

# MARCONIPHONE SERVICE MANUAL

## MODEL 285—4 VALVE P.C.P. BATTERY RECEIVER

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**PRIVATE AND CONFIDENTIAL—TO THE TRADE ONLY**

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## THIS IS THE FINEST OF ALL 4-VALVE BATTERY RECEIVERS

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### GENERAL DESCRIPTION.

#### WAVELENGTH RANGE.

Medium Waves.—200 to 550 metres (approximately).

Long Waves.—900 to 2,000 metres (approximately).

#### CURRENT CONSUMPTION.

L.T.—Radio 0.62 Amp. ; Gram., 0.65 Amp. (approximately).

H.T.—6.0 M.A. (no signals) ; 9.0 M.A., average total feed (loud signals).

#### VALVES AND EQUIPMENT.

The high frequency valve, Marconi VS2 (metallised), is followed by an HL2 detector (metallised), which is transformer coupled to a pair of Marconi P.T. 2's, which are arranged on the Marconi Parallel Conductance Principle—an improved form of Q.P.P. output.

*Marconi P.T.2 Valves bearing a large white reference letter, viz., V, W, X, Y, or Z, are specially designed for this instrument. Non-lettered Valves and Valves other than those specified must not be used.* The standard equipment comprises a Marconiphone 175-volt combined H.T. battery and G.B. battery, and a 2-volt 58 ampere-hour accumulator.

#### PHYSICAL SPECIFICATION.

|                 |                |                |
|-----------------|----------------|----------------|
| Overall Height. | Overall Width. | Overall Depth. |
| 13½ inches.     | 23 inches.     | 9¾ inches.     |
| 34.4 cm.        | 58.5 cm.       | 24.8 cm.       |

Net weight :—46 lb. (20 kg.) with batteries. Gross weight :—58 lb. (26 kg.) with batteries.

#### CIRCUIT, FIG. 1.

Model 285 is a 4-valve self-contained battery receiver with extremely selective band-pass tuning and P.C.P. push-pull output. A special feature of this instrument is the use of FERROCART R.F. TUNING COILS.

Aerial tuning coils, L1, L2, are inductively coupled to the first tuned circuit L3, L4, VC1.

The sensitivity of the H.F. valve is controlled by the potentiometer VR2, which controls the voltage applied to the screening grid of that valve and also regulates the reaction, whilst VR1 (which is ganged with VR2) regulates aerial input.

L7 and L8 are the "reaction" coils, which are coupled to the tuned anode coils L9 and L10. Coupling between the detector valve and the output pentodes is by means of the parallel fed transformer T1.

#### LOUDSPEAKER.

Improved moving coil type. Part No 16000J. D.C. Resistance of speech coil—4.0 ohms.

### INSTALLATION.

#### OUTDOOR AERIAL.

The aerial should be about 80 feet long and as high as possible—especially the end remote from the instrument.

#### REDUCING INTERFERENCE.

Changing the direction of an aerial will often reduce noise from lighting, telephone and tramway trolley wires, and also interference caused by a powerful local transmitter.

#### INDOOR AERIAL.

Due to the extreme sensitivity of this instrument an indoor aerial may be employed where circumstances do not permit the erection of an outdoor aerial. An insulated wire about 50 feet long, stretched between hooks screwed into the picture rail, will suffice to bring in local stations at adequate strength. Choose an inner wall which is not likely to be damp and keep wire away from the wall.

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QUALITY OF REPRODUCTION IS A STRONG SALES FEATURE

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## MODEL 285 WILL EASILY OPERATE AN EXTERNAL SPEAKER

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### ADJUSTING TO SUIT AERIAL.

Due to the widely differing aerial capacities which may be found, even in aerials of the same length, it is recommended that the instrument be adjusted to suit the customer's own aerial.

Tune in a weak distant station on the lower end of the medium waveband (between 200 and 230 metres), and adjust aerial trimmer (TCI) until maximum signal strength is obtained.

The difference in signal strength when trimmer screw is moved will be more noticeable if a WEAK station is chosen.

### EXTRA LOUDSPEAKERS.

An extra speaker may be connected to this instrument without appreciably reducing volume.

Moving iron or moving coil type may be used, providing that the extra speaker is adjusted to suit pentode output conditions; Marconiphone Models 141 or 140 are recommended.

In all cases the "extra" must be connected to terminals 3 and 5 on the chassis L.S. panel, and disconnected from the instrument when not in use.

Do not operate the instrument with the parent speaker disconnected.

### EXTRA LOUDSPEAKER WIRING.

As speakers are connected directly across the anodes of the output valves, the extra speaker leads must be well insulated. A damp wall is quite sufficient to run down the H.T. battery in a short time if the wire used is not covered with rubber.

## DISMANTLING.

### REMOVAL OF CHASSIS.

1. Remove four knobs from front of cabinet, and loudspeaker leads from back of chassis.

*When re-assembling, make sure that ends of screws locate in spindle grooves.*

2. Remove accumulator housing by taking out the 2 screws on battery shelf and 1 screw at back of housing.

3. Remove four screws fastening chassis to battens on underside of chassis.

*Do not forget to replace washers and L.S. earth lead when re-assembling. Chassis is now free.*

### REMOVAL OF LOUDSPEAKER AND OUTPUT TRANSFORMER.

1. Remove chassis as previously specified.

2. Take out the 3 cross-head screws from front of cabinet.

Lift speaker carefully over battery shelf.

