# "His Master's Voice"

**PRELIMINARY SERVICE DATA**

**RADIO RECEIVER MODEL 1372**

## SPECIFICATION

### GENERAL

A 6-valve (including rectifier) AM/FM receiver incorporating piano-key waverange switching and separate AM and FM tuning controls. Internal aerials are fitted as well as sockets for external aerials and earth connection. Switched pick-up sockets and external loudspeaker sockets are also provided.

### MAINS SUPPLY

200-250 Volts AC or DC, 50-60 c/s AC. Power consumption approximately 50 Watts.

### WAVEBAND COVERAGE

| | |
|---|---|
| Long Wave - | 1160—1940 Metres |
| Medium Wave - | 188— 545 Metres |
| VHF/FM - - | 88— 101 Mc/s |

### CABINET

Wax polished, medium oak table model, 18¾ in. wide x 12¾ in. high x 7¼ in. deep.

## DRIVE CORD REPLACEMENT

### A.M. TUNING

Allow 4ft. 3in. of nylon braided cord and, starting with the tuning gang fully open, proceed as follows :—

Knot one end of the cord and anchor in the slot provided in the drive drum at the end nearest the gang. Wind the cord one turn in a clockwise direction round the drum and continue as shown in the accompanying diagram. Before winding the final turns round the drum, ensure that the tensioning pulley is exerting tension on the cord. When the winding is completed, the end of the cord must be secured round the moulded peg in the top of the drum and tucked into the groove provided. A little cellulose adhesive should be applied to the two turns round the peg.

Fit the cursor so that, with the gang fully closed, the cursor is aligned with the markers at the right-hand end of the scale. The tip of the cursor should ride on the outside of the guide loop.

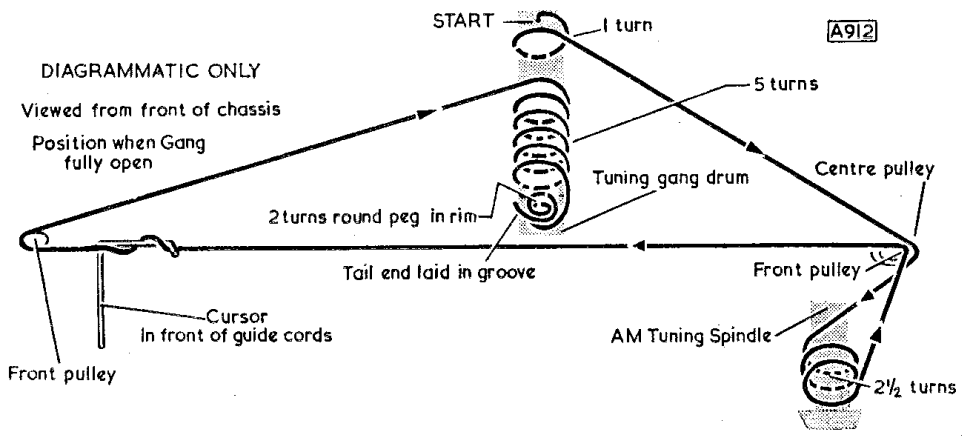


**Fig. 1. The AM tuning drive cord.**

### F.M. TUNING

#### Cursor Drive

Allowing 4ft. 3in. of nylon braided cord, tie one end to the self-tapping screw in the FM drive drum. Arrange the cord as shown in Figure 2, finishing with one complete turn round the drum.

Attach the tension spring to the end of the cord and anchor to the peg moulded in the drum so that the cord is under sufficient tension to ensure that the drive is free from any backlash. Fit the cursor so that the tip rides within the guide loop and, with the tuning spindle turned fully anti-clockwise, adjust the cursor position to align it with the scale marker at the left-hand end of the scale.

#### Tuner Drive

The arrangement of the tuner unit drive cord is clearly shown in Figure 2, but the following points should be noted :—

If a replacement cord is required, fit service replacement Z17223 which comprises a length of cord with tuning slugs already fitted. Difficulty will otherwise be found in fitting the slugs to a length of cord with sufficient accuracy to ensure satisfactory tracking.

