

# LISSEN

## SERVICE MANUAL FOR 5 VALVE, 3 BAND SUPERHET MAINS RECEIVER MODEL 8319.

### TECHNICAL SPECIFICATION

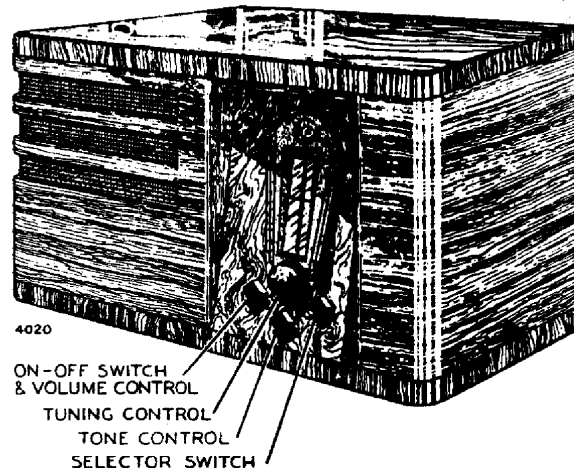
THE Model No. 8319 is a three-band superhet receiver for A.C. mains operation (200-250 volts, 40-100 cycles).

Valves are as follows :—

- Frequency changer  
Ever Ready A36B (Triode hexode).
- I.F. Amplifier  
Ever Ready A50P (Variable-mu H.F. pentode).
- Detector, A.V.C., and L.F. Amplifier  
Ever Ready A23A (Duo-diode-triode).
- Output Valve  
Ever Ready S30D (Triode).
- Rectifier  
Ever Ready A11D (Double diode).
- Tuning Indicator  
Ever Ready A39A.

An inductively coupled band-pass filter precedes the frequency changer on long and medium waves; on short waves the aerial is coupled direct to the aerial coil through a condenser (C14).

The grid coils in the oscillator circuits are tuned, and the oscillator frequency is higher than the signal frequency on medium and long waves, and lower on short waves.



The primary of the 1st I.F. transformer forms the anode load of the frequency changer, and this winding, in common with the other I.F. coils, is tuned to 455 Kc/s. The anode circuit of the I.F. amplifier includes the primary of the second I.F. transformer, the secondary of which is connected direct to the signal diode, and through a small condenser to the A.V.C. diode. The latter applies the A.V.C. potential via decoupled circuits to the grids of the frequency changer and I.F. amplifier valves. L.F. coupling between the triode amplifier in the duo-diode-triode valve, and the output triode, is effected by a high-fidelity resistance-capacitance combination. The maximum undistorted output is 2.5 watts.

The H.T. rectifier circuit is conventional, and the speaker field is used as a smoothing choke.

Wavelengths covered by the Model 8319 are as follows :—

- Long waves ... 850 to 1,920 metres.
- Medium waves 198 to 580 metres.
- Short waves ... 19 to 50 metres.

The wavechange switches are in position "A" on short waves, "B" on medium waves, and "C" on long waves.