## HOW TO TEST.

**Make the following preliminary tests before proceeding with the component and valve tests.**

### SPEAKER, OUTPUT TRANSFORMER AND BATTERY TEST.

Turn the switch backwards and forwards from "ON" to "OFF." Assuming that the batteries are O.K. a rustling sound will be heard, providing that pentodes are functioning.

### VS2 VALVE AND H.F. CIRCUIT TEST.

Temporarily disconnect aerial whilst a powerful local station is being received.

If aerial makes little or no difference to signal strength, the fault will probably lie in that part of the circuit preceding the detector valve.

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**SUITABLE EXTRA SPEAKERS ARE MARCONIPHONE MODELS 140 OR 141**

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## MODEL 285 GIVES SPLENDID GRAMOPHONE REPRODUCTION

### HOW TO TEST (continued).

A faulty VS2 or a faulty aerial or earth system will result in weak but undistorted signals.

If when aerial is connected to the fixed vanes of VC3 (see Fig. 2) the sensitivity is commensurate with that of a 2-stage battery receiver, the trouble can be definitely associated with the VS2 valve, or the components preceding L9 and L10 in the circuit diagram.

### DETECTOR VALVE TEST.

If results are O.K. on "GRAM." but unsatisfactory when aerial is connected to VC3, the fault will probably lie with coils L9, L10, L11 and/or L12, or the condensers and resistances associated with that part of the circuit.

### PENTODE VALVE TEST.

Remove each pentode in turn to ascertain that both valves are functioning.

Although the instrument will give fairly satisfactory results with only one output valve, the tone (especially in the lower registers) will be adversely affected.

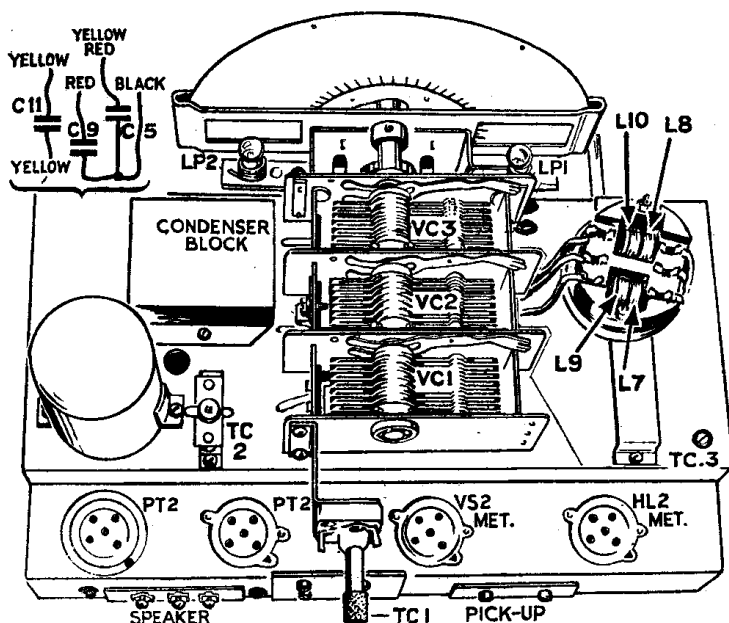
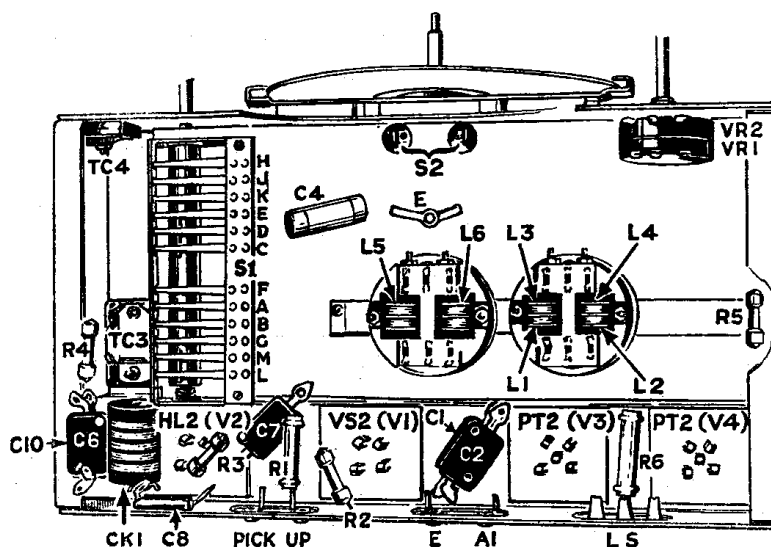


Fig. 2.

Fig. 3.



**THE MARCONIPHONE MODEL 19 PICK-UP IS RECOMMENDED**