Note that the tuning cores must be inserted with the closed and open ends of the cores in their correct positions as indicated in the diagram.

Check that the cursor is correctly positioned on the cursor drive cord and untie the knot in cord "A", preparatory to threading it

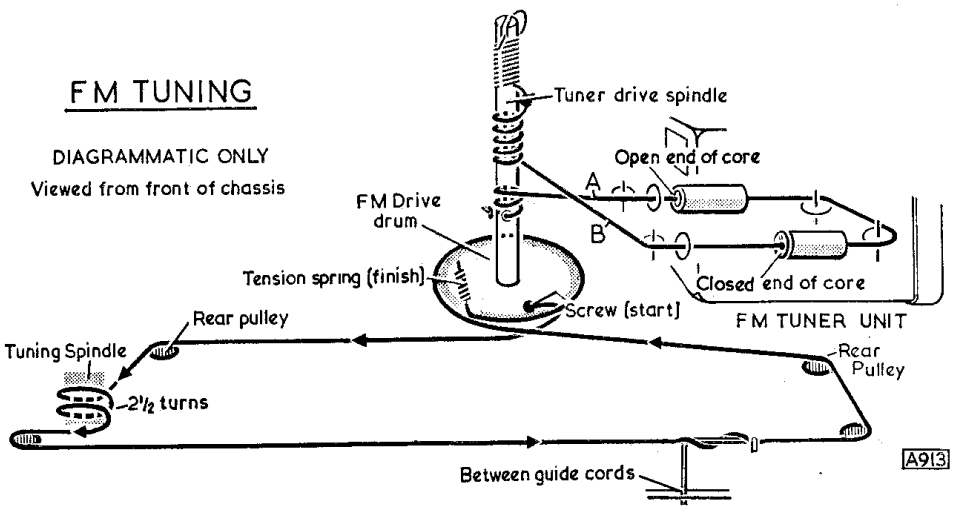


**Fig. 2. The FM tuning drive cords.**

through the hole in the FM drive spindle. The cord should then be re-knotted 1in. beyond the spindle when cord "B" is pulled out to its limit. Pull the knot up against spindle and, with the drum locking screw slackened off to allow the spindle to be rotated separately, turn the spindle clockwise to take up any slack.

Attach the tension spring to cord "B" at approximately 4in. from the tuner unit pulley. Tighten up the drive drum locking screws and rotate the tuning control one turn clockwise. Cord "B" may then be wound round the tuner drive spindle in an anti-clockwise direction and the tension spring anchored in the slot in the spindle as shown in the diagram. The cord must be under sufficient tension to ensure freedom from backlash.

The unit should then be re-aligned as described in "RF Alignment (FM)". After alignment, check that at extremes of cursor sweep, at least one turn of cord remains around the spindle.

