AIR PUBLICATION

116B-0301-606

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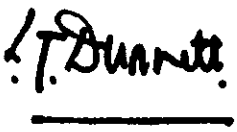
ARI. 18120 SERIES AND SRI. 18120/7

U.H.F. HOMING INSTALLATIONS

AMPLIFYING UNIT (R.F.) TYPE 11681

REPAIR AND RECONDITIONING INSTRUCTIONS

BY COMMAND OF THE DEFENCE COUNCIL



(Ministry of Defence)

FOR USE IN THE
ROYAL NAVY
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(Prepared by the Ministry of Technology)

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AMENDMENT RECORD SHEET

To record the incorporation of an Amendment List in this publication, sign against the appropriate A.L. No. and insert the date of incorporation.

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AMPLIFYING UNIT (R.F.) TYPE 11681

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ILLUSTRATIONS

(Cont'd)

INTRODUCTION

1. The amplifying unit (R.F.) Type 11681 (fig. 1 and 2) is a module of the R.F. Unit Type 11037 (part of homing installation ARI.18120). The module is of open construction, comprising an aluminium alloy casting bolted to a silver-plated brass chassis. The casting contains two coaxial input sockets, an electronic switching circuit and an aperiodic input circuit; this feeds into a single stage r.f. amplifier which, together with its coaxial output socket, is contained in the chassis. The amplifying unit is mounted in the chassis assembly Type 11680 (A.P.116B-0301-605) and secured by three red-painted captive screws.

FUNCTION

2. The two r.f. inputs are fed via isolating resistors to a short r.f. delay line which is embedded in dielectric. Two semiconductor diodes are connected one to each end of the delay line in opposing polarity; when a 4.75 kHz square wave is applied to the diodes they conduct alternately, connecting the input of the r.f. amplifier stage to each end of the delay line at the switching frequency.

3. The r.f. amplifier is a single stage grounded grid amplifier having its anode circuit tuned to cover the frequency range 220 MHz to 400 MHz and matched to 50 ohms output impedance; the tuning capacitor is operated by a mechanical drive from the tuning unit Type 11683 (A.P.116B-0301-607) via a gear train in the chassis assembly Type 11680.

4. A circuit diagram of the amplifying unit is given in fig. 8 at the end of this publication; a detailed circuit description is published in A.P.116B-0301-1.

CLEANING AND PHYSICAL EXAMINATION

5. The amplifying unit should be cleaned and physically examined in accordance with the instructions given in A.P.116B-0303-601, Chap. 2, para. 7 to 9.

REPAIRS

6. Any damage and/or deficiencies revealed during the physical examination and, where possible, any reported faults should be repaired at this stage, Before attempting to effect any rep irs, reference should be made to the general servicing instructions in A.P.116B-0301-601, Chap. 2.

MODIFICATIONS

7. Examine the amplifying unit to ascertain its modification state and embody any outstanding modifications. A list of modifications to the amplifying unit is given in Table 3 at the end of this publication; full details of these modifications, together with embodiment instructions, are published in the appropriate leaflets of A.P.116B-0301-2 (formerly A.P.2531L, Vol. 2).

ELECTRICAL SERVICING

TEST EQUIPMENT

8. The items of test equipment required for testing the amplifying unit are listed in Table 1; further details of individual items may be obtained from the associated publications quoted in the Table.

TABLE 1
Test equipment

Item	Reference No.	Nomenclature	Associated publications
1	6625-99-106-1189	Signal generator CT394B	A.P.117E-0213-1
		or	
	6625-99-901-9983	Signal generator CT394A	

TABLE 1

Cont'd

Item	Reference No.	Nomenclature	Associated publications
2	6625-99-104-7574	Signal generator TF1370A (a.f.)	A.P.117E-0101-1
		or	
	6625-99-932-4976	Signal generator Type 65B (a.f.)	A.P.2536C
3	6625-99-914-9811	Wattmeter, absorption, a.f., TF893A	A.P.117B-0102-1
4	5QP/17447	Multimeter CT498	A.P.120M-0106-1
5	6625-99-194-9182	Oscilloscope HP180A	A.P.117K-0102-1
6	5821-99-942-8542	Transmitter-receiver Type TR5/ARC52	A.P.116D-0105-1 (2nd Edition)
7	5821-99-942-8543	Control unit Type C1607	
8	6130-99-999-7812	Power supply (130V) includes:-	A.P.116D-0133-6B Chap. 2
	5995-99-932-4017	Cable assembly, power electrical	
9	5821-99-943-7136	Power unit (a.c.)	A.P.116E-0102-1B6
10	5995-99-932-4037	Connector	
11	5995-99-945-9895	Cable assembly, power, electrical	
12	10S/17488	Test set Type 11860 includes;-	A.P.116B-0301-601, Chap. 3
	5995-99-441-8344	Cable assembly, radio frequency	
	10HS/1718	Cable assembly, radio frequency	
	10HS/1720	Cable assembly, radio frequency	
	10HS/1721	Cable assembly, radio frequency	
	10HS/1809	Cable assembly, radio frequency	

TABLE 1
Cont'd

Item	Reference No.	Nomenclature	Associated publications
	10HS/1810	Cable assembly, radio frequency	
	10HS/1674	Lead, electrical (flylead)	
	10H/23391	Plug, electrical (220Ω)	
	10H/23392	Plug, electrical (50Ω)	
	5935-99-940-3325	Adaptor, plug to socket, electrical	
13	10S/17487	Test jig (tracking) Type 11861 includes:-	A.P.116B-0301-601, Chap. 3
	6625-99-425-3834	Wiring harness	
	10AP/2073	Cover	
14	6625-99-943-7032	Test kit includes:-	A.P.116D-0133-1B, Chap. 2
	5821-99-932-1920	Interconnecting box	
	5995-99-932-1800	Connector, special purpose electrical	
	5995-99-932-1802	Connector, special purpose electrical	
	5995-99-932-3721	Connector	
	5995-99-932-3722	Connector	
15	5935-99-932-2819	Adaptor, plug to plug, electrical	
16	10S/NIV 1829	Panel, test, homer	

ARRANGEMENT OF TEST EQUIPMENT

9. Arrange and set up the test equipment and the amplifying unit as follows:-

(1) On the power supply (130V) set the H.T. and SUPPLY switches to OFF and turn the SET L.T. TEST SET control, the SET L.T. UNIT ON TEST

control, the SET H.T. control and the SET BIAS control fully counter-clockwise.

(2) On the test set Type 11860 set the H.T. and L.T. switches to OFF and the selector switch to ANODE VOLTAGE, rotate the ADJ. L.T. and ADJ. H.T. controls fully counter-clockwise and the PHASING UNIT control to mid-position. Connect a link between the 50Ω LOAD and 220Ω LOAD sockets.

(3) On the interconnecting box set the D.C. SUPPLY circuit breakers to off, the D.C. SUPPLY switch to TR5 and the 3 PHASE switch to OFF; set the MUTE switch to NORMAL and the TONE switch to OFF.

(4) Secure the amplifying unit to the test set (fig. 3) and connect the equipment as shown in fig. 7.

(5) On the panel, test, homer operate SW2 and SW3 to OFF, SW1 and SW4 to ON and set the Variac to 200V.

(6) Connect the test set flylead, Ref. No. 10S/1674, to TP2 of the amplifying unit.

(7) Set the a.f. wattmeter to measure 600mW at 50 ohms impedance.

(8) On the power unit (130V):-

(a) Set the SUPPLY and H.T. switches to ON.

(b) Set the HEATER VOLTS switch to TEST SET and adjust the SET L.T. TEST SET control for an indication of 6.3V on the A.C. meter.

(c) Set the HEATER VOLTS switch to V.P. and adjust the SET L.T. UNIT ON TEST control for an indication of 12.6V on the A.C. meter.

(d) Set the H.T. CURRENT switch to H.T. VOLTS and adjust the SET H.T. control for an indication of 125V on the D.C. meter.

