SUB - SECTION

R D

TYPE 35S PAGE RD2

RD2

TYPE 35S

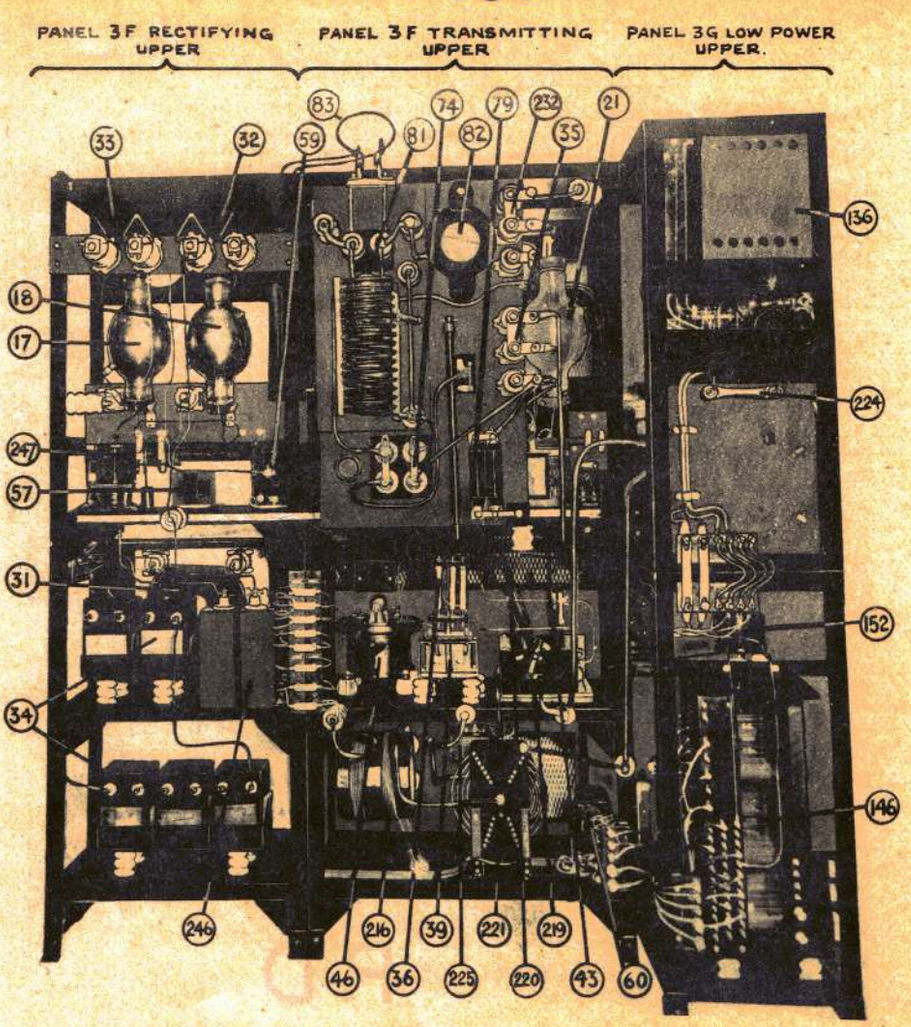


FIG. t.

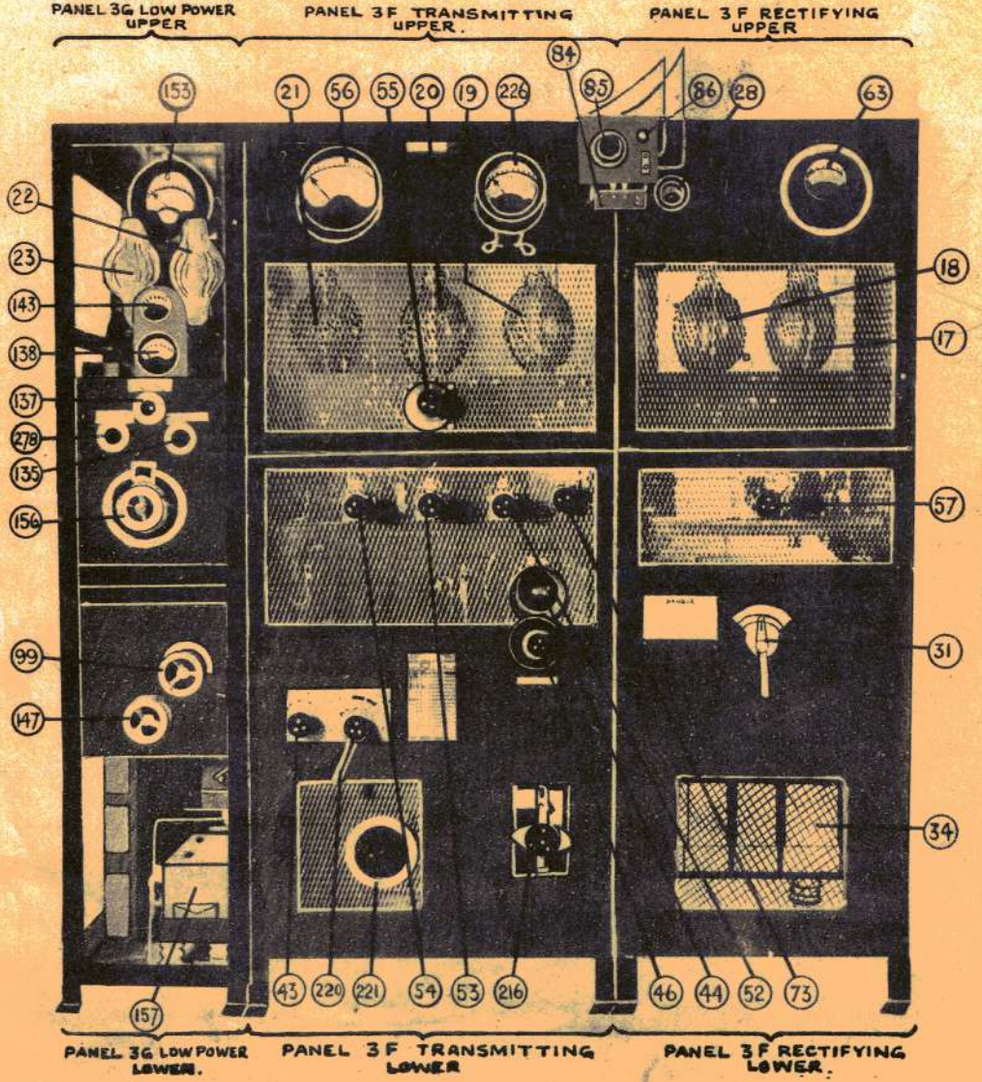


FIG. u.

RD 3
~~R9~~

TYPE 35S

DETAILS OF COMPONENTS.

Transmitter	3F, L/F	3G Low power	3F, H/F	6G	Emergency Set	Type 13
Frequency range	60 - 500 kc/s	60 - 500 kc/s	3500 - 20,000 kc/s	100 - 670 kc/s	60 - 500 kc/s	375 - 1364 ~~60 - 500~~ kc/s
Power supply	8 kW Alternator	1½ kW Alternator	8 kW Alternator	8 kW Alternator	20 volt battery	1 kW rotary converter
Filament supply	1½ kW Alternator	1½ kW Alternator	1½ kW Alternator	-	-	-
Valves used See Section J	3 NT4A 2 NU1	1 NT1 1 NU1 2 NU1	3 NT4A	-	-	-
Wave Form	C.W. & I.C.W.	C.W. & I.C.W.	I.C.W.	Spark	Spark	Spark
Associated wavemeters	Patt. 1492B or G9	Patt. 1492B or G9	G7 & G8	Patt. 1492B or G9	-	Patt. 1492B or G9
Approximate range in miles	700	100	World wide at times.	150	5	50
Date of design	1919	1924	1928	1930	1914	1918
Reference page	~~R1~~ RD8	~~R13~~ RE 11	~~R15~~ R.D 10	OB6	~~R17~~ RD 12	

COMPOSITION OF PANELS.

Type 35S is the main transmitting set fitted in some of the older class of Cruisers and is usually fitted in conjunction with Type 13 spark set. The latter uses the Type 35S aerial and aerial series condenser (211) but is otherwise independent of the valve set. Transmitter 6G may be fitted with Type 35S in future sets and in this case Transmitter 6G will replace Type 13.

Type 35S has four power boards which are similar to those used with Type 36S and carry the necessary switches, fuses and instruments for the distribution of power to the set and W/T Office. A photograph of these boards is shown in figure b. Their full title (which must be used for store-keeping purposes) is considered too cumbersome for instructional purposes and they will be referred to as Nos. 1, 2, 3 and 4 power boards in these notes, as shown below:-

No. 1.	No. 2.	No. 3.	No. 4.
Board 2F Supply 1½ kW Upper.	Board 3F Supply D.C. 14 kW or 8 kW Upper.	Board 3G Distributing Upper.	Board 2F Supply A.C. 14 kW or 8 kW Upper.
Board 2F Supply 1½ kW Lower.	Board 3G Supply D.C. 14 kW or 8 kW Lower.	Board 2G Distributing Lower.	Board 2G Supply A.C. 14 kW or 8 kW Lower.

The transmitting circuits of Type 35S are carried in three panels which face the power boards. Their store-keeping titles are shown below as well as the name by which the various panels will be referred to in these notes. When the spark attachment, Transmitter 6C, is fitted it occupies a separate panel. Photographs of these panels are shown in figures t. and u.