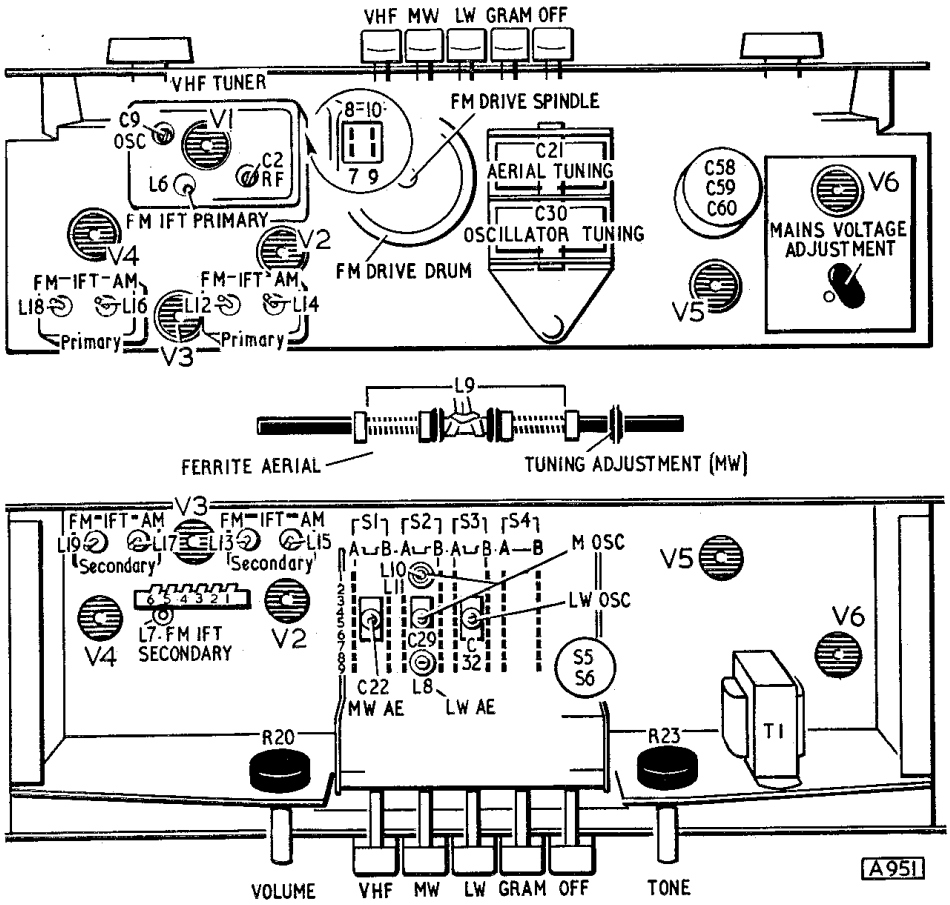


**Fig. 3. Locations of trimming adjustments, valves, etc. As the chassis is directly connected to one side of the mains, isolating capacitors of adequate working voltage should be used when connecting a signal generator into circuit.**