# SERVICE DATA FOR MODEL 8319.

## CONDENSERS

| Code | Description                      | Part No. | Values                      |
|------|----------------------------------|----------|-----------------------------|
| C1   | M.W.B.P.1 Trimmer                | 82,500   | 5/40 mmfd.                  |
| C2   | L.W.B.P.1 Trimmer                | 82,501   | 40/100 mmfd.                |
| C3   | M.W.B.P.2 Trimmer                | 82,500   | 5/40 mmfd.                  |
| C4   | L.W.B.P.2 Trimmer                | 82,501   | 40/100 mmfd.                |
| C5   | S.W. Aerial Trimmer              | 82,500   | 5/40 mmfd.                  |
| C6   | S.W. Oscillator Trimmer          | 82,500   | 5/40 mmfd.                  |
| C7   | M.W. Oscillator Trimmer          | 82,500   | 5/40 mmfd.                  |
| C8   | L.W. Oscillator Trimmer          | 82,501   | 40/100 mmfd.                |
| C9   | M.W. Padder } Double             | 82,502   | 300/600 mmfd.               |
| C10  | L.W. Padder } Padder             |          | 200/400 mmfd.               |
| C11  | Triple Gang                      | 80,506   | 540 mmfd. Max. each sect.   |
| C12  |                                  |          |                             |
| C13  |                                  |          |                             |
| C14  | S.W. Aerial Coupling             | 71,262   | 10 mmfd.                    |
| C15  | S.W. Tracking                    | 68,005   | .01 mfd.                    |
| C16  | A.V.C. Decoupling                | 68,020   | .1 mfd.                     |
| C17  | V.1 Screen By-pass               | 68,020   | .1 mfd.                     |
| C18  | V.1 Cathode By-pass              | 68,020   | .1 mfd.                     |
| C19  | V.1 Oscillator Grid              | 66,035   | .0001 mfd.                  |
| C20  | V.1 Oscillator Anode Decoupling  | 68,020   | .1 mfd.                     |
| C21  | A.V.C. Decoupling                | 68,020   | .1 mfd.                     |
| C22  | I.F. Trimmers on I.F.T. Assembly |          |                             |
| C23  |                                  |          |                             |
| C24  |                                  |          |                             |
| C25  |                                  |          |                             |
| C26  | V.2 Screen By-pass               | 68,020   | .1 mfd.                     |
| C27  | V.2 Cathode By-pass              | 68,020   | .1 mfd.                     |
| C28  | Tuning Indicator Grid By-pass    | 68,020   | .1 mfd.                     |
| C29  | L.F. Coupling                    | 68,008   | .05 mfd.                    |
| C30  | Signal Diode Load By-pass        | 66,035   | .0001 mfd.                  |
| C31  | V.3 Cathode By-pass              | 67,005   | 50 mfd.                     |
| C32  | A.V.C. Coupling                  | 71,262   | 10 mmfd.                    |
| C33  | L.F. Coupling                    | 68,008   | .05 mfd.                    |
| C34  | V.3 Anode Decoupling             | 67,009   | 2 mfd.                      |
|      |                                  |          | 300 V. Working Elec.        |
| C35  | Tone Control                     | 68,007   | .025 mfd.                   |
| C36  | H.T. Smoothing                   | 67,031   | 8 + 8 mfd. 540V. Peak Elec. |
| C37  | Rectifier Reservoir              |          |                             |
| C38  | V.4 Cathode By-pass              |          |                             |

## SWITCHES

| Code | Description                       | Part No. | Values            |
|------|-----------------------------------|----------|-------------------|
| S1   | B.P.1                             | 83,502   | Wave Range Switch |
| S2   | B.P.2                             |          |                   |
| S3   | Oscillator Grid                   |          |                   |
| S4   | Oscillator Anode                  |          |                   |
| S5   | Dial Lamps                        |          |                   |
| S6   | On/Off (Ganged with Vol. Control) |          |                   |

## VALVES

| Code | Description                     | Part No. | Values          |
|------|---------------------------------|----------|-----------------|
| V1   | Triode Hexode Frequency Changer | 4093     | Ever Ready A36B |
| V2   | H.F. Pentode I.F. Amplifier     | 4083     | Ever Ready A50P |
| V3   | Double Diode Triode             | 4067     | Ever Ready A23A |
| V4   | Directly heated Output Triode   | 4096     | Ever Ready S30D |
| V5   | Rectifier                       | 4084     | Ever Ready A11D |
| V6   | C.R. Tuning Indicator           | 4097     | Ever Ready A39A |

## RESISTORS

| Code | Description                      | Part No. | Values                |
|------|----------------------------------|----------|-----------------------|
| R1   | S.W. A.V.C. Decoupling           | 71,962   | 110,000 ohm, 1/2 watt |
| R2   | M. & L.W. A.V.C. Decoupling      | 71,962   | 110,000 ohm, 1/2 watt |
| R3   | V1 Screen Potentiometer          | 71,928   | 20,000 ohm, 1/2 watt  |
| R4   | V1 Screen Potentiometer          | 71,935   | 5,000 ohm, 1/2 watt   |
| R5   | V1 Oscillator Grid Leak          | 71,974   | 26,000 ohm, 1/2 watt  |
| R6   | V1 Bias                          | 71,969   | 150 ohm, 1/2 watt     |
| R7   | M.W. Het. Voltage Adjuster       | 71,914   | 1,000 ohm, 1/2 watt   |
| R8   | L.W. Het. Voltage Adjuster       | 71,907   | 2,000 ohm, 1/2 watt   |
| R9   | V1 Screen and Osc. Decoupling    | 72,011   | 10,000 ohm, 2 watt    |
| R10  | A.V.C. Decoupling                | 71,962   | 110,000 ohm, 1/2 watt |
| R11  | V2 Bias                          | 71,957   | 100 ohm, 1/2 watt     |
| R12  | V2 Screen Feed                   | 24,756   | 25,000 ohm, 1/2 watt  |
| R13  | I.F. Stopper                     | 71,962   | 110,000 ohm, 1/2 watt |
| R14  | Signal Diode Load                | 71,944   | 510,000 ohm, 1/2 watt |
| R15  | Volume Control                   | 81,502   | 500,000 ohm, Var.     |
| R16  | V3 Bias                          | 71,982   | 2,100 ohm, 1/2 watt   |
| R17  | V3 Decoupling                    | 71,988   | 5,100 ohm, 1/2 watt   |
| R18  | V3 Anode Load                    | 71,971   | 50,000 ohm, 1/2 watt  |
| R19  | A.V.C. Diode Load                | 71,962   | 110,000 ohm, 1/2 watt |
| R20  | A.V.C. Diode Load                | 71,944   | 510,000 ohm, 1/2 watt |
| R21  | Tuning Indicator Grid Decoupling | 71,944   | 510,000 ohm, 1/2 watt |
| R22  | Tuning Indicator Anode Feed      | 71,902   | 2.1 Megohm, 1/2 watt  |
| R23  | V4 Grid Leak                     | 71,945   | 260,000 ohm, 1/2 watt |
| R24  | Tone Control                     | 81,506   | 250,000 ohm, Var.     |
| R25  | V4 Bias                          | 89,500   | 600 ohm, 2 watt       |
| R26  | A2 Potentiometer                 | 71,962   | 110,000 ohm, 1/2 watt |
| R27  | V1 Oscillator Grid Stopper       | 71,943   | 200 ohm, 1/2 watt     |
| R28  | A2 Potentiometer                 | 71,963   | 11,000 ohm, 1/2 watt  |