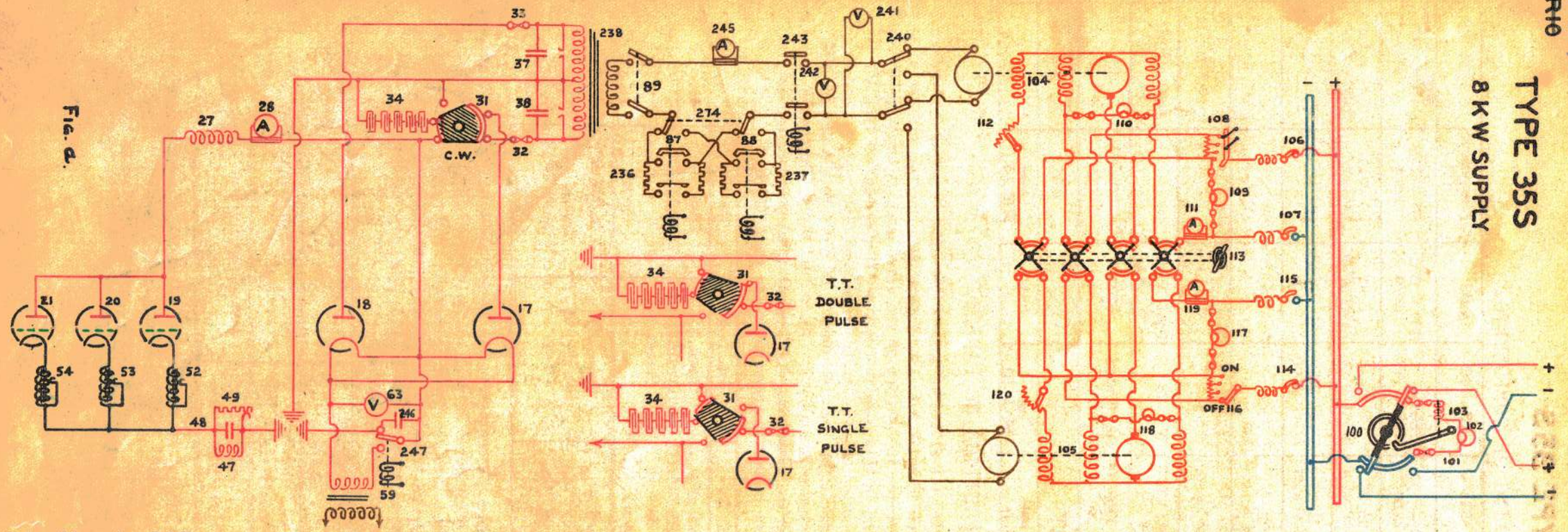
The emergency set is not fitted as a complete unit in a panel but the various instruments are secured to the bulkheads, etc., as convenient.

Transmitter 3G Low Power.	Transmitter 3F L/F.	Rectifying Panel.
Panel Upper.	Panel 3F Transmitting Upper.	Panel 3F Rectifying Upper.
Panel Lower.	Panel 3F Transmitting Lower.	Panel 3F Rectifying Lower.

The switches necessary for the control of the set are mounted in a special panel, Board 3G Controlling, (see figure b. on page ~~R13~~ RE3) which is fitted within easy reach of the operator in the C.R.R. The "ON" and "OFF" pushes for the auto-starters are also fitted near the operator as are the main alternator field regulators (112) (190), A.C. voltmeter (241) (see figure a.), also the aerial ammeter (226) and milliammeter (158) (see figure c.)

TYPE 35S
8 KW SUPPLY

Fig. a.



Main Alternator 8 kW.

Circuit breakers (106)(107) and (114)(115) connect the main busbars to the Y size automatic starter (108)(see page MA7) and hand starter(116)(see page MB6) respectively, which control the main alternators for the H.T. supply. The circuit breakers are mechanically set to "ON" by hand, and if an excessive current is taken by the alternator, break to "OFF" by the action of the bobbin shown diagrammatically in series with the contact. They can also be broken by pressing an "OFF" push. An eight pole change over switch (113) connects the starters (108)(116) to the main alternators and enables either starter to be used for either machine and both machines can be run simultaneously, one light. The motor end of the machines can be completely isolated by setting the C.O.S. (113) to "OFF". Indicating lamps(109)(117) are connected between the armature terminals of the starters and the negative contacts of the circuit breakers. The lamps are situated behind a glass slide which is moved by an arm of the C.O.S.(113) and indicates the combination of Breaker, Starter and Machine in use and "OFF" when the C.O.S. (113) is in the "OFF" position. (See figure b.) If the automatic starter (108) is switched on with the C.O.S. in the "OFF" position the indicating lamp (109)or (117) will reach full brilliancy as soon as the starter connects with the first contact as only the 6 ohm starter resistance is in series with it. When the auto-starter (108) is connected to the machine by the C.O.S.(113) and the starter switched "ON" the indicating lamp (109) or(117) will first glow and finally reach full brilliancy when the machine is running at full speed. This effect is due to the indicating lamp being connected in parallel with the motor armature, and as the motor gathers speed the back E.M.F. increases. The same effect is, of course, obtained with the hand starter(116) in use. Machine running lamps (110) and (118) are also fitted and are connected between the motor. ~~and alternator fields, and thus indicate that power is being supplied to the alternators.~~ The alternator field regulators (112)(120) and a voltmeter (241) are fitted in the C.R.R. to enable the operator to control the power without leaving the receiving room. Motor field regulators and frequency meters which were fitted with the earlier machines are not now used as the later machines are of the 500 cycle/sec type for which no variation of speed is arranged.

TYPE 35S

8 KW SUPPLY.

Main A.C. Supply. The main A.C. output is connected to the main A.C. C.O.S. (240). As this switch is separate from the machine C.O.S. (113) care should be taken that it is set to the machine in use. The centre contacts of the main A.C. C.O.S. (240) are connected to the relay switch (243) (see figure f.) which is a double pole switch in the main A.C. supply to the set, and which is operated by a gate switch (173) (see figure m.) on the cage door when the D.C. switch (12) is made. If a hot wire ammeter (245) is used its shunt is fitted in the relay switch box, but the later type moving-iron instruments have no shunts (See Admiralty Handbook of W/T (1931) paragraph 188). Two paralleling switches are fitted but as only one transformer is used one switch (89) only is used to isolate the primary of the main transformer (238) if desired. The main A.C. circuit is completed by the Magnetic Keys (87) and (88) (see figure e.) either of which can be used by setting the change over switch (274) to the magnetic key required. Double contacts are fitted in the magnetic keys with non inductive resistances (236) (237) connected across each side. The auxiliary contacts are adjusted to make before the main contacts and complete the A.C. supply through the resistances. The final movement of the key makes the main contacts and short circuits the resistances. With this arrangement sparking of the magnetic key contacts is considerably reduced when the circuit is broken by the magnetic key.

H.T. Supply. One transformer (238) with a step up ratio of 1 – 40 is used for the H.T. supply, the secondary windings being connected in series and the centre point earthed. The secondary is protected from stray oscillatory currents by two 1 jar condensers (37) (38) and safety horns are connected across each half of the secondary windings. One end of the secondary winding is connected through a fuse (33) direct to the anode of one of the rectifying valves (18) and the other end to the C.W. – T.T. switch (31). This switch has three positions.

C.W. : Both rectifying valves (17) (18) and the smoothing condensers (34) connected to the H.T. supply.

T.T. : Double Pulse (1000 cycles/sec) Both rectifying valves connected to the H.T. supply. Smoothing condensers disconnected and earthed.

T.T. : Single Pulse (500 cycles/sec) One rectifying valve (18) only connected to the H.T. supply. Smoothing condensers disconnected, but not earthed.

~~Two~~ One 1 jar condensers (35) connected in series protect the rectifying valves filament transformer (59) from stray oscillatory currents when using I.C.W. (See Admiralty Handbook of W/T (1931) paragraph 656 (22)).

High peak oscillatory voltages are obtained when using tonic train and may cause sparking in the set if the A.C. volts are high. (See Admiralty Handbook of W/T (1931) paragraph 654). The A.C. input, therefore, should not exceed 250 volts when using T.T. at 500 cycles/sec and 300 volts when using T.T. at 1000 cycles/sec.

The filaments of the rectifying valves (17) (18) are connected to the anode ammeter (28) and anode choke coil (27) and the anodes of the three transmitting valves (19) (20) (21).

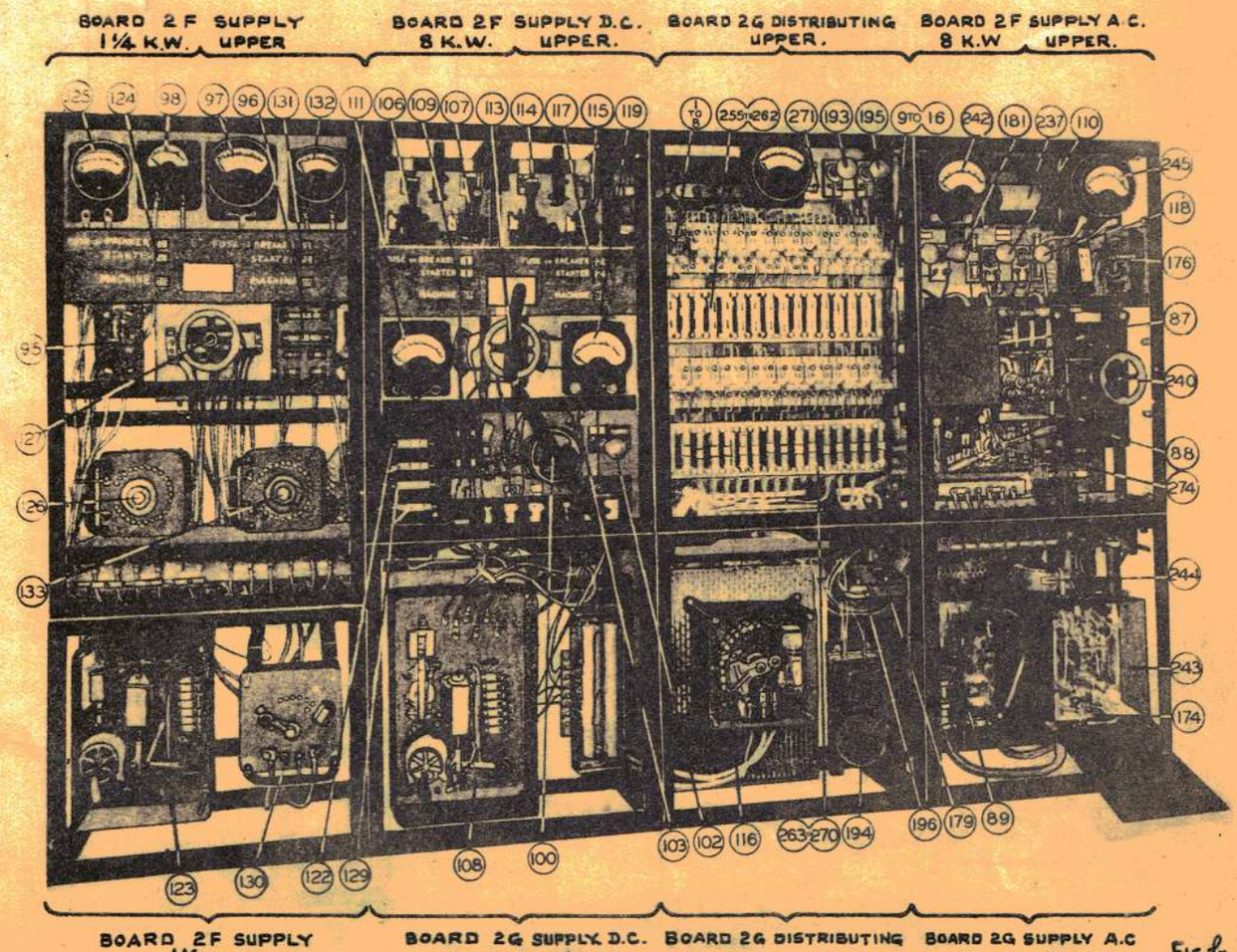


Fig. 6.

