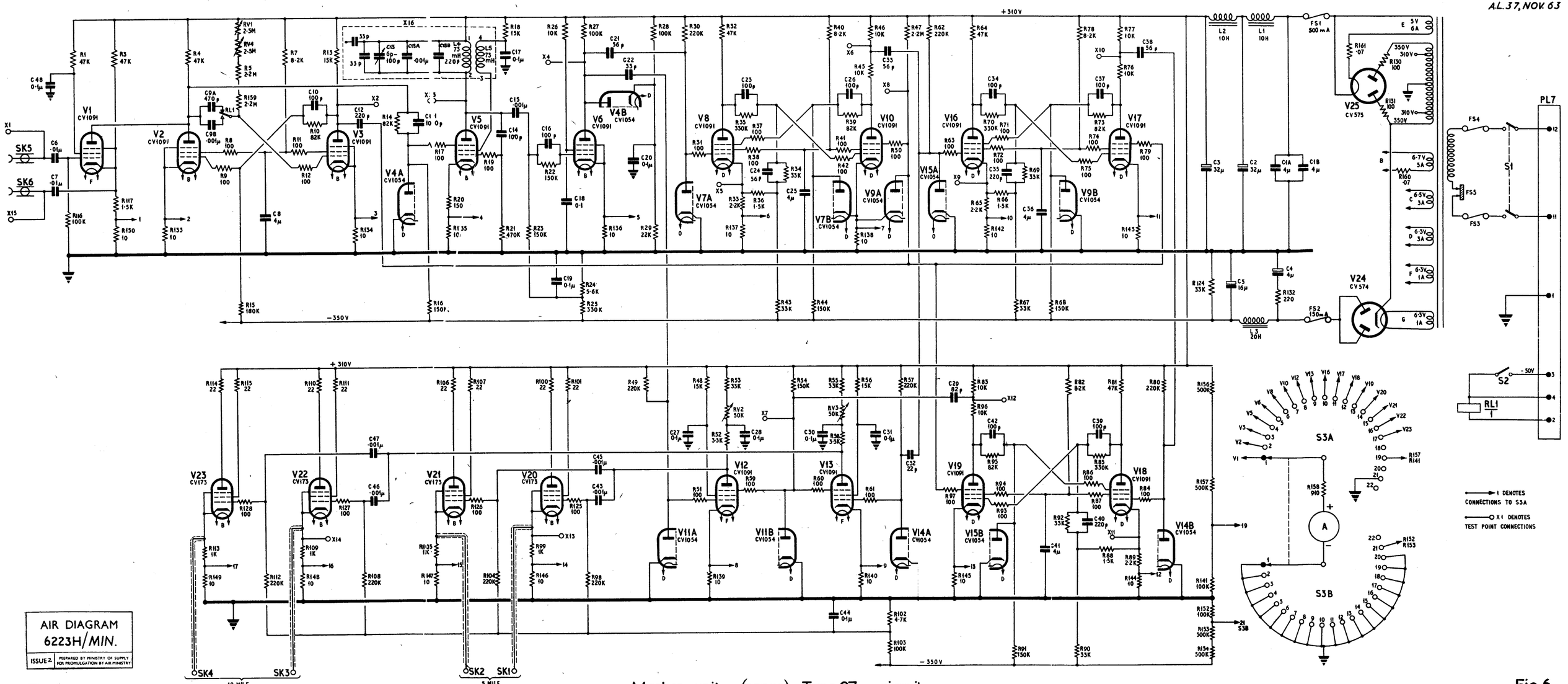
48. The control grids of the cathode-followers are returned to a fixed negative voltage of approximately 30 volts. This ensures that the standing current through these valves is reduced to a low value between pulses, thereby easing the drain on the power supply.

Power circuits

49. The marker unit requires a power supply of 230 volts 50 c/s which is provided by conventional rectifier circuits. A 50-volt DC supply is required for operation of the p.r.f. halving relay.

Waveforms

50. Waveform monitoring facilities are provided by sockets on the front panel of the unit; HT and valve currents may be observed on a meter on the front panel. The waveforms are shown in fig. 5. It should be understood that the voltage figures given thereon are intended only as a guide, the criteria of functioning satisfactorily being operation of the unit as a whole and the attainment of the output figures which will be found in the relevant part of this document.



AIR DIAGRAM
6223H/MIN.
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Fig. 6

Marker unit (range) Type 27 – circuit

Fig. 6

Appendix 1

MARKER UNIT (RANGE) TYPE 27A

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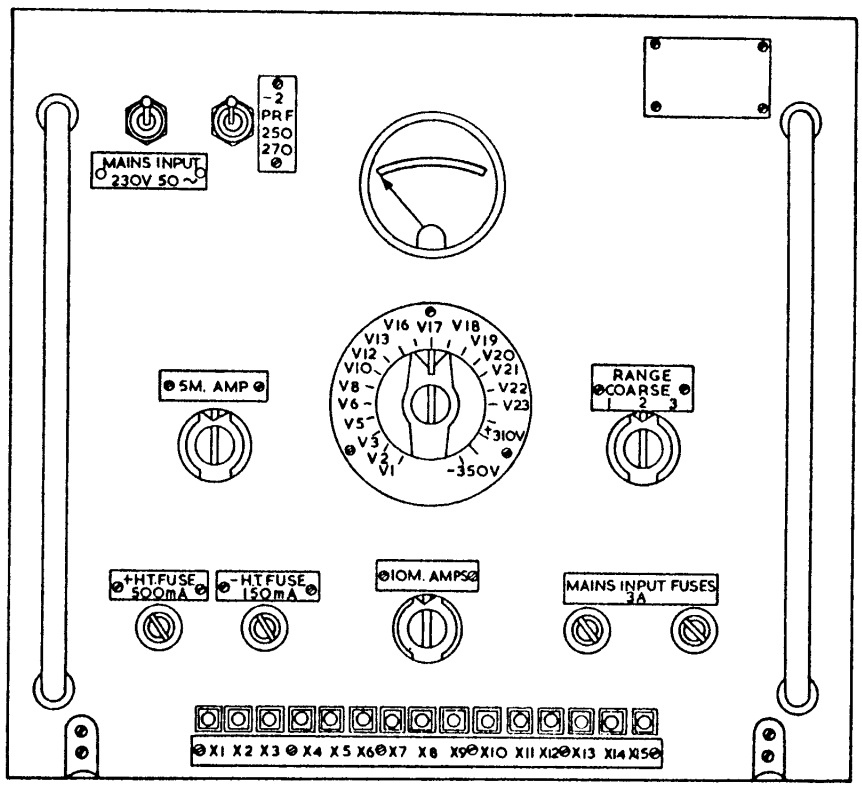


Fig. 1. Marker unit (range) Type 27A—front panel

Introduction

1. The marker unit (range) Type 27A (Ref. No. 10D/21435) is used at radar stations that are capable of extra long range timebase operation. The unit is similar to the marker unit (range) Type 27, which is described in the preceding chapter. The only difference shown by the front panel of the Type 27A is the addition of a three-position switch as shown in figure 1. Fig 2 shows a plan view of the unit and fig. 3 is the circuit diagram.

Circuit description

2. The circuit of the unit is identical to that described in the foregoing chapter except for the alterations in V2 anode circuit. These alterations consist of providing a coarse and fine range adjustment and extending the CAL. marks out to 320 miles. For coarse range adjustment a 3-position wafer switch is used to switch fixed resistors into the flip-flop (V2 and V3) delay circuit. For fine range adjustment RV4 is used. In order to extend the duration of the flip-flop delay, thus extending the duration of the negative-going square wave applied to V5 suppressor grid and extending the range of the CAL. marks, a further capacitor (C9C) is connected in parallel with C9A to bring the total capacity to 1290 pF.

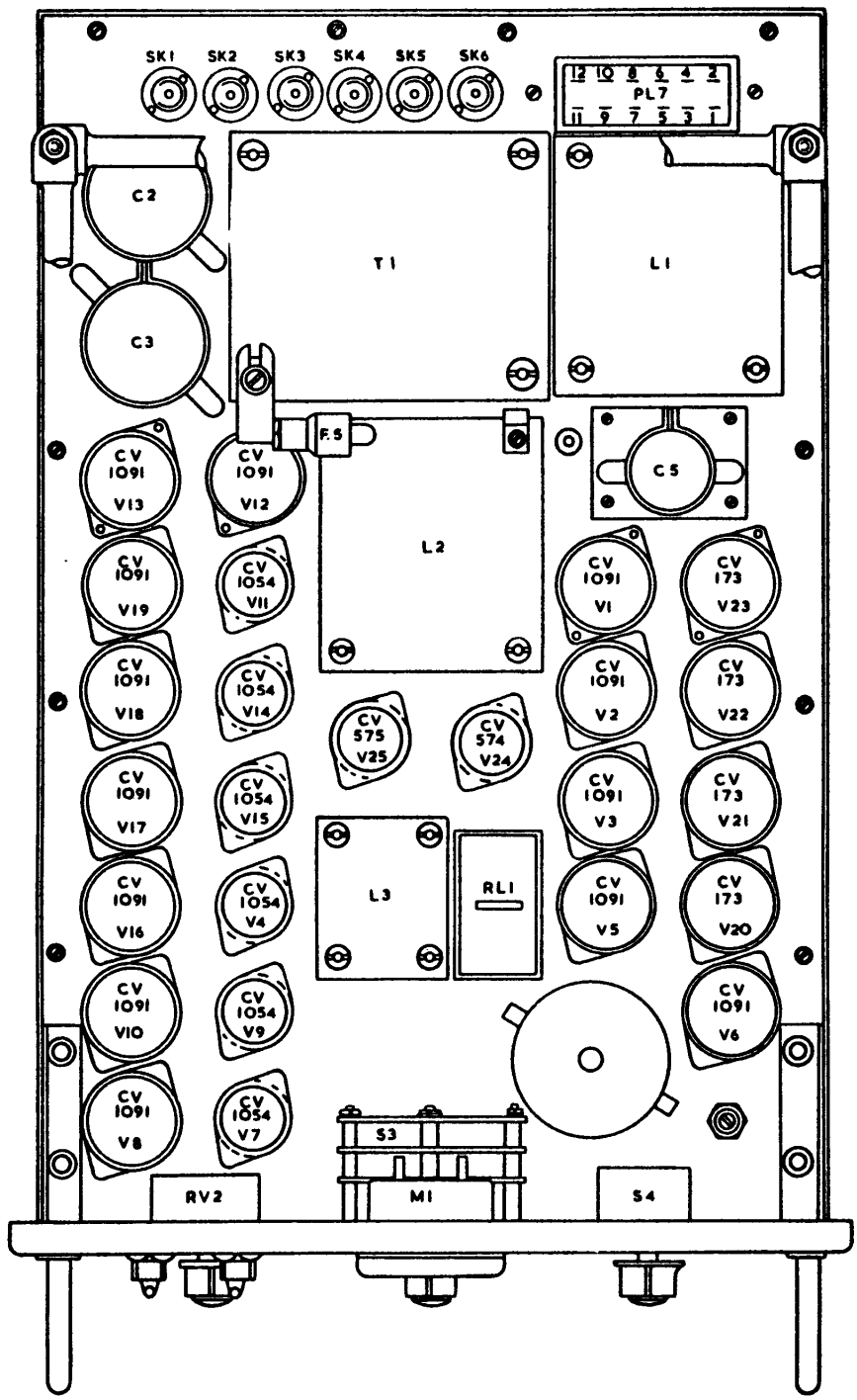
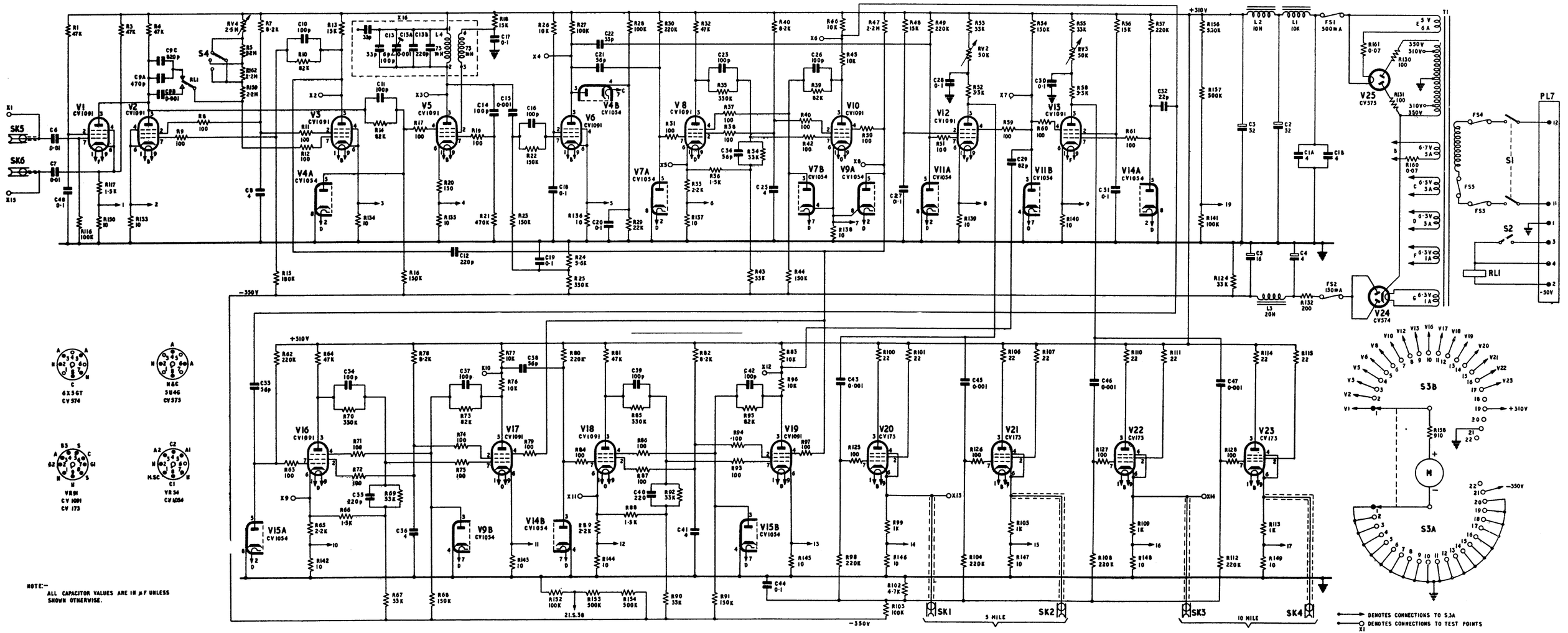


Fig. 2. Marker unit (range) Type 27A—plan view



NOTE:—
ALL CAPACITOR VALUES ARE IN μF UNLESS SHOWN OTHERWISE.

Fig.3

Marker unit (range) Type 27A – circuit

Fig. 3

Chapter 3

MULTIVIBRATOR UNIT TYPE 52

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Introduction

1. The multivibrator unit Type 52 (Stores Ref. 10U/15047) produces a positive locking pulse to lock the transmitter of radar Type 15, Mk. 5. When free-running, any p.r.f. in the range from 250 to 500 can be obtained. It can be also locked to the 180-volt, 500 c/s supply. In this instance a phasing control ensures the correct point of triggering.

2. The unit also produces square waves for lobe switching on the radar Type 15 aerial and a time-base "split" waveform used in height finding; the latter can be suppressed if not required. The switching waveforms are delayed with reference to the transmitter pulse, ensuring that switching only occurs between the timebases.

3. The unit contains its own HT and LT power supply units requiring an input of 230 volts, 50 c/s. Valve currents and HT can be metered by means of a meter and switch mounted on the front panel. A front panel view is shown in fig. 1 and fig. 2 is a schematic of the unit.

Circuit description

Transmitter locking pulse

4. The valves V3 and V4 (Type CV1091) constitute a free-running multivibrator normally running at a p.r.f. of 500, or 250 when the relay RL2 is energized. This doubles the time constants in the grid circuit of the two valves by adding C9 and C11 in parallel with C8 and C10 respectively. The recurrence frequency is also controlled by the potentiometer chain consisting of RV2, RV5, RV3 and R12.

5. RV5 is pre-set to limit the upper recurrence frequency when all other controls are fixed at upper limits for reasons of safety in the transmitter. RV3 is the fine control used for setting normal operation to 500 p.r.f. RV2 is pre-set so that when the relay RL1/1 is energized the contact RL1 "a" short-circuits this potentiometer and increases the p.r.f. by 5 per cent. The reason

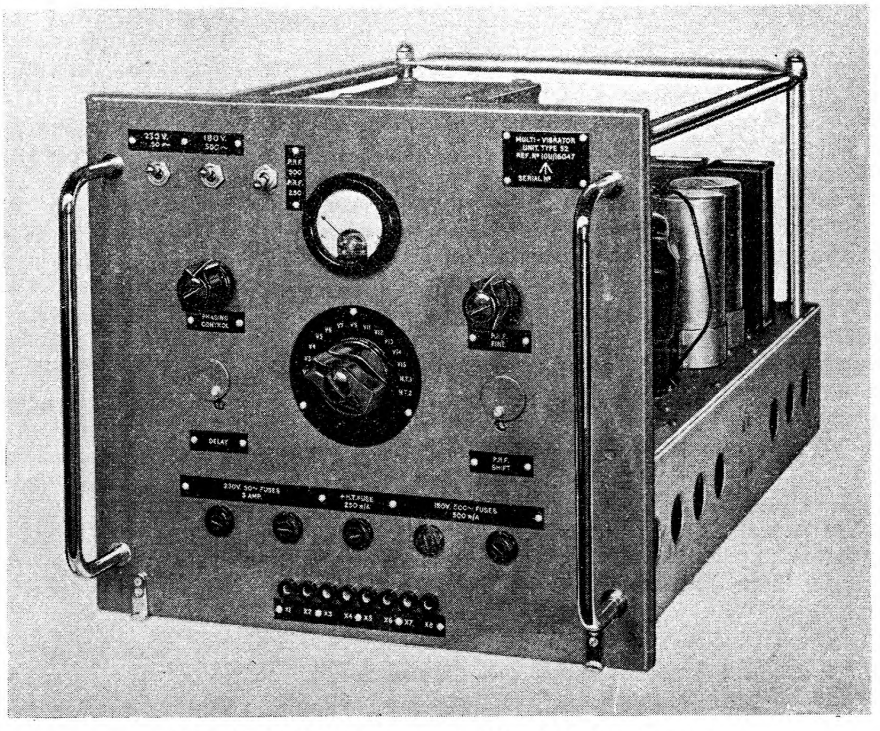


Fig. 1. Multivibrator unit Type 52—front panel

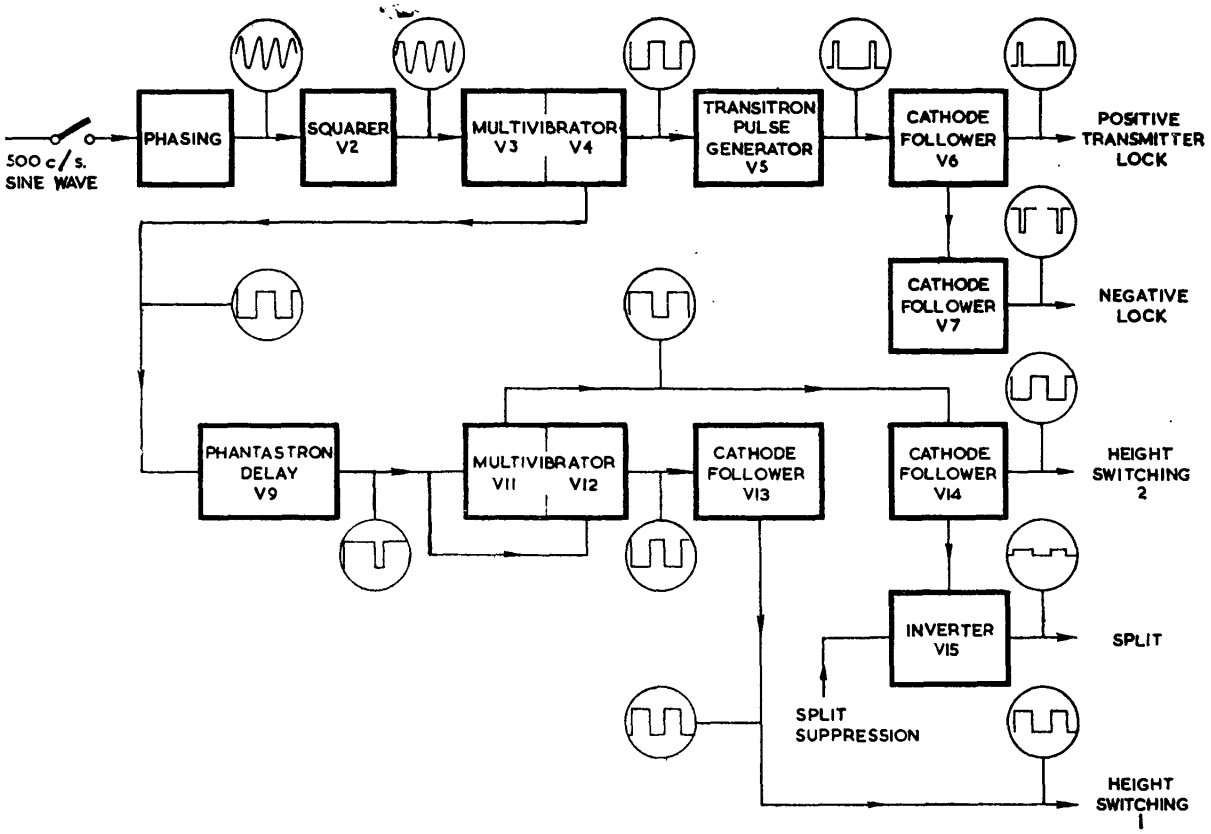


Fig. 2. Multivibrator unit Type 52—schematic

for this "small shift" facility is explained in the following paragraphs.

6. It is possible for reflections derived from the transmitter pulse initiating the timebase to appear on the following timebase. The position of the pulse is varied if the p.r.f. is altered. Hence these echoes can be identified by the provision of the "small shift" control.

7. It is possible to lock the multivibrator to a p.r.f. of 500 or 250 from a 500 c/s 180-volt supply which is taken to the grid of the ◄ double triode ► V2 (Type CV ◄ 1908 ►) where it is squared. The differentiated output is fed to the anode of V3. The point at which triggering occurs can be controlled over about 60 deg. of each cycle by means of the phasing control RV1.

8. The square-wave output from V4 is differentiated and the negative-going pip thus produced triggers the transitron valve V5 (Type CV1091) on its suppressor grid. The output from the anode of V5 is a positive pulse of about 50 microseconds duration and with a steep leading edge.

9. This pulse is cathode-followed by V6 (Type CV124) which gives an output of 6 volts when terminated by 70 ohms. This output is fed out to radar Type 15 where it is used to trigger the transmitter.

10. A negative output is taken from the anode of V6 and cathode-followed by V7 (Type CV124). The output from V7 is not now used.

Height switching and split waveforms

11. The valves V8 to V15 (inclusive) develop the switching waveforms for height finding. The phantastron delay circuit associated with V9 (Type CV1116), which is triggered by the output from V4, produces positive pulses at the screen of V9. These are variable in duration by RV4 and are doubled in length when RL2/2, the 500/250 p.r.f. relay, is energized, thus doubling the capacitance in the grid-to-anode circuit of V9. The total variation is from 1 to 1·8 or 2 to 3·6 milliseconds.

12. The resulting waveform is differentiated, the leading positive-going edge being clamped by V10 (Type CV1054) and the lagging, negative-going edge triggering the multivibrator consisting of V11 and V12 (Type CV1091) which runs at half the p.r.f. This multivibrator produces the switching waveforms which are delayed on the transmitter pulse by an amount which must be greater than the longest timebase in use, but less than the recurrence period.

13. The square-waves at the anodes of V11 and V12 are cathode-followed by V13 and V14 (Type CV124) respectively. The cathodes of these two valves are returned to negative 30 volts so that the outputs rise above this level. The square-wave from V14 is phase reversed in V15 (Type CV1091) for split timebase purposes, that is to say, alternate timebases are displayed horizontally on an A-scope.

14. Suppression of the split waveform is provided by applying a negative pulse to V15 suppressor grid which is clamped to earth by V10b. This was originally provided because provision was

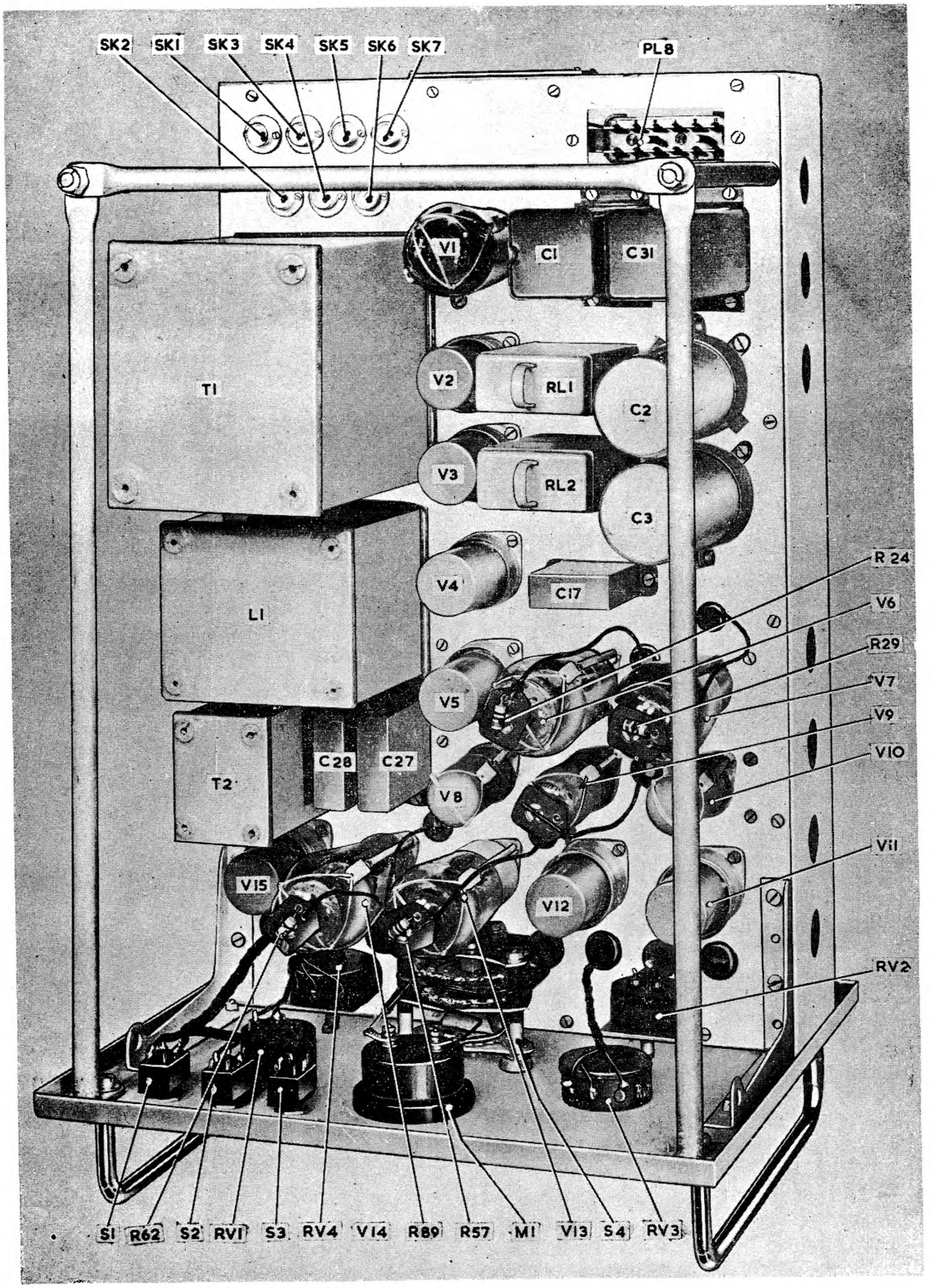


Fig. 3. Multivibrator unit Type 52, plan view

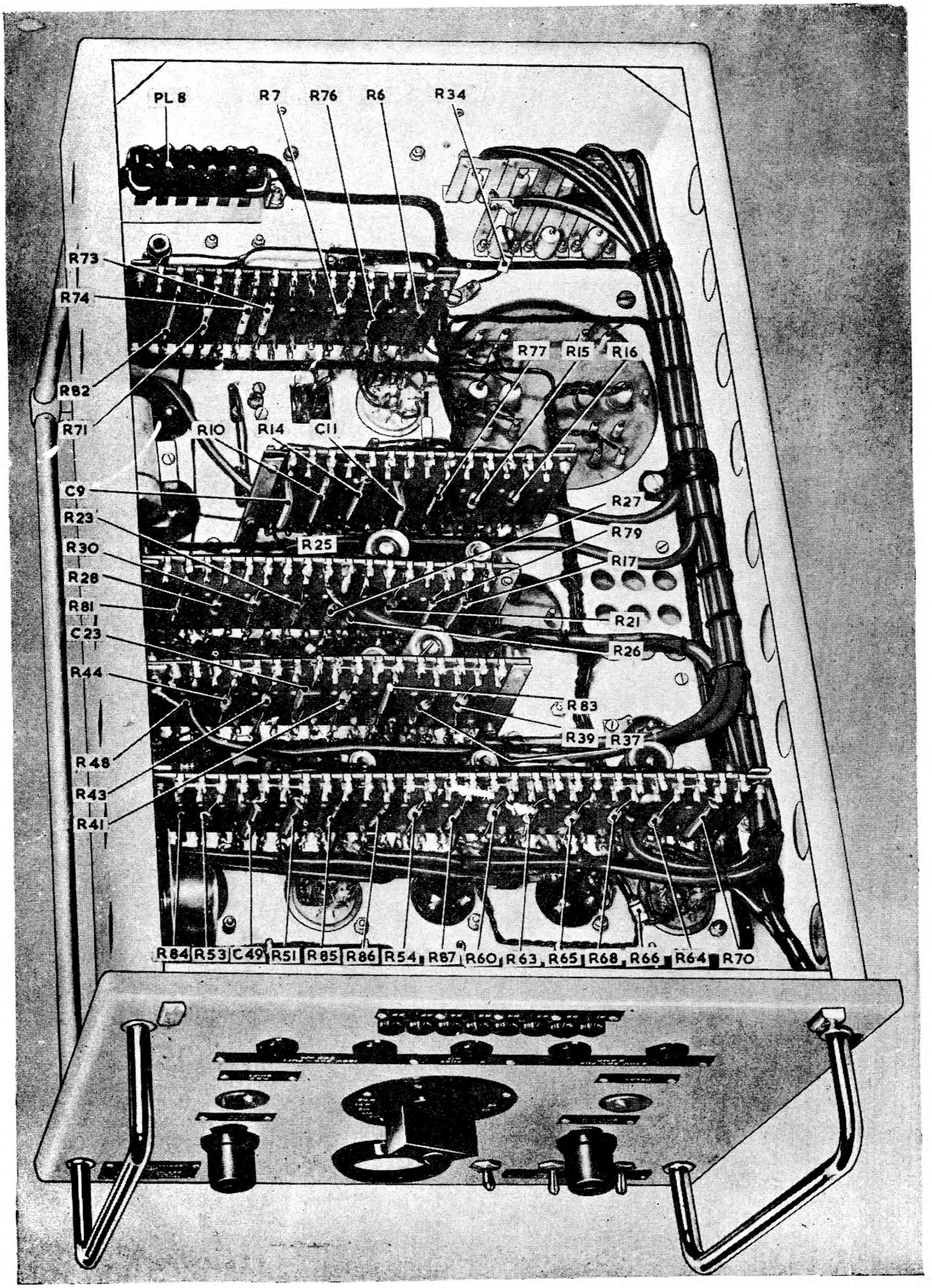


Fig. 4. Multivibrator unit Type 52, underside of chassis (1)

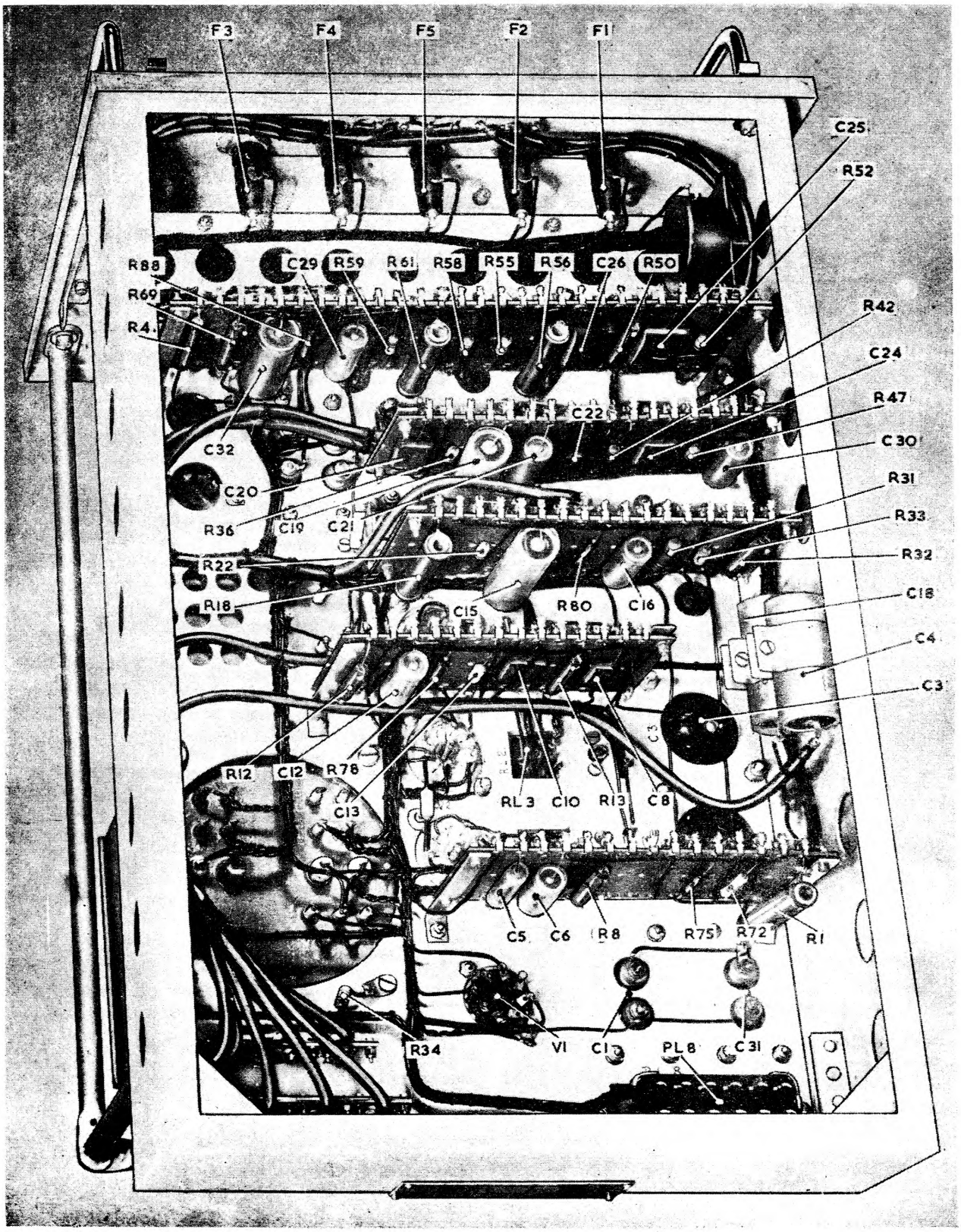


Fig. 5. Multivibrator unit Type 52, underside of chassis (2)

required for displaying IFF on a second displaced track on the H/R console. Had this been used, the radar trace would require to be split but not the IFF.

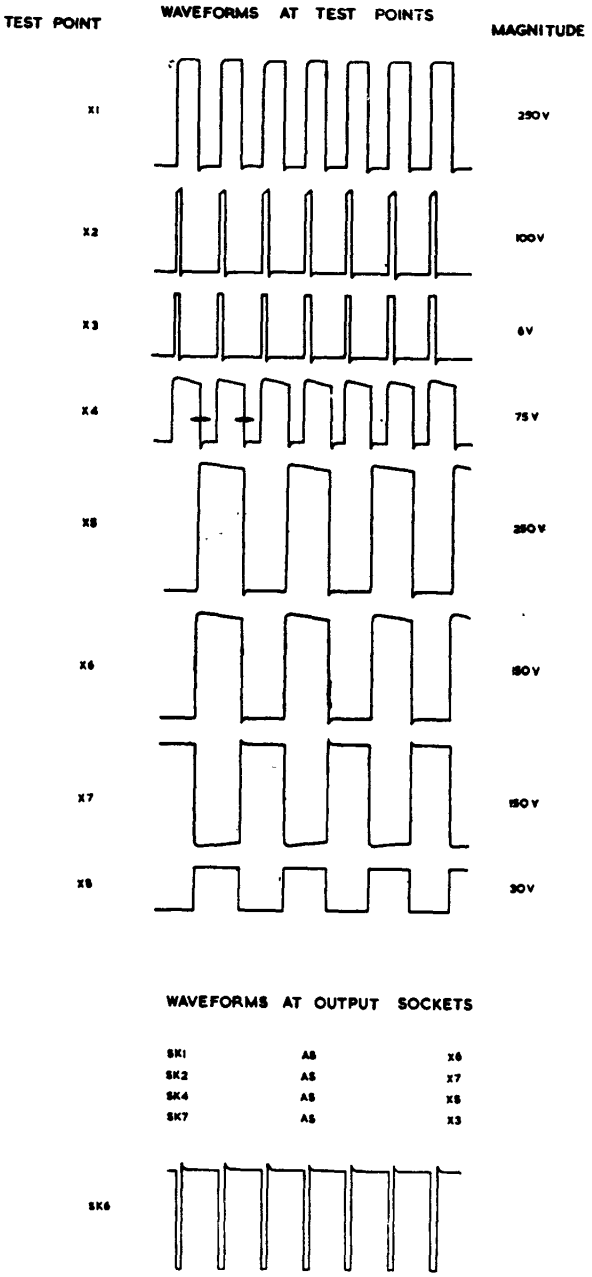


Fig. 6. Multivibrator unit Type 52, waveforms

Phantastron

15. The cathode of half "*a*" of the double-triode V8 is held at approximately positive 40 volts by RV4, R36, R37 and R38. A very small current flows through R41, the anode of V8*a* being very slightly positive to the cathode. Hence the grid of V9 is at, approximately, positive 40 volts. The cathode load R45 (4·7 K-ohms) of V9 carries a normal current of about 8 mA which holds the cathode at about 42 volts, that is, the grid bias is negative 2 volts.

16. The suppressor grid of V9 is held at, approximately, positive 10 volts by RV4, R36, R37 and R38, hence the anode of V9 is cut off and is at 325 volts HT.

17. When the negative lock is applied to the grid of V9 via V8*a*, the grid potential is brought down and the cathode potential follows. When the cathode potential is sufficiently low to release the suppressor (that is, not more than 5 volts positive) the anode current begins to flow and the anode drops. This drop is fed back to grid by C22 (or C22 and C23) and the cathode follows. This opens the suppressor grid path fully, with further rise of anode current. V9 quickly reaches a quasistable state with grid and cathode almost at earth potential, since the falling grid voltage eventually limits the cathode current.

18. Since, however, R41 (4·7 megohms) is feeding current to C22 (or C22 and C23) the grids begin to rise slowly with a similar gradual fall in anode voltage. When the anode has fallen almost to earth, feedback from the anode to the control grid ceases and the grid rises fairly rapidly as more current flows into C22 (or C22 and C23).

19. As the grid rises, the cathode follows until the suppressor begins to cut off the anode current. The anode then begins to rise, bringing up the control grid rapidly and the cathode following. Cumulative action cuts off the anode. The duration of the cycle is determined by the setting of RV4 (50K) and the p.r.f. switch which determine the magnitude of the current flowing to C22 (or C22 and C23 in parallel).

20. The function of V8*b* is to clip the positive peaks from the differentiated waveform appearing at the cathode of V8*a*.

Illustrations

21. A plan view of the unit is shown in fig. 3. Two underside views of the chassis are given in fig. 4 and fig. 5. Waveforms at the test points and output sockets are given in fig. 6 and a complete circuit of the unit is fig. 7.

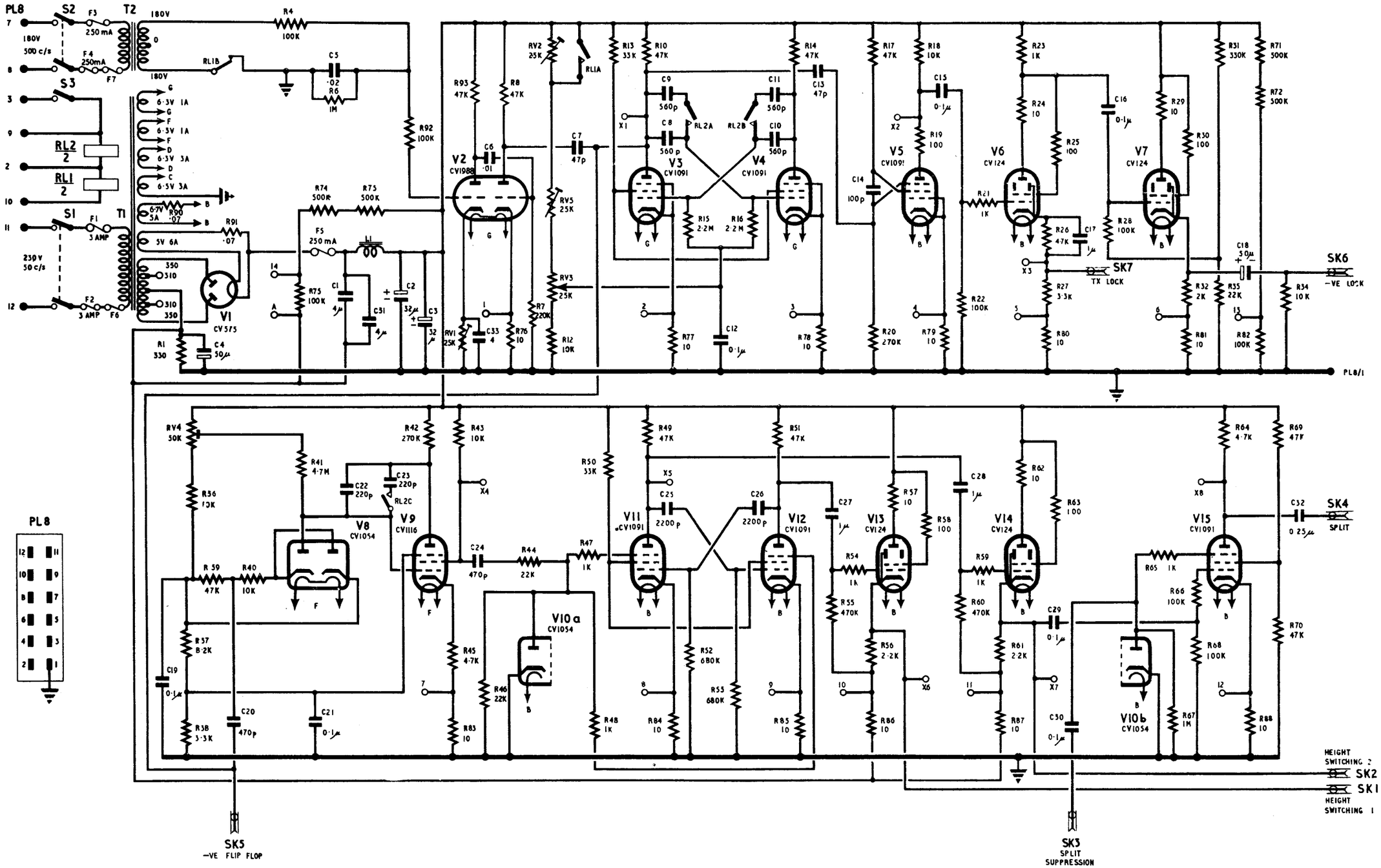


Fig. 7

Multivibrator unit Type 52: circuit

Fig. 7

Chapter 4

SELECTOR UNIT TYPE 33

(RADAR TYPE 7 AERIAL)

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Introduction

1. The selector unit (radar Type 7 aerial) Type 33 (Stores Ref. 10D/18750) provides the following services :—

(1) Waveforms for the Height/Range console, so that signals from the individual aerials may be presented on separate traces to facilitate height finding.

(2) Waveforms from left and right " check " operations on the H/R console.

(3) Gating of the " bright-up " waveform fed to the PPI on the fixed coil installation so that the ground echoes, obtained when the TOP AERIAL is in use, are not displayed.

(4) Gating of the " bright-up " waveform fed to the PPI on the fixed coil installations so that the echoes displayed are those from the BOTTOM AERIAL only.

(5) Gating of the synchronizing pulses fed to the PPI on the moving coil installations so that the ground echoes obtained when the TOP AERIAL is in use are not displayed.

A switch inside the unit controls the gating operations, enabling (3) and (4) to be effected when in the FIXED COIL position and operation (5) when in the MOVING COIL position.

DESCRIPTION

General

2. The unit is constructed on a standard AIR MINISTRY IG (" information generator ") panel with the mains on-off switch, fuses, metering switch and meter mounted on the front panel which contains, additionally, sixteen monitoring sockets. Input and output connections are made at the rear of the unit by one Jones plug and ten co-axial plugs Type 579.

3. Four 62·5 c/s sine-waves are fed from the capacity switch (radar Types 7 and 15) to this unit and are here combined in various " squarer " circuits to provide the required waveforms which are shown, idealistically, in fig. 1. Views of the unit are given in fig. 2 to 6 and the complete circuit in fig. 7.

4. The following operations are effected upon the sine-waves **A**, **B**, **C** and **D** obtained from the capacity switch. The reader should distinguish between the *sine-waves* and the outputs, some of which are labelled with the same letter, a convention with which users of the former AMES Type 7 handbook will be familiar. In this Chapter the sine-waves are lettered in bold type.

(1) Sine-waves **A** and **B** are squared and fed out on sockets Sk1 and Sk5 (*fig.* 7) to give outputs C and D for left and right check operation.

(2) Sine-waves **A** and **B** are combined in the squarer V10 to gate the bright-up waveform for " bright-up E output."

(3) Sine-waves **B** and **C** are combined to gate the bright-up form to give " bright-up F output."

(4) Sine-waves **C** and **D** are combined in a squarer and then combined with the output of V10 to give a square-wave which is also phase-inverted, producing two outputs, A and B, in anti-phase.

(5) Sine-waves **C** and **D** are both phase-advanced by 45 deg. and then fed to squarer stages to obtain gating of the synchronization pulse.

5. The unit contains its own stabilized power supplies of 270 V *positive* and 70 V *negative*.

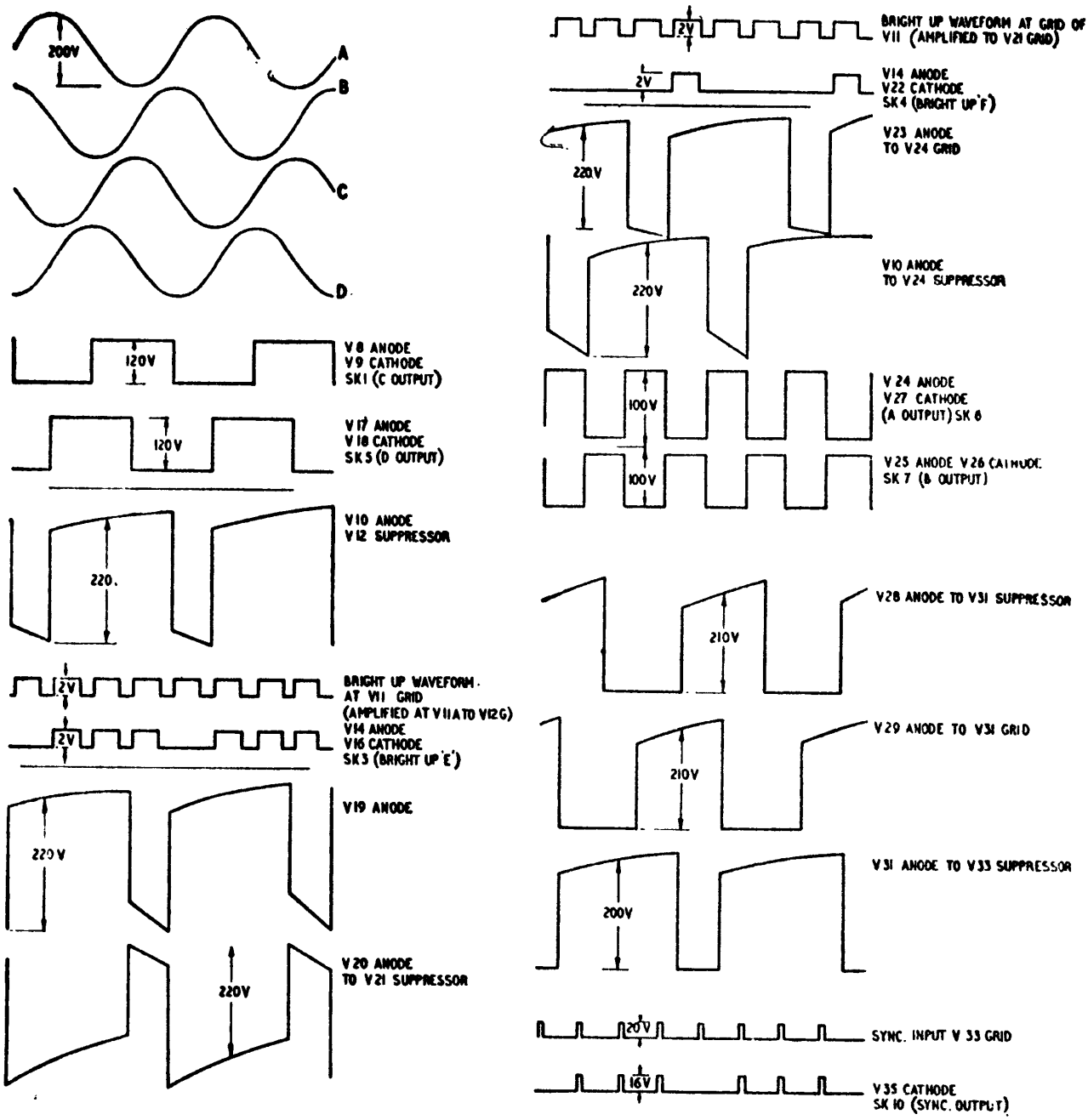


Fig. 1. Waveforms

Circuits (*fig. 7*)

6. The circuit arrangements can best be considered whilst tracing the production of the various waveforms shown, non-scaled, in fig. 1.

C and D outputs

7. Sine-wave **A** is fed to the grid of V8 (Type CV138). From the anode of V8 a square-wave is taken to the grid of V9 (Type CV2127) which is arranged as a cathode-follower giving the C output of approximately 100 V peak-to-peak at socket Sk1. The valves V17 (Type CV138) and V18 (CV2127) act in similar fashion on sine-wave **B** to produce output D at socket Sk5.

Bright-up E

8. Sine-waves **A** and **B** are fed into V10 (Type CV138) **A** being applied to the suppressor and **B** to the grid. The valve will conduct only when the voltage on both electrodes is raised above the cut-off value so the resultant anode waveform is a square-wave of mark/space ratio 3 : 1. This is fed to the suppressor of V12 (Type CV138).

9. The bright-up waveform is fed into socket Sk2 and is amplified by the double-triode V11 (Type CV455). It is then fed into the control grid of V12. Since the waveform on the suppressor of this valve is approximately 220V in amplitude and is DC-restored *negatively* by the diode V13a (Type CV140, *half*), it cuts off the valve on its negative-going excursion so that the output from V12 contains the bright-up waveform with every fourth bright-up pulse removed.

10. To restore the phase this waveform is passed to a triode amplifier V14a (Type CV455 *half*) in the anode circuit of which there is a potentiometer RV2. RV2 enables the output from V16 (Type CV2127) to be adjusted to an amplitude of 2V.

11. To maintain constant amplitude over various mark/space ratio bright-up pulses, the input to the grid of V16 is DC-restored *positively* to the bias voltage by means of the diode V15a (Type CV140 *half*). The gated waveform is taken from the cathode of V16 to output socket Sk3.

Bright-up F

12. Sine-wave **B** is applied to the suppressor of V19 (Type CV138) and the sine-wave **C** to its control grid. The squaring circuit produces a wave of mark/space ratio 3 : 1 at the anode. This is fed to a phase-inverting circuit of which V20 (Type CV138) is the centre. At the anode of V20 a waveform of mark/space ratio 1 : 3 appears. This waveform is DC-restored *negatively* by V13b (Type CV140) and applied to the suppressor of V21 (Type CV138) for gating purposes.

13. At the control grid of V21 there are the amplified bright-up pulses from V11 (*para.* 9). The resultant anode waveform contains every fourth bright-up pulse which is returned to its correct phase by an inverter triode V14b (Type CV455 *half*), is DC-restored *positively* with respect to the bias voltage by diode V15b (Type CV140 *half*) and fed through the cathode-follower V18 to the output socket Sk 5. The level of the output is adjusted to 2V by the potentiometer RV 3.

A and B outputs

14. Sine-waves **C** and **D** are fed to V23 (Type CV138), **C** to the control grid and **D** to the suppressor. The valve acts as a squarer giving a square-wave of mark/space ratio 3 : 1 at the anode. This is applied to the grid of V24 (Type CV138). At the suppressor of this valve a square-wave of mark/space ratio 3 : 1 but opposite in phase is received from V10 (*para.* 8).

15. The valve V24 will only conduct when both waveforms are at voltages above the cut-off value so the resultant at the anode is a symmetrical square-wave of twice the frequency (125c/s) of the input sine-wave. This is fed through a cathode-follower V27 (Type CV2127) to socket Sk6 and constitutes the A output waveform which is approximately 100V peak-to-peak in amplitude.

16. A second output from V24 anode is applied to the grid of V25 (Type CV138) which phase-inverts the square-wave and feeds it through a cathode-follower V26 (Type CV2127) to socket Sk 7 where a square-wave of 100 V peak-to-peak appears. This is in antiphase to that at Sk 6 and is the B output waveform.

Gated sync. pulses

17. Sine-wave **C** is passed through the circuit C31-R134 which produces an advance of 45 deg. in phase. The advanced waveform is applied to a squarer valve V28 (Type CV138) from the anode of which a square-wave is taken to the suppressor of V31 (Type CV138).

18. Sine-wave **D** is passed through the circuit C33-R139 which also produces an advance in phase of 45 deg. This waveform is squared by V29 (Type CV138) and is fed to the control grid of V31. The inputs to V31 are DC-restored *negatively* with respect to earth by the double diode V30 (Type CV140).

19. The waveform at the anode of V31 is a square-wave of mark/space ratio 3 : 1. This is DC-restored by the diode V32 (Type CV140 *half*) and applied to the suppressor of V33 (Type CV138) for gating purposes.

20. Synchronizing pulses for the PPI are fed to the control grid of V33 through socket Sk8. Due to the action of the waveform on the suppressor, every fourth sync. pulse does not appear in the anode waveform. The output is then returned to correct phase by an inverter stage V34 (Type CV138) which feeds into a cathode-follower V35 (Type CV2127) from the cathode of which pulses of approximately 16 V. amplitude are taken to socket Sk10. Socket Sk9 is a parallel connection to Sk8 so that ungated pulses can be obtained when required.

Fixed or moving coil console operation

21. When used on a fixed coil installation the gated sync. pulse facility will not be required therefore the switch SW3, at the rear of the chassis, is thrown to FIXED COIL and the heater supply to the valves V28 to V35 is disconnected.

22. For operation on a moving coil installation the gating of the bright-up waveforms is not required so the heater supply to the sync. gating circuits is restored by setting SW3 to the MOVING COIL position. After the type of operation required is decided upon and the switch position selected, the unused valves may be removed from the circuit.

Power supplies

23. The power supplies consist of a stabilized *positive* supply of 270 V capable of delivering 200 mA, and a *negative* 70 V line tied to a neon stabilizer. The latter is the bias supply and is fuse-protected by F3 (60 mA).

24. Both input lines to the primary of transformer TR1 carry 3A fuses F1 and F2. The 350-0-350 V secondary output is full-wave rectified by V2 (Type CV138), protected from overload by fuse F4 (250 mA). The supply is then passed through a condenser-input Π-type filter C_2-L_1-C_3 to a conventional stabilizing pack.

25. The setting of a potentiometer RV1 varies the grid voltage of V5 and this controls the voltage at which stabilization is effected. The screw-driver adjustment control is brought out to the front panel and labelled HT CONTROL.

26. HT voltage and other circuit readings can be measured on a meter M1 by use of the switch on the front panel. In normal operation the current taken from the 230V AC mains is approximately 0·7 A.

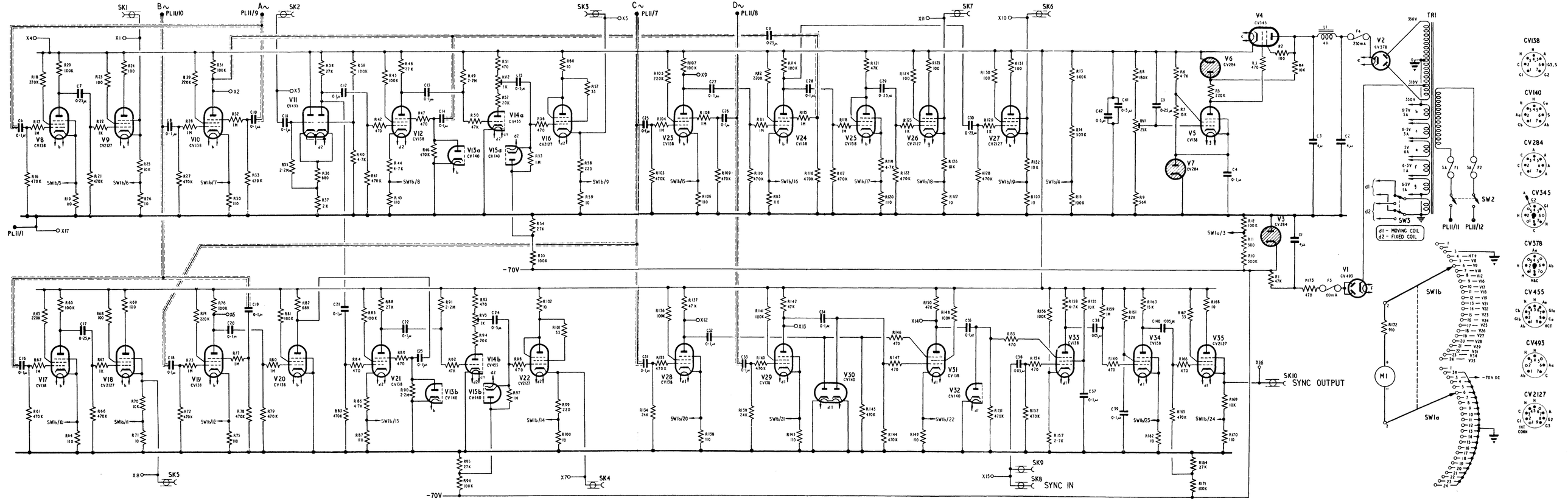


Fig. 7

Selector unit (radar Type 7 aerial) Type 33 – circuit

Fig. 7

Chapter 5

WAVEFORM GENERATOR (ANTI-SEA CLUTTER) TYPE 104

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Introduction

1. The waveform generator (anti-sea clutter) Type 104 (Stores Ref. 10V/16079) generates a waveform which suppresses wave clutter (short range sea return interference). The output of the waveform generator is injected into the amplifier (IF and video) Type A.3680 in opposition to the sea return signals. Pulse-shaping and amplitude controls are provided so that an inverted version of any sea return signal may be produced.

2. The unit is fitted to those static coastal radar installations which experience wave clutter, i.e., to installations using low-looking radar heads. The unit is a standard Air Ministry "information generator" type chassis incorporating its own power supplies, and can be housed in any of the following rack assemblies:—Type 307, 308, 310 and 319. When used with CEW/B and CEW/D installations, the unit is housed in a spare rack assembly. Fig. 1 is a general view of the unit.

General description

3. A block diagram of the waveform generator is included in fig. 6. The first stage is a flip-flop which generates positive-going pulses of variable width at the triggered frequency. The pulses pass through a differentiating circuit containing both coarse and fine differentiating controls. An inverter amplifier, biased beyond cut-off, amplifies the positive excursion of the input only, and the resulting negative-going output from the anode is fed out to a coaxial line via a cathode follower. An amplitude control is included in the output stage.

Circuit description

Waveform generator

4. A circuit diagram of the waveform generator and its power supplies is given in fig. 6; top and underside views of the chassis are shown in fig. 2 and 3.

5. Positive-going synchronizing pulses from the master trigger unit are fed in at SK1, and are coupled to the grid of V8a via C6 and R17. Shunted across R17 is a DC restorer diode (V7a) which re-establishes these pulses at earth potential.

6. The double-triode V8 functions as a cathode-coupled flip-flop which generates positive-going pulses at the frequency of the incoming triggering pulses. During the quiescent period, V8a is biased beyond cut-off by the voltage developed across the common cathode resistor R18; a triggering pulse of some 12V amplitude is needed to overcome this bias.

7. When triggered, the flip-flop passes rapidly into its unstable condition, and returns to its stable condition after a time interval determined principally by the time constant of the CR network C7, C8, R15 and RV2 (the WIDTH CONTROL). The width of the resulting positive pulse at V8b anode

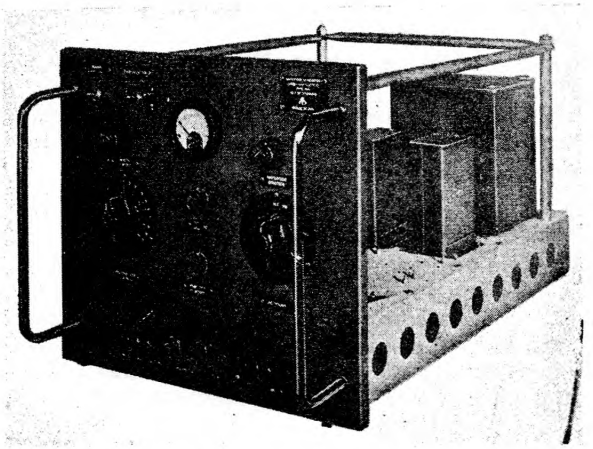


Fig. 1. Waveform generator (anti-sea clutter) type 104

can be varied between 1/50 and 3/4 of the p.r.f. period.

8. The output pulses of the flip-flop, DC restored at earth potential by the diode V7b, are applied to the differentiating circuit formed by RV3 (the FINE DIFF. CONTROL), R23, R21 and the particular condenser selected by SW2 (the COARSE DIFF. CONTROL). The waveforms shown in fig. 4 and 5 illustrate the action of the differentiating controls; only the positive excursion of the waveform need be considered, since the negative excursion is eliminated by the inverter amplifier V9.

9. SW2 provides a large step variation of the trailing edge gradient. Owing to the stray capacitance of the circuit, however, the amplitude of the leading edge is reduced when a condenser of low value is introduced. The potentiometer RV3 functions both as a fine differentiating control and as an amplitude control. As the control is turned clockwise, the time constant is reduced by the shunting effect of R23; at the same time the amplitude of the leading edge is increased. When the control is set fully counter-clockwise, there is no input of V9.

10. V9 is an inverter amplifier biased some 5V beyond cut-off by the potential divider R27 and R26. This bias ensures that only the positive excursion of the differentiated waveform is amplified; the positive overswing which would otherwise appear at the anode of V9 is thus eliminated.

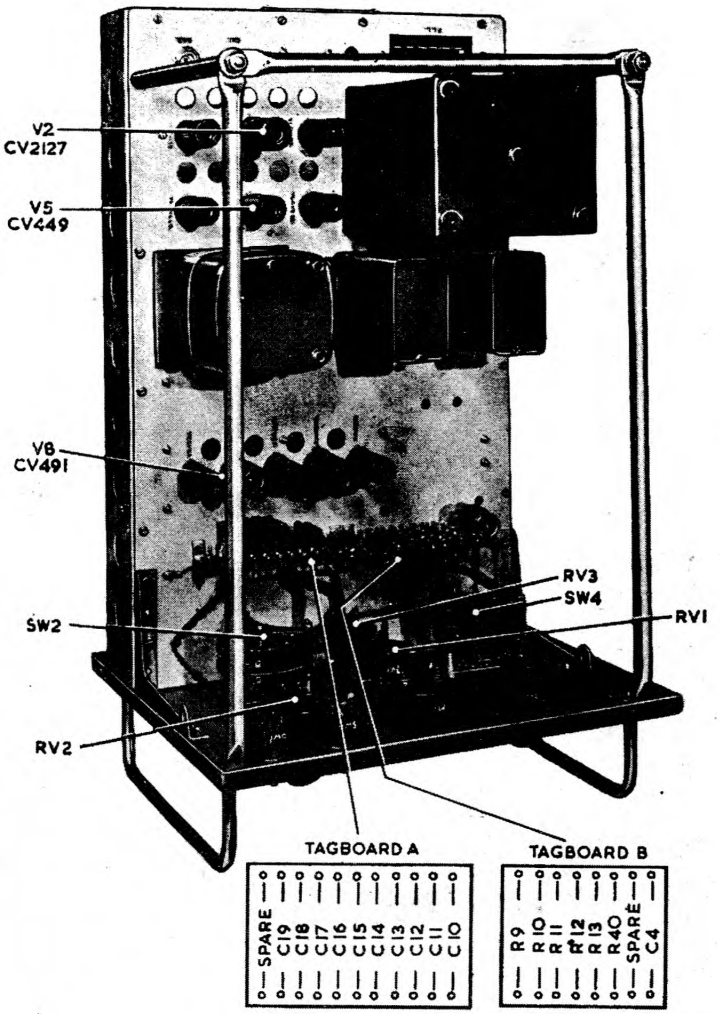


Fig. 2. Plan view

11. The final stage is a cathode follower. To enable the valve to pass the negative-going waveform, a positive balance voltage is provided for the control-grid of V10 by the potential divider R36 and R37. RV4 is the AMPLITUDE CONTROL.

12. The negative output, DC restored at earth potential by V11, passes through SW3 (the ANTI-CLUTTER OUT/IN switch) to SK2, and is fed over a coaxial line to SK10 of the receiver (IF and video) Type A.3680.

Power supplies

13. The built-in power unit operates from a 250V 50 c/s supply, which is fed in at pins 11 and 12 of the Jones plug PL1 and applied to the primary of the mains transformer through the double-pole switch SW1 and two 3A fuses. The 350-0-350 secondary winding feeds the full-wave rectifier V1, from which the positive 250V HT supply is derived.

14. A shunt-condenser input smoothing circuit is used. The output voltage is stabilized by the series regulator V2, which is controlled by the shunt feed-back valve V3. The reference voltage for V3 is provided by the gas-filled valve V6, while its anode and screen supplies are stabilized by V4 and V5 respectively. Included in the feedback loop is a potentiometer (RV1) which functions as an HT adjustment control.

Monitoring facilities

15. A comprehensive metering system is provided which does not involve the withdrawal of the unit or the use of connecting leads. The built-in meter and its associated METERING switch are mounted on the front panel of the unit.