## OPERATING CONDITIONS OF VALVES

| Valve  | Electrode      | Voltage    | Current (mA.) |
|--|----------------|------------|---------------|
| Frequency changer (Ever Ready A36B) Triode-hexode            | Anode          | 268        | 1.4           |
|  | Screen         | 68         | 3.4           |
|  | Osc. anode     | 102        | 8.2           |
|  | Cathode        | 1.8        | 13.0          |
| I.F. Amplifier (Ever Ready A50P) Variable-mu H.F. pentode    | Anode          | 268        | 9.7           |
|  | Screen         | 167        | 3.5           |
|  | Cathode        | 1.3        | 13.2          |
| Det., A.V.C., & L.F. amp. (Ever Ready A23A) Duo-diode-triode | Anode          | 128        | 2.2           |
|  | Cathode        | 2.7        | 2.2           |
| Tuning Indicator (Ever Ready A39A)                           | Anode          | 19         | 0.16          |
|  | Target         | 267        | 0.38          |
|  | Cathode        | 0          | 0.54          |
| Output (Ever Ready S30D) Triode                              | Anode          | 247        | 44.0          |
|  | Cathode        | 26         | 44.0          |
| Rectifier (Ever Ready A11D) Double-diode                     | Anode to anode | 685 R.M.S. | —             |
|  | Cathode        | 403        | 77.0          |

Mains supply at 224 v. input to 216/235 v. Tap.=0.32 amps.

NOTE.—The above measurements made with the receiver tuned to 1,000 Kc/s and no signal applied to input terminals. All voltages are to CHASSIS unless otherwise stated, and an Avometer on the 1,200-volt range was used for all voltages above 15 volts.

## INDUCTANCES

| Code | Description                   | Part No. | Values                    |
|------|-------------------------------|----------|---------------------------|
| L1   | M. & L.W. Primary             | 78,505   | Signal Frequency Coil     |
| L2   | M.W.B.P.1                     |          |                           |
| L3   | L.W.B.P.1                     |          |                           |
| L4   | S.W. Aerial                   |          |                           |
| L5   | M.W.B.P.2                     |          |                           |
| L6   | L.W.B.P.2                     | 78,509   | Oscillator Frequency Coil |
| L7   | S.W. Grid                     |          |                           |
| L8   | M.W. Grid                     |          |                           |
| L9   | L.W. Grid                     |          |                           |
| L10  | S.W. Tickler                  |          |                           |
| L11  | M.W. Tickler                  | 77,501   | 1st I.F.T.                |
| L12  | L.W. Tickler                  |          |                           |
| L13  | 1st I.F. Primary              |          |                           |
| L14  | 1st I.F. Secondary            |          |                           |
| L15  | 2nd I.F. Primary              |          |                           |
| L16  | 2nd I.F. Secondary            | 77,503   | 2nd I.F.T.                |
| L17  | Speaker Field, 1,650 ohm Cold |          |                           |
| T1   | Output Transformer on Speaker | 85,511   |                           |
| T2   | Mains Transformer             | 77,507   |                           |