RD6
~~R12~~

TYPE 35 S

1/4 K W. SUPPLY.

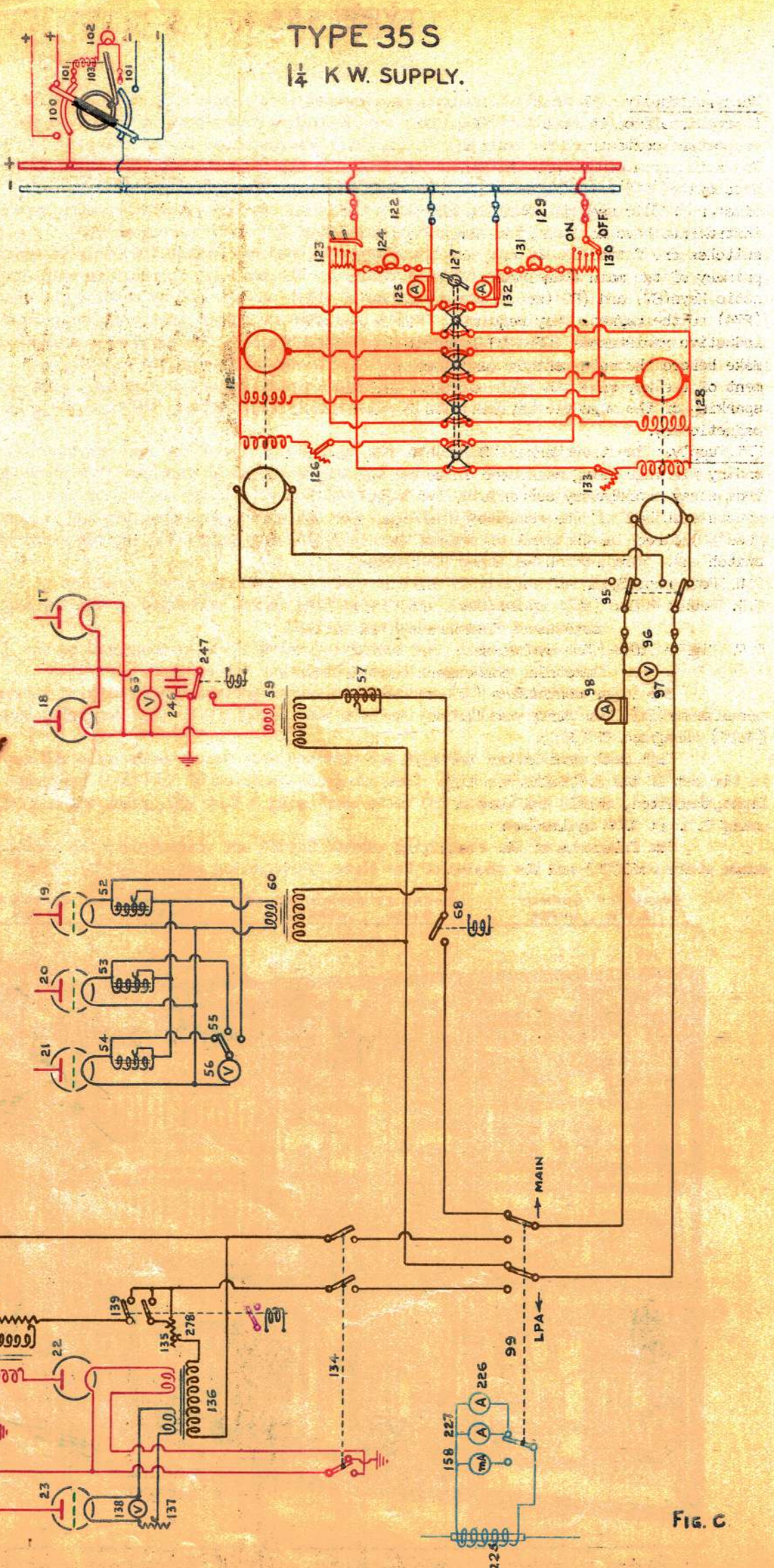


FIG. C

TYPE 35 S

1¼ KW. SUPPLY.

Filament Alternators 1¼ kW. Two pairs of fuses(122) and (129) connect the main bus bars to the W or Z size automatic starter(123)(See pages MA2 and MA2) and hand starter(130)(See Sub-section MP) respectively which control the 1¼ kW alternators for the filament supply to all valves and the H.T. and filament supply for the Low Power Attachment. The fuses(122)(129) correspond to the circuit breakers (106)(107) and (114)(115) in the 8-kW main alternators supply.

An eight pole change over switch(127) connects the starters(123) and (130) to the filament alternators and carries out the same functions as the C.O.S.(113) used for the main alternators. Indicating lamps(124)(131) indicate the combination of Fuses, Starter and Machine in use and are operated in a similar manner to those for the main alternators but no "Machine Running" lamps are fitted.

The alternator field regulators(126)(133) and a voltmeter(97) are fitted in the power board near the set to enable the operator to adjust the A.C. voltage while observing the actual voltage on the valves by the voltmeters(56)(68) in the valve panels.

Filament A.C. Supply. The A.C. output from the filament alternators is connected to the Filaments A.C. C.O.S.(95). As this switch is separate from the machine C.O.S.(127) care should be taken, as in the case of the 8 kW machines, that it is set to the machine in use. Fuses(96) and an ammeter (98) connect the A.C. C.O.S.(95) to the "Main - L.P.A." C.O.S.(99) on the Low Power Panel. This switch has two positions.

MAIN. In this position the A.C. supply is connected through the filament switch(68) to the transmitting valves filament transformer(60) and the rectifying valves filament transformer(59). An additional contact connects the aerial ammeter transformer(225) to the aerial ammeters (226) and(227), one of which is fitted in the valve panels and the other in the C.R.R.

L.P.A. In this position the A.C. supply is connected to the L.P.A. filament transformer(136) and H.T. transformer(140) while the additional contact connects the aerial ammeter transformer (225) to a milliammeter(158) in the C.R.R.

The filament switch(68) is a single pole break in the filaments A.C. supply which completes the circuit to the rectifying valves and transmitting valves filament transformers(59)(60). The rectifying switch(247) is fitted in the secondary circuit of the rectifying valves filament transformer(59), and, when made, completes the filament circuit and when broken earths the filaments and thus the smoothing condensers (34) when using C.W.

Fine adjustment of the filament voltage is obtained by variable chokes which are adjusted by handles on the front of the panels. One choke(57) is connected in the primary circuit of the rectifying valves filament transformer(59) to regulate the filament voltage of both rectifying valves (17)(18). The transmitting valves filament chokes(52)(53)(54) are connected in the secondary circuit of the transmitting valves filament transformer(60) and a voltmeter (56) can be connected to read the filament voltage of each valve by the voltmeter C.O.S.(55).

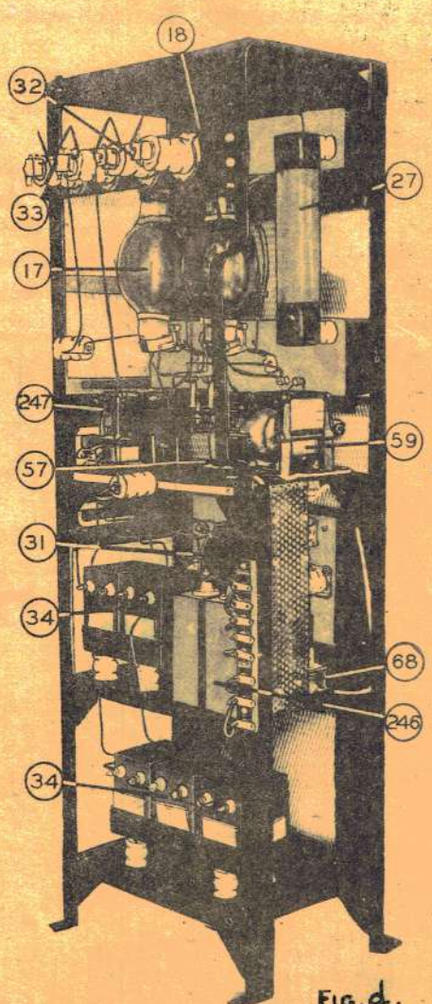


Fig.d.

MAGNETIC KEY

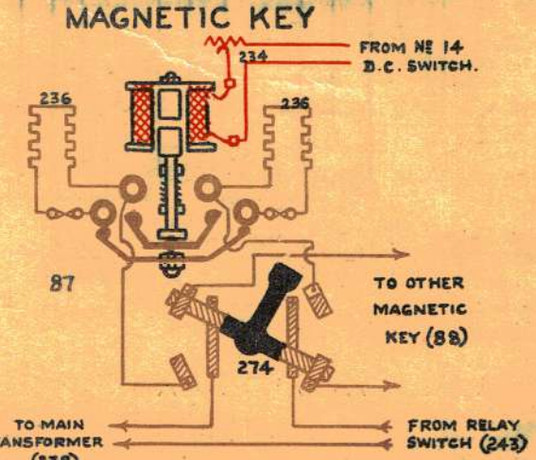


Fig.e.

RELAY SWITCH

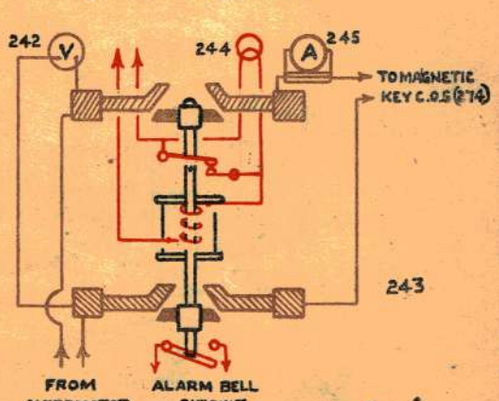


Fig.f.

RDB
~~R14~~

TYPE 35S

TRANSMITTER 3F, L/F.

Wave form	Method of producing oscillation	Nature of circuit	Grid excitation	Feed	Aerial excitation	High oscillating potential electrode.
C.W or I.C.W.	Self	Tuned circuit between anode and filament.	Mutual inductive	Parallel	Direct inductive	Anode

The main L/F transmitting circuit fitted in Type 35S is referred to herein as Transmitter 3F, L/F. Most of the components are housed in panels 3F, Transmitting, Upper and Lower, but some are housed in other panels or positions as indicated in the photographs.