(9) Set the a.f. signal generator to provide a square wave output of 4.6 kHz at 10V.

(10) Set the multimeter CT498 to its 10V a.c. range, operate the test set L.T. and H.T. switches to ON and adjust the ADJ. L.T. control for 6.3V indication on the CT498.

(11) Disconnect the flylead from TP2 and set the CT498 to its 100V d.c. range.

(12) Connect the flylead to the stand-off insulator which forms the junction of PL12/6 and R6 on the amplifying unit.

(13) Adjust the test set ADJ. H.T. control for 85V indication on the CT498.

(14) Transfer the flylead to TP1 on the amplifying unit and verify that the CT498 indication is within the limits 64V and 78V. Disconnect the flylead from TP1.

AMPLIFIER STABILITY

10. Verify the stability of the amplifier as follows:-

(1) Remove the 50Ω plug, Ref. No. 10H/23392 from SKT10 of the amplifying unit and substitute the 220Ω plug, Ref. No. 10H/23391.

(2) Set the CT498 to its 10V a.c. range and connect the flylead to TP2 of the amplifying unit.

(3) Adjust the test set ADJ. L.T. control to give 7V indication on the CT498.

(4) Disconnect the flylead from TP2, set the CT498 to its 250V d.c. range and then connect the flylead as in para. 9 (12).

(5) Adjust the test set ADJ. H.T. control for 100V indication on the CT498.

(6) Transfer the flylead to TP1 on the amplifying unit, rotate the tuning shaft through one complete revolution and verify that there is no sharp fall in the indication on the CT498.

(7) Transfer the flylead from TP1 to TP2 and repeat the adjustments described in para. 9 (10) to (14).

SWITCHING WAVEFORM

11. Operate the test set selector switch to SWITCHING WAVEFORM and adjust the oscilloscope controls to obtain a stationary square wave display; verify that the amplitude of this waveform is within the limits 0.95V and 1.45V.

AMPLIFIER GAIN 225 MHz

12. Measure the amplifier gain, at 225 MHz, in the following manner:-

(1) Remove the 220Ω plug from SKT10 of the amplifying unit and, using the cable assembly, Ref. No. 10HS/1718, connect SKT10 to the 50Ω MONITOR socket on the test set.

(2) Operate the test set selector switch to GAIN AND TRACKING.

(3) Set the u.h.f. signal generator to give an unmodulated output of 225 MHz at 500 mW with the carrier level set to 1V.

(4) On the amplifying unit rotate the tuning shaft to fully mesh the capacitor vanes.

(5) With the CT498 set to its 250μA d.c. range, adjust the trimmer capacitor C5, on the amplifying unit, for peak indication on the CT498.

(6) Adjust the u.h.f. signal generator output level to give an indication of between 20μA and 50μA on the CT498; note this indication.

(7) Note the attenuator dB setting on the u.h.f. signal generator.

(8) Uncouple the cable assemblies from the test set PHASING UNIT OUTPUT sockets and transfer the cable assembly from SKT10 of the amplifying unit to the right-hand PHASING UNIT OUTPUT socket on the test set.

(9) Connect the 50Ω plug, Ref. No. 10H/23392, to the left-hand PHASING UNIT OUTPUT socket on the test set.

(10) Adjust the u.h.f. signal generator output level to obtain the CT498 indication noted in sub-para.(6); verify that the attenuator setting exceeds that noted in sub-para.(7) by not less than 3.5dB.

AMPLIFIER GAIN 300 MHz

13. Measure the amplifier gain, at 300 MHz, as follows:-

(1) Set the u.h.f. signal generator to give an unmodulated output of 300 MHz at 500mV with the carrier level set to 1V.

(2) Adjust the u.h.f. signal generator output level to give an indication of between 20μS and 50μA on the CT498; note this indication.

(3) Note the attenuator dB setting on the u.h.f. signal generator.

(4) On the test set disconnect the 50Ω plug, transfer the cable assembly from the right-hand PHASING UNIT OUTPUT socket to SKT10 on the amplifying unit and connect SKT9 and SKT11 of the amplifying unit to the test set as in fig. 7.

(5) Adjust the tuning shaft of the amplifying unit to give peak indication on the CT498.

(6) Adjust the u.h.f. signal generator output level to obtain the CT498 indication noted in sub-para.(2); verify that the attenuator setting is below that noted in sub-para.(3) by not less than 5dB.

AMPLIFIER GAIN 400 MHz

14. Measure the amplifier gain, at 400 MHz, in accordance with the following procedure:-

(1) Set the u.h.f. signal generator to give an unmodulated output of 400 MHz at 500mV with the carrier level set to 1V.

(2) Adjust the tuning shaft of the amplifying unit to give peak indication on the CT498.

(3) Adjust the u.h.f. signal generator output level to give an indication of between 20μA and 50μA on the CT498; note this indication.

(4) Note the attenuator dB setting on the u.h.f. signal generator.

(5) Alter the r.f. connections between the amplifying unit and the test set as described in para. 12 (8) and (9).

(6) Adjust the u.h.f. signal generator output level to obtain the CT498 indication noted in sub-para.(3); verify that the attenuator setting is below that noted in sub-para.(4) by not more than 1dB.

(7) Operate the test set H.T. and L.T. switches to OFF and disconnect and remove the amplifying unit from the test set.

TRIMMER CAPACITOR C5 - ADJUSTMENT

15. Adjust the trimmer capacitor C5 as described below:-

(1) Secure the amplifying unit to the test jig (tracking) Type 11861, ensuring that the couplers are correctly mated, and then connect the test jig to the test set using the wiring harness, 5995-99-425-3834.

(2) On the amplifying unit connect SKT9 and SKT11 to the test set as shown in fig. 7 and connect SKT10 to the test set 50Ω MONITOR socket using the cable assembly, Ref. No. 10HS/1718.

(3) Set the test jig to 395 MHz and the tracking error micrometer to zero.

(4) Set the u.h.f. signal generator to give an unmodulated output of 395 MHz at 500mV with the carrier level set to 1.3V.

(5) Operate the test set L.T. and H.T. switches to ON.

(6) Adjust the trimmer capacitor C5 of the amplifying unit for peak indication on the CT498.

TRACKING

16. Verify that the tracking of the amplifier tuning is correct as follows:-

(1) With the u.h.f. signal generator adjusted to give an unmodulated output level of 500mV, set the signal generator and the test jig first to 390 MHz, then in 10 MHz steps down to 230 MHz and finally to 225 MHz.

(2) At each of the frequency settings in sub-para.(1) adjust the test jig micrometer for peak indication on the CT498 and note the number of divisions displacement from zero on the micrometer; return the micrometer to zero after each test.

Note...

(a) One division on the micrometer corresponds to 100 kHz.

(3) The micrometer setting displacement from zero (sub-para. (2)) shall not exceed 10 divisions over the frequency range 225 MHz to 290 MHz, and shall not exceed 12.5 divisions over the frequency range 300 MHz to 390 MHz.

(4) Should the tracking be incorrect at any point, the tuning capacitor must be re-aligned in accordance with para. 17.

17. Where the tracking of the amplifier tuning (para. 16) is found to be unsatisfactory, adjust the tuning capacitor as described in the following procedure:-

(1) Remove the right-hand side-cover from the amplifying unit and substitute the cover, Ref. No. 10AP/2073

(2) Adjust the trimmer capacitor C5 as described in para. 15 (3) to (6).

(3) With the u.h.f. signal generator adjusted to give an unmodulated output of 500mV, set the signal generator and the test jig to each of the frequencies quoted in Table 2.

Caution...

When adjusting the rotor vane segments (sub-para.(4)) care must be taken to ensure that no segments are allowed to contact either the adjacent stator vanes or the inductor strip; the clearance between the rotor vane segments and the adjacent stator vanes must be not less than 0.005 in. and that between

the segments and the inductor strip must be not less than 0.050 in.

(4) At each frequency adjust the appropriate rotor vane segment specified in Table 2 (see also fig. 5), using an insulated tool, for peak indication on the CT498.