16. A number of monitoring sockets (X1 to X6) are also mounted on the front panel. These test points are shown in the circuit diagram.

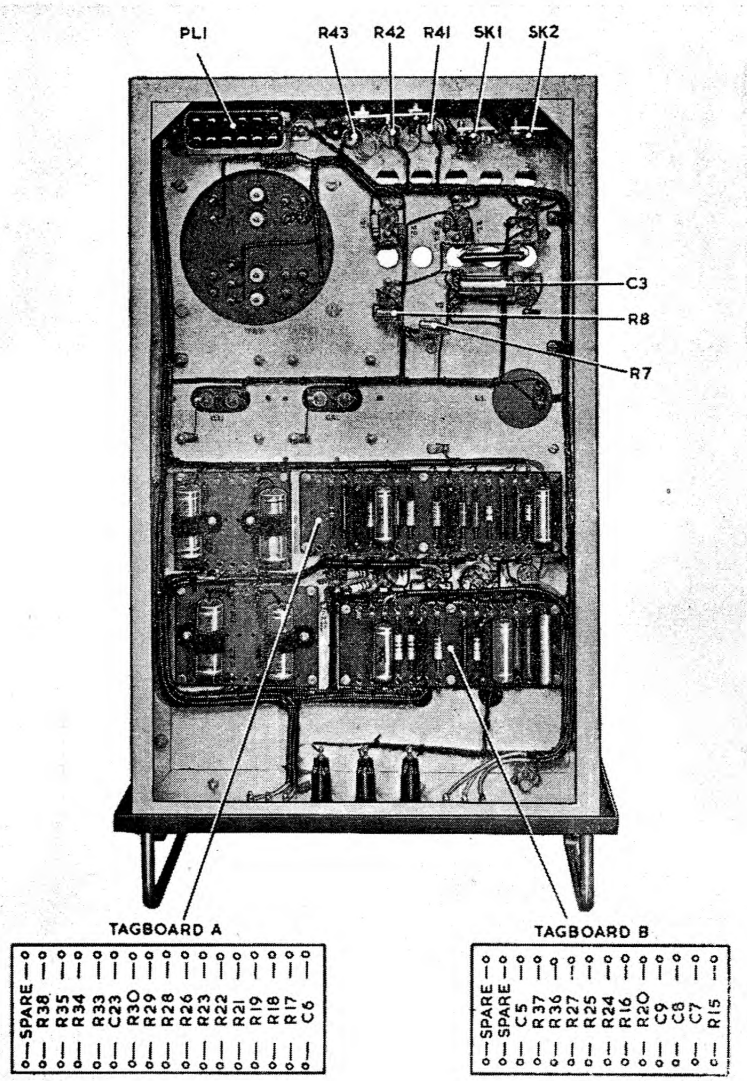


Fig. 3. Chassis—underside

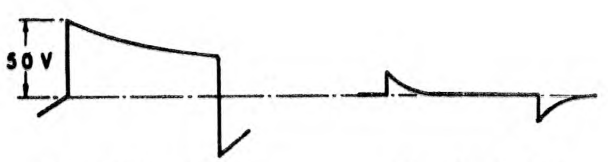


Fig. 4. Action of coarse diff. control

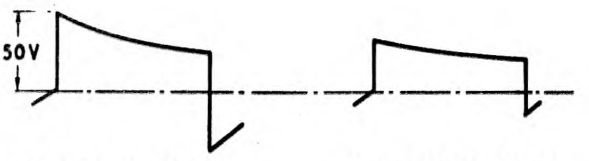
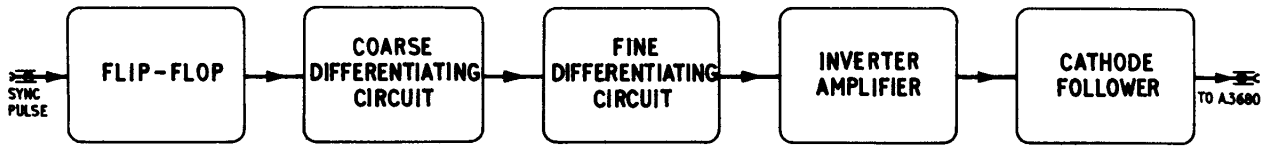
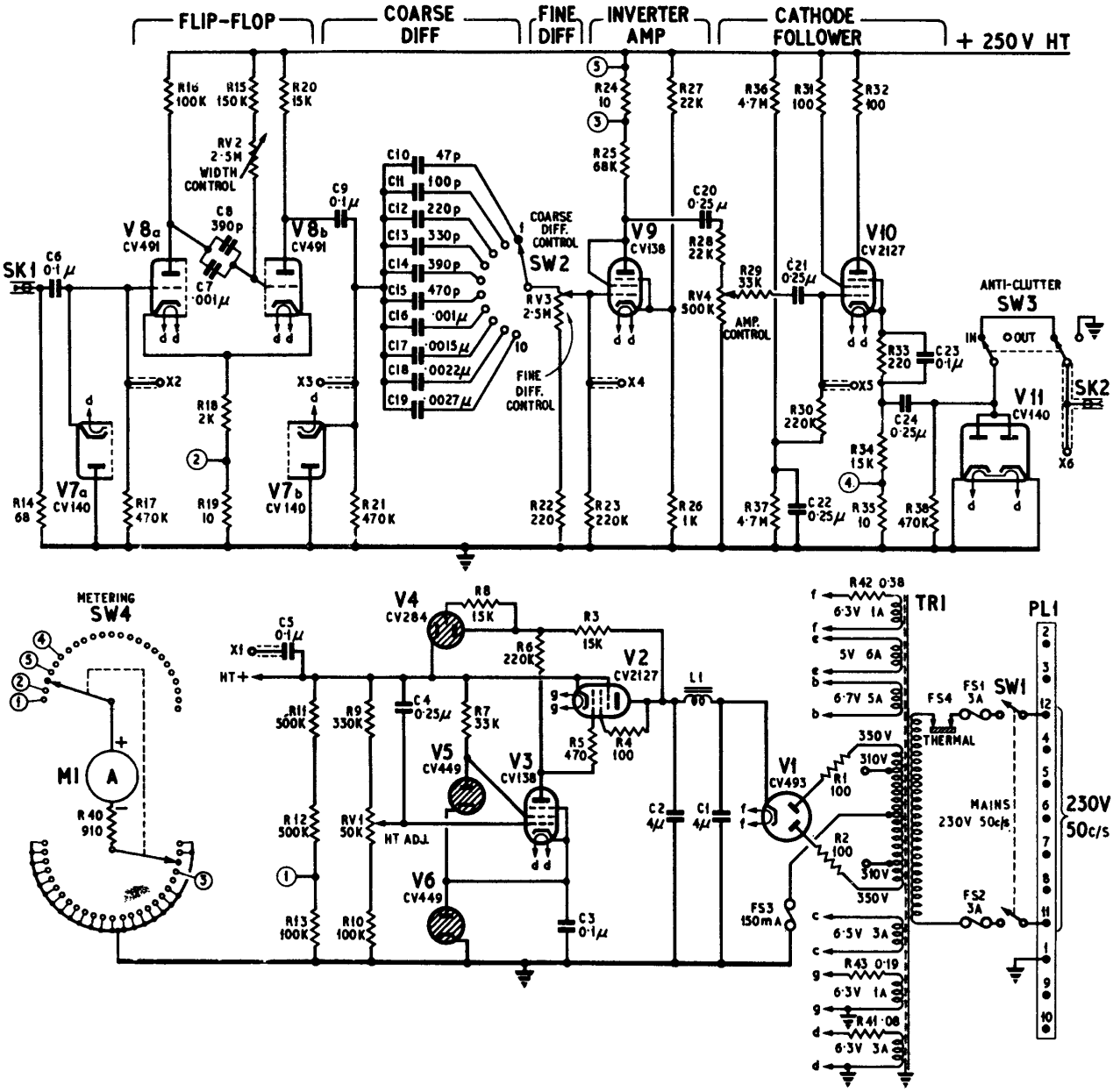
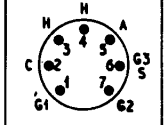
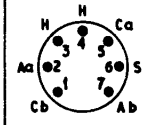
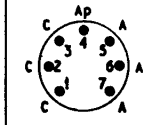
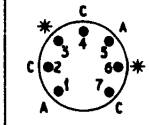
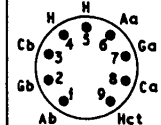
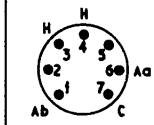
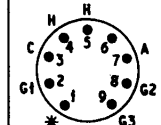


Fig. 5. Action of fine diff. control





CV 138	CV 140	CV 284	CV 449	CV 491	CV 493	CV 2127
						

* INTERNAL CONNECTION

Fig.6. Waveform generator (anti-sea clutter) Type 104-circuit

Chapter 6

TRIGGER UNIT TYPE 4413

(This chapter supersedes that issued with A.L. 17)

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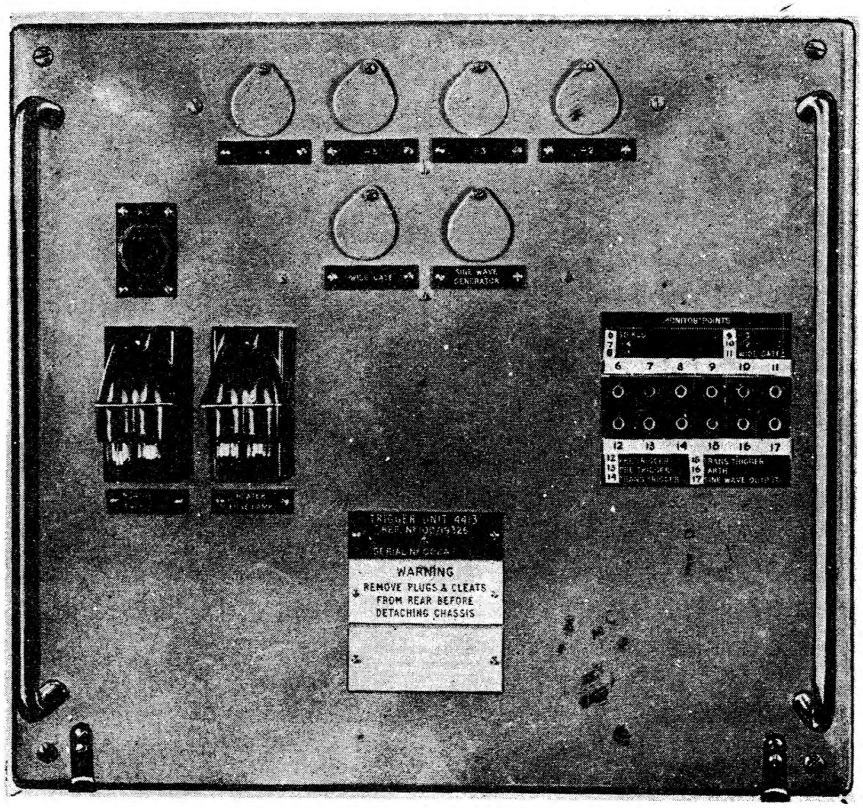


Fig. 1. Trigger unit 4413 : front view

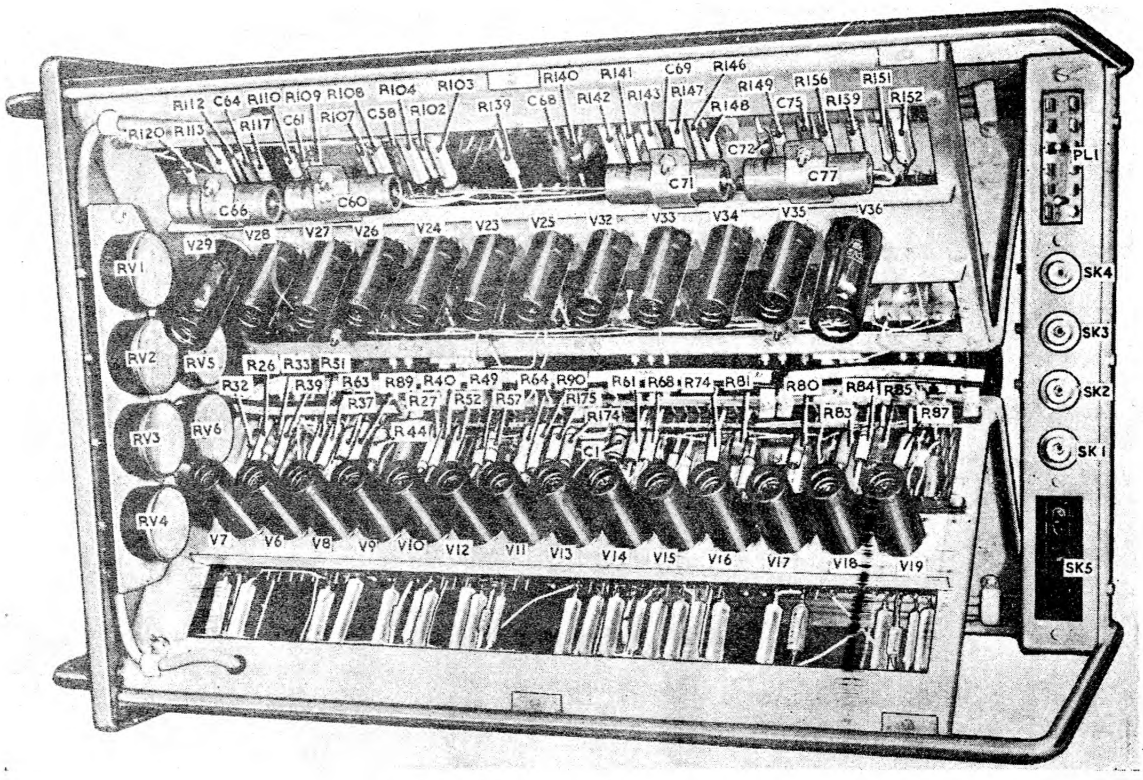


Fig. 2. Trigger unit 4413 : top view

GENERAL

1. Trigger unit 4413 (*fig.* 1) initiates two trains of pulses which are used for station triggering on CEW stations where Radar Type 80 is installed. Both pulse trains have the same p.r.f., namely, 270 c/s, and corresponding pulses in the two trains (the primary and secondary sub-trigger pulse trains) have a separation of 688 μS. The outputs from trigger unit 4413 are :—

(1) A primary sub-trigger pulse train at 270 p.p.s.

(2) A pulse train at 270 p.p.s. (The MTU trigger pulses).

2. The unit is situated in rack assembly 4411 in the radar office. In contrast to the vertical plate type of chassis, trigger unit 4413 has four small chassis running from front to rear forming, in cross section, an **X**-shape (*fig.* 2). This construction has the advantage that components are more readily accessible, and tendencies to overheating due to confined space are minimized.

3. The requirements of Radar Type 80 (*A.P.* 2527*Q*, *Vol.* 1, *Part* 1, *Sect.* 3) are such that the interval between corresponding pulses in the two trains must be kept constant. If this were not so, the time during which the pulse forming network in Type 80 modulator is charged would vary, with adverse effects. Trigger unit 4413 incorporates a highly stable crystal oscillator (at 32·344 kc/s) to keep the p.r.f. and timing interval constant. By crystal-controlling the p.r.f., interstation interference is minimized.

BRIEF DESCRIPTION

4. A simplified block diagram of the trigger unit is given in fig. 4. From this it will be seen that a chain of four frequency divider circuits is used to provide outputs having a p.r.f. of 270 p.p.s. For simplicity, only approximate frequencies are shown at each stage on this diagram but *the division ratios are quoted exactly on all illustrations.* Idealised waveforms of the dividing action are given in the first five waveforms of fig. 3.

5. A special type of crystal is used in the oscillator which employs automatic amplitude limiting to achieve a high stability frequency and to avoid damaging the crystal. Following the buffer amplifier, a regenerative squarer squares the waveform which then triggers the first divider. Subsequent dividers are triggered in cascade (*fig.* 4). All frequency dividers use flip-flop circuits.

6. The delayed or secondary sub-trigger pulse train requires the rectangular waveform shown on the sixth waveform of fig. 3. This waveform is called the wide gate. The circuit producing it is a flip-flop triggered by the fourth divider. The wide gate has a p.r.f. of 270 p.p.s. and a duration of 900 μ secs.

7. The circuit which employs V23, V24 and V25A yields an output to its gated amplifier channel only when pulses from the $\div 4$, $\div 5$ and $\div 2$ circuits coincide. These coincident pulses are shown on fig. 3, from which it is apparent that single pulses at a repetition rate of 270 c/s are applied to the control grid of V26. This is one of the primary gated channel's two inputs.

8. The other input is the squared 32 kc/s wave-

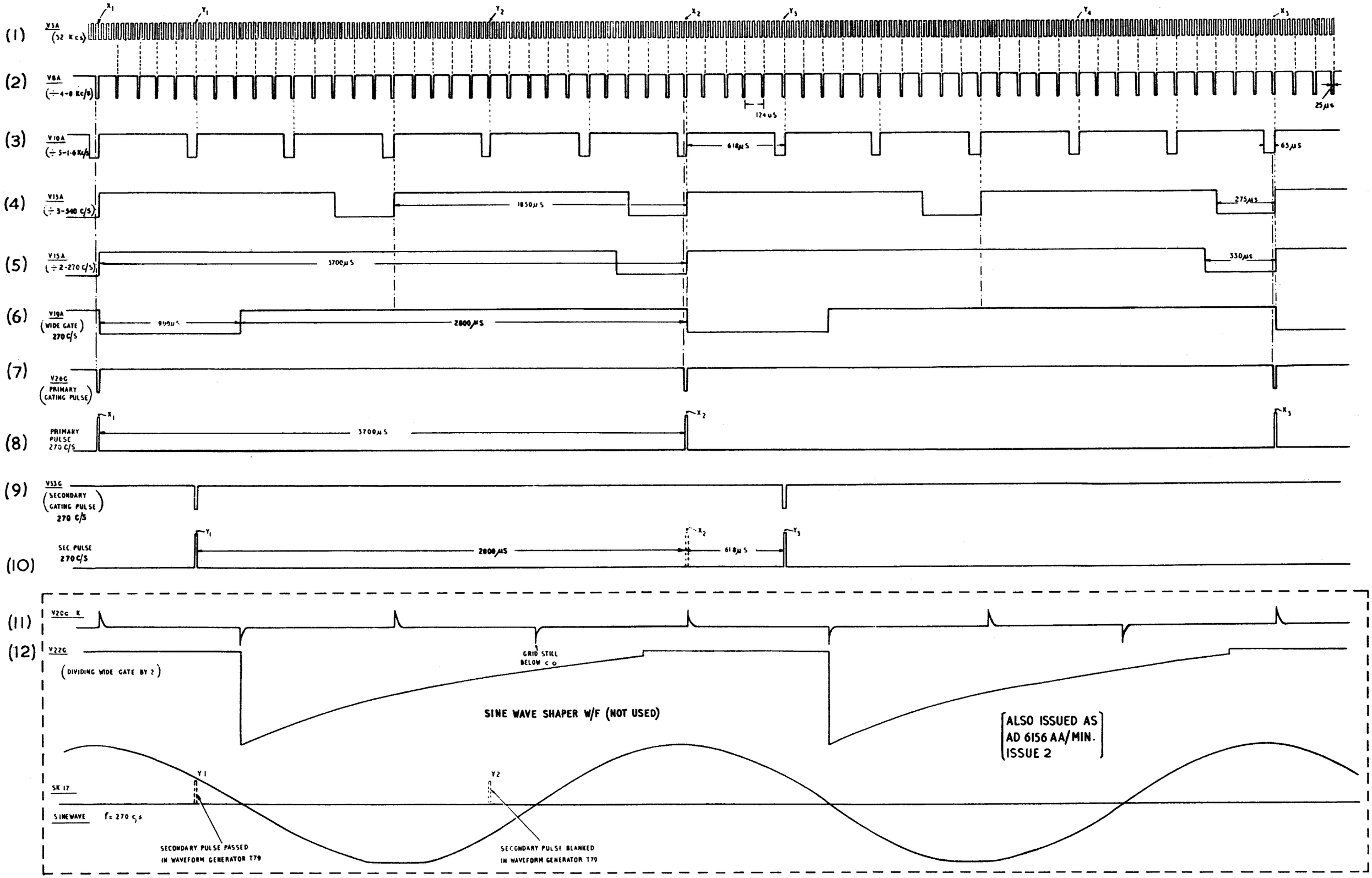


Fig.3

Trigger Unit 4413 Idealised Waveforms

Fig.3

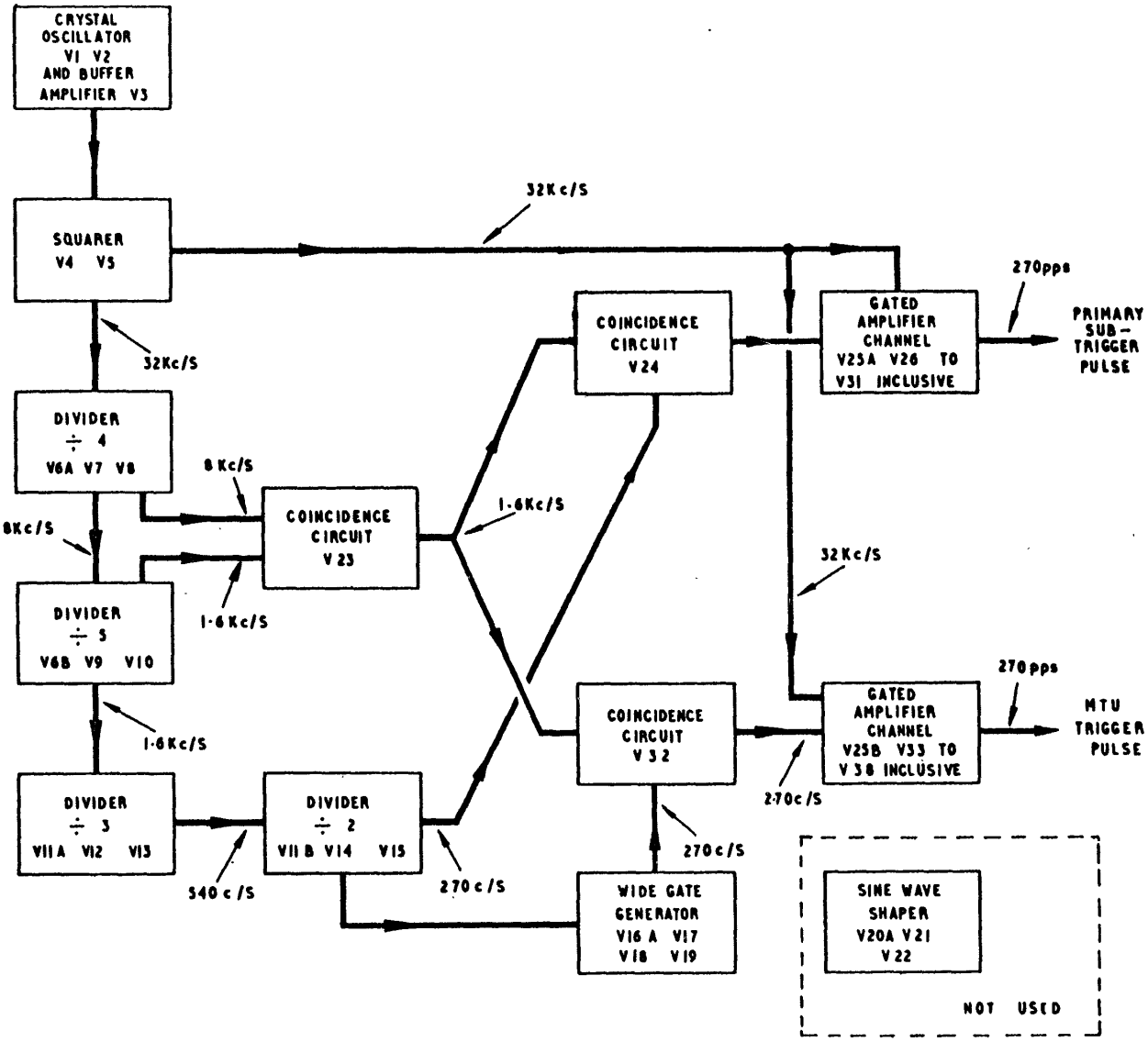


Fig. 4. Block diagram

form from V5, which is differentiated at V27. This gated amplifier channel is only open to its second signal for the duration of its first. Thus a narrow pulse is fed out 270 times per second. It should be noted that the actual output is derived from one cycle of the squared, crystal-controlled waveform. This avoids jitter which would be present if the divider outputs were used as output pulses. The p.r.f. at which this waveform is fed out is also crystal-controlled via the divider. The coincidence circuits ensure that precisely corresponding cycles of the crystal oscillation are fed out in each succeeding repetition period. This circuit's output pulse is known as the *primary sub-trigger pulse.*

9. A similar arrangement of coincidence circuits containing V23, V32 and V25B, following by a gated amplifier channel is used to produce the *secondary sub-trigger pulse.* Again an output from V32 occurs only when the pulses from the ÷4, ÷5 dividers, and the wide gate circuit are coincident (*fig.* 3). V32 provides a negative-going pulse output only during the wide gate's negative-going period of 900 μ secs at a repetitive rate of 270 c/s. Which pulse V32 passes is most important and fig. 3 should be studied closely. The phase of the wide gate is arranged so that the output from the ÷2 circuit (270 p.p.s.) has just completed a negative-going pulse when the leading edge of the negative-going wide gate occurs. This ensures that the primary gating pulse is not fed into the secondary channel. V32 yields its output, the gating pulse for the secondary channel, one pulse of 1·6 kc/s later than the gating pulse for the primary channel, i.e., for every primary gating pulse there is a secondary gating pulse 618 μS later.

10. The secondary gated amplifier channel is similar to that for the primary sub-trigger pulse and a narrow pulse derived from the squared crystal-controlled waveform is fed out for every negative-going half cycle of the wide gate. It has been seen that pulses in the MTU trigger pulse train form the secondary sub-trigger pulse train

at 270 p.p.s. As shown in fig. 3 the spacing between the sub-trigger pulses and the MTU trigger pulses give correct spacing between corresponding pulses in the two trains fed to trigger unit 102. For correct operation switch unit 413A in the MTU has to be switched to the RADAR TYPE 7 operating position.

Summary

11. In the above brief description we have seen that the required close control over p.r.f. is obtained by using a crystal oscillator from which are derived the two pulse trains. The requirement for accurately spaced corresponding pulses from both trains (a pair of pulses is required for triggering the modulator in Type 80) is met by generating a pulse train from the crystal oscillations, at 1·6 kc/s to obtain a 618 μS spacing. The 1·6 kc/s waveform is obtained in two divider stages ($\div 4$ and $\div 5$). Since two trains at 270 p.p.s. from trigger unit 4413 are required, two further divider stages are necessary. The 1·6 kc/s waveform is fed into a $\div 3$ stage and the resulting 540 p.p.s. waveform is reduced to 270 p.p.s. in a $\div 2$ stage.

12. Although there have now been obtained waveforms at 270 p.p.s., these are not used directly as the trigger pulse trains. These waveforms are merely used as gating waveforms for the 32 kc/s waveform so that the output pulses have their triggering edges derived directly from the crystal-controlled oscillations.

13. Because the 270 p.p.s. pulses are too wide to select one 32 kc/s pulse the coincidence circuit (*fig.* 4) produces a narrow 1·6 kc/s pulse which has been obtained from the $\div 4$ and $\div 5$ dividers. The output of this coincidence circuit feeds into two other coincidence circuits. Both these coincidence circuits produce gating pulses which are sufficiently narrow to allow only one pulse of the 32 kc/s waveform to pass through to their respective amplifier channels.

14. Fig. 3 shows clearly that it is when all the waveforms are going negative together that a pulse comes through the gated amplifier channel: X1, X2 and X3 through the primary channel and Y1 and Y2 through the secondary channel. The gating pulse waveform is deteriorated slightly to allow the sharp crystal-controlled triggering edge through. The 32 kc/s waveform is sharply differentiated at the input to each gated valve to obtain narrow output pulses which are amplified and shaped in the output stages. The output pulses are approximately 4 μS wide.

15. Through the above description round figures have been used for the frequencies at the various divider stages, it may now be helpful to consider more exact figures. The crystal frequency is 32·344 kc/s. This is divided by 4 and by 5 to give a frequency of 1·617 kc/s, one cycle of which occupies 618·1 μS. This interval plus a fixed delay of 70 μS in the MTU gives the spacing between corresponding pulses in the two sub-trigger pulse trains. Now the 1·617 kc/s waveform is further divided by 3 to give 539 c/s and again by 2 to give 269·5 or nominal 270 c/s.

CIRCUIT DESCRIPTION

Crystal oscillator and buffer amplifier

16. A special type of crystal having a double resonator in a vacuum is used in the crystal oscillator circuit (*fig.* 5). Initially V1, a variable

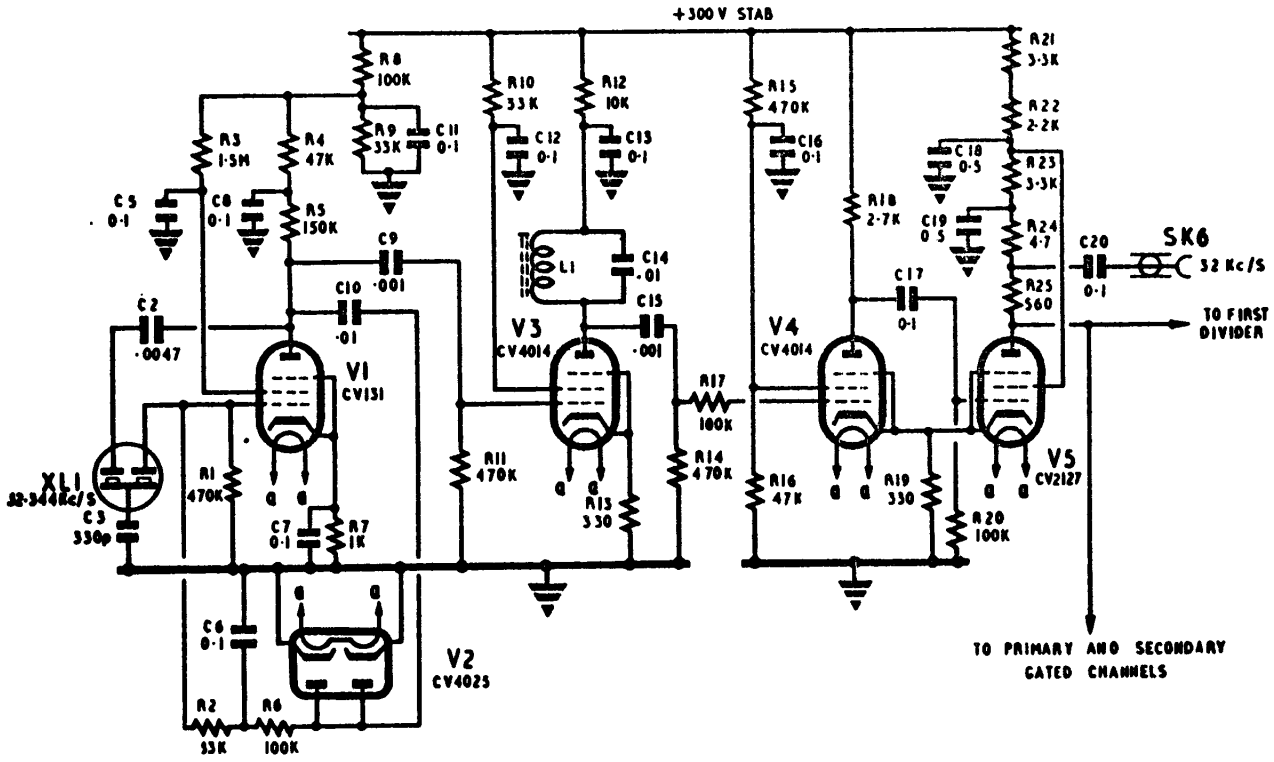


Fig. 5. Crystal oscillator and squarer circuit

μ pentode, is unbiased and oscillations build up rapidly in the crystal circuit in the grid of V1, feedback from the anode being via C2. To prevent damage to the crystal, automatic amplitude limiting is obtained by a peak rectifier circuit, consisting of V2, C6, R6 and R2, which is fed from the anode of V1 via C10. The smoothed negative voltage developed across C6 is applied to the grid of V1. A small amount of cathode bias in V1 is provided by R7 which is decoupled by C7. Amplitude limiting besides protecting the crystal also enhances frequency stability. The buffer amplifier V3 is tuned to 32·344 kc/s by L1 in its anode circuit. Negative feedback is provided by undecoupled R13.

Squarer

17. From the anode of V3 the amplified sine wave is fed via C15 to the cathode-coupled regenerative squarer circuit of V4 and V5 (*fig.* 5). The anode loads of the two valves, R18 and R25, are low values to allow rapid transition of the circuit from one state to the other with consequent steep-edged output waveforms. The anode load of V5 actually consists of R25 in series with R24, the latter being a small fraction of the total. This permits the connection of an oscilloscope to the monitoring point SK6 without the extra stray capacitance affecting the circuit's action. The anode waveform of V5 (*fig.* 3) is fed to three circuits: to the two gate valves (V27 and V34) and to the first divider (V6).

First divider

18. In the stable state of the flip-flop circuit (*fig.* 6) V7 is cut off by its grid connection to the junction of R31 and R24. V8 is conducting hard as its control grid is returned to HT via R35. V7 anode then tends to rise to +300V but is held at the potential of RV1's wiper when V6A conducts. The screen grid and anode potentials of V8 are low during this period.

19. When the first negative-going waveform (*fig.* 7), differentiated by C21 and R28, is fed to V6A's cathode, the negative-going voltage at the anode of V7 is taken via C25 to the control grid of V8 and, as a result, V8 draws less current. V8's screen grid potential starts to rise. This rise is conveyed by C26 to V7 control grid, lifting the bias on V7. The anode potential of V7 drops, taking the grid of V8 still further negative until, by cumulative action, which is very rapid, V8 is cut off and the flip-flop is then in its unstable state. It should be noted that V6A isolates the divider from the squarer output circuit as it cuts off on the advent of the first negative-going edge.

20. The reversion to the steady state takes time, the amount of time required depending on C25 discharging via R35 to a value where V8 starts to pass current. V8 screen grid potential then falls due to current in R36. This drop is taken by C26 to V7 control grid and V7 draws less

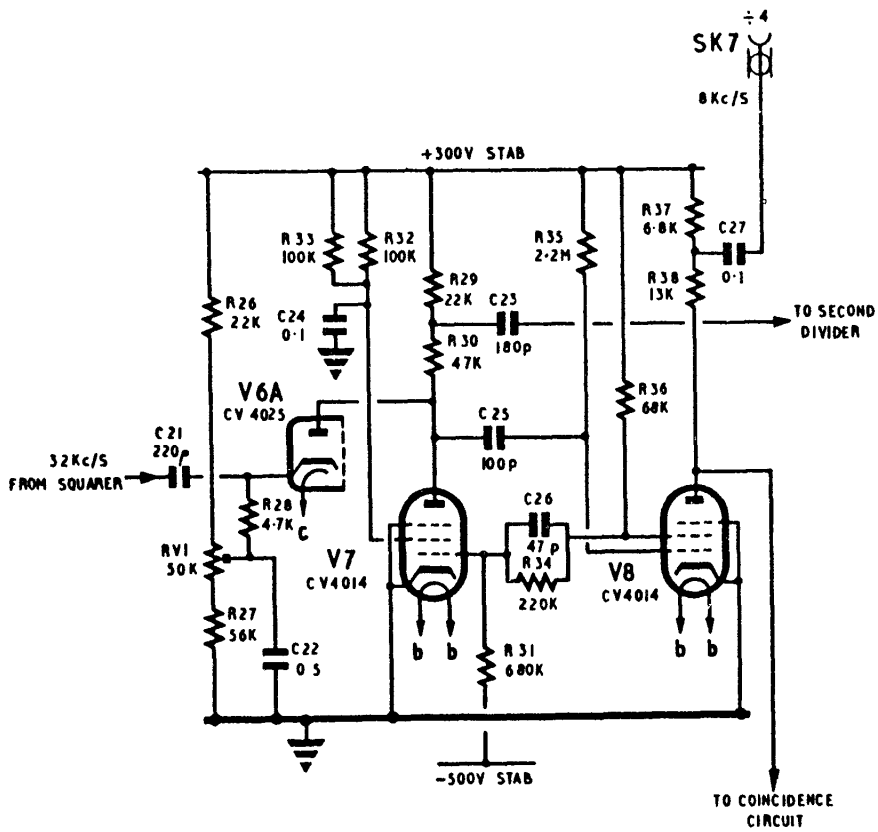


Fig. 6. Divider circuit

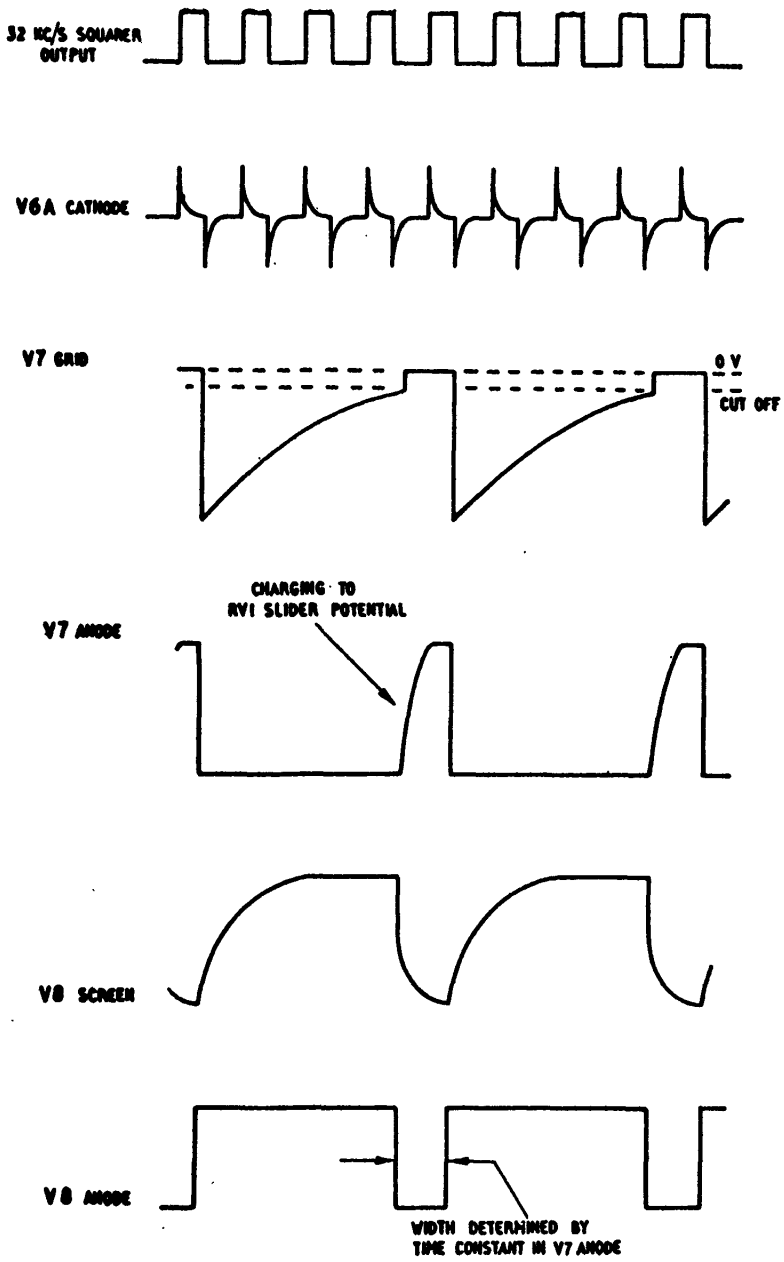


Fig. 7. Divider waveforms

current, V7 anode potential rises and V8 control grid rises with it so V8 draws more current and by cumulative action the return to the stable state is very rapid. A steep-edged waveform on the screen and anode of V8 results.

21. While C25 is discharging, V7 is conducting heavily and, as mentioned above, after the first negative-going pulse at V6A's cathode, the anode potential of V7 is below that on the wiper of RV1. Thus, the instant the first pulse fed through V6A changes the state of the flip-flop, V6A is cut off by its anode being negative relative to its cathode. Succeeding differentiated pips on V6A cathode do not appear on the anode of V7 until V7 is once again cut off and the anode potential is at or near that of RV1's slider. Thus only every nth pulse is passed by V6A. The value of n depends on how long the circuit stays in the unstable state. This in turn depends on the time constant of C25 and C35 and on the initial charge on C25 (considering that V7 anode must be back at the original potential before the steady state is reached). Now the initial charge, the only variable, is set by RV1. Thus RV1 determines the divider ratio. It is set so that one cycle of the V7-V8 flip-flop takes place for every four cycles of the squarer output. Two outputs are taken from the V7-V8 flip-flop: one, the negative-going trigger edge, is fed from the junction of R29 and R30 in the anode of V7 to the following divider; the other is fed from the anode of V8 to V23 (the coincidence circuit). SK7 provides a monitoring point for the first divider.

22. The width of the negative-going pulse on V8 anode is of interest. The negative-going edge of the pulse occurs when V8 cuts on and ends when the flip-flop is triggered once again when a pulse is passed by V6A. During this time V7 anode is charging up towards HT as V7 is cut off but it will be held at the potential set by RV1 when V6A conducts. In practice the setting of RV1 and the time constant will be such that a negative-going pip will be passed by V6A before V7 anode has attained RV1 slider potential, but sufficient time must be allowed for recovery on V7 anode. Now the time taken depends, in the case of the first divider, on C25 and the anode load of V7, and C25 is a factor in determining the period of the flip-flop. In succeeding stages, as the time interval between pulses lengthens, the time required for recovery on the anode of the first valve (corresponding to V7) will also lengthen since the value of the anode load is fixed by the necessity for a sharp drop once the valve cuts on. In succeeding stages, then the negative-going pulses fed to the coincidence circuits will be wider. This also offers a convenient method of setting up the divider because, within the limits of the circuit, if the pulse width is set correctly the divider ratio will also be correct.

Subsequent dividers

23. The second divider (*fig.* 17) works in the same way as the first, triggering pulses being fed to it via V6B. Its ratio is set by RV2 to divide by 5 the output of the first divider. The monitoring point, SK8, is connected to a tapping on the anode load of V10 to prevent circuits connected to it affecting the action of the divider. From

the second divider two outputs are taken :— one, taken from the junction of R42 with R43 in the anode of V9, feeds V11A to trigger the third divider ; the other, taken from the anode of V10, feeds V23 (the coincidence circuit).

24. The third divider circuit, consisting of V11A, V12 and V13, is similar to the first two, RV3 being the control for division ratio. This stage is set to divide by three. One output is taken from the third divider, this is taken from the junction of R55 and R54 in the anode of V12, and feeds V11B to trigger the fourth divider.

25. In the fourth divider, consisting of V11B, V14 and V15, RV4 controls the division ratio which is set to divide by two. Two outputs are taken from this stage and the first feeds V24 (the coincidence circuit), the other, taken from R68, the screen grid load of V14, feeds V16A (the wide gate generator).

Wide gate generator

26. This circuit (V16A, V17, V18, V19) is another flip-flop. In the stable state (i.e. before a trigger pulse) V17 (*fig.* 17) conducts heavily and V19 is cut-off. The DC back-coupling path is from the anode of V17 to the control grid of V19. The AC back-coupling is from the screen grid of V19 to the control grid of V17, C48 and R78 being the timing components.

27. The voltage range through which the screen grid potential of V19 can vary when the flip-flop changes state is set by RV5. In the stable state, V19's screen grid potential is clamped at the voltage on C49 (the upper limit) by V18A. A negative-going pip passed by V16A to the grid of V17 triggers the flip-flop into the unstable state. As V19 conducts its screen grid potential drops but is held by V18B at the voltage of C50 (the lower limit). The voltage drop on the screen grid is conveyed to the grid of V17 by C48 and V17 cuts off. How long V17 stays cut-off is determined by the amount of the drop and on the time constant of C48 and R78. The setting of RV5 then determines the duration of the unstable state of the flip-flop, in which there is no dividing action as it had returned to the stable state before the arrival of the next pulse from the third divider. The purpose of the circuit is to provide a gating pulse, the wide gate, which is used in the coincidence circuits.

28. It should be noted that the wide gate waveform is taken to the coincidence circuits from the

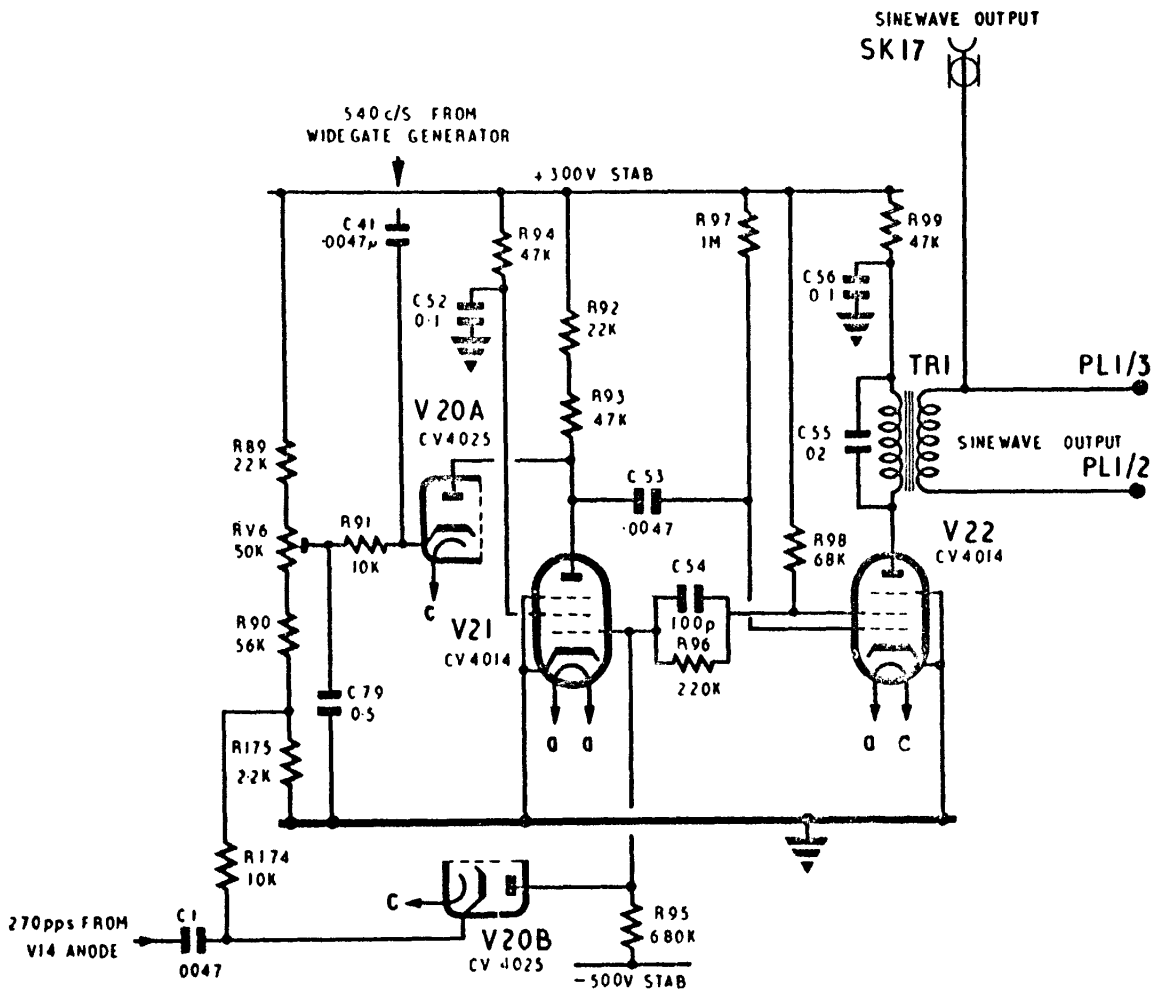


Fig. 8. Sine wave shaper circuit

anode of V19. This is the valve which is cut off in the stable state and so its output on the triggering edge, in contrast with the outputs from the dividers to the coincidence circuits, is negative-going instead of positive-going. This difference is most important in producing two pulse trains with the correct separation i.e., the primary sub-trigger and MTU trigger pulse trains. This point will readily be appreciated if it is remembered that the coincidence circuit (*para.* 33) provides an output only when all input waveforms are negative-going as shown in fig. 4.

Sine wave shaper (not used)

Note . . .

Originally, the sine wave shaper was used to supply a sine wave to the MTU. This sine wave blanked out alternate MTU trigger pulses which had a pulse rate of 540 *p.p.s. The following information is included here to complete the description of trigger unit* 4413 *circuit* (*fig.* 17).

29. V21 and V22 are in a flip-flop circuit (*fig.* 8) similar to that used for the divider circuits. The anode load of V22 is a parallel tuned circuit, formed by the primary of TR1 and C55, whose resonant frequency is 270 c/s. As shown in fig. 3, the time constant of C53 and R97 in the grid of V22 is greater than one cycle of the 540 c/s wide gate generator output. In the stable state, V22 is conducting and V21 is cut off so that the anode potential of V21 is high and V20A can pass negative-going pulses applied to its cathode. The positive-going wide gate waveform is sharply differentiated by C41 and R91 (*waveform* 11, *fig.* 3). Now there is an ambiguity in the triggering of the circuit which is resolved by the circuit including V20B but, assuming that V20A passes the correct differentiated negative-going pip as shown in fig. 3, this can be ignored for the moment. The circuit is triggered into its unstable state and V22 is cut off, the bias on V21 is lifted and V21 anode potential is held low while C53 discharges through R97. The next negative-going pip is not passed by V20A but the circuit reverts before the one after so that it divides by two.

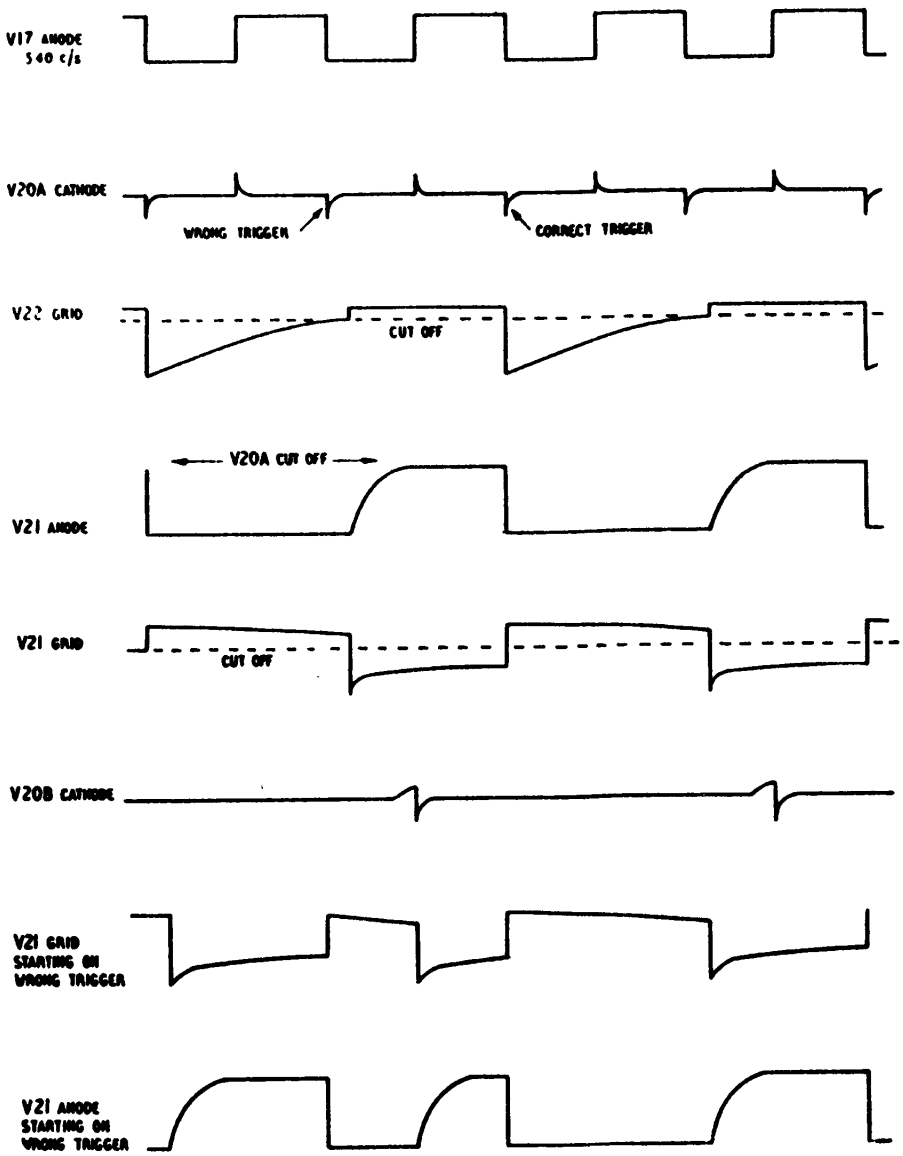


Fig. 9. Sine wave trigger waveforms

30. Division by two is necessary to provide a trigger with the correct phasing to keep the tuned circuit oscillating. When V22 is cut off, the anode starts a positive-going swing at 270 c/s (the phase of the sine wave in fig. 3 is that at SK17) and dividing by two ensures that the anode is again swinging positive when the valve is once again cut off. The damping on the oscillatory circuit when V22 opens up is negligible and the drop in voltage at V22 anode is once again correctly phased with the sine wave. For consistently correct blanking the frequency of the oscillatory circuit must be approximately correct and C55 (nominally ·02) is adjusted to give the correct frequency at SK17.

31. As mentioned above V20A might, on first switching on, pass the wrong trigger pulse. It is apparent that the sine wave would then be in the wrong phase and the secondary sub-trigger pulse train from the MTU would consist of the pulses in the 540 c/s MTU trigger pulse train which should be blanked. To prevent this happening, a pulse at 270 c/s from the anode of V14 is sharply differentiated in C1 and R174 producing a sharp negative-going pip which is applied to the cathode of V20B. With correct triggering the grid of V21 is below cut off (*fig.* 9) and the pip is not passed by V20B.

32. Suppose now that V20A passes the wrong trigger. Then when the negative pip arrives at the cathode of V20B the grid of V21 is high and the circuit is triggered back to its stable state. V21's anode is once again high on the arrival of the next negative pip, the correct trigger, at the cathode of V20A and the circuit is once again triggered and the desired operation is resumed.

Coincidence circuits

33. An output is given from the diodes in the coincidence circuits when the three inputs coincide. The inputs to the coincidence circuits are in each case taken from the appropriate valve in the divider and wide gate circuits as discussed in para. 24. The action of the circuits can readily be seen by referring to fig. 3 and fig. 10, which shows the circuit containing V23 V24 and V25A. In the absence of pulses all three valves are conducting and the anode of V25A is held at the potential set on its cathode which is connected to the junction of R100 and R101. It should be noted that the anodes of the divider output valves are also held at this potential. Negative-going pulses on the anodes of the diodes cut them off but it is only when both halves of V23 and of V24 are cut off that the anode potential of V25A drops towards the −500V stabilized line. A negative-going pulse, equal in width to the narrowest of the three pulses applied to the coincidence circuit, is passed to the grid of V26. The recurrence frequency of the pulses is that of the lowest frequency applied.

34. Each input pulse to V26's control grid is integrated by the circuit of C59 and R102 to impose a slope on the leading and trailing edges of the negative going pulse. This has two effects :—

(1) It prevents any capacitive coupling taking effect between the suppressor grid and anode of V27, and thus ensures that the gating waveform is not fed out from V27.

(2) It imposes a time lag at the end of the gating pulse to allow the formation of the output pulse.

Primary gated channel

35. V27 is biased to cut-off on both its controls and suppressor grids (*fig.* 11). The positive-going gating waveform from the anode of V26 is applied to its suppressor grid ; the input to its control grid is the 32 kc/s crystal controlled waveform from V5. This is differentiated by C61 and R110 and the positive pip before the negative-going trigger edge (*fig.* 12) opens up V27 producing a pulse of about 4 μS at the anode. The delay imposed on the trailing edge of the gate pulse ensures that the gate valve stays open on

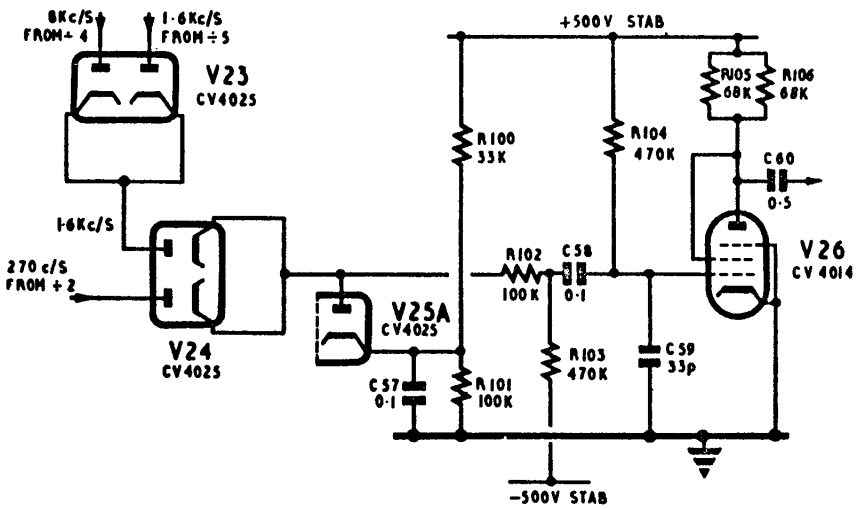


Fig. 10. Coincidence circuit

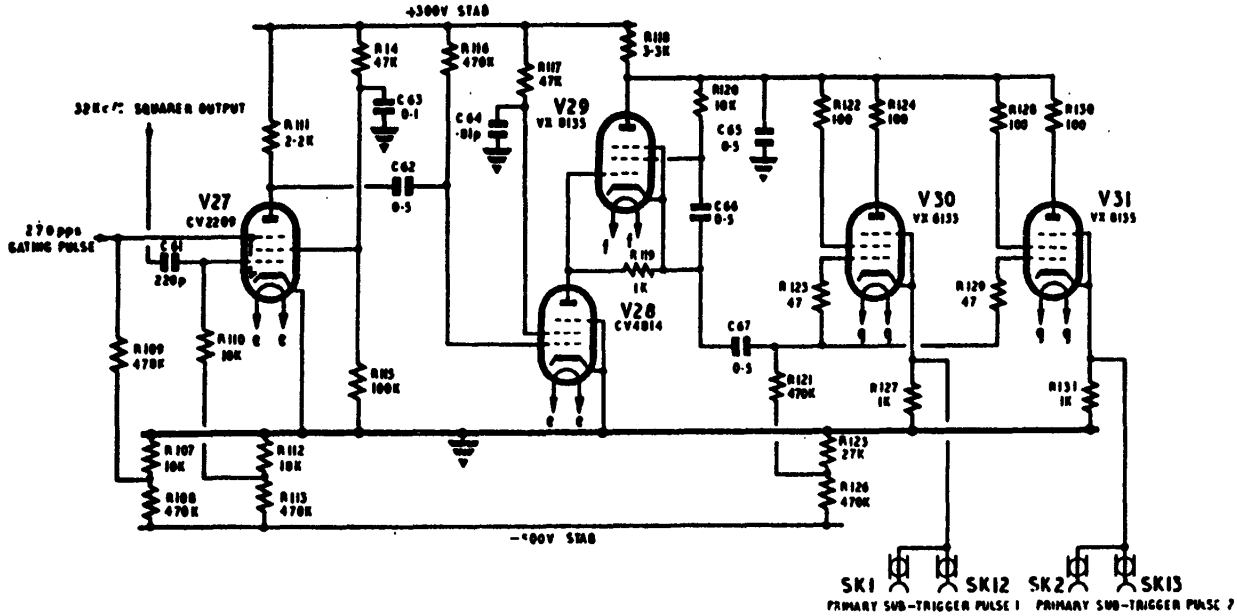


Fig. 11. Primary gated channel

its suppressor after the differentiated pulse on the grid has finished.

36. The negative-going pulse at the anode of V27 is now at the required p.r.f. (270 p.p.s.) and has a sharply defined leading edge derived directly from the crystal oscillator. It is noteworthy that an output at 270 p.p.s. could be obtained from the divide by two circuits but it will be remembered that the start of the pulse (*waveform 5 in. fig. 3*) is determined by the setting of the preset RV4 and so it is not so stable as the edge derived from the crystal.

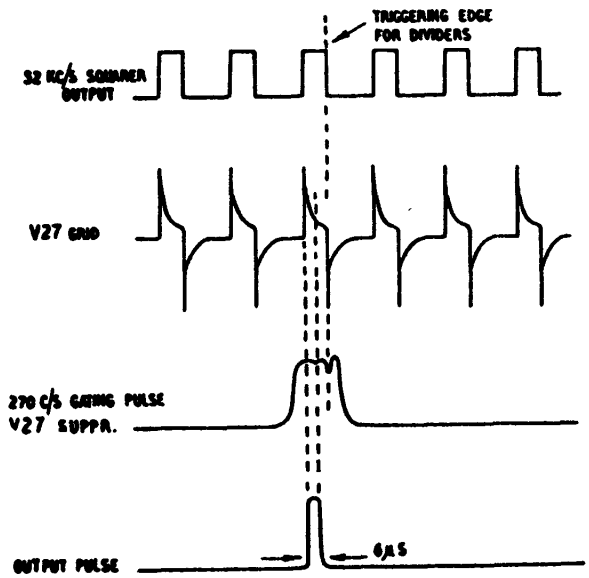


Fig. 12. Gated and output waveforms

37. Normally V28 is passing the current required by V29. This current is determined by the bias developed across R119. When V28 is cut off by the negative-going pulse applied to its grid, current in R119 ceases, removing the bias on V29. V29 conducts heavily and a large positive-going pulse is passed by C67 to the grids of V30 and V31, the cathode follower output stages. V30 and V31 are rapidly taken above cut-off and steep-fronted pulses are developed at the cathodes, which are connected to coaxial sockets SK1 and SK2. Decoupling of the HT line for the output pulses is provided by R118 and C65. The outputs from this channel are positive-going primary sub-trigger pulses at 270 p.p.s.

Secondary channel

38. Another circuit consisting of V23, V32 and V25B is fed with 270 c/s wide gate waveform into V32B (*fig.* 17) and the resultant gating pulse at 270 c/s is fed into the secondary gated channel. Its time relationship to the primary gating pulse can be seen from fig. 3. This output pulse, the MTU trigger pulse is developed in the same way as described in para. 34.

Power supplies

39. Stabilized HT supplies for the unit are provided by power unit 4414 but the trigger u it has its own heater transformer, TR1 (*fig.* 17). This transformer has seven heater windings. The ones which feed valves whose cathode potentials are normally high are connected to potential dividers across the HT supply.