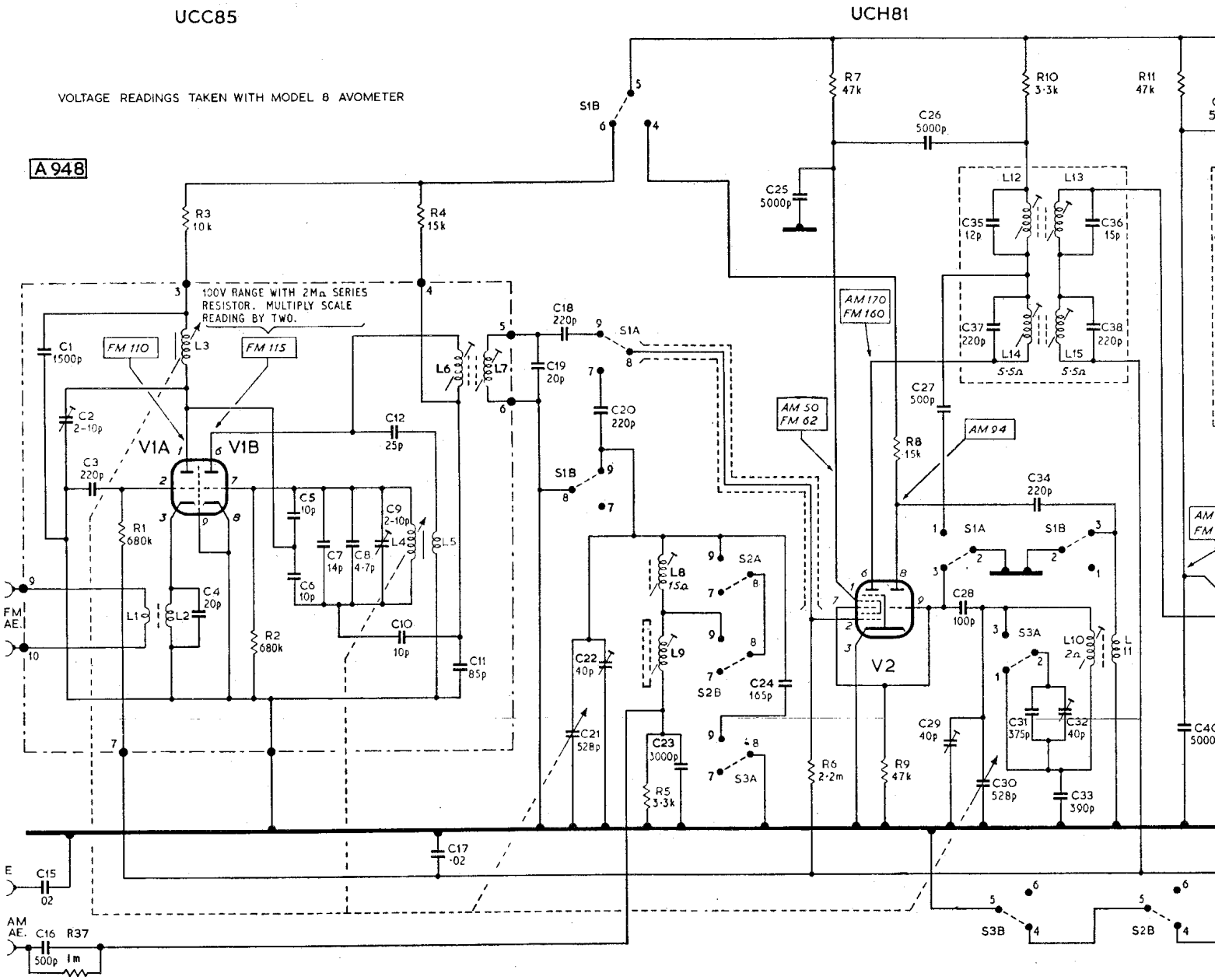


**Fig. 4. Circuit diagram of model 1372.**

The wavechange switching is shown with the VHF/FM key depressed. The single pole changeover switches shown in the diagram represent sections of the contact wafers associated with the press key switch unit. The actual arrangement of contacts on the switchbank is also shown and the groups of contacts are lettered and numbered so that they may be identified in the main diagram.