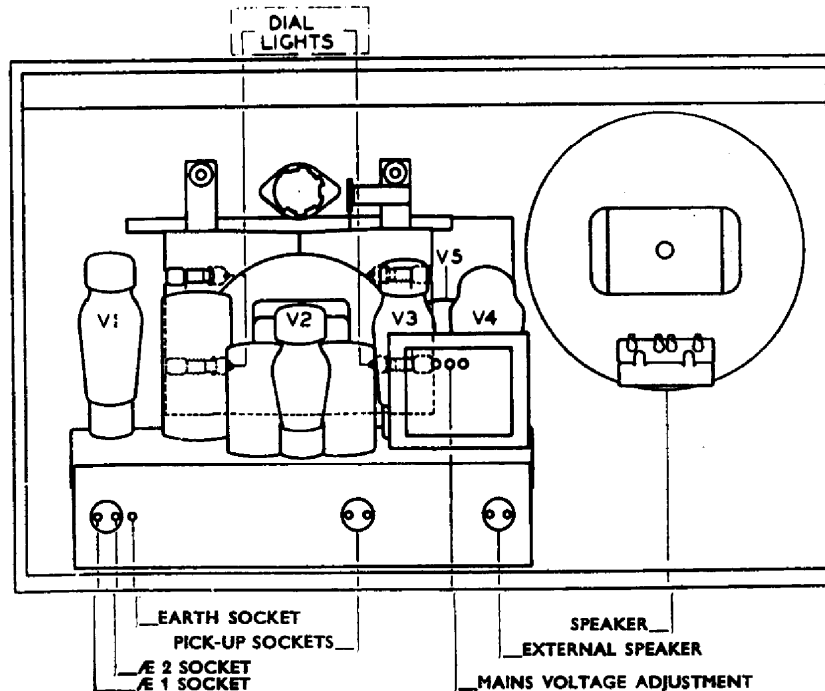


Fig. 10

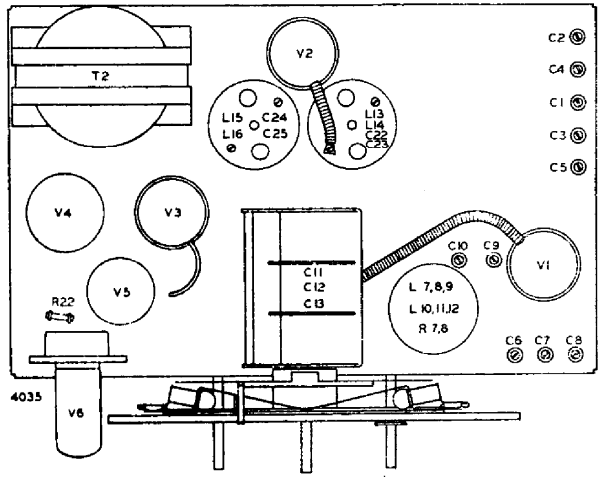
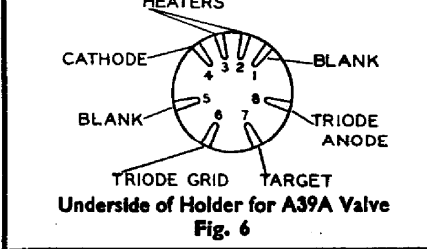
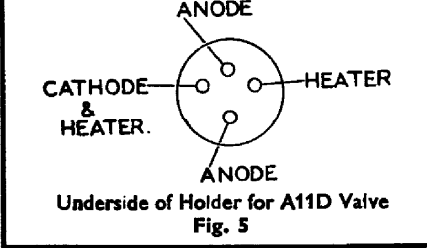
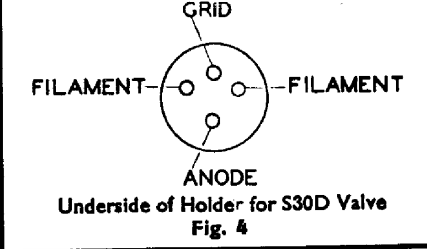
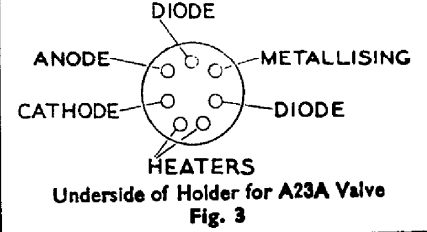
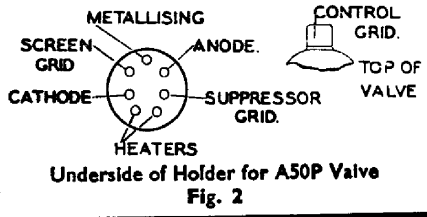
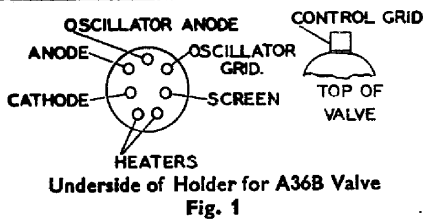