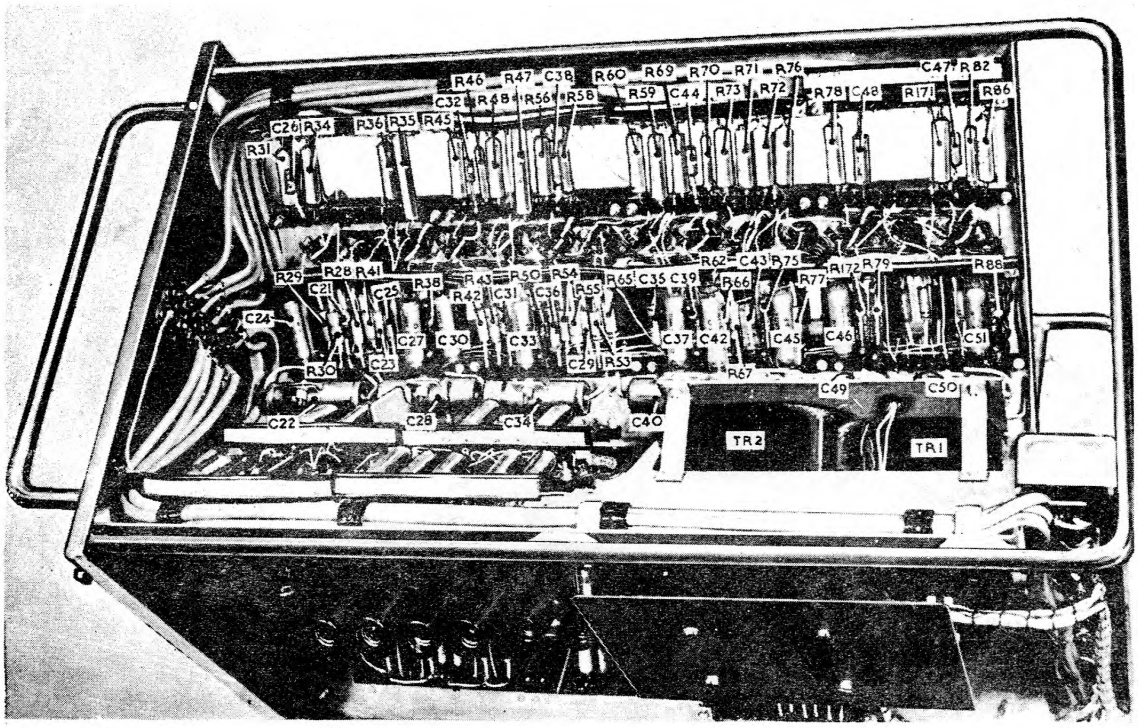


Fig. 13. Trigger unit 4413 : right-hand view

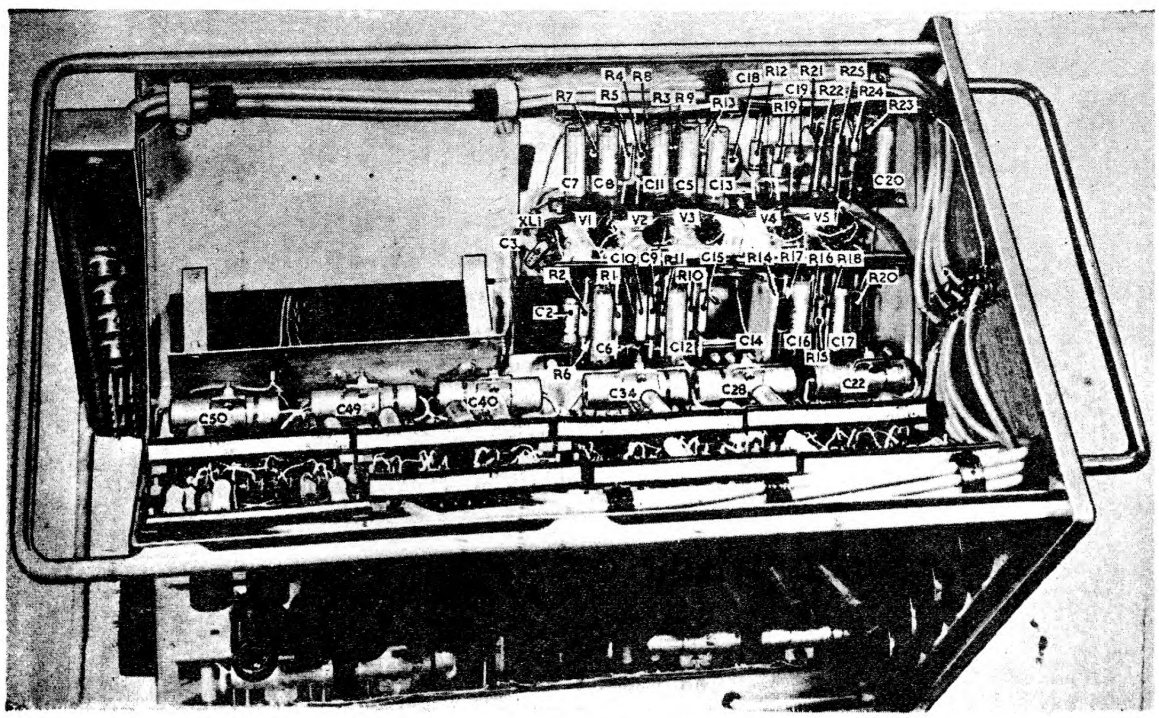


Fig. 14. Trigger unit 4413 : right side with unit upside down

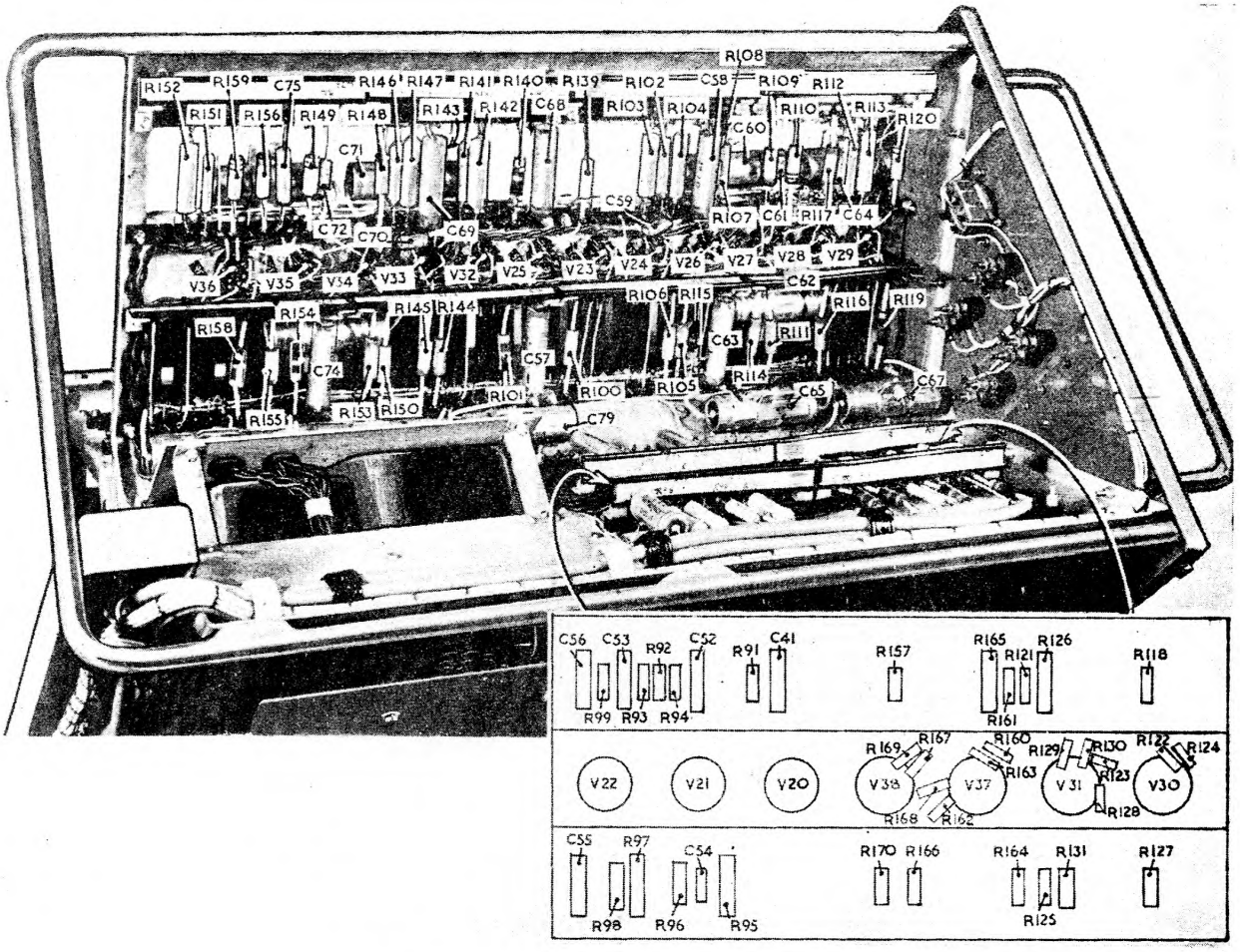
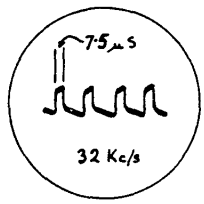
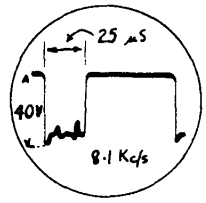


Fig. 15. Trigger unit 4413 : left-hand view

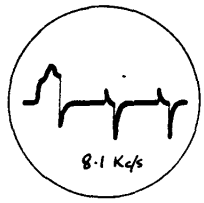
SK6
V5 ANODE



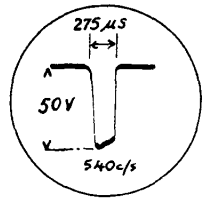
SK7 (÷4)
V8 ANODE



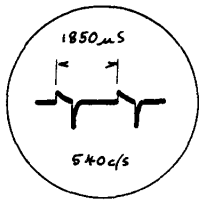
V11a CATHODE



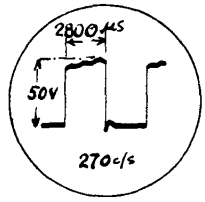
SK9 (÷3)
V13 ANODE



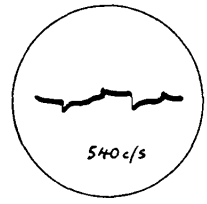
V16a CATHODE



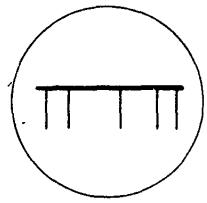
SK11 (WIDE GATE)
V19 ANODE



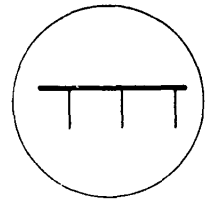
V20a CATHODE



V23 CATHODE



V23 CATHODE
(V24 REMOVED)



V32 CATHODE

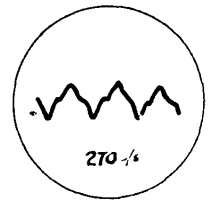
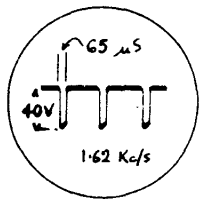


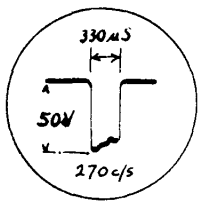
Fig.16

(ALSO ISSUED AS AD 6156 AC/MIN.)

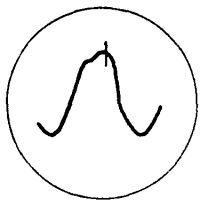
SK8 (÷5)
V10 ANODE



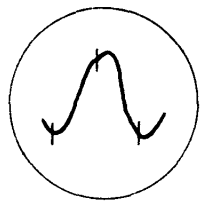
SK10(÷2)
V15 ANODE



SK17
PRIMARY PULSE PHASING

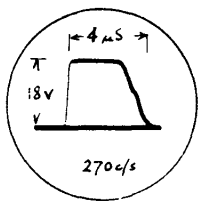


SK17
SEC'Y PULSE PHASING



SINE WAVE
SHAPES
WAVEFORMS
(NOT USED)

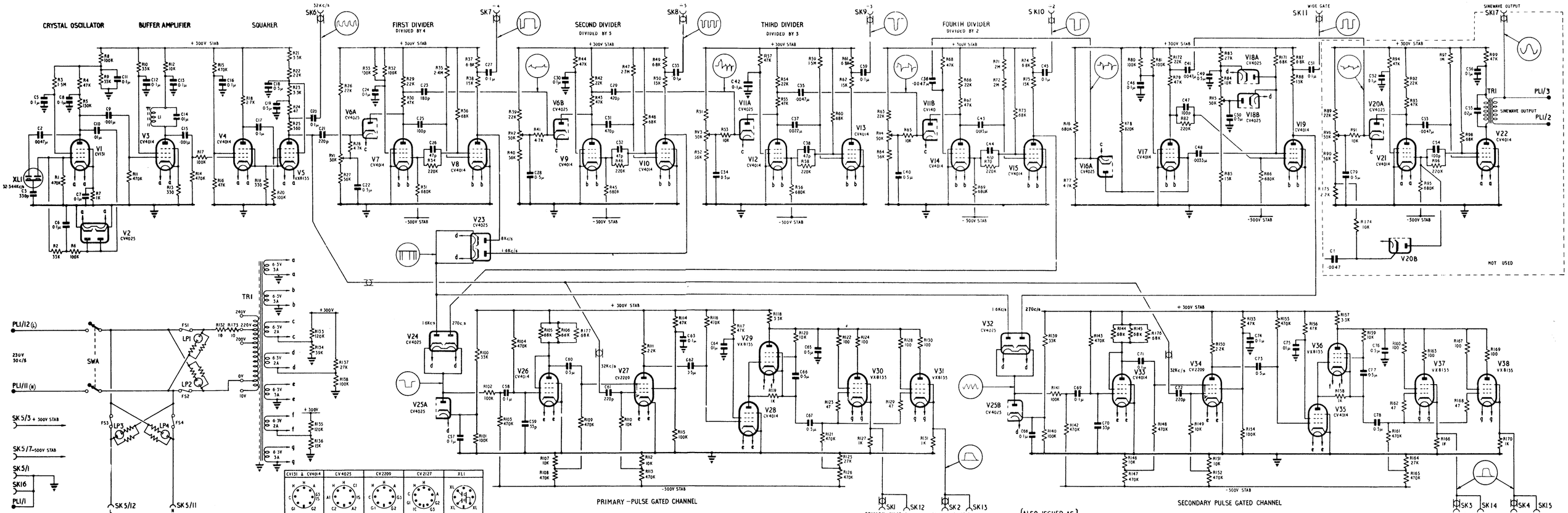
SK12-SK13
PRIMARY PULSE



TRIGGER UNIT 4413

WAVEFORMS TAKEN ON CT 316

Fig.16



(ALSO ISSUED AS AD6156AD/MIN.)

Fig. 17

Trigger unit 4413: circuit

Fig. 17

Chapter 7

(This chapter supersedes that issued with A.L. 21)

TRIGGER UNIT 4890

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INTRODUCTION

1. Trigger unit 4890 (*fig.* 1) is used on GCI sites to trigger Radar Type 80. The unit has an open-centre construction with the valves mounted horizontally to facilitate cooling. It incorporates automatic change-over circuits to indicate the state of operation. Two units are located in a rack assembly in the radar office and are interconnected by junction box 6024.

G.C.I. Station triggering

Operational requirement

2. On some GCI sites it is necessary for Radar Type 80 to work with Radar Type 7. Normally the Type 80 will be located, along with other centimetric radars, at the main site and the Type 7 may be at a remote site some 2 to 8 miles away.

3. Radar Type 7 must be triggered at a time related to a particular position of its aerial capacity switch. A Master Trigger Unit on the Radar Type 7 site (the remote site) produces a triggering pulse which is synchronized with a correctly phased sine wave of 250 c/s produced by a generator mounted on the capacity switch.

4. To synchronize the firing of Radar Type 80 transmitter with that of the Type 7 transmitter it is necessary to use the 250 c/s sine wave from the remote Type 7 capacity switch to produce the two trigger pulses, separated by 688 microseconds, required by Type 80. These pulses are called the primary sub-trigger pulse and the secondary sub-trigger pulse, respectively.

5. Radar video signals from both equipments (Type 80 and Type 7) should arrive at the displays simultaneously to produce accurately related information. This necessitates the incorporation

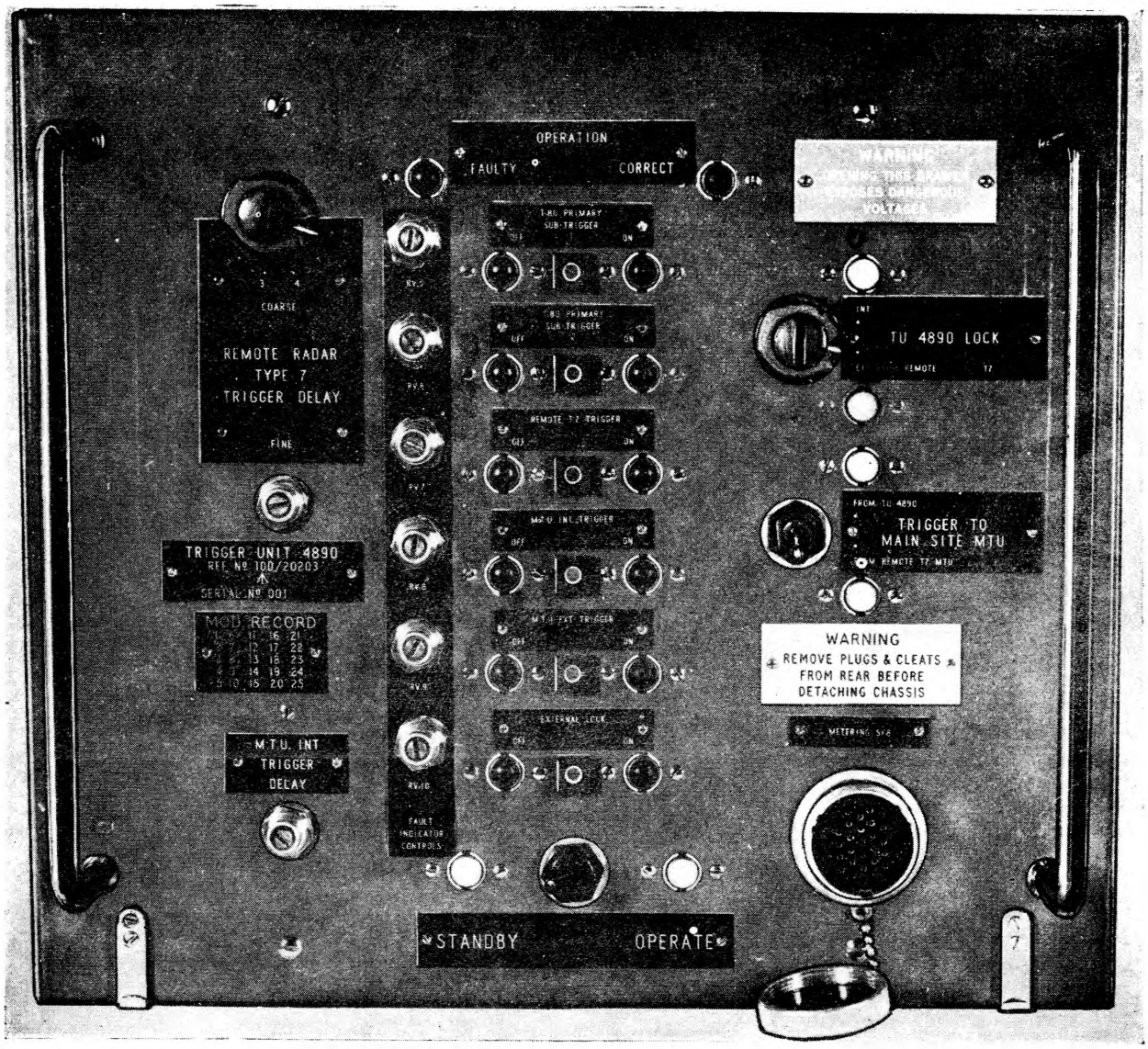


Fig. 1. Trigger unit 4890 : front panel

of suitable delay circuits into the system. It is also necessary, for servicing, that the two equipments should be able to operate independently.

System description

6. A block diagram of the system is shown in fig. 2 and waveforms are shown in fig. 3. When Radar Type 7 is operating by itself the sinewave output from the capacity switch is used to trigger the remote Master Trigger Unit (MTU) which produces a pulse to fire the transmitter. A second pulse (MTU external trigger), produced by the remote MTU, is fed to the main site Master Trigger Unit, via TU4890, as a trigger for the displays.

7. In normal operation with the radars on the main site, the remote MTU is triggered by a pulse, produced by TU 4890, correctly phased with the capacity switch by feeding the 250 c/s sine wave from Radar Type 7 to TU4890. To allow for transmission time of the sine wave from and of the pulse to the remote site, delay adjustment can be made by controls within TU4890. A pick-off circuit in TU4890 is also operated by the 250 c/s sine wave and produces the primary sub-trigger pulse for Radar Type 80. The main site MTU supplies the secondary sub-trigger pulse for Radar Type 80. The trigger pulse to the main site can be obtained in one of two ways depending upon the setting of the TRIGGER TO MAIN SITE MTU switch on TU4890 ; these are :—

(1) From a delay circuit within trigger unit 4890 which is triggered by the pulse producing the primary sub-trigger pulse.

(2) From the remote MTU.

8. The trigger pulse is taken to the main site MTU which produces the secondary sub-trigger pulse for Radar Type 80, trigger pulses for other radars and the timebases for the display consoles.

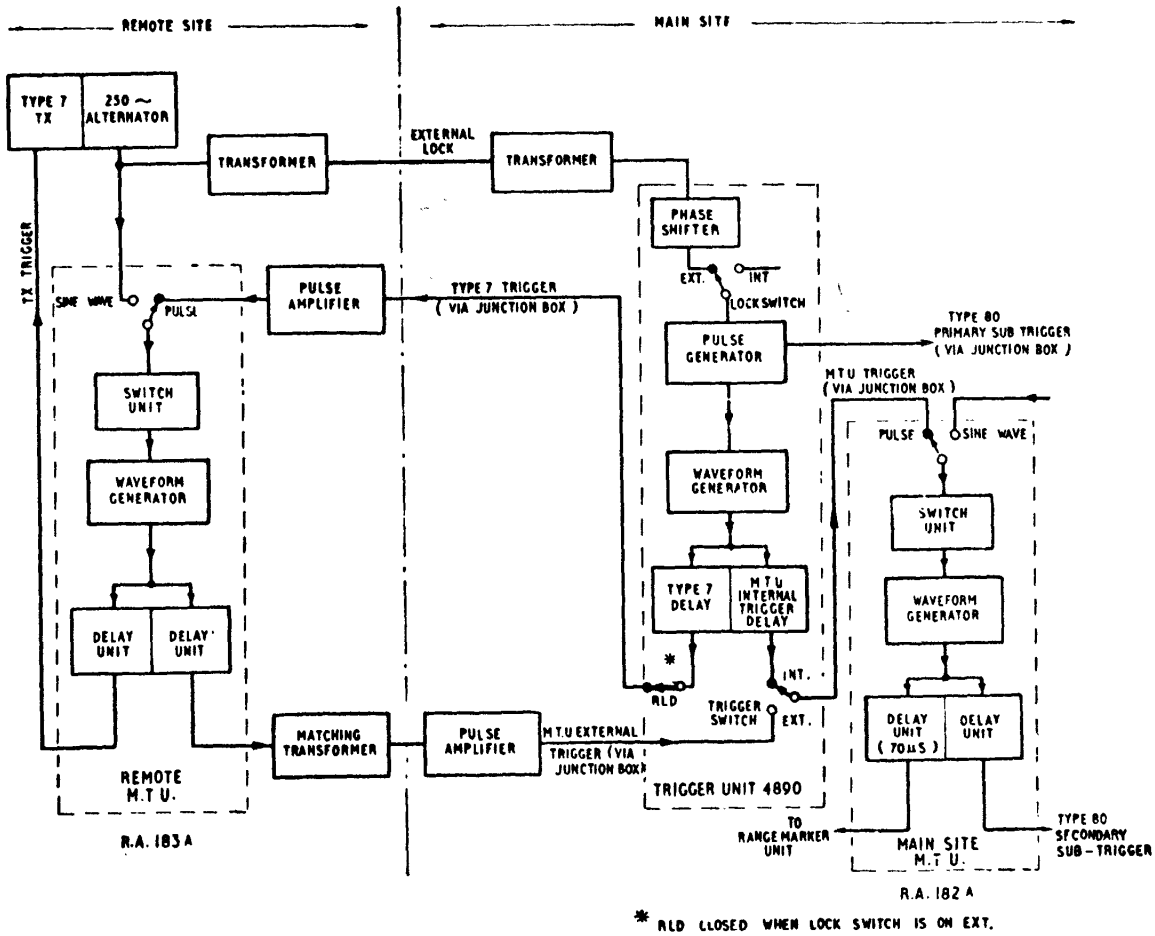


Fig. 2. G.C.I. station triggering : block diagram

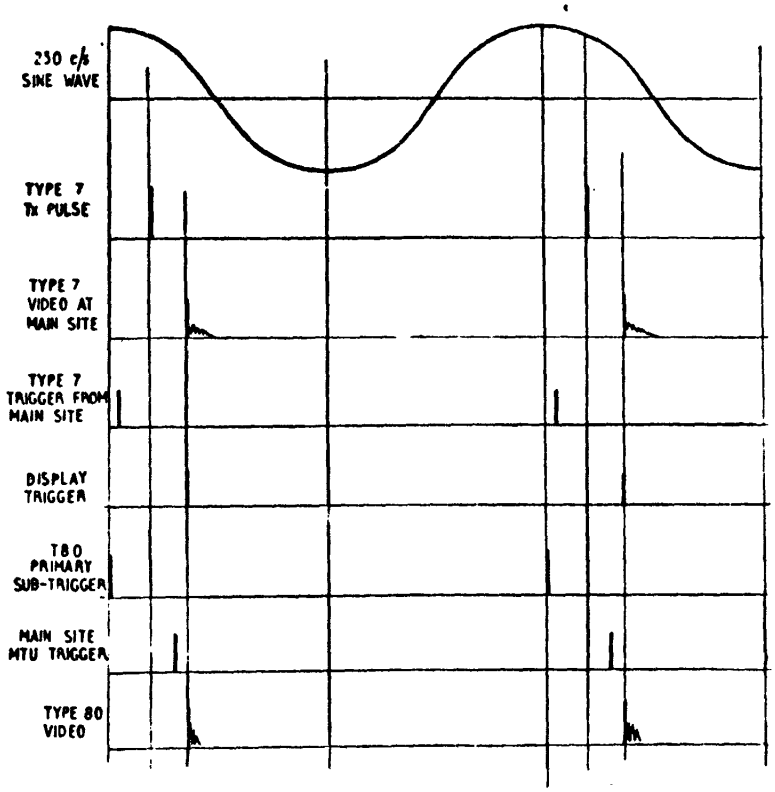


Fig. 3. G.C.I. station triggering : waveforms

9. When Radar Type 80 is required to operate on its own, TU4890 can be switched to TU4890 INT. In this position the unit is self-triggering and provides the primary sub-trigger pulse for Type 80, and the secondary sub-trigger and display circuit trigger pulses, by triggering the main site MTU as before. Under this mode of operation the pulse to the remote MTU is removed.

10. In view of the importance of TU4890 in the triggering system, two units are installed and interconnected in such a way that either unit can be switched into the synchronizing system ; change-over being effected by a STANDBY/OPERATE switch on the front of each unit. Servicing of the standby unit may be done while the other unit is operational.

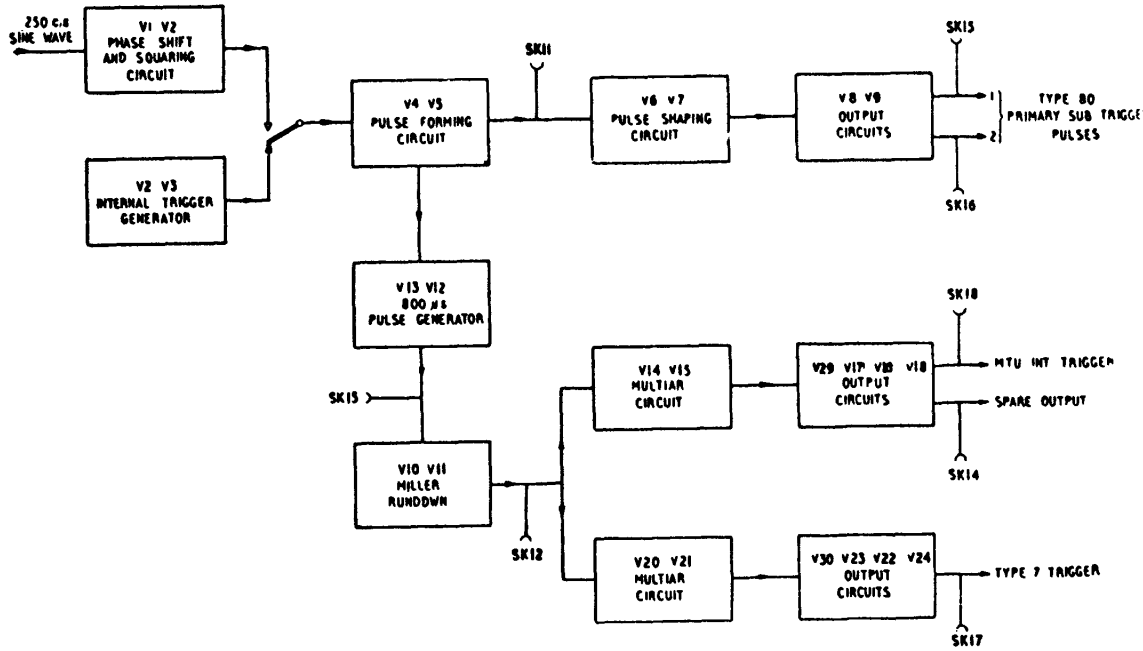


Fig. 4. Trigger unit 4890 : block diagram

11. The combining of the output circuits is effected by junction box 6024. The junction box is mounted behind the two trigger units.

12. TU4890 also contains some automatic change-over and fault indicator facilities. When operating on TU4890 LOCK-EXT. FROM REMOTE T7, i.e., when locked by the 250 c/s since wave from Radar Type 7, the unit will change over to INTERNAL should the sine wave fail. At the same time the origin of the main site MTU trigger changes over from the pulse generated at the remote MTU to the one generated in TU4890. *The Type 80 transmitter will trip during the change-over period due to the missing primary and secondary sub-trigger pulses.* Lamps on the front panel show the operational state of the unit. Other lamps indicate the presence or absence of the various pulses and waveforms into and out of the trigger unit as an aid to quick fault location.

Local type 7

13. On some sites the Type 7 may be on the main site. It is then triggered from the main site MTU as for the other Radars. The REMOTE TYPE 7 TRIGGER pulse is not then used.

Brief circuit description

14. In the block diagram of the TU4890 (*fig.* 4) V2 and V3 form a multivibrator at 250 c/s. This multivibrator is switched on when the unit is on internal trigger, selection of which is made by putting the TU4890 LOCK switch (*fig.* 1) to INT. In normal operation (LOCK switch to EXT. FROM REMOTE T7) the incoming 250 c/s sine wave is fed into a phase-shifting and squaring stage, V1, whose output edges are related to the zeros of the sine wave input (*fig.* 5). The start of the square wave can be varied from about 40 deg. to 100 deg. (*fig.* 5*b*).

15. The output of V1 or the multivibrator output is taken to a pulse-forming circuit consisting of V4 and V5. The circuit produces a 4 μS negative-going pulse when triggered by the negative-going edge of the square wave input (*fig.* 5*c*).

16. The 4 μS negative-going pulse is fed to the output stages, where cathode-followers V8 and V9 provide, for Radar Type 80, primary sub-trigger pulses of 30V (*fig.* 5*d*) when the output lines are terminated with the 70-ohm impedance cables.

17. The negative-going 4 μS pulse is also fed to an 800 μS pulse generator consisting of V12 and V13 which are connected in a flip-flop circuit. This circuit produces a square wave, approximately 800 μS long, which has a nominal amplitude of 120V (*fig.* 5*e*). The square wave triggers a Miller rundown circuit (V10 and V11) and the linear rundown of approximately 500V amplitude (*fig.* 5*f*) feeds two multiar circuits which produce half sine wave pulses (*fig.* 5*g*) at preset levels of the Miller rundown.

18. The waveform from V15, in the first multiar, is fed through a crystal diode V29 to an output circuit V16, V17 and V18, the only difference being that a pulse of 20V amplitude is produced at the cathode of V18 (*fig.* 5*h*). This pulse feeds the main site MTU.

19. The second multiar, V20 and V21, produces a half sine wave pulse which is fed through V30 and output stages V22, V23 and V24 to the remote site MTU as a trigger for Radar Type 7. The delay in this multiar is adjustable from 340 to 640 μS.

20. In addition to the main circuits, the unit

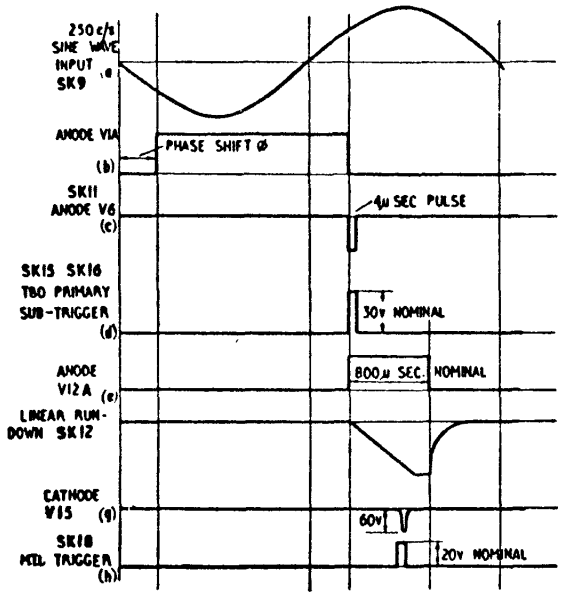


Fig. 5. Trigger unit 4890: waveforms

contains fault detection circuits, each valve circuit (*fig.* 16) has an associated indicator lamp, a FAULT lamp, mounted on the front panel (*fig.* 1).

CIRCUIT DESCRIPTION

Phase shift and squaring circuits

21. The incoming 250 c/s sine wave from the remote site enters the unit on pins 6 and 7 of PL1 (*fig.* 16), across which is connected the primary of input transformer TR1. The secondary of TR1 is centre tapped to earth and across the whole winding are connected R1, RV1 and C2, which provide a phase-shifting network whereby adjustment of RV1 correctly phases the output pulses to the Type 7 transmitter. The phased sine wave is taken from the junction of RV1 and C2 to the first grid of a double-triode squarer stage, V1.

22. V1A (left-hand half of valve in fig. 16) anode is coupled to the grid of V1B by C3. The two halves also have a common cathode load R5 and R6 in series. As soon as the rate of change of voltage on the grid of V1B is large enough (at the points where the sine wave passes through zero), feedback through C3 and across the cathode loads builds up rapidly to the extent that V1B has two alternating states so long as the sine wave input is present. With a negative-going swing at the grid of V1A (*fig.* 5*a*) the grid of V1B is taken up to the level set at the junction of R8 and R9, to which it is connected by V28, a germanium diode. V1A is then rapidly cut off. With a positive swing on V1A grid, V1B is rapidly cut off and V1A reaches saturation. The large amount of feedback during the change-over produces very steep edges which are flattened off sharply as cut-off or saturation is reached. A substantially square wave appears at the junction of R3 and R4 in the anode of V1A.

23. The square wave from V1 or a similar output from a multivibrator (V2 and V3) can be selected by contacts on relay H, whose operation will be described later. Contact 1 selects the output waveform and contact 2 switches the HT supply to one or other of the two circuits.

Pulse forming circuit

24. The square wave is fed via C6 to the grids of another double-triode, V4 connected as a single valve. Now C6 and R24 have a time-constant less than the half-period of the square wave (2,000 μS) and the waveform is differentiated somewhat at the grids of V4. Now V4 is normally conducting but V5 is cut off as its grid is connected to the junction of R29 and R32 providing about 25V bias. The positive-going edge of the differentiated square wave on V4 grids has no effect, but the negative-going pip lifts the bias on V5. Positive feedback to the cathode of V4 from the cathode of V5 via C7 produces a square, negative-going pip in the anode of V5. By suitable choice of :—

(1) time constant for C7 and the combined resistance of R26 and R27, and
(2) bias on V6,
the pulse is made 4 μS wide (*fig.* 5*c*).

25. The negative-going pulse, monitored at test point SK11 is taken :—

(1) Via C11 through a phase-shifting circuit to the output stages V8 and V9.
(2) Via C10 to an 800 μS pulse generator.

Primary sub-trigger output stages

26. The output circuit V6 to V9 (*fig.* 16) produces two primary sub-trigger pulses for Radar Type 80 from cathode-followers V8 and V9. The negative-going pulse is applied to the grid of V7 which is normally passing as heavy a current as required by V6. The current in V6 is determined by the bias developed across R36. When V7 is cut off by the negative-going pulse, the bias on V6 is lifted and a large positive-going pulse is passed by C13 to the grids of the two cathode-followers. This arrangement of V7 and V6 is to maintain a sharp leading edge on the pulse. Decoupling for the output stages is provided by R38 and C13. The outputs from V8 and V9 are positive-going pulses (*fig.* 5*d*) monitored at SK15 and SK16.

800 μS pulse generator

27. The negative-going pulse at the anode of V5 is taken through C10 and passed by V13A which isolates the pulse generator from the 4 μS pulse forming circuit. V12 is a double-triode with V12B normally cut off by the potentiometer chain consisting of R65, R71 and R72. V12A, which is unbiased, is normally conducting hard. The negative pulse on the grid of V12A causes anode current to fall and the potential at the junction of R65 and R67 rises.

28. The grid potential of V12B also rises, causing a further fall in potential at the anode of V13A.

By cumulative action, the grid of V12A is rapidly taken beyond cut-off and V12B is conducting. After some 800 μS, during which the charge on C25 leaks away through R69, V12A opens up and the circuit quickly reverts to the condition of V12A conducting and V12B cut off. As V12B cuts off, the anode of V13A swings towards the 300V HT but this edge is not passed by V13A because its cathode is tied to the HT line through R76.

Linear run down generator

29. The 800 μS positive-going pulse at the junction of R65 and R67, monitored at SK13, is taken via C24 to the suppressor grid of V10, a Miller rundown circuit. V10 is connected between the +300V and −250V lines and is normally cut off on its suppressor which is returned to a −310V supply through R68. Catching diode V11A ensures that the suppressor does not go positive to cathode and V11B ensures that it does not swing below the preset bias level at the end of 800 μS pulse.

30. When suppressor bias is lifted, V10, which had been taking a heavy screen grid current due to its grid being returned to HT through R58, passes anode current and the potential at the junction of R62 and R61 starts to drop. This drop is conveyed by C21 back to the grid which is taken down nearly to cut off. The grid immediately tries to charge back to HT, but feedback through C21, due to the dropping potential on the anode of V10 as valve current increases, prevents a rapid rise and the characteristic linear rundown of the anode volts ensues. The rundown continues (*fig.* 5*f*) until the anode "bottoms." The grid is then free to rise and C21 charges through R58 until the valve takes grid current once more; the anode during this time remains bottomed. This condition lasts until the end of the 800 μS pulse, when the suppressor is once more taken beyond cut off. V10 anode gradually reverts to HT potential as C21 charges through R61. The anode rundown voltage is monitored at SK12.

31. The linear rundown voltage is taken to two multiar pick-off circuits consisting of :—

(1) V14 and V15 which are followed by output stages V29, and V16 to V19 produce the main site MTU trigger pulse. The secondary sub-trigger pulse for Radar Type 80 is developed from this pulse in the MTU.

(2) V30 and V21 which are followed by output stages V30, and V22 to V24 produce the trigger pulse for Radar Type 7.

The multiar circuits produce pulses at preset levels of the rundown voltage and therefore at preset delay times after the start of the rundown.

Multiar circuit

32. V14B (*fig.* 16) is normally held cut off as its cathode is held at the +300V level (when V10 is not passing anode current) and its anode is returned to a lower potential, the preset pick off level, set by RV3. When the rundown takes place the cathode potential of V14B drops, the dropping potential being passed by V14A. V15 is normally conducting heavily since its grid is returned to the +300V line. When the preset level is reached, V14B conducts and the grid of V15 falls, causing a sharp drop of current in V15. Regenerative feedback provided by TR3, whose secondary is connected in the cathode circuit, rapidly takes V15 beyond cut off and provides a large negative-going swing across the secondary of TR3. The voltage swing approximates in shape to a half sine wave pulse of short duration and about 60V amplitude. V14A ensures that no ringing will take place in TR3.

MTU trigger pulse output stage

33. V29 is normally biased on its anode by the negative voltage across R90 (about −10V). It passes the large negative swing which is taken to the grid of V17. The latter is connected in series with V16 across the HT supply in a circuit similar to that described in para. 26. Positive-going output pulses from the cathode of V18 are taken off as the MTU trigger pulse and that of V19 (monitored at SK14) as a spare pulse. The output from V18 is reduced to about 20V amplitude by R101 connected in series with the 68-ohm load.

Remote type 7 trigger

34. The rundown voltage is also fed to a multiar circuit consisting of V20 and V21 and TR4 (*fig.* 16). A much wider adjustment of the bias on V20B anode is obtained by using switch SWA as well as preset RV4. SWA is connected to a stepped potentiometer chain across the +300V and −250V lines. This provides a delay adjustment of from 360 to 640 μS.

35. The negative-going pulse at the cathode of V21 is passed by V30 to the grid of V23 and the positive pulse at the anode of V23 is fed to the grid of only one cathode-follower, V24, whose output is taken to the remote site MTU to trigger Radar Type 7.

Power supplies

36. HT supplies required by TU4890 are produced in power unit 4889 (*Sect.* 6, *Chap.* 7) which provides regulated supplies at 300V, −250V, −310V, and an unregulated supply at +400V. Valve heaters are supplied from TR2 within the trigger unit (*fig.* 16).

Switching and fault indicator circuits

37. The trigger unit also contains automatic change-over and fault indicator facilities. When it is operating on the locking sine wave from the remote Type 7 250 cycle alternator, the unit will change over to INTERNAL if the sine wave fails. At the same time the origin of the trigger pulse to the main site MTU changes over from the pulse generated at the remote MTU to that generated in TU4890. Alternatively, if the pulse from the remote MTU fails, the system will stay locked to the sine wave but the main MTU will be triggered from the internally generated pulse of the TU4890. Indicator lamps on the front panel (*fig.* 1) show the operational state of the unit. Other lamps indicate the presence or

absence of the various pulses and waveforms into and out of the trigger unit. It should be remembered that during the changeover period, the Type 80 transmitter will trip, due to the absence of its trigger pulses.

Switching

38. Switch SWB (*fig.* 15), a front panel switch, selects whether the unit will be operational or remain at STANDBY. In the latter position a 50V supply which enters the unit on PL1, pins 2 and 3, merely lights LP1, the STANDBY indicator, and either LP5 or LP6, the INT. or EXT. LOCK indicators. On OPERATE, however, the 50V supply is routed via contact RLA/1 (normally closed) to lamp LP2 and to relays which route the output pulses via sockets at the rear of the unit and junction box 6024 into the triggering system. On STANDBY, with the relays unoperated, the pulse outputs from the unit are terminated in 68-ohm resistors. The changeover from STANDBY to OPERATE is a manual operation (depending upon the setting of SWB).

39. On OPERATE, RLB and RLC make and switch the outputs (monitored at SK15 and SK16) of V8 and V9, the primary sub-trigger pulses, to SK2 and SK1. If the selector switch SWC on the front panel is put to INT. TU4890 LOCK, relay RLH is not energized and contacts 1 and 2 arrange that the internal multivibrator is on. Relay RLF makes, switching the output of V18 into the triggering system via SK3. This pulse, monitored at SK18 is the main site MTU trigger pulse (*fig.* 5*h*) from which is developed the secondary sub-trigger pulse for Radar Type 80. LP5 indicates this state.

40. On TU4890 LOCK-EXT. FROM REMOTE T7 there are two possible conditions for triggering the main site MTU, FROM TU4890 and EXT. FROM REMOTE T7 MTU, selected by SWD. On FROM TU4890 the output of V18 is used as the main site MTU trigger; on EXT. FROM REMOTE T7 MTU the trigger pulse from the remote MTU is used. The normal mode of operation is with SWD on FROM TU4890. In both positions of SWD, provided contact RLP/2 is made, RLH and RLJ are energized (*fig.* 15). The contacts of RLH change over the connections from the multivibrator to the squarer. RLJ/1 makes the circuit to light LP6 and breaks the circuit to LP5. Relay A ensures that only one of the two trigger units is operational at any one time. Pins 4 and 5 on each unit (*fig.* 15) are cross connected and, when a unit is switched to OPERATE, the −50Vline is taken via RLA/1 and pin 4 on one unit to pin 5 on the other unit to operate RLA; contact 1 opens and none of the relays operate. In the unoperated position RLA/2 connects a 68-ohm resistor (R174) to earth, terminating the MTU EXTERNAL TRIGGER line from the remote MTU when it is not in use. This resistor switched to prevent placing it in parallel with a similar resistor in the other trigger unit, thereby incorrectly terminating the line.

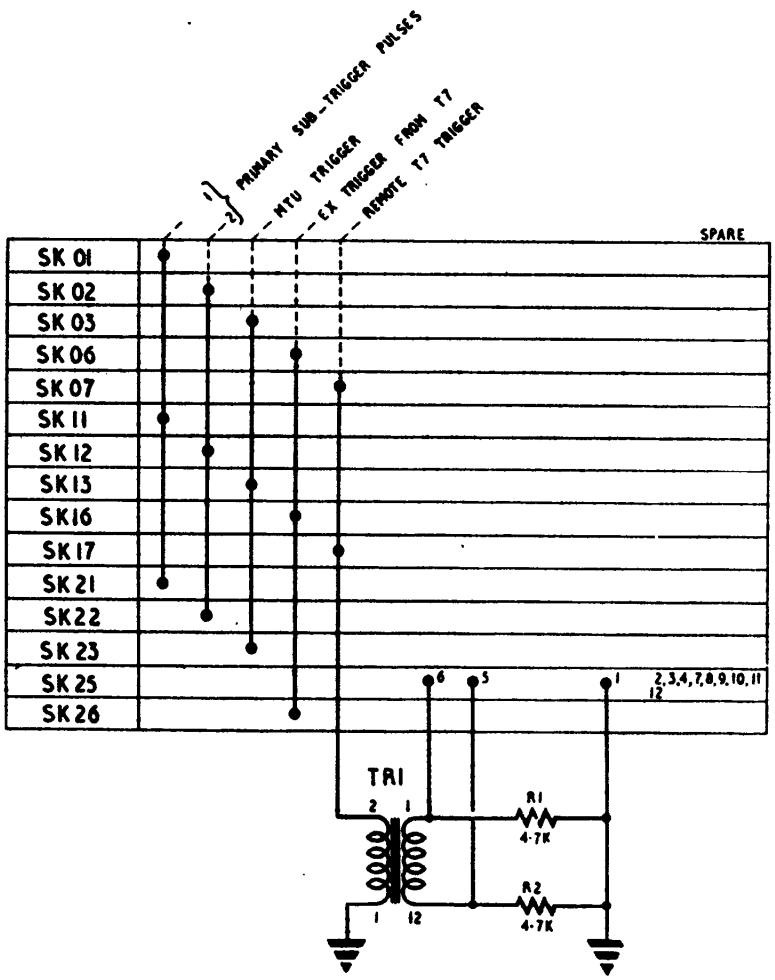


Fig. 6. Junction box 6024 : circuit

41. RLD and RLE are energized via RLP/1 when RLP is energized. Now RLP is operated when the 250 c/s sine wave from the form Type 7 capacity switch is present. The input wave is rectified in V13B and an integrating circuit, C54and R184 lifts the bias on V27B which is normally cut off. Current through RLP, in the anode circuit of V27B, is set, by adjusting

RV10, to 9±1 mA. The measurement is taken across R189 with a multimeter connected between SK8/M and chassis.

42. RLD contacts route the output of V24 via SK7 to the remote MTU as trigger for Radar Type 7. Provided RLO is made, i.e., when the MTU EXTERNAL TRIGGER pulse is fed in on SK6, RLE is energized. Its contacts energize RLG and light LP4, the MTU EXTERNAL TRIGGER indicator. RLG contacts switch the MTU EXTERNAL TRIGGER to SK3 as the MTU TRIGGER PULSE.

43. Should the MTU EXTERNAL TRIGGER fail, RLO opens, opening RLE. RLG is open-circuited by RLE/1 which changes over to energize RLF routeing the MTU INTERNAL TRIGGER pulse to SK3 as the MTU TRIGGER. Also, should the sine wave fail, RLP opens, open circuiting RLO and RLE. RLM is open circuited by RLP/2 changing over and the contacts change over to bring on the multivibrator. Operation of the unit is then the same as if it were switched to INT. TU4890 LOCK.

Indicator circuits

44. In addition to the lamps already mentioned, which indicate the operational state of the unit according to which relays are energized, there are lamps indicating the presence or absence of each input and output pulse. There are in all six valve integrator and relay stages and twelve lamps, LP7 to LP18 inclusive, are associated with them. Two more lamps, LP19 and LP20, indicate CORRECT or FAULTY operation. Should a unit show FAULTY operation it should be switched to STANDBY and the other unit switched to OPERATE.

Junction box

45. The circuit of the junction box is given in fig. 6 and a general view in fig. 7. Pulses are fed in on the sockets SK01, etc., from one unit and on SK11., etc., from the other unit. The Type 7 trigger pulse is fed out via matching transformer TR1 to telephone lines connected to SK25.

SETTING UP

46. The following procedures are included for guidance pending the issue of Vol. 5 servicing

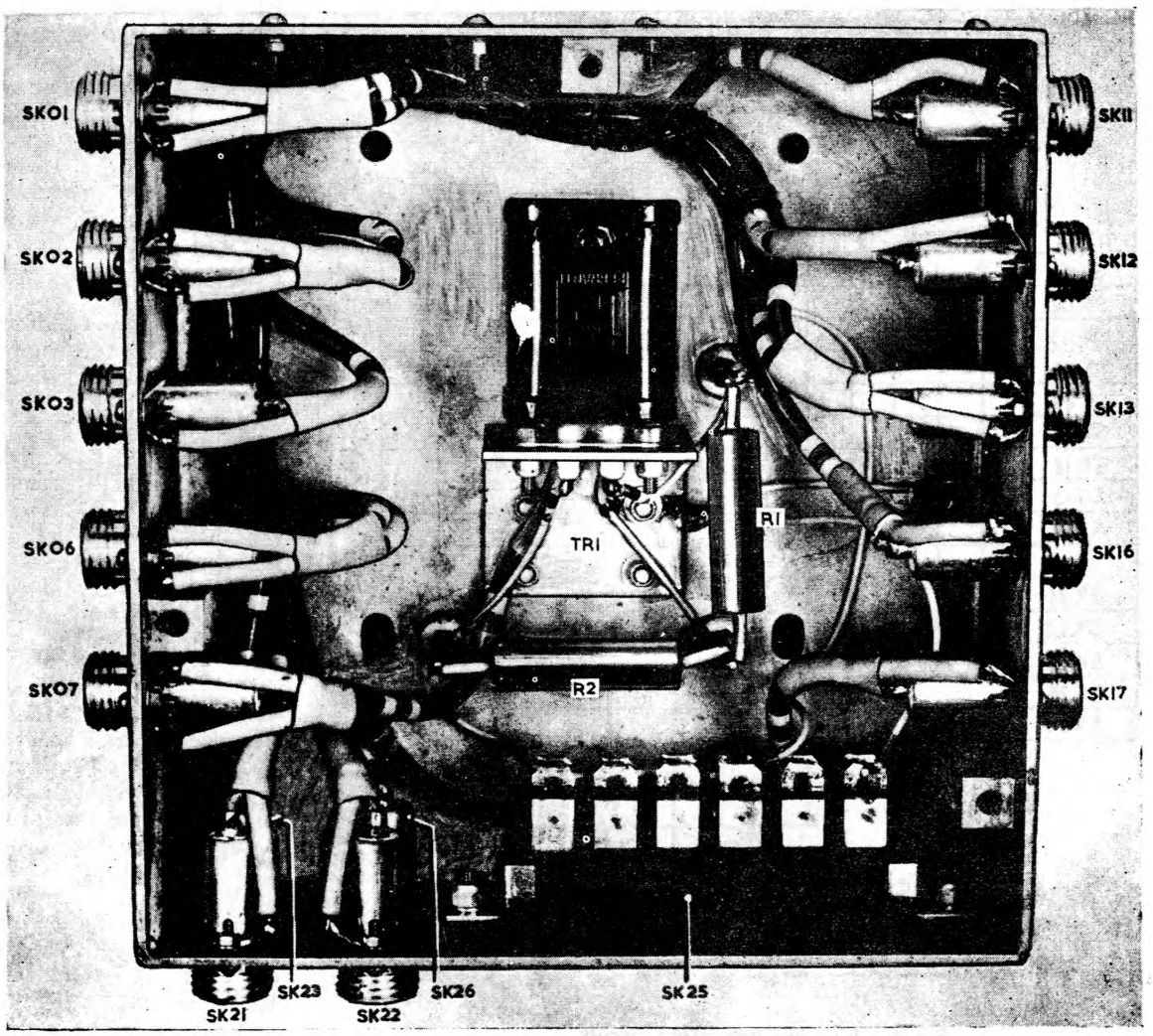


Fig. 7. Junction box 6024 : top cover removed

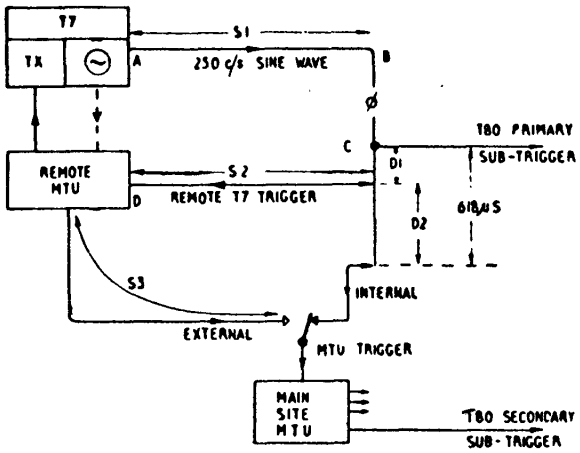


Fig. 8. System delays

procedures, and also as an aid to understanding the reasons for the delays which have to be set up in TU4890 when Type 7 is working with the other Radars on the main site. A diagram showing the various delays in the system is given in fig. 8 and a phasing diagram is given in fig. 9. In fig. 8, S1, S2 and S3 represent the delays due to the lengths of cable carrying the video and pulse signals required by the main site and the remote Type 7 site. S3 also includes a delay of approximately 25 μS in the remote MTU. ϕ is the phase shift set in at the input to TU4890 before the production of the Type 80 primary sub-trigger pulse. D1 and D2 are the delays obtained within TU4890 by the Miller rundown and multiar circuits; D1 is the delay in the production of the Type 7 trigger pulse after the Type 80 primary sub-trigger and D2 is the delay in the production of the MTU trigger pulse (which triggers the displays and all the main site radars) after the Type 7 trigger pulse.

47. It should be noted that D2 is not separately adjustable within TU4890. D1 is separately adjusted and (D1+D2) is adjusted to be 618 μS (a requirement of the Type 80 modulator) D2 is then given by (618—D1) μS, i.e., D2 is dependent on D1.

48. D1 and ϕ are obtained as follows:—

$$D2=S2+S3$$

To facilitate the alignment of the video signals from the remote Type 7 with those of the Type 80 the delay between the Type 7 trigger pulse and the MTU trigger pulse has to be the same for both methods of triggering.

So $D1=618-(S2+S3)\ \mu S$ .... (1)

At 250 c/s the period for a complete sine wave is 4,000 μS, i.e., 100 μS represents 9 degrees on the angular scale and 618 μS represents 56 degrees. Now the Radar Type 7 is normally fired at 144 degrees after the sine wave has passed through zero as shown in fig. 9,

So $S1+\phi+D1+S2=144$ degrees

or $\phi=144-D1-S1-S2$

But $D1=618-(S2+S3)\ \mu S$

$=56-(S2+S3)$ degrees

$\therefore\ \phi=144-56+S2+S3-S1-S2$ degrees

$=88+(S3-S1)$ degrees .... (2)

Equations (1) and (2) depend only on the lengths of cable and the amounts of variation obtainable on ϕ and D1 are arranged within TU4890 to cater for the minimum and maximum distances between the main site and the remote Type 7 site. In practice, an allowance of 40 μS for drift in the Type 7 sine wave is made so that ϕ is usually greater than the value given by (2) above. Radar Type 7 then fires at about 148 degrees instead of 144 degrees.

49. The following items of test gear will be required in setting up the power units and the trigger units.

(1) Multimeter 100
(2) Oscilloscope CT316
(3) Test set 402.

50. First set up the stabilized power supply in PU4889, with multimeter 100 on the 300V scale and plugged into the appropriate socket, as follows:—

(1) At SKIE adjust RV2 to read —250V.
(2) At SKID adjust RV1 to read +300V.

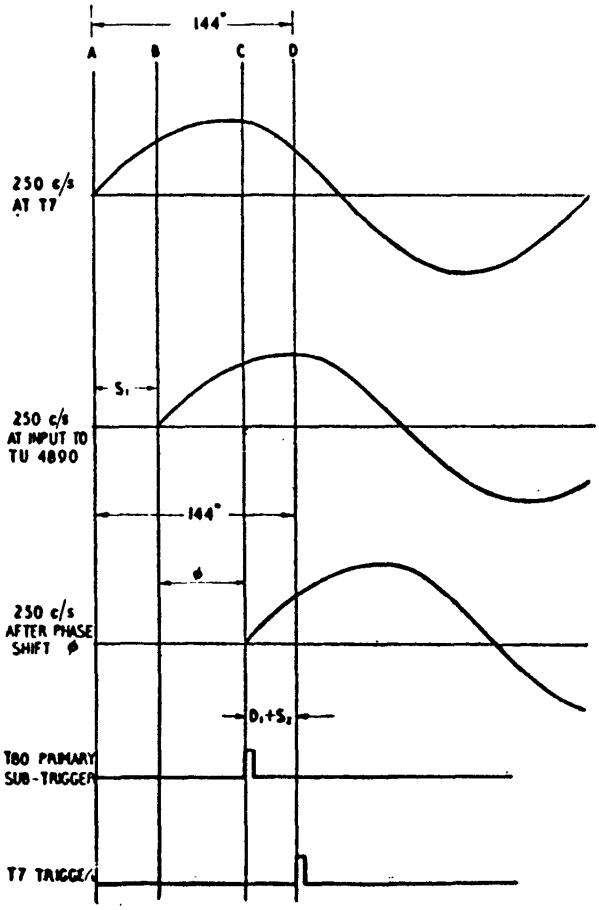


Fig. 9. Pulse phasing

With the multimeter on the 1,000V scale, check that the remaining HT voltages are within the following limits :—

Between 370 and 435V at SKIC.

Between −295 and 325V at SKIG.

51. It will be necessary in setting up the trigger units to work in conjunction with the remote Type 7 equipment. It is also advisable that all transmitters be run down to avoid possible damage. It is assumed that the Type 7 equipment, in particular the remote MTU and the capacity switch generator, have been set up and correctly phased. The trigger units and their power units should have been switched on for at least half an hour before starting the tests. The remote MTU should, at the start, be synchronized by the 250 c/s sine wave direct from the Type 7 generator. Then proceed as follows :—

(1) Set the unit under test to OPERATE and the second unit to STANDBY. Check that the lights on the unit under test indicate OPERATE. Set the switches on the unit as follows :—TU4890 LOCK ; to EXT. FROM REMOTE T7 and TRIGGER TO MAIN SITE ; to FROM TU 4890. Check that the lights indicate the condition set up.

(2) Terminate SK4 on each unit and SK22 on junction box 6024 (the spare outputs) with the unit line terminating Type 34, which puts a 68-ohm resistor across the socket.

(3) Check that all six waveforms are present at the front panel monitor points using oscilloscope CT316 with the signal input switched to DC. Details of the six waveforms are as follows :—

Name	*Waveform*	*Amplitude*
T80 primary sub-trigger 1	4 to 5 μS pulse	25 to 35V
T80 primary sub-trigger 2	4 to 5 μS pulse	25 to 35V
Remote T7 trigger	4 to 5 μS pulse	35 to 50V
MTU int. trigger	4 to 5 μS pulse	18 to 25V
MTU ext. trigger	3·5 to 4·5 μS pulse	25 to 35V
External lock	250 c/s sine wave	200V ±10% peak-to-peak

(4) Plug multimeter 100 into SK8 and adjust the variable resistors shown below to give a reading of 8 to 10 mA in the appropriate switch positions :—

Switch position	*Adjust*
G	RV5
H	RV6
J	RV7
K	RV8
L	RV9
M	RV10

Note . . .

It is assumed that the cables entering the junction box are correctly terminated, i.e., that they all present about 70 ohms impedance to the trigger units.

(5) Check that all the ON lamps, indicating the presence of the six waveforms, are lit and that the lamp at the top of the panel indicates CORRECT operation.

(6) Trigger the CT316 from the front edge of the 253 c/s pulse generated by test set 402.

(7) Set the T.B. DELAY switch on the oscilloscope to 1 mS and adjust the timebase speed to 5 μS for each division on the graticule using the oscilloscope calibration control.

(8) Observe the 10-mile marker pips from the test set and adjust the oscilloscope FINE DELAY to bring the front edge of the 50-mile marker pip to the centre line of the graticule.

Note . . .

Operations (6), (7) *and* (8) *set a measured delay of* 618 μS *into the CT*316.

(9) Trigger the CT316 from the front edge (positive trigger) of the T.80 PRIMARY SUB-TRIGGER 1 pulse and observe the MTU INTERNAL TRIGGER pulse.

(10) Adjust the MTU INTERNAL TRIGGER DELAY control, RV3, to bring the leading edge of the pulse under the centre line.

Note . . .

The delay ($D1+D2$) *of* 618 μS *has now been set into the trigger unit.*

(11) Check that the sine wave from Radar Type 7 is exactly 250 c/s and arrange for it to be set up at the Type 7 well if necessary.

(12) Trigger the CT316 from the front edge (positive trigger) of the MTU EXTERNAL TRIGGER pulse and put the T.B. DELAY switch to OFF.

(13) Using the calibration control adjust the timebase speed to 10 μS per graticule division.

(14) Observe the MTU INTERNAL TRIGGER pulse and set it to occur from 35 to 45 μS later than the start of the timebase by adjusting RV1, the sine wave phasing control. This sets the angle ϕ plus the 40 μS allowance for drift (*para.* 37).

(15) Trigger the CT316 from the T7 TRIGGER pulse and, using the calibration control, adjust the timebase speed to 2 μS per graticule division.

(16) Arrange that the *remote* site MTU be changed over from SINE WAVE to PULSE TRIGGER.

(17) Observe the MTU EXTERNAL TRIGGER pulse and adjust the CT316 T.B. DELAY to bring the leading edge to the centre line of the graticule.

(18) Observe the MTU INTERNAL TRIGGER pulse and, using the coarse and fine REMOTE RADAR TYPE 7 TRIGGER DELAY controls, SW1 and RV4, set its leading edge to within 2 μS of the centre line.

(19) Switch out the timebase delay on the CT316 and trigger it from the 253 c/s pulse from the test set 402.

(20) Display the test set 402 output on the CT316 and adjust the timebase speed to show two or three pulses, roughly calibrating the timebase for 253 c/s.

(21) Switch the trigger unit to INT. TU4890 LOCK and check that this is indicated by the lamps.

(22) Observe the T.80 PRIMARY SUB-TRIGGER 1 pulse and, using RV2, set its p.r.f. to about 253 c/s.

Note . . .

Operation (22) *sets up the internal multivibrator.*

(23) Check that the MTU EXTERNAL TRIGGER has disappeared but reappears when the unit is switched to EXT. FROM REMOTE T7, TU4890 LOCK.

(24) With the unit switched to EXT. FROM REMOTE TYPE 7 and FROM REMOTE T7 MTU, short circuit the top four monitor points to earth, in turn, and check that the corresponding OFF lamp and the FAULTY lamp light.

(25) Check that the green lamp at the top of the main site MTU is lit, indicating that the MTU is being triggered.

(26) Short circuit the REMOTE T.7 TRIGGER monitor point to earth and check that the trigger unit changes over to FROM TU4890 as indicated by the lamps. The MTU EXTERNAL TRIGGER OFF lamp should also light.

Note . . .

The main site MTU green lamp should still be on.

(27) Arrange that the Type 7 sine wave be switched off at the remote well, and check that the EXTERNAL LOCK lamps indicate OFF and that the unit changes over to INT. TU4890 LOCK and TRIGGER TO MAIN SITE MTU to FROM TU4890. The main site MTU green lamp should still be on.

(28) Switch on the Type 7 sine wave.

(29) Repeat all the above operations on the second trigger unit (unit B).

(30) Set unit A to OPERATE and B to STANDBY. Check that the green lamp on the main site MTU is lit.

(31) Set B to OPERATE and check that, although the STANDBY lamp goes out, the OPERATE lamp does not light.

(32) Set unit A to STANDBY and check that the lamp lights. Check that the OPERATE lamp on unit B lights and that the green lamp on the MTU is still on.

(33) Set the switch on unit B to STANDBY and check that the MTU green lamp goes out.

(34) Set unit A to OPERATE.