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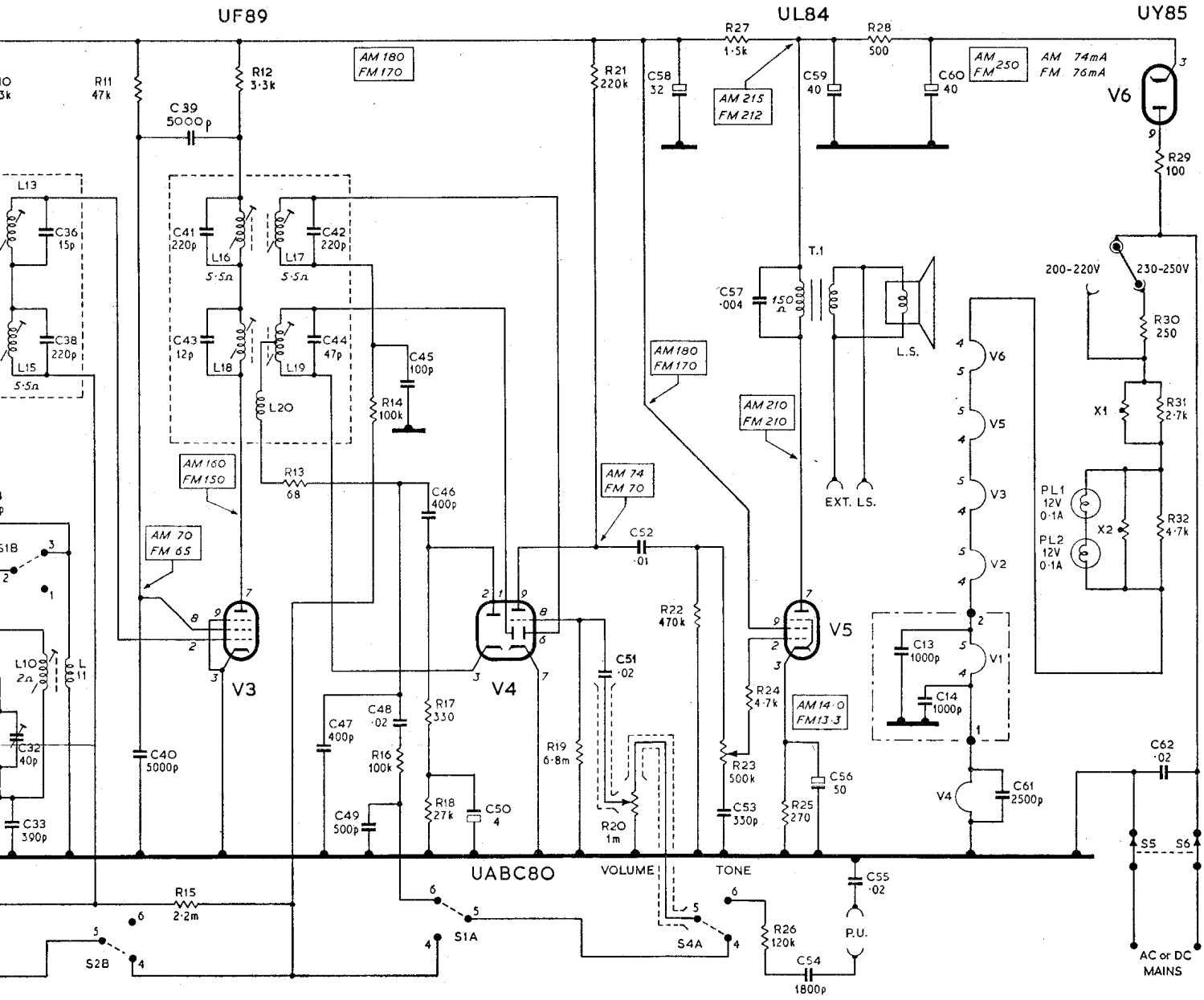
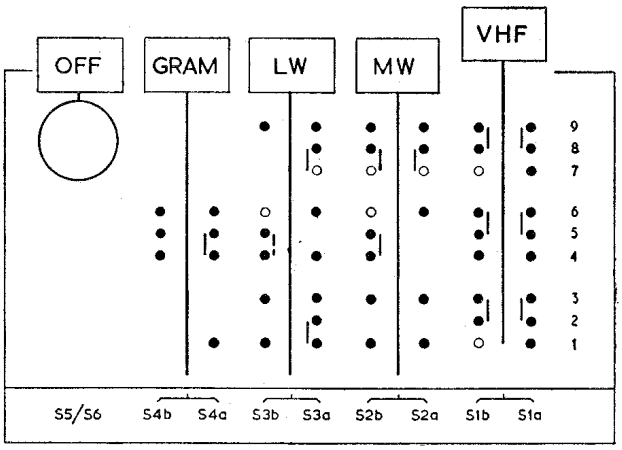



**VOLTAGES**—Measurements were taken with a model 8 Avometer with a mains input of 240 Volts AC (50 cycles) and the mains voltage adjustment set to 230-250 V. Readings were taken with the receiver switched to MW as well as VHF/FM.

**INDUCTANCES**—DC resistances, if 1 ohm or greater, are given in the diagram.




PIANO KEY SWITCH CONTACTS SHOWN IN VHF-FM POSITION. SWITCH VIEWED FROM UNDERSIDE OF CHASSIS.

# ALIGNMENT DATA

## A.M. CIRCUITS

### I.F. Alignment

Switch the receiver to MW, turn gang to minimum capacitance position and volume control to maximum. Inject a **470 Kc/s** modulated signal through a 0.1uF capacitor at the grid of **V3** (pin 2) and adjust **L17** and **L16** for maximum output.

Inject the signal at **V2** control grid (pin 2 via 0.1uF) and adjust **L15** and **L14** for maximum output. Do not make any further adjustment to **L17/L16.** Throughout alignment, adjust input signal level to maintain output at approximately 50mW.

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### R.F. Alignment

MW must be aligned first. Signals to be injected via a loop, loosely coupled to the ferrite rod aerial. Input level to be adjusted to maintain output at approximately 50mW.

1. With the gang at maximum capacitance, set cursor to the marker at the extreme right-hand end of the scale.

2. Switch to MW, inject 1,400 Kc/s signal and set cursor to the alignment marker near the 200 Metre calibration point. Adjust **C29** and **C22** for maximum output.