Fig. 7

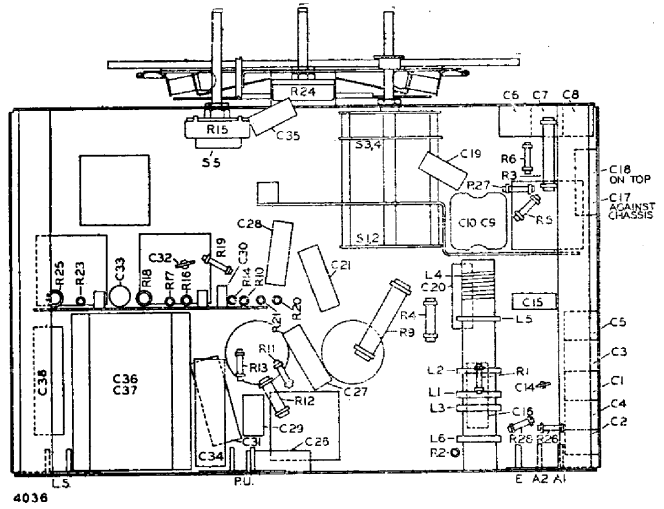
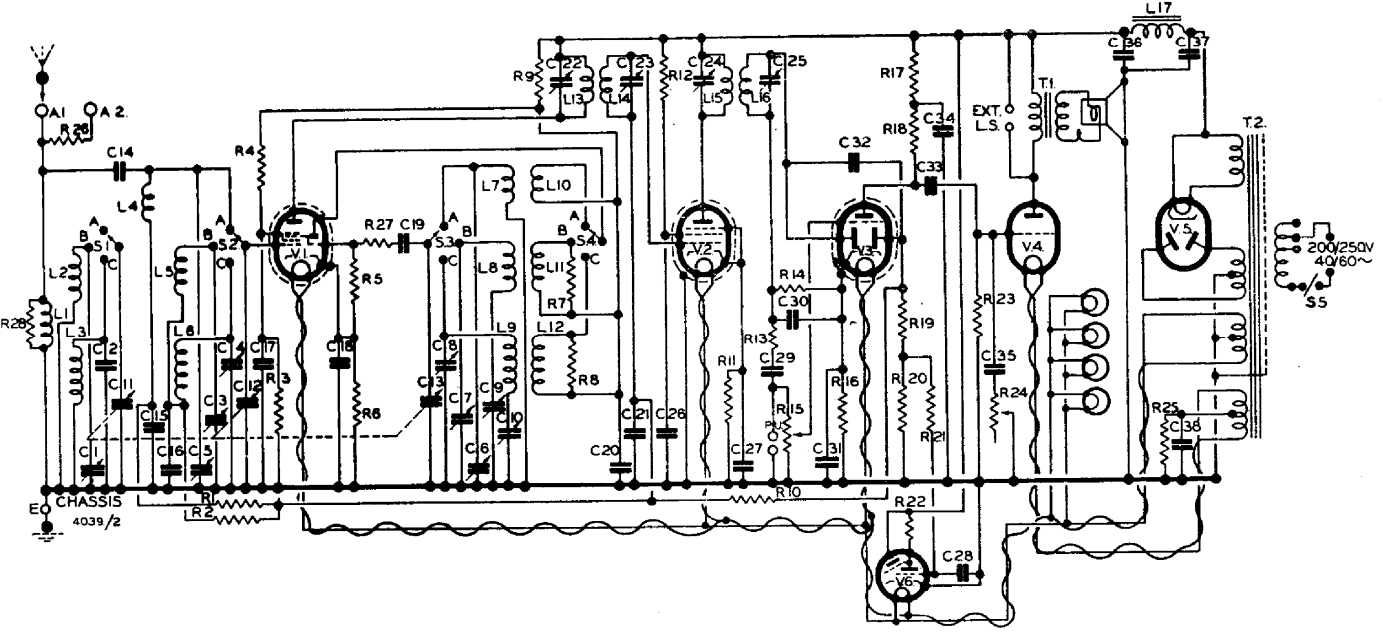


Fig. 8



CIRCUIT DIAGRAM

Fig. 9