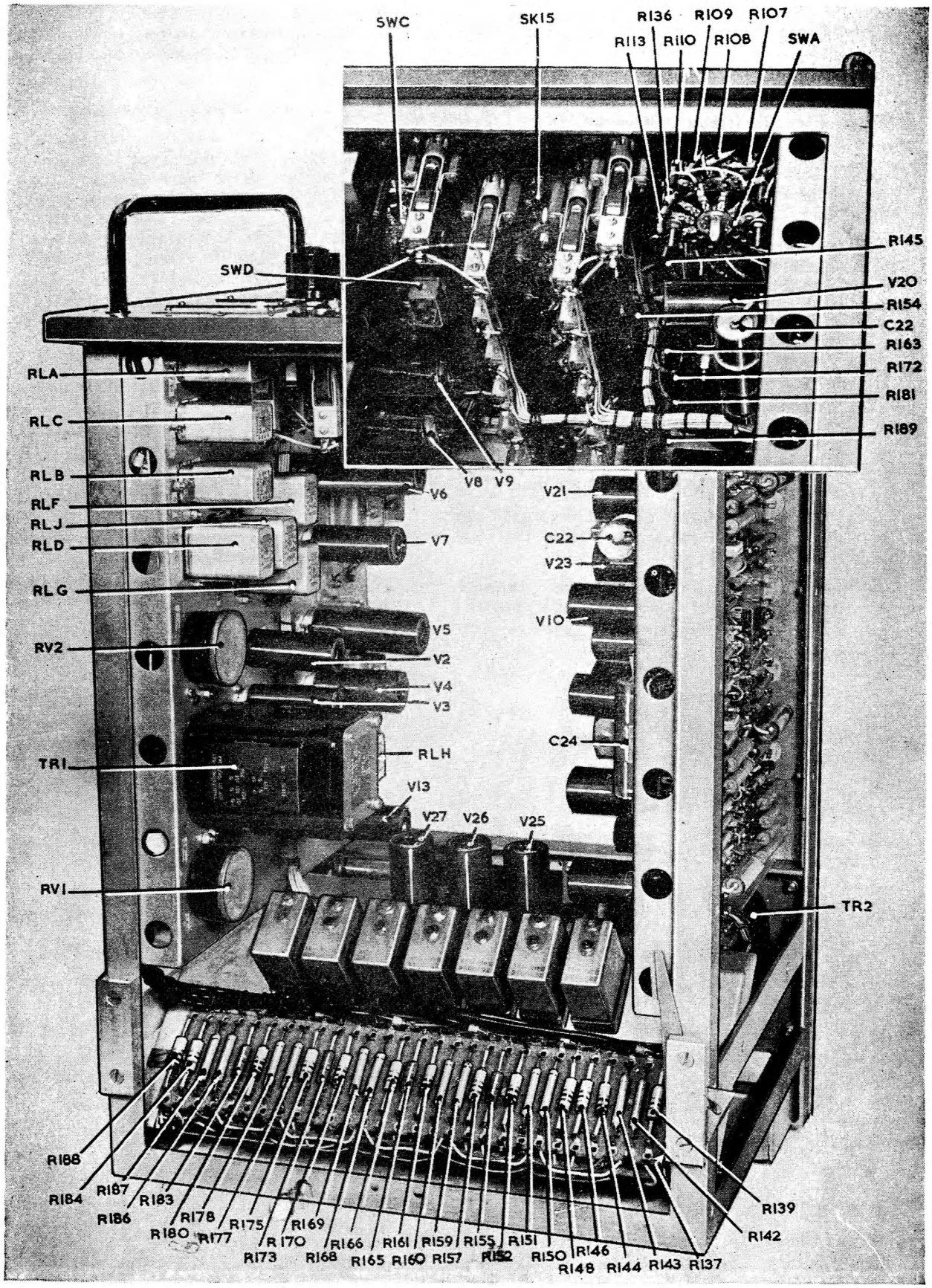


Fig. 10. Trigger unit 4890 : top

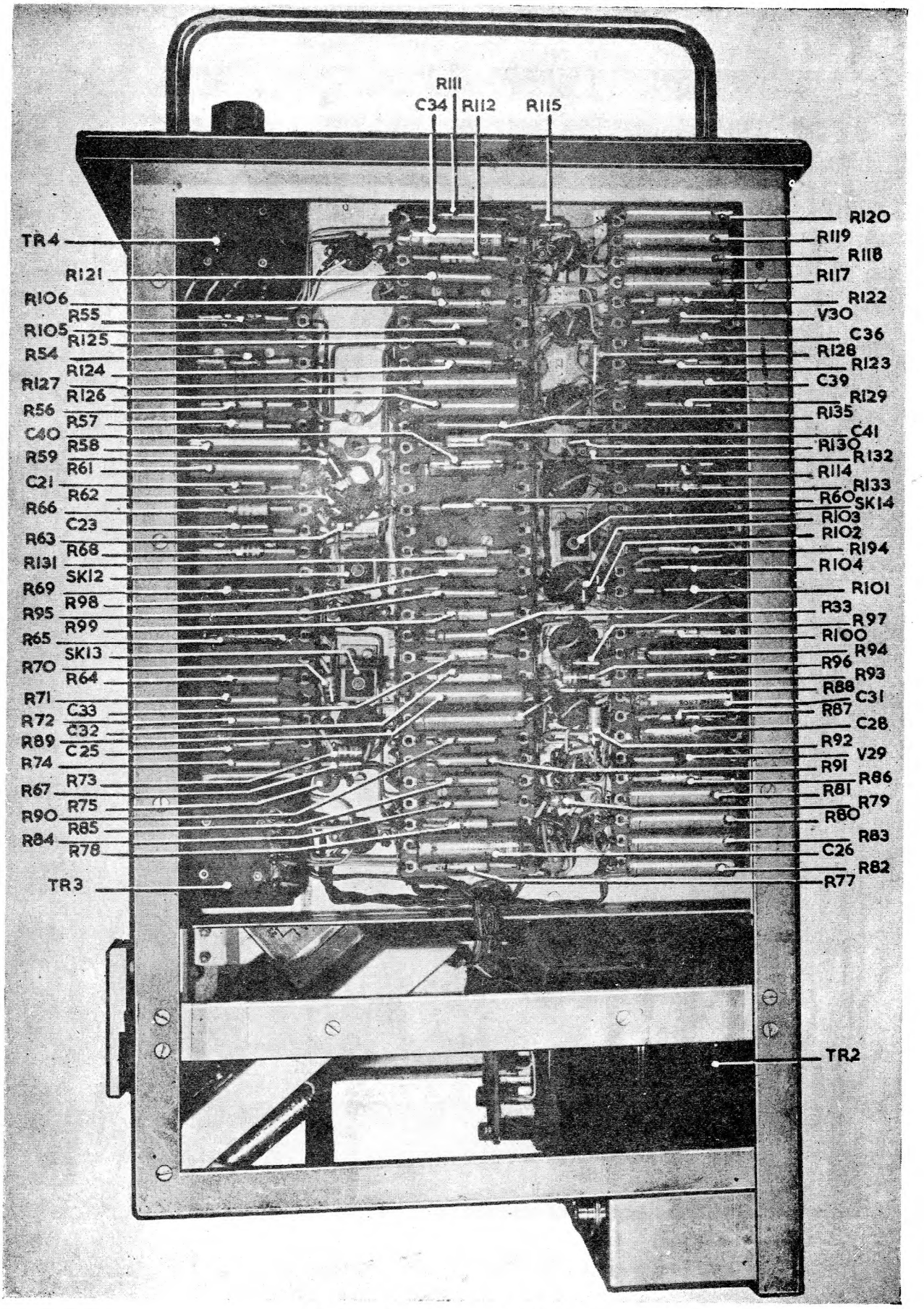


Fig. 11. Trigger unit 4890 : LH side

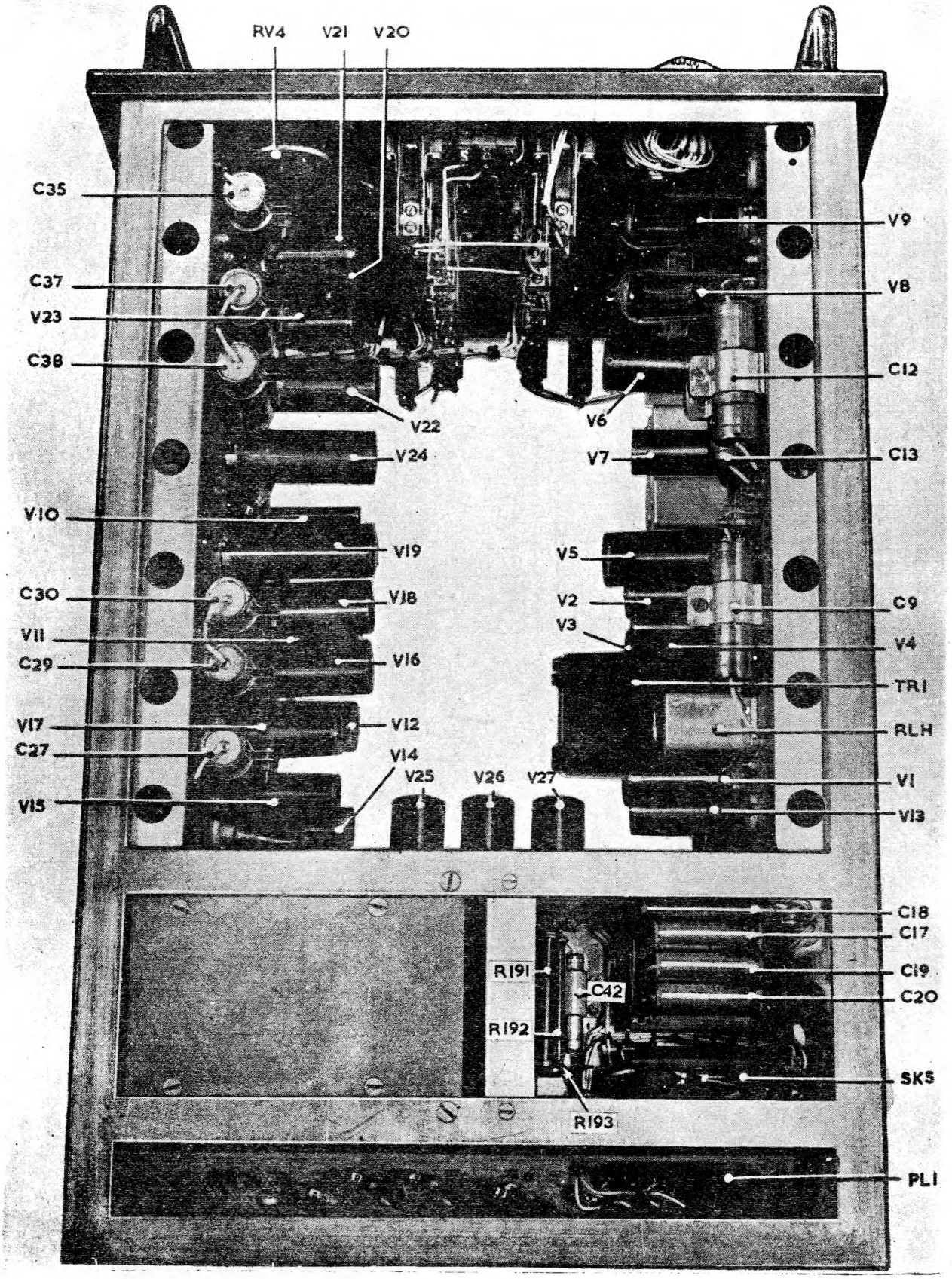


Fig. 12. Trigger unit 4890 : bottom

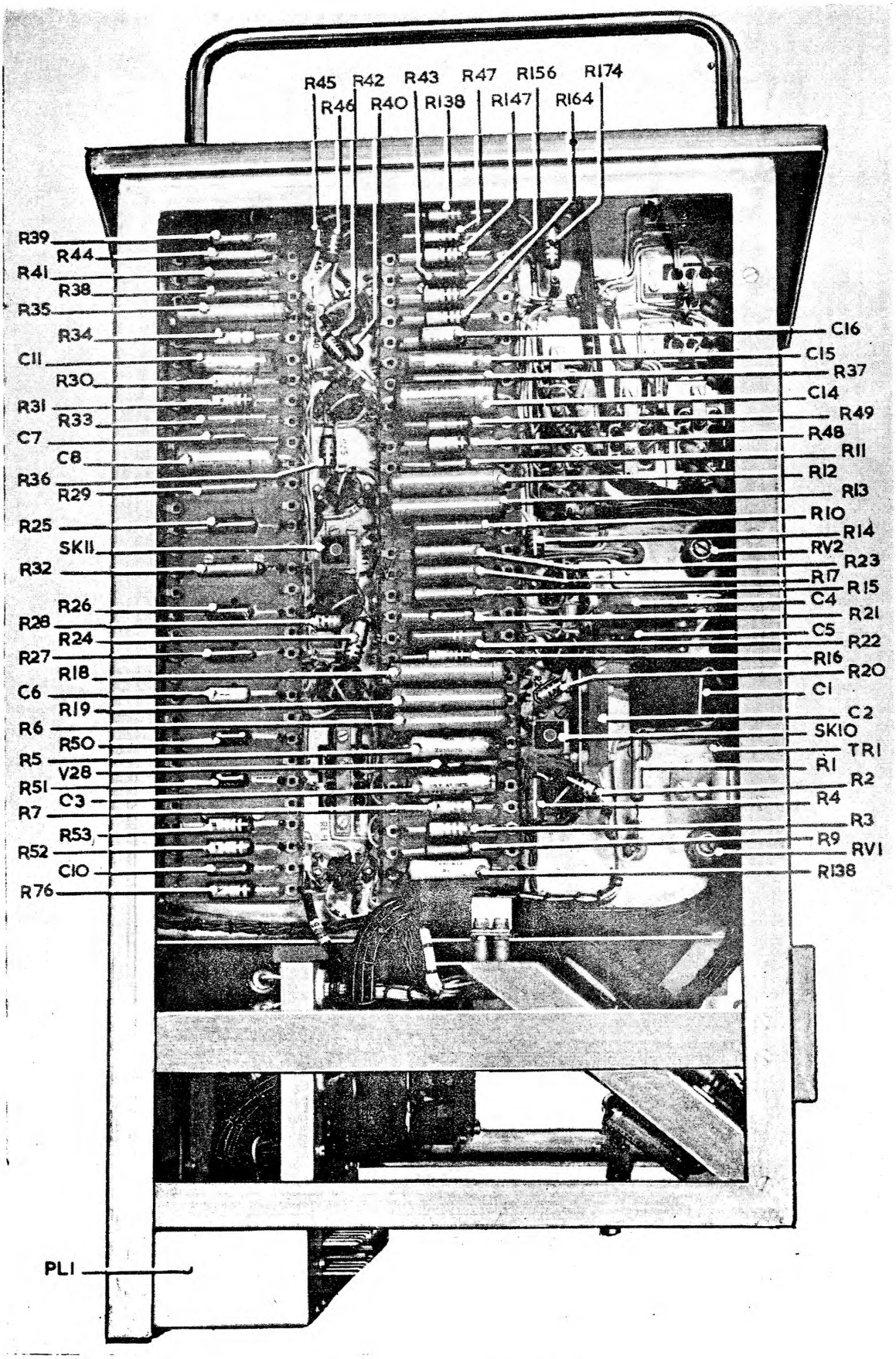


Fig. 13. Trigger unit 4890 : RH side

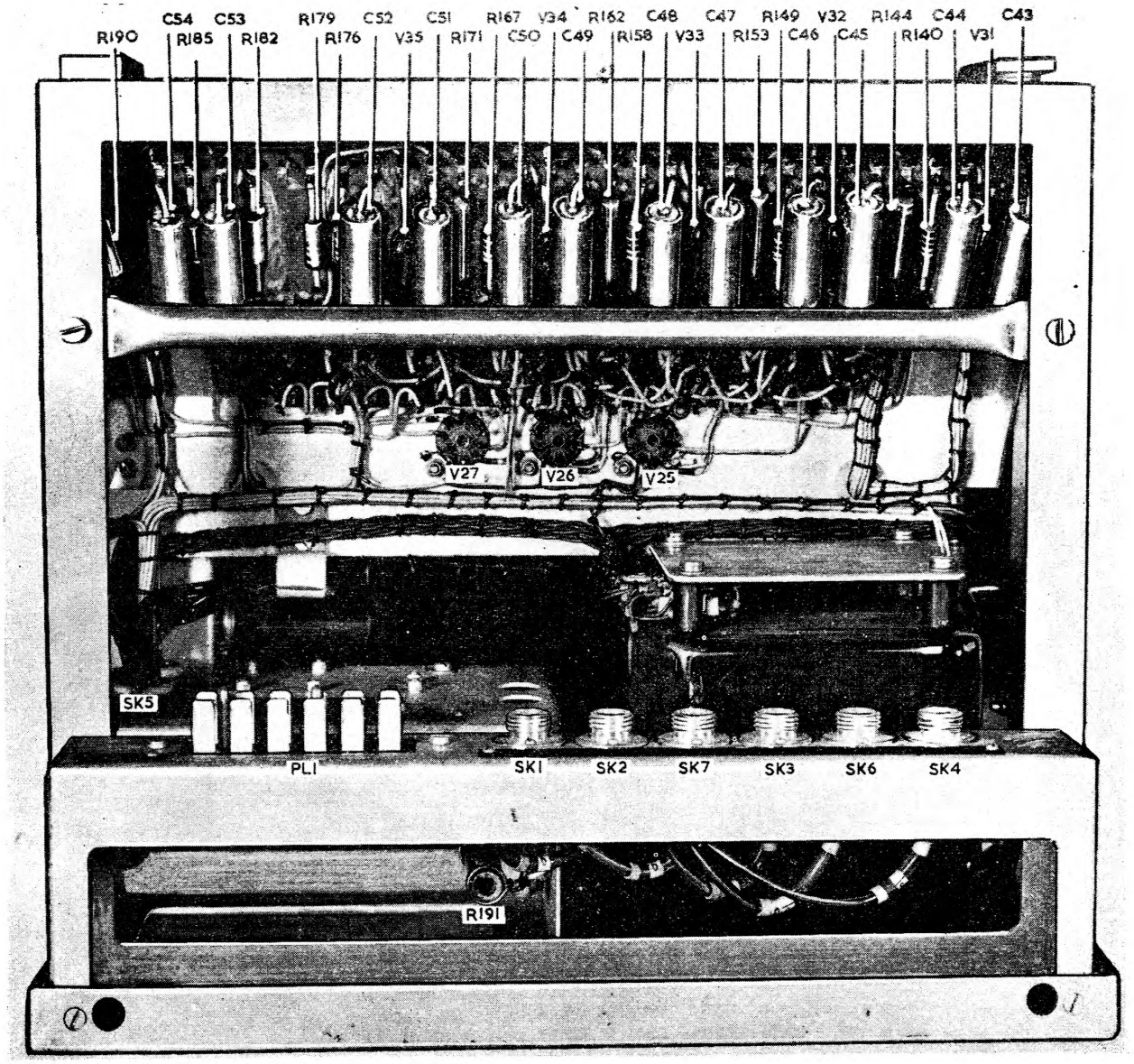
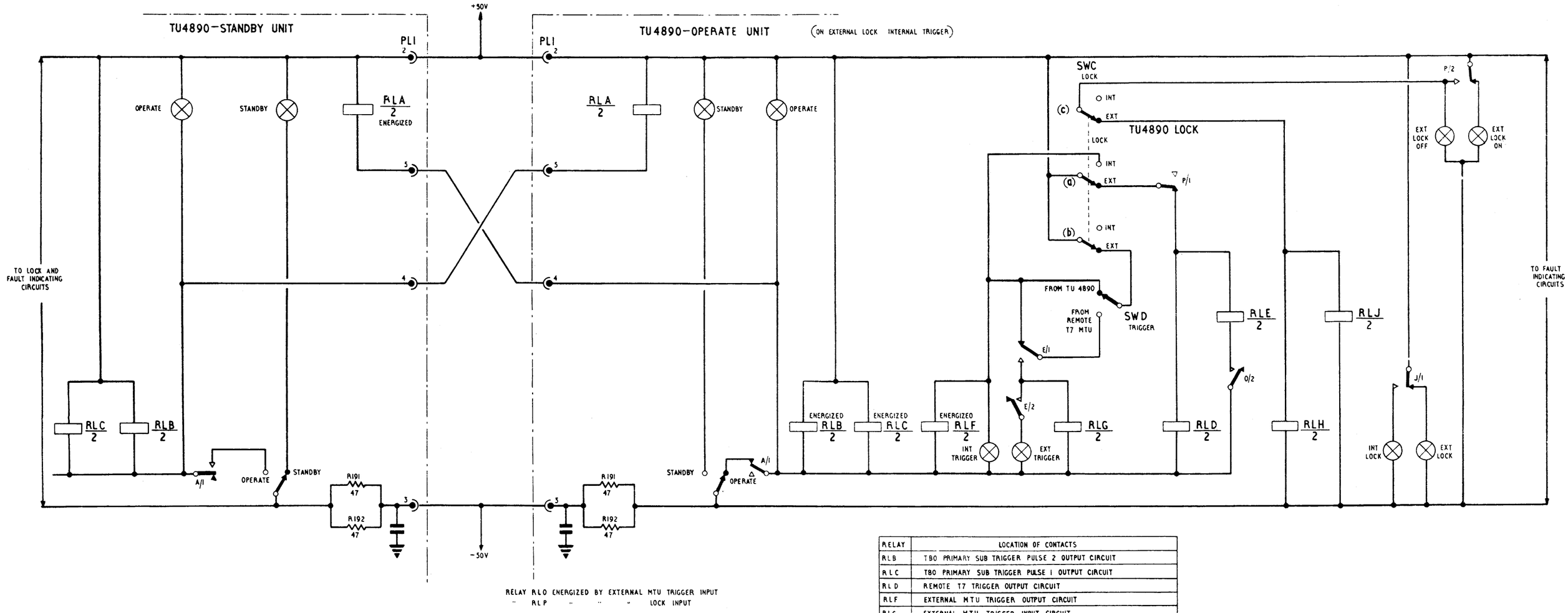


Fig. 14. Trigger unit 4890 : back



RELAY RLO ENERGIZED BY EXTERNAL MTU TRIGGER INPUT
" RLP " " " " LOCK INPUT

RELAY	LOCATION OF CONTACTS
RLB	TBO PRIMARY SUB TRIGGER PULSE 2 OUTPUT CIRCUIT
RLC	TBO PRIMARY SUB TRIGGER PULSE 1 OUTPUT CIRCUIT
RLD	REMOTE T7 TRIGGER OUTPUT CIRCUIT
RLF	EXTERNAL MTU TRIGGER OUTPUT CIRCUIT
RLG	EXTERNAL MTU TRIGGER INPUT CIRCUIT
RLH	V1 OUTPUT

Fig.15 *ALSO ISSUED AS A.D.6159 Z/MIN*

Trigger unit 4890: automatic switching system-circuit.

Fig. 15

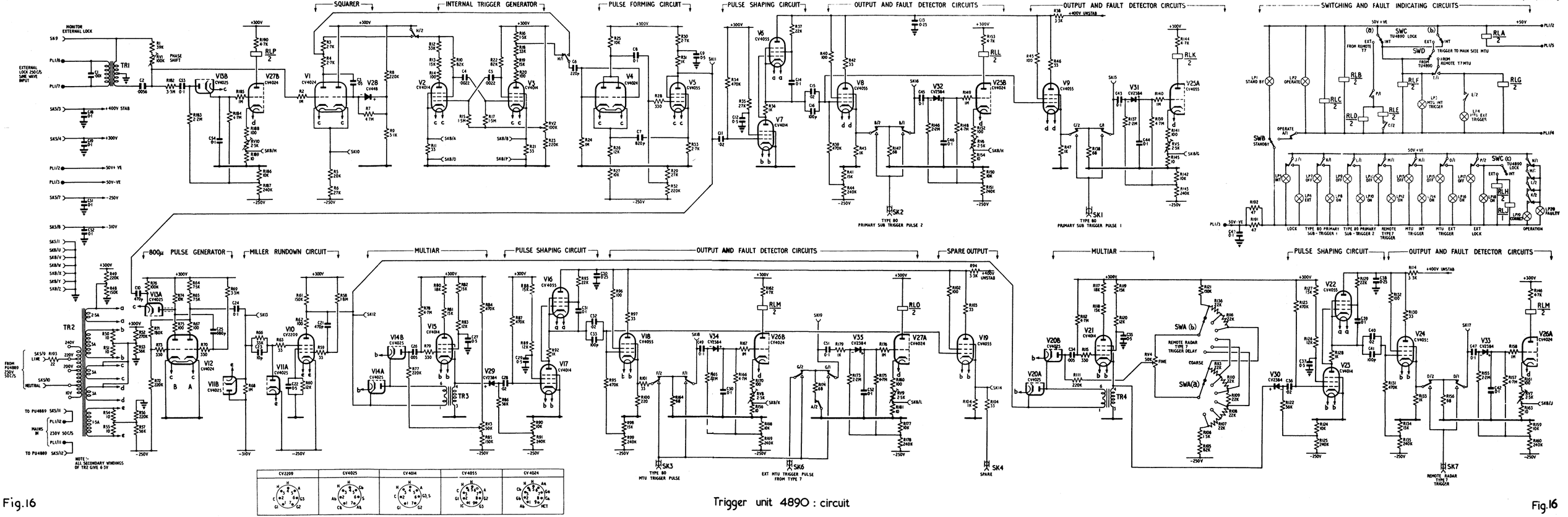


Fig.16

Trigger unit 4890 : circuit

Fig.16

SECTION 4

MONITORS AND TEST SETS

SECTION 4

MONITORS AND TEST SETS

LIST OF CHAPTERS

Note.—*A list of contents appears at the beginning of each chapter*

1 Monitoring unit Type 75

2 Test set Type 402

Chapter 1

MONITORING UNIT TYPE 75

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Introduction

1. Facilities for monitoring waveforms of the IG are provided by :—

(1) Monitoring unit Type 75
(2) Power unit Type 741
(3) Switch unit (monitoring) Type 296.

The monitoring unit is described in this chapter, the power unit in Sect. 6 and the switch unit in Sect. 5.

Power supplies

2. The monitoring unit requires the following power supplies which are supplied by the power unit, direct connection being made by three 12-pin Jones' plugs and sockets and two Belling-Lee high-voltage plugs and sockets on each unit.

(1) *Positive* 330 volts DC
(2) *Positive* 310 volts DC
(3) *Negative* 300 volts DC
(4) 6·3 volts 3·1 amp. 50 c/s
(5) 6·3 volts 0·2 amp. 50 c/s
(6) 6·3 volts 0·3 amp. 50 c/s
(7) 4·0 volts 1·0 amp. 50 c/s
(8) *Negative* 2·5 kV DC.

A 2-volt peak-to-peak 50 c/s test signal is also supplied by the power unit for calibration purposes on the monitoring unit. The initial supply to the power unit is 230 volts, 50 c/s.

Signals

3. Two methods of feeding signals to the cathode-ray tube are provided :—

(1) Signals are condenser-fed to the Y2-plate via a co-axial socket on the front panel. This facility is intended as a means of monitoring waveforms which are brought out to monitoring points on the front panels of units in the rack assembly Type 165 by use of a jumper lead. There are ten such points in the monitoring unit, including 2-volt test and earth.

4. The second method is :—

(2) Feeding to the Y1-plate, via a co-axial socket at the rear of the chassis and an amplifier with gain variable between 10 and 100. This is connected direct to the output of the switch unit (mon.) Type 296.

5. The following information is permanently wired in to the switch unit :—

(1) 5-mile range marks (three channels)
(2) 10-mile range marks (three channels)
(3) Radar video out (three channels)
(4) IFF video in (three channels)
(5) IFF video out (three channels)
(6) Azimuth marks (two channels)
(7) 2-volt peak-to-peak 45/65 c/s
(8) Earth.

One switch selects the type of information and the other the channel from which it is taken ; it is then passed direct to the input to the amplifier in the monitoring unit. The channel selector switch passes the correct synch. for the channel concerned to the monitoring unit.

Synchronizing

6. Sync. pulses are also permanently wired to the switch unit. The channel selector switch passes the correct sync. for the channel concerned to the monitoring unit which will operate on a *positive* four volts or *negative* seven volts pulse.

Application to static stations

7. The monitoring unit Type 75 and power unit Type 741 will be mounted with the test set Type

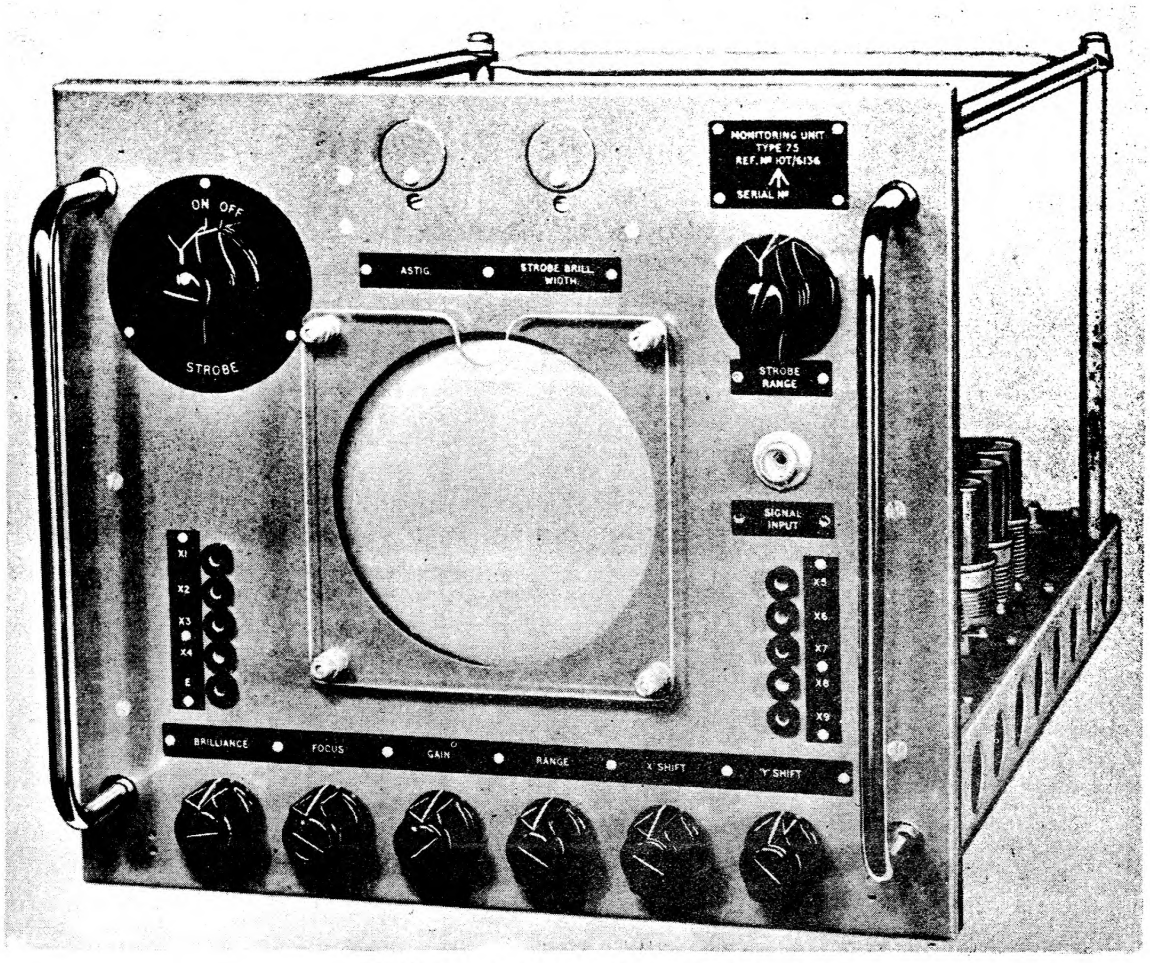


Fig. 1. Monitoring unit Type 75, front panel

402 on a monitoring trolley for servicing purposes on static stations. This trolley is described in AIR PUBLICATION 2527D.

Monitoring unit Type 75

General

8. The monitoring unit Type 75 (Stores Ref. 10T/6136) consists of a 6-inch range deflection CRT which displays one or two timebases as an A-scan. It is used primarily as a monitor to assist in setting-up the remaining circuits of the IG by observation of their various waveforms. It can also be used to observe the signal/noise ratios of echoes. A front panel view of the unit is shown in fig. 1. Plan and under-chassis views are given in fig. 2 and 3. As the component boards are sign-written, only certain unidentified components are annotated on the latter diagram. Fig. 4 is a circuit diagram. A block diagram and waveforms are shown in fig. 5 and 6.

9. The main timebase is continuously variable in range. When operating the transmitter on a pulse recurrence frequency of 500 it is possible to display just over two cycles of any waveform occurring at this p.r.f. At a p.r.f. of 250 it is possible to display distances somewhat over the maximum range of the transmitter.

10. In addition, a "strobe" timebase lasting 10 miles is provided so that any 10-mile stretch of the main timebase can be selected and displayed on the CRT by means of a switch. The section selected by the strobe range control is indicated on the main timebase by a brightening of the trace over the 10-mile section selected. The strobe timebase has the same amplitude as the main timebase and therefore gives an expanded display of any part of the main trace in which the operator is interested. It is therefore useful for examining the rate of rise and fall of pulses, observing signal/noise ratios of echoes at known ranges and other similar purposes.

11. An amplifier having a distortionless gain, variable between 5 and 150 (dependent on amplitude of input), is provided. In addition, the second Y-plate is brought out to a wander lead for the purpose of monitoring points on the information generator which are large enough not to require amplification.

12. As mentioned in para. 2 the power supplies required for the operation of the monitor 'scope are obtained from the power unit Type 741 which also supplies a 2-volt peak-to-peak 50 c/s waveform to X9 on the monitor 'scope chassis. Valve currents on this unit are monitored in the power unit Type 741 described in Chap. 4, Section 6.

13. Provision is made for triggering the unit with a positive or negative sync. pulse to the grid or cathode of V1 respectively. The amplitude required is at least 7V, the unused sync. input socket being short circuited by the special co-axial plug provided.

Monitor 'scope circuits

14. When considering the operation of the monitor 'scope circuits reference should be made to fig. 4. The valves V2 and V4 (both Type CV1091) are arranged in a cathode-coupled flip-flop circuit. V4 is normally conducting, as its grid is held at a positive potential of about 50 volts by the second half of the double-diode V3 (Type CV1054). The cathode of this diode is held at about 50 volts by R16, R17 and R18 and therefore the anode of the diode, which is returned to HT via R15, will be at approximately the same potential. In the same way the grid of V2 is held at about 30 volts by the first half of V3 since its cathode is returned to the junction of R17 and R18. The fact that V4 is passing current causes a bias of about 50 volts to be developed across R11, the common bias resistor, and, since the grid of V2 is only at 30 volts, V2 is cut off.

15. When the negative-going locking pulse, from V1 (Type CV1091), is fed in via C7 it drives the cathode of V3 (second half) negative and there is a corresponding drop at its anode and therefore at the grid of V4. This cuts off V4 and the potential across the common cathode resistor R11 falls to such a value that V2 commences to conduct and its anode voltage drops by an amount which depends on the setting of RV1 in its anode circuit.

16. This drop is communicated via C5 (and C5A) to the grid of V4 and that valve is held cut off after the locking pulse has ended while C5 and C5A charge up through R15. During the same time V2 is therefore passing current. When C5 and C5A have discharged to a potential which brings the grid of V4 into its grid base, V4 commences to pass current and develops the bias across R11 which cuts off V2. The flip-flop has now returned to its static condition. The condenser C9 and resistance R14 do not affect the operation of the flip-flop and are only included in the circuit for the reason mentioned in para. 33-35.

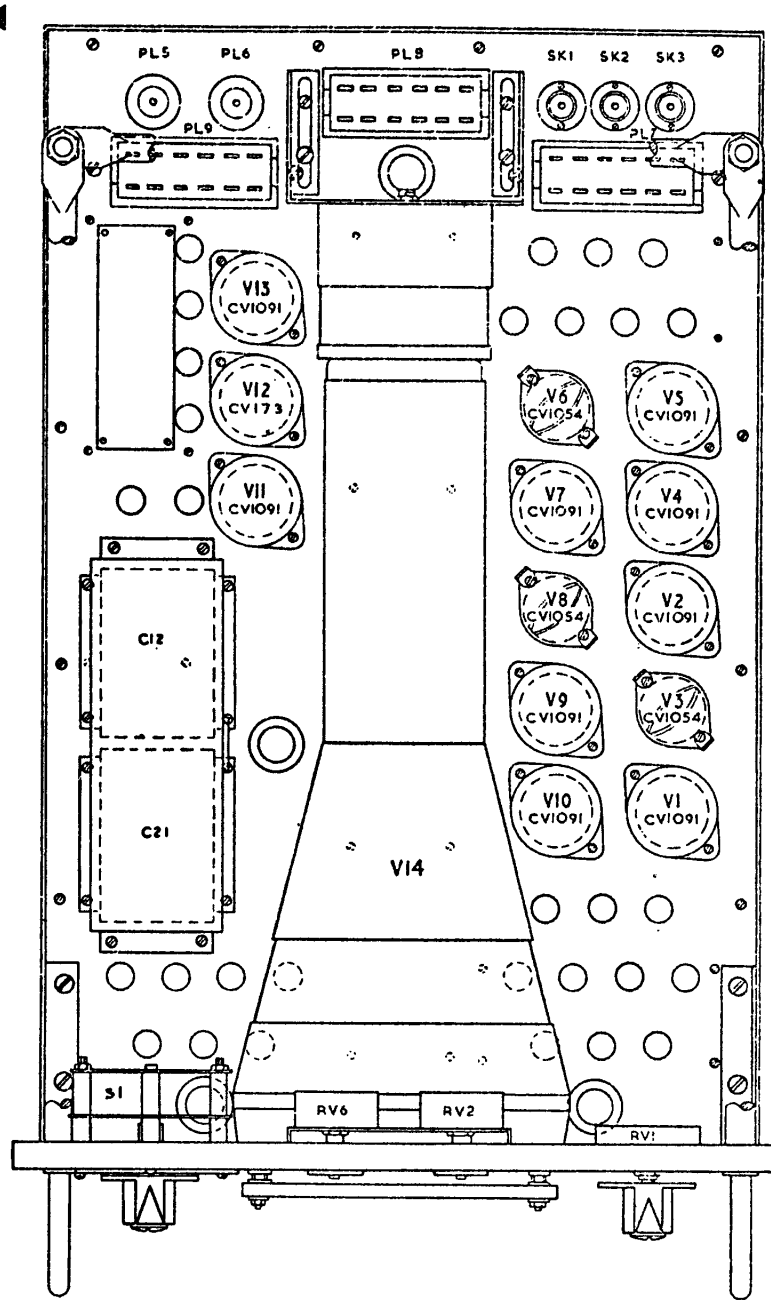


Fig. 2. Monitoring unit Type 75, plan

17. There is, of course, the usual instantaneous cumulative action at the commencement and termination of the flip-flop action. Thus, there is a negative-going square-wave developed at the anode of V2 and a positive-going square-wave at the anode of V4, the durations of both being the same and controlled by the setting of RV1, the STROBE RANGE CONTROL.

18. The outputs of V2 and V4 are fed via the STROBE OFF/ON switch to initiate the long and short duration timebases respectively, while a second output is taken from V4 for the production of the "strobe" brightening pulse. This last-mentioned circuit will be described first.

19. The positive-going square-wave from the anode of V4 is fed via a short time-constant circuit C10, R23, RV2 to the grid of V5 (Type CV1091). Since the grid of this valve is returned to HT it will normally be conducting and passing grid current. The positive-going pip from the differentiated square-wave therefore will be obliterated by grid current whereas the negative-going pip will drive V5 into cut-off and V5 will remain cut off until C10 has discharged to earth potential, when V5 will again pass current. The width of the negative-going pulse developed across R26 is adjusted to have a duration of 10-15 miles by the STROBE BRILLIANCE WIDTH CONTROL RV2 and thus is of the same duration as the strobe timebase.

20. This pulse which is about 10 volts in amplitude is fed via C12 to the cathode of the CRT where it provides incremental brightening of the main trace at the range chosen and extra brilliance for the strobe timebase to compensate for the very much higher "writing" speed. It will be seen that if RV1, the STROBE RANGE control, is varied, the width of the square-wave from the anode of V4 will vary and, therefore, the brightening pulse which is derived from the back edge of the square-wave will vary in position on the main trace.

Timebase generating circuits

21. The valves V6, V7, V8 and V9 comprise the timebase generating circuit, the two timebases being obtained by insertion of the requisite time-constant circuits of the STROBE ON/OFF switch.

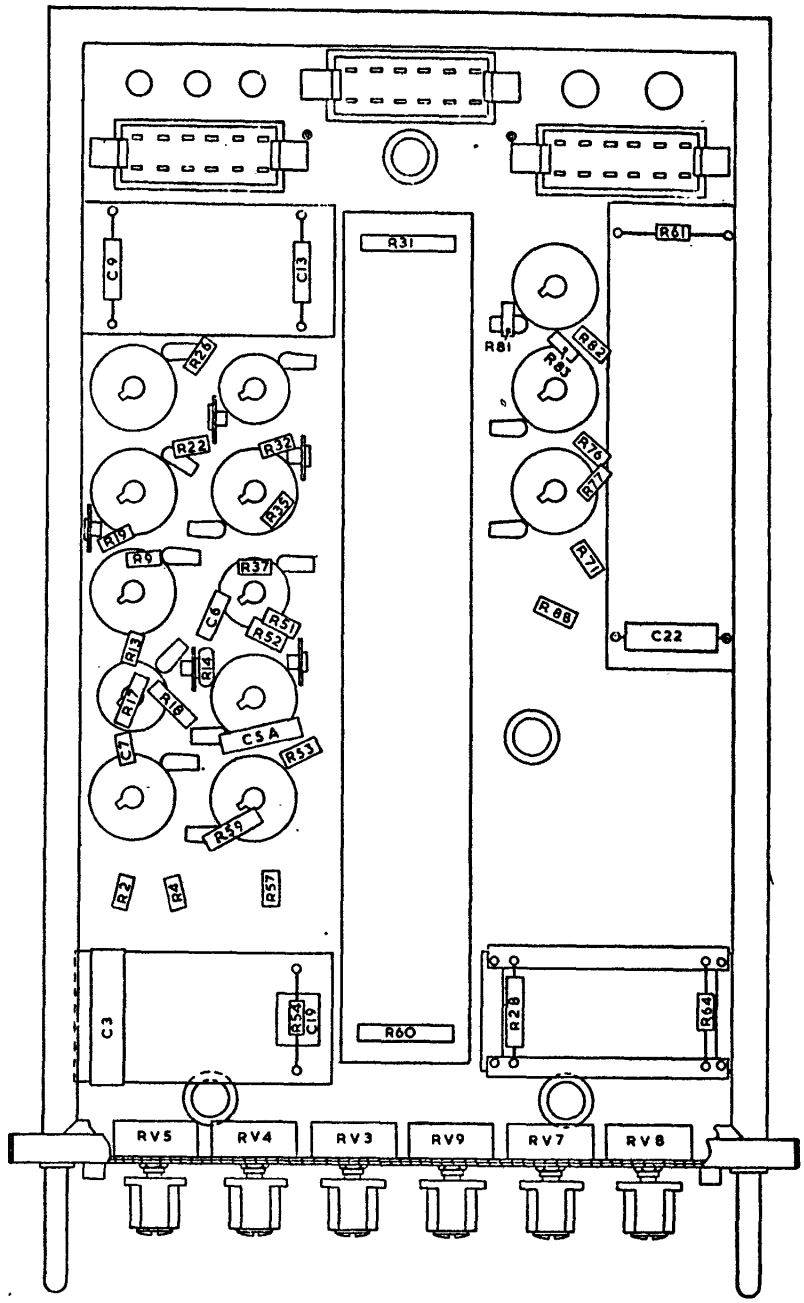


Fig. 3. Monitoring unit Type 75, under-chassis
(Note :—Sign-written components are not annotated.)

22. The timebase, whether generating the main timebase or the strobe timebase, requires a negative trigger pulse applied to the suppressor grid of V7 (Type CV1091). When the switch is set to give the main timebase, that is in the OFF position, this pulse is obtained from the front edge of the negative-going square-wave at the anode of V2 and therefore starts the timebase at the same time as the triggering voltage for the flip-flop.

23. However, when the switch is set to give the strobe timebase, that is in the ON position, the pulse is obtained from the back edge of the positive-going square-wave at the anode of V4 and, since the width of this pulse is variable by the STROBE RANGE control, the start of the strobe timebase can be delayed to commence at a selected range. This will coincide with the brilliance pulse fed from V5 to the cathode of the CRT since both waveforms are derived from the back edge of the same square wave at V4 anode.

24. The suppressor grid of V7 is fed via the short time-constant circuit C13, R29, with a negative-going pip derived from the negative-going edges of either the negative-going square-wave from V2 anode or the positive-going square-wave from V4 anode, according to the position of the STROBE ON/OFF switch. No positive-going pips are developed across the short time-constant circuit as the V7 suppressor grid is held at earth potential by the diode V6 (Type CV1054).

25. The negative-going pip derived from V2 anode will be coincident in time with the locking pulse to the flip-flop, whereas the pip derived from V4 anode will occur at a time selected by RV1, the STROBE RANGE control.

26. In the quiescent state of the timebase, V7 is conducting and V9 (Type CV1091) is cut off on its suppressor grid by the fall in potential along the chain R30, R31, R38 and R40. V9 is, however, taking screen current and control-grid current and the condenser C17 is charged up to about 300 volts, this level being fixed by the diode half V8b (Type CV1054).

27. When V7 is cut off by the negative pulse on its suppressor grid, its anode rises sharply and this rise is passed to the suppressor of V9 via the resistor network R30, R31, R38, R40, and V9 commences to pass anode current. The fall in potential at the anode of V9 is transferred via C17 and C15 to the grids of V9 and V7 respectively, but C17 being stopped farther down the anode load of V9, the grid of V7 drops farther. V7 is thus cut off but V9 is still passing a very small current.

28. After the initial fall of potential at the junction of R43-R44, C17 will commence to discharge in a linear manner, *slowly* if R48 is in circuit (normal timebase) but variable by RV3, the RANGE control which varies the potential to which R48 is taken. When on STROBE timebase R49 is in circuit, and the discharge time is *rapid* as R49 is returned to HT. The result is a negative-going sawtooth waveform from the anode of V9 of max. miles duration on normal timebase and of 10 miles duration when on STROBE timebase.

29. As C17 discharges, the anode potential of V9 drops, carrying the grid of V7 with it. This drop in volts would drive the grid of V7 very negative but the second half of V6 has its anode tied to a fixed *negative* potential of approximately 10 volts and therefore the grid of V7 is held at this potential as long as the anode potential of V9 continues to drop.

30. When this action ceases no more current flows into C15, and V7 cuts on again at a time determined by the time-constant C15, R42. The fall in the anode potential is then transferred via the resistor network R30, R31, R38, and R40 to the suppressor of V9 and thus cuts it off. The anode of V9 then rises towards 330 volts as C17 charges through R43 but is caught at 310 volts by the diode V8b, thus eliminating the long exponential tail of this rise, and V9 is ready for the next locking pulse.

31. Since V7 has remained cut off for the duration of the sawtooth from V9 anode, a positive-going square-wave will be obtained from its anode. This square-wave will be slightly longer in duration than the sawtooth, and a suitable amount is taken from the junction of R30 and R31 and fed to the grid of the CRT as a brightening pulse.

32. Since it is possible to extend the range of the main timebase for a duration which exceeds the time interval between the locking pulses used to trigger the multivibrator, the following circuit arrangement is included to prevent any period of instability occurring at the point where the timebase p.r.f. changes to half the normal p.r.f.

33. The square-wave from the anode of V7 is passed via the diode V8a to the short time-constant circuit C6, R14. The positive-going pulse therefrom is washed out by the diode V3 (first half) but the negative-going pulse from the back edge of the square-wave, applied to the grid of the V2, ensures that V2 will remain cut off for a period determined by C6 and R14 which is somewhat longer than the recovery time of V9. It is thus impossible to get the timebase in an unstable condition as no locking pulse can be derived from the multivibrator until V9 has recovered and the blocking signal of the grid of V2 has disappeared to allow the multivibrator to operate.

34. Thus, the RANGE control (RV3) can be used to extend the timebase to extreme range of 360 miles, the circuits automatically dividing from a p.r.f. of 500 c/s to one of 250 c/s when a timebase duration equal to approximately $\frac{2}{5}$ max. is reached, or 250 c/s to 125 c/s when a timebase duration equal to approximately $\frac{4}{5}$ max. is reached, according to the sync. p.r.f.

35. A similar negative-going signal is obtained from the anode of V4 and fed to the grid of V2 the time-constant in this case being C9 and R14. This signal keeps V2 cut off for the same length of time following the end of the strobe delay square-wave at V4 anode until V4 is fully conducting, so that no unstable condition occurs as the strobe brightening pulse is run out along the main trace, to a distance corresponding to $1\frac{1}{4}$ times the sync. period.

36. The valve V10 (Type CV1091) is arranged as a paraphase amplifier and its operation is as follows. The circuit constants associated with V10 have been so chosen that the valve is always passing current. In view of this it will be evident that grid potential changes, which can only amount to about 4 to 5 volts (the grid bias of the valve), will be negligible when compared with the potential across R56, RV4 (*negative* 300 volts). It can therefore be assumed that the current down this chain and the total current through R54 and R55 is constant.

37. Initially, R54 will be passing most of the total current through R54 and R55 since V9 is then cut off and 300 volts is applied to the top end of R54 while R55 has only a small voltage across it, this being due to the large volts drop across R58, the anode load of V10.

38. When however the anode volts of V9 drop, to produce the negative-going sawtooth, the current through R54 must also decrease. This implies a lowering of the voltage on the grid of V10 which passes less current, its anode voltage rises, the current increases through R55, and the grid potential of V10 rises again to its original value.

39. It will be appreciated, therefore, that if the grid voltage of V10 is to remain constant, any change in voltage across R54 must be accompanied by an equal and opposite change in voltage across R55, so that the total current still remains the same through R56 and RV4. The waveforms across R54 and R55, which are thus equal in amplitude and opposite in polarity, are fed to the X-plates of the CRT and are reciprocal within the limits of equality of R54 and R55 and of the change of grid volts of V10 compared with 300 volts.

40. Variation of RV4, the X-shift control, by adjusting the total current through the chain and the bias applied to the grid of V10, determines the initial current through the valve and the standing potential at its anode. This voltage will thus determine the position of the origin of the timebase on the CRT.

41. The cathode-ray tube circuits are standard, the cathode potential being at, approximately, *negative* 2·5 kV, and that of the final anode at about *positive* 170 volts, the mean potential of the X-plates.

Video amplifier circuits

42. The video amplifier consists of a two-stage amplifier V11 (Type CV1091) and V12 (Type CV173), with a cathode-follower output stage V13 (Type CV1091). The gain, without distortion is variable between 5 for a sine wave input of 6V and 150 for one of 0·2V. This allows for inputs giving a deflection on the CRT of up to about 2½ in. Inputs in excess of 5 volts should be fed in via Y2 or tapped down.

43. Since the amplifier is intended to deal with either positive or negative signals, no DC restoration is provided. Any overloading, therefore, has a very pronounced effect upon the base line. Due to the inductance-compensated anode circuits of V10 and V11, the frequency response of the amplifier is very good up to 2 Mc/s.

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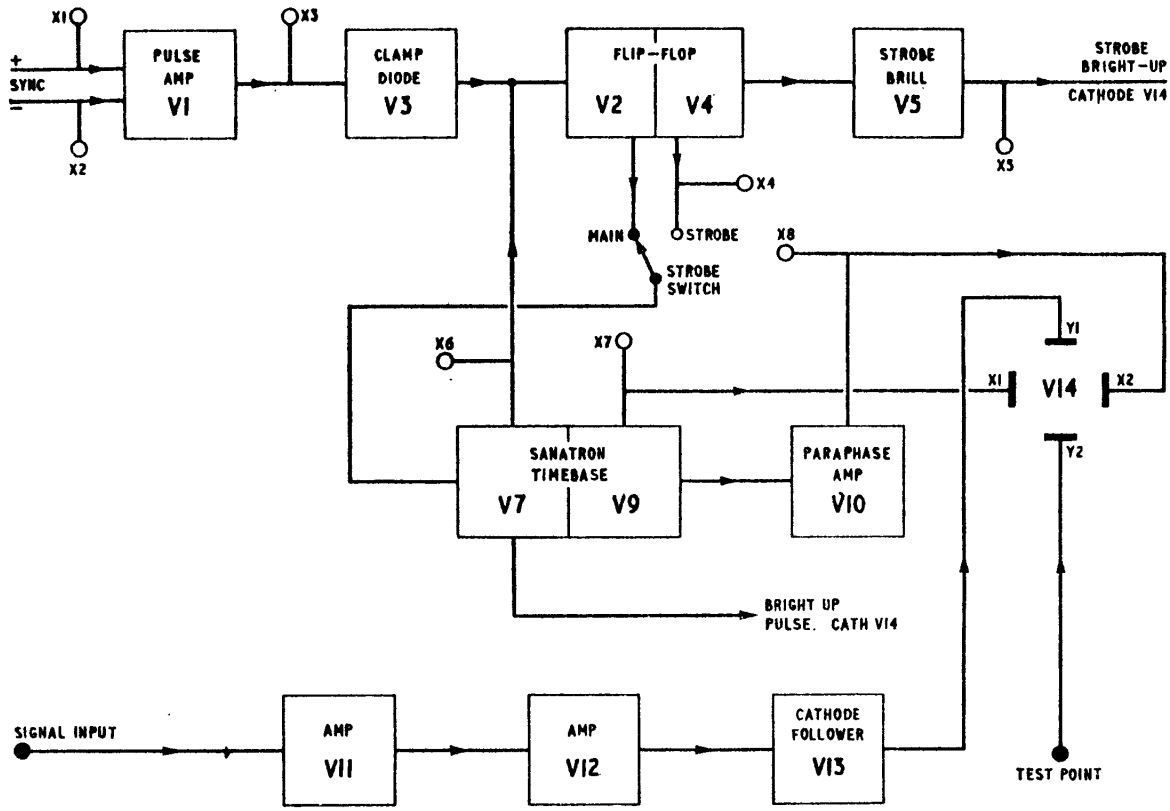
40. Variation of RV4, the X-shift control, by adjusting the total current through the chain and the bias applied to the grid of V10, determines the initial current through the valve and the standing potential at its anode. This voltage will thus determine the position of the origin of the timebase on the CRT.

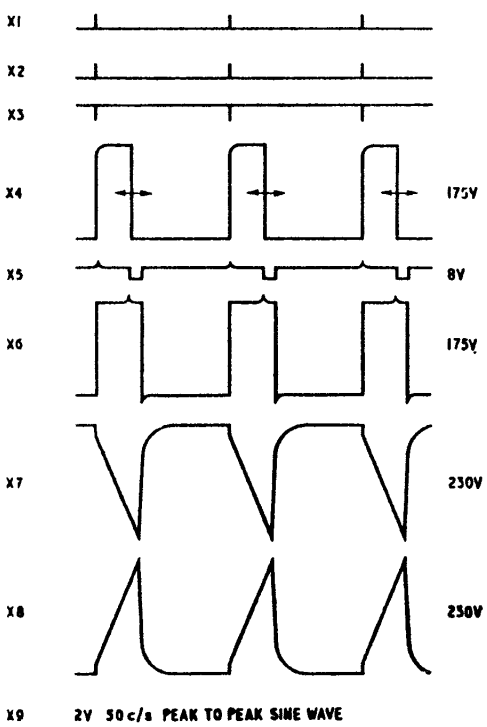
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43. Since the amplifier is intended to deal with either positive or negative signals, no DC restoration is provided. Any overloading, therefore, has a very pronounced effect upon the base line. Due to the inductance-compensated anode circuits of V10 and V11, the frequency response of the amplifier is very good up to 2 Mc/s.





NOTES

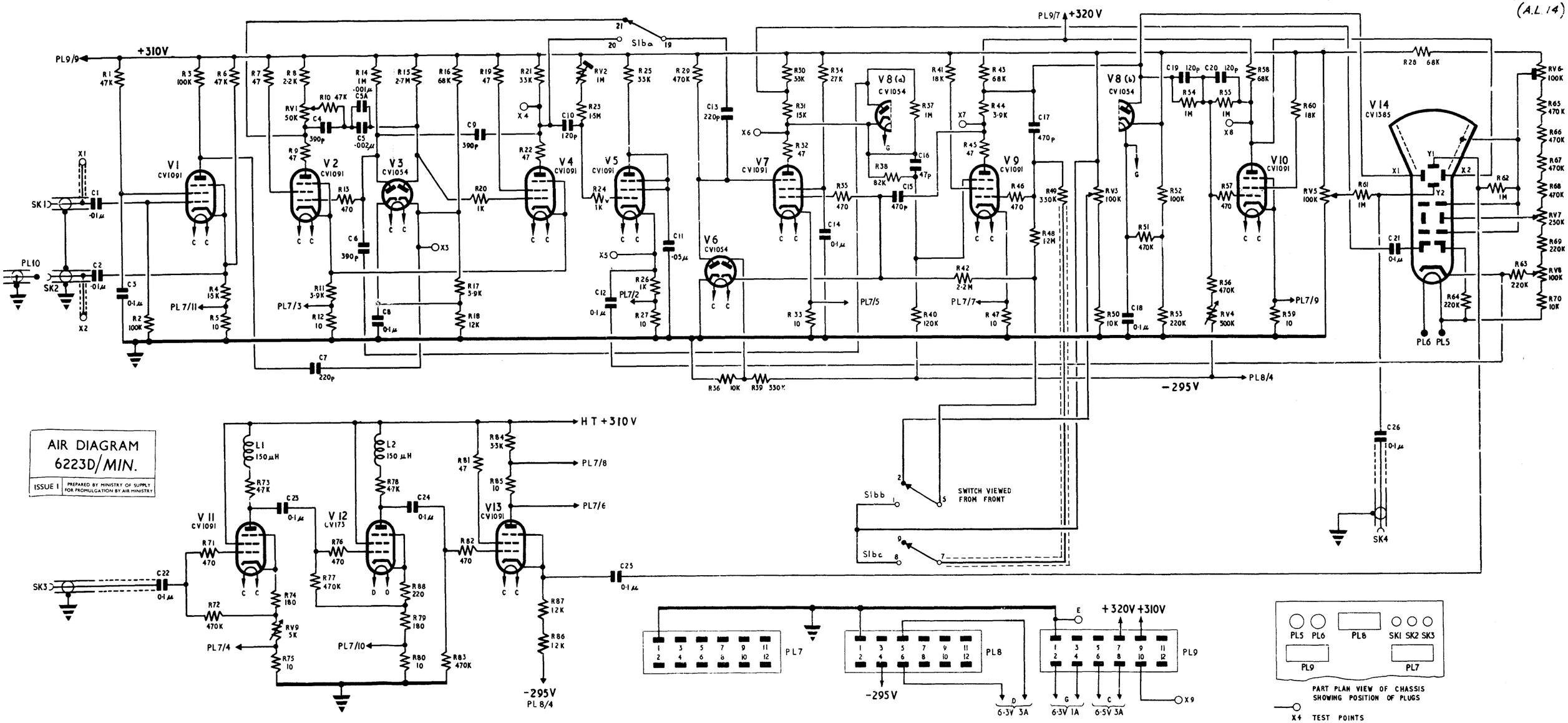
1 SYNC IS APPLIED TO X1

2 WHEN THE TRAILING EDGE OF X4 WAVEFORM APPROACHES THE SECOND SYNC PULSE, THE LATTER IS SUPPRESSED ALLOWING THE RANGE TO EXCEED ONE P.R.F. PERIOD

3 VOLTAGE AMPLITUDES ARE INTENDED ONLY AS A GUIDE

Fig. 4 (above). Monitoring unit Type 75, block diagram.

Fig. 5 (below). Monitoring unit Type 75, waveforms



AIR DIAGRAM
6223D/MIN.
ISSUE 1 | PREPARED BY MINISTRY OF SUPPLY FOR PROMULGATION BY AIR MINISTRY

Monitoring unit Type 75 — circuit

Fig.6.

Chapter 2

TEST SET TYPE 402

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Introduction

1. Test set Type 402 (Stores Ref. 10S/16157) forms part of the rack assembly and was designed to provide the necessary pulses and signals required to test and assess the performance of the various equipments. It is fully described in Air Publication 2527D and, therefore, only a brief specification will be included here.

2. The pulses generated are :—

(1) Synchronizing and variable video echo pulses produced at a series of selected recurrence frequencies.

(2) Long-duration pulses produced at two (alternative) repetition frequencies.

(3) Pulses of modulated and unmodulated RF.

(4) Crystal-controlled calibrating pulses at three differing series of intervals.

Specification

Dimensions

3. The test set weighs 71 lb. Its dimensions are :—12½ in. height, 14 in. width and 23 in. depth.

Sync. and video echo

4. **Pulse recurrence frequency:**

80 to 1,200 c/s.

Triggering sources:

(1) 420 to 650 c/s mains source with zero to 60 deg. phasing control.

(2) Pulse input of 350 to 1,200 c/s p.r.f.

(3) 506 c/s internal triggering.

Locking holds over *plus* or *minus* 20 c/s shift of trigger frequency.

Triggering pulse:

Min. 18 volts, 4 microseconds positive-going.

Sync. pulse:

0·6, 2·0 or 4·0 microseconds width, zero to 20 volts amplitude across 70 ohms.

Video echo pulse:

0·6, 2·0 or 4·0 microseconds width, zero to 12 volts amplitude across 70 ohms.

Video echo delay:

3·5 to 300 nautical miles.

Calibrator section

5. **Crystal frequency:**

16·19 kc/s *plus* or *minus* 0·05 per cent.

Outputs:

5-mile marker,

10-mile marker,

40-mile marker,

506 c/s sync. pulses (fed to sync. and video echo section).

Pulse width for all range marks:

0·75 microsecond.

Output level for all range marks:

Zero to 12 volts across 70 ohms.

Long-duration pulse section

6. **Pulse recurrence frequency:**

10-mile or 40-mile p.r.f.

Pulse width:

40 to 80 microseconds on 10-mile p.r.f.

60 to 350 microseconds on 40-mile p.r.f.

Output level:

40 volts unterminated.

RF modulation section

7. **Internal RF oscillator frequency:**

42 to 48 Mc/s.

External RF input:

10 to 200 Mc/s (with 15 dB insertion loss on input level).

Types of modulation:

(1) Delayed echo pulse taken from sync. and video echo section.

(2) 40 to 350 microseconds pulse taken from the long-duration pulse section.

(3) 40 to 350 microseconds pulse taken from the long-duration pulse section, which is the envelope of a 1 Mc/s oscillator. This provides variable width blocks of 0·5 microsecond pulses.

RF output:

100 mV at zero attenuation across a 70-ohm, zero to 80 dB attenuator. When taken from the rear socket there is an additional 6 dB attenuation when terminated with 80 ohms.

Power supply

8. The power supply is 230 volts, 45 to 65 c/s.

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A.L.39, May 66

SWITCHING APPARATUS AND DELAY NETWORKS

SECTION 5

SWITCHING APPARATUS AND DELAY NETWORKS

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Chapter 1

SWITCH UNIT (MONITORING) TYPE 296

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Introduction

1. The switch unit (monitoring) Type 296, Stores Ref. 10F/16141, is used to select any one of eleven sets of screened inputs in each of three channels to be monitored in the monitoring unit Type 75 (*Sect.* 4) of the rack assembly Type 165. The sync. for the cathode-ray tube is also selected from the appropriate channel. Four modulator phasing controls for two Type 13 and two Type 14 radar installations are also included to ensure synchronism of transmitter pulses.

2. Illustrations of the switch unit are given in figs. 1 to 4 (inclusive) and a circuit diagram is shown in fig. 5.

Channels switch

3. The switch S2, CHANNELS, can be used to select any one channel from the following inputs wired in through the socket panel at the back of the unit (*fig.* 4) :—

Azimuth marks	2 channels.
IFF in	3 channels.
IFF out....	3 channels.
10-mile range marks	3 channels.
5-mile range marks	3 channels.
Video	3 channels.
Lock	3 channels.

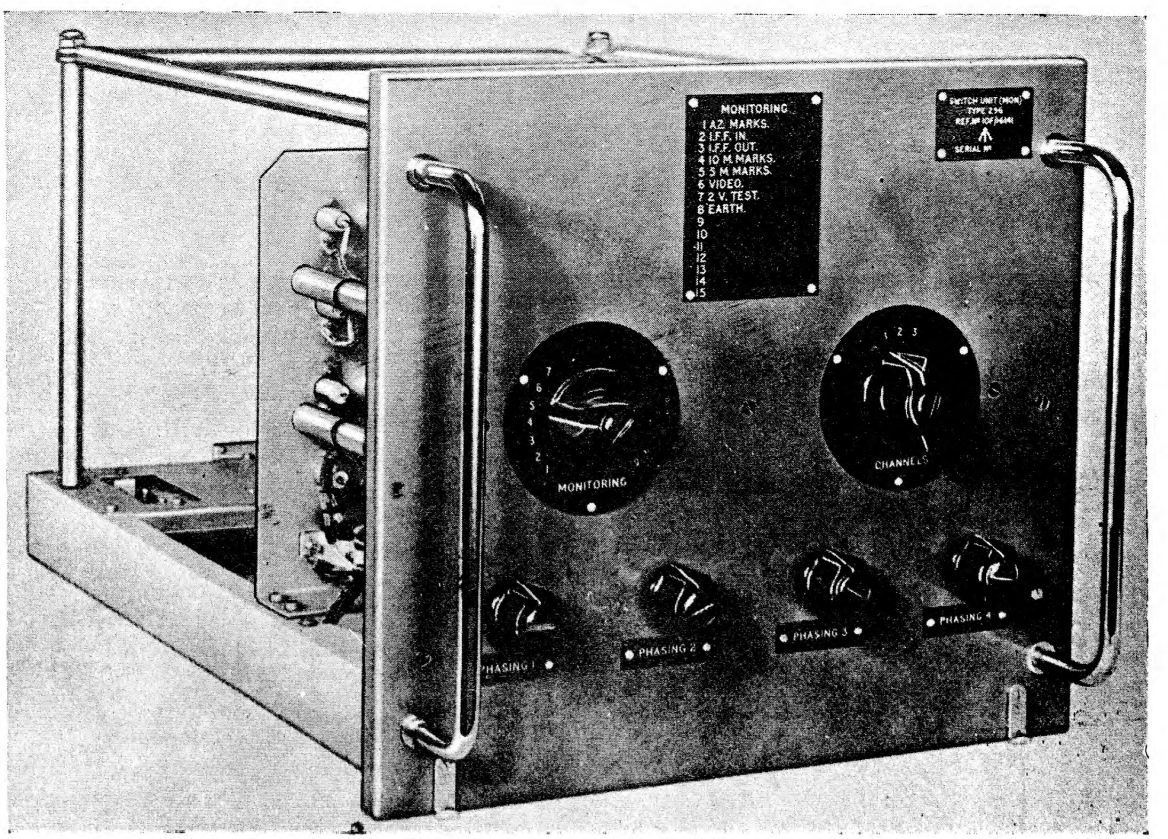


Fig. 1. Switch unit (mon.) Type 296, front panel

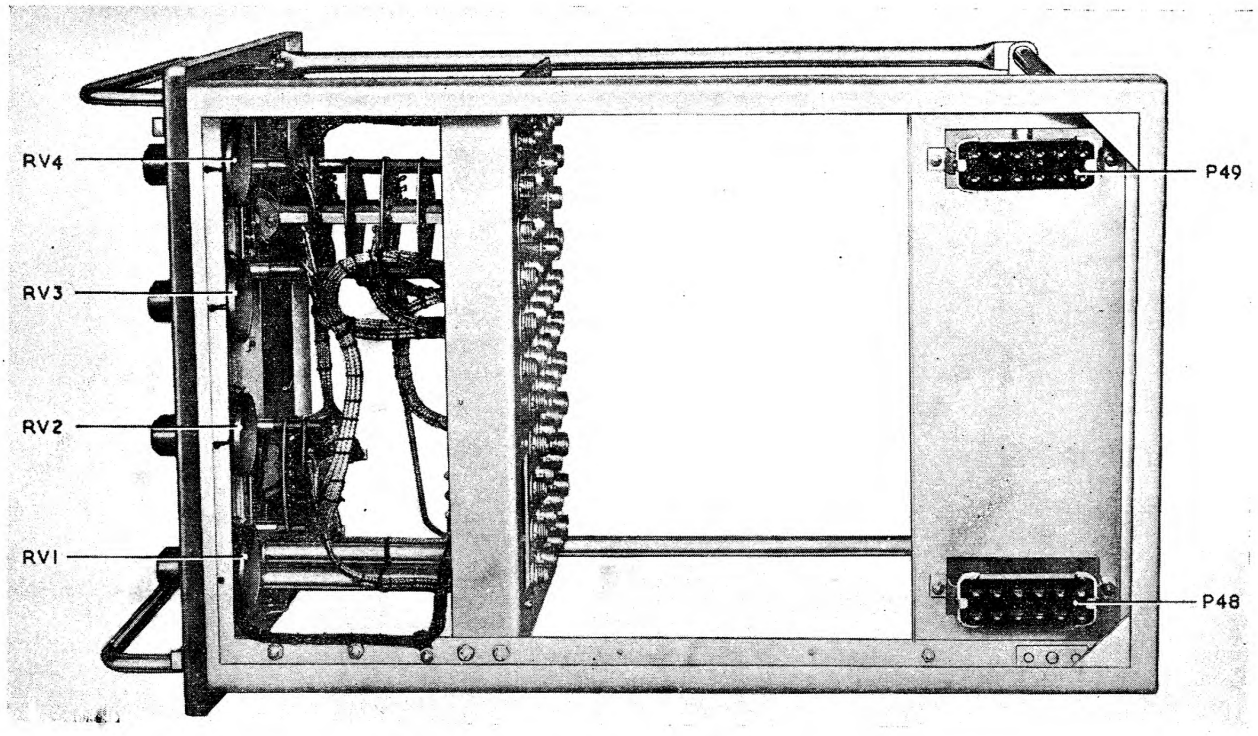


Fig. 2. Switch unit (mon.)Type 296, chassis underside (1)

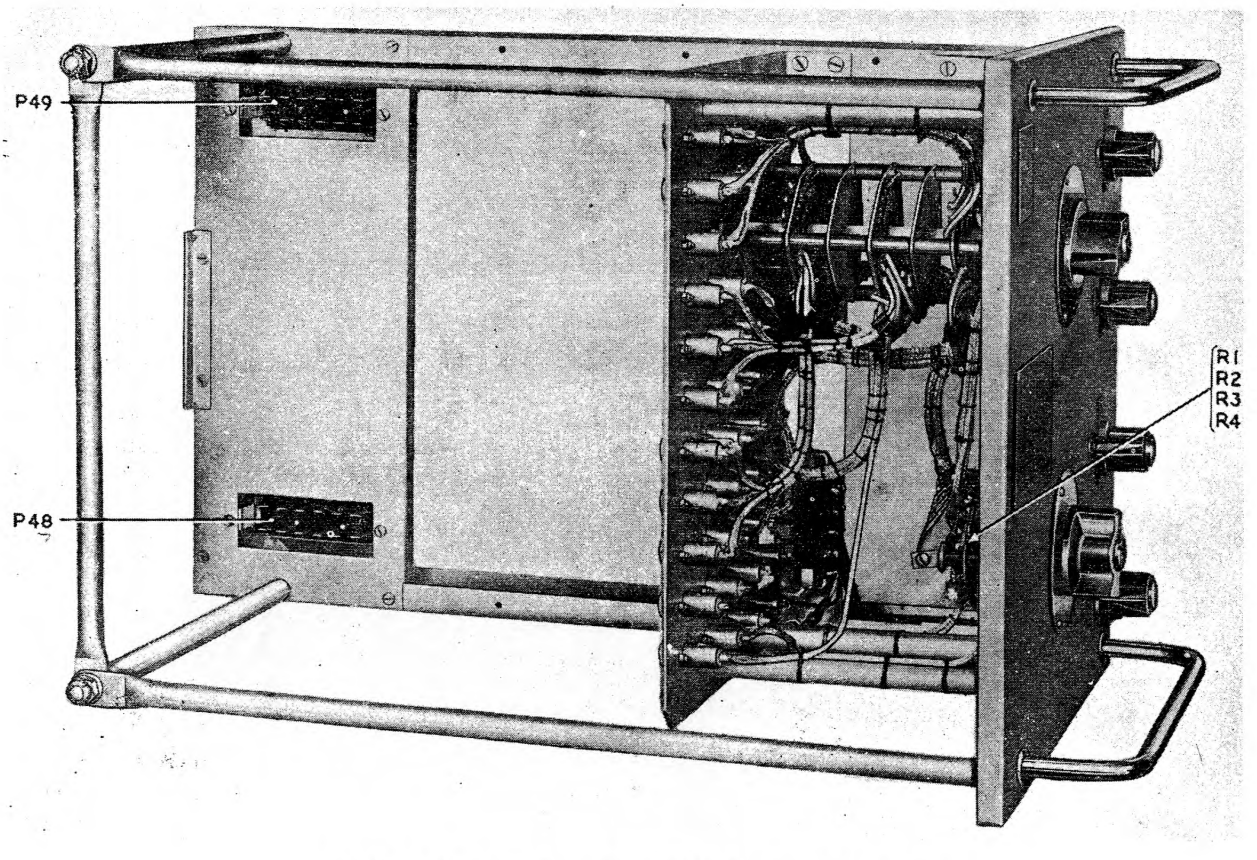


Fig. 3. Switch unit (mon.) Type 296, chassis underside (2)

Monitoring switch

4. All the outputs from the switch S2 are wired to the switch S1, MONITORING, which selects any one item of information from the channels selected by S2. The information selected by S1 is sent out via the socket Sk21 to the amplifier in the monitoring unit Type 75.