(5) Remove the cover, Ref. No. 10AP/2073 from the amplifying unit and refit the cover removed in sub-para.(1).

(6) Verify the tracking as described in para. 16.

TABLE 2

Adjustment of rotor vane segments

Frequency (MHz)	Adjust rotor vane	Segment No	Segment colour
390	Lower	1	Plain
380	Upper	1	Plain
370	Lower	2	Black
360	Upper	2	Black
350	Lower	3	Red
340	Upper	3	Red
330	Lower	4	Yellow
320	Upper	4	Yellow
310	Lower	5	Blue
300	Upper	5	Blue
290	Lower	6	Plain
280	Upper	6	Plain
270	Lower	7	Black
260	Upper	7	Black
250	Lower	8	Red
240	Upper	8	Red
230	Upper	8	Red
225	Upper	9	Yellow
225	Lower (if necessary)	10	Plain

SIGNAL-PLUS-NOISE TO NOISE RATIO

18. Measure the signal-plus-noise to noise ratio in the following manner:-

(1) Set SW3 of the panel, test to ON, operate the SUPPLY switch of the power unit (a.c.) to ON and close the TR5 D.C. SUPPLY circuit breaker on the interconnecting box.

(2) On the control unit Type C1607 operate the function switch to T/R, the CHAN. switch to M and the MANUAL frequency selectors to 240.0 MHz.

(3) On the panel, test adjust the Variac control to give 27.5V indication on the meter.

(4) Disconnect the multimeter CT498 from the test set, switch the CT498 to its 10V d.c. range and connect it to the AVC (negative) and EARTH (positive) terminals of the interconnecting box.

(5) Transfer the cable assembly from SKT9 of the amplifying unit to the R.F. HEAD INPUT socket on the test set.

(6) Disconnect the Cable assembly from the left-hand PHASING UNIT OUTPUT socket of the test set and substitute the 50Ω plug.

(7) Remove the link from the test set 50Ω LOAD and 220Ω LOAD sockets and connect the output of the a.f. signal generator to the 50Ω LOAD socket.

(8) Set the test jig to 240 MHz and the tracking error micrometer to zero.

(9) Set the u.h.f. signal generator to 240 MHz at 40μV, modulated 30% and adjust the frequency for peak indication on the CT498.

(10) Alternately switch the modulation of the u.h.f. signal generator off and on, adjusting the test set TUNE control until the a.f. wattmeter indication with the modulation on is 12dB above that obtained with the modulation off.

(11) Transfer the cable assembly from the R.F. HEAD INPUT socket on the test set to SKT9 of the amplifying unit.

(12) Remove the 50Ω plug from the left-hand PHASING UNIT OUTPUT socket and reconnect the cable assembly removed in sub-para.(6).

(13) Connect SKT10 of the amplifying unit to the R.F. HEAD INPUT socket on the test set using the cable assembly, Ref. No. 10HS/1718.

(14) Switch on the modulation of the u.h.f. signal generator and note the a.f. wattmeter indication; switch off the modulation and verify that

the wattmeter indication falls by not less than 12dB.

(15) Set the control unit function switch to OFF.

(16) Disconnect the a.f. signal generator from the 50Ω LOAD socket on the test set and connect a link between the 50Ω LOAD and 220Ω LOAD sockets.

(17) Disconnect the multimeter CT498 from the interconnecting box.

(18) Disconnect and remove the amplifying unit from the test jig and uncouple the jig from the test set.

BEARING ERROR

19. The bearing error should be verified in accordance with the following procedure:-

(1) Secure the amplifying unit to the test set, connect SKT9 and SKT11 to the test set as shown in fig. 7 and connect SKT10 to the 50Ω MONITOR socket of the test set using the cable assembly Ref. No. 10HS/1718.

(2) Set the multimeter CT498 to its 250μA range and connect it to the test set METER terminals.

(3) Set the u.h.f. signal generator to give an unmodulated output of 225 MHz at 500mV and then adjust the tuning shaft of the amplifying unit for peak indication on the CT498.

(4) Adjust the u.h.f. signal generator output level to give 40μA indication on the CT498; this level must be maintained for the subsequent tests.

(5) Adjust the oscilloscope controls and the test set PHASING UNIT control to obtain a square-wave display as shown in fig.6(A).

(6) Re-adjust the test set PHASING UNIT control to obtain a waveform which has lobes of equal amplitude (fig. 6(B)).

(7) Switch on the modulation of the u.h.f. signal generator and adjust the modulation depth to 10%.

(8) Measure and note the amplitude X (fig. 6(C)) of the waveform displayed on the oscilloscope.

(9) Switch off the modulation of the u.hf. signal generator

(10) Adjust the test set PHASING UNIT control to obtain a waveform on the oscilloscope as shown in fig. 6(D) on which the amplitude Y is approximately that noted in sub-para.(8); measure and note the amplitude Y.

(11) On the amplifying unit interchange the connections to SKT9 and SKT11 and then measure and note the amplitude Z (fig. 6(A)) of the waveform displayed on the oscilloscope.

(12) Calculate the bearing error from the following expression:-

$$\text{bearing error} = \frac{\text{(difference between Y and Z)}}{X}$$

The bearing error shall not exceed 0.14.

(13) Interchange the connections to SKT9 and SKT11 on the amplifying unit.

(14) Repeat the procedure described in sub-para.(3) to (13) at 300 MHz; the bearing error shall not exceed 0.26.

(15) Set the u.h.f. signal generator to 399 MHz and adjust the tuning shaft of the amplifying unit for peak indication on the CT498.

(16) Adjust the u.h.f. signal generator output level to give 15μA indication on the CT498; this level must be maintained for the subsequent tests.

(17) Repeat the procedure described in sub-para. (6) to (13); the bearing error shall not exceed **0.45.**

(18) If any of the bearing error limits cannot be met, adjust potentiometer RV2 on the amplifying unit to reduce the difference between the Y and Z readings and then repeat the procedure described in sub-para.(3) to (17)

MODULATION SENSITIVITY

20. Measure the modulation sensitivity in the following manner:

(1) Set the u.hf. signal generator to give an unmodulated output of 225 MHz at 500mV and then adjust the tuning shaft of the amplifying unit for peak indication on the CT498.

(2) Adjust the u.h.f. signal generator output level to give 40μA indication on the CT498.

(3) Adjust the test set PHASING UNIT control to obtain, on the oscilloscope, a waveform with lobes of equal amplitude (fig. 6(B)).

(4) Remove the cable assembly, 5995-99-441-8344, from SKT11 of the amplifying unit and the left-hand PHASING UNIT OUTPUT socket of **the** test set and substitute the cable assembly, Ref. No. 10HS/1721.

(5) Measure and note the difference in amplitude of adjacent lobes displayed on the oscilloscope.

(6) Remove the cable assembly, Ref. No. 10HS/1721 and refit the cable assembly 5995-99-441-8344 (see sub-para.(4)).

(7) Switch on the modulation of the u.h.f. signal generator and adjust the modulation depth until the difference in amplitude of adjacent lobes on the oscilloscope display is as noted in sub-para.(5); the modulation depth shall be within the limits 7% and 13%.

(8) Switch off the modulation of the u.h.f. signal generator.

SWITCHING DIODE POLARITY

21. The switching diode polarity should be verified as follows:-

(1) On the test set disconnect the link from the 50Ω LOAD socket, substitute the adaptor, 5935-99-932-2819 and connect the link between the adaptor and the 220Ω LOAD socket.

(2) Using the cable assembly, Ref. No. 10HS/1721 couple the adaptor to the external trigger input of the oscilloscope and set the oscilloscope for external triggering.

(3) Adjust the oscilloscope controls for a square-wave display as shown in fig. 6(B).

