SUB-SECTION

RC

TYPE 34A

PAGE RC2

RC2

TYPE 34A FITTED WITH TYPE 2*.

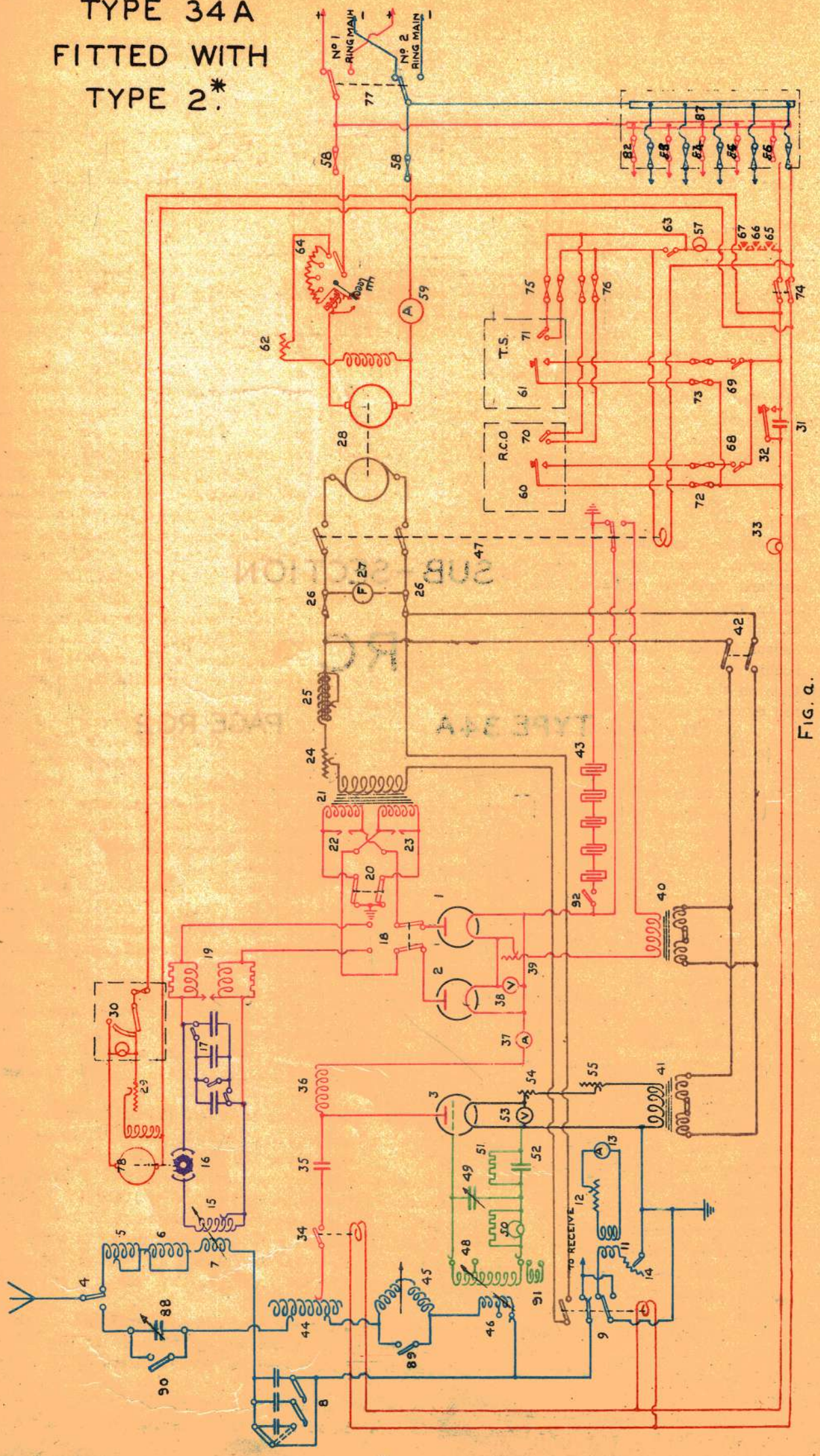

FIG. a.

TYPE 34A

Date of design:- 1918.
Frequency range:- 60 - 1364 kc/s.
Power supply:- Rotary converter 1½ kW.
Associated wavemeters:- Pattern 1492B or 69.
Valves used:- One NT4A and two NU1.