5. Also connected to S1, through pins 2 and 1 respectively of the plug PL 47, are the 2-volt peak-to-peak test signal and earth.

6. The lock output from S2 is fed direct, via Sk11, to the sync. input socket on the monitoring unit Type 75. Hence, when a signal is selected from a particular channel the correct sync. for that channel is also selected.

IFF attenuation

7. The IFF signals are too great in amplitude to apply direct to the amplifier in the monitoring unit. In order to attenuate them, two potentiometer chains, one for input and one for output signals, are wired on to the CHANNEL switch S2 and these cut down signals to approximately one-quarter their normal amplitude. These are shown as R1 to R4 in an inset to fig. 5.

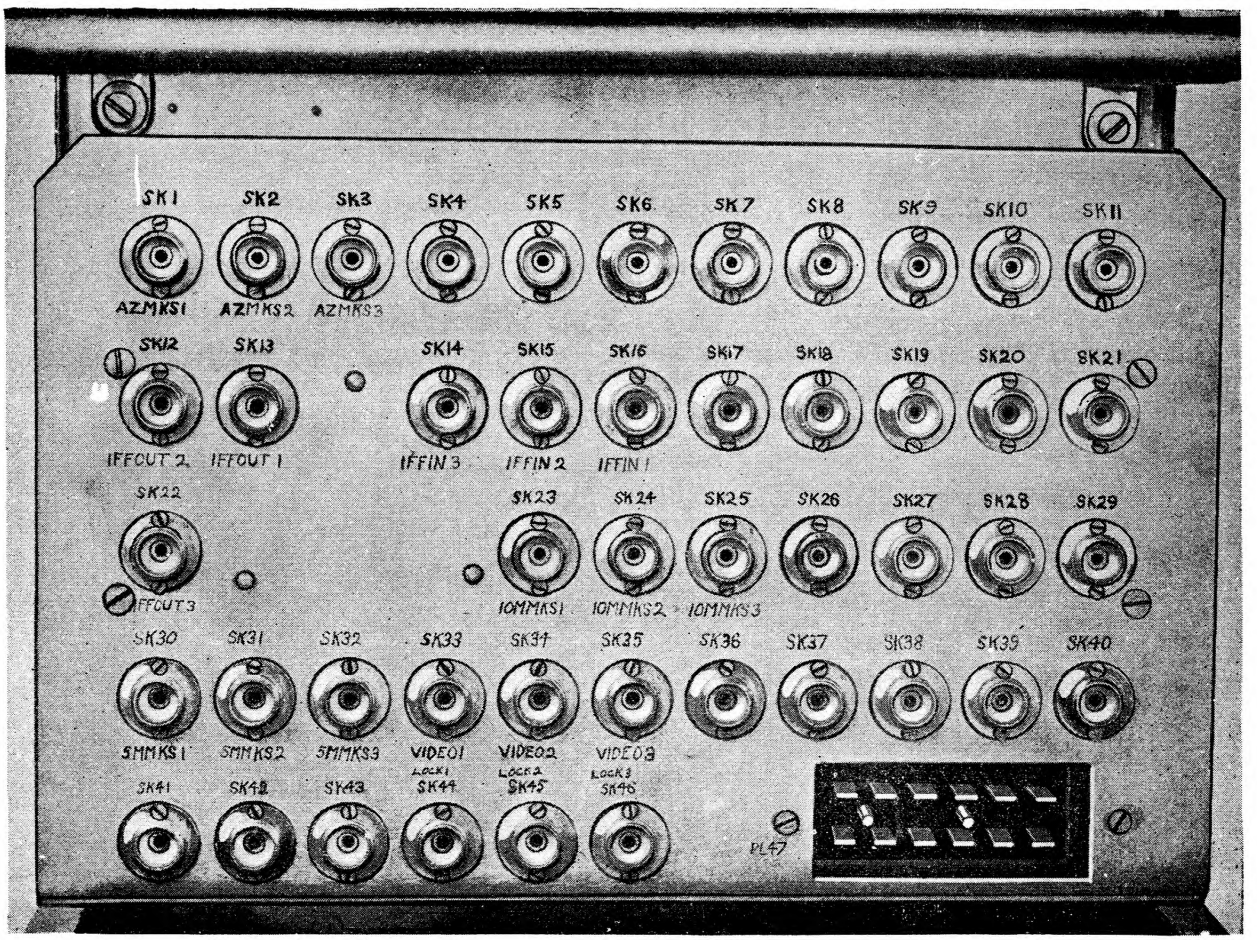


Fig. 4. Switch unit (mon.) Type 296, socket board

	CHANNEL 1	CHANNEL 2	CHANNEL 3
AZ MARKS	SK1 → S2a1	SK2 → S2a2	SK3 → S2a3
IFF IN	SK16 → S2f21	SK15 → S2f22	SK14 → S2f23
IFF OUT	SK13 → S2b5	SK12 → S2b6	SK22 → S2b7
10M MARKS	SK23 → S2e17	SK24 → S2e18	SK25 → S2e19
5M MARKS	SK30 → S2c9	SK31 → S2c10	SK32 → S2c11
VIDEO	SK33 → S2d13	SK34 → S2d14	SK35 → S2d15
	SK6 → S2n21	SK5 → S2n22	SK4 → S2n23
	SK9 → S2t21	SK8 → S2 t22	SK7 → S2t23
	SK19 → S2m17	SK18 → S2m18	SK17 → S2m19
	SK36 → S2s17	SK37 → S2s18	SK38 → S2s19
	SK41 → S2r13	SK42 → S2r14	SK43 → S2r15
LOCK	SK44 → S2k13	SK45 → S2k14	SK46 → S2k15

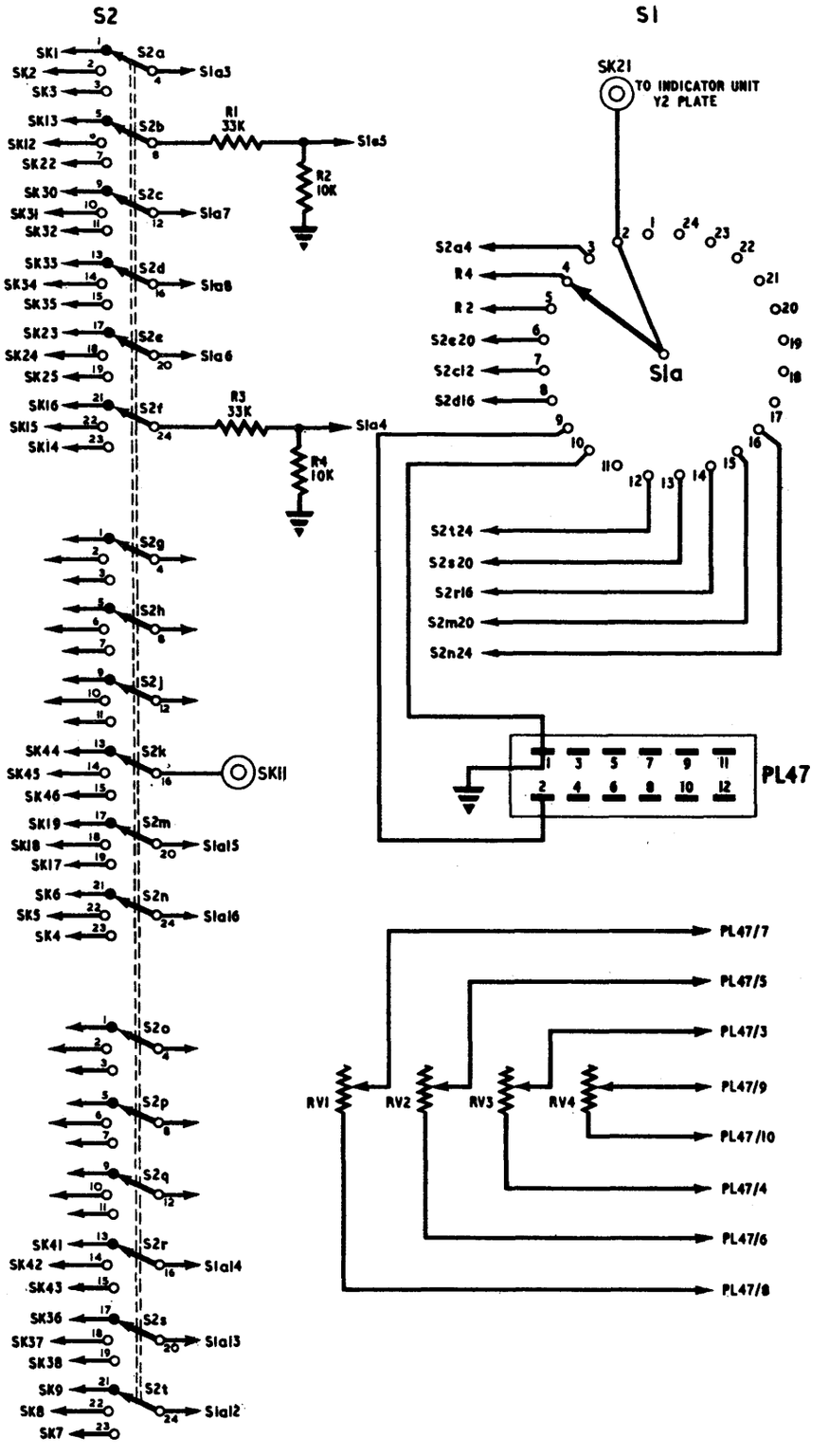


Fig. 5

Switch unit (mon) Type 296 – circuit

Fig. 5

Chapter 2

SWITCH UNIT TYPE 410

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Introduction

1. The switch unit Type 410 has two functions. It provides automatic change-over to the standby rectifier Type 17 if the DC output of the main rectifier Type 17 fails, and it houses the master-aerial-head selector-switch.

2. In static radar stations the switch unit Type 410 forms part of a rack assembly (Type 307-322). This rack assembly is situated in the operations building. All connections to the unit are made by Jones plugs and sockets.

3. Rectifiers Type 17 give a DC output of 50V and also five separate AC outputs of 24V, centre-tapped. The master-head selection switch is also fitted to the rectifier Type 17 but when used in conjunction with the switch unit Type 410 this facility is not used. Instead, this facility is obtained from the switch unit Type 410.

4. The output of each rectifier Type 17 is fed through two Jones plugs into the switch unit Type 410, No. 1 rectifier through PL905 and PL908 and No. 2 rectifier through PL906 and PL907. PL905 and PL906 each take four centre-tapped AC supplies; these are changed over by relay contacts X1-X6 and Y1-Y6 and the output is taken from PL901.

5. Plugs PL908, PL907 take the other AC supplies (pins 1, 2, 3) which are changed over by relay contacts Z1, Z2, Z3; the output is taken from PL904 (pins 1, 2, 3). Pins 7 and 8 of these plugs carry the incoming DC supply. The DC output is taken from plugs PL902, PL903, PL904, PL909 and PL910. The position of the change-overswitch SW1 determines which rectifier will be considered as master.

Automatic change-over circuit

6. With switch SW1 in the position shown in fig. 4 the rectifier supplying through PL907 is master. Relay $RL\frac{D}{3}$ will be energized from the master supply thus closing contact D1 to pass the DC supply to the output plugs. Contact D2 is opened to isolate the supply entering through PL908 and contact D3 opens to prevent relays $RL\frac{Z}{3}$, $RL\frac{Y}{6}$, $RL\frac{X}{6}$ from being energized. The AC supplies are therefore taken from PL906 to PL901 and from PL907 to PL904.

7. If the DC supply fails on the master rectifier then relay $RL\frac{D}{3}$ will be cleared down. Contact D1 will open to break the supply line and contact D2 will be made to connect the stand-by DC supply to the output plugs. Contact D3 will also be made so that relays $RL\frac{Z}{3}$, $RL\frac{Y}{6}$ and $RL\frac{X}{6}$ will be energized and so change over the AC supplies.

8. If the rectifier feeding into the left-hand side plugs in fig. 4 is considered as master then switch SW1 would be in the alternative position to that shown in fig. 4.

9. Relay $RL\frac{C}{3}$ is energized from the master supply and so completes the DC output circuit through contact C1. Contact C2 isolates the stand-by supply. The change-over relays, $RL\frac{Z}{3}$, $RL\frac{Y}{6}$, $RL\frac{X}{6}$ are energized through contact C3 and so the AC supplies are taken from plugs PL905 and PL908.

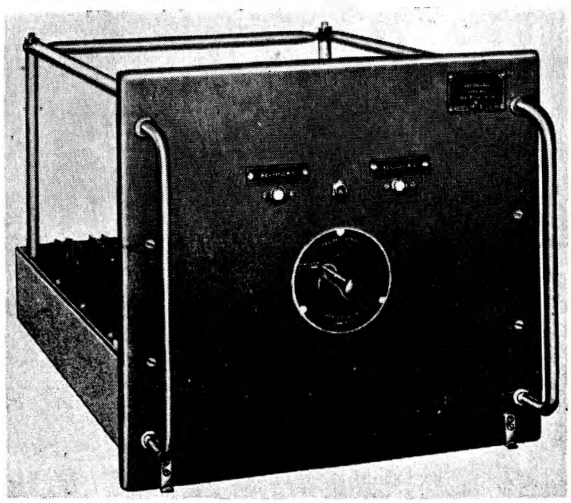


Fig. 1. Switch unit Type 410—front panel

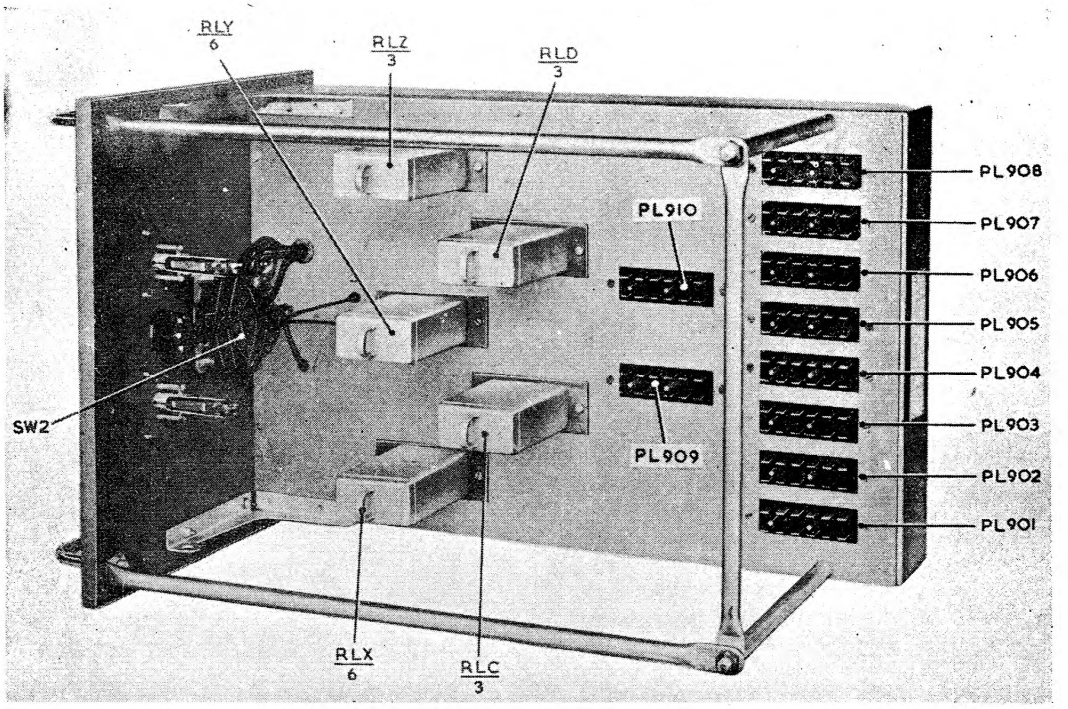


Fig. 2. Switch unit Type 410—plan view

10. In the event of failure of the master DC supply, relay $RL\frac{C}{3}$ will be cleared down and the stand-by DC will be fed through contact C2. Contact C3 will be broken and relays $RL\frac{Z}{3}$, $RL\frac{Y}{6}$ and $RL\frac{X}{6}$ will be cleared down and so change over the AC supplies.

11. Pilot lights (LP1, LP2) indicate when the rectifiers are switched on. Both should be alight independent of which is the master rectifier. Failure of a rectifier is indicated by the extinguishing of its pilot light.

Master aerial head

12. A separate, additional DC supply is fed to that aerial head which is selected as the master. This is provided through switch SW2.

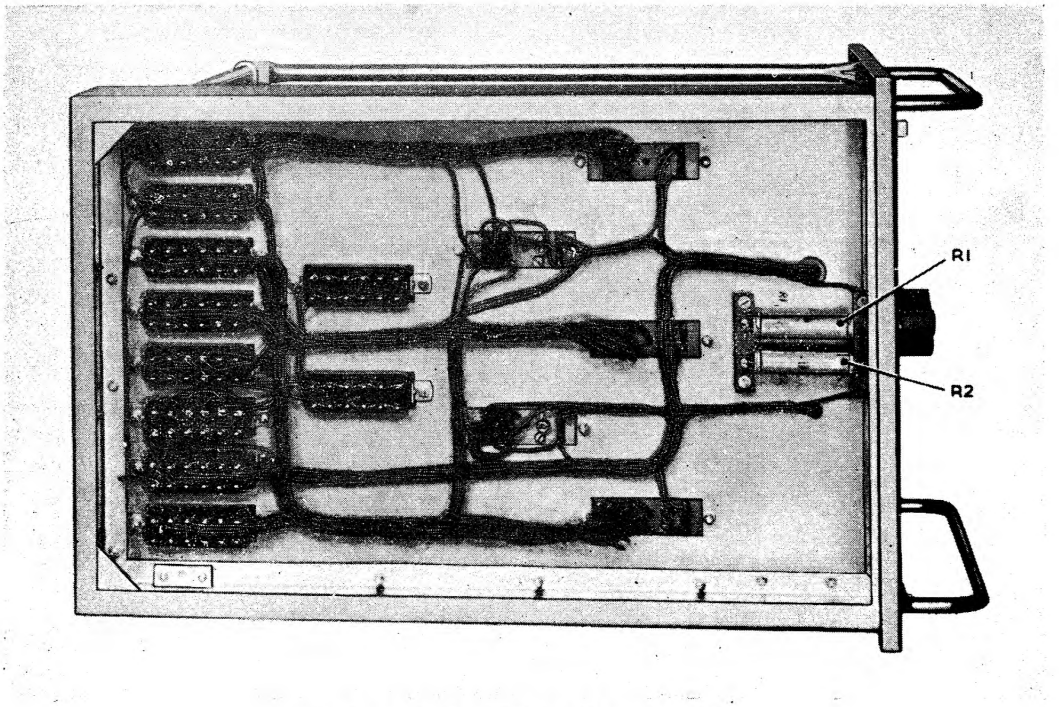


Fig. 3. Switch unit Type 410—underside

OUTPUT TO AERIAL HEADS

PL 901

1 2 3 4 5 6 7 8 9 10 11 12

X1 X2 X3 X4 X5 X6 Y1 Y2 Y3 Y4 Y5 Y6

AC
AC
PL 905
AC
AC

PL 906
AC
AC
AC

NO. 2. RECTIFIER IN

SW1

C1 C2 D2 C3 D1

D3

R2 LP2 RL C/3 RL Z/3 RL Y/6 RL X/6 RL D/3 R1 LP1

50V DC

50V DC

PL 908
AC

AC
PL 907

Z1 Z2 Z3

SW2

PL 902 PL 903 PL 910 PL 909 PL 904

OUTPUT TO AERIAL HEADS

Fig.4

Switch unit Type 410 – circuit

Fig.4

Chapter 3

SWITCH UNIT 4729

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Introduction

1. The switch unit 4729 (Stores Ref. 10F/18120) incorporates an amplifier and detector unit, amplifying unit Type 301 (Stores Ref. 10U/16058), a video amplifier, a switching circuit and a self-contained power pack. The unit is constructed on a standard A.M. information generator chassis and housed in the rack assembly 4722 or 4725 according to the type of station.

Application

2. The unit is used at the remote radar Type 13, Type 14 or Type 54 sites on Rotor stations having a remote CHEL role. It operates in conjunction with the monitoring unit Type 75, on the adjacent rack assembly 4719, its function being to select outputs from the aerial heads for display on the monitoring unit. By means of a selector switch, IF outputs to the main site, IF monitoring and video monitoring may be selected for viewing.

General

3. The self-contained power pack, operating from a 230V 50 c/s supply, provides all heater requirements and a stabilized 300V output for HT supply. There are facilities for measurement of HT voltage and valve currents on a built-in meter. A diagram of the front panel is given in fig. 1, plan and under-chassis views of the chassis being given in fig. 2 and fig. 3 respectively.

Circuit description

4. A circuit diagram of the complete unit is given in fig. 4.

Amplifying unit Type 301

5. The amplifying unit Type 301 is a sub-assembly which is mounted on the main unit chassis; it is used to amplify and detect the 45 Mc/s input for monitoring purposes. The 45 Mc/s signal is fed in at socket SK16 whence it passes through a three-stage IF amplifier formed by valves X1 V1, X1 V2 and X1 V3 (all CV 138). This amplifier has a mid-band frequency of 45 Mc/s and a bandwidth greater than 1 Mc/s at 3 dB down. The maximum gain of the IF amplifier is 60 dB and is controlled by the IF GAIN control on the front panel of the switch unit 4729. This control operates the potentiometer RV2 which is connected in the cathode circuits of the three IF valves, and controls the bias applied to each.

6. The IF amplifier is followed by a double diode X1 V4 (CV 140) which is connected as a detector and peak limiter. The positive output of the detector is fed to the grid of X1 V5 (CV 2179). The signal on the grid of X1 V5 is limited by the second half of X1 V4 which clips any pulses that tend to drive X1 V5 positive. X1 V5 functions as a video amplifier, feeding a negative pulse to

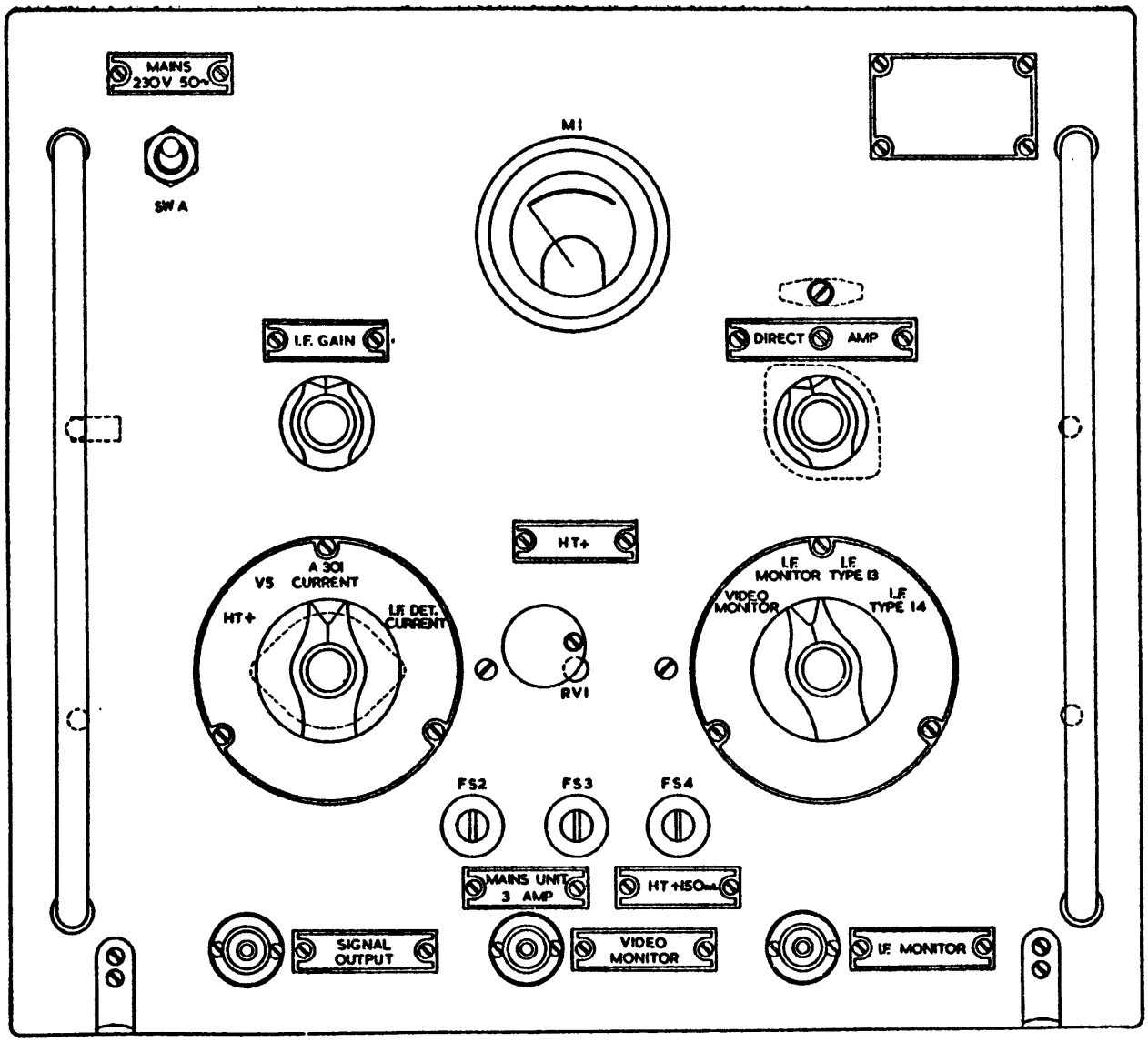


Fig. 1. Switch unit 4729—Front panel

the output socket SK17. The overall gain of the amplifying unit Type 301 is approximately 89 dB.

Video amplifier

7. A separate video amplifier is also provided in the switch unit 4729. The video input is fed to the grid of V5a (half CV 455), amplified and fed to the grid of a cathode follower V5b (half CV 455). The cathode follower output is taken to SK3.

Selector switch

8. The four-position selector switch (SW C) on the right-hand side of the front panel provides, in conjunction with the DIRECT/AMP switch (SW D) mounted immediately above it, selection of the various monitoring facilities, as detailed in the following paragraphs.

9. When the selector switch is in the VIDEO MONITOR position, the input to the VIDEO MONITOR socket (SK5) on the front panel is fed either direct to the SIGNAL OUTPUT socket (SK4) or via the video amplifier V5 to SK3 at the rear of the chassis, according to whether the DIRECT/AMP switch is in the DIRECT or AMP position. It will be noted that when the selector switch is in the VIDEO MONITOR position, the inputs to SK1, SK2 and SK6 (IF MONITOR) are shorted to earth.

10. When the selector switch is in the IF MONITOR position, the input to the IF MONITOR socket (SK6) on the front panel is fed via PL16 and SK16 to the input of amplifying unit Type 301. The resultant video from the output of this unit is fed either direct to the SIGNAL OUTPUT socket (SK4) or via the video amplifier V5 to SK3 at the rear of the chassis, according to whether the DIRECT/AMP switch is in the DIRECT or AMP position. It will be noted that when the selector switch is in the IF MONITOR position, the inputs to SK1 and SK2 are shorted to earth.

11. When the selector switch is in the IF TYPE 13 position, the input to SK2 is fed to the amplifying

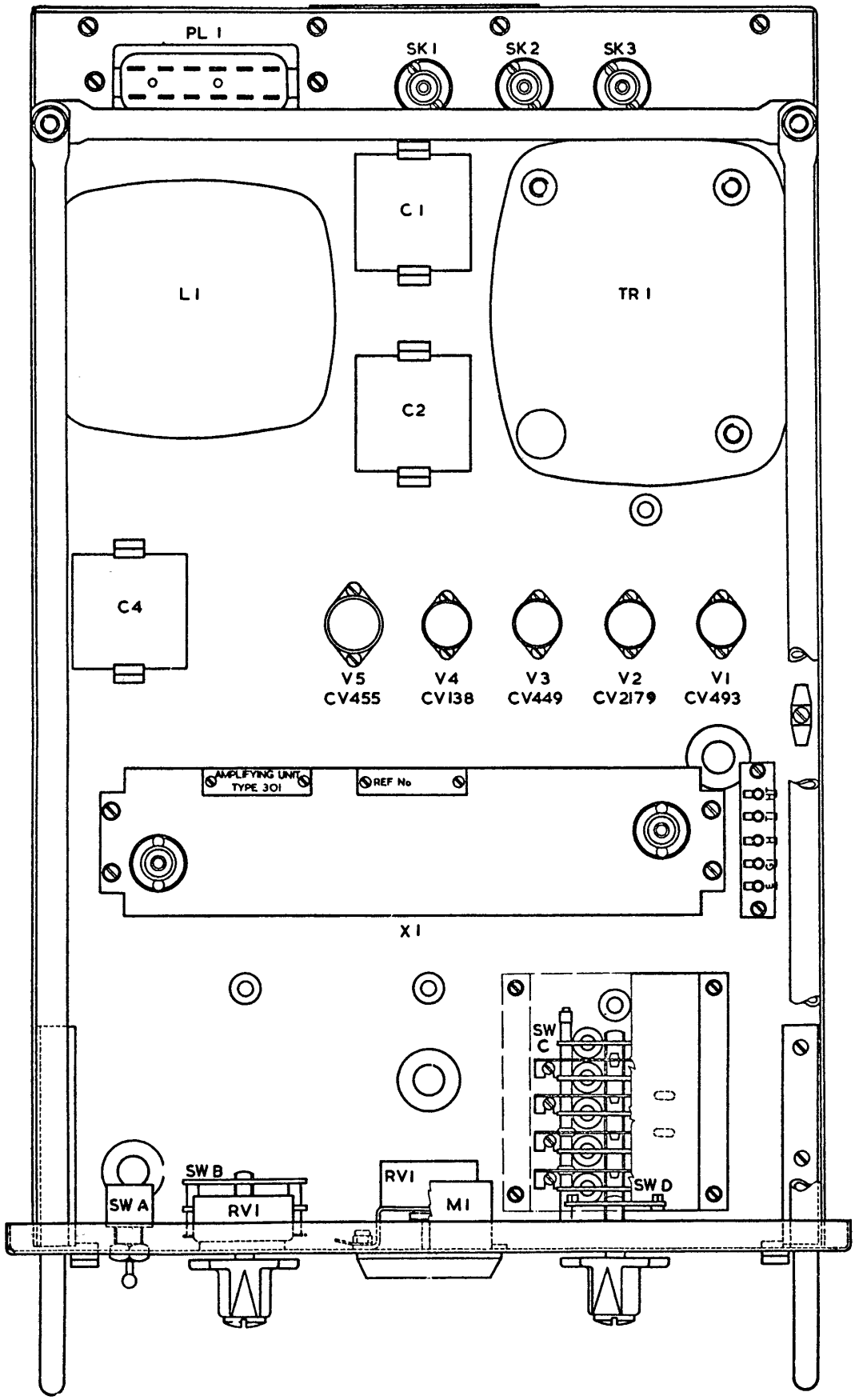


Fig. 2. Switch unit 4729—Plan view

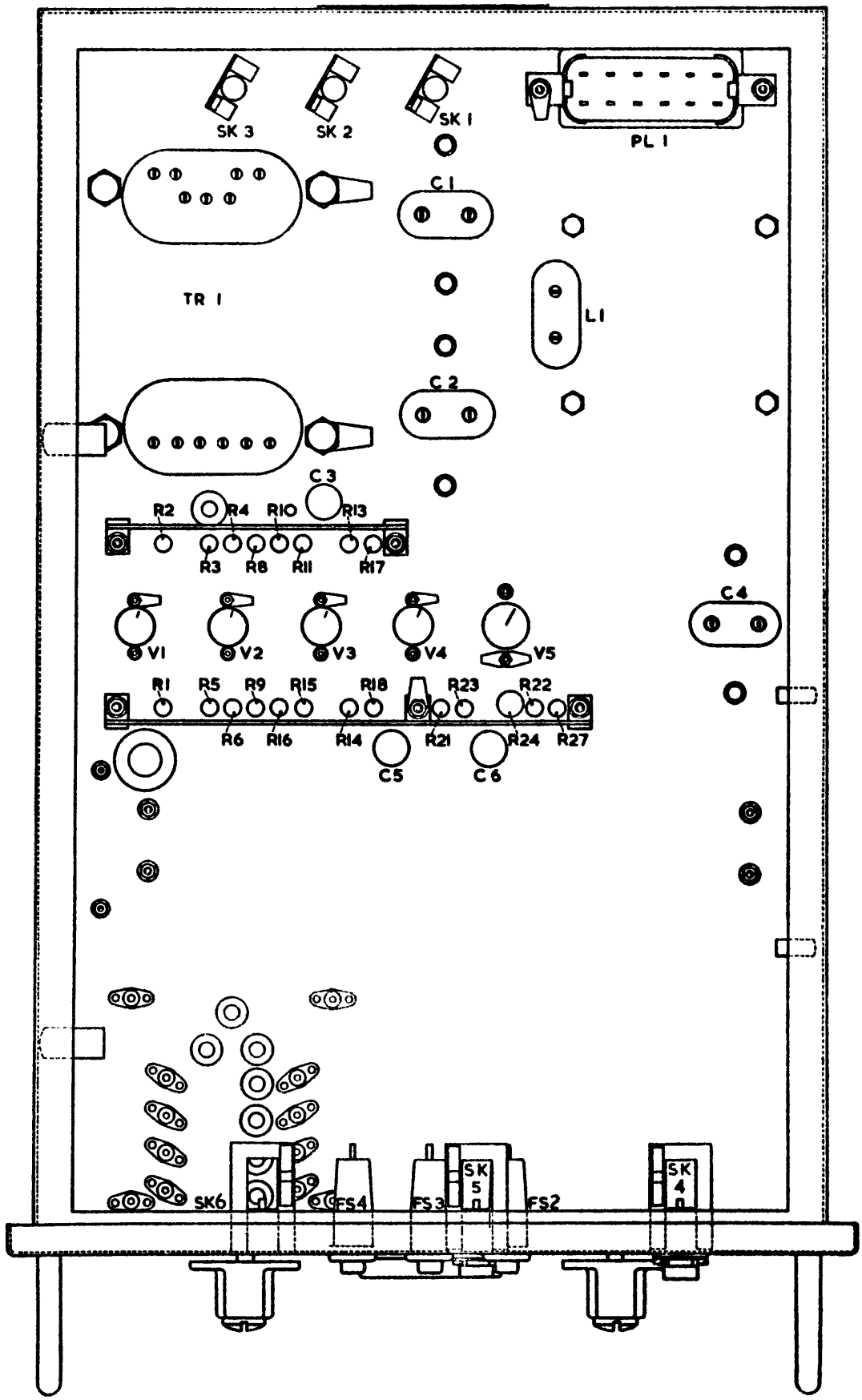


Fig. 3. Switch unit 4729—Under chassis view

unit Type 301, and the resultant video will again be fed either to the SIGNAL OUTPUT socket (SK4) or via the video amplifier V5 to SK3 as described in para. 10. In this instance, the inputs to SK1 and SK6 (IF MONITOR) are shorted to earth.

12. When the selector switch is in the IF TYPE 14 position, the input to SK1 is fed to the amplifying unit Type 301 and the resultant video will again be fed either to the SIGNAL OUTPUT socket (SK4) or via the video amplifier V5 to SK3 as described in para. 10. In this instance, the inputs to SK2 and SK6 (IF MONITOR) are shorted to earth.

Note . . .

At sites where the Type 54 *performs the CHEL role instead of the Type* 14, *the* IF TYPE 14 *label on the selector switch should be read as* IF TYPE 54.

Power supplies

13. The built-in power pack is energized from the 230V 50 c/s mains supply which is fed in at pins 11 and 12 of the Jones plug PL1 ; the supply is applied to the primary of the mains transformer TR1 via the double pole switch SW A. HT is obtained from the 420-0-420V winding, rectified by V1 (CV 493) and smoothed by a condenser input pi-section filter. The HT is regulated at 300V by a triode connected pentode V2 (CV 2179) acting as a series impedance in the HT positive line. The impedance of V2 is controlled by a DC amplifier V4 (CV 138) in conjunction with a neon stabilizer V3 (CV 449).

14. The action of this type of stabilizing circuit is described in detail in Sect. 2, Chap. 12.

15. The value of the stabilized HT output is determined by the setting of the front panel control marked HT+ (RV1). Variation of RV1 gives a control of HT voltage over the range 250V to 330V, and this control is normally set to give a voltage of 300. Due to the action of this stabilizing circuit, the HT voltage remains constant within $\pm$ 2V if the mains input is varied from 217V to 244V.

16. Two 6·3V windings are provided on TR1 ; one for the heaters of V1 and V2, the other supplying the heater requirements of the other valves, including those in the amplifying unit Type 301.

Metering

17. The meter M1 is mounted on the front panel and can be switched by SW B to measure the stabilized HT voltage, the anode current of V5, the total HT current of amplifying unit Type 301 or the IF detector (first half of CV 140) current in the amplifying unit Type 301. Table 1 gives the meter readings for these four positions of SW B.

TABLE 1

Meter readings

Switch position	*Reading*
HT+	2·85 to 3·15
V5	1·98 to 2·42
A301 CURRENT	3·33 to 4·07
IF DET CURRENT	0·1 to 0·4

Note . . .

The readings given in Table 1 *are taken with the* HT+ *control set to give* 300*V. When the meter reading is taken in the* A301 CURRENT *switch position, the* IF GAIN *control on the front panel must be set at maximum.*

AIR DIAGRAM
6223B/MIN.
ISSUE 1 | PREPARED BY MINISTRY OF SUPPLY FOR PROMULGATION BY AIR MINISTRY

PLI/11 PLI/12 PLI/1 SWA FS1 FS2 FS3 3A 3A TRI R1 100 R2 100 V1 CV493 6·3V 2A. 6·3V 4A. FS4 150 ma L1 R5 8·2M R6 8·2M R3 100 R4 100 V2 CV2179 R7 4·7K C1 4μ C2 4μ R8 47K R10 68K R11 220K R9 47K V3 CV449 V4 CV138 C3 0·1μ R12 47K R13 360 R14 180K RV1 25K R15 56K R16 6·8K C4 4μ R22 10 R23 4·7K C6 0·1μ V5(a) CV455 V5(b) CV455 R25 470 R19 470K R20 100 R21 1·5K R24 220K R26 120 R27 15K R17 10 R18 2·2K C5 0·1μ R29 68 SWB ab SWB ba SWB bb R28 910 mA MI 0-5 m.A F.S.D. SK3 HT+

SK6 SK1 SK2 SK5 SK4 SWD SWCa SWCb SWCc SWCd SWCe PL16

X1 AMPLIFYING UNIT TYPE 301

SK16 L1 R1 68 C1 47p R3 33 R4 220 C2 ·0012μ C21 ·0012μ V1 CV138 R2 2·7K L2 C3 ·0012μ R5 100 C5 47p R7 33 R8 220 C6 ·0012μ C22 ·0012μ V2 CV138 R6 2·7K L3 C7 ·0012μ R9 100 C9 47p R11 33 R12 220 C10 ·0012μ C23 ·0012μ V3 CV138 R10 2·7K L4 C11 ·0012μ R13 100 C26 ·0012μ V4 CV140(a) R14 3·3K C14 56p C13 ·0012μ R15 10K V4 CV140(b) C24 ·0012μ C15 ·0012μ C17 10μ L5 C16 ·01μ R16 330K C27 500p R18 1·5K C18 ·0012μ R20 100 R17 4·7K L6 V5 CV2179 C19 5·6p C20 ·01μ C25 ·0012μ SK17 PL17 E T1 H G RV2 1K Y

Switch unit 4729-circuit

Fig.4

Chapter 4

PANEL RELAY SYNC SELECTOR 5945-99-970-7044

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Introduction

1. The panel relay sync selector N.S. No. 5945-99-970-7044 selects five outputs from ten inputs. Five inputs are locally generated sync pulses. Five inputs are remotely generated sync pulses, of which two are undelayed and three are delayed. Seven relays with single pole changeover contacts carry out the switching, and these are controlled remotely by three Switch Units Type 4572C, located with the Control Trainer and Recorder Equipment.

Circuit Description

2. Figure 1 shows the circuit diagram of the sync selector relay panel. Link channels 1 and 2 may be triggered by either local sync pulses or by remote undelayed sync pulses. RLA/1 and RLB/1 perform the switching. The control trainer may be triggered by either local sync or by remote delayed sync. RLC/1 performs the switching.

3. Recorders 1 and 2 are triggered by either local sync or remote delayed sync on the record function. Relay contacts RLD/1 and RLF/1 carry out this switching. However, on the replay function, the recorders must be triggered by local sync. Relay contacts RLE/1 and RLG/1 override contacts RLD/1 and RLF/1 respectively, to ensure this takes place.

4. The relay panel is associated with network pulse delay N.S.5915-99-944-7748 and amp (pulse splitter) 300 in rack assembly 313B, (Sect. 1, Chap. 20).

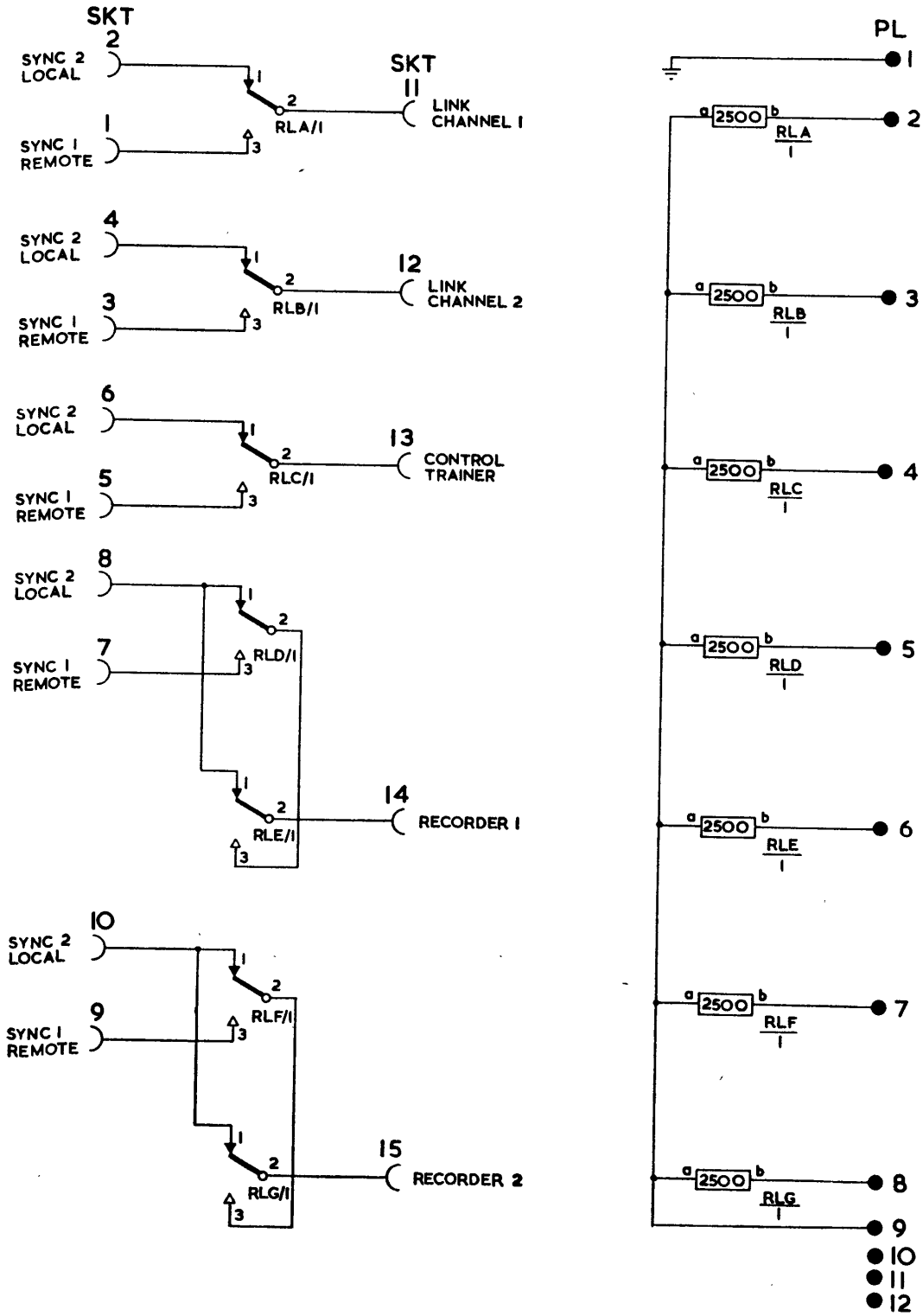


Fig. 1 Network pulse delay circuit diagram

Chapter 5

NETWORK PULSE DELAY 5915-99-944-7748

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Introduction

1. This is a general-purpose delay network and serves as a preset phasing adjustment of remote sync pulses with respect to those generated locally. Two similar delay lines are provided, constructed from epoxy resin encapsulated sections.

Circuit description

2. Figure 1 shows the circuit details. Each line comprises 15 sections. Thirteen sections are either 1 or 2μS delay. Two sections are of either $\frac{1}{2}$ or 1μS delay. The maximum delay is 28μS and adjustment is made by short circuiting half sections or sections not required.

3. The line gives rise to slight attenuation of the sync pulses and, with maximum delay, the amplitude of the pulse output is approximately two thirds of the pulse input.

4. This unit is associated with panel relay sync selector N.S.5945-99-970-7044 and amp (pulse splitter) 300 in rack assembly Type 313B, (Sect. 1, Chap. 20).

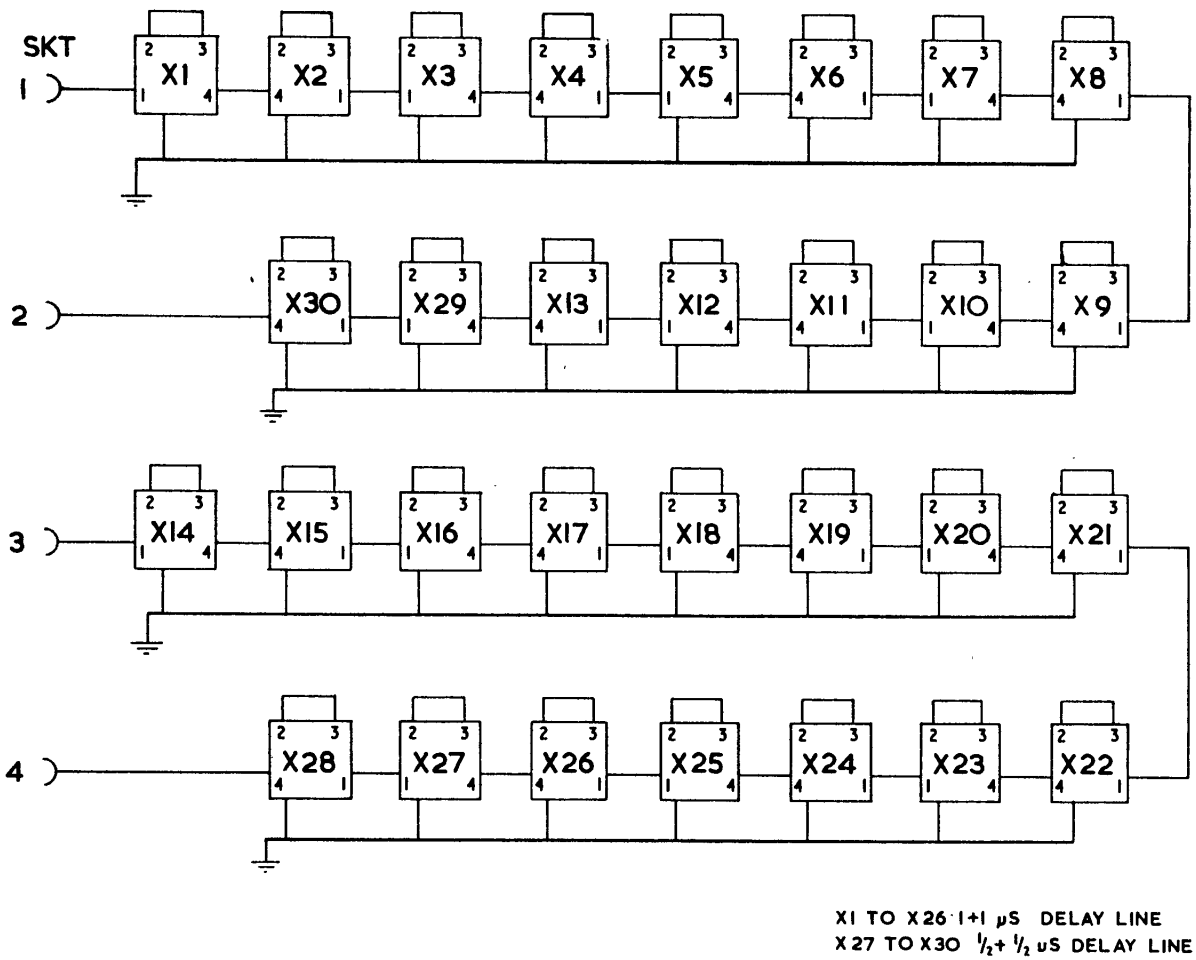


Fig. 1 Network pulse delay circuit diagram

SECTION 6

POWER, RECTIFIER AND TRANSFORMER UNITS

SECTION 6

POWER, RECTIFIER AND TRANSFORMER UNITS

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2 **Rectifier unit Type 17**
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4 **Transformer unit (selsyn) Type 175**
5 **Power unit 4414**
6 **Power unit 4415**
7 **Power unit 4889**
8 **Power unit 4415A**

Chapter 1

RECTIFIER UNIT TYPE 15

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Introduction

1. The rectifier unit Type 15 (Stores Ref. 10D/17761) consists of two distinct power supply units each rated to provide 50 volts DC at 4A. The rectifier is actuated from the main 230 volts, 45/65 c/s supply.

2. The function of the rectifier is to provide the energizing voltage for relays in the information generator and for relays and indicating lamps in the associated display units. Mounted on the unit there are four emergency MANUAL tuning potentiometers and associated on-off switches for the four AFC channels from the separate aerial heads.

3. A front panel diagram of the rectifier is shown in fig. 1. Fig. 2 gives a plan view of the chassis and fig. 3 is an under-chassis aspect. A side elevation, from the left-hand, is shown in fig. 4, and a complete circuit diagram is fig. 5.

DC circuits

4. The 230 volts, 45/65 c/s input is accepted at pins 11 and 12 of the flanged plug PL1 (Type 563, Stores Ref. 10H/4048) and fed through 3A

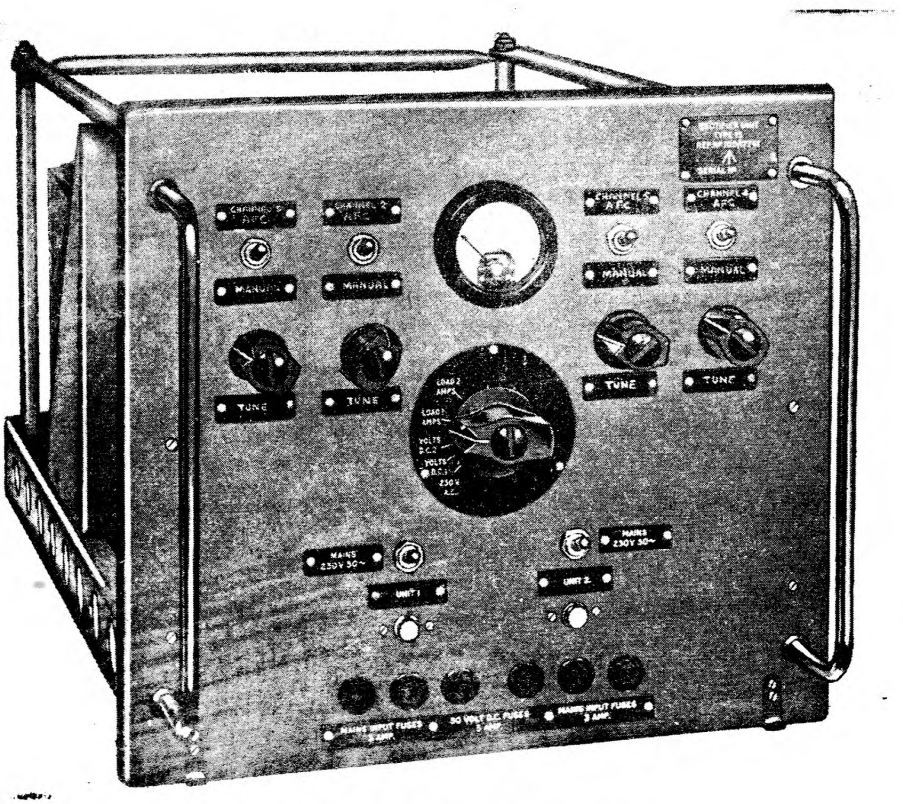


Fig. 1. Rectifier unit Type 15, front panel

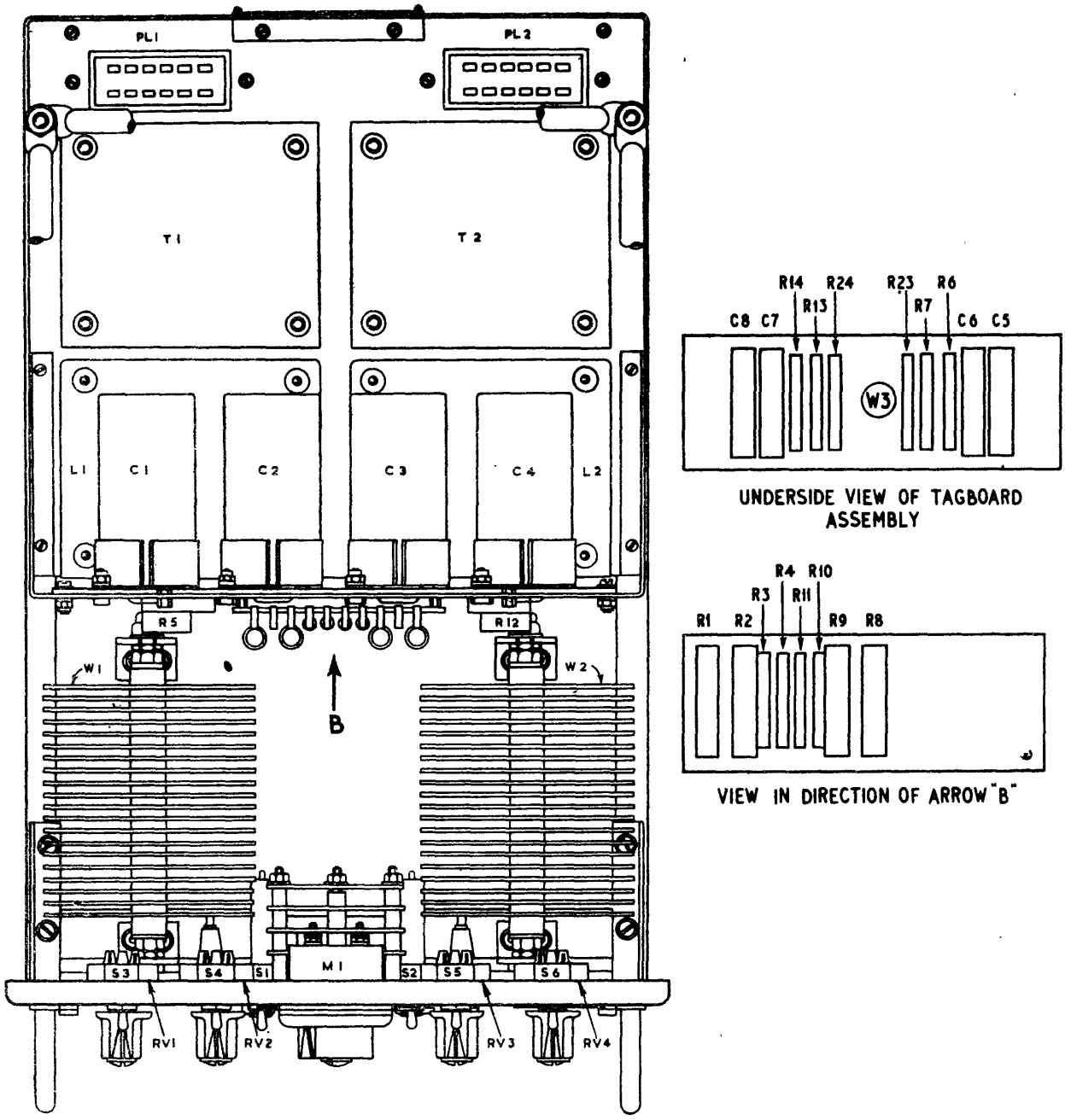


Fig. 2. Rectifier unit Type 15, chassis, top deck

standard cartridge fuse links in each line to two transformers T1 and T2. Double-pole, double-throw switches S1 and S2 on the input side enable either, or both, of these to be brought into operation.

5. The outputs from the secondaries of the transformers T1 and T2 are bridge-rectified by W1 and W2 respectively and passed through 5-amp. fuses F3 and F4 to smoothing circuits consisting of input chokes L1 and L2, condensers C1, C2 (C3, C4) and resistors R1, R2 (R8, R9). The *positive* side of these circuits is earthed and connected to pins 2 and 4 of plug PL1.

6. Pilot lamps LP1 and LP2 are incorporated in the two circuits. The negative 50 volts DC from unit No. 1 is taken off at pin 3 of PL1 and negative 50 volts from unit No. 2 at pin 5 of the same plug.

Metering

7. A meter M1 (Stores Ref. 5Q/171) is mounted on the front panel and can be switched by means of S7 to measure voltage output or current supplied by either of the two rectifier circuits or the mains input voltage. The last-named is rectified for metering purposes by W3.

AFC circuits

8. The AFC controls consist of four identical circuits. It will be only necessary to describe that identified with the double-pole, double-throw

switch S3. The switch which is normally "open", can be used to make a relay circuit in the associated aerial cabin. This brings into circuit the 20K-ohm, 4W variable resistor RV1 which is used to vary the frequency of the klystron local oscillator. It is emphasized that this manual tuning must only be used in an emergency.

9. The plug PL2 is associated with the AFC on/off and tune circuits of the four channels, two from Radar Type 13 and two from Radar Type 14.

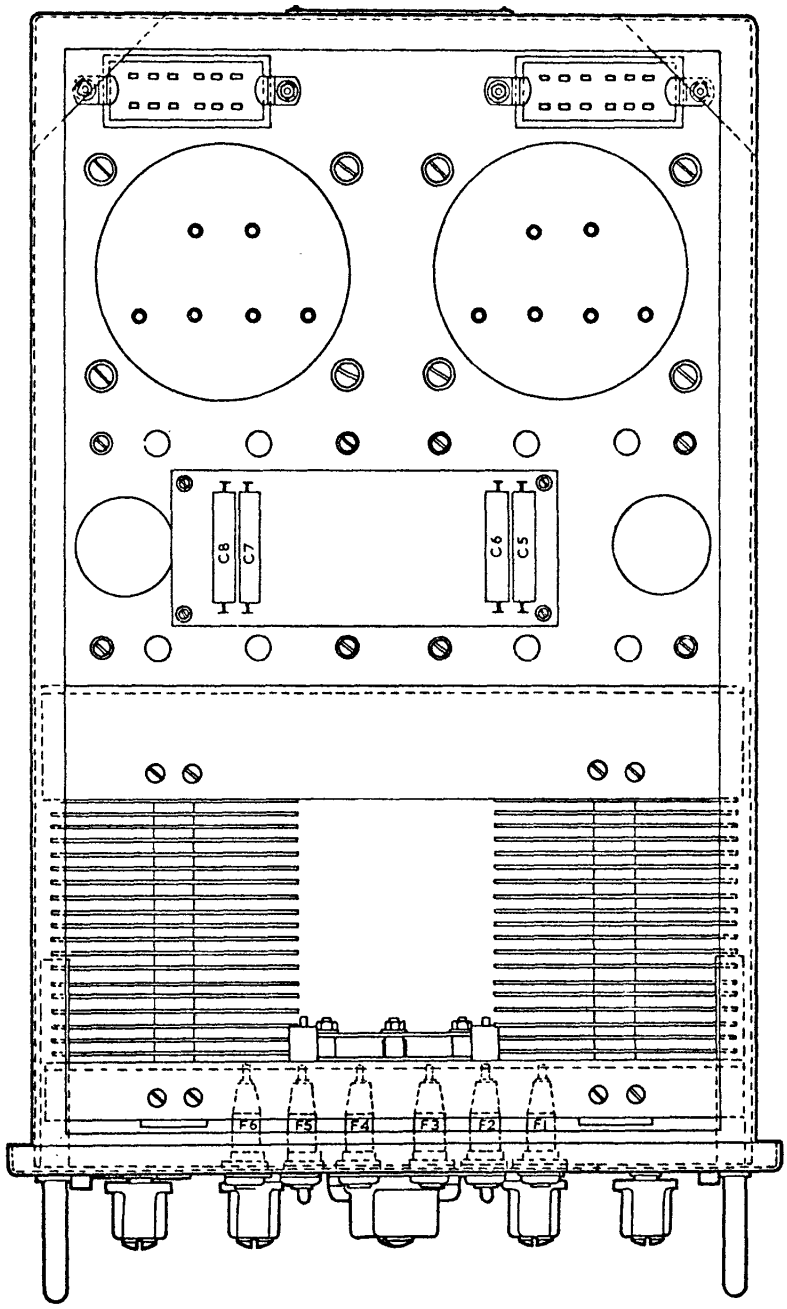


Fig. 3. Rectifier unit Type 15, chassis, underside

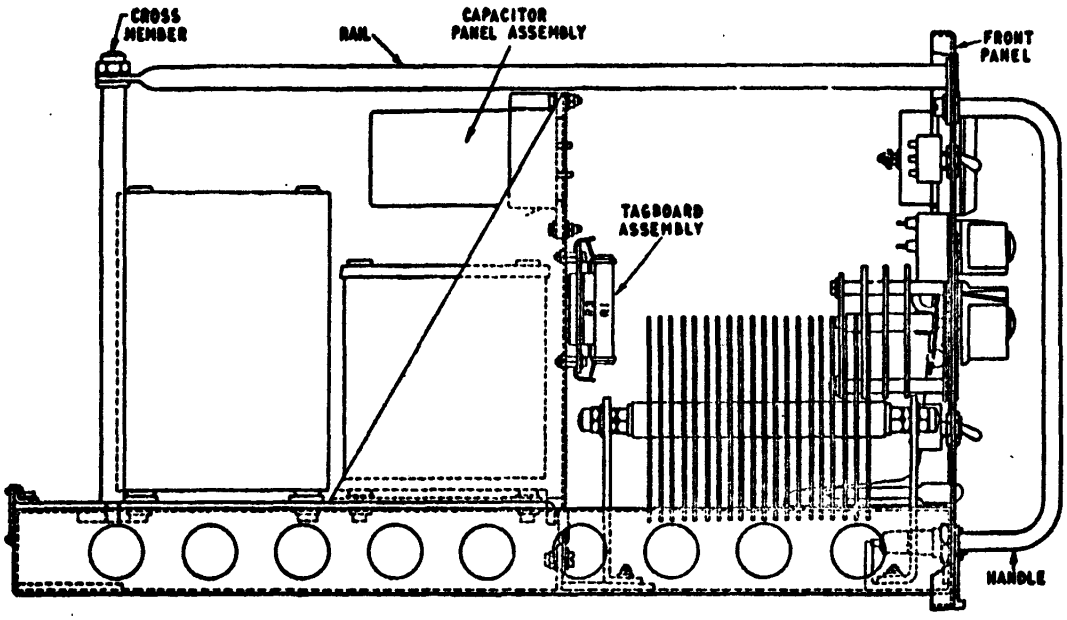


Fig. 4. Rectifier unit Type 15, left-hand side elevation

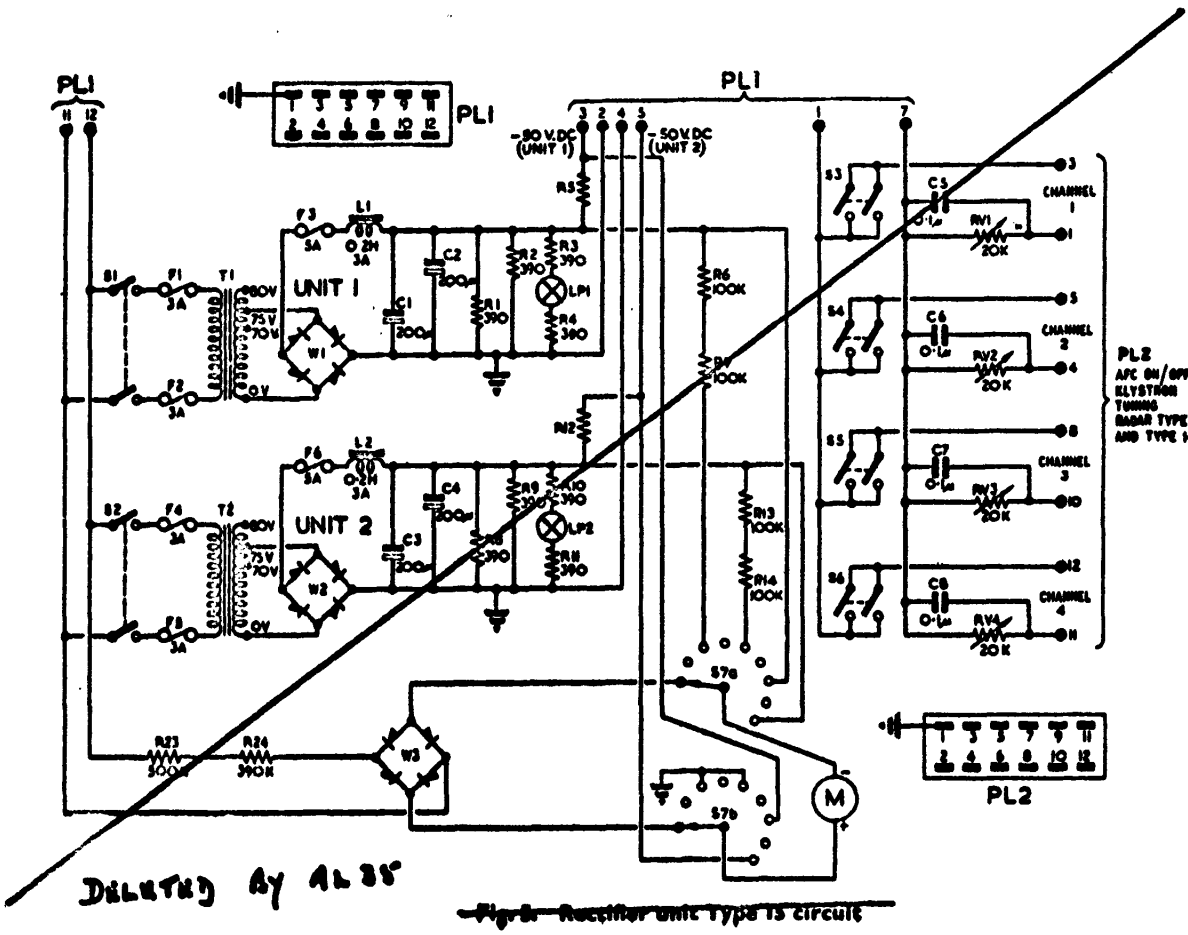
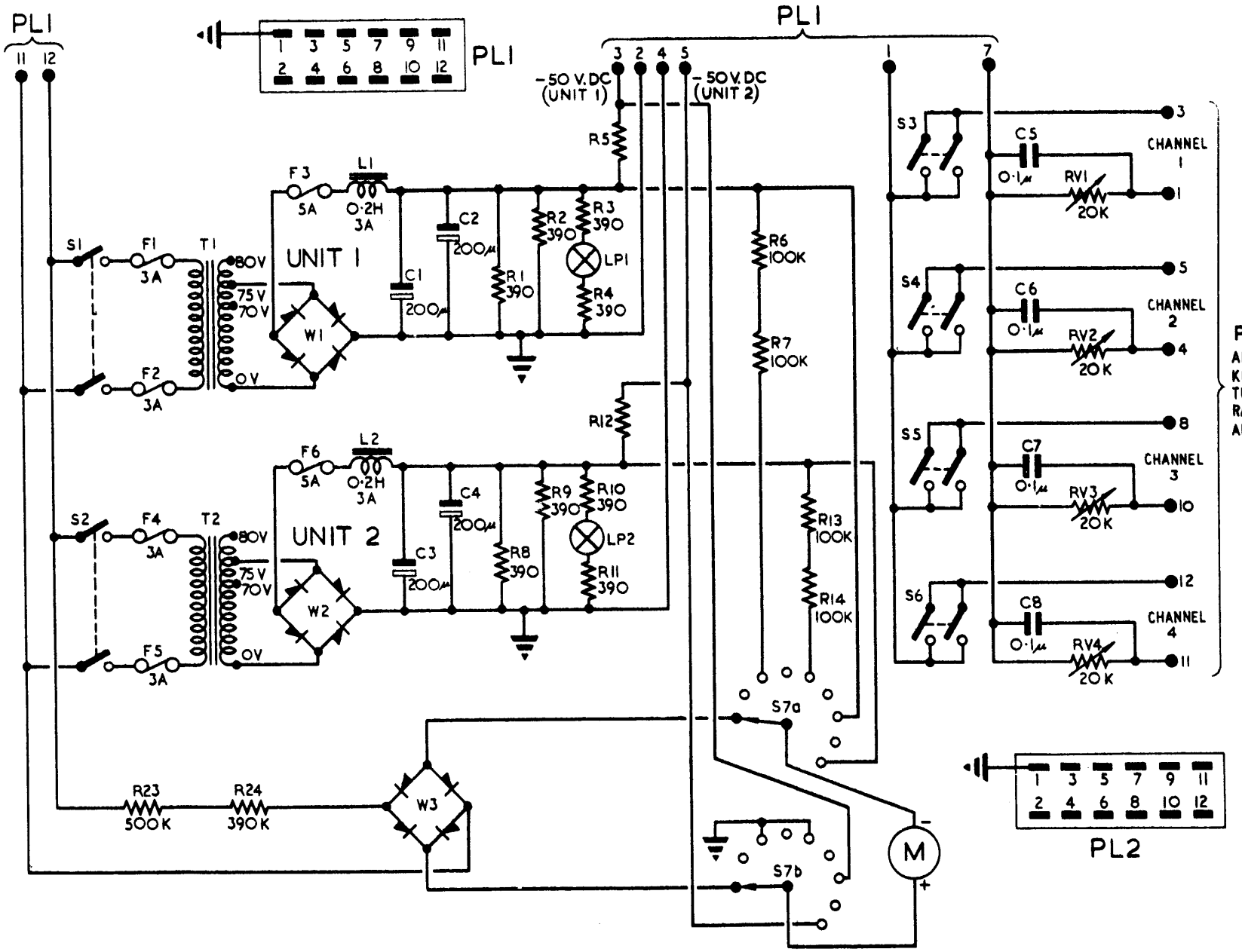


Fig 5. Rectifier unit Type 15 circuit



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Rectifier unit Type 15: circuit

Fig. 5

Chapter 2

RECTIFIER UNIT TYPE 17

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Purpose	1	Description	4
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Rectifier Type 17—front	1	Rectifier Type 17—underside	3
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Purpose

1. On static radar sites the rectifier Type 17 (*Stores Ref.* 10D/17779) supplies 50V DC for operating relays in the servo amplifier Type 297 (*Sect.* 2, *Chap.* 9) and in the control unit Type 600 (*Sect.* 7, *Chap.* 1), associated with the amplidyne turning gear used on radars Type 13, 14 and 79. The unit also provides phasing arrangements for each slave head turning gear control circuit, to ensure synchronous turning with the master head.