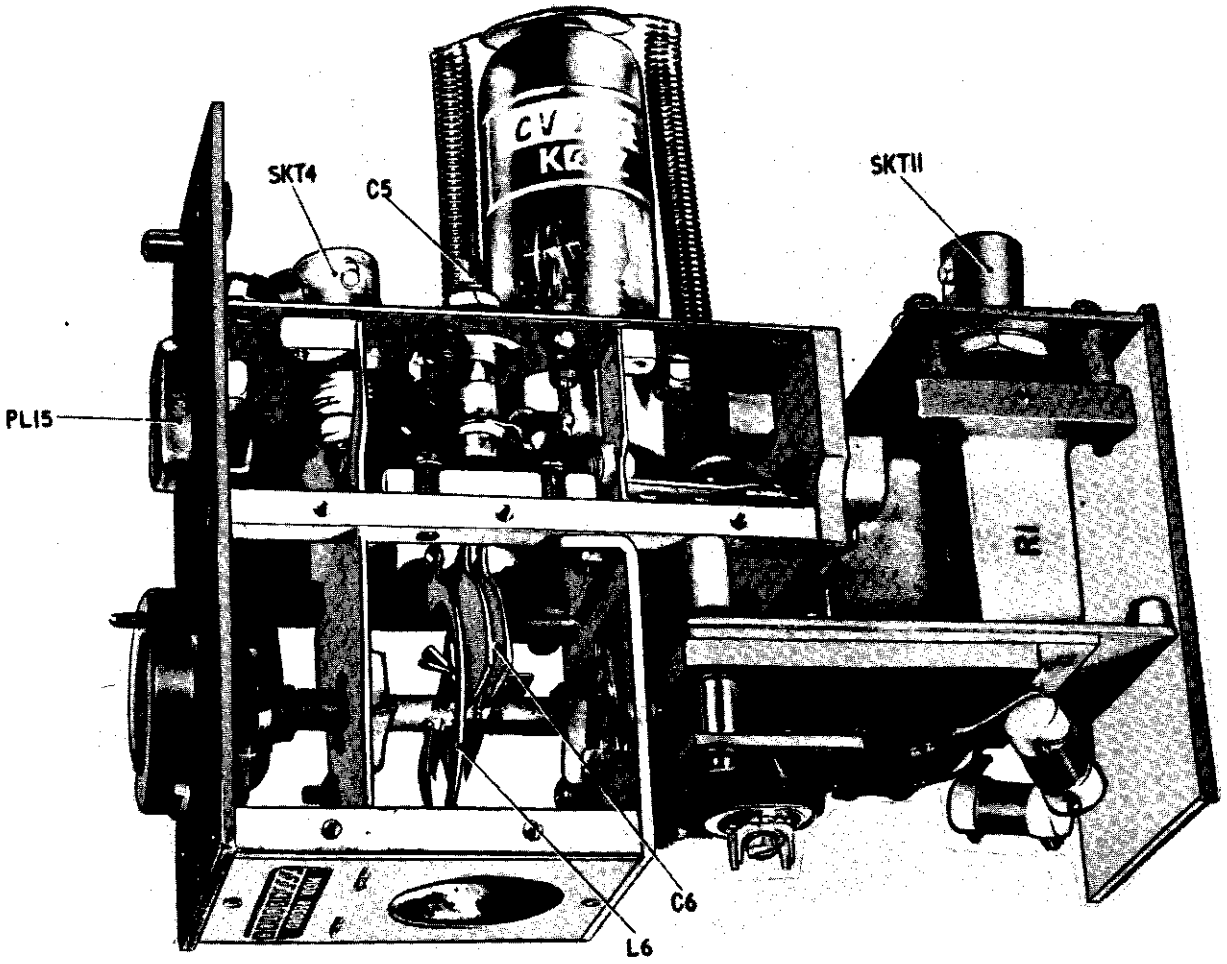
(4) Rotate the test set PHASING UNIT control to the left and verify that the left-hand lobe increases and the right-hand lobe decreases in amplitude; rotate the control to the right and verify that the right-hand lobe increases and left-hand lobe decreases in amplitude.

22. When all testing has been satisfactorily completed, operate the test set L.T. and H.T. switches to OFF and remove the amplifying unit from the test set.