3. Set the cursor to the marker at approximately 500 Metres, inject 580 Kc/s signal and adjust **L10** and the adjusting ring on the ferrite-rod aerial for maximum output.

4. Repeat 2 and 3 until no further improvement results.

5. Switch to LW, inject 223 Kc/s signal, set cursor to the alignment marker near 1300 Metres and adjust **C32** and **L8** until no further improvement results.

## F.M. CIRCUITS

The various trimming adjustments associated with the VHF/FM band must not be disturbed unless suitable equipment is available to re-align the tuned circuits. If a component is replaced in the VHF tuner unit, care must be taken to restore the wiring to its original position and ensure that the lead lengths of the replacement part are the same as in that originally fitted.

The following alignment procedure is based on the use of an FM signal generator with IF and Band 11 coverage and an output impedance of 75Ω. Carrier deviation should be set to 25Kc/s and, throughout alignment, the signal input to the receiver should be adjusted to maintain an audio output of 100mW. The sequence of adjustments must be strictly observed.

### I.F. Alignment

Switch the receiver to VHF and allow to warm up for at least ten minutes. Set the volume control to maximum.

| Adjustment | Signal Frequency | Point of Injection |
|---|---|---|
| **L19, L18** | **10.7 Mc/s** | **V3** control grid (Pin 2 via .01uF) |

With signal generator output of 20mV, adjust **L19,** followed by **L18,** for maximum audio output. This should be approximately 100mW.

| Adjustment | Signal Frequency | Point of Injection |
|---|---|---|
| **L13, L12** | **10.7 Mc/s** | **V2** control grid (Pin 2 via .01uF) |

Adjust **L13, L12** for maximum audio output reducing input level as required so that the audio output does not exceed 100mW.

| Adjustment | Signal Frequency | Point of Injection |
|---|---|---|
| **L7, L6** | **10.7 Mc/s** | Junction **R3** and **L3** (Tag 3 on VHF tuner via 500pF) |

Using a non-metallic trimming tool, adjust **L7** and **L6** for maximum audio output, reducing input level as necessary.

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### R.F. Alignment

1. Rotate tuning control to bring cursor to the left-hand end of scale and check that the cursor coincides with the marker provided.
2. Adjust tuning control to set cursor to 91 Mc/s on scale.
3. Slacken off the locking screws of the FM drive drum and, without altering the position of the cursor, rotate the drum spindle in an anti-clockwise direction until the internal stop in the tuner prevents any further rotation. The slotted end to the spindle facilitates this adjustment.
4. Tighten up drum to spindle.
5. Rotate tuning control to bring cursor to 99 Mc/s.
6. Inject 91 Mc/s signal, frequency modulated, at the aerial sockets and adjust the oscillator trimmer **C9** for maximum output. A non-metallic trimming tool must be used.
7. Slacken off drive drum locking screws and, whilst holding the drum spindle to keep the tuner on 91 Mc/s, rotate the tuning control to bring the cursor to 91 Mc/s on tuning scale.
8. Adjust **C2** for maximum output (91 Mc/s signal).
9. Check calibration over the band and if necessary repeat 1 to 6.

## CAPACITORS

Electrolytics excepted, tolerance ±20% unless otherwise stated. Where no working voltage is given, this should be taken as 350 Volts D.C.

