

11. SECOND R/F AMPLIFIER.

The grid circuit of the second R/F amplifier consists of one of the coils (32) tuned by the main tuning condenser (35) and its individual trimming condenser (33). The coil for the range in use is selected by means of the band change switch (10) any lower-frequency coils being short-circuited. The coil for range 1 is shunted by a 2-megohm resistance to decrease the gain.

The valve used is a VR100 screened pentode (2), the anode of which is coupled to the tuned circuit of the detector valve (3) by means of a coupling coil (44), the appropriate coil for the range in use being selected by means of the band change switch (10).

12. DETECTOR.

The grid circuit of the detector valve consists of one of the coils (45) tuned by the main tuning condenser (49), which is shunted by the range trimming condenser (47). The coil for the range in use is selected by the band change switch (10), which short-circuits any lower frequency coils. The coil for range 4 is shunted by a 250,000-ohm resistance to decrease the gain.

The valve is a VR99 triode-hexode mixer (See Admiralty Handbook of W/T 1938 Vol. 11, Para. F31) the hexode portion being used as the detector and the triode portion as the local oscillator. The signal grid of the hexode portion is connected to the tuned circuit through a 100-mfd. condenser (50) and 2-megohm resistance (51) in parallel.

The anode of the valve is connected to an R/F filter through a 0.01 mfd. condenser (71). The R/F filter consists of a choke (74), a 0.001 mfd. condenser (73) and a 0.0015 mfd condenser (75) followed by a 500,000-ohm resistance (76) and the 250,000-ohm pre-set A/F Volume Control (77). The slider of the Volume Control potentiometer is connected to the primary winding of the intervalve transformer (78).

13. LOCAL OSCILLATOR.

The tuned circuit of the local oscillator, which employs the triode section of the VR99 detector valve, consists of one of the coils (65) shunted by the range trimming condenser (66) in series with the appropriate vernier inductance (62) or (63) and is tuned by one section (61) of the main tuning condenser. On ranges 1 and 4 the inductance is shunted by resistances of 1-megohm, and 500,000-ohms respectively. On range 1 a padding condenser of 8,500-mfd. is connected in series with the tuned circuit.

The grid of the local oscillator valve is connected to the tuned circuit through a 100-mfd. condenser (58), which is shunted by a 2-megohm resistance (59). The vernier inductance and tuned circuit coil are selected by the range switch (10).

The anode of the local oscillator is connected via the range switch (10) to the appropriate coupling coil (65) by means of which the feedback necessary to make the system self-oscillatory is obtained. The other end of the coupling coil is connected to the H.T. line through a 30,000-ohm resistance (69) via the operating switch (87) when the switch is in either of the "Ret. ON" positions.

Coupling between the local oscillator and detector is electronic, the grid of the triode section of the VR99 valve being internally connected to a grid of the hexode detector portion.

14. FIRST A/F AMPLIFIER.

The grid of the first A/F amplifier valve (4), which is an NR68 indirectly heated triode, is fed from the secondary winding of the inter-valve transformer (78), the other end of which is connected to earth.

The output from the valve is taken from the anode via a 0.1-mfd. condenser (82) to the second A/F valve either via the A/F filter or direct, according to the position of the operating switch (87).

15. SECOND A/F AMPLIFIER (OUTPUT STAGE).

The grid of the second A/F amplifier valve (5), which is a 6J5G indirectly heated triode valve, is fed from the anode of the first A/F stage valve (4) either directly through the coupling condenser (82), when the operating switch (87) is in either of its "Filter Out" positions or via the A/F filter circuit when the operating switch is in either of its "Filter In" positions.