The circuit used is similar to that described in Admiralty Handbook of W/T (1931), paragraph 656, with the exception of the grid leaks and condensers, only one of each being used for the three transmitting valves in Type 35S. Figure g shows the L/F circuit used in Type 35S. The valves are also used for the H/F set as described in the notes on Transmitter 3F, H/F, on page ~~R15.~~ RD10

The H.T. supply is obtained from a single transformer (238) with the secondary earthed at its centre point. When a spark attachment is fitted a change over switch is connected in the transformer secondary circuit to connect the H.T. supply either to the rectifying valves (17)(18) or to the spark attachment 6G. The spark transmitter fitted in the majority of cases is, however, a separate unit, Type 13.

Two links (232)(35) are used to connect the anode and grid circuits either to the L/F or the H/F set. In the L/F position the anode link (232) connects the anode blocking condenser (231) to the anode tapping lead on the aerial coil (214) and the grid link (35) connects the grids of the valves to the grid leak resistance (36) and condenser (39).

The grid circuit consists of the adjustable grid coil (43) the variable grid condenser (46) the grid indicating lamp(44) and shunt resistance (45). The grid coil is wound on a pancake former with four tappings which are connected in circuit by a barrel switch operated from the front of the panel. The one jar grid condenser (46) can be varied by a handle on the front of the panel and should be adjusted to a setting which does not cause the grid indicating lamp (44) to burn at more than half brilliancy.

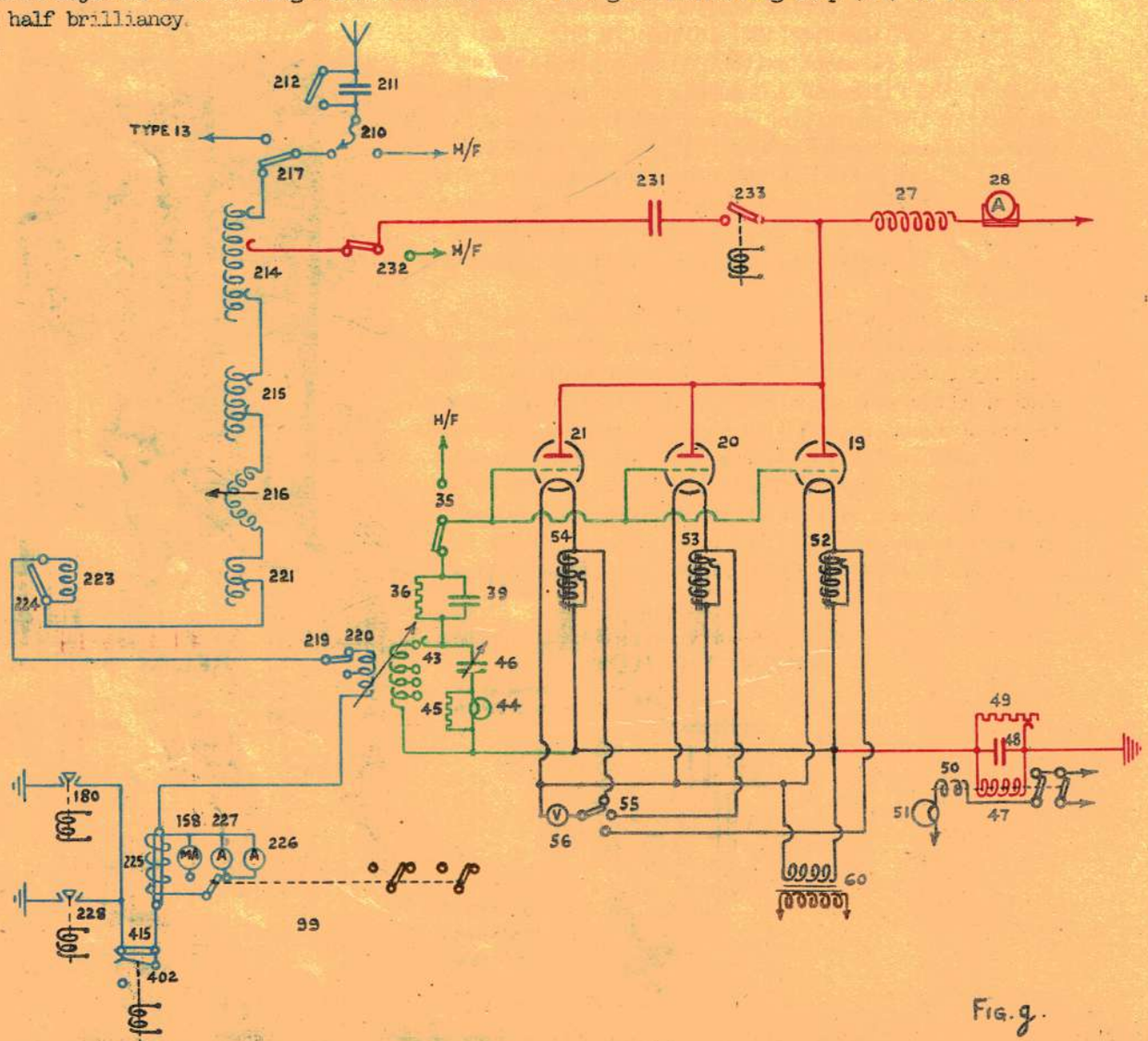


Fig. g.

TYPE 35S

TRANSMITTER 3F, L/F.

The filaments of the valves are connected to earth through the overload relay which consists of an inductance coil (47) condenser (48) and adjustable resistance (49) in parallel. The condenser (48) passes the R/F component of the valve current. The D.C. component passes through the inductance coil (47) and resistance (49) and the adjustment of the latter varies the proportion taken by the former. The magnetic field of the inductance coil (47) acts upon an armature against the tension of a spring. This armature carries two contacts and when attracted over against the spring, by virtue of the amplitude of current in the inductance coil (47), one contact completes the circuit of the hold on coil (50) while the other contact short circuits the supply to the bobbin of the main filament switch (63) thus switching off the valves (See figure o.). Once the adjustment of the spring is fixed the value of the current at which the overload will operate is adjustable by varying the resistance (49).

The valves have separate adjustable chokes (52)(53)(54) in the filament circuits and the filament current is regulated by handles at the front of the panel which, once set, can be locked in position. A voltmeter (56) can be switched to any valve by the voltmeter C.O.S. (55) to ensure that the correct voltage is applied to each valve filament.

The aerial circuit consists of an aerial series condenser (211) main aerial coil (214) 180 mic coil (215) variometer (216) fine tuning coil (221) low power set coupling coil link (224) aerial coupling coil (220) aerial ammeter transformer (225) emergency link (415) and operating switch (223). The aerial series condenser (211) is brought into use for frequencies above 500 kc/s by opening the short circuiting link (212).

Tapping for rough tuning from the upper and lower ends of the main aerial coil (214) are taken to the upper (275) and lower (277) links of the main wave change link board and the anode tapping leads are connected to the middle row of links (276) (See figure u. on page ~~[illegible]~~ RE18). Finer tuning is obtained by upper and lower tappings on the 180 mic coil (215) which has a separate linkboard (see figure r.). The variometer (216) is adjustable by a handle on the front of the panel and a locking device is fitted to the handle to limit the movement to suit the frequency in use. A link connects either six or twelve turns of the aerial coupling coil (220) in use as required.

Coupling between the aerial and grid circuits can be adjusted by a handle on the front of the valve panels which varies the angle from 0 to 30° between the two coils The fine tuning coil (221) consists of a flat spiral coil with a revolving arm pivoted at its centre. The arm carries a clip which connects to the fine tuning coil in the position required. A hole in the extended steel front of the panel gives access to the clip but no safety device is fitted to prevent the operator adjusting the fine tuner while the set is working. The aerial ammeter transformer (225) is connected to the aerial ammeter (226) for the main set by the Main – L.P.A. C.C.S. (99) as described in the notes on Transmitter 3G Low Power (See Page ~~[illegible]~~ RE11).

Tuning. The set is tuned by placing the wavemeter mutual coil near the main aerial coil (214) or 180 mic coil (215) and adjusting the tappings on each of the tuning coils until the desired frequency is obtained. At each adjustment of inductance in the aerial circuit the grid circuit should be readjusted and the anode tapping connected to that point in the aerial circuit which gives the maximum aerial current with the minimum anode current. The former is shown on the aerial ammeters (223) and (227) and the latter on the anode ammeter (28). The theory of the adjustment of the anode tapping point is fully dealt with in Admiralty Handbook of W/T (1931) paragraph 614.

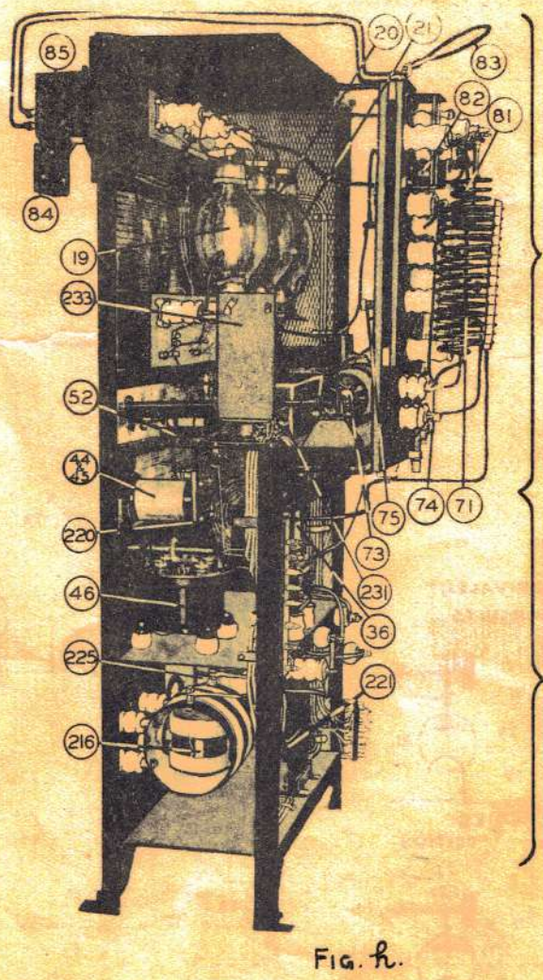


FIG. h.

RD 10
~~R16~~

TYPE 35S

TRANSMITTER 3F, H/F.