| Ref. | Value | Rating | Function | Part No. |
|---|---|---|---|---|
| C 1 | 1500pF | 750V | V1A H.T. decoupling | |
| C 2 | 2-10pF | Pre-set | L3 tuning | Z13903 |
| C 3 | 220pF | 750V | V1A grid coupling | |
| C 4 | 20pF | 5% | L2 tuning | |
| C 5 | 10pF | ±0.5pF P100 750V | Oscillator/mixer | |
| C 6 | 10pF | ±0.5pF P100 750V | signal injection | C100H75/F13 |
| C 7 | 14pF | 10% P100 750V | Part L4 tuning and | C140S75/F13 |
| C 8 | 4.7pF | ±0.5pF N750 750V | temp. compensating | C47XH75/F14 |
| C 9 | 2-10pF | Pre-set | Oscillator trimmer (F.M.) | Z13903 |
| C10 | 10pF | ±0.5pF P100 750V | Oscillator balancing | C100H75/F13 |
| C11 | 85pF | 2.5% | Mixer I.F. feedback | Y850R35/SU4 |
| C12 | 25pF | 5% | V1B anode coupling and L6 tuning | |
| C13 | 1000pF | —20%+80% | V1 heater R.F. bypass | |
| C14 | 1000pF | —20%+80% | | |
| C15 | 0.02uF | 350V A.C. | Earth isolating | |
| C16 | 500pF | 500V | A.M. aerial isolating | |
| C17 | 0.02uF | 150V | A.G.C. decoupling | |
| C18 | 220pF | 750V | V2 I.F. coupling (F.M.) | |
| C19 | 20pF | 5% | L7 tuning | |
| C20 | 220pF | 750V | V2 signal coupling (A.M.) | |
| C21 | 528pF† | Variable | Aerial tuning (A.M.) | Z25115 |
| C22 | 4-40pF | Pre-set | M.W. aerial trimmer | Z13920 |
| C23 | 3000pF | 5% | A.M. aerial coupling | |
| C24 | 165pF | 5% | L.W. aerial trimmer | S/N45753 |
| C25 | 5000pF | | V2 H.T. decoupling and | |
| C26 | 5000pF | | neutralizing | |
| C27 | 500pF | 500V | I.F. bypass | |
| C28 | 100pF | 750V | V2 osc. grid coupling | |
| C29 | 4-40pF | Pre-set | M.W. oscillator trimmer | Z13920 |
| C30 | 528pF† | Variable | Oscillator tuning (A.M.) | Z25115 |
| C31 | 375pF | 2% | L.W. oscillator trimmer | 45752 |
| C32 | 4-40pF | Pre-set | | Z13920 |
| C33 | 390pF | 2% | Oscillator padder (A.M.) | Y391R35 |
| C34 | 220pF | 750V | V2 osc. anode coupling | |
| C35 | 12pF | 5% | L12 tuning | |
| C36 | 15pF | 5% | L13 tuning | |
| C37 | 220pF | 2% | L14 tuning | |
| C38 | 220pF | 2% | L15 tuning | |
| C39 | 5000pF | | V3 H.T. decoupling and | |
| C40 | 5000pF | | neutralizing | |
| C41 | 220pF | 2% | L16 tuning | |
| C42 | 220pF | 2% | L17 tuning | |
| C43 | 12pF | 5% | L18 tuning | |
| C44 | 47pF | 5% | L19 tuning | |
| C45 | 100pF | 750V | I.F. bypass (A.M.) | |
| C46 | 400pF | 10% | I.F. filter (F.M.) | |
| C47 | 400pF | 10% | | |
| C48 | 0.02uF | 150V | Audio coupling (F.M.) | |
| C49 | 500pF | 500V | F.M. de-emphasis | |
| C50 | 4uF | Electro. 100V | Ratio det. stabiliser | Z13210 |
| C51 | 0.02uF | 150V | V4 grid coupling | |
| C52 | 0.01uF | 150V | V5 C.G. coupling | |
| C53 | 330pF | | Part tone control | |
| C54 | 1800pF | 350V A.C. | Pick-up isolating | |
| C55 | 0.02uF | 750V | | |
| C56 | 50uF | Electro. 25V | V5 cathode bypass | Z13202 |
| C57 | 0.004uF | 350V A.C. | Tone correction | |
| C58 | 32uF | Electro. 275V | H.T. smoothing and | |
| C59 | 40uF | Electro. 275V | reservoir | Z13200 |
| C60 | 40uF | Electro. 275V | | |
| C61 | 2500pF | —20%+80% | V4 heater bypass | |
| C62 | 0.02uF | 350V A.C. | Mains R.F. bypass | |
| C63 | 0.01 | 150V | V6 grid decoupling | |

† Swing value.