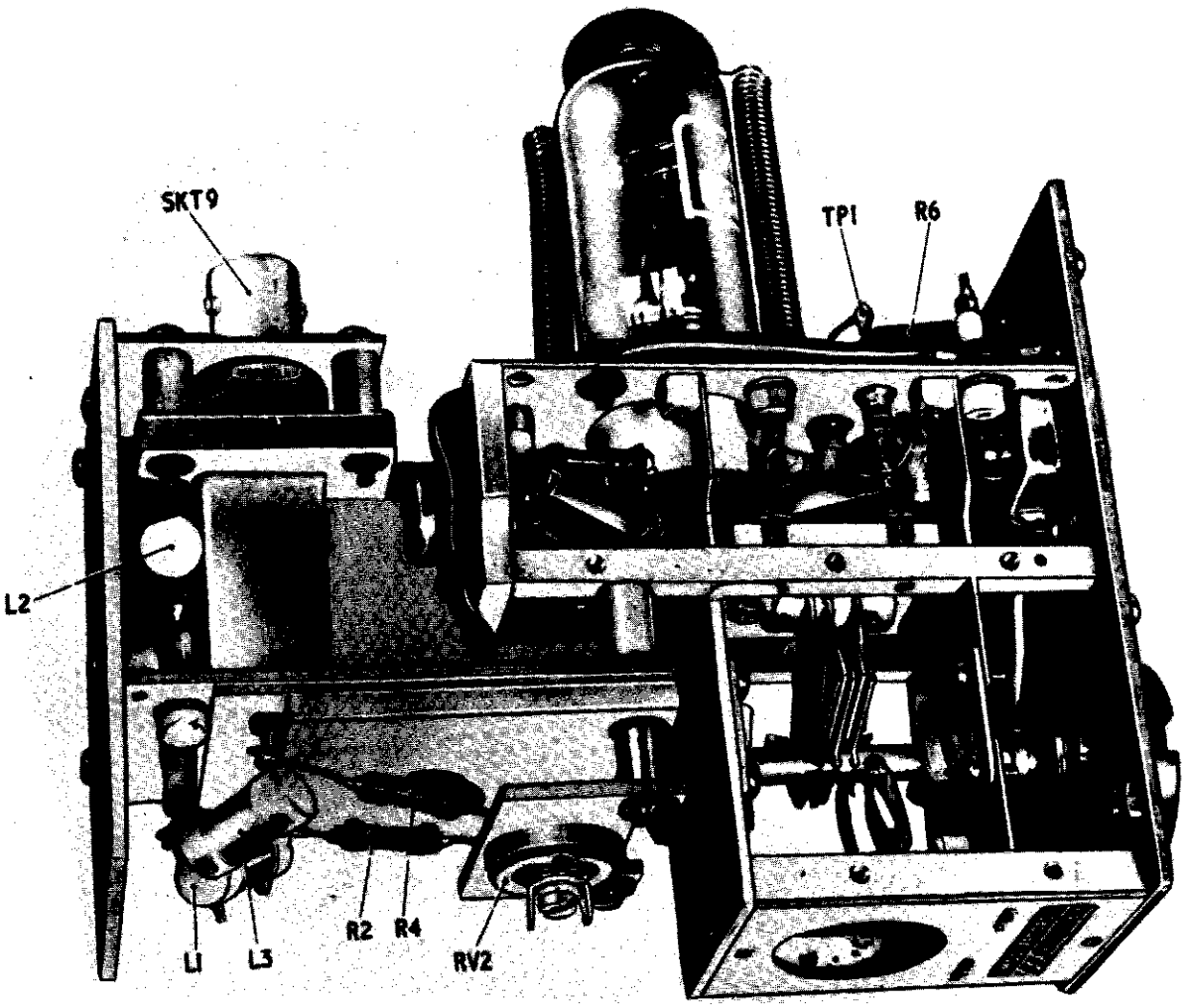
TABLE 3

Modifications

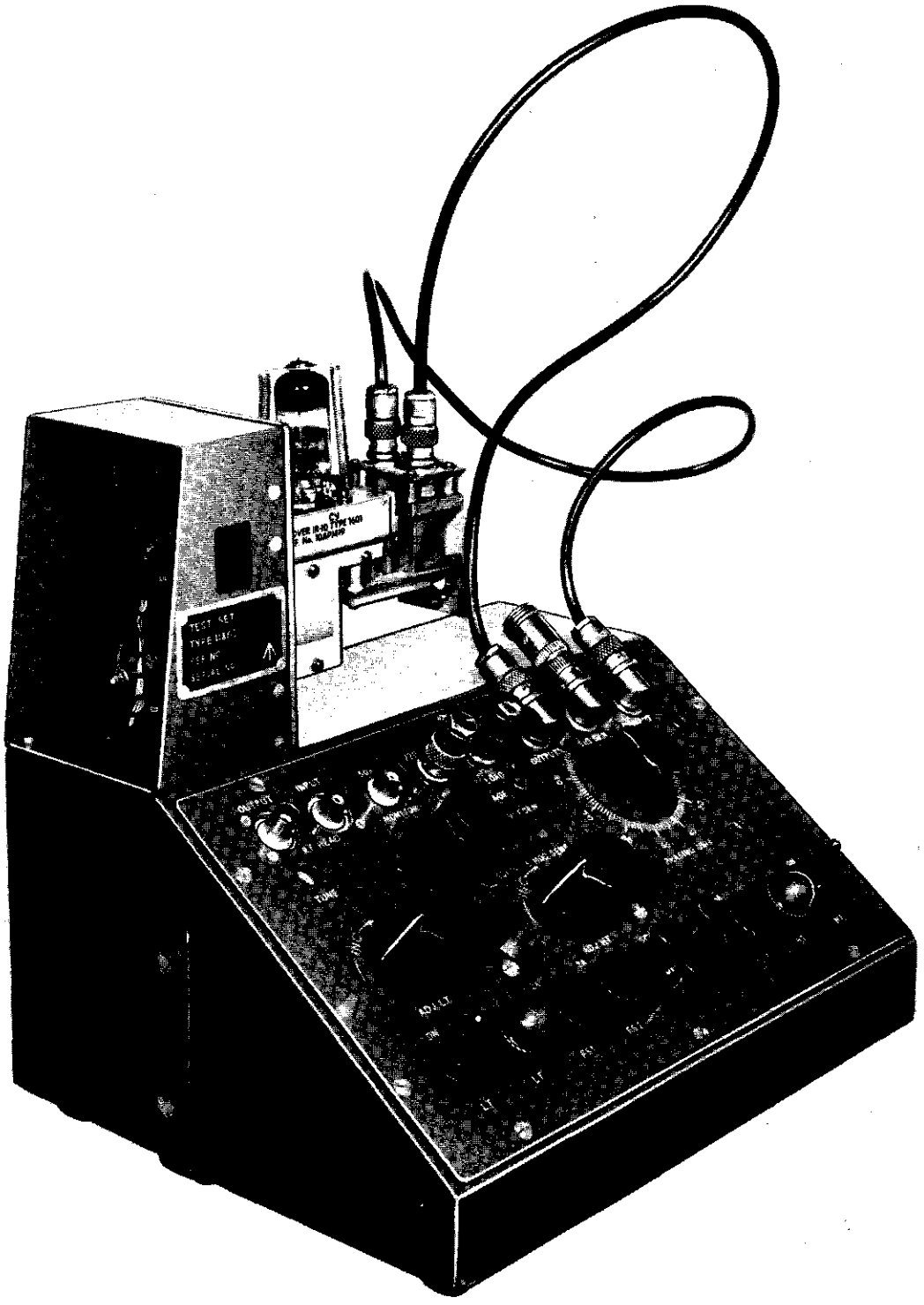
Mod. No.	Class	Topic -2 Leaflet	A.L.	Label No.	Brief details of change
5470	B/2	B4	5	1	Fit a silver-plated phosphor bronze wiper in order to more effectively earth the shaft of the tuning capacitor.
5506	B/2	B3	4	2	Add a 20pF decoupling capacitor (C10) in the valve heater circuit to reduce the tendency towards instability.
5604	B/3	B5	6	3	Introduce a 100 ohm potentiometer (RV2) and change the value of resistors R2 and R4 from 68 ohms to 22 ohms to allow adjustment for bearing error.



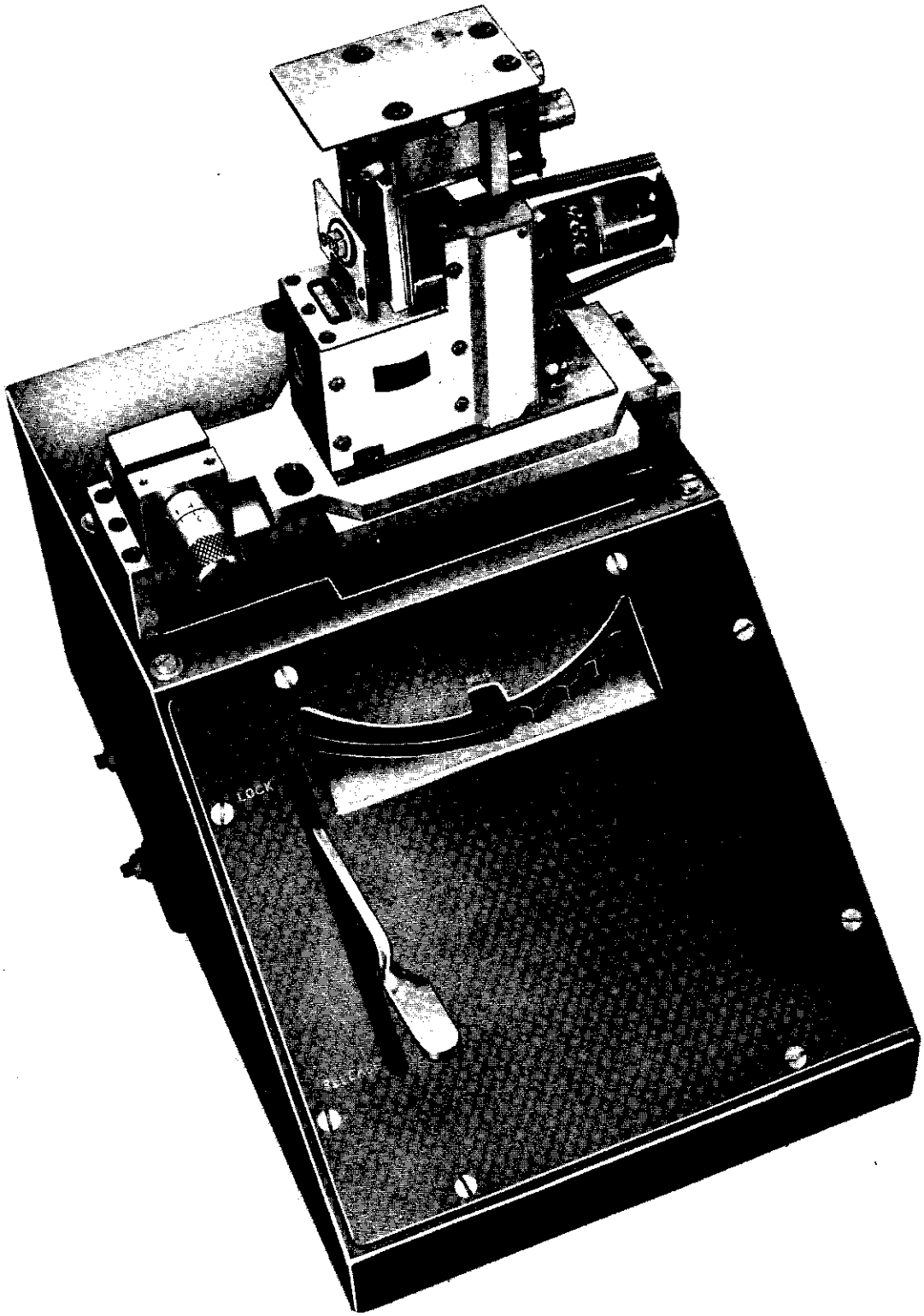
Amplifying unit (R.F. Type 11681 - front Fig. 1