Wave form	Method of producing oscillation	Nature of circuit	Grid excitation	Feed	Aerial excitation	High oscillating potential electrode
T.C.W.	Self	Tuned circuit between anode and grid.	Direct capacitive	Parallel	Mutual inductive.	Anode

The H/F transmitting circuit used in Type 35S is explained in Admiralty Handbook of W/T (1931) paragraph 712.

The set is not contained in a separate panel but is mounted on teak boards, fixed on brackets which are secured to the framework at the rear of the L/F panel.

Two links (232) (35) are used to connect the anode and grid circuits either to the L/F or the H/F set. In the H/F position the anode link (232) connects the anode blocking condenser (231) to the H/F oscillatory circuit and the grid link (35) connects the grids of the valves to the grid leak resistances (79) and to the H/F oscillatory circuit.

The same valves are used for the L/F and H/F sets and the H.T. and filament supplies are described in the notes on 3 kW. and 1½ kW. supplies pages ~~R44~~ and ~~R46~~, RD5 RD7 and Transmitter 3F, L/F page ~~R44~~. RD8.

The oscillatory circuit is connected in the series or parallel position by the series parallel links (74) the equivalent circuits of which are shown below. The inductance coil (71) is adjustable by a flexible connection and the tuning condenser (73) varied by an extension handle which is inserted through a hole in the metal screen and is operated from the front of the panel.

Coupling to the aerial can be varied by adjusting the position of the aerial coupling coil (81). A send-receive switch (80) connects the aerial circuit to the aerial coupling coil (81) or the H/F receiver and is operated by a switch on the Board 2G Controlling in the receiving cabinet (see notes on D.C. Switch 10), figure p. page ~~R66~~. RE 14 ~~R14~~.

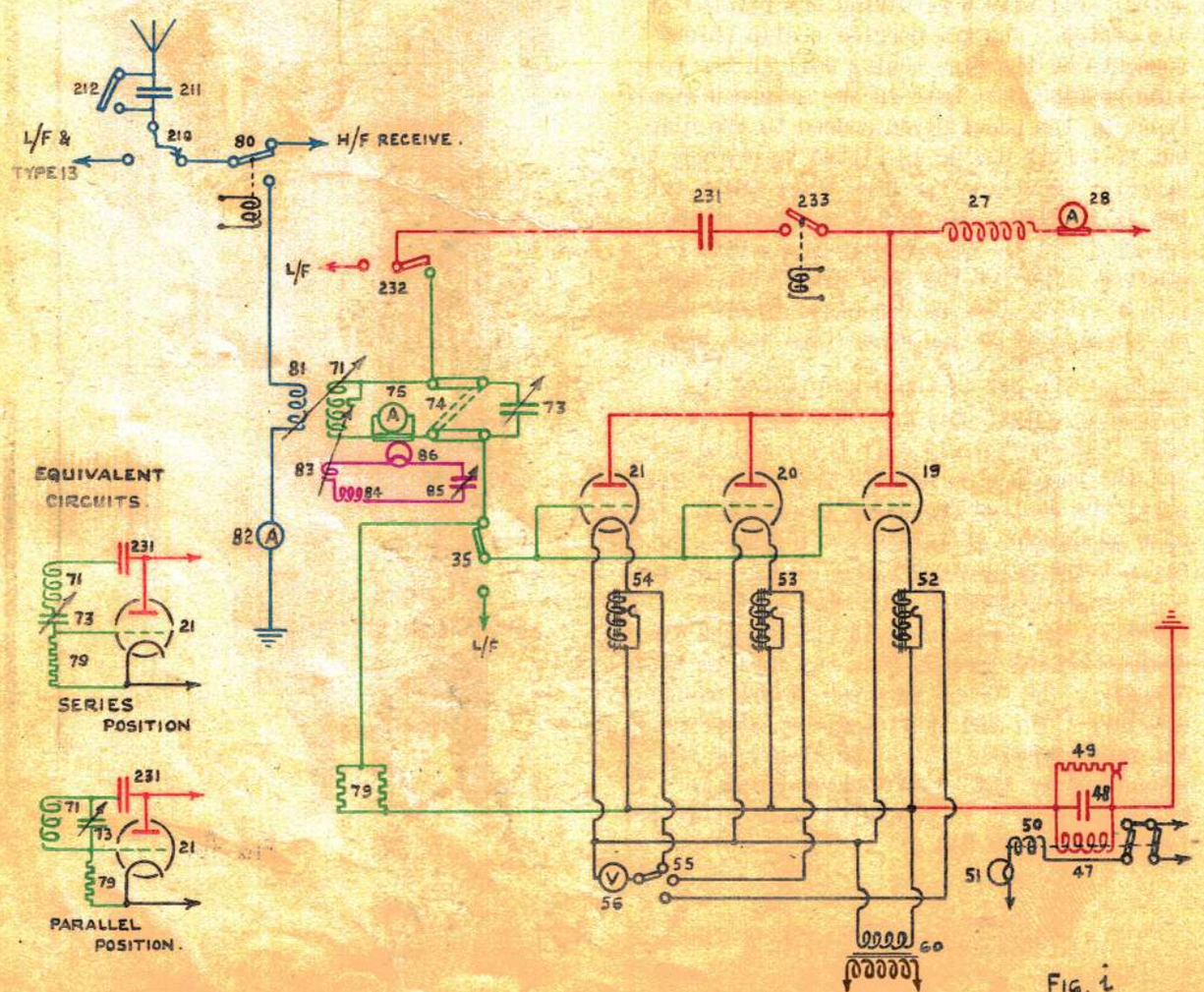


FIG. 1

TYPE 35S

EMERGENCY SET.

The emergency set is fitted to provide a means of transmission when all power from the ship's mains has failed or is not available.

The set is entirely operated by the 20-volt supply from the secondary battery (417). (See Admiralty Handbook of W/T (1931) paragraph 430.)

In order to supply 10 volts to the bobbin of the send-receive switch(402) a tapping on the middle of the 20 volt battery (417) is connected to the bobbin through a tumbler switch(414) which is fitted in the receiving cabinet. The full 20 volts is connected to the primary of the emergency coil(403) through the morse key(413). The send-receive switch (402) connects the aerial circuit direct to the emergency coil spark gap (404) and the main aerial circuit is used as the oscillatory circuit. This method of transmission (known as Plain Aerial) causes considerable interference to neighbouring receiving sets (see Admiralty Handbook of W/T (1931) paragraph 418) and should only be used when no other set is available.

A catch on the link (415) prevents the send-receive switch (402) being accidentally switched to "send" and earthing the aerial through the secondary of the emergency coil (403) when the emergency set is not in use. As the main aerial circuit is used as the oscillatory circuit the transmitted frequency will depend on the adjustment of the main aerial circuit.