## MISCELLANEOUS

| Ref. | Function and Description | Part No. |
|---|---|---|
| L.S. | P.M. 3Ω speech coil, 6½" diameter | Y16002/4 |
| PL1, PL2 | Pilot lamps, 12V 0.1A | 33774 |
| S1-S6 | Piano-key switch assembly | X25149/1 |
| X1, X2 | Thermistors, Varite V1010 | Z4558/7 |

## RESISTORS

All carbon types unless otherwise stated. Where no tolerance or power rating is given for fixed resistors, these should be taken as ±20% and ¼ Watt respectively.

| Ref. | Value | Rating | Function | Part No. |
|---|---|---|---|---|
| R 1 | 680KΩ | | V1A grid leak | |
| R 2 | 680KΩ | | V1B grid leak | |
| R 3 | 10KΩ | 10% | V1A anode feed | |
| R 4 | 15KΩ | 10% | V1B anode feed | |
| R 5 | 3.3KΩ | | A.M. aerial shunt | |
| R 6 | 2.2MΩ | | V2 hep. grid leak | |
| R 7 | 47KΩ | 10% | V2 S.G. H.T. feed | |
| R 8 | 15KΩ | 10% | V2 osc. anode load | |
| R 9 | 47KΩ | 10% | V2 osc. grid leak | |
| R10 | 3.3KΩ | | V2 hep. anode feed | |
| R11 | 47KΩ | 10% | V3 S.G. H.T. feed | |
| R12 | 3.3KΩ | | V3 anode H.T. feed | |
| R13 | 68Ω | | L20 series | |
| R14 | 100KΩ | | I.F. filter (A.M.) | |
| R15 | 2.2MΩ | | A.G.C. decoupling | |
| R16 | 100KΩ | | F.M. de-emphasis & I.F. filter | |
| R17 | 330Ω | | Ratio detector load | |
| R18 | 27KΩ | 10% | | |
| R19 | 6.8MΩ | | V4 grid leak | |
| R20 | 1MΩ | Log. Pot. | Volume control | Z13069/1 |
| R21 | 220KΩ | | V4 triode anode load | |
| R22 | 470KΩ | | V5 grid leak | |
| R23 | 500KΩ | Log. Pot. | Tone control | Z13069/5 |
| R24 | 4.7KΩ | | V5 grid stopper | |
| R25 | 270Ω | 10% ½W | V5 cathode bias | |
| R26 | 120KΩ | 10% | Pick-up series | |
| R27 | 1.5KΩ | 10% 1W | H.T. smoothing | |
| R28 | 500Ω | 5% 6W | | |
| R29 | 80Ω | 5% 6W | W1 current limiter | |
| R30 | 250Ω | 10% 6W | Mains dropper | |
| R31 | 2.7KΩ | 10% 1W | X1 shunt | |
| R32 | 4.7KΩ | 10% ½W | X2 shunt | |
| R33 | 100Ω | 10% 1W | Mains dropper | |
| R34 | 2.2MΩ | | Tuning indicator feed (A.M.) | |
| R35 | 6.8MΩ | | Tuning indicator feed (F.M.) | |
| R36 | 470KΩ | | V6 anode load | |
| R37 | 1MΩ | | A.M. aerial discharge | |

## INDUCTORS AND TRANSFORMERS

| Ref. | Function and Description | Part No. |
|---|---|---|
| L 1 | V.H.F. aerial input transformer | Z10475 |
| L 2 | | |
| L 3 | V.H.F. amplifier tuning | |
| L 4 | V.H.F. oscillator feedback | |
| L 6 | 1st F.M. I.F. transformer | Y10474 |
| L 7 | | |
| L 8 | L.W. loading coil | Y25154 |
| L 9 | Ferrite rod aerial | Y25424 |
| L10 | M.W. & L.W. oscillator tuning | Y25153 |
| L11 | M.W. & L.W. oscillator feedback | |
| L12 | 2nd F.M. I.F. transformer | X25651 |
| L13 | | |
| L14 | 1st A.M. I.F. transformer | |
| L15 | | |
| L16 | 2nd A.M. I.F. transformer | |
| L17 | | |
| L18 | Ratio detector transformer | X25144 |
| L19 | | |
| L20 | | |
| T1 | Audio output transformer | Z10395 |

Address all Service Enquiries to :

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