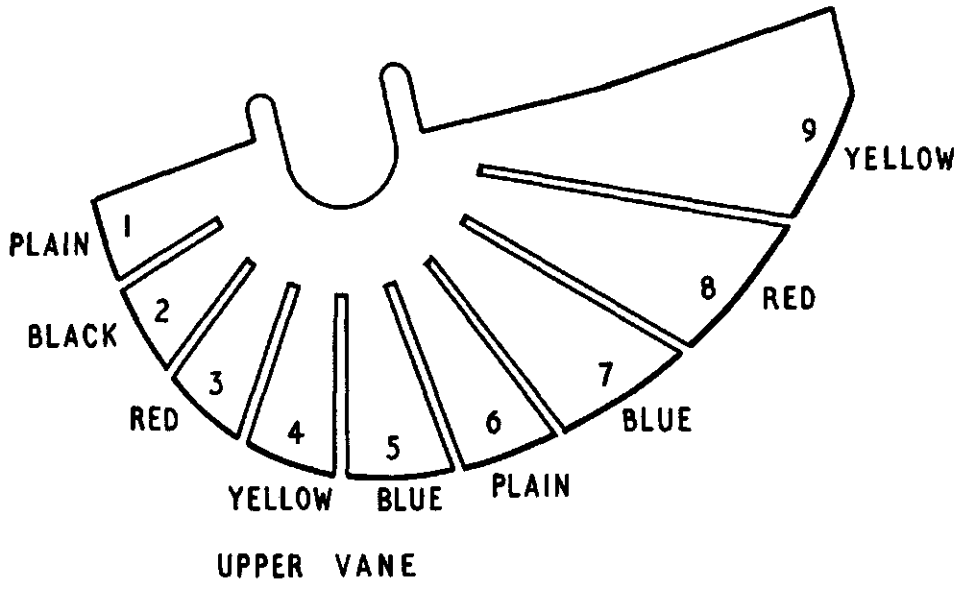
Amplifying unit (R.F.) Type 11681 - rear Fig. 2