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

Types 33 and 34A are identical medium power valve sets differing only in their power supply which is usually taken from a spark set fitted in conjunction. Type 33 is usually fitted with Type 9 and being obsolescent will not be further described. Type 34A is usually fitted with Type 2* (see page P5) and is described below. A full explanation of the circuit used is given in Admiralty Handbook of W/T (1931), paragraph 656 and a complete sketch in figure a.

The H.T. supply for the two rectifying valves is obtained from the main transformer (21) the secondary windings being connected in series with the centre point earthed by means of the transformer secondary series parallel switch (20). A smoothing unit (43) consisting of five helsby condensers is connected to the rectifying valves filament and transmitting valves anode for producing C.W. To transmit I.C.W. a switch (92) is used to break the connection to the smoothing condensers(43).

Power to the main transformer (21) can be regulated by the lamp resistance board (24)which is in series with the main A.C. supply to the transformer primary. Details of the lamp resistance board (24) are given in figure b. In order to prevent local interference during reception a magnetic switch (47) is fitted which makes and breaks the A.C. supply from the rotary converter to the main and filament transformers. The switch (47) is controlled by a tumbler switch (63) in the receiving cabinet and duplicate switches (70)(71), connected in parallel with the tumbler switch (63), are fitted in the R.C.O. and T.S. respectively to enable the operators in these positions to switch the set off as desired. An additional contact on the magnetic switch (47) acts as a rectifying switch and earths the smoothing condensers (43) when the magnetic switch (47) is broken. The circuit to the bobbin of the switch (47) is connected in series through the cage door contacts (65)(66)(67) in addition to the control switch (63), and the smoothing condensers (43) are thus discharged and earthed by opening any of the cage doors to make adjustments to the set.

The filament supply for the valves is obtained from two step down transformers (40) and (41). As the filaments of the rectifying valves (1) and (2) are connected to the anode of the transmitting valve (3) and will be at a high potential when the set is working, the filament rheostat (39) and voltmeter (38) for the rectifying valves are fitted inside the safety screen. The filament voltage of the rectifying valves should therefore only be adjusted when the main transformer secondary switch (18) is broken. The filament rheostat (54) and voltmeter (53) for the transmitting valve (3) are fitted in the receiving cabinet under the control of the operator. To compensate for the different resistances of the varying lengths of cable between the filament transformer (41) and the rheostat (54) in different ships an additional resistance (55) is connected in series with the filament supply. This resistance (55) should be adjusted to give the correct voltage on the transmitting valve (3) when the filament rheostat (54) is in the central position. By this means the valve filament can be protected from being burnt out should the rheostat (54) be accidentally switched to the full "ON" position.

The A.C. output from the rotary converter supplies the filament transformers (40) and (41) in addition to the main H.T. transformer (21). The load on the rotary converter will therefore be greater when the magnetic key (9) is made than when the key is broken. The A.C. supply to the filament transformers will, in consequence, rise and fall with the movement of the magnetic key (9). No compensating arrangement for this is fitted in Type 34A and care should be taken that the filament voltage is adjusted when the magnetic key is broken.

Two separate grid coils (48) and (91) are used for the lower and higher frequencies respectively. Either coil (48) or (91) can be connected to the grid circuit by two flexible leads. The low frequency winding has a tapping for rough tuning. When using the high frequency winding (91)the whole of the low frequency winding (48) must be short circuited by a suitable length of wire. The grid condenser (49) is variable for fine adjustment and is controlled by the operator in the receiving cabinet by an arrangement of wires and drums. A 90 ohm non-inductive resistance with a 32 c.p. 100 volt carbon filament lamp in parallel (50) giving a total resistance of 45 ohms, is connected in the grid oscillatory circuit to reduce the current to a suitable value. The lamp will glow and indicate an excess of grid oscillatory current due to incorrect tuning or the grid and aerial circuits being too tightly coupled.

The bobbins of the magnetic key (9) and the anode key (34) are connected in parallel. The anode key (34) should be adjusted to make before the upper contact of the magnetic key (9) which makes and breaks the A.C. supply to the main transformer (21), to prevent sparking at the anode key contacts.

