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M.275.

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NOTES ON NAVAL QUENCH RECEIVER.

Description.

This receiver is primarily intended for reception of I.C.W. on frequencies between 19 and 54 megacycles, the range being covered by two plug-in coils. A diagram of connections is shewn in Fig.1, in which it will be seen that the terminals AE_1 and AE_2 are connected to a small coil variably coupled to the receiving circuit L_1 C_1 associated with the first valve. Leaky grid rectification is also performed by this valve, the values of grid leak R_1 and condenser C_2 being 1-megohm and 0.0003-mfd. respectively. This valve is brought to the oscillating point by adjustment of a 30-ohm rheostat fitted in its filament circuit. In the H.T. supply lead the coil L_2, which provides coupling to the quench circuit, is connected. The second valve generates oscillations on about 20 kc/s. the circuit L_3 C_4 L_4 C_5. This frequency can be varied over a small range by altering the distance between L_3 and L_4 by means of a knurled knob in the coil bank, but this adjustment should not be necessary as it is only provided so that all naval quench receivers can work on a common quench frequency. The amplitude of the quenching voltage applied to the receiving valve anode is adjusted by a parallel variable resistance R_2 across the coupling coil L_2. A stage of somewhat peaky note-magnification is provided by a Navy intervalve transformer connected between the receiving valve and the output valve. Maximum amplification is obtained at about 700 cycles. This low-frequency stage can be cut out by means of the black switch and all filament circuits are broken by the yellow switch.

Instructions for Use.

Connections to Left-Hand Terminals.

L.T. supply - 4 volts (at 0.3-amp.).

H.T. supply - 50 volts (at 10 milliamps.).

L.T. positive is common with H.T. negative.

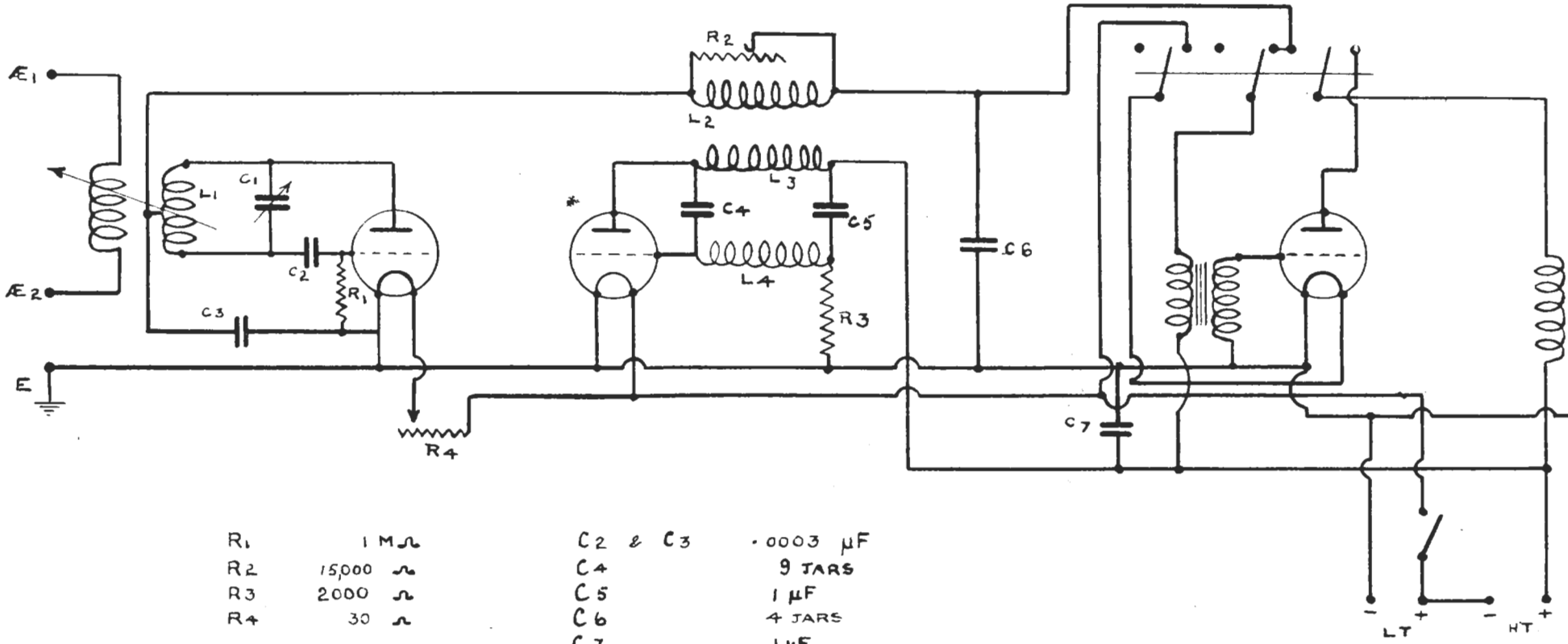
In accordance with general naval practice, a 5/1 step-down output transformer is fitted, therefore low resistance telephones should be used.

Connections to Right-Hand Terminals.

If a frame, dipole, or other balanced aerial system be used, connect to AE_1 and AE_2 and, if possible, earth the set by a short wire between the earth and earth terminal. If an earthed aerial system be used, connect the aerial to AE_1 and

join a short wire from earth to AE_2 and the earth terminal. Insert three PM4DX valves (which are now standardised for naval use as NR15A valves) and the appropriate tuning coil for the range of frequencies on which reception is required. After closing the box adjust the tuning condenser to the approximate setting as shown in the calibration curves in Fig.2. Switch on the filament supply by means of the yellow switch and adjust the regeneration and quenching controls so that a soft mush is heard in the phones with the note-magnifier stage switched out. Then search for the signal by varying the tuning condenser. The amount of aerial coupling required will vary greatly with various aerial systems; with an untuned aerial, tight coupling is generally desirable but with an aerial system in tune, very loose coupling will be required. Increased coupling under these conditions will prevent the receiver oscillating. This condition, of course, will always be accompanied by cessation of mush when passing through the setting on the condenser corresponding to the tuning of the aerial system and when this occurs, the aerial coupling should be loosened. When using the note-magnifier stage it will generally be found necessary to reduce the amount of mush by a reduction of regeneration, that is, a reduction of filament current in the receiving valve.

NAVAL QUENCH RECEIVER.



R_1	1 MΩ	C_2 & C_3	·0003 μF
R_2	15,000 Ω	C_4	9 JARS
R_3	2000 Ω	C_5	1 μF
R_4	30 Ω	C_6	4 JARS
		C_7	1 μF

FIG. 1.