large shock effect

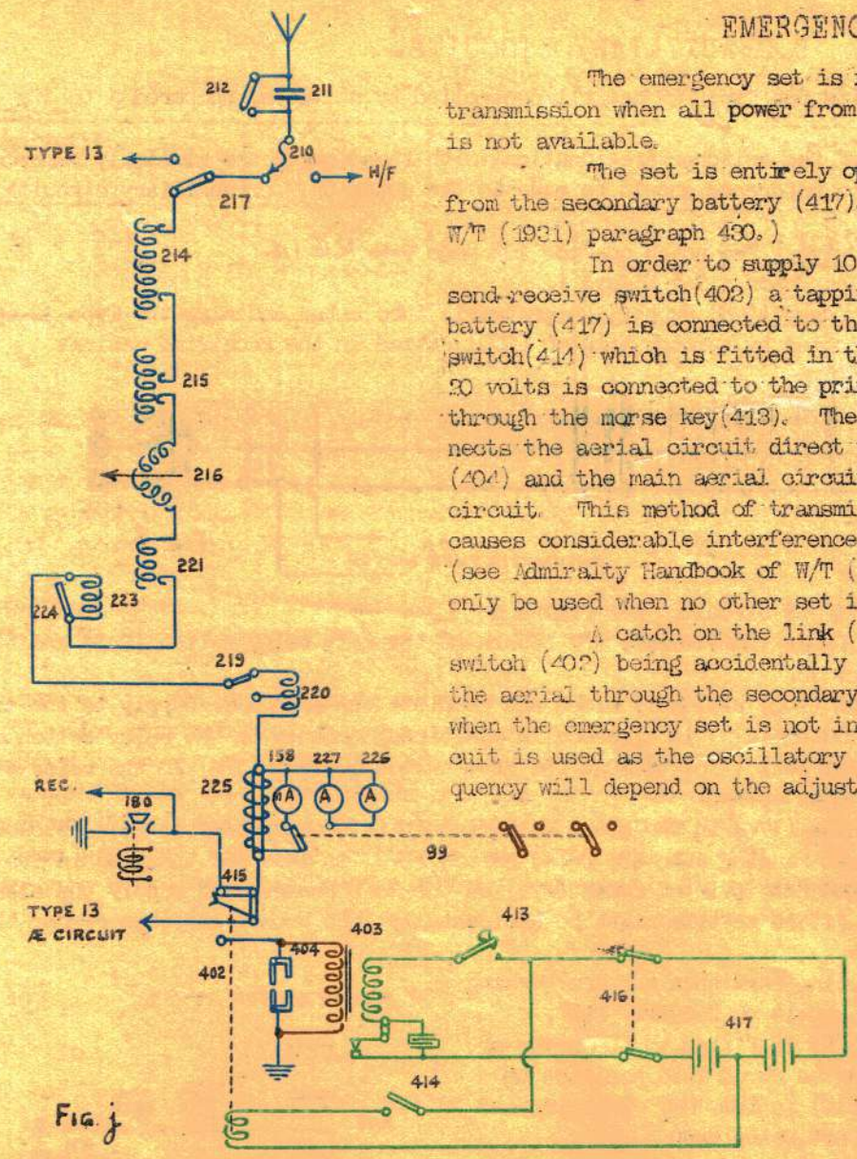


Fig. j

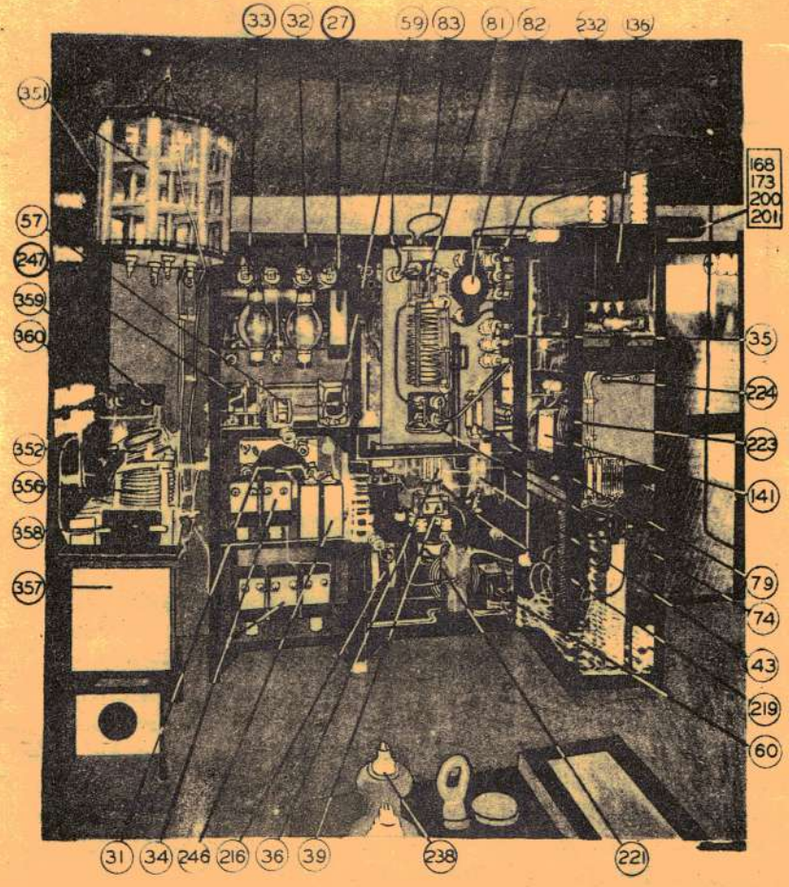


Fig. k.

RD12
~~R18~~

TYPE 35S

D.C. AUXILIARY CIRCUITS.

The auxiliary circuits for Type 35S are all controlled by switches, numbered 1 to 16, fitted on No. 3 power board.

The duties of some of the switches are identical with those which are similarly numbered in Type 36S. Where this occurs reference should be made to the notes on D.C. auxiliary circuits, Type 36S.

D.C. Switches (1) to (10) inclusive. See notes on Type 36S page ~~R30~~ RE14

D.C. Switch (11). Pneumatic Tube Motor. See figure l.

D.C. switch (11) and fuses (265) supply the pneumatic tube motor and also the Type 13 spark gap motor (369) which is controlled by a motor starter (370) fitted in the receiving cabinet.

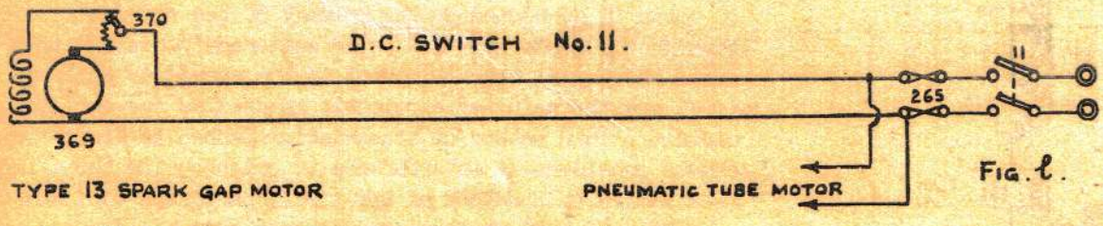


Fig. l.

D.C. Switch (12). Blower and Safety circuit. See figure m.

D.C. Switch (12) and fuses (266) supply the bobbin of the main relay switch (243) and the rotary converter (366) for Type 13.

The main relay switch (243) will only close and complete the main A.C. supply to the transformers when the gate switch contact (173) is closed. An additional contact on the relay switch completes the circuit of the safety bell (175) through the gate switch contact (174) if the relay switch should stick "ON" when the gate is opened.

The gate switch contact (174) in the alarm bell circuit is broken when the gate is closed and thus prevents the alarm bell ringing when the relay switch (243) is made and the gate in its normally closed position. A separate pair of fuses (271) on the No. 3 power board supply the alarm bell circuit but no switch is fitted as this might be accidentally left broken and thus render the alarm bell circuit inoperative.

To prevent the set being used when men are working aloft in the vicinity of the aerials or feeders, etc., a sliding plate, marked "Man aloft" is fitted to the cover of D.C. Switch (12). The plate can be moved into position to lock the switch (12) in the "OFF" position and thus prevent the set being used.

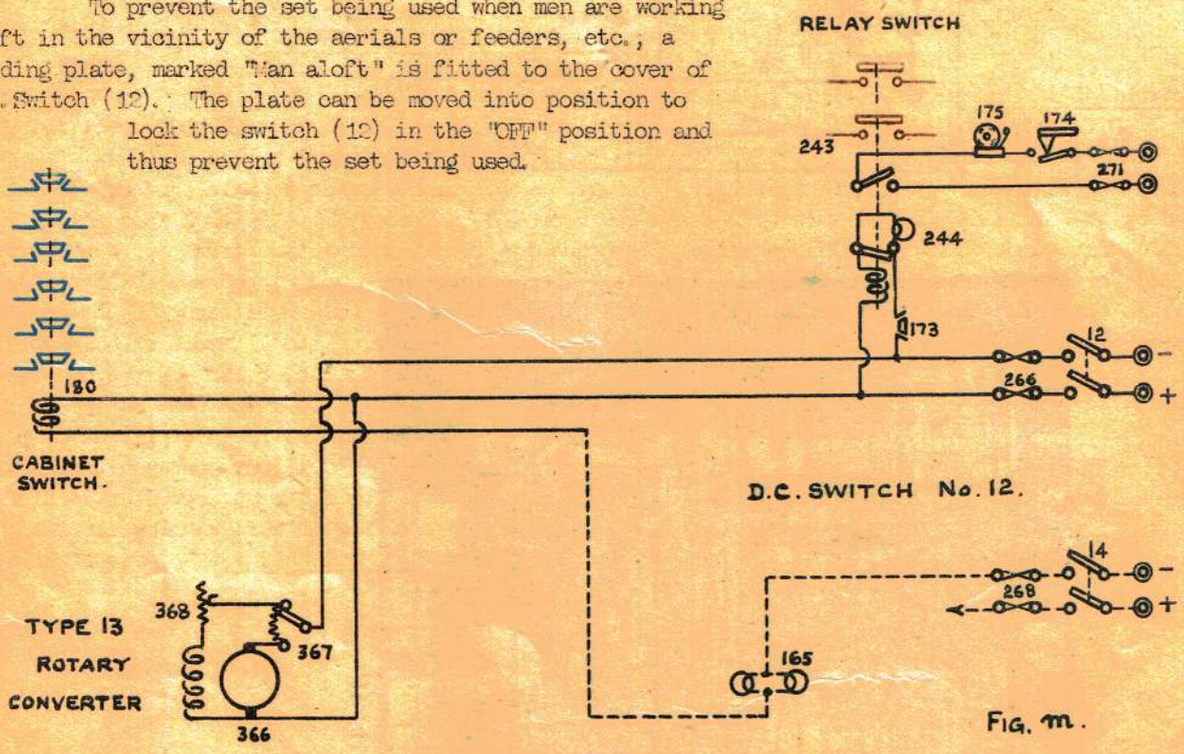


Fig. m.

D.C. Switch (13). Morse key remote control and bell signal circuit. See notes on Type 36S Page ~~R30~~ RE14

D.C. Switch (14). Key circuit. See figure n.

D.C. switch (14) and fuses (268) supply the master key circuits for operating the magnetic keys (87)(88) of the main set or low power set (139), the operating switch (228) cabinet switch (180) and anode key (233). Three contacts of the master key C.O.S. (177) connect the operating circuits to the master key required. The magnetic keys are connected in circuit by the magnetic key C.O.S. (176).

When transmitting on the low power set, which uses the main aerial circuit, it is necessary for the operating switch (228) to function and earth the transmitting aerial, but the cabinet switch (180) is not required to operate as this earths all the receiving bays in the C.P.R. For this reason the negative lead from the bobbin of the cabinet switch (180) is connected to the positive of D.C. switch (12) which supplies the main relay switch (243). The cabinet switch (180) will therefore only operate when the circuit for the main relay switch (243) is made.

TYPE 35S

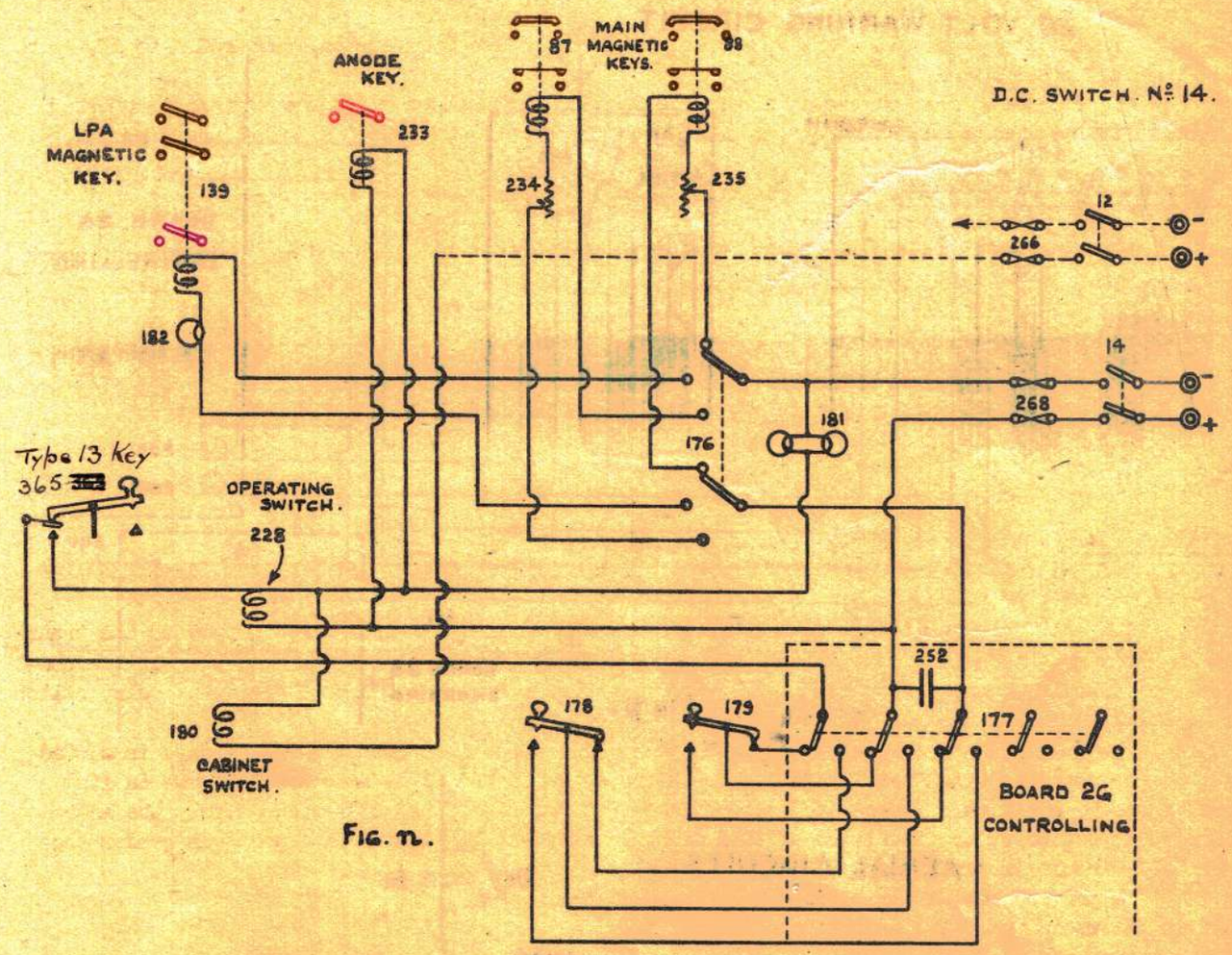


Fig. n.