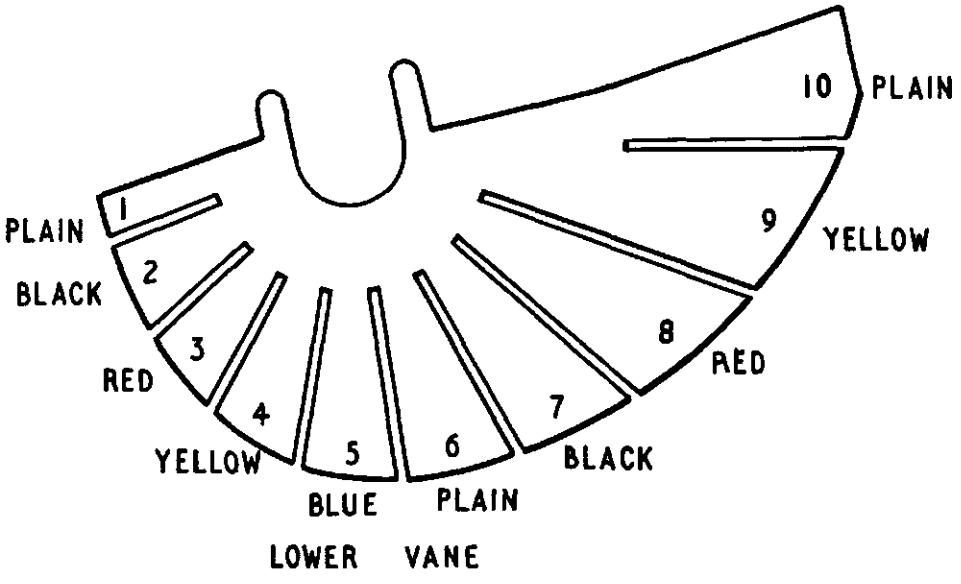


Test set Type 11860 with amplifying unit fitted Fig. 3

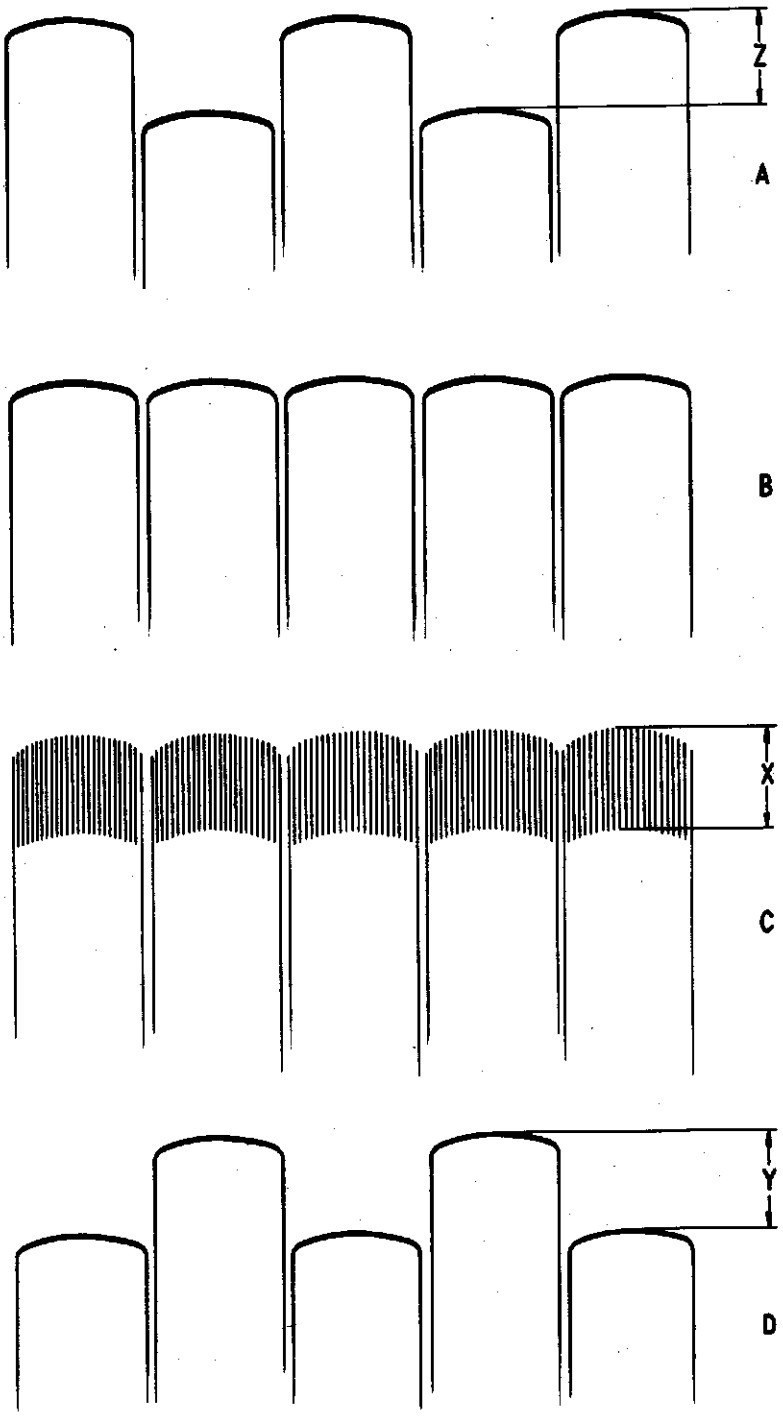


Test jig (tracking) Type 11861 with amplifying unit fitted Fig. 4



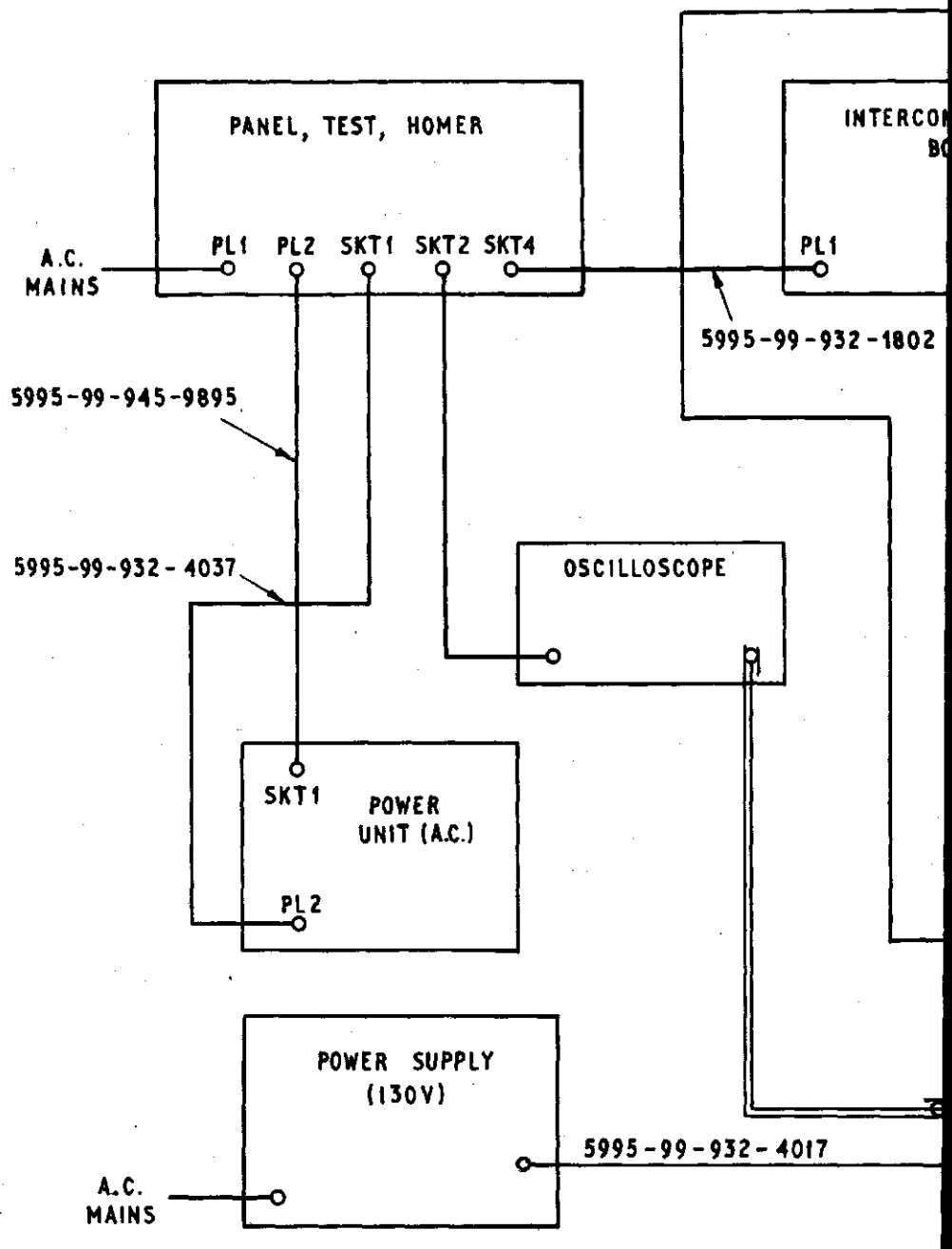


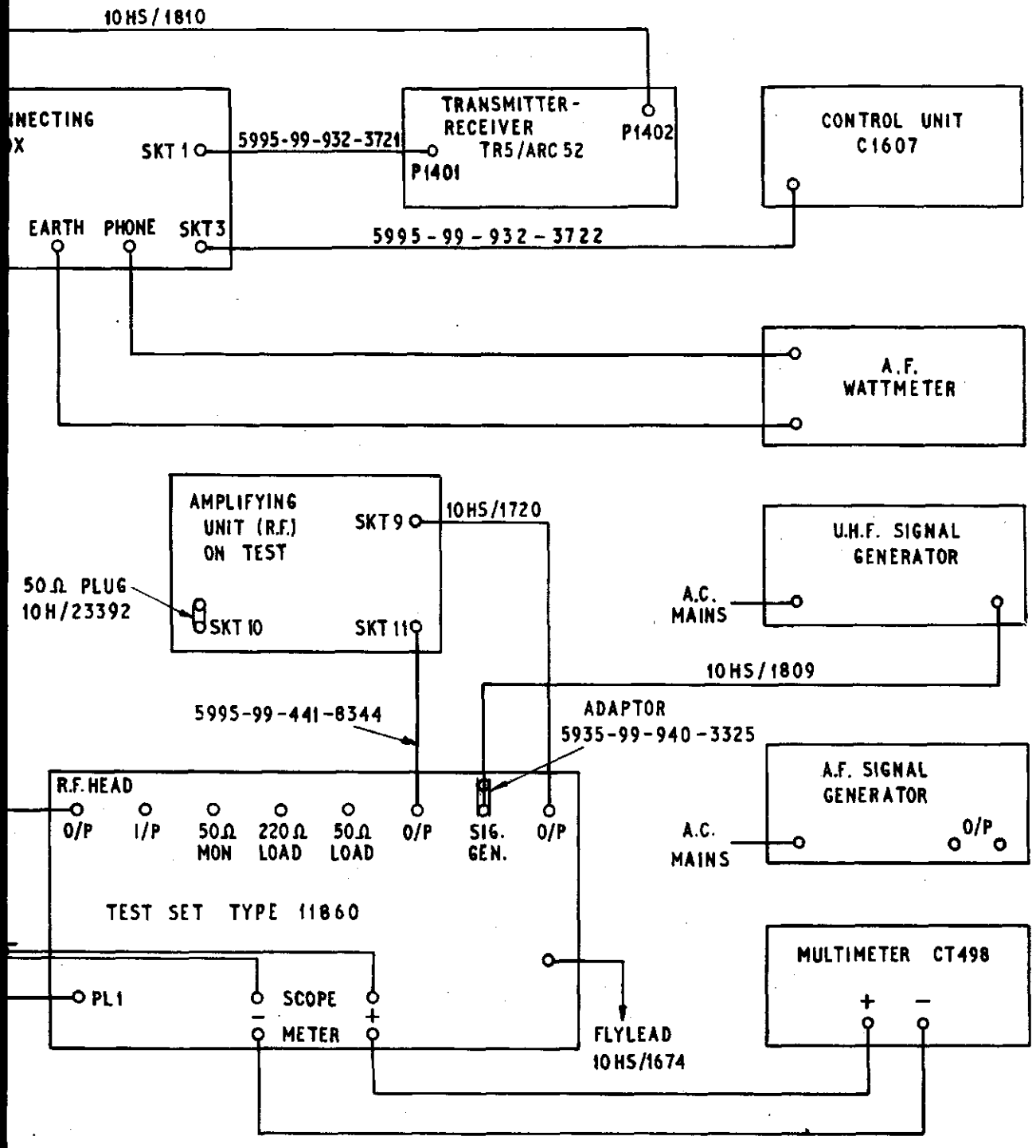
Tuning capacitor rotor vane segments Fig. 5