The link change over switch (4) connects the aerial either to the Type 2 (5) or the Type 34A (44) aerial coil. A No.7 condenser (88) is wired in series with the aerial and is used on wave

frequencies above 500 kc/s. A switch (90) short circuits this condenser (88) on lower frequencies. A variometer (45), which is controlled from the cabinet is used for aerial fine tuning. A switch (89) is fitted to short circuit the variometer (45) on wave frequencies above 300 kc/s. The aerial coupling coil (46) is adjustable by means of a plug which connects either half or all the coil in circuit. Coupling between the aerial and grid circuits is increased by sliding the grid coil (48) inside the aerial coupling coil and is held in position by a nut on the baseboard. Power in the aerial is regulated by the 10 ohms aerial resistance (14). This method should be used in preference to the lamp resistance board(24) in the A.C. circuit as the anode voltage may be reduced by the latter method until valve oscillations become unstable.

Tuning. (See Admiralty Handbook of W/T (1931) paragraph 843). The set is tuned by coupling the wavemeter mutual coil to the low potential end of the aerial coil (44). The upper and lower aerial coil tappings are then adjusted to obtain the required frequency, the anode tapping point being shifted as necessary to give maximum aerial current for minimum reading in the anode ammeter (37). Before transmitting the grid condenser (49) should be adjusted for maximum aerial current, and, if possible, the wave frequency should be checked by using a K5; any small adjustment necessary being made by the variometer (45)

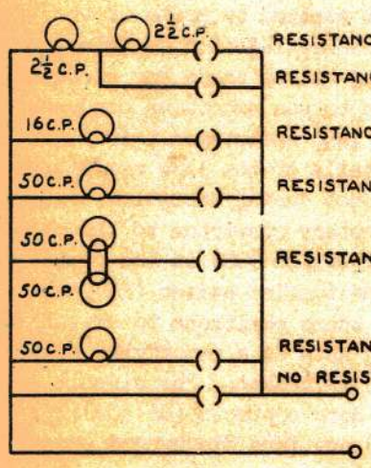

FIG 6.

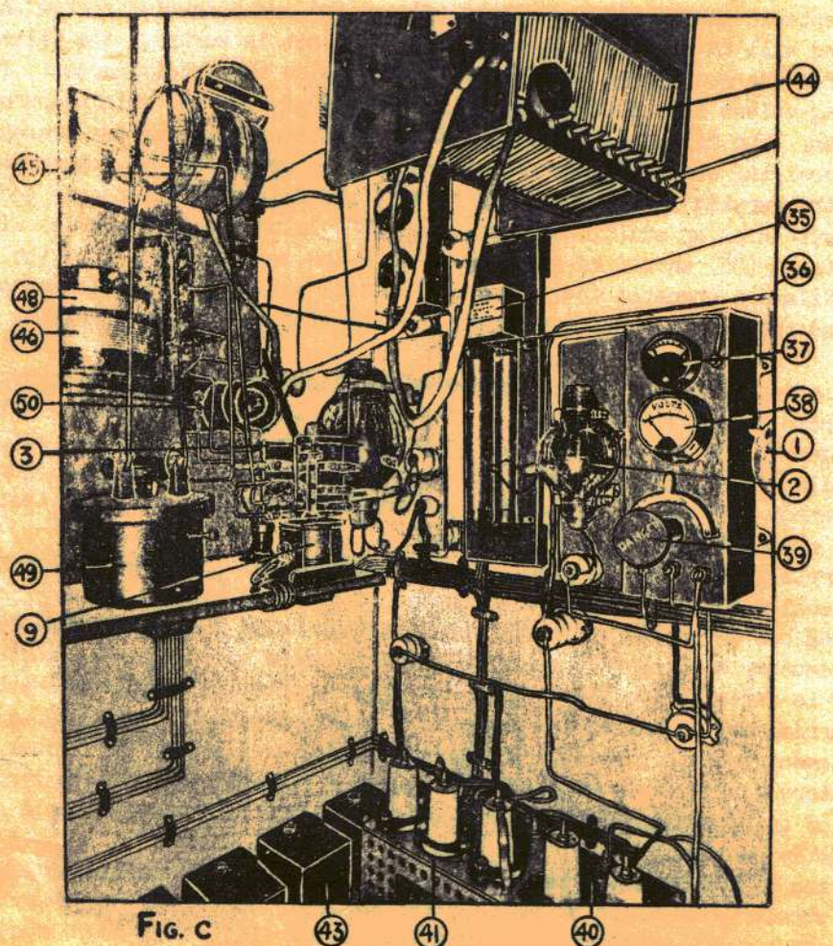

FIG. C