D. C. Switch (15). Control panel valve set. See figure o.

D. C. Switch (15) and fuses (269) supply the bobbins of the filament switch(68) rectifying switch (247) overload relay hold on coil (50) and the H/F send-receive switch (80).

The filament (68) and rectifying (247) switches are connected in parallel and are controlled by the filament control switch (163) on the Board 2G Controlling. A 2½ c.p. indicating lamp(166), fitted on the Board 2G Controlling, is connected in parallel with the 50 c.p. resistance lamp(164) for the filament and rectifying switches. The indicating lamp(166) burns at half brilliancy when the filament control switch (163) is "ON" but will burn at full brilliancy if the resistance of the filament switch bobbin is short circuited by the overload relay (50). The full action of the overload relay is explained on page RD9 ~~R15~~. Auxiliary contacts are fitted to the filament control switch(163) for the 20 volt warning circuit.

D. C. Switch (16). Spare switch.

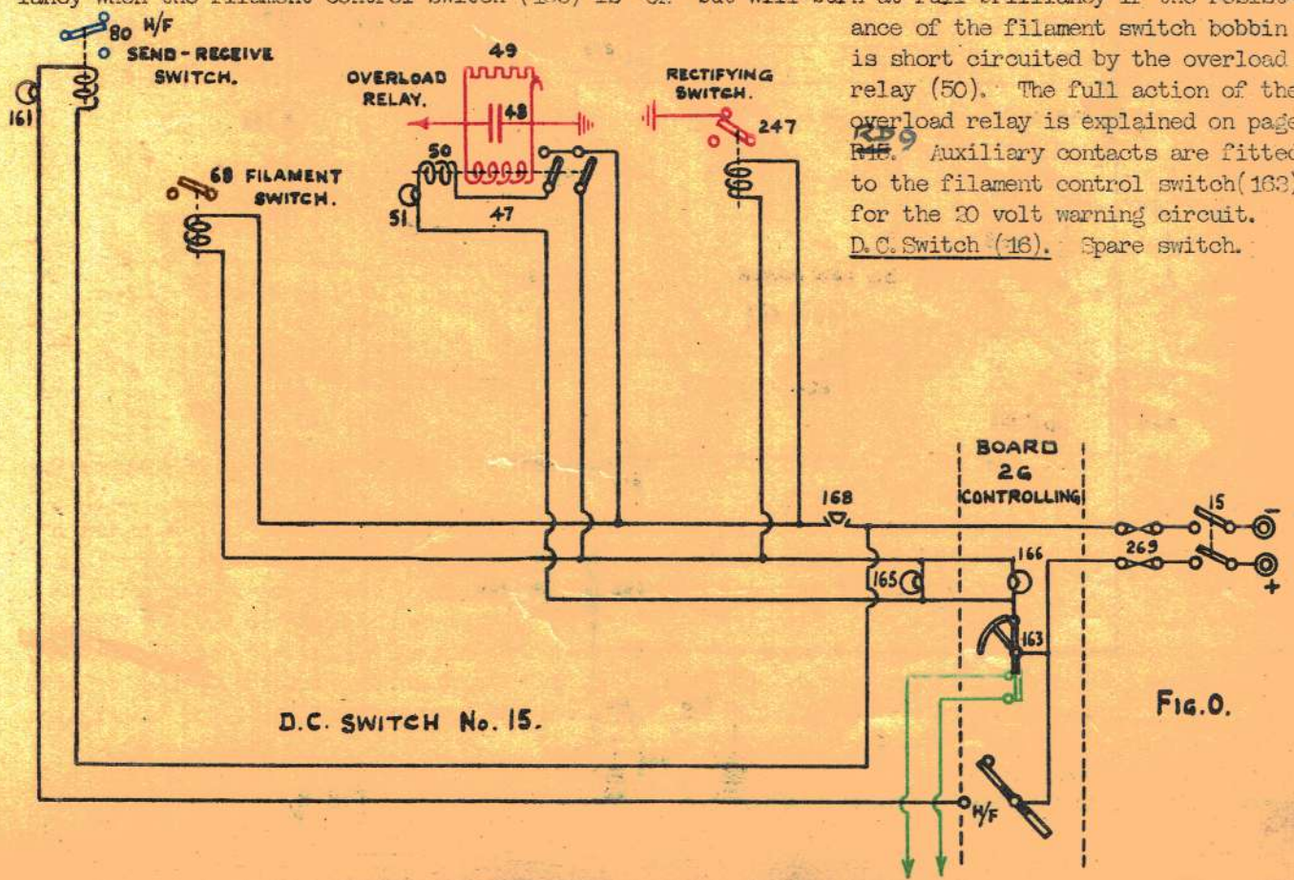


Fig. o.

RD 14
R20

TYPE 35 S

20 VOLT WARNING CIRCUIT

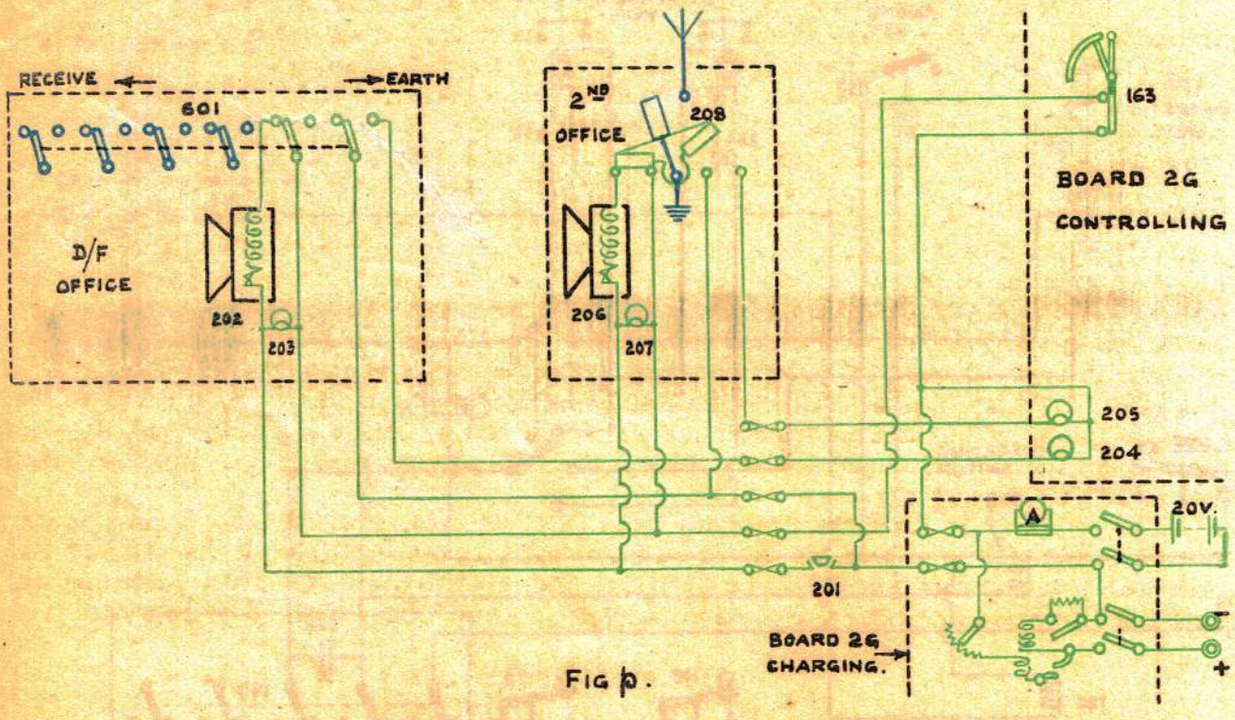


Fig p.