Modulation waveforms Fig. 6

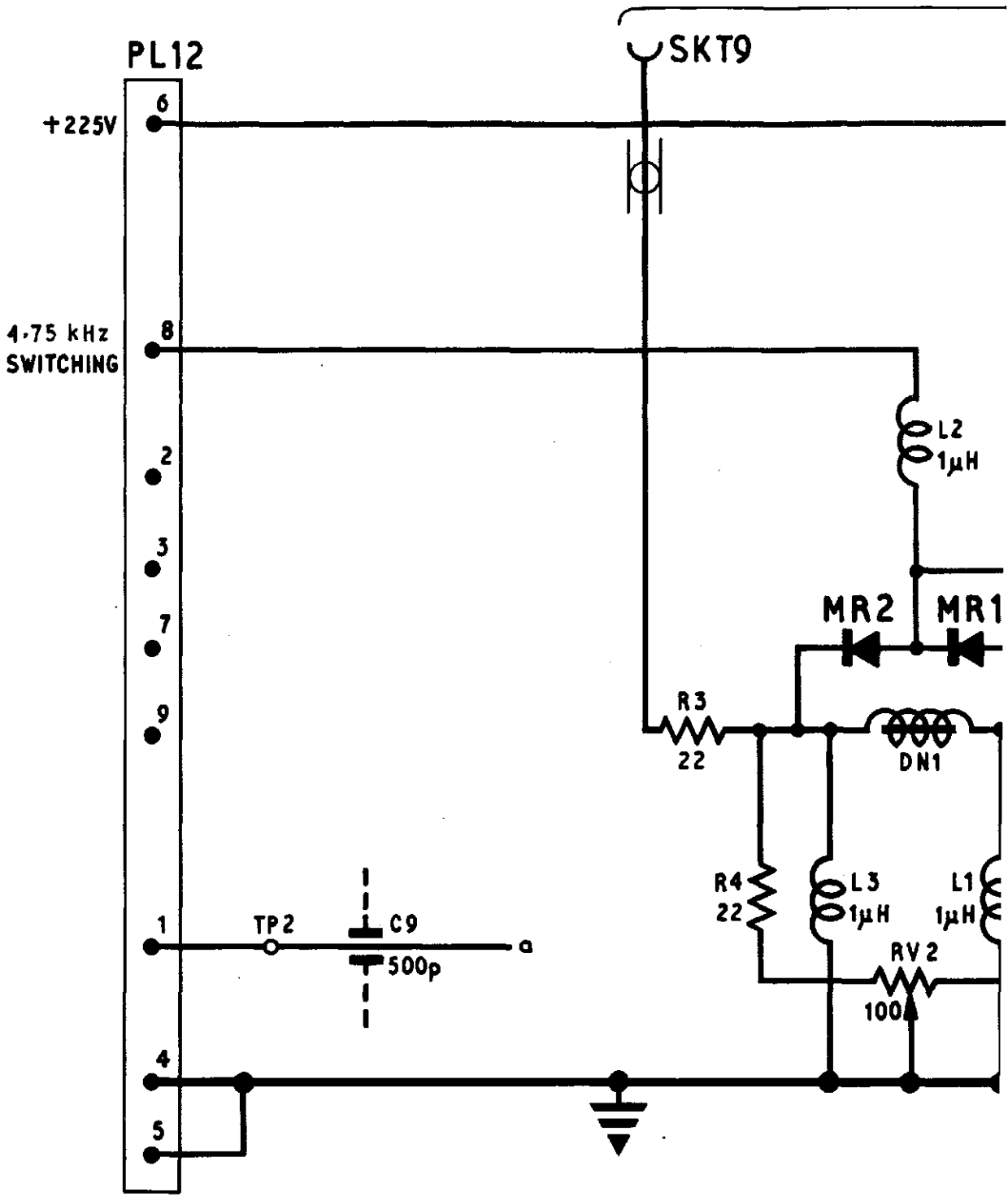
RM 36651/1/153 260 11/70 L&GL&CL&CLB


PANEL, TEST, HOMER
PL1 PL2 SKT1 SKT2 SKT4
A.C. MAINS
INTERCOM
BO
PL1
5995-99-932-1802
5995-99-945-9895
5995-99-932-4037
OSCILLOSCOPE
SKT1
POWER UNIT (A.C.)
PL2
POWER SUPPLY (130V)
5995-99-932-4017
A.C. MAINS



pment connections

Fig. 7



NOTES: CIRCUIT INCLUDES MOD. No. 5506/2, 5604/3

AIR DIAGRAM - MIN

116B-0301-MD 55

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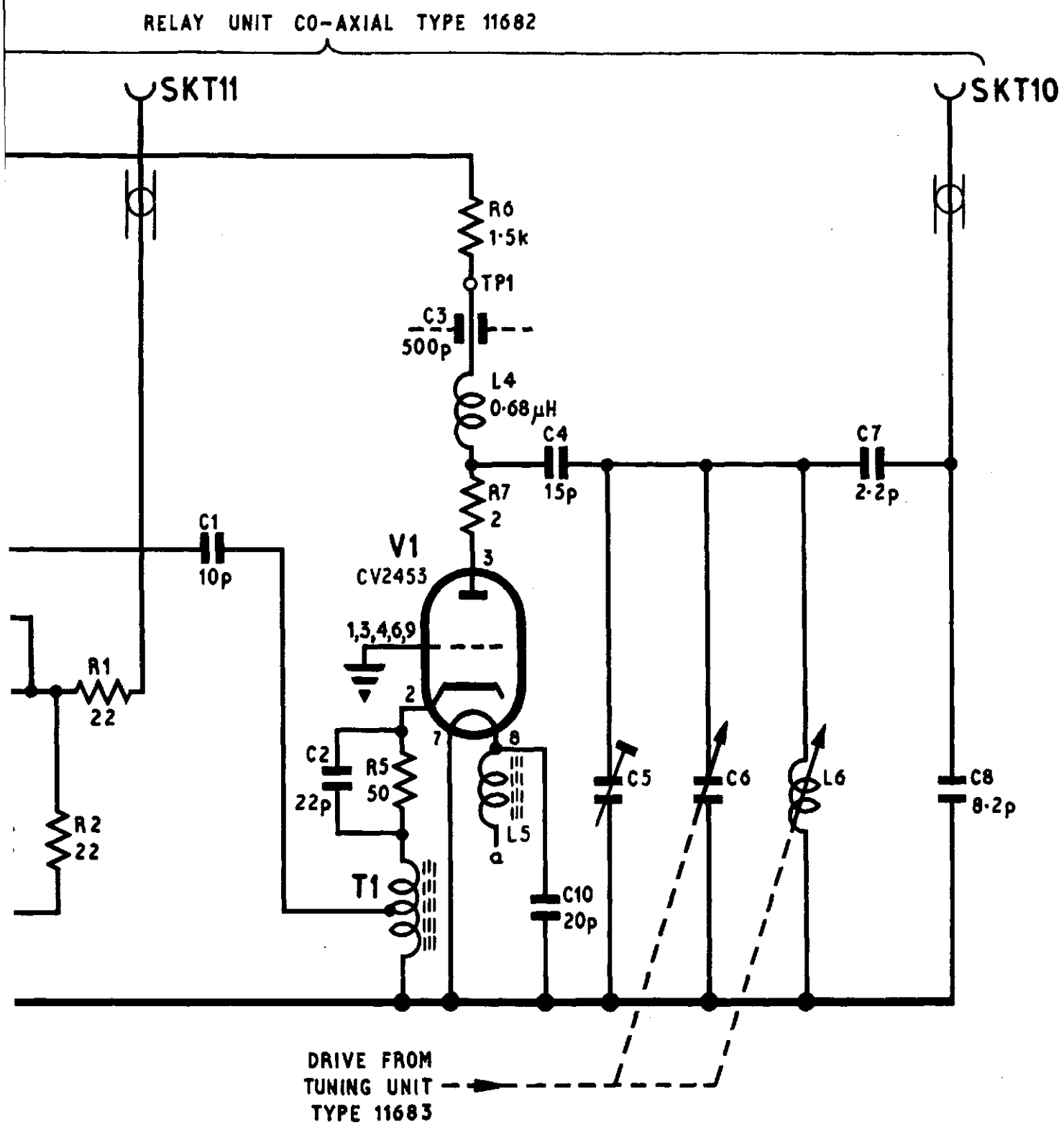
ISSUED OCT. 70

Amplifying unit



(R.F.) Type 11681 - circuit

Fig.8.