2. On mobile radars using amplidyne turning gear (A.P.2886H) the rectifier unit provides similar facilities to those on static sites and also allows the master head to be selected, using the MASTER AERIAL selector switch (SW7) on the front panel. On static sites two rectifier units are used, with a switch unit Type 410 (*Sect.* 5, *Chap.* 2) to select one or the other. In these circumstances the MASTER AERIAL selector switch on the switch unit Type 410 is used instead of the switches on the rectifier units.

Location

3. In its mobile application the rectifier is housed in the rack assembly Type 166 in the RVT510. On static sites it is housed in the information generator rack in the radar office (*Sect.* 1).

Description

4. The unit is illustrated in fig. 1 to 3 and the circuit is given in fig. 4. The 230V 50 c/s mains supply is fed to the primary of transformer TR1 via SW1 and the 3A fuses FS1 and FS2. The 50V DC supply is produced by the selenium rectifier fed from a suitable tapping on the secondary of TR1. The positive side of the 50V DC is earthed and the negative line includes the 5A fuse FS3. A choke input filter (L1, C1 and C2) and a constant 200-ohm load (R1 and R2 in parallel) provide adequate regulation while LP1 indicates the availability of the 50V DC supply.

5. The −50V is fed out to the control circuits via PL2/2 and 3 and is also applied to the front panel MASTER AERIAL selector switch SW7. In position 1 (*fig.* 4) the switch is on open circuit and leaves the heads on INDIVIDUAL CONTROL. In positions 2 to 6 it selects MASTER AERIAL 1, 2, 3, 4, 5, respectively, for SYNCHRONOUS CONTROL by feeding −50V out to the appropriate servo amplifier relays RL1 and RL2 (*mobile application only*).

Phasing circuits

6. The mains input is also applied to transformers TR2-TR6 via variable phasing circuits in series with one side of the mains supply. Each phasing circuit, one for each turning gear channel, consists of a variable resistor in parallel with an inductance. Variation of the appropriate preset resistor RV1 to RV5 (accessible from the front) alters the phasing of the secondary output, which

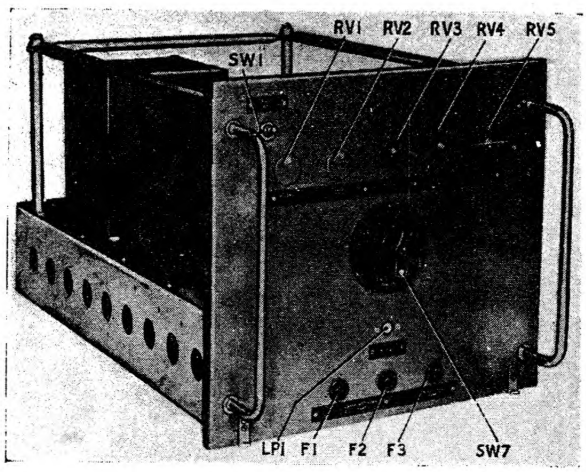


Fig. 1. Rectifier Type 17—front

feeds a phasing potentiometer connected to the servo amplifier input transformer T3. Where this potentiometer gives adequate control the rectifier phasing circuit can be short-circuited by SW2-SW6. These switches are located on the main chassis deck and can be operated with the unit withdrawn from its rack. The switch positions are labelled PHASING IN and PHASING OUT (switch closed). With PHASING IN, adjustment of the resistor effects the sensitivity of the system but will not reduce the lag of one head relative to another by more than 2 deg.

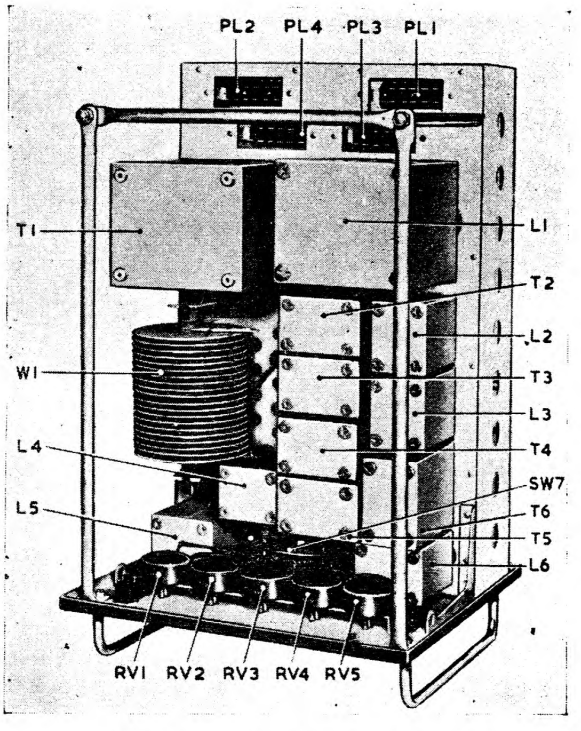


Fig. 2. Rectifier Type 17—top view

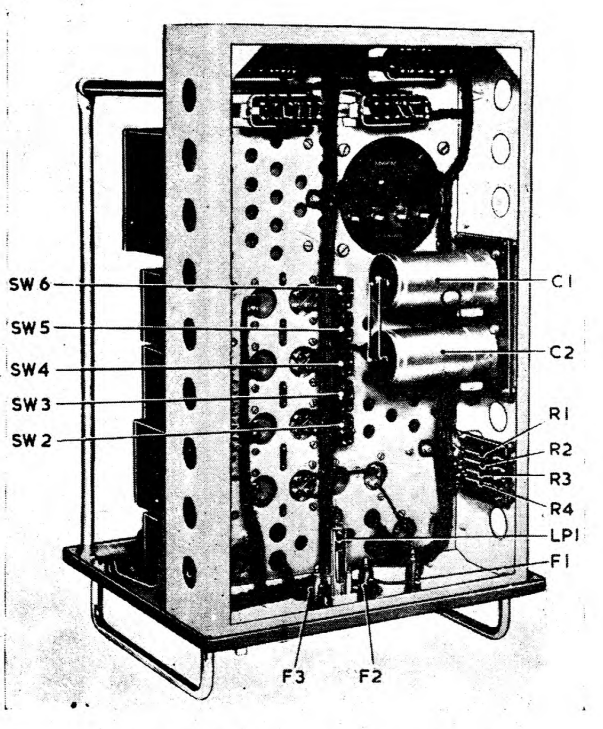


Fig. 3. Rectifier Type 17—underside

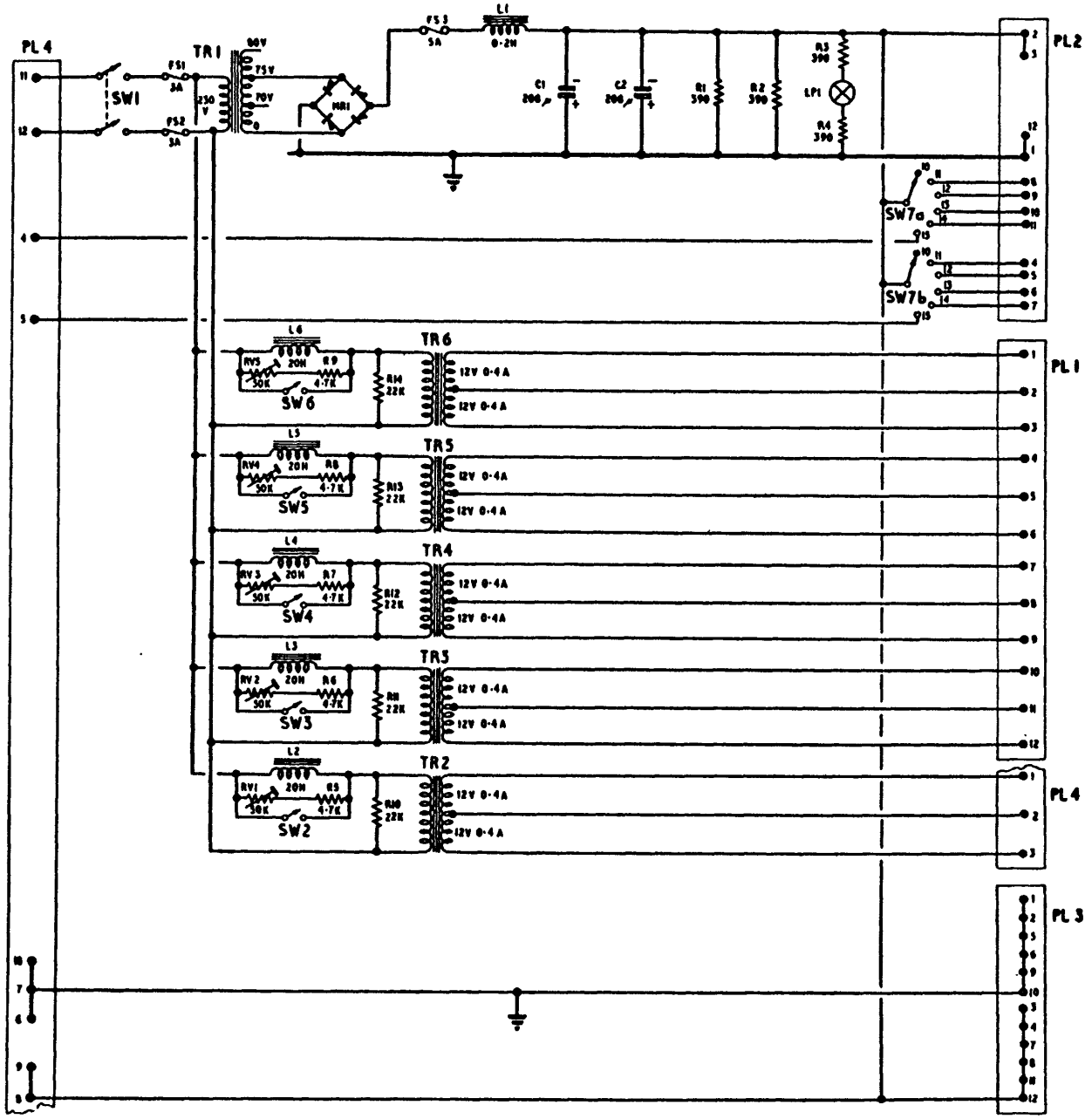


Fig. 4. Rectifier Type 17—circuit

Chapter 3

POWER UNIT TYPE 741

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Circuits and outputs	2
Metering	5

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Power unit Type 741	
Front panel	1
Plan view	2
Chassis underside diagram	3
Circuit	4

Introduction

1. The power unit Type 741 (Stores Ref. 10K/16091) supplies all power necessary for the operation of the monitor 'scope, monitoring unit Type 75, described in Chap. 13 of this Part. A front panel view is given in fig. 1 and a plan view in fig. 2. A diagram of the chassis underside is fig. 3. A circuit diagram is shown in fig. 4.

Circuits and outputs

2. The output circuits associated with the two transformers T1 and T2 are of conventional design. T1 has seven secondary windings and provides the following outputs :—

(1) *Positive* 330 volts for V9 and V10 of the monitoring unit via pin 7 on PL3.

(2) *Positive* 310 volts via pin 9 on PL3.

(3) 6·3 volts AC (one side earthed) via pins 6 and 8 on PL3.

(4) 6·3 volts AC (taken to *positive* 200 volts on the monitoring unit, since the cathode of V7 is at *positive* 310 volts) via pins 2 and 4 on PL3.

(5) 6·3 volts AC (floating) via pins 5 and 6 on PL2.

(6) 5·0 volts for heater of power unit fullwave rectifier valve V1 (Type CV575).

(7) 6·3 volts for heater of power unit fullwave rectifier valve V2 (Type CV574).

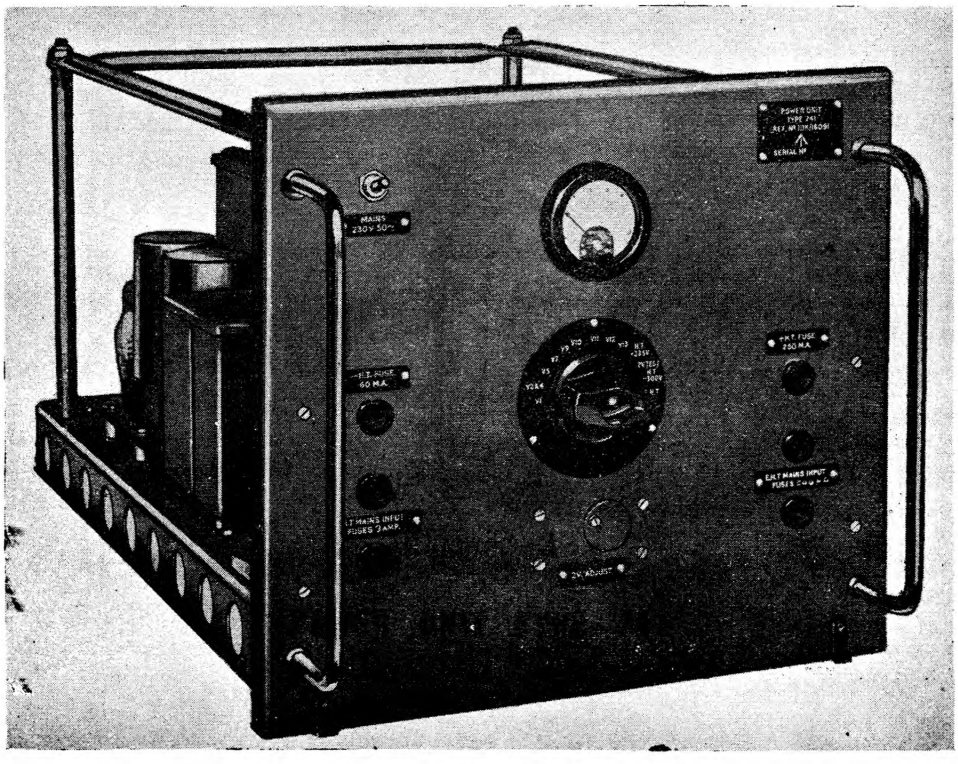


Fig. 1. Power unit Type 741, front panel

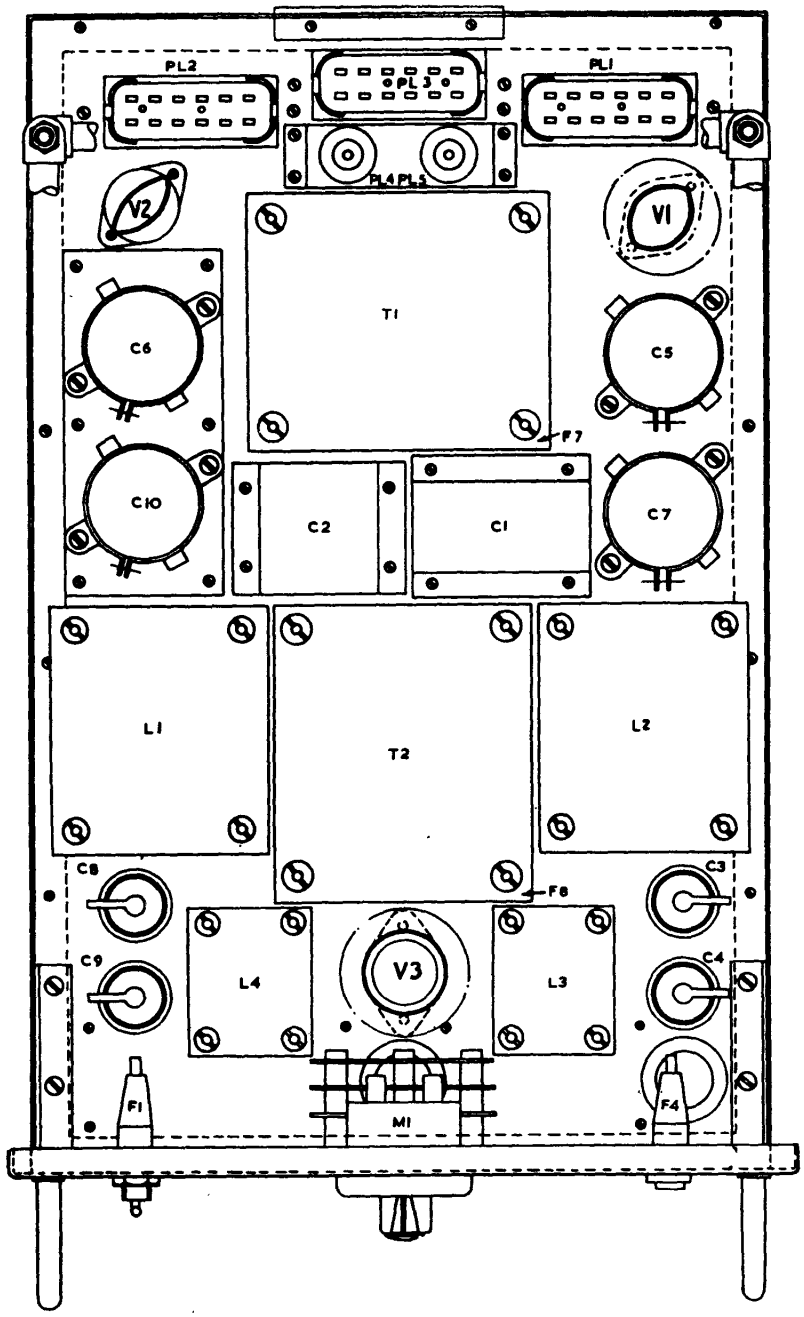


Fig. 2. Power unit Type 741, plan view

3. The transformer T2 has two secondary windings and provides the following outputs :—

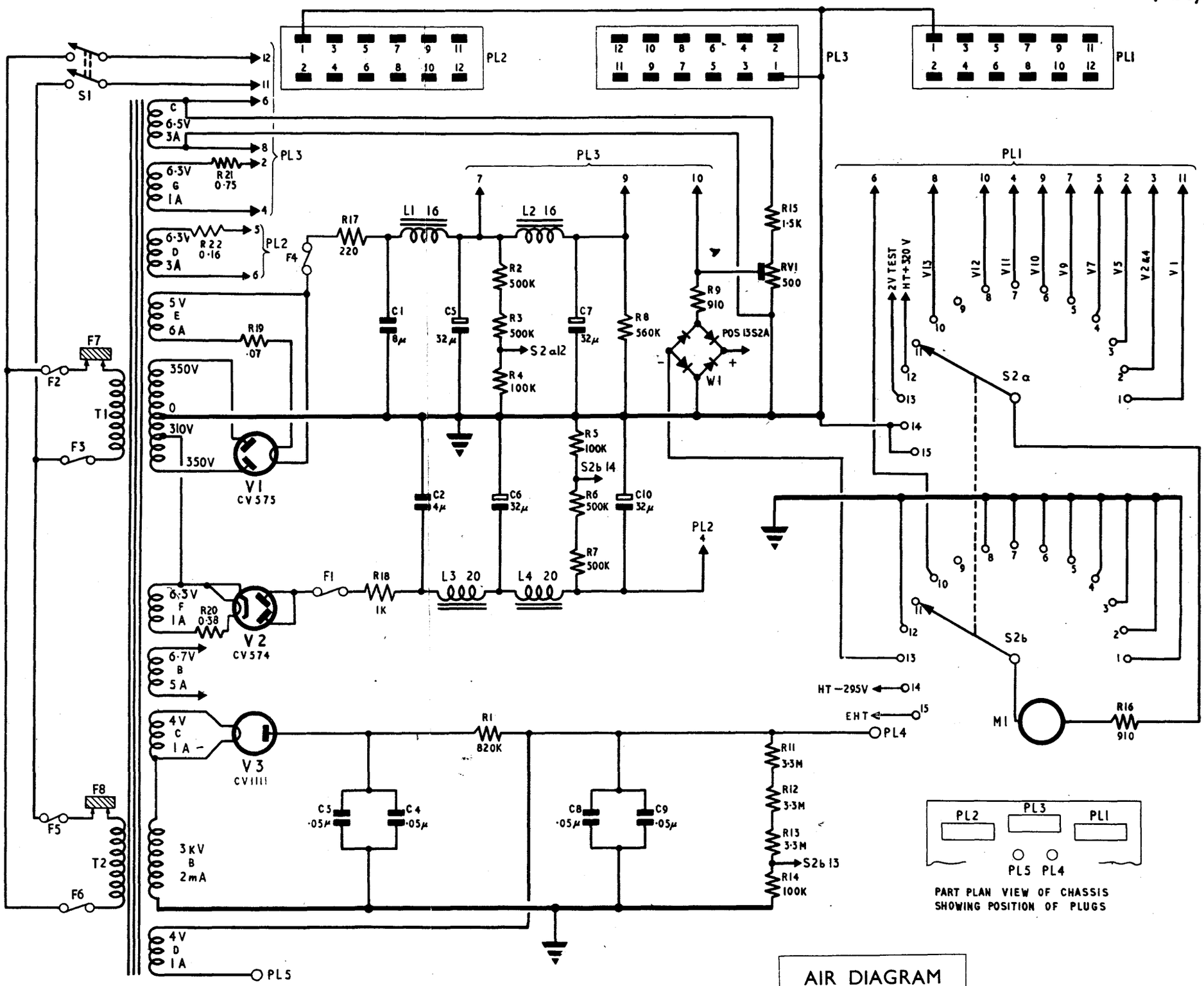
(1) *Negative* 2·5 kV plus one side of a 4-volt AC winding for the cathode-ray tube via PL4.

(2) 4 volts AC for the heater of the cathode-ray tube at *negative* 2·5 kV via PL5.

4. An output of 2 volts peak-to-peak at 50 c /s is obtained from the network R15 and RV1. This signal is fed via pin 10, PL3 to test point X9 on the monitoring unit. In the rack assembly Type 165 it is also fed via pin 10, PL3 to the switch unit (monitor) Type 296 described in Chap. 15 of this Part.

Metering

5. The meter on the front panel is used to check HT positive and negative, EHT and 2-volt test on this unit. It also serves to measure valve currents on the monitoring unit.



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Power unit Type 741 — circuit

Fig. 4.

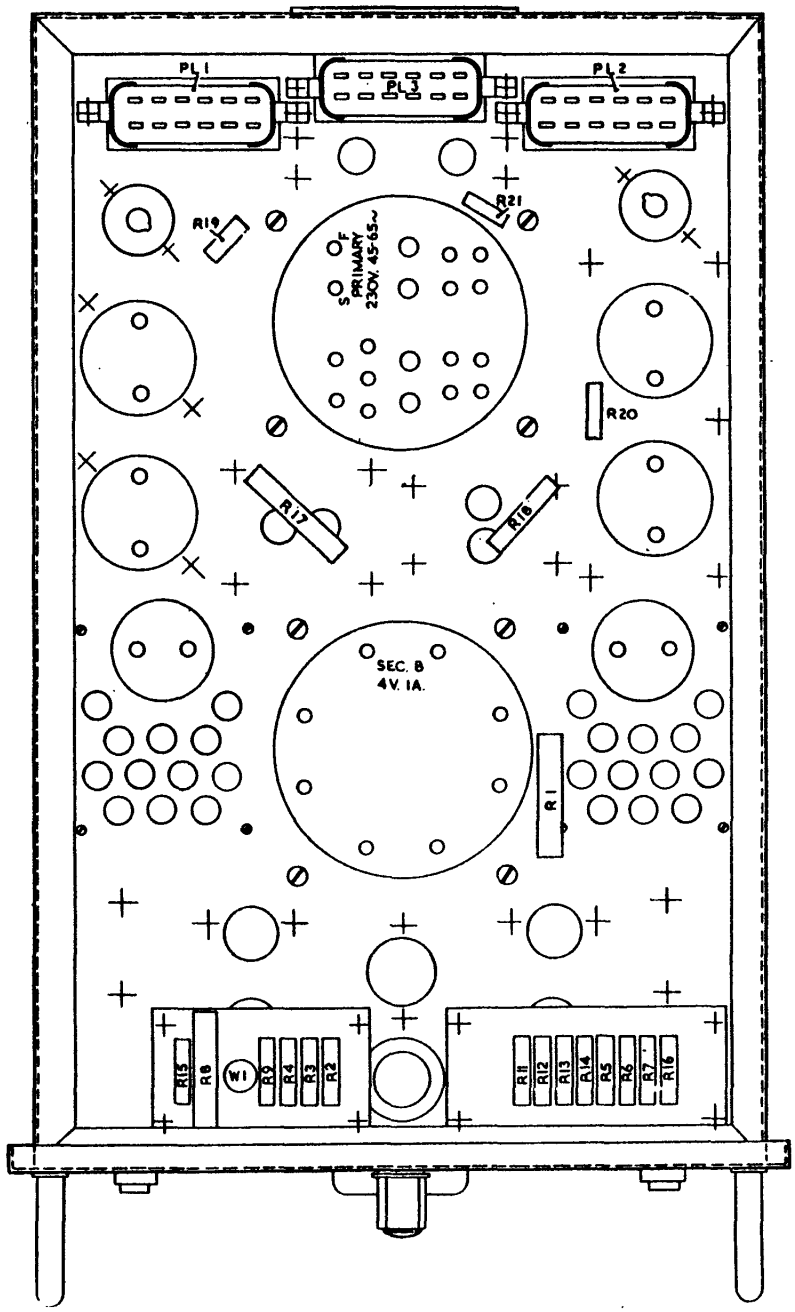


Fig. 3. Power unit Type 741, Chassis underside diagram

Chapter 4

TRANSFORMER UNIT (SELSYN) TYPE 175

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	Para.		Para.
Introduction	1	*Description*	3

LIST OF ILLUSTRATIONS

	Fig.		Fig.
Transformer unit Type 175 and associated equipment :		*Transformer unit Type 175 : underside*	2
Circuit	1		

INTRODUCTION

1. The transformer unit (selsyn) Type 175 (Stores Ref. 10K/17102) is situated in the remote radar Type 7 and forms part of the rack assembly Type 318. It is connected, via high-voltage landlines, to the transformer unit Type 179 in the operations building.

2. The Type 175 and the Type 179, together with the landlines joining them, form the connecting link between the operations building and the repeat-back selsyn in the aerial head. They step up the selsyn voltages before they are fed to the long landlines, and step them down again at the other end. This is done in order to reduce the power lost in the lines.

DESCRIPTION

3. Fig. 1 gives a circuit diagram of the transformer unit Type 175 and of parts of the associated equipment, and shows their inter-connections. Fig. 2 shows the component layout as seen from below.

4. The supply for the rotor of the repeat-back selsyn in the aerial head is taken from a 230-volt 50 c/s mains supply board in the operations building. It is stepped up to 650 volts in the Type 179 and fed along high-voltage lines to transformer T801 in the Type 175. This transformer is an auto-transformer; it steps the 650 volts down to 220 volts, which is then fed to the rotor of the repeat-back selsyn.

5. The voltages induced in the stator windings of the repeat-back selsyn are fed to the three star-connected auto-transformers T802, 803 and 804, where they are stepped up from 100 volts to 400 volts before being fed to the high-voltage landlines. At the other end of the landlines the voltages are stepped down again in the Type 179 and fed to the stators of various selsyn motors, the rotors of which are energized from the same 230-volt supply as that used to energize the rotor of the repeat-back selsyn.

6. The terminals on transformers T802, 803 and 804 which are marked 0, 100, 400 in the circuit diagram (*fig.* 1), may be marked 0, 50, 200 on the transformers themselves. Despite this, the voltages actually present will be 0, 100, 400.

7. The transformer unit Type 179 is described in AIR PUBLICATION 2527E, Vol. 1, Part 1, Chap. 14.

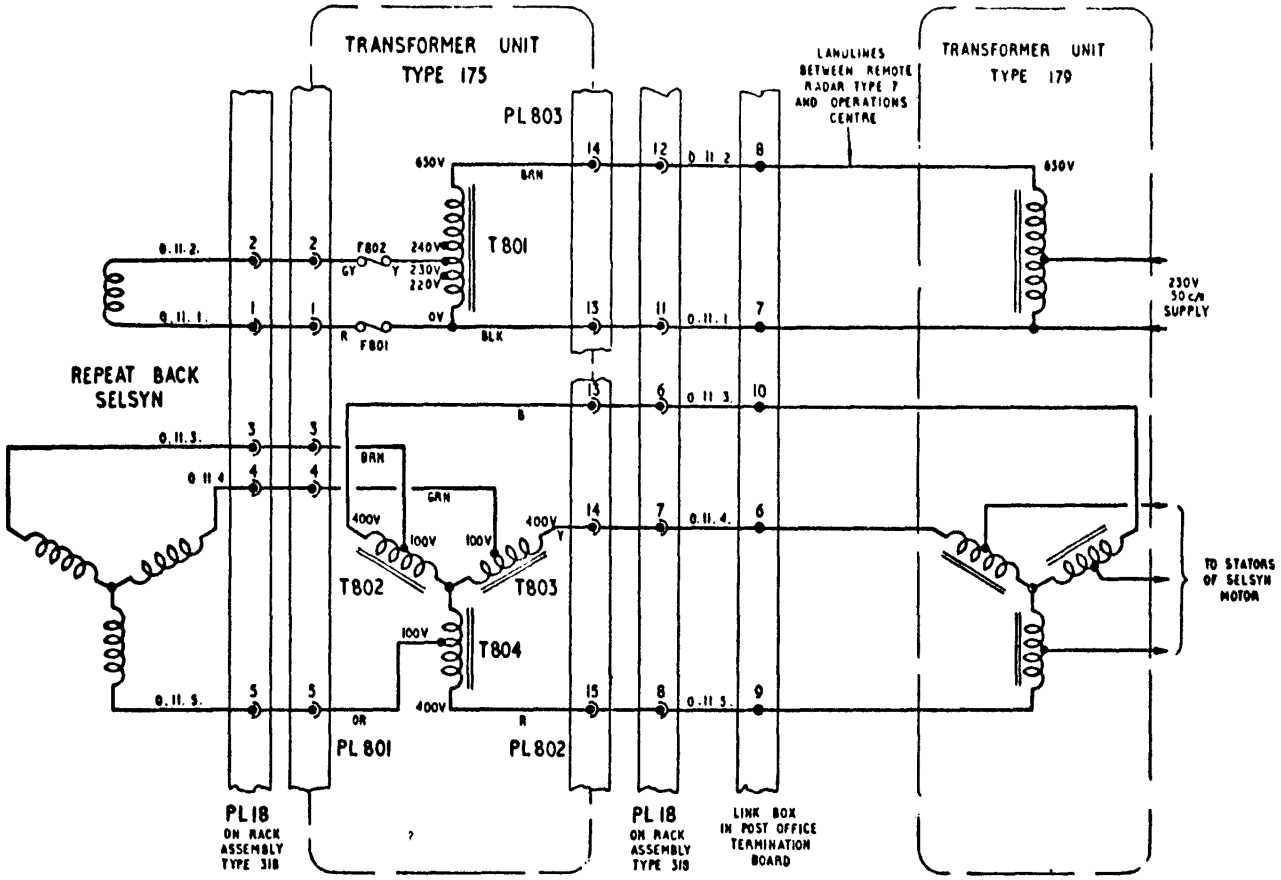


Fig. 1. Transformer unit Type 175 and associated equipment : circuit

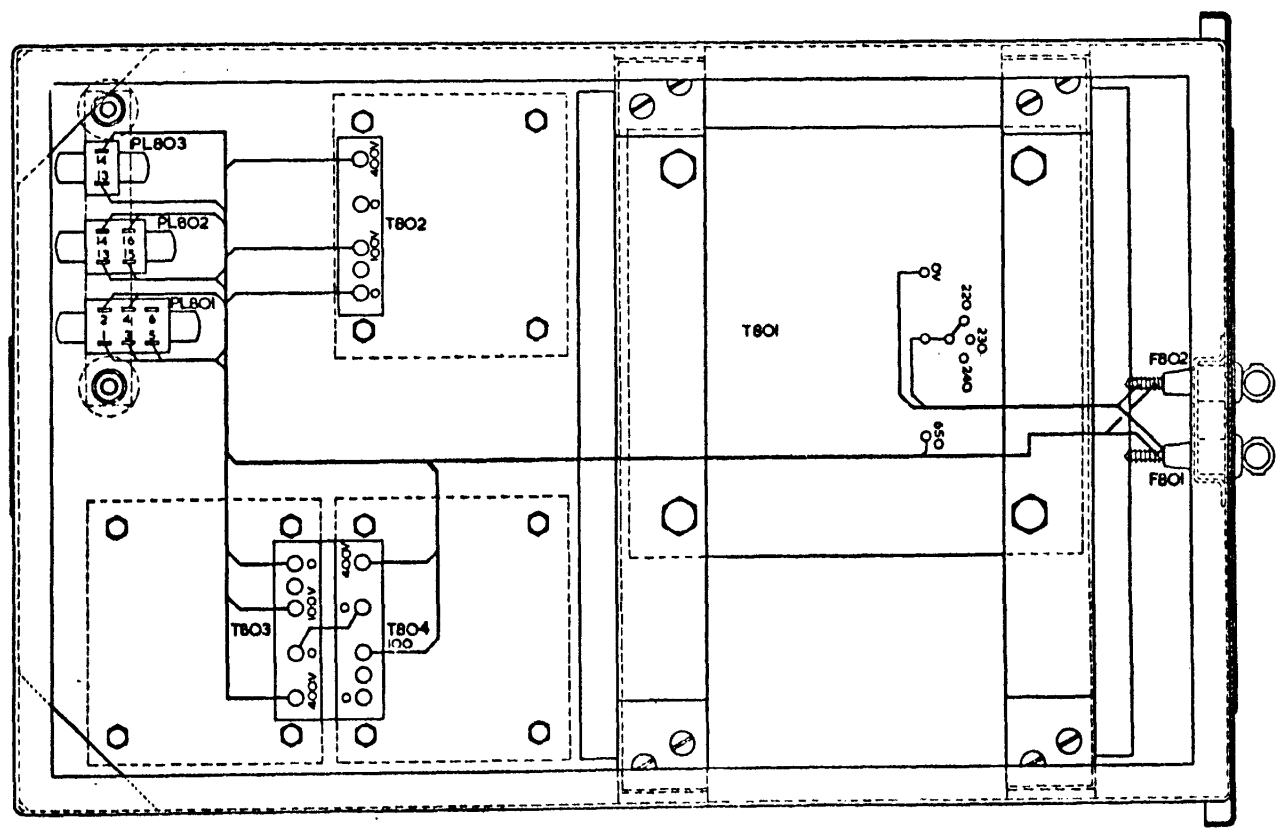


Fig. 2. Transformer unit Type.175 : underside

Chapter 5

POWER UNIT, TYPE 4414

(This chapter supersedes that issued with A.L. 18)

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	Para.		Para.
General	1	*Monitoring*	5
—500V supply	2		
+350V supply	4	*Setting up procedure*	6

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	Fig.		Fig.
Power unit 4414: front view	1	*Power unit 4414 : bottom view*	3
Power unit 4414 : top view	2	*Power unit 4414 : circuit*	4

General

1. Two stabilized supplies, one positive and one negative are provided by power unit 4414 (*fig.* 1, 2, *and* 3) for trigger unit 4413. The negative supply (—500V) is available earlier than the positive supply after switch-on. The two outputs are monitored by the inclusion of a panel-mounted voltmeter with a selector switch. The unit is situated underneath the trigger unit in rack assembly 4411 in the radar office. It should be noted that the unit has no ON-OFF switch. The OFF position of the meter selector switch SWA (*fig.* 4) does not switch the unit off, but merely earths both meter connections.

—500V supply

2. The indicating neons in fuse units X2 and X3 are ionized when the supply fed in at pins 11 and 12 of PL1 reaches transformers TR2 and TR3 via surge-limiting resistors R19 and R20. TR2 supplies all valve heaters on the unit from five separate secondary windings. The —500V supply is not established until V7 and V8 are fully heated. Thermal delay switch X4 provides

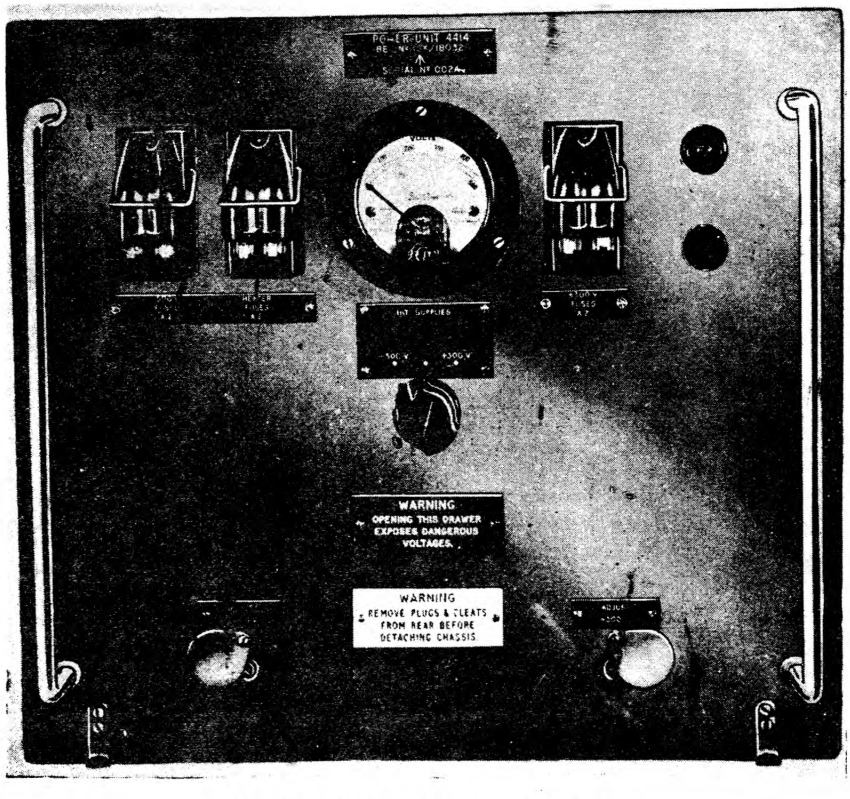


Fig. 1. Power unit 4414 : front view

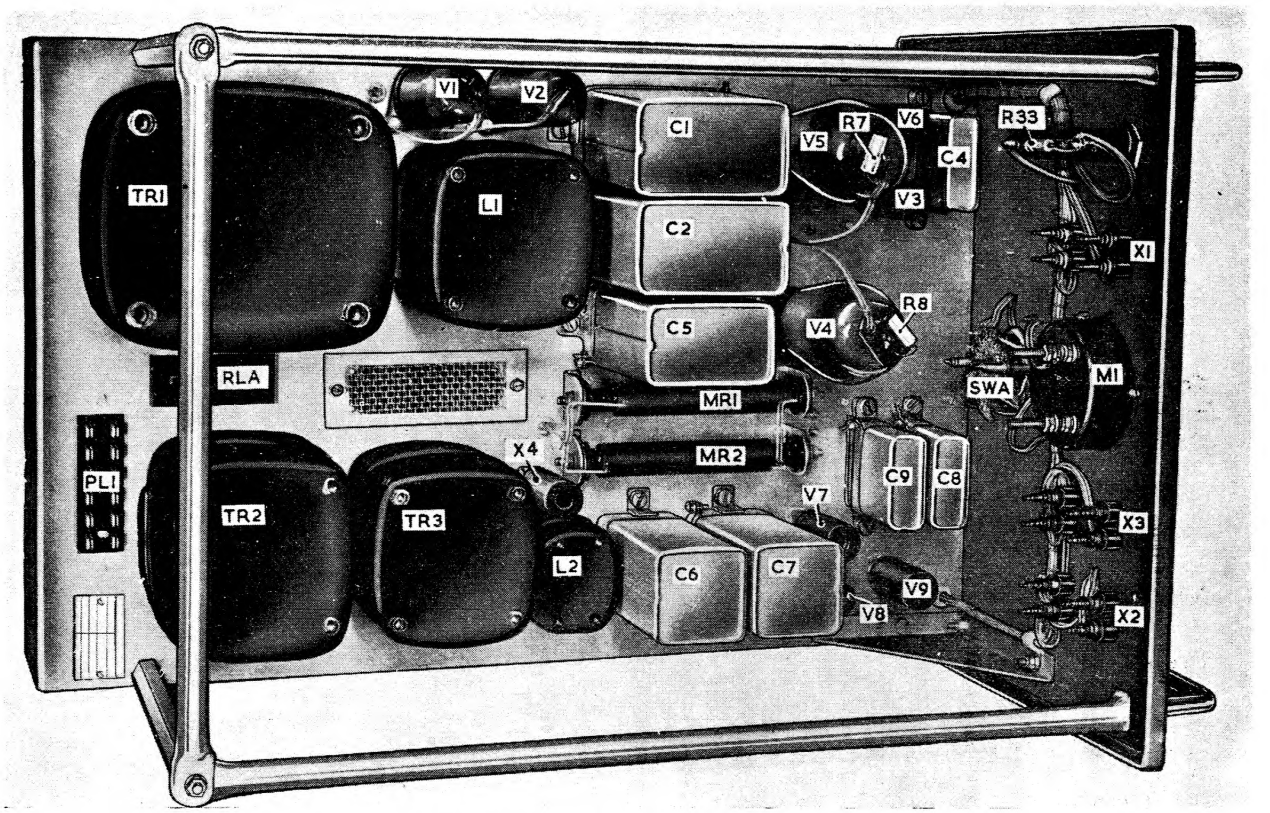


Fig. 2. Power unit 4414 : top view

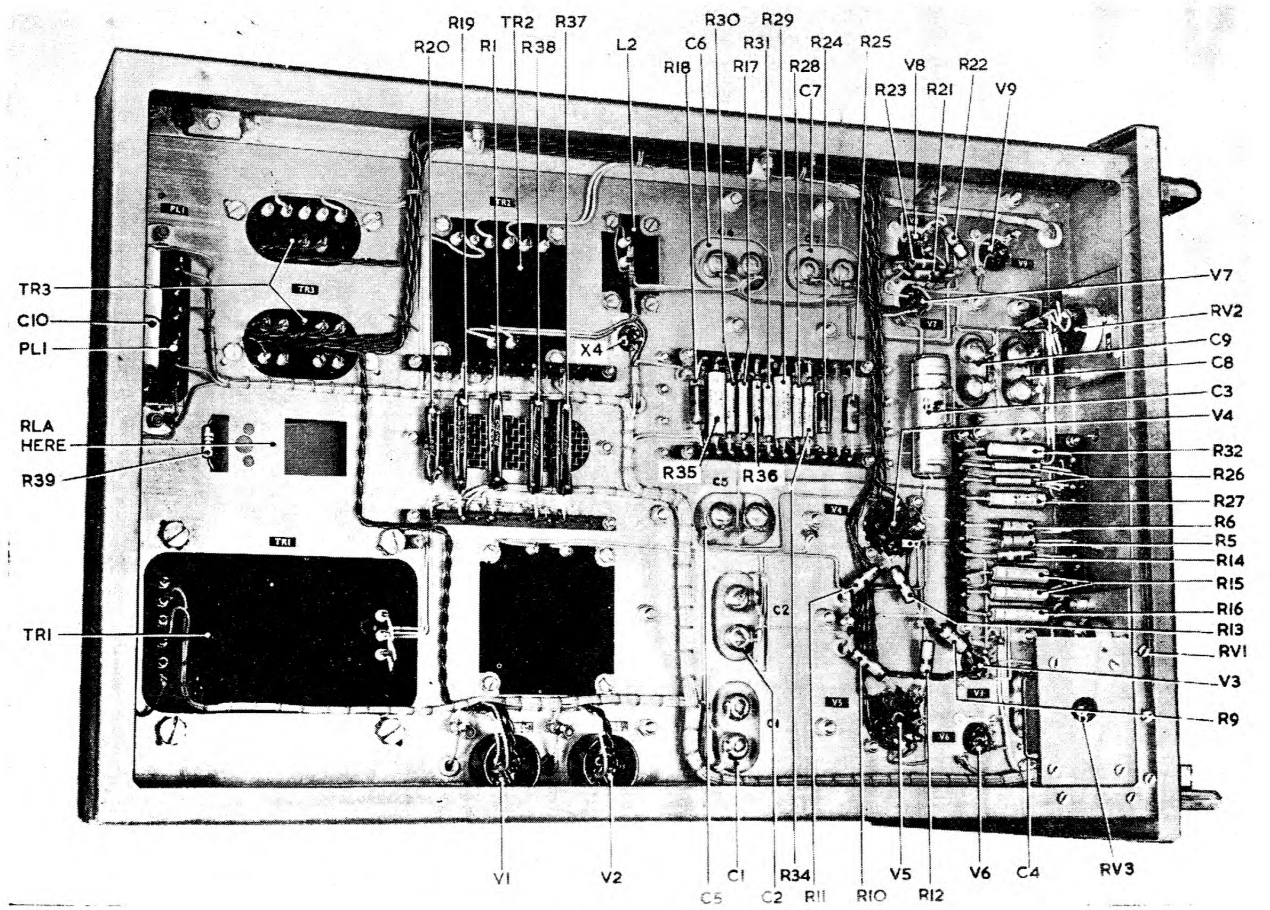


Fig. 3. Power unit 4414 : bottom view

a delay of about 1 minute before TR3 is energized The secondary winding of TR3 provides a supply to the bridge rectifying circuit comprising metal rectifiers MR1 and MR2. The output is smoothed by C6, L2 and C7. Relay RLA is energized amost immediately the −500V supply is available as the trigger unit bias supplies between pins 1 and 7 provide sufficient load. The AC supply from pins 12 and 11 is then fed to transformer TR1 via RLA1.

3. Valves V7, V8 and V9 are in a conventional stabilizer circuit. V8 is the series valve, V7 the shunt valve and V9 the source of reference potential. The circuit's action is as follows :—

Suppose the voltage at pin 7 on PL1 increases. The voltage at V7's control grid increases and its anode voltage decreases. The decrease is fed to the control grid of V8 and is sufficient to increase the voltage dropped across V8, by the same amount as the original increase at pin 7. Response to high frequency components of the pulse waveforms occurring in trigger unit 4413 is increased by C9 which is connected from RV2's slider to earth. The screen grid is decoupled by C8. RV2 is used to set the output voltage level.

+350V supply

4. This supply is fed out on pin 3 via a fuse FS7. Valves V1 and V2 are connected in the full-wave rectifying circuit supplied by TR1. Smoothing of the DC output is provided by C1,L2 and C2. V4 and V5, in parallel, constitute the series valve in a conventional stabilizer circuit, which is otherwise substantially the same as that described in paragraph 3. RV3, in the anode of V3 control the extent to which V4 and V5 conduct : it is set so that both valves pass the same anode current. It is necessary to set up this control if either V4 or V5 is changed since in the unbalanced condition one valve would be worked harder than the other and also the control of the stabilizer would be impaired. The setting up procedure is described in para. 6. Additional smoothing is provided for V3 by R5 and C3. C5 serves the same purpose at the output. The availability of the supply is indicated by LP7.

Monitoring

5. The meter mounted on the front panel is a moving coil instrument which has a full scale deflection of 500 μA and whose scale is calibrated 0-500V. When switch SWA is set to the HT +350 position the series multiplier resistors R17, R30 and R35 protect the meter which is also shunted by R18. The inclusion of R18 reduces the standing HT voltage between the switch contacts. R28 reduces the standing HT for monitoring the −500V supply while R29, R31 and R36 are the multipliers.

Setting up procedure

6. To ensure that both V4 and V5 are passing the same amount of anode current, a multimeter Type 1 (AVO model 8) set on DC volts, should be connected across R7 and R8 in turn, the voltage drop across the resistors should be the same. If this is not so, RV3 should be readjusted until the readings are the same. V4 and V5 are then balanced. It is advisable to recheck the +350V output if any adjustment of RV3 was necessary.

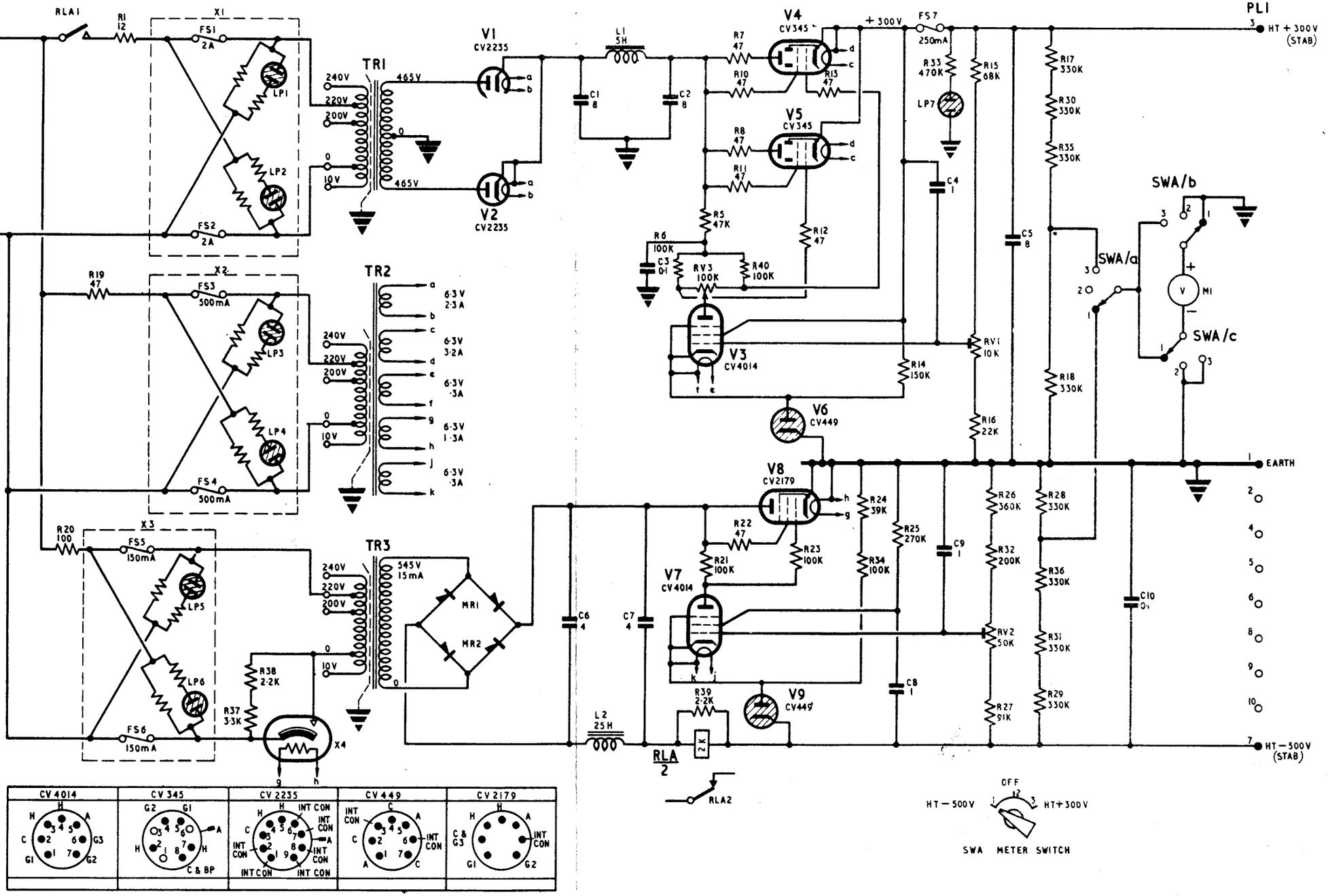


Fig. 4

(ALSO ISSUED AS AD 6156 AB/MIN)

Power unit 4414 - circuit

Fig. 4

Chapter 6

POWER UNIT 4415

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Power unit 4415 : front panel	1	Power unit 4415 : underneath	3
Power unit 4415 : top of chassis	2	Power unit 4415 : circuit	4

General

1. This unit (*fig.* 1, 2 *and* 3) produces three stabilized HT supplies for amplifying unit (video) 4416 (*Sect.* 2, *Chap.* 11). One of these supplies is —250V, which is available earlier, after switch-on, than the other two supplies, each of which is +250V. The output voltages are monitored by a four position switch connected to a panel-mounted meter.

2. Four conventional electronic stabilizing circuits are contained in the unit. The three which supply the two positive and one negative outputs, are obtained from full-wave rectifier circuits. The fourth is a half-wave rectified supply, which feeds a stabilized voltage to the series and shunt valves in the two +250V supplies.

3. The AC supply, which is fed in on pins 11 and 12 of PL1 (*fig.* 4), is fed via the fuse unit X3 to the primary winding of TR3. Transformers TR1 and TR2 receive this same supply via X1 and X2 respectively, after relay RLA, supplied from TR3, has operated, closing contacts RLA1 and RLA2 which then carry the supply to TR1 and TR2 respectively. Resistors R1, R38 and R59 are

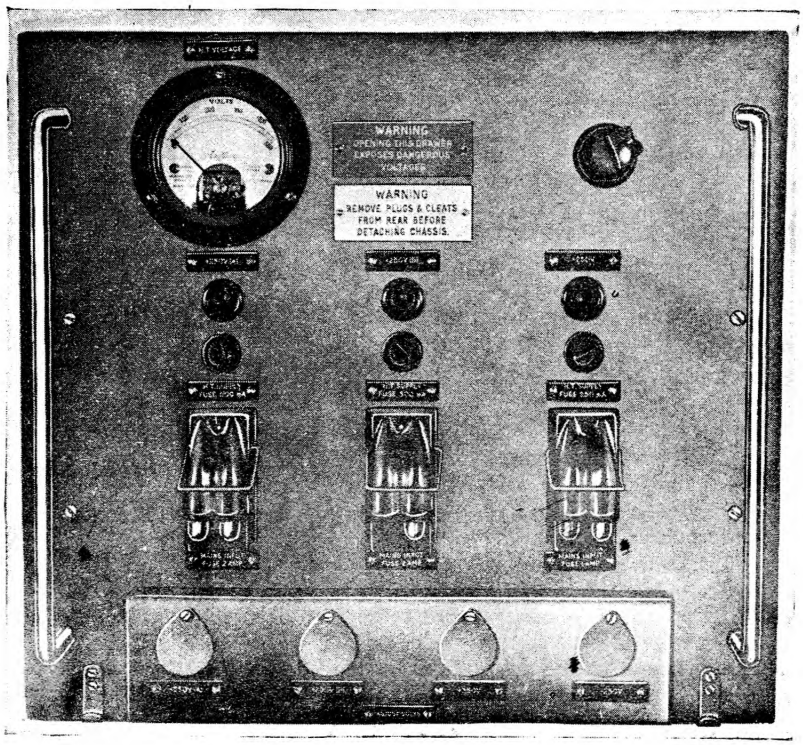


Fig. 1. Power unit 4415 : front panel

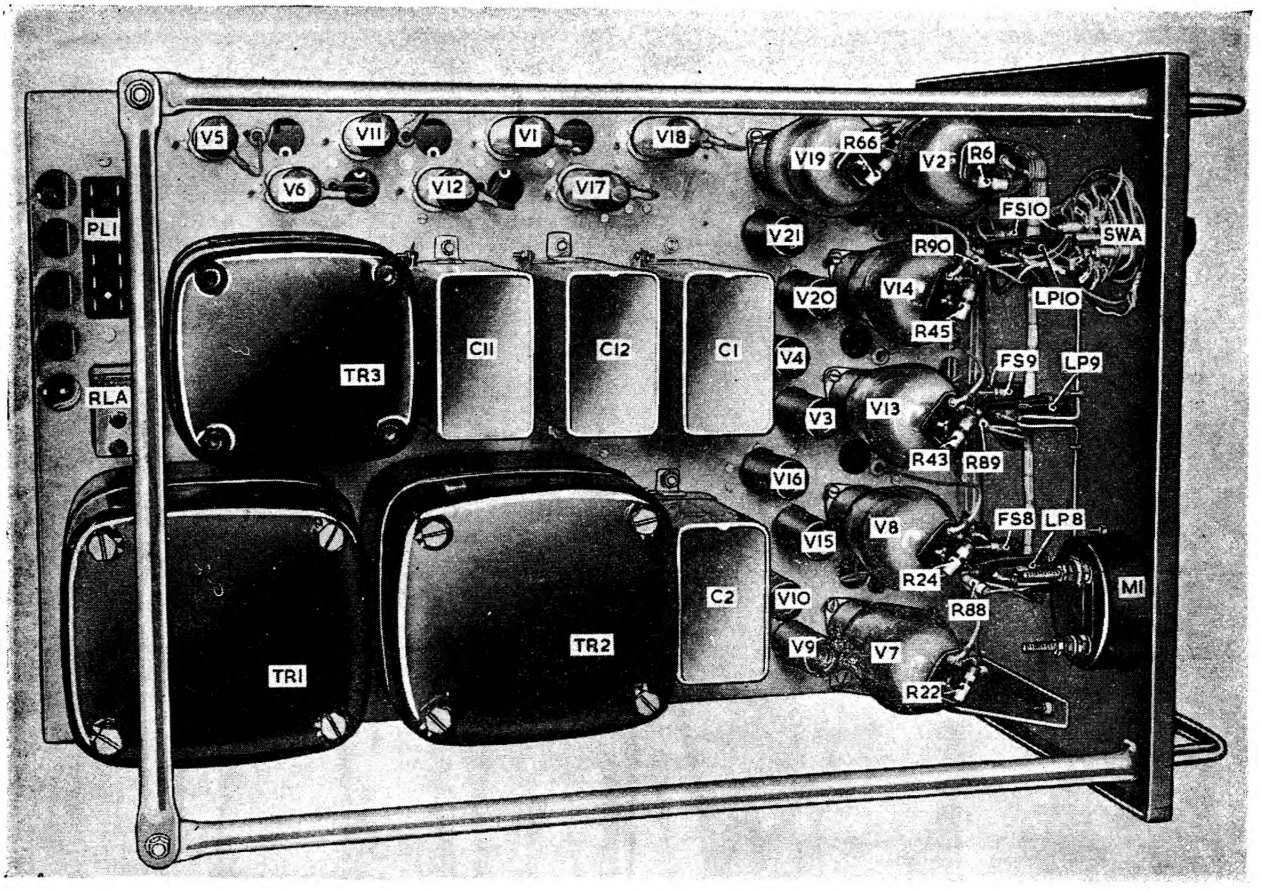


Fig. 2. Power unit 4415 : top of chassis

surge limiters which protect the fuses in X1, X2 and X3 respectively.

+250V (A) supply

4. V5 and V6 are connected in a full-wave rectifying circuit. The output from this circuit is taken via two valves connected in parallel, V7 and V8. These are the series valves in a conventional stabilizing circuit, which includes V9 as the shunt valve and V10 the source of reference potential. It will be noted that no smoothing chokes are employed in this circuit as the stabilizer eliminates ripple.

5. The anode load of V9 is connected to the +350V supply in preference to the +250V supply. This connection allows of an increase in the value of the anode load, and hence the gain, of the shunt valve V9. The screen supplies of V7 and V8 also come from the +350V supply. This enables V7 and V8 to operate as pentodes, making stabilization more efficient. The heater to cathode potential of V9 is set to a safe value by the potential divider network R28 and R29. Its control grid potential is preset by RV2 to give the required output voltage. Capacitor C7, connected from RV2 to the positive HT, presents a low impedance to high frequency components, which thus receive greater cancelling effect. Suppose that the voltage at pin 3 on PL1 increases, V9's control grid potential increases and its anode potential falls. This fall is fed to the control grids of V7 and V8. The voltage drops across V7 and V8 thus increase and the voltage at pin 3 is reduced by the amount that it increased. Since RV2 sets the potential on V9 anode and the grids of V7 and V8, it can be seen how it is used to set the level of the output voltage whose availability is indicated by LP8.

+350V supply

6. This supply is also fed to the screen grids of tetrodes V13 and V14 as well as to those of V7 and V8, and to the anode of V15, in the +250V (B) circuit. The (B) circuit operates exactly as described in para. 4 and 5. V1 is a half-wave rectifier with RC smoothing (R5 and C2) supplied from the 450V secondary winding of TR1. Valves V2, V3 and V4 are in the conventional stabilizing circuit whose operation is principally the same as described in para. 5.

—250V supply

7. Valves V17 and V18, supplied from TR3, form a full-wave rectifying circuit which is stabilized by the circuit containing V19, V20 and V21 similar to that for the +350V supply. When this supply appears, relay RLA is energized.