AERIAL CIRCUITS

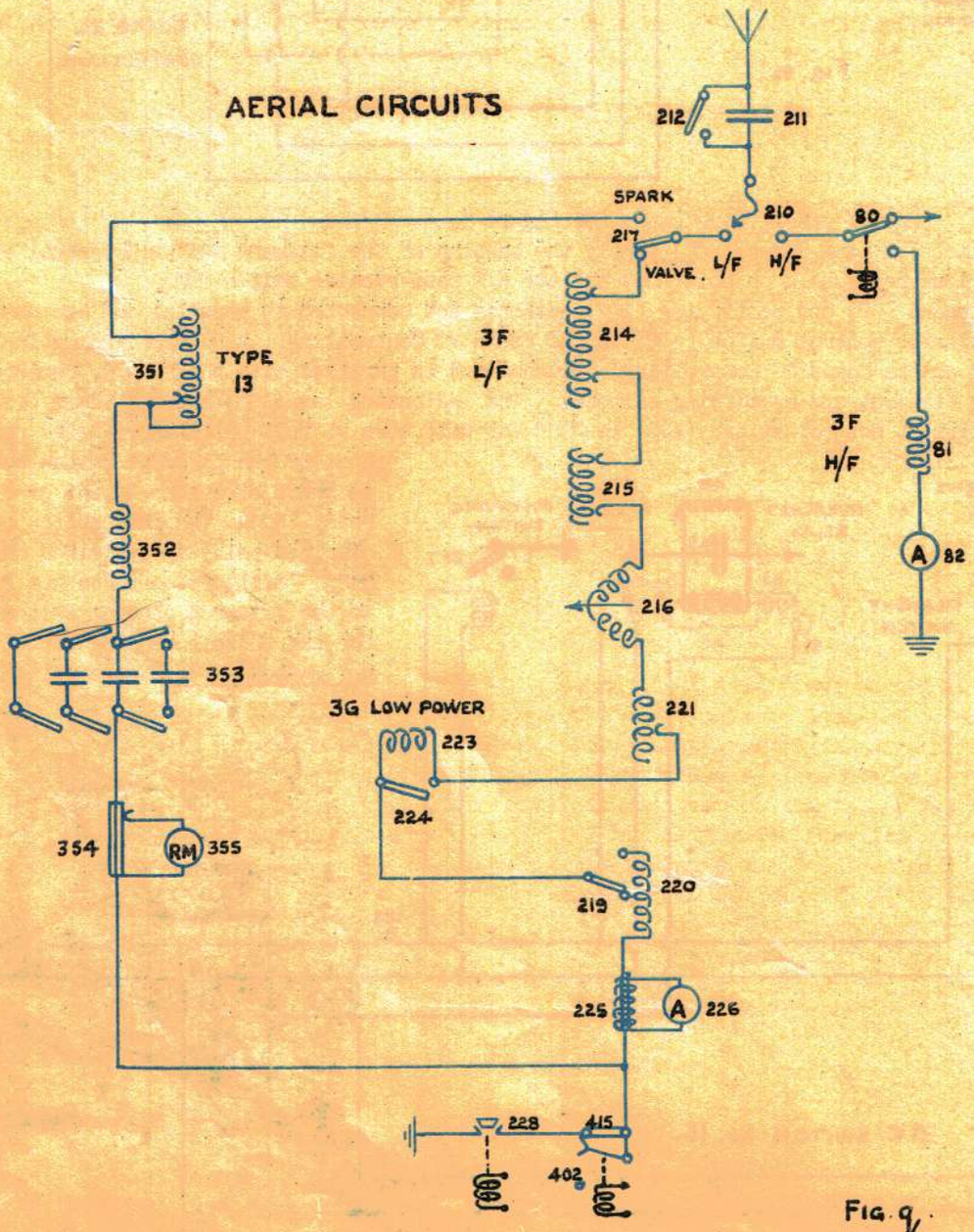


Fig q.

RD 15
R21

20 VOLT WARNING CIRCUIT.

In order to protect the receiving gear in the Second and D/F Offices when the main set is transmitting, a warning circuit is fitted which consists of loud sounding buzzers (202)(206) and lamps (203)(207) operated by the 20 volt supply from the Board 26 Charging.

The D/F and Second Offices are fitted with aerial safety switches (601) and (208) for earthing the aerials when the main set is transmitting or the office is not in use. In the "receive" position the switches (601) (208) are connected as shown in figure p. and complete the 20 volt supply to the loud sounding buzzers (202) (206). When the operator in the Main Office makes the filament control switch (163) to transmit on power an auxiliary contact on the switch (163) makes the 20 volt supply to the buzzers (202)(206) and warning lamps (203) (207) in the D/F and Second Offices respectively. The warning lamps (203) (207) will burn as long as the filament control switch (163) is made but the circuit to the buzzers (202)(206) is broken by the respective aerial safety switches (601) (208) when the operators earth their aerials. In addition to breaking the circuit to the buzzers (202)(206) the aerial safety switches complete the supply to reply lamps (204) and (205) fitted on the Board 26 Controlling. The reply lamps (204)(205) indicate to the operator in the main W/T Office that the D/F and Second Office aerials are earthed and it is safe to transmit. A gate switch contact (201) breaks the supply to the buzzers (202) (206) and warning lamps (203)(207) when the gate is opened.

It should be noted that the reply lamps (204)(205) will light when the aerials in the D/F and Second Offices are earthed by the aerial safety switches (601)(208) irrespective of the position of the filament control switch (163) and gate switch contact (201), thus affording the main office a permanent indication whenever the D/F or Second Office aerials are earthed.

AERIAL CIRCUITS.

The aerial circuits and methods of connecting the transmitters to the aerial are shown in figure q. . A flexible lead (210) is used to connect the aerial to the H/F Send - Receive switch (80) or to the change over link (213) for Type 13 or Transmitter 3F L/F.

WAVECHANGE LINKBOARDS.

To enable quick wave changing an arrangement of links is provided for varying the inductance coils in the aerial circuit. Two linkboards are fitted, mounted on separate stands, and used for coarse and fine tuning. The main linkboard is used for coarse tuning and is similar to that used with Type 36S and shown in figure u on page RE18. It consists of three rows of link connections (275)(277)(276) for adjusting the upper and lower tappings and the anode tapping leads to the main aerial coil (214). The fine tuning linkboard, see figure r., has two rows of link connections (278) (279) and is used for making adjustments on the 100 mic aerial coil.

In each case the connecting link can be used in one of six positions marked "A" to "F". Connections to the linkboards are made for the six frequencies more generally used. After the set has been tuned the connections to the linkboards are arranged so that the links on both linkboards are in "A" position for one frequency, in "B" position for another frequency and so on, thus enabling the adjustments on aerial coils to be changed quickly to any of six predetermined frequencies.

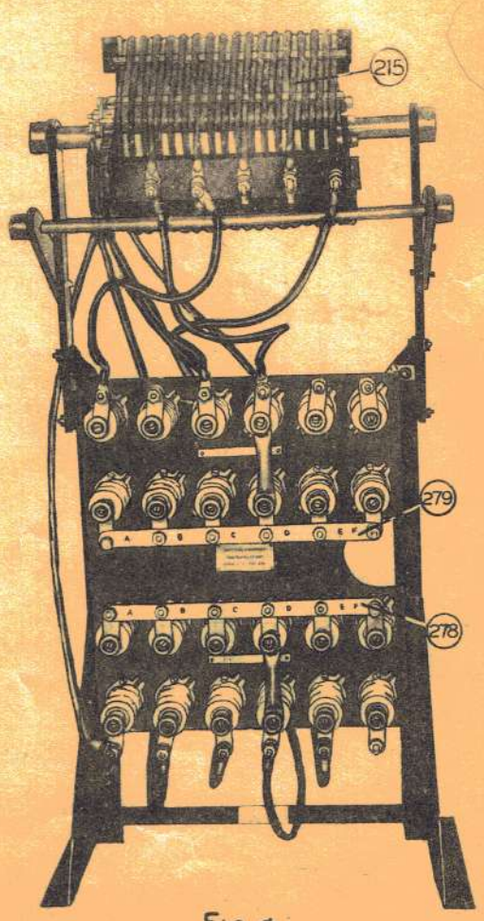


FIG. 4.

TYPE 13-35S.

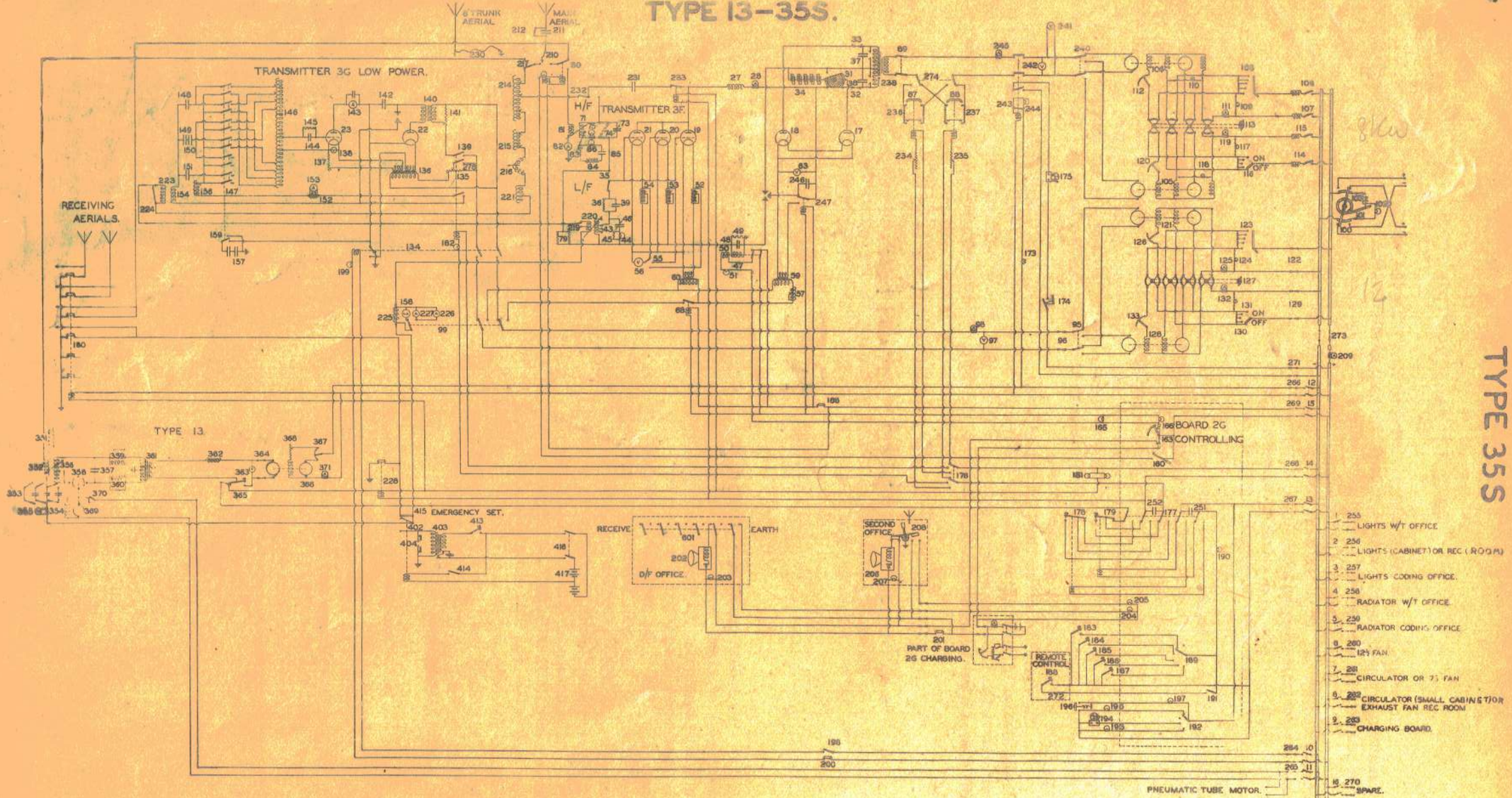


FIG. 5.

TYPE 35S