Monitoring

8. A meter which has a 500 μA moving coil movement and a scale calibrated from 0 to 500V, can be switched to any one of four monitoring points which are connected to potential dividers of a 1 Meg. resistor in series with a 100K across

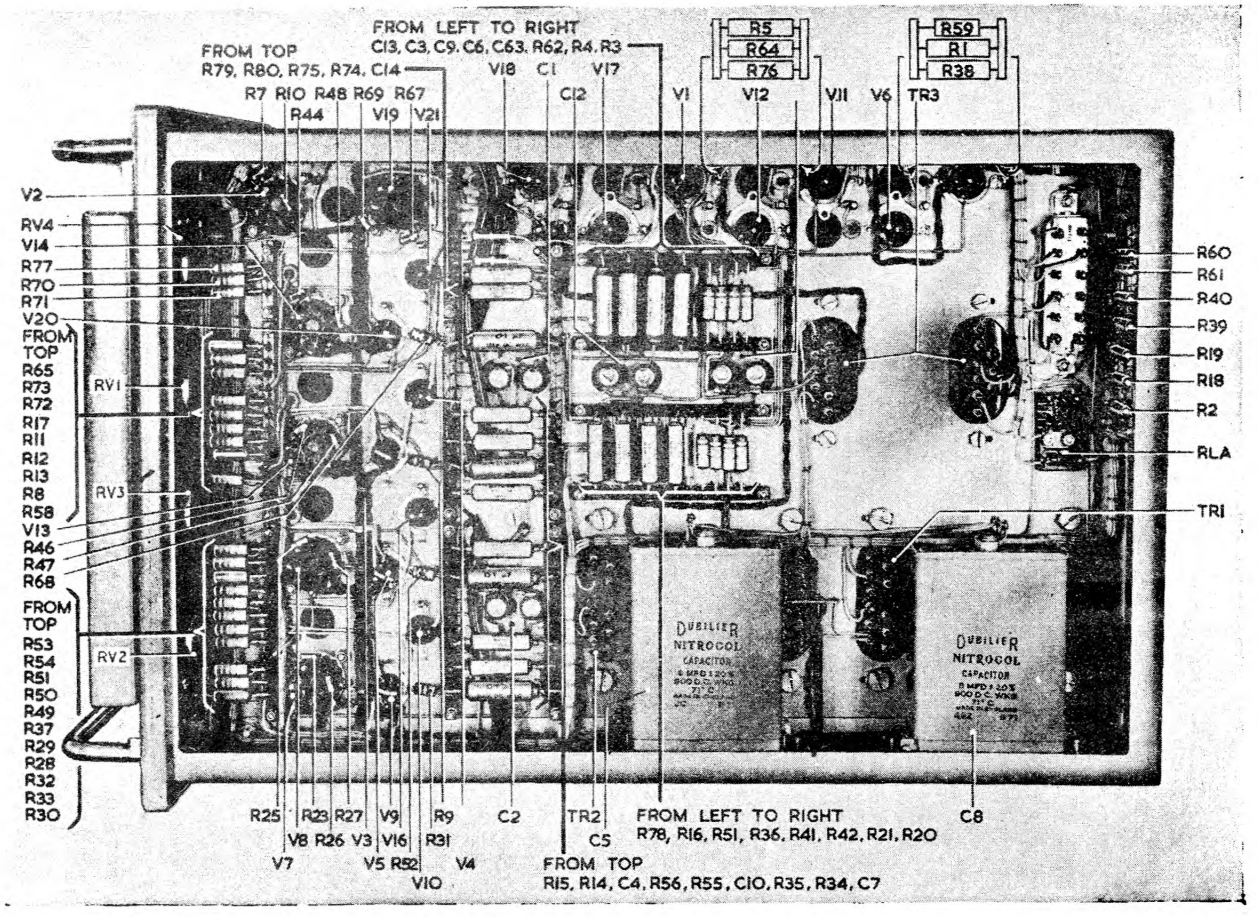
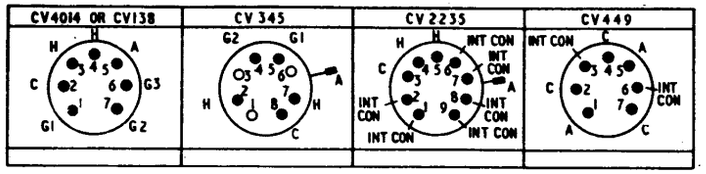
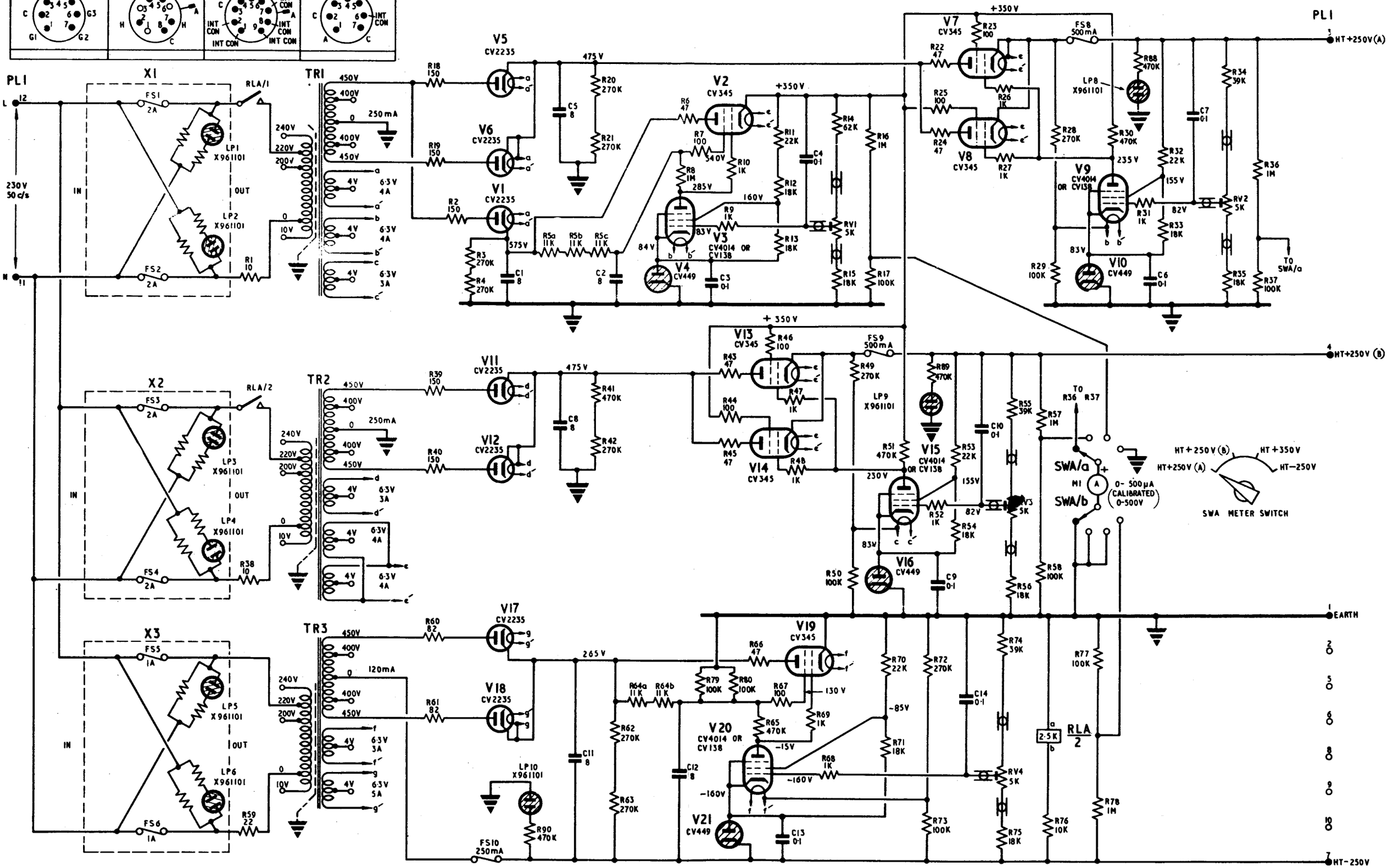


Fig. 3. Power unit 4415 : underneath

each supply. This method (using a series and shunt resistor for each contact of the switch) is employed to reduce the standing potential between contacts.

9. Fig. 4 is marked with voltages taken with a multimeter Type 1 used on the 250V and 1,000V ranges, and measured with respect to earth under no load conditions.





ALSO ISSUED AS A.D.6156AE/MIN

Fig.4 Power unit 4415 - circuit Fig.4

Chapter 7

(This chapter supersedes that issued with A.L.22)

POWER UNIT 4889

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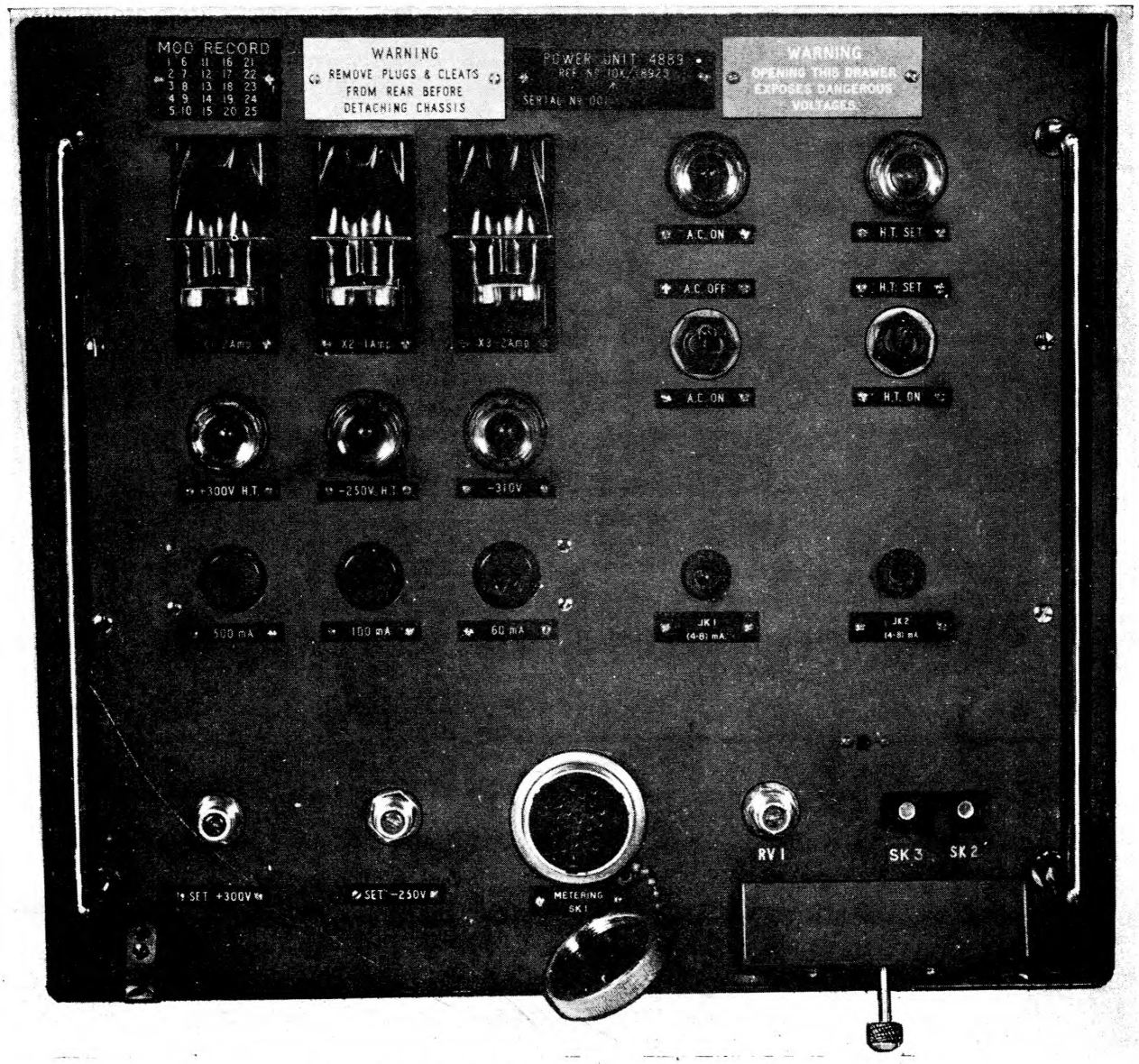


Fig. 1. Power unit 4889 : front panel

General

1. Power unit 4889 supplies trigger unit 4890 (*Sect.* 3, *Chap.* 7) with voltages stabilized at +300V, −250V and −310V and an unstabilized voltage of 400V. There are two of these power units in the radar office, one for each trigger unit. Since each trigger unit has its own heater supply no low voltages are supplied by the power unit to the trigger unit.

2. There are two full wave rectifiers, one supplying the positive stabilizing circuit, the other supplying the negative 250V stabilizer. The other negative supply is derived across a half wave rectifier and added to the −250V rail to make up −310V.

3. Two relays are connected across the stabilized voltage lines. One relay in the positive supply, when energized makes HT available at the output plug. The other in the negative supply, short circuits the first relay, de-energizing it if the negative 250V supply fails.

Circuit description

Positive HT supply

4. TR1 supplies the full wave rectifier V1 which feeds into the smoothing filter L1, C1 and C2 (*fig.* 5). The smoothed HT is applied via FS7 to V2 and V3, two beam tetrodes working in parallel as the series valve of the stabilizer circuit. V2 and V3 are balanced by RV1, in a bridge network with R20 and R23 connected between their grids, so that both valves pass approximately the same current. SK2 and SK3 are the voltage monitoring points to enable this adjustment to be made (*fig.* 1).

5. V5, the shunt valve, has its grid stabilized by a resistance chain R31 to R34 connected in series with RV2 across the +300V and −250V outputs, RV2 sets the point at which the +300V supply is stabilized. Since V5 cathode is taken to the negative line, the positive line is stabilized with respect to it. The +300V supply is available at PL1/4 when A/2 is closed.

6. The 400V unstabilized supply is taken from the low pass filter via R16 which, in conjunction with C5 serves to decouple this supply from the +300V stabilized supply. When RLA is energized the voltage appears at PL1/3 via contact A/1.

Negative HT supply

7. TR2 is the negative HT transformer. It has two tappings either side of the centre tapped secondary HT winding. The 350-0-350 winding supplies the full wave rectifier whose output is fed into a low pass filter and stabilizer circuit. Only one side of the 300V-0-300V tapping is used, and this supplies the half wave rectifier V7. The RC smoothing circuit R79, C8, R48 and C9 presents the output of V7 across the neon stabilizer V4.

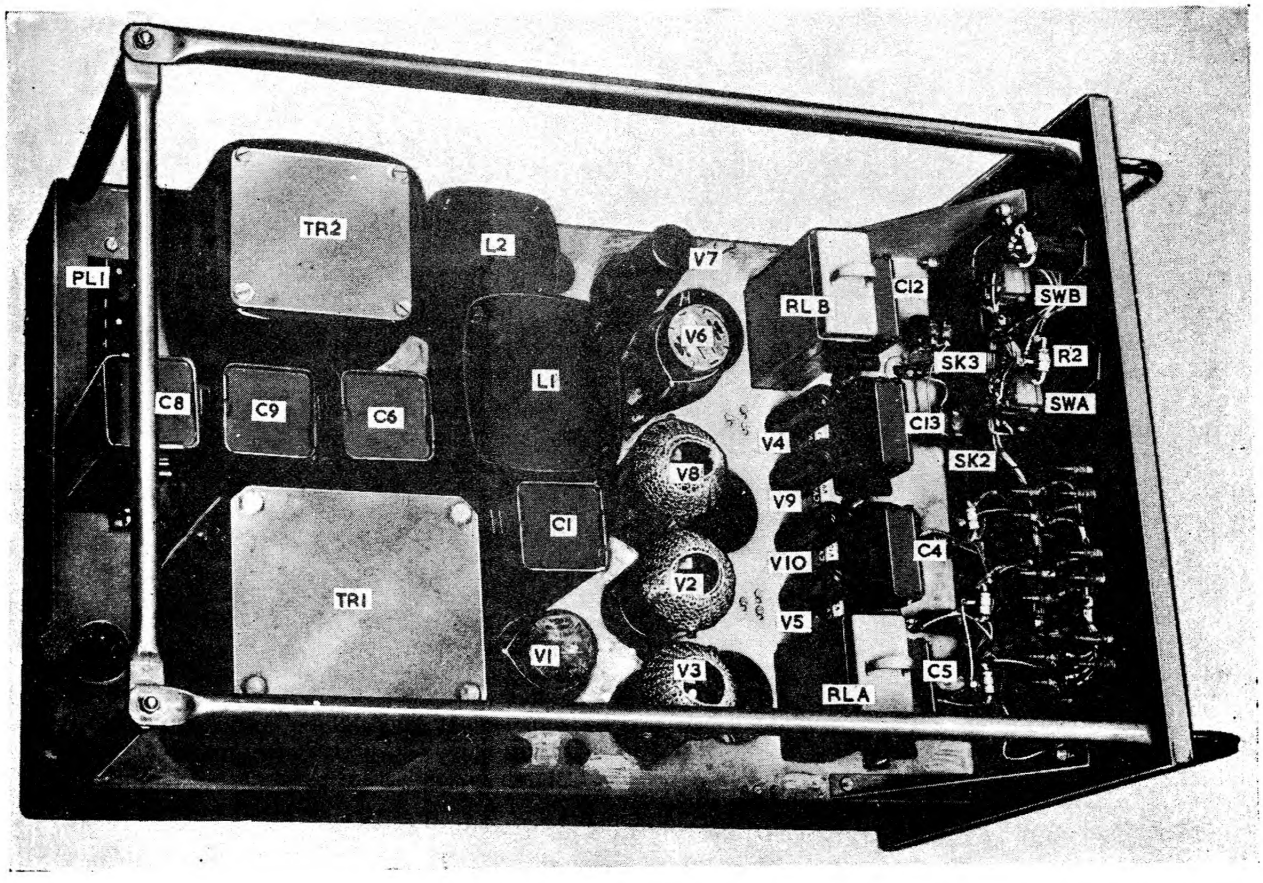


Fig. 2. Power unit 4889 : top view

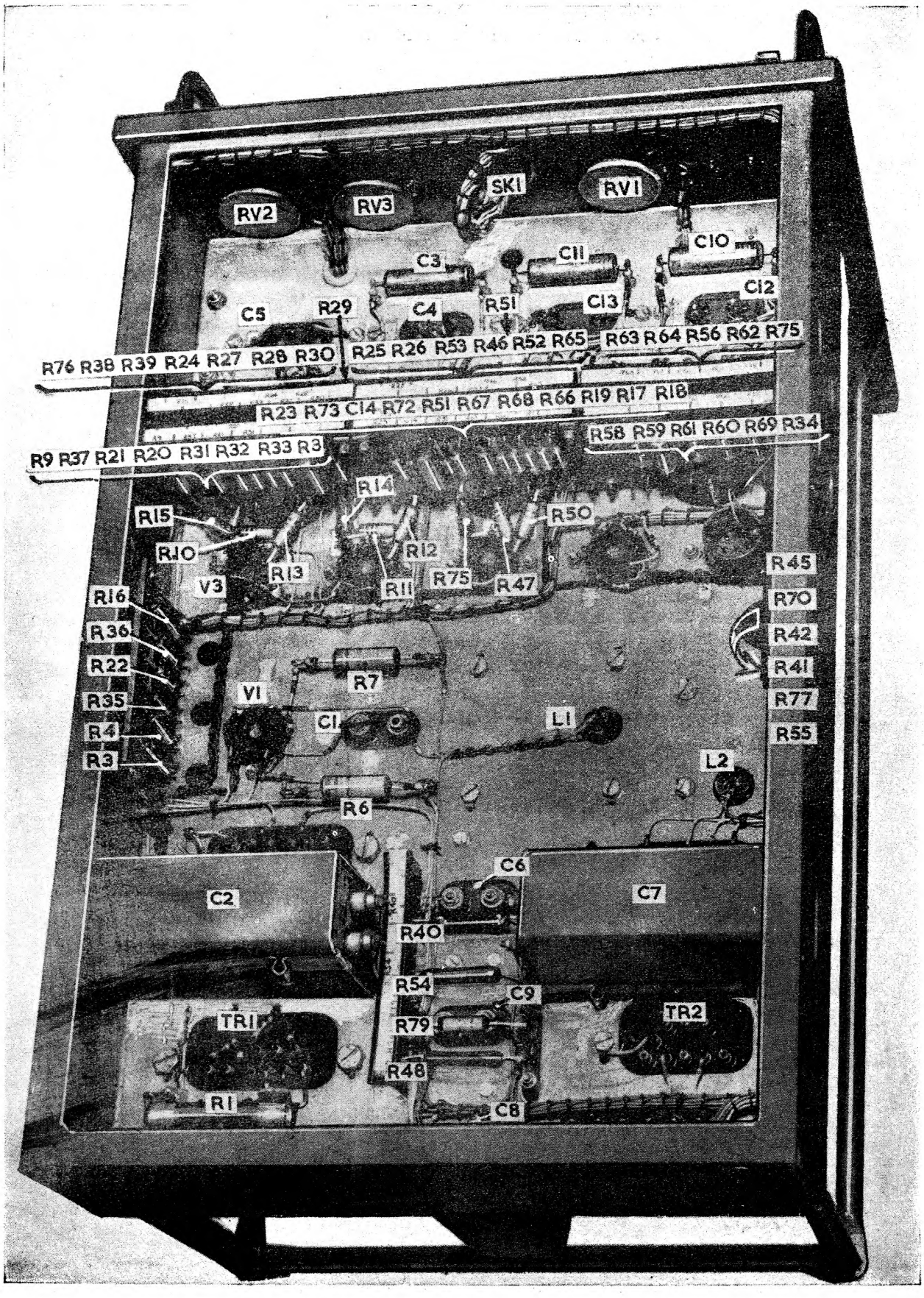


Fig. 3. Power unit 4889 : bottom view

minutes to warm up, check and adjust the voltages as measured on a multimeter Type 100 as follows :—

−250V supply. PL1 pins 1 and 7. Adjust RV3 (on 250V scale).

+300V supply. PL1 pins 1 and 4. Adjust RV2 (on 1,000V scale).

13. The following supplies should then be within the following limits :—

+400V supply. PL1 pins 1 and 3 ; 370V to 435V (1,000V scale).

−310V supply. PL1 pins 1 and 8 ; −295V to −325V (1,000V scale).

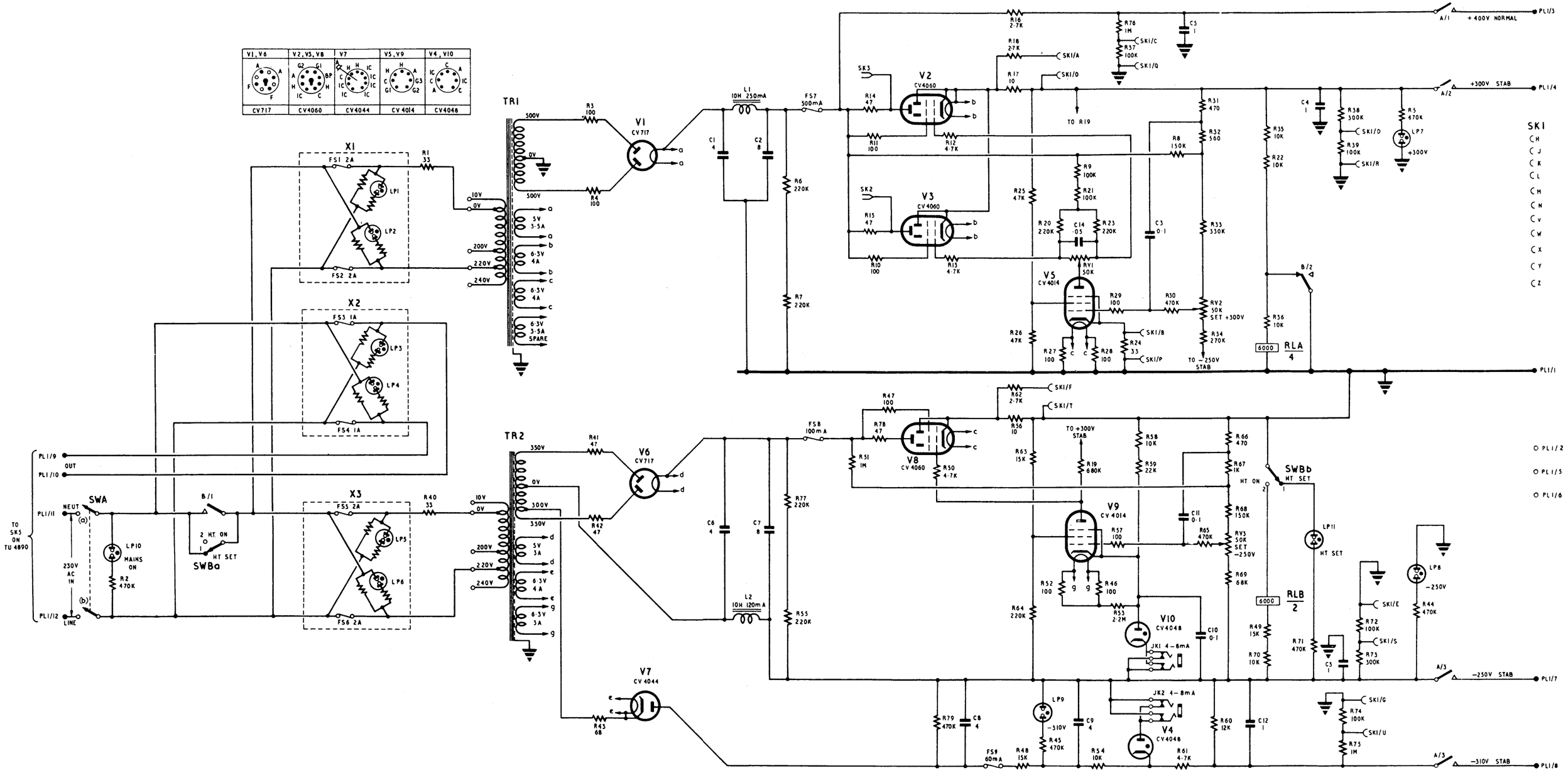


Fig.5 ALSO ISSUED AS A.D.6159AC/MIN

Power unit 4889 : circuit

Fig. 5

Chapter 8

POWER UNIT 4415A

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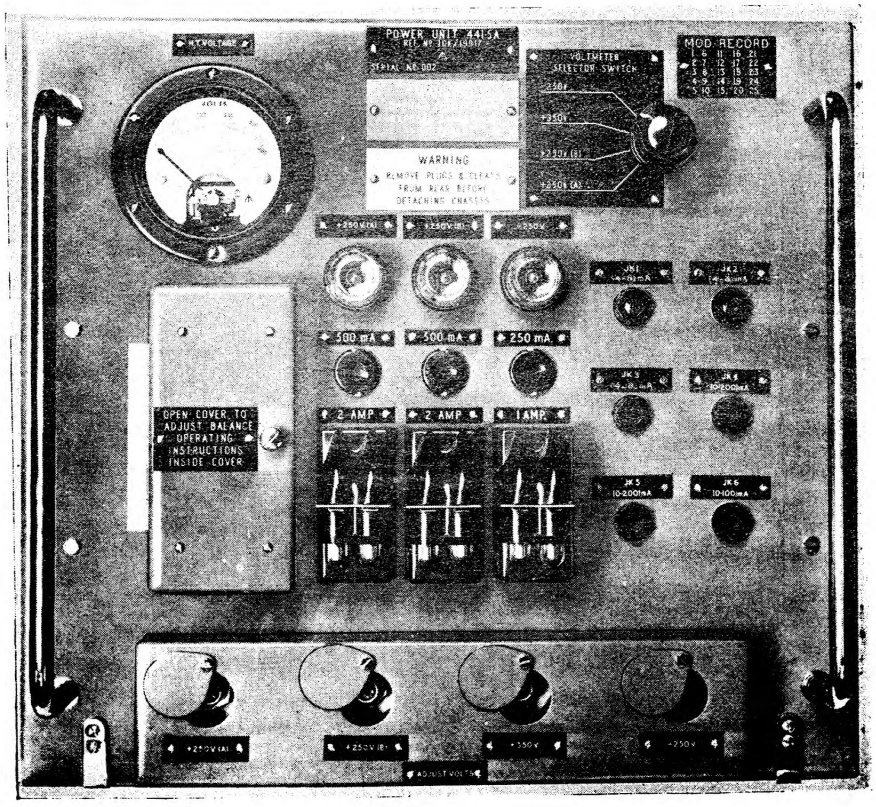


Fig. 1. Power unit 4415A : front panel

General

1. This unit (*fig.* 1, 2 *and* 3) produces three stabilized HT supplies for amplifying unit (video) 4416 (*Sect.* 2, *Chap.* 11), or 4416A. One of these supplies is —250V which, after switch-on, is available earlier than the other two +250V supplies. The output voltages are monitored by a four-position switch connected to a panel-mounted meter. The AC input is switched on and off by the amplifying unit video 4416A (*Sect.* 2, *Chap.* 14).

2. Four conventional electronic stabilizing circuits are contained in the unit. The three which supply the two positive and one negative outputs are obtained from full-wave rectifier circuits. The fourth is a half-wave rectified supply, which feeds a stabilized voltage to the series and shunt valves in the two +250V supplies.

3. The AC supply is fed in on pins 11 and 12 of PL1 (*fig.* 4) and fed via the fuse unit X3 to the primary winding of TR3. Transformers TR1 and TR2 receive this same supply via X1 and X2 respectively, after relay RLA, connected across the negative output, has been energized to close contacts RLA1 and RLA2 which then carry the supply to TR1 and TR2 respectively. Resistors R1, R2 and R3 are surge limiters which protect the fuses in X1, X2 and X3 respectively.

+250V(A) supply

4. V5 and V6 are connected in a full-wave rectifying circuit. The output from this circuit is taken via two valves in parallel, V15 and V16. These are the series valves in a conventional stabilizing circuit, which includes V19 as the shunt valve and V20 the source of reference potential. It will be noted that no smoothing chokes are employed in this circuit as the stabilizer eliminates ripple.

5. The anode load of V19 is connected to the +350V supply in preference to the +250V supply. This allows a higher value anode load to be used and, hence, the gain of the shunt valve V19 is high. The screen supplies of V15 and V16 also come from the +350V supply. R5 forms the balancing arms of a wheatstone bridge arrangement supplying the two grids. This enables V15 and V16 to operate as balanced tetrodes, making stabilization more efficient. The heater to cathode potential of V19 is set to a safe value by the potential divider network R67 and R68. Its control grid potential is preset by RV2 to give the required output voltage. Capacitor C12, connected from RV2 to positive HT, presents a low impedance to high frequency components which thus receive greater cancelling effect. Suppose that the voltage at pin 3 on PL1 increases; V19's control grid potential then increases, its anode potential falls and this fall is fed to the control grids of V15 and V16. The voltage drop across V15 and V16 thus increases and the voltage at pin 3 is reduced by the amount that it had increased. Since RV2 sets the potential on V19 anode, and the grids of V15 and V16, it can be seen how it is used to set the level of the output voltage, whose availability is indicated by LP7.

+350V supply

6. This supply is also fed to the screen grids of tetrodes V17 and V18, as well as to those of V15 and V16, and to the anode of V21 in the +250V(B) circuit. The (B) circuit operates exactly as described in para. 4 and 5. V1 is a half-wave rectifier supplied from the 450V secondary winding of TR1 and valves V2, V3 and V4 are in a conventional stabilizing circuit whose operation is principally the same as described in para. 5.

—250V supply

7. Valves V9 and V10, supplied from TR3, form a full-wave rectifying circuit, which is stabilized by V13, V14 and V12 in a circuit similar to that used for the +350V supply. When the negative supply appears, relay RLA is energized.

Monitoring

8. A meter M1, which has a 500 μA moving coil movement and a scale calibrated from 0 to 500V, can be switched in series with each of the four 1 Meg. series resistors to monitor the voltage outputs of the four HT supplies. The current monitoring jacks provide a means of checking the current flow in the outputs and also the correct operation of the neon stabilizers.

9. The voltage monitoring points and potentiometer controls used in balancing the series valves in the two positive supplies are mounted behind the cover situated on the left of the front panel.

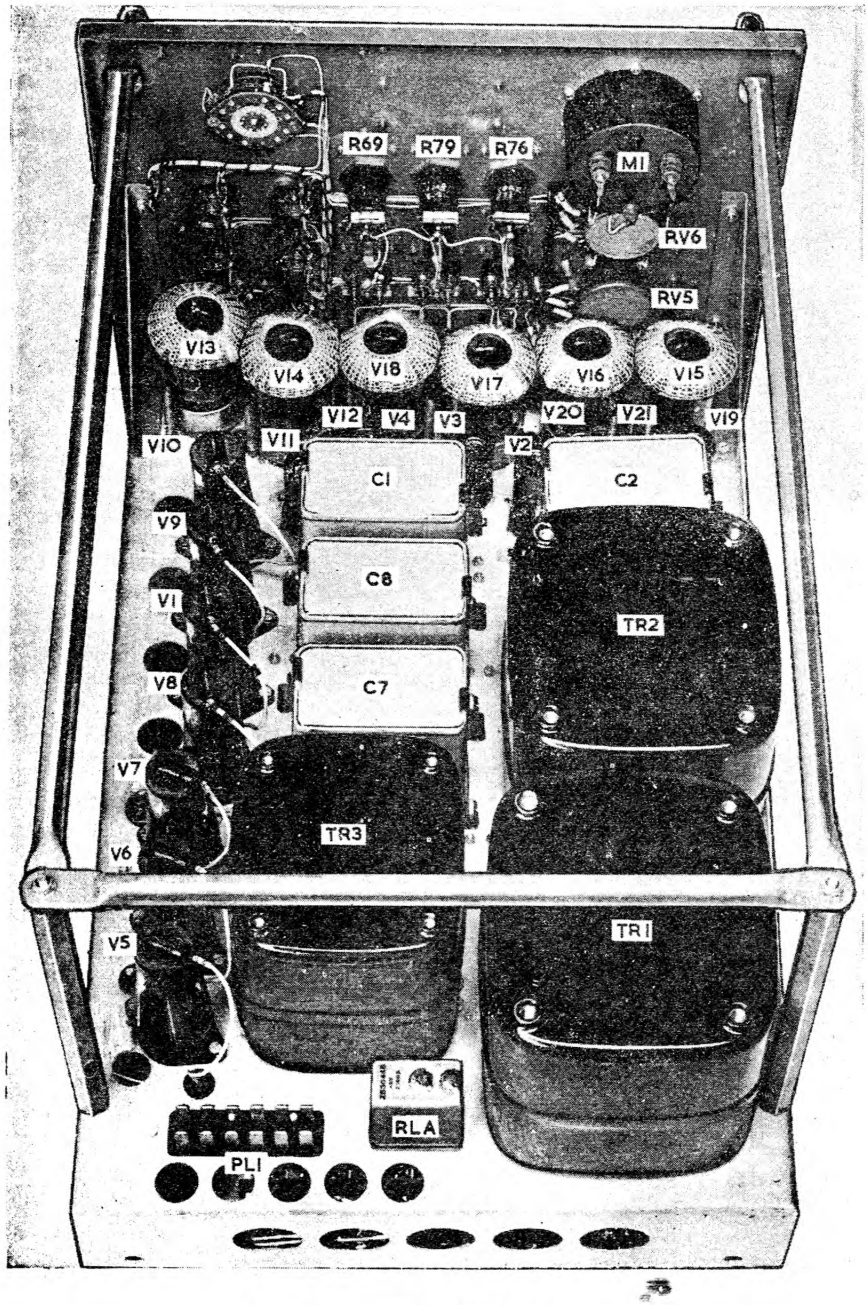


Fig. 2. Power unit 4415A : Top view

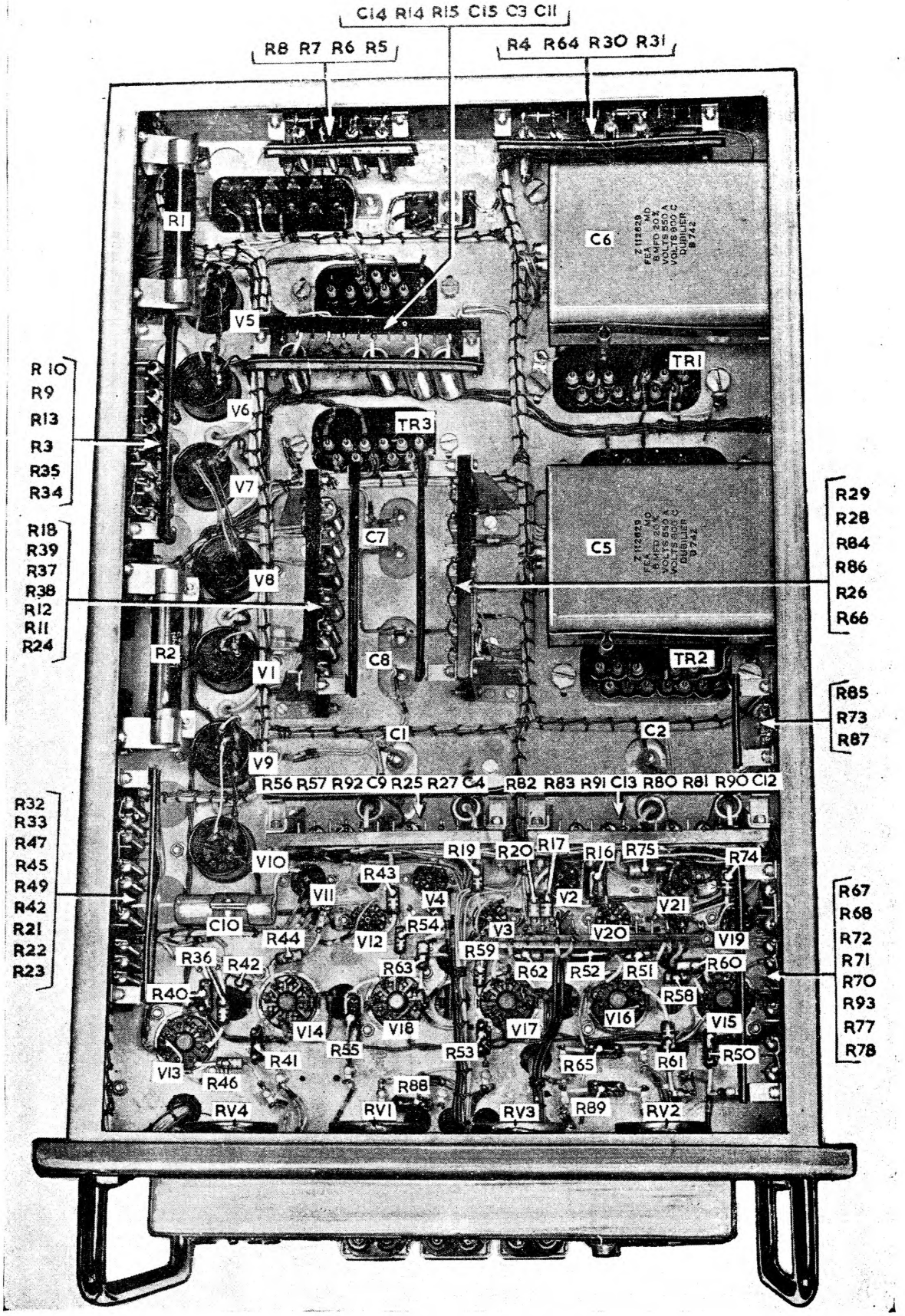
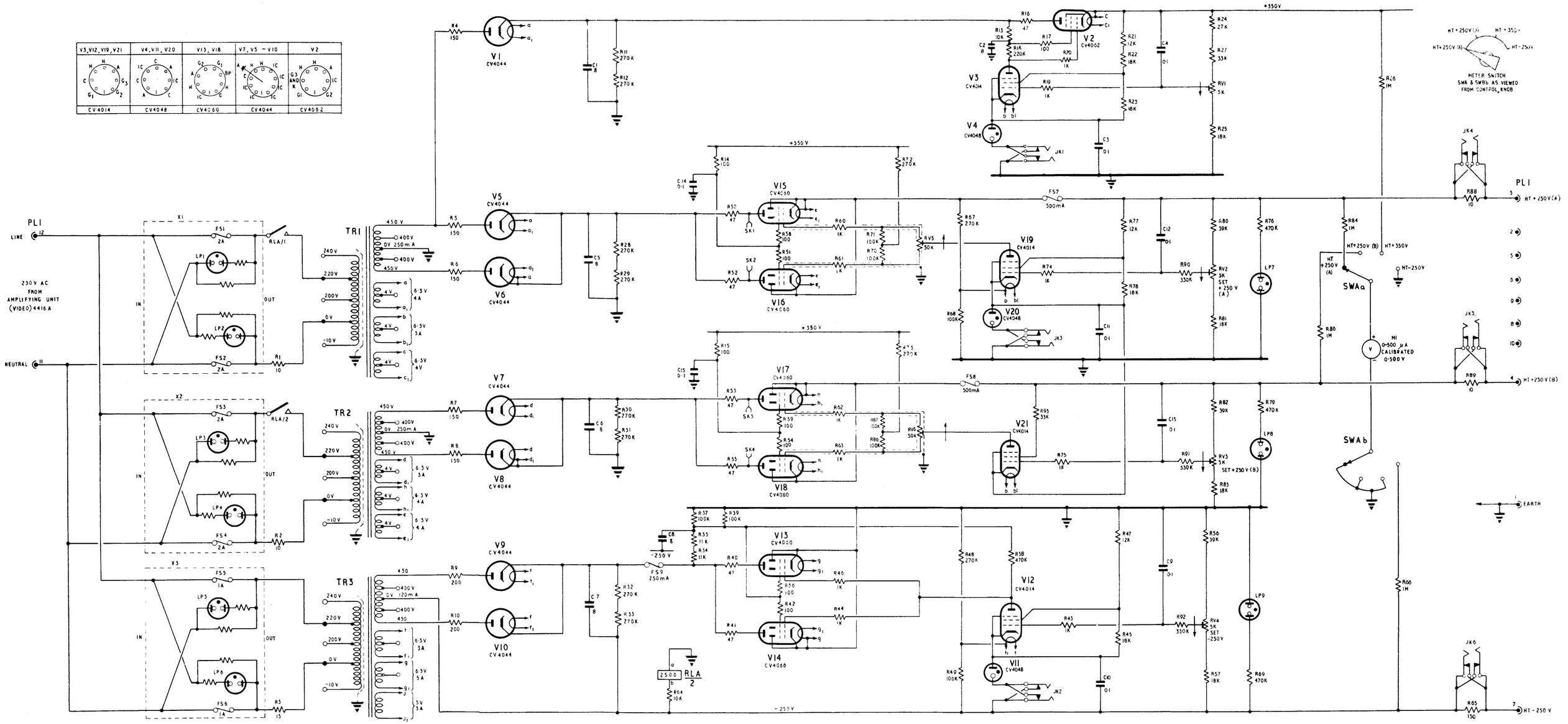


Fig. 3. Power unit 4415A : underside



Power unit 4415 A: circuit

Fig.4

ALSO ISSUED AS A.D.6159AD/MIN

Fig.4

SECTION 7

CONTROL UNITS

SECTION 7

CONTROL UNITS

LIST OF CHAPTERS

Note.—*A list of contents appears at the beginning of each chapter*

1 Control unit Type 600

2 Control unit (TG) 6618

Chapter 1

CONTROL UNIT TYPE 600

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Introduction

1. The control unit Type 600 (10L/16029) is part of the amplidyne turning gear system and is used on radars Type 13, 14 and 79 on static sites. The unit is associated with the amplifying unit (servo) Type 297, described in Chap. 9 of Sect. 2, and is housed in the same rack assembly. The control unit contains identical channels for two heads and where both channels are in use the unit will be associated with two servo amplifiers.

2. Where a head is controlled from a console Type 60A, the console is equipped with a function selector switch, a position control selsyn, a SPEED control and a SWEEP ANGLE control. These controls are connected to the control unit Type 600 and associated servo amplifier. For alternative control facilities, reference should be made to A.P.2886H.

Description

3. On the front panel of the control unit 600 are mounted mains input fuses (in duplicate) together with switches labelled INDIVIDUAL/SYNCHRONOUS (S502) and IN LINE/180° DISPLACED (S501) for each control circuit. S502 must be closed when the associated head is required to turn in synchronism with other heads on a site, and S501 must be closed when the associated head, working as slave, is required to turn 180 deg. displaced from the master head.

4. The control unit houses a power unit providing 120V DC (nominal) for the external SPEED and SWEEP ANGLE controls; preset controls are provided in the control unit for setting-up. The unit also contains a phase-sensitive network which forms part of the servo system used on position and sweep angle control. This network provides operating current for the polarized relay RL501, which operates the reversing relay RL502 on sweep angle control, and controls the servo amplifier SLEW circuit on position control. For a complete description of the operation of the system, refer to A.P.2886H.

5. Fig. 1 gives a front panel view of the chassis, while fig. 2 gives a plan view and fig. 3 an underside view. The annotated components may be identified on the circuit diagram (*fig.* 4). On the circuit diagram the main interconnections with the external controls, and with the servo amplifier, are shown in broken line.

Circuit

6. The following description merely outlines the functions of the components. Fuller information is given in A.P.2886H and A.P.2527B, which contain detailed descriptions of the operation and setting-up of the amplidyne system in its various applications.

7. The primary of transformer T501 is energized from the 230V AC mains supply when the control unit is switched on at the radar office power board. It should be noted that all the amplidyne turning gear equipment must be fed from the same phase (*red*) to ensure correct operation.

8. In each control channel the full-wave rectifier V501 is supplied from a 175V-0-175V winding rated at 52mA. The DC output is not smoothed

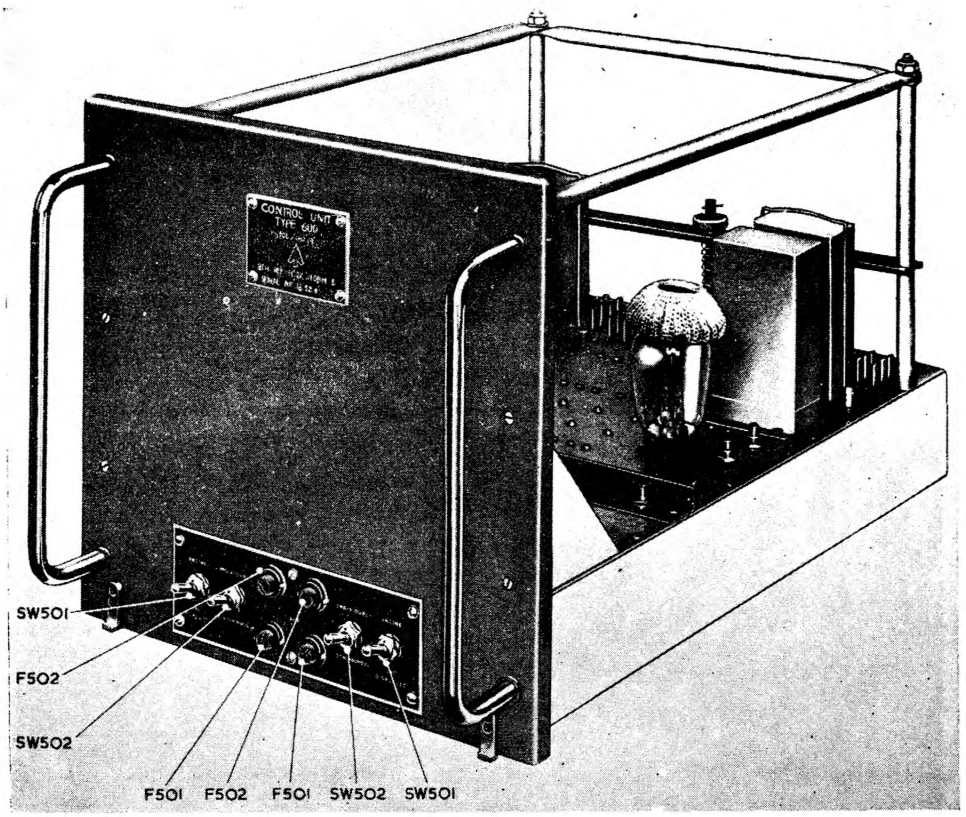


Fig. 1. Control unit Type 600—front

and the preset resistor RV501 is adjusted to give a 131V reading on a testmeter (150V DC range) connected between PL501/9 and PL502/6 of a unit in circuit as in fig. 4, with relay RL502 un-energized, as shown.

Position control

9. With the external function selector switch S301 in position 1, as shown in fig. 4, the turning gear is on *position control*. The error signal from the aerial servo selsyn is applied across the primary of the input transformer TR3 in the servo amplifier and the voltage across the centre-tapped portion of this primary winding is applied to PL502/9 and PL502/7 in the control unit. The centre tap is connected to relay RL501 via PL502/8.

10. Relay RL501 is a polarized telegraph type relay with two balanced windings, each of 1250 ohms resistance. It has one change-over contact which is centre-stable. With the aerial head on INDIVIDUAL operation and with the function selector switch on position control, relay RL10 in the servo amplifier is energized and contacts RL10/4 (*fig.* 4) change over to connect one winding of RL501 across a preset portion of RV504. This applies to the first winding of RL501 a bias voltage of such polarity as to hold open the contacts on RL501.

11. Meanwhile, the error signal across PL502/9 and PL502/7 is applied to the junctions of W508, W507 and W502, W501. W507 and W501 are connected to the second winding of RL501 via switch wafers S301g, S301f and S301h, and PL501/7. The circuit is completed to transformer TR3 via PL501/8 (*para.* 9), and the germanium diodes W507 and W501 give full-wave rectification of the error signal. The AC ripple across the second winding of RL501 is smoothed by C501. The polarity of the DC derived from the error signal is in opposition to the bias voltage on the first winding of RL501. The preset potentiometer RV504 is adjusted so that the bias voltage is overcome by the error signal resulting from an 11 deg. difference between the aerial and control selsyn rotors. When this occurs the contact on RL501 closes and energizes relay RL4 in the servo amplifier to bring in the SLEW circuit, which prevents overshoot as the aerial moves into coincidence with the bearing selected by the control selsyn.

Sweeping

12. With the function selector switch on position 2 the aerial moves back and forth over an arc determined by the setting of the SECTOR SWEEP potentiometer, at a speed determined by the setting of the SPEED potentiometer. Relay contacts RL10/4 and switch wafer S301e connect the bias winding of RL501 to the SECTOR SWEEP

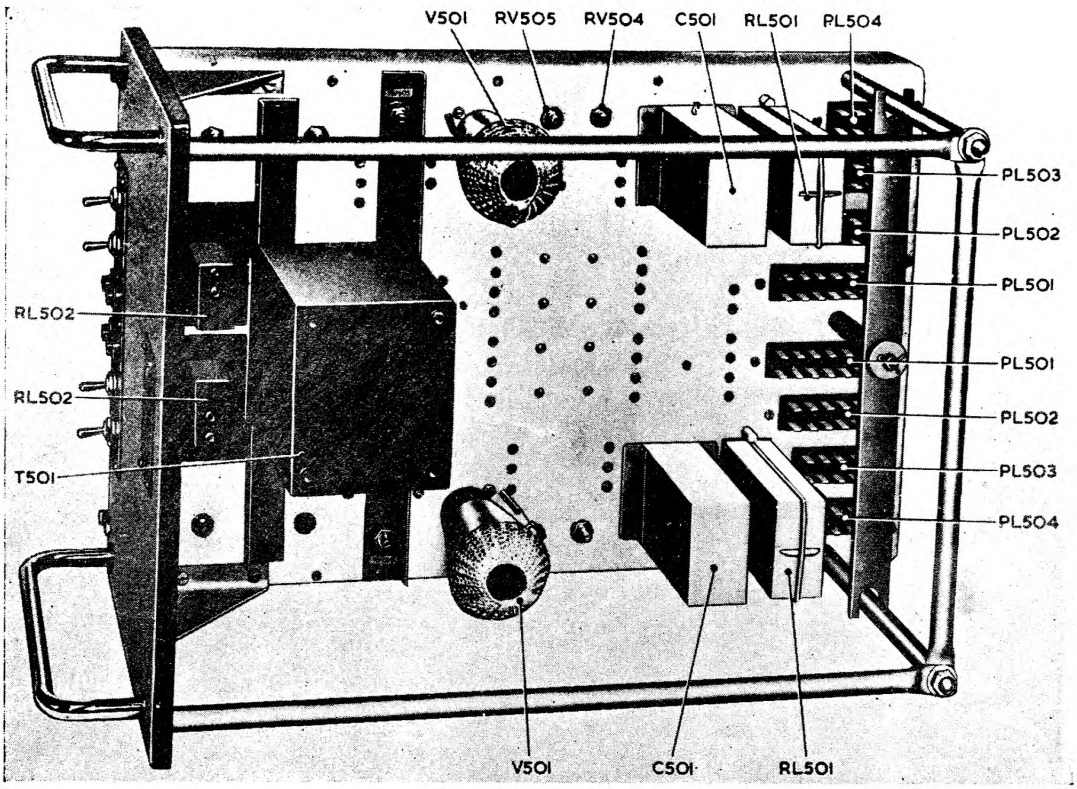


Fig. 2. Control unit Type 600—plan view

potentiometer and RL501 contacts are held open for the time being. Meanwhile the aerial turns in response to the DC input from the SPEED control to PL4/10 in the servo amplifier, at a speed dependent on the amplitude of the input voltage and in the direction determined by the polarity (i.e. clockwise for a positive input).

13. As the aerial turns, an error voltage is fed back to the primary of transformer TR3 in the servo amplifier from the aerial selsyn. This voltage is applied to the phase sensitive network W501-W508 in the control unit. The centre-tap of the transformer is connected to the second winding of RL501 and the ends of the transformer winding to PL502/9 and PL502/7 as for position control, but W501 is now connected to W503 by S301f, W507 to W505 by S301g and the return connection for the second winding of RL501 to PL501/8 via S301h.

14. W507 and W508 are now in parallel with W505 and W506 across the 55V winding S2 of transformer T501, while W503 and W504 are in parallel with W501 and W502 across S1. The two windings are in anti-phase so current passes through each circuit on alternate half cycles, limited by R503, R504 and R501, R502, respectively.

15. In the absence of any error signal, the junction of W507 and W508 is always at the same potential as the junction of W505 and W506, while the junction of W503 and W504 is at the same potential as that of W501 and W502, so no voltage is produced across the operating winding of RL501. The error signal upsets the balance of that circuit which is in phase with the signal and produces a DC voltage across the relay winding. The amplitude of the voltage increases in proportion to the error signal until it finally overcomes the bias voltage in the other winding of RL501 (derived from the SECTOR SWEEP control). RL501 contacts therefore close and energize relay RL502, the two contacts of which reverse the polarity of the DC supply to the SECTOR SWEEP and SPEED controls. RL501 is therefore held in its new position while the direction of rotation of the aerial is changed. The error voltage now decreases to zero as the aerial returns to its central position, then increases as the aerial moves towards its other limit of sweep. The phase of the signal is now changed so it upsets the balance of the second half of the phase-sensitive circuit and produces a voltage across the operating winding of RL501 in opposition to the reversed bias voltage. This voltage is again overcome and the sequence repeats with the aerial sweeping back again.

16. For sweeping operations, the speed is limited to 3 r.p.m. to prevent mechanical stresses when the direction of rotation is reversed. RV503 (preset), R509 and R510 in series with the SPEED

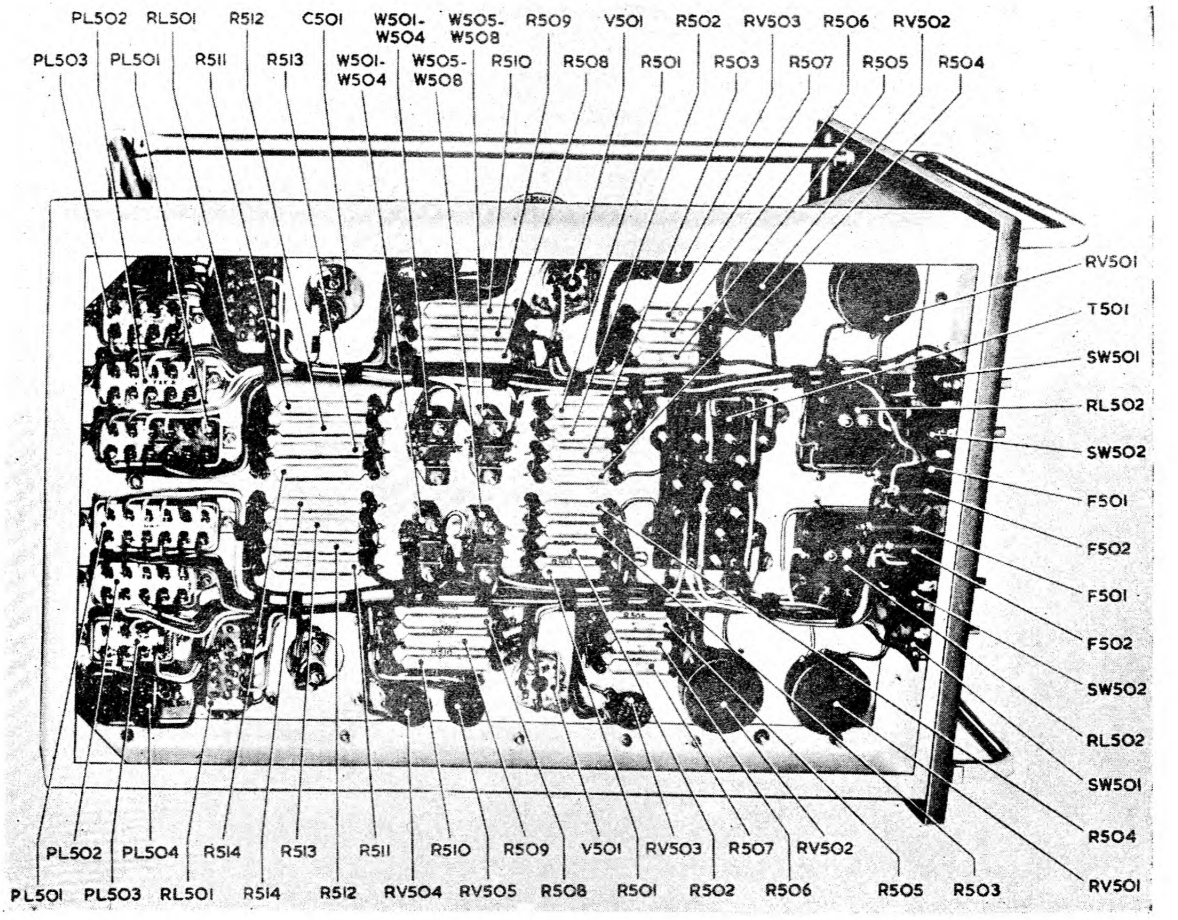


Fig. 3. Control unit Type 600—underside

control limit the potential across the control potentiometer while R508 in parallel with the potentiometer further limits its range. The range of the SECTOR SWEEP potentiometer is similarly limited by the series resistors RV502 (preset) and R511-R514. Further, to prevent excessive speed on small angles of sweep, the SPEED and SECTOR SWEEP controls are linked by a gear train (A.P.2527B).

Continuous rotation

17. On continuous rotation the phase-sensitive network is not used. The aerial turns as determined by the input from the SPEED control to PL4/10 in the servo amplifier. With the function selector switch on positions 3 and 4, wafer S301d connects PL501/10 to PL501/9 thus taking R508 out of circuit and giving a wider range to the SPEED control, enabling a maximum aerial speed of 6 r.p.m. to be attained. A minimum crawl speed is provided by R505 which is always in circuit in series with the SPEED control (console 60A application).

18. With the function selector switch on position 3 the head turns in a clockwise direction. With the switch on position 4, relay RL502 is energized and the two relay contacts reverse the polarity of the DC supply to the SPEED control, so the head turns counter-clockwise.

Slave operation

19. For slave operation the function selector switch is on position 1 and an error input is made from the rotor of the slave aerial selsyn to the primary of transformer TR3 in the servo amplifier. The centre-tapped section of the primary is connected to W501 and W507 as on INDIVIDUAL position control (*para.* 9-11) so as to feed a rectified error voltage to the second winding of relay RL501. The bias winding of this relay is energized by the preset voltage across part of RV505, which is connected by contacts RL10/4 of relay RL10 (not energized on slave operation). When the bias voltage is overcome the contacts of RL501 bring in the SLEW circuit relay, RL4 in the servo amplifier.

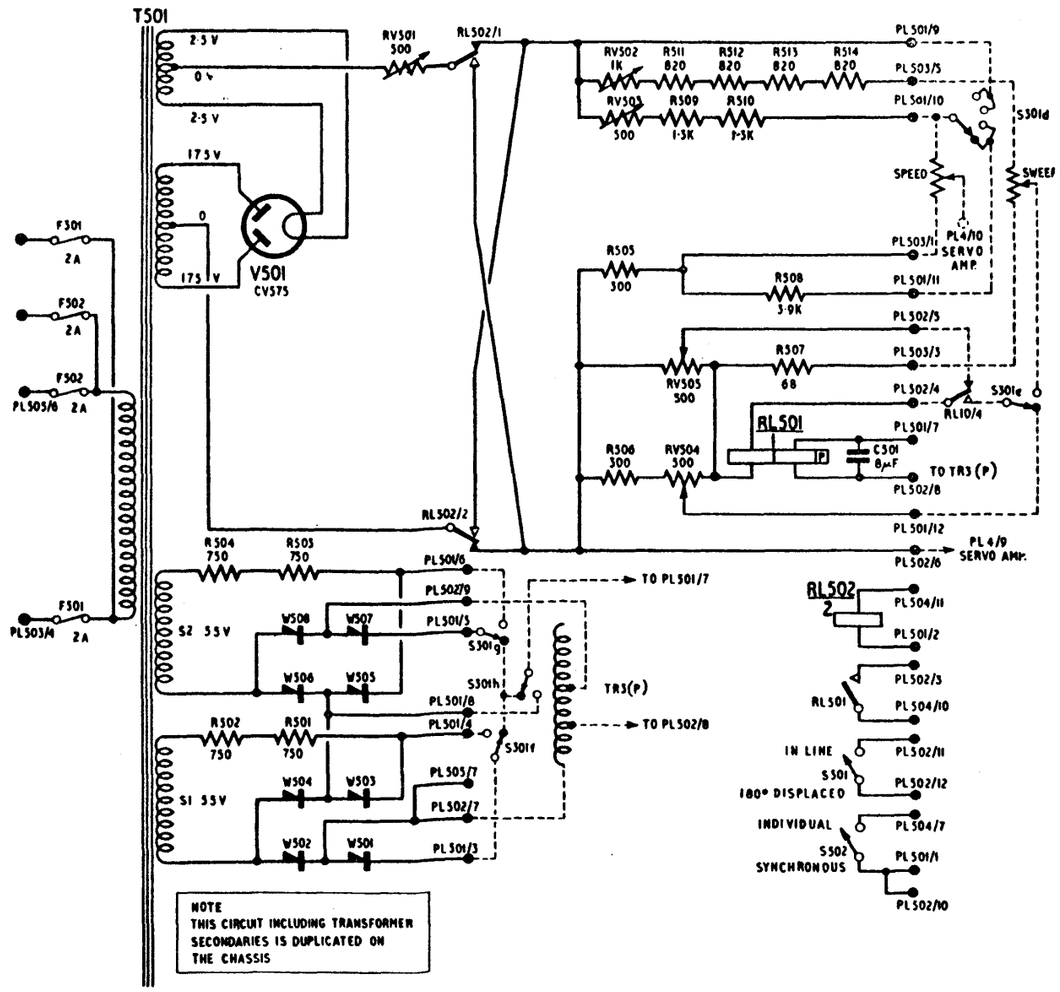


Fig. 4. Control unit Type 600—circuit

Chapter 2

CONTROL UNIT (TG) 6618

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General

1. Control unit 6618 (*Ref. No. 10L/16433*) provides for remote control of the turning gear in Radar Type 80 Mk. 3. It is installed in a combined head control rack (e.g., rack assembly 873 and variants) in the radar office and is connected to the master control cubicle via the head patching panel in the radar office and box distribution 105 in the modulator building.

2. Front and top views of the unit, which measures 17 in. × 5¼ in. × 11⅝ in., are shown in fig. 1 and 2. The circuit is given in fig. 3. It contains four push-buttons, two lamps and a meter which indicates the turning speed of Type 80, whose normal running speed is 4 r.p.m. The lamps indicate INTERLOCKS CLOSED and CONTROL AVAILABLE. Control position has to be selected by a switch on the front of Master control cubicle. When this switch is set to REMOTE, the CONTROL AVAILABLE lamp lights, indicating that the rotation of Type 80 can be controlled by the START, STOP, RAISE and LOWER SPEED push-buttons on control unit 6618. How these push-buttons effect control is described in A.P.2527QA, Vol. 1, Part 1, Sect. 9, Chap. 4.

3. Normally the INTERLOCKS CLOSED lamp will be lit if Type 80 turning gear is switched on. The supply for the lamps comes from a 40V tapping on a transformer in the master control cubicle. The common line for the lamps on PL1/7 is connected via the head patching panel to terminal 307T in box distribution 105. The CONTROL AVAILABLE indicator connects with terminal 306T and the INTERLOCKS CLOSED indicator with 308T. The latter terminal is then taken to the Master control cubicle and into the turning gear interlock system on terminal 57. Table 1 gives the core identifications for the various services from plugs 1 and 2 to box distribution 105.

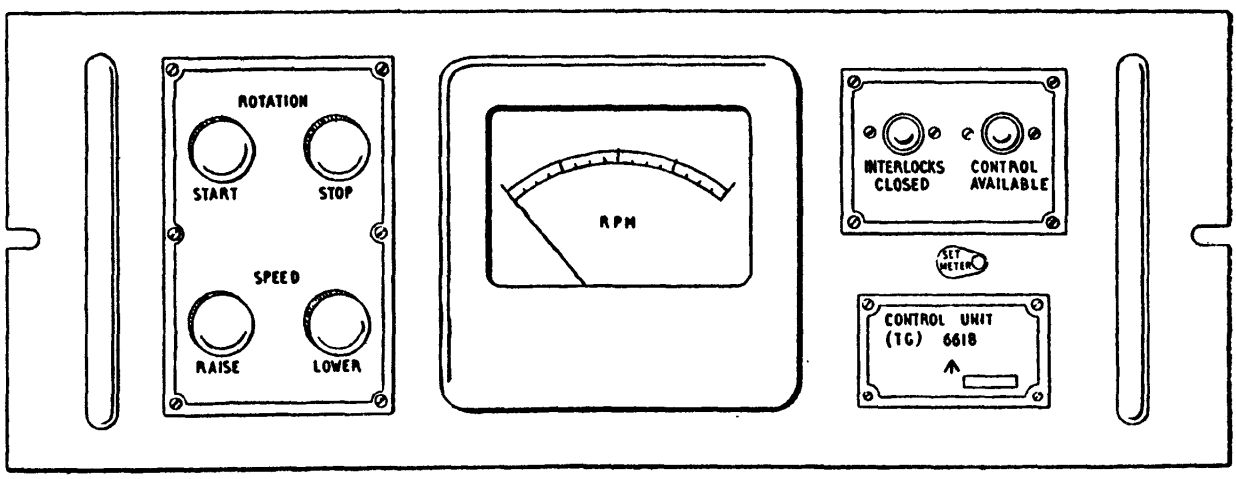


Fig. 1. Control unit 6618: front panel

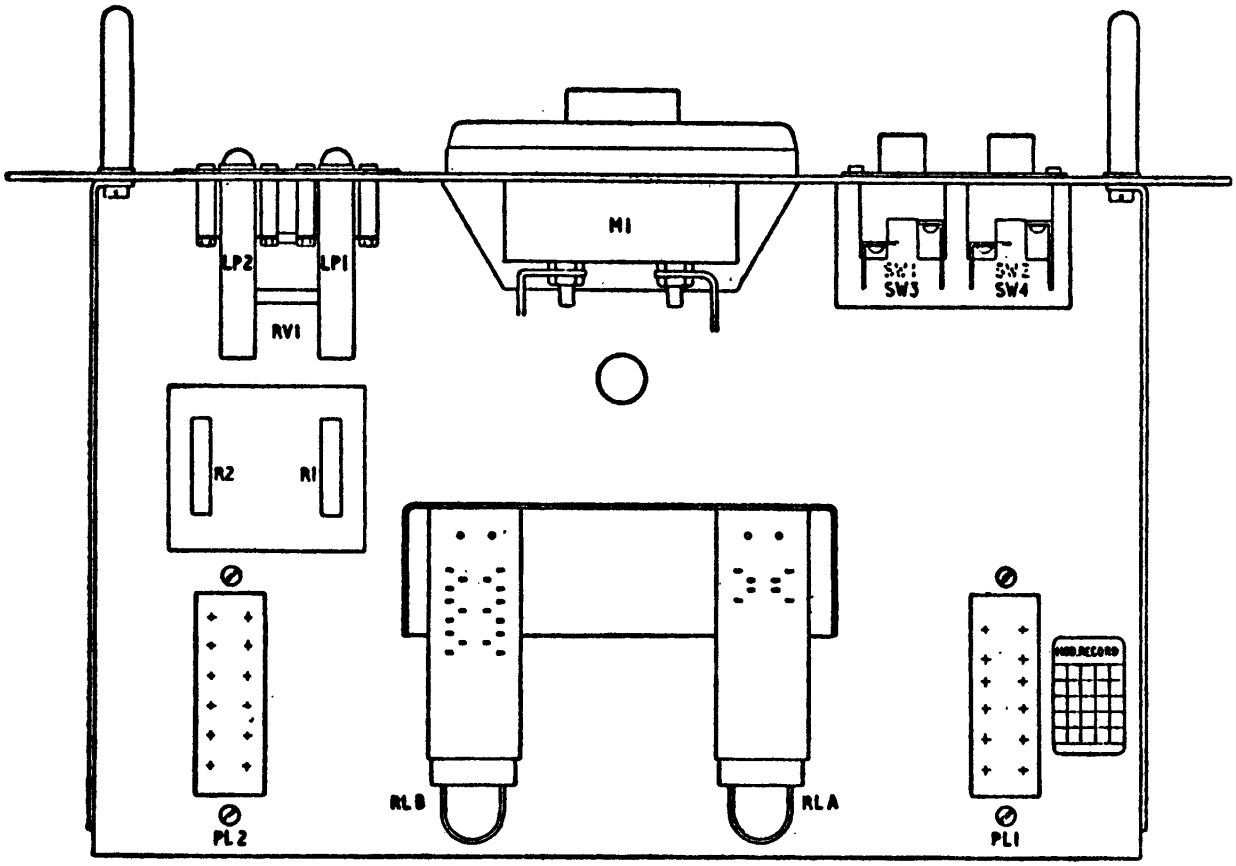


Fig. 2. Control unit 6618: top

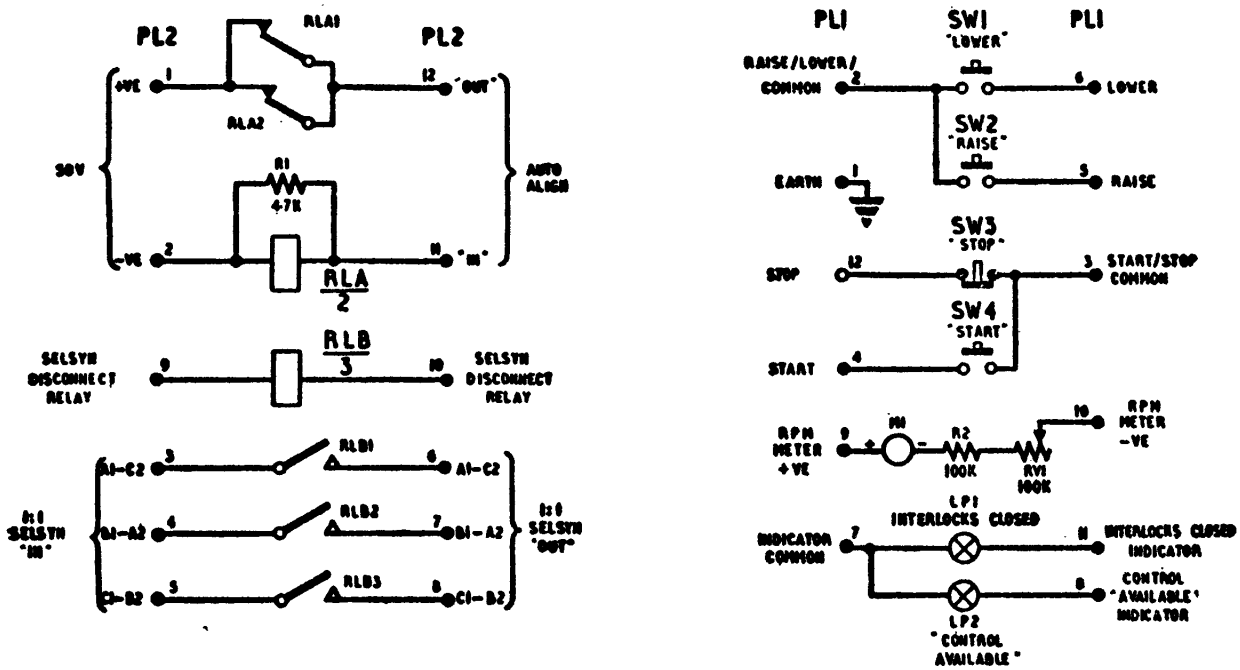


Fig. 3. Control unit 6618: circuit

TABLE 1

Services from plugs 1 and 2

Plug Pin	*Service*	*Site wiring ident.*	*T80 ident.*	*Plug Pin*	*Service*	*Site wiring ident.*	*T80 ident.*
1/1	Earth			1/12	Stop	QC33-12	303T
1/2	Raise/Lower Common	QC33-11	301T	2/1	50V +ve (earthed)		
1/3	Start/Stop Common	QC33-2	304T	2/2	50V −ve		
1/4	Start	QC33-3	305T	2/3	1 : 1 Selsyn In A1-C2	QC12-3	170T
1/5	Raise speed	QC33-4	302T	2/4	,, ,, ,, B1-A2	QC12-4	171T
1/6	Lower speed	QC33-5	300T	2/5	,, ,, ,, C1-B2	QC12-5	172T
1/7	Indicators Common	QC33-6	307T	2/6	,, ,, Out A1-C2		
1/8	Control Available Indicator	QC33-7	306T	2/7	,, ,, ,, B1-A2		
				2/8	,, ,, ,, C1-B2		
1/9	R.p.m. meter +ve	QC33-8	310T	2/9	Selsyn disconnect relay		
1/10	R.p.m. meter −ve	QC33-9	309T	2/10	,, ,, ,,		
1/11	Interlocks closed Indicator	QC33-13	308T	2/11	Auto-align In	QC6-2	200T
				2/12	,, Out		

Auto-align relay

4. This relay, RLA, is operated when the auto-align switch on the Type 80 turntable is earthed, connecting PL2/11 to earth. Its contacts, which are normally closed, are in series with the auto-align relay in indicator, electrical 102. The operation of the system, whose main function is to indicate the bearing of a slave head when it is being synchronized with the master, is described in detail in A.P.2527E, Vol. 1 (*2nd Edn.*), Part 1, Sect. 5, Chap. 4.

Selsyn disconnect relay

5. The other relay, RLB, has three contacts, one for each selsyn stator connection. The relay is operated by the MASTER HEAD SELECTOR switch in switch unit 410A. This switch unit, which is described in Section 5, is installed in rack assemblies (I.G.) 311, 313 and 314. When the Type 80 head is selected as master, the relay is energized and the contacts closed. Positional information from the 1 : 1 repeat-back selsyn on the Type 80 turntable is then routed to the servo control circuits to keep the rotation of slave heads in step with Type 80. It should be noted that Type 80 cannot be a slave.

SECTION 8

SETTING-UP AND OPERATING

SECTION 8

SETTING-UP AND OPERATING

LIST OF CHAPTERS

Note.—*A list of contents appears at the beginning of each chapter*

1 Setting-up and operating

Chapter 1

SETTING-UP AND OPERATING

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Introduction

1. As mentioned in Section 1, Chapter 1, the rack assembly Type 165 forms part of the mobile radar operations room Type 1 (R.V.510, Mk.1). The employment of individual units of this IG (information generator) rack on static stations necessitates their incorporation in rack assemblies bearing other type numbers; details of the various rack assemblies involved are given in Section 1.

2. The setting-up and operating of the various IG units so disposed is naturally dependent upon the units with which they are associated, the type of radar head used and the operational requirements for the particular type of station.

3. In these circumstances, it has been considered advisable to allocate the setting-up and operating instructions for the IG units used on static applications to the documents specifically covering those applications.

4. The provisional setting-up instructions in the following paragraphs are given on a unit basis for those IG units on which setting-up information is available at the time of writing. Where the information contained herein conflicts with that given in the document of specific application, the latter constitutes the over-riding authority.

Use of test set Type 402

5. The test set Type 402 (AP.2527D) is wired into the rack assembly Type 165, its outputs being connected to the co-axial sockets SK45 to SK51 inclusive on the panel (signals outlet) Type 620. The sync. input connection is not brought out to the panel Type 620 since, in the mobile application, the test set Type 402 will normally be operated free-running, crystal-locked internally or locked to the 500 c/s supply.

6. The test set is used by making the required interconnections by jumper leads between the co-axial sockets on panel Type 620 and the co-axial sockets on the backs of the units being set up.

Note...

The sockets SK45 to SK51 on the panel Type 620 are wired in parallel with the sockets on the front panel of the test set Type 402. If required, therefore, the test set sockets may be used in preference.

Marker unit (range) Type 27

7. The oscillator should be set up and operation checked as follows:—

(1) On panel F at the right-hand side of the rack assembly, disconnect the normal sync. inputs from the aerial heads (SK1/19, 2/19 and 3/19).

(2) Using the video echo from the test set Type 402 to synchronize the marker unit, connect Sk50 on panel Type 620 to SK22, 25 and 28 on the same panel.

(3) Set the test set Type 402 sync. to 506 c/s.

(4) On monitoring unit Type 75, disconnect SK1 and connect the sync. output from the test set Type 402 to SK1.

(5) Connect the 5-mile marker output from test set Type 402 to SK4 on monitoring unit Type 75.

(6) On the monitoring unit Type 75 and all the marker units Type 27, turn the range controls to maximum.

(7) On the switch unit (monitoring) Type 296, set the MONITORING switch to position 5. the monitoring unit Type 75 should now display negative markers from the test set Type 402 and positive markers from the marker unit concerned.

(8) Adjust the delay control on the test set Type 402 until the first negative pip coincides with the first positive pip.

(9) Ensure that all markers coincide, re-tuning the oscillator in the marker unit if necessary; the strobe timebase should be used at extreme ends of the range to achieve the necessary accuracy.

(10) Check the 10-mile markers in a similar manner.

(11) Check that the marker units operate satisfactorily with a sync. p.r.f. of 253 c/s from the test set Type 402 and also with sync. from the aerial heads.

Note . . .

For static applications, the above setting-up should be effected with the trailing leads from the test rig, installation Type 6, connected directly to the sockets on the marker units.

Monitoring unit Type 75 and power unit Type 741

8. (1) Display 5-mile range marks from a marker unit Type 27 and check that the range of the main timebase is variable from about 40 miles to about 360 miles.

(2) Set up a 2V peak to-peak 50 c/s test signal, adjusting the pre-set control marked 2V ADJUSTMENT, on the power unit, to obtain a reading of 2V on the power unit panel test meter (switch position 13).

Radar signal channels

9. The amplifiers Types A.3679, A.3680 and A.3681 may be set up and their operation checked as follows :—

(1) On panel F at the right-hand side of rack assembly Type 165, disconnect the IF inputs from the aerial heads (SK1/21, 2/21 and 3/21).

(2) Connect the RF output from test set Type 402 i.e. SK51 on panel Type 620, to SK1 on the back of amplifiers Type A.3679 in turn.

(3) On panel F at the right-hand side of rack assembly Type 165, disconnect the normal sync. inputs from the aerial heads (SK1/19, 2/19 and 3/19).

(4) Connect the sync. output from test set Type 402 i.e. SK49 on panel Type 620 to SK22, 25 and 28 (channels 1, 2 and 3) on the same panel i.e. to the monitoring unit Type 75.

(5) On the switch unit (monitoring) Type 296, set the MONITORING switch to position 7 (2V TEST).

(6) On the monitoring unit Type 75, adjust the GAIN control to give a 1 in. deflection on the CRT.

(7) On the switch unit (monitoring) Type 296, set the MONITORING switch to position 6 (VIDEO).

(8) Set the controls of the test set Type 402 as follows :—

SYNC. FREQ. C/S	253 c/s (position 6)
RF MOD SELECTOR	BLOCKS 1μs PULSES, 50-300μs DURATION (position 3)
RF INT-EXT switch	INT position
INT. RF FREQ.	45 Mc/s
dB ATTENUATION	40 dB.

(9) Set the controls of the amplifier Type A.3680 as follows :—

VIDEO BIAS	Minimum (fully clockwise)
IF GAIN	To give 1 in. deflection on monitoring unit Type 75 throughout initial setting-up.

(10) Set the controls of the amplifier Type A.3681 as follows :—

AMP. LIMIT	Fully clockwise
BIAS	Fully clockwise.

(11) Switch the amplifier Type A.3679 into circuit, setting its GAIN control to maximum.

(12) Set the FREQUENCY control on the amplifier Type A.3679 for maximum response, and then re-set the GAIN control so that switching the amplifier in and out of circuit does not affect the signal amplitude i.e. the amplifier gain is unity.

Note . . .

All other anti-jamming controls should be switched out of circuit.

(13) Check the waveforms against those in fig. 1 of C.D.0475F, Vol.1, Part 2, Chapter 1.

Signal-to-noise ratio

10. (1) With the normal IF and sync. connections to the aerial heads, set the MONITORING switch on the switch unit (monitoring) Type 296, to position 7 (2V TEST).

(2) On the monitoring unit Type 75, adjust the GAIN control to give a 2 in. deflection on the CRT.

(3) On the switch unit Type 296, set the MONITORING switch to position 6 (VIDEO).

(4) With video outputs connected normally to the display consoles, adjust the VIDEO BIAS control on the amplifier Type A.3680 to give a 1½ in. deflection on the CRT.

(5) Adjust the IF GAIN control to give a ½ in. deflection for a signal-to-noise ratio of 3 to 1.

Note . . .

If the GAIN control on the monitoring unit Type 75 is set too high, the signals will be limited in the monitor amplifier.

(6) Set up the amplifier Type A.3679 as detailed in the foregoing operations, using a good PE (permanent echo) or steady target.

Note . . .

For static applications, connections should be made directly between the test rig, installation Type 6, trailing leads and sockets on the individual units. 2V test signals are obtained from X9 on the front panel of the monitoring unit. Video is taken from X5, X6 or X7 on the front panels of the amplifiers Type A.3680.

Marker unit (azimuth) type 26

Setting up auto-align system

11. This marker unit consists of two identical channels and the following setting-up procedure will apply for either one :—

Note . . .

When setting-up, a test set (selsyn) Type 406 or the driving selsyn in a radar Type 14 may be used to drive the marker unit. If the driving selsyn is used, the auto-aligning connection from the aerial vehicle must be disconnected.

(1) Ensure that all supplies are switched off or disconnected.

(2) Connect a test meter Type D1 across the auto-aligning contacts S1.

(3) Adjust the position of the switch assembly relative to the cam so that the cam closes the switch contacts for 5 deg. of cam rotation.

Note . . .

This can be measured by observing the position of the slots on the interruptor disc at the extreme points of contact of the switch. The 120 deg. separation of the slots corresponds to 10 deg. of the cam so that half the distance between any two slots corresponds to the required 5 deg.

(4) Secure the switch assembly on the chassis base plate.

(5) Loosen the grub screws on both the cam disc and the slotted disc.

(6) Connect selsyn supplies causing the selsyn to rotate.

(7) Short-circuit the cam switch contacts S1 and switch on the 50V DC supply. RL1 should now be energized and the selsyn will lock in the nearest stable position.

(8) Rotate the cam disc on its shaft to the point at which the cam closes the contacts. The cam disc must be secured to its shaft at the mid-point of the arc of contact of the cam switch. The setting can be checked by taking a reference point on the chassis, marking the periphery of the slotted disc at extreme points of contact of the cam switch (sub. para. (3)) and then marking a further point where the selsyn locks. The last mark should be half-way between the first two.

(9) De-energize RL1 by removing the short circuit from the cam contacts and switching off the 50V DC supply. The selsyn should now rotate.

(10) Switch on the 50V DC supply when the cam contacts have just passed the engaged position and check that the selsyn locks firmly during the next contact period.

(11) Switch off the 50V DC ; the selsyn should pick up and continue to rotate.

Note . . .

The tests described in operations (9), (10) and (11) should be made at selsyn speeds up to 180 r.p.m. corresponding to aerial speeds up to 6 r.p.m.

(12) Repeat operations (9), (10) and (11) with the selsyn rotating in the reverse direction and check that the selsyn locks and picks up smoothly in both directions.

(13) Check that the auto-align system works smoothly in conjunction with an aerial vehicle, the auto-align connection to the aerial being made. Once the selsyns have synchronized, RL1 should no longer energize.

Alignment of light beam

12. (1) Remove the base of the photo-electric cell housing.

(2) Close the contacts S1, thus lighting the lamp.

(3) With the selsyn held in the locked position (sub para 7 of para. 11), rotate the slotted disc on its shaft to the position which enables the maximum light to pass through a slot ; this can be observed by looking into the cell housing. Secure the disc in this position by the grub screws provided.

(4) Repeat operations (9) to (12) inclusive of para. 11, checking that the maximum amount of light passes through a slot when when the selsyn locks.

Note . . .

The photo-electric cells CV2132 must not be continuously exposed to a source of light.

SECTION 2

AMPLIFIERS AND AMPLIFYING UNITS

SECTION 9

PACKAGING, ASSEMBLING AND DISMANTLING

LIST OF CHAPTERS

Note.—*A list of contents appears at the beginning of each chapter*

1. Packaging, assembling and dismantling (*to be issued later*)

PART 2

TECHNICAL INFORMATION

PART 2

TECHNICAL INFORMATION

LIST OF CHAPTERS

Note.—*A detailed list of contents appears at the beginning of each chapter*

1 Rack assembly Type 165, servicing

Chapter 1

RACK ASSEMBLY TYPE 165

SERVICING

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Note...

The information given in this Chapter was prepared from prototype equipment. It is issued as a guide to servicing action pending the preparation of a finalized system based upon actual working experience.

DISMANTLING

1. Provision is not made for servicing the units of the rack assembly Type 165 *in situ* and, in consequence, units must be removed from the if rack attention is necessary.

2. To remove a unit :—

(1) Switch off the unit concerned.

(2) Unscrew the dome nuts (*fig.* 1) holding the foot of the front panel.

(3) Turn off the main gate switch at the back of the rack (*fig.* 2) ; all power is switched off the rack by the main gate switch.

(4) Remove the appropriate rear cover from the rack ; the cover cannot be removed unless the gate switch is off.

(5) Remove the plugs and sockets from the rear of the unit.

(6) Disengage the retaining catch (*fig.* 1 *and* 2) from the bottom flange on the rear of the chassis of the unit, and push the unit forward a few inches to prevent the catch from returning to its hold position.

(7) Withdraw the unit through and out of the rack from the front.

3. The connection panels at the top right-hand front of the rack and the right-side connection panels are permanently connected in the wiring of the rack and normally they will not require to be withdrawn for servicing. Access to the connections on the rear of the panels is possible if the rear cover is removed from the rack, and if necessary, the

adjacent units are also removed. The rack with all detachable units removed is shown in fig. 3.

SETTING UP

Marker unit (range) Type 27

4. To set up and check the range mark generators :—

(1) Disconnect the normal sync. inputs from th. aerial heads by removing the plugs from SK1/19, SK2/19, and SK3/19, on the right-hand side connection panel (Panel F, fig. 4).

(2) Connect SK50 on the signals outlet panel Type 620 (Panel D) to SK22 on the same panel; this connects the video echo output of the test set Type 402 to the sync. input circuit of the first marker generator (Panel O).

(3) Set the test set Type 402 sync. selector switch (SYNC. FREQ. c/s) to the 506 c/s position.

(4) Remove the right-hand rear cover from the rack to give access to the backs of the monitoring unit Type 75 and the test set Type 402.

(5) Disconnect the sync. input plug from SK1 on the rear of the monitor, and the sync. output plug from SK21 on the rear of the test set.

(6) Connect SK1 on the monitor to SK21 on the test set; this puts the test set sync. into the monitor.

(7) Connect the 5 MILE output socket on the front of the test set to the SIGNAL INPUT socket on the front of the monitor; this connects the test set 5-mile markers to the monitor CRT Y2-plate.

(8) Turn the MONITORING switch on the switch unit (monitor) Type 296 (Panel I) to position 5 and the CHANNELS switch to 1; this puts the 5-mile output of the first marker generator on to the monitor CRT Y1-plate through the internal amplifier.

(9) Turn the range controls on the marker generator to maximum.

(10) Turn the RANGE and GAIN controls on the monitor to maximum and set the STROBE switch to OFF.

(11) Replace the rear cover and switch on the gate switch and the units.

(12) Adjust the 5M AMP control on marker generator and the 5 MILE AMPLITUDE control on the test set for similar amplitudes of the positive and negative pulses respectively on the monitor display.

(13) Set the DELAY controls on the test set for the first positive marker to coincide with the negative marker at the beginning of the trace.

(14) Check the coincidence of the markers along the length of the monitor trace.

(15) Vary the RANGE control on the marker generator and check that the coincidence remains the same.

(16) If the markers do not line up :—

(*a*) Adjust the oscillator trimmer in the marker generator (C13) for approximate coincidence.

(*b*) Re-adjust the test set DELAY controls for coincidence at the beginning of the trace.

(*c*) Set the monitor STROBE switch to ON and the STROBE RANGE control to display the extreme end of the pulse train from the marker unit.

(*d*) Adjust C13 carefully for exact coincidence of the markers.

(*e*) Set the STROBE RANGE control to display the beginning of the pulse train.

(*f*) Use the test set DELAY controls to reset for coincidence.

(*g*) Repeat (*c*), (*d*), (*e*), and (*f*), until exact coincidence is obtained at both ends of the pulse train.

(17) Set the MONITORING switch on the switch unit (mon) Type 296 to position 4 to display the 10-mile markers from the marker generator.

(18) Transfer the plug on the front panel of the test set from the 5 MILE socket to the 10 MILE socket.

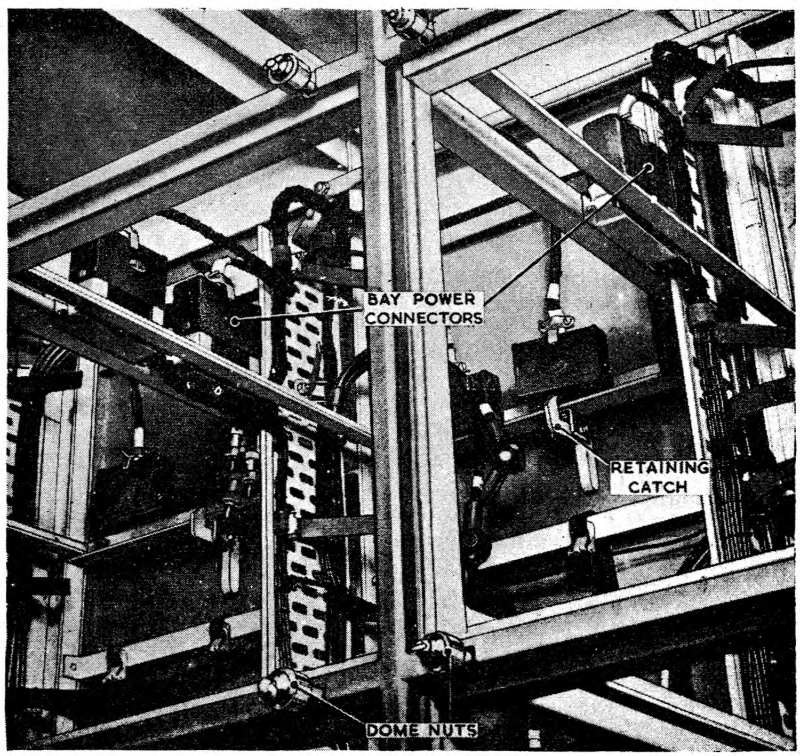


Fig. 1. Rack assembly Type 165—front detail

(19) Check that the 10-mile markers are coincident over their full range ; it should not be necessary to alter the setting of the oscillator control C13.

(20) Transfer the connection on Panel D to couple SK50 to SK25 ; this connects the video echo output of the test set into the sync. input circuit of the second marker generator Panel S.

(21) Turn the MONITORING switch on the switch unit to position 5 (5-mile) and the CHANNELS switch to position 2.

(22) Transfer the front panel connection on the test set from the 10 MILE socket to the 5 MILE socket.

(23) Repeat operations (9) to (19) inclusive on the second marker generator (Panel S).

(24) Transfer the connection on Panel D to couple SK50 to SK28 ; this connects the video echo output into the sync. input circuit of the third marker generator, Panel T.

(25) Turn the MONITORING switch on the switch unit to position 5, and the CHANNELS switch to position 3.

(26) Transfer the front panel connection on the test set from the 10 MILE socket to the 5 MILE socket.

(27) Repeat operations (9) to (19) inclusive on the third marker generator (Panel T).

5. Further check the operation of the marker generators as follows :—

(1) Set the test set sync. selector switch to 253 c/s.

(2) Check each marker generator in turn for the production and coincidence of both 5- and 10-mile markers.

(3) Connect up the aerial heads on Panel F and check for satisfactory operation with the normal sync.

Radar signal channels

6. The radar signal channels consist of the amplifiers (N.B.W.) Type A.3679, (IF and VID) Type A.3680, and (AJ and VID) Type A.3681. Three channels are provided by three each of amplifiers A.3679 and A.3680, and two of amplifier A.3681. Two channels are provided in each A.3681 so the second channel in the second unit is spare.

7. The first channel uses A.3679, Panel M ; A.3680, Panel N ; and channel 1 of A.3681, Panel U. The second channel uses A.3679, Panel Y ; A.3680, Panel Q ; and channel 2 of A.3681, Panel U. The third channel uses A.3679, Panel Z ; A.3680, Panel R ; and channel 1 of A.3681, Panel V.

8. To set up and test the first channel :—

(1) Remove the aerial head IF connection from SK1/21 on Panel F.

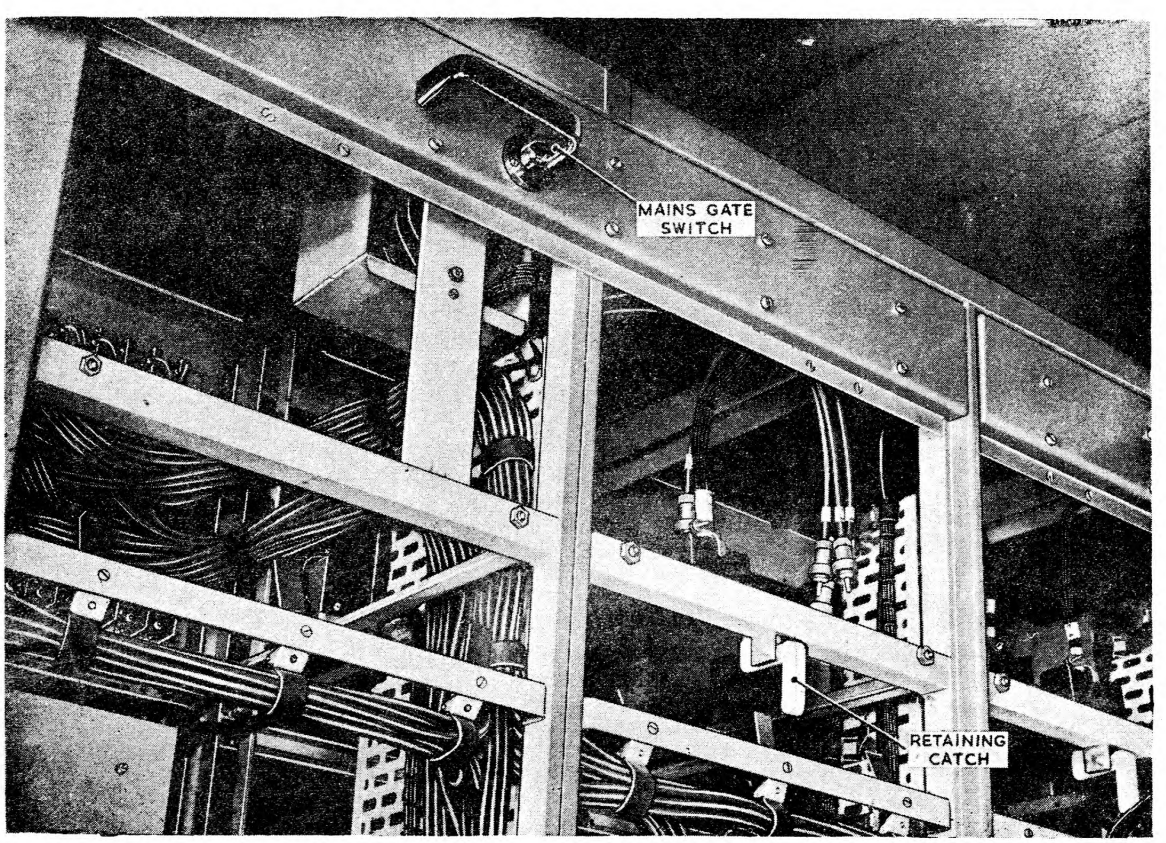


Fig. 2. Rack assembly Type 165—rear detail

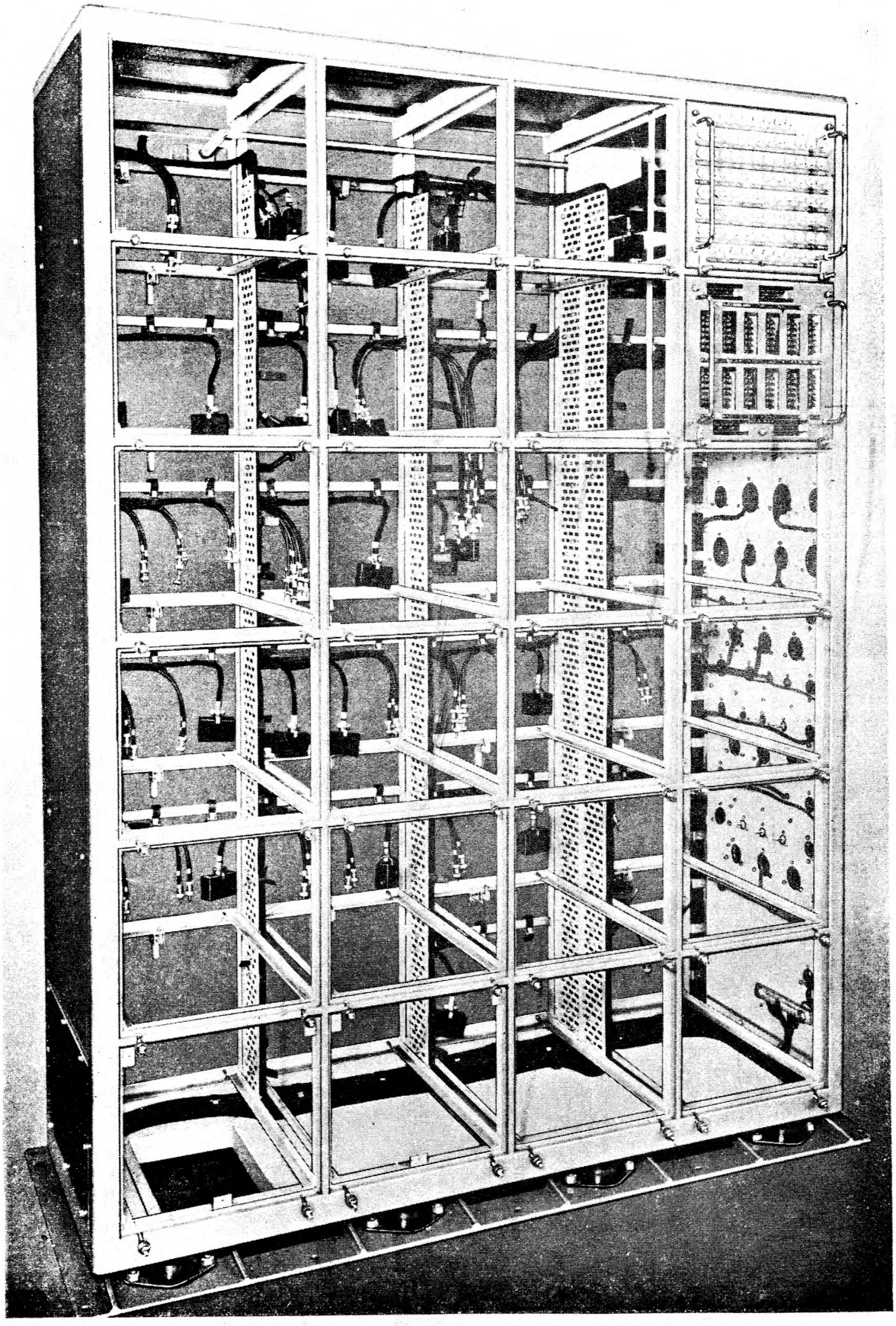


Fig. 3. Rack assembly Type 165—main units removed

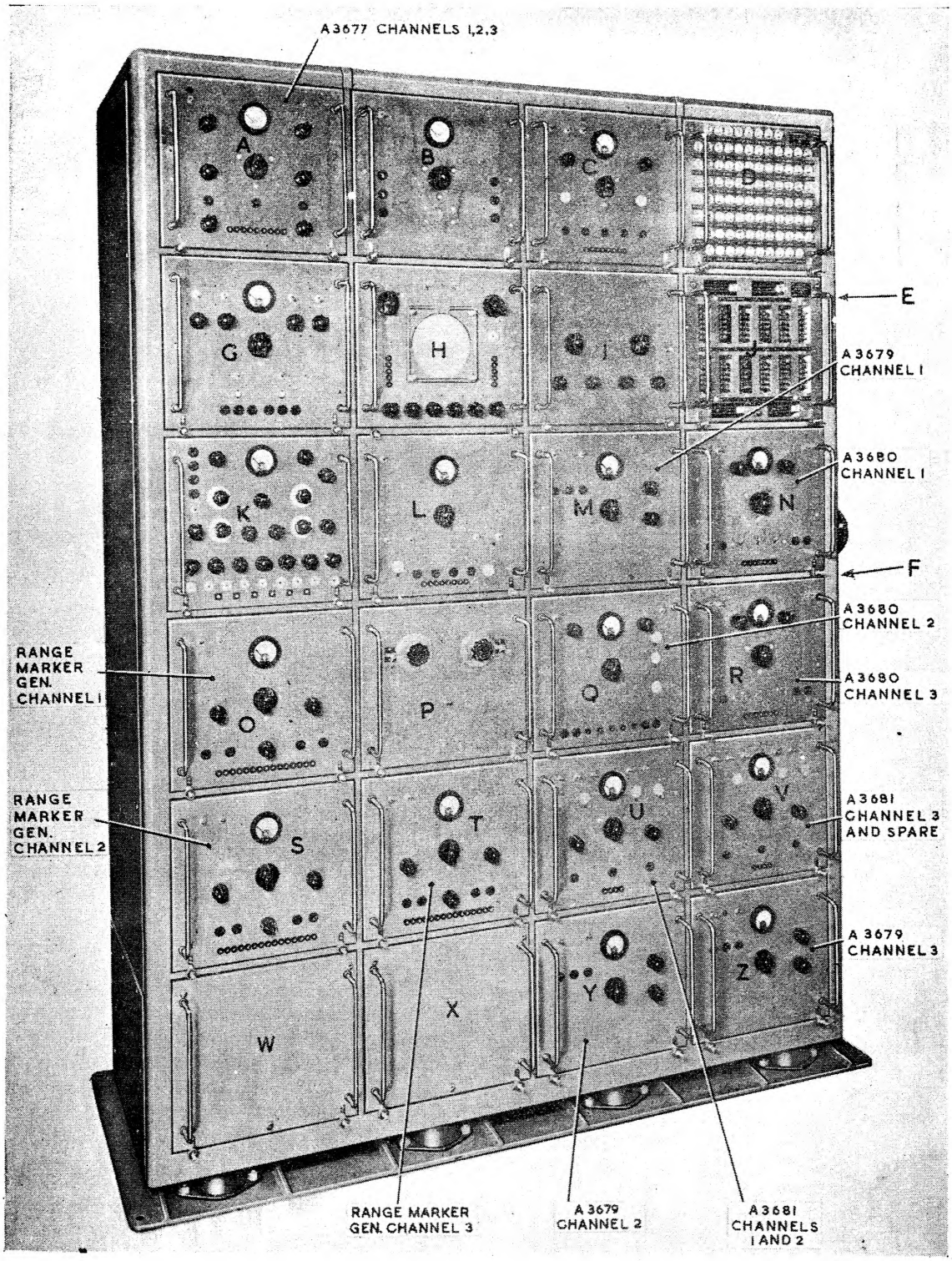


Fig. 4. Rack assembly Type 165—channel identification

(2) Switch off the main gate switch and remove the rear covers.

(3) Connect SK17 on the rear of the test set Type 402 to SK1 on the rear of A.3679, Panel M.

(4) Replace the rear covers and switch on the gate switch.

(5) Remove the aerial head sync. connection from SK1/19 on panel F.

(6) Connect SK49 on Panel D (sync. out from test set) to SK22 on Panel D (channel 1 sync. to monitor).

(7) Set the MONITORING switch on the switch unit to position 7 (2V TEST).

(8) Adjust the GAIN control on the monitor for the 2V test voltage to produce a 1 in. peak-to-peak deflection on the CRT.

(9) Set the MONITORING switch on the switch unit to position 6 (VIDEO) and the CHANNELS switch to channel 1.

(10) Set up the test set Type 402 as follows :—

(*a*) Set the sync. selector switch to the 253 c/s position.

(*b*) Set the RF MOD SELECTOR switch to the third position, BLOCKS 1 μs PULSES, etc.

(*c*) Set the RF FREQUENCY control to 45 Mc/s.

(*d*) Set the RF attenuator to 40 dB.

(11) Set the A.3680 VIDEO BIAS control fully clockwise to minimum, and the IF GAIN control for a 1 in. deflection on the monitor CRT.

(12) Set the A.3681 presets AMP LIMIT 1 and BIAS 1 fully clockwise.

(13) Switch the N.B.W. amplifier (A.3679) into circuit.

(14) Set the A.3679 GAIN CONTROL to maximum.

(15) Adjust the A.3679 FREQUENCY CONTROL for maximum response.

(16) Adjust the GAIN CONTROL so that the deflection on the monitor CRT remains the same when the N.B.W. amplifier is switched in and out of circuit.

(17) Check that with operation of the anti-jamming controls the display on the CRT appears as in fig. 5.

9. To set up the signal-to-noise ratio on the first channel :—

(1) Replace the aerial head IF and sync. connections on Panel F.

(2) Set the MONITORING switch on the switch unit to position 7 (2V TEST).

(3) Adjust the GAIN control on the monitor for the 2V test voltage to produce a 2 in. peak-to-peak deflection on the CRT.

(4) Set the MONITORING switch to position 6 (VIDEO).

(5) Switch off the gate switch and remove the rear covers.

(6) Remove the test set connection from SK1 on the rear of the A.3679 and re-connect the normal input.

(7) Replace the covers and switch on the gate switch.

(8) Adjust the VIDEO BIAS control on the A.3680 for a $1\frac{1}{2}$ in. deflection on the CRT.

(9) Adjust the IF GAIN control on the A.3680 for $\frac{1}{2}$ in. deflection ; this gives a signal-to-noise ratio of 3-to-1.

(10) Check that on normal signals the gain level remains the same with the N.B.W. amplifier in or out of circuit.

10. Repeat the operations of para. 8 and 9 on the second and third channels in turn as follows:—

(1) For the second channel :—

(*a*) Remove the aerial head connection for SK2/21 on Panel F.

(*b*) Connect SK17 on the rear of the test set to SK1 on the rear of A.3679, Panel Y.

(*c*) Remove the aerial head sync. connection from SK2/19 on Panel F.

(*d*) Connect SK49 on Panel D to SK25.

(*e*) Set the CHANNELS switch on the switch unit to position 2.

(*f*) Proceed with the tests as for channel 1.

(2) For the third channel :—

(*a*) Remove the aerial head connection from SK3/21 on Panel F.

(*b*) Connect SK17 on the rear of the test set to SK1 on the rear of A.3679, Panel Z.

(*c*) Remove the aerial head sync. connection from SK3/19 on Panel F.

(*d*) Connect SK49 on Panel D to SK28

(*e*) Set the CHANNELS switch on the switch unit to position 3.

(*f*) Proceed with the tests as for channel 1.

Multivibrator unit Type 52

11. To lock the frequency of the multivibrator Type 52 (Panel C) to the 500 c/s mains supply :—

(1) Connect SK49 (test set sync.) on Panel D to SK22 (channel 1 sync. input to monitoring unit).

(2) Check that the switch unit is set to channel 1.

(3) Connect the front panel SIGNAL INPUT point on the monitor to the test point X1 on the front of the multivibrator unit.

(4) Set the test set sync. selector to 500 c/s.

(5) Adjust the monitor unit RANGE control for maximum range.

(6) Switch on both mains supplies (230V 50 c/s and 180V 500 c/s) on the multivibrator unit.

(7) Set the PRF switch on the multivibrator unit to 500 c/s.

(8) Adjust the PRF FINE control for a locked square wave to appear on the monitor CRT.

(9) Set the PRF switch to 250 c/s.

(10) Check that the square wave halves in frequency but remains locked.

(11) Turn the PHASING control over its full range and note that the position of the square wave on the trace is affected but no change in shape or stability results.

Azimuth markers

12. The azimuth markers are generated in marker unit (azimuth) Type 26 (Panel P) and shaped and amplified in the amplifier (AZ Mk.) Type A.3678 (Panel L). There are two azimuth marker channels provided by duplicate circuits in each unit.

13. Setting up is carried out with either a Selsyn simulator (test set (Selsyn)) Type 406 or the normal drive from the radar head. When the radar head drive is used the auto-aligning circuit from the aerial vehicle must be disconnected.

14. To set up the auto-aligning system on any channel :—

(1) Check that all supplies are switched off.

(2) Connect a testmeter set to measure OHMS across the auto-align contacts, S1, of the marker unit (azimuth).

(3) Adjust the position of the switch assembly relative to the cam such that the cam closes the switch contacts for 5 deg. rotation of the cam. The rotation can be estimated by observing the position of the slots on the interceptor disc at the extreme points of contact of the switch ; the 120 deg. separation of the slots corresponds to a 10 deg. movement of the cam, hence a rotation through half the distance between slots corresponds to the required 5 deg.

(4) Secure the switch assembly to the base plate.

(5) Loosen the grub screws on both cam disc and slotted disc.

(6) Apply Selsyn drive to PL3.

(7) Short out the contacts of S1, and switch on the 50V DC supply (to energize relay 1 which opens two lines to the Selsyn and locks it).

(8) Rotate the cam disc on its shaft to the point where the cam causes the contacts to close.

(9) Secure the cam disc to its shaft at the mid-point of the arc of contact of the cam switch. This point can be checked by taking a reference point on the chassis, marking the periphery of the slotted disc at extreme points of contact of the cam switch, then marking a further point where the Selsyn locks ; the last mark should be half-way between the first two.

(10) De-energize RL1 by removing the short and switching out the 50V DC supply ; the Selsyn should rotate.

(11) Switch on the DC supply and note that as the cam closes S1 the Selsyn locks firmly and remains so.

(12) Switch out the DC supply and check that the Selsyn continues to rotate.

(13) Adjust the Selsyn input drive for rotation in the reverse direction and repeat (10), (11), and (12).

(14) Check that the system works smoothly with the radar head drive, and that with the auto-align circuit connected the Selsyn will pick up synchronism and rotate smoothly.

15. To align the light beam :—

(1) Remove the base of the photo-electric cell housing.

(2) Switch on the mains supply to illuminate the lamp.

(3) Short S1 and switch on the DC supply so that the relay is energized and the Selsyn locks.

(4) Rotate the slotted disc on its shaft to a position where maximum light passes through a slot, as seen by looking into the cell housing.

(5) Secure the disc in this position by means of the grub screws.

(6) Repeat para. 10 to 13, and note that maximum light passes through a slot when the Selsyn locks.

WARNING

The photo-electric cells must not be exposed continuously to a source of light.

Monitoring unit Type 75

16. To set up the monitoring unit Type 75 :—

(1) Set the switch unit (monitor) to position 5 so that 5-mile range marks from the marker generator are displayed on the monitoring unit.

(2) Set the monitor STROBE switch to OFF.

(3) Check that operation of the RANGE contro on the monitor varies the timebase over the range from 40 miles to about 360 miles.

(4) Set the STROBE switch to ON.

(5) Adjust the preset RV2 (STROBE BRILL WIDTH for even illumination of the strobe trace.

(6) Set the STROBE switch to OFF and note that the strobed section of the main trace is brightened over a range of about 10 miles.

17. Set up the 2V test signal as follows :—

(1) Set the monitoring switch on the power unit Type 741 to position 13.

(2) Adjust the 2V ADJUSTMENT for a reading of 2 on the monitor meter.

SERVICING

18. The state of the equipment can be assessed from a study of the waveforms as at the monitor points brought out to banana sockets on the fronts of most of the units, and from the readings of the monitor meters. The correct monitor pictures are shown in Fig. 6 to 13 ; the monitor meter readings are given in the tables below. Unless otherwise stated, meter readings should be within plus or minus 10 per cent. of the figures quoted.

TABLE 1

Meter readings—multivibrator unit Type 52

(taken with multivibrator locked to 500 c/s mains)

Switch position	Circuit	Reading	Remarks
1	V2 cathode	0·3 to 0·6	
2	V3 cathode	0·55 to 0·85	
3	V4 cathode	0·55 to 0·85	
4	V5 cathode	1·6	± 20 per cent.
5	V6 cathode	0·0	0·35 to 0·65 with SK7 unterminated
6	V7 cathode	2·5	± 20 per cent.
7	V9 cathode	0·55 to 0·85	
8	V11 cathode	0·55 to 0·85	
9	V12 cathode	0·55 to 0·85	
10			
11	V13 cathode	3·35	± 20 per cent.
12	V14 cathode	3·35	
13			
14	V15 cathode	0·5 to 0·8	
15	HT+1	3·2	± 10 per cent.
16			
17	HT+2	3·55	± 10 per cent.

TABLE 2

Meter readings—rectifier unit Type 15

Switch position	Circuit	Reading	Remarks
1	AC input	2·3	No load and full load
2	DC supply (1)	3·2	No load
		2·4	Full load
3	DC supply (2)	3·2	No load
		2·4	Full load
4			
5	DC load current (1)	0·0	No load
		4·0	Full load
6			
7	DC load current (2)	0·0	No load
		4·0	Full load

TABLE 3

Meter readings—amplifier (az mk) Type A.3678

(no input signal)

Switch position	Circuit	Reading	Remarks
1	V1 cathode	0·6	
2	V2 cathode	0·8	
3	V3 cathode	0 to 0·2	RV1 varied
4	V4 cathode	0 to 0·2	RV1 varied
5	V7 cathode	0·6	
6	V8 cathode	0·8	
7	V9 cathode	0 to 0·2	RV2 varied
8	V10 cathode	0 to 0·2	RV2 varied
9	HT + (A)	3·3	
10	HT + (B)	3·4	
11	HT − (C)	3·8	

TABLE 4

Meter readings—marker unit (range) Type 27

(all controls fully clockwise)

Switch position	Circuit	Reading	Remarks
1	V1 cathode	0·5 to 0·8	
2	V2 cathode	2·2	± 20 %
3	V3 cathode	0·25 to 0·55	
4	V5 cathode	0·35 to 0·65	
5	V6 cathode	0·75 to 1·2	
6	V8 cathode	0·2	Maximum reading
7	V10 cathode	1·4	± 20 %
8	V12 cathode	2·1	
9	V13 cathode	2·0	
10	V16 cathode	0·2	Maximum reading
11	V17 cathode	1·35	± 20 %
12	V18 cathode	0·2	Maximum reading
13	V19 cathode	1·35	± 20 %
14	V20 cathode	0·1	Nominal deflection
15	V21 cathode	0·1	
16	V22 cathode	0·1	
17	V23 cathode	0·1	
18			
19	HT+	3·0	± 10 %
20			
21	HT−	3·25	

TABLE 5

Meter readings—amplifier (AJ and VID) Type A.3681

Switch position	Circuit	Reading	Remarks
1			
2	V2 cathode	1·4	± 20 %
3	V3 cathode	3·1	
4	V4 cathode	1·6	
5	V2A cathode	1·4	
6	V3A cathode	3·1	
7	V4A cathode	1·6	
8			
9	HT1	3·5	± 10 %
10	HT2	3·4	

TABLE 6

Meter readings—amplifier (IF and VID) Type A.3680

Switch position	Circuit	Reading	Remarks
1	HT +	3·4	± 10 %
2	V10 cathode	0·5 to 1·0	
3	V12 cathode	0·25	Maximum reading
4	HT − (330V)	3·7	± 10 %
5	HT − (160V)	1·05	± 20 %
6	HT + (140V)	1·35	
7	V14 cathode	1·0	
8	V19 cathode	1·1	
10	V20 cathode	0·1 to 0·5	
11	V21 cathode	0·1 to 0·5	
12	V22 cathode	0·1 to 0·5	

TABLE 7

Meter readings—amplifier (NBW) Type A.3679
(all controls fully clockwise)

Switch position	Circuit	Reading	Remarks
1	V1 cathode	2·2	± 20 %
2	V2 cathode	0·9	± 30 %
3	V3 cathode	1·6	± 20 %
4	V4 cathode	0·375	
5	V5 cathode	1·3	
6	V6 cathode	1·15	
7	V7 cathode	1·2	
8	V8 cathode	0·4	± 25 %
9	HT + 1	2·85	± 15 %
10	HT + 2	3·6	± 10 %

TABLE 8

Meter readings—amplifier (IFF) Type A.3677
(SK2, SK4, and SK6 terminated normally)

Switch position	Circuit	Reading	Remarks
1	V2 anode	0·0 to 0·6	RV4 varied
2	V3 anode	0·0 to 0·5	RV4 varied
3	V4 anode	2·7	± 15 %
4	V6 anode	0·0 to 0·6	RV5 varied
5	V7 anode	0·0 to 0·5	RV5 varied
6	V8 anode	2·7	± 15 %
7	V10 anode	0·0 to 0·6	RV6 varied
8	V11 anode	0·0 to 0·5	RV6 varied
9	V12 anode	2·7	± 15 %
10	HT+	2·45	± 10 %

Note.—*The readings need not reach the limits specified in Table 8 but they should not exceed them.*

TABLE 9

Meter readings—power unit Type 741
(positions 1 to 10 show conditions in the monitoring unit Type 75)

Switch position	Circuit	Reading	Remarks
1	V1 cathode	0·55 to 0·85	
2	V2, V4, cathode	1·6	± 20 per cent.
3	V5 cathode	0·6 to 0·9	
4	V7 cathode	0·4 to 0·7	
5	V9 cathode	0·4 to 0·7	
6	V10 cathode	0·3 to 0·6	
7	V11 cathode	1·55	± 20 per cent.
8	V12 cathode	3·2	± 20 per cent.
9			
10	V13 anode	1·05	± 20 per cent.
11			
12	HT + (330V)	3·3	± 20 per cent.
13	2V test	1·55	± 20 per cent.
14	HT — (300V)	3·1	± 20 per cent.
15	EHT — (2,500V)	3·1	± 20 per cent.

Note.—*All the readings given in Table 9 are obtained with the* RANGE, STROBE RANGE *and* GAIN *controls, on the monitoring unit Type 75, set fully clockwise. On the same unit, the* STROBE *switch should be in the* OFF *position and the* X SHIFT *set to obtain the maximum length of trace. The sync pulse is applied at a p.r.f. of 500.*

Appendix 1

WAVEFORM GENERATOR (ANTI-SEA CLUTTER) TYPE 104

LIST OF CONTENTS

	Para.		Para.
Setting-up	1	Servicing	3

ILLUSTRATION

	Fig.
Waveforms	1

SETTING-UP

1. Examine the monitor PPI for signs of wave clutter. If close range target echoes are obscured, set the ANTI-CLUTTER switch to IN and turn the FINE DIFF. CONTROL, WIDTH CONTROL and AMPLITUDE CONTROL fully clockwise. Set the COARSE DIFF. CONTROL to the position at which the wave clutter is removed. If the clutter cannot be completely removed by the coarse control, the other front panel controls should be adjusted as follows.

2. The range of the anti-clutter waveform is reduced by turning the WIDTH CONTROL counter-clockwise. Over-cancellation throughout the clutter area is rectified by reducing the amplitude of the anti-clutter waveform, i.e., by turning the AMPLITUDE CONTROL counter-clockwise. Over-cancellation at the beginning of the timebase is rectified by turning the FINE DIFF. CONTROL counter-clockwise.

SERVICING

3. The correct meter readings, together with the tolerances allowed, are given in Table 1. These readings are taken with the COARSE DIFF. CONTROL, FINE DIFF. CONTROL and AMPLITUDE CONTROL set fully clockwise. If the HT reading is outside the limits quoted in Table 1, the HT ADJ. control is adjusted before other meter readings are taken.

4. Six monitoring points (X1 to X6) are provided. The correct monitor pictures for the more common positions of the front panel controls are shown in fig. 1. Other tests which may be made are :—

(1) Monitor the waveform at test point X1 and check that the HT ripple does not exceed 35 mV peak-to-peak.

(2) Set the FINE DIFF. CONTROL fully clockwise. Monitor the waveform at test point X4 and check that the degree of differentiation decreases perceptibly as the COARSE DIFF. CONTROL is rotated from position 1 to position 10.

(3) Monitor the waveform at test point X5 and check that the amplitude decreases to zero when the FINE DIFF. CONTROL is turned fully counter-clockwise. Return the control to its fully clockwise position.

(4) Monitor the waveform at test point X6. Check that the output is removed when the ANTI-CLUTTER switch is set to OUT.

TABLE 1

Meter readings

Switch position	Reading Max.	Min.
HT	2·85	2·55
V8	0·6	0·4
V9	0·12	0·08
V10	1·1	0·9

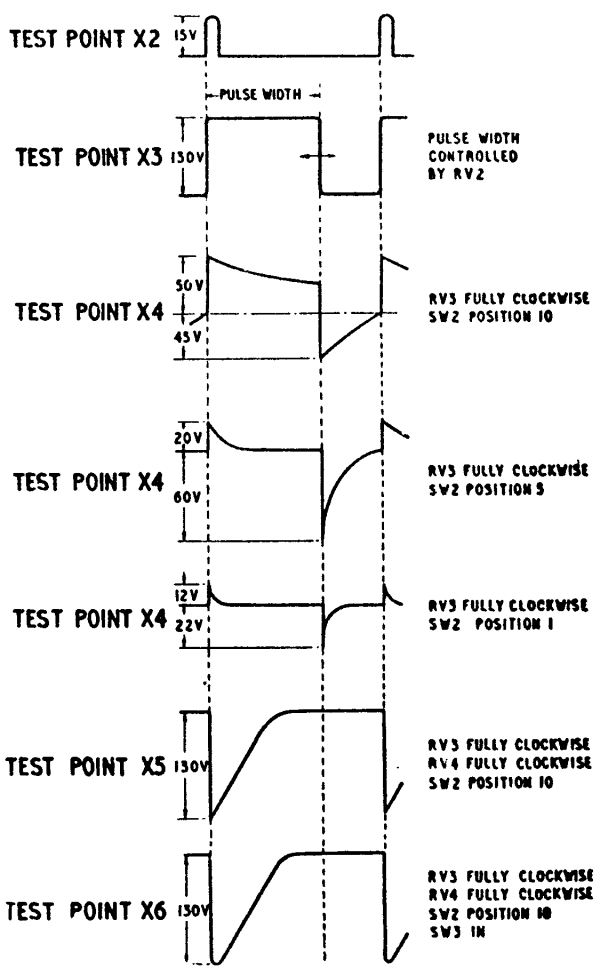


Fig. 1. Waveforms

PART 3

FAULT DIAGNOSIS

No IFF video at SK2 with IF at SK3

19. (1) Check that IFF video is reaching SK1 (at the rear of the amplifier chassis).

(2) Check V5 and V6.

(3) Check whether relay RLB is operating; this relay is energized via Jones plug PL1 (pins 3 and 9).

No output at both SK2 and SK3

20. (1) Check Jones plug PL1 and its mating socket.

(2) Check fuses F1, F2 and F3 (on the front panel).

(3) Check F4, the thermal cut-out, which is mounted on the mains input transformer T1.

(4) Check the rectifier V1.

Amplifier unit (pulse splitter) Type 300

No output on one channel only

21. If there is no output at sockets SK3 to SK8 inclusive, although output is available at sockets SK10 to SK15 inclusive, the following actions should be taken :—

(1) Check that the trigger pulse is reaching SK2.

(2) Check V4.

22. If there is no output at sockets SK10 to SK15 inclusive, although output is available at sockets SK3 to SK8 inclusive, the following actions should be taken :—

(1) Check that the trigger pulse is reaching SK9.

(2) Check V12.

No output on both channels

23. (1) Check Jones plug PL1 (pins 1 and 2) and its mating socket.

(2) Check fuses F1, F2, F3 and F4 (on the front panel).

(3) Check rectifiers V1 and V2.

No trigger pulse at only one output socket

24. If the trigger pulse is absent from only one of the twelve output sockets, the fault must lie in the associated cathode-follower and should therefore be easily traceable.

Amplifying unit (pulse) Type 4279

No output

25. In the event of there being no output at SK1 on this unit, the following checks may be made :—

(1) Check Jones plug PL1 (pulse input at pins 5 and 6, mains input at pins 11 and 12) and its mating socket.

(2) Check fuses F1, F2 and F4 (on the front panel).

(3) Check the thermal cut-out F3, which is mounted on the mains input transformer T1.

(4) Check rectifier V1.

(5) Monitor the waveforms at test sockets X1, X2, X3 and X4.

(6) Check the individual valve feeds of V5 and V6 and the stabilized HT voltage by operation of switch SWC.

Marker unit (azimuth) Type 26

No azimuth marks on one or both channels

26. Checks may be made on this unit as mentioned in para. 7 and 9.

Marker unit (range) Type 27

No range marks at all

27. (1) Check plug PL7 (pins 11 and 12) and its mating socket.

(2) Check fuses F1, F2, F3 and F4 (on the front panel).

(3) Check V24 and V25.

(4) Monitor test sockets X1, X2, X3 and X4.

(5) Check the individual valve feeds of V1, V2, V3, V5 and V6.

No 5-mile range marks but 10-mile marks present

28. (1) Monitor test socket X13.

(2) Check the individual valve feeds of V12, V20 and V21.

No 10-mile range marks but 5-mile marks present

29. (1) Monitor test socket X13.

(2) If the 40-mile broadening pulse is present, check the individual valve feeds of V13, V22 and V23.

(3) If the 40-mile broadening pulse is not present, check the individual valve feeds of V8 and V10.

Range marks present but no 40-mile broadening pulse

30. If both the 5 and 10-mile range marks are present but the 40-mile broadening pulse is missing, the following actions should be taken :—

(1) Monitor test sockets X9, X10, X11 and X12.

(2) Check the individual valve feeds of V16, V17, V18 and V19.

Multivibrator unit Type 52

Impossible to lock to 180V 500 c/s supply

31. (1) Check PL8 (pins 7 and 8) and its mating socket.

(2) Check F3 and F4, the 180V 500 c/s supply fuses (on the front panel).

(3) Check V2.

P.r.f. of 250 unobtainable

32. (1) Check PL8 (pins 2 and 3) and its mating socket.

(2) Check S3, the p.r.f. selection switch on the front panel.

(3) Check relay RL2.

No switching waveforms for height finding

33. (1) Monitor test sockets X4, X5, X6, X7 and X8.

(2) Check the individual valve feeds of V9, V11, V12, V13, V14 and V15.

No output

34. (1) Check PL8 (pins 11 and 12) and its mating socket.

(2) Check fuses F1, F2 and F5 (on the front panel).

Selector unit Type 33

No " bright-up E output " at SK3

35. (1) Check that sine-waves **A** and **B** are reaching pins 9 and 10 respectively of Jones plug PL11.

(2) Check V10 ; monitor test socket X2 to check the waveform at V10 anode.

(3) Check that the bright-up waveform is reaching SK2 ; monitor test socket X3.

(4) Check V11, V12, V13a, V14a, V15a and V16.

No " bright-up F output " at SK4

36. (1) Check that sine-waves **B** and **C** are reaching pins 10 and 7 respectively of Jones plug PL11.

(2) Check V19 ; monitor test socket X6 to check the waveform at V19 anode.

(3) Check that the bright-up waveform is reaching SK2 ; monitor test socket X3.

(4) Check V11, V21, V13b, V14b, V15b and V22.

Output A not available

37. (1) Check that sine-wave **C** is reaching pin 7 of Jones plug PL11.

(2) Check V23 ; monitor test socket X9 to check the waveform at V23 anode.

(3) Check V10 ; monitor test socket X2 to check the waveform at V10 anode.

(4) Check V24 and V37 (the cathode-follower feeding the A output waveform to SK6).

Output B not available

38. (1) Check that sine-wave **D** is reaching pin 8 of Jones plug PL11.

(2) Check V23 ; monitor test socket X9 to check the waveform at V23 anode.

(3) Check V10 ; monitor test socket X2 to check the waveform at V10 anode.

(4) Check V24, V25 and V26 (the cathode-follower feeding the B output waveform to SK7).

Output C not available

39. (1) Check that sine-wave **A** is reaching pin 9 of Jones plug PL11.

(2) Check V8 and V9 (the cathode-follower feeding the C output waveform to SK1).

Output D not available

40. (1) Check that sine-wave **B** is reaching pin 10 of Jones plug PL11.

(2) Check V17 and V18 (the cathode-follower feeding the D output waveform to SK5).

No output at all

41. (1) Check PL11 (pins 11 and 12) and its mating socket.

(2) Check fuses F1, F2, F3 and F4 (on the front panel).

(3) Check rectifiers V1 and V2.

Waveform generator (anti-sea clutter) Type 104

42. A fault in this unit will be evidenced by lack of suppression or incomplete suppression of wave clutter (short range sea return interference), assuming that the setting-up has been carried out correctly, as detailed in Part 2.

Lack of synchronism

43. The following checks may be made if synchronism is lacking or erratic :—

(1) Check that sync pulses from the master trigger unit are reaching SK1.

(2) Monitor the waveform at test socket **X2** ; the positive-going sync pulses should have an amplitude of approximately 15V.

(3) Check V7 and V8.

(4) Monitor the waveform at test socket **X3** ; the width of the large positive pulses should be controllable by the WIDTH CONTROL, RV2.

No output at SK2

44. (1) Check the individual valve feeds.

(2) Monitor the waveforms at test sockets **X1** to X6 inclusive.

(3) Check PL1 (pins 1, 11 and 12) and its mating socket.

(4) Check fuses F1, F2 and F3 (on the front panel) and thermal cut-out F4.

(5) Check rectifier V1.

Test set Type 402

45. Full details of fault finding on this test set will be found in A.P.2527D, Vol. 1, Chap. 3.

Rectifier units Type 17 and switch unit Type 410

46. If the DC output of the main rectifier unit Type 17 fails, the switch unit Type 410 provides automatic change-over to the standby rectifier unit. Failure of a rectifier is indicated by the extinguishing of its pilot light (LP1 or LP2). Under no-fault conditions, both LP1 and LP2 should be alight.

Rectifier unit Type 15

Failure of both 50V DC supplies

47. (1) Check that the mains input voltage is available by putting the meter switch to the 230V AC position.

(2) If the mains input voltage is not available, check plug PL1 (pins 11 and 12) and its mating socket.

Failure of only one 50V DC supply

48. (1) Check fuses F1, F2 and F3 on unit 1 or fuses F4, F5 and F6 on unit 2, as appropriate. These fuses are located on the front panel.

Note . . .

If fuses F1 and F2 have blown and F3 is intact, check transformer T1 and rectifier W1.

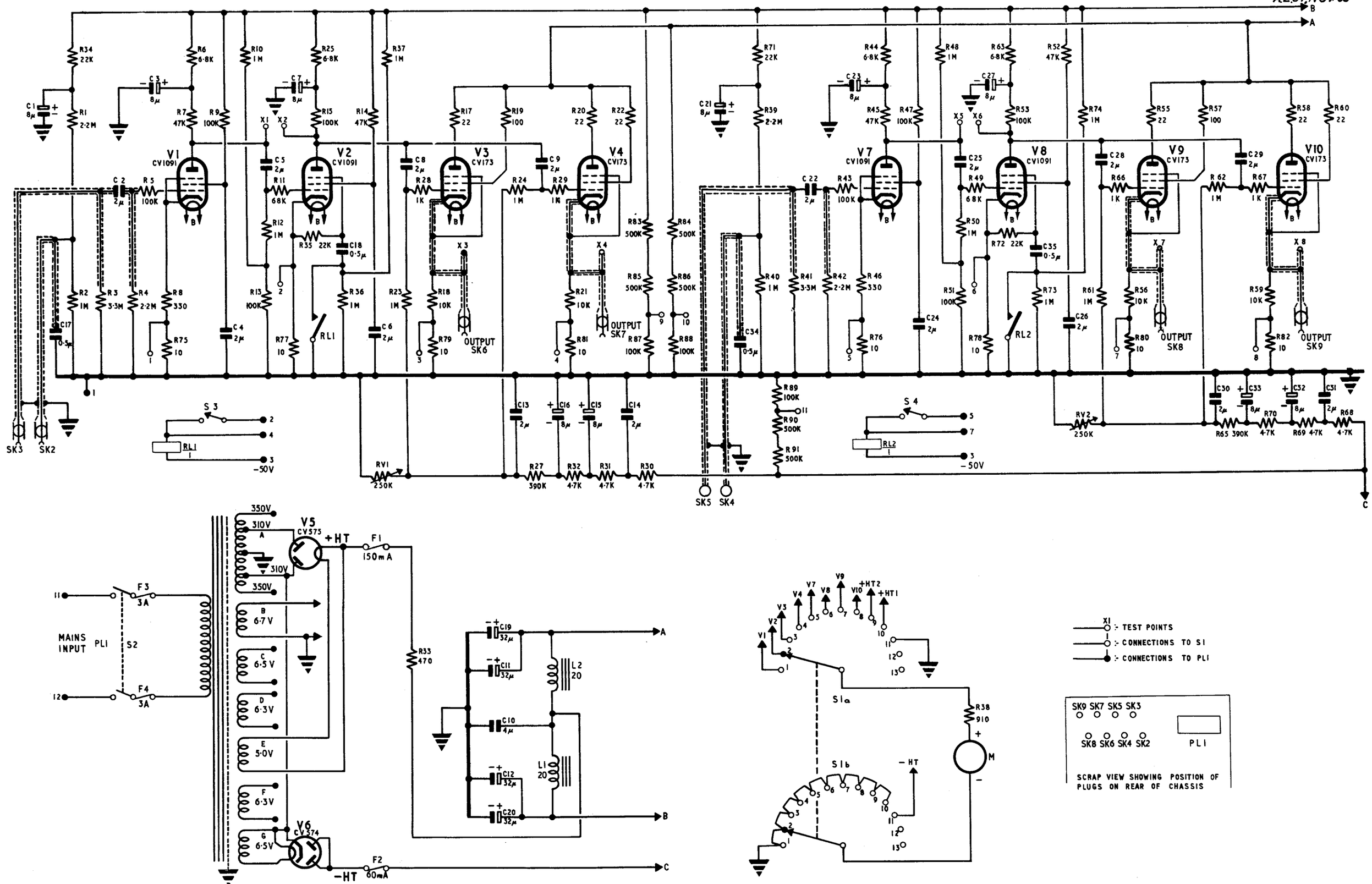


Fig. 8

Amplifier (Az Mk.) Type A.3678- circuit

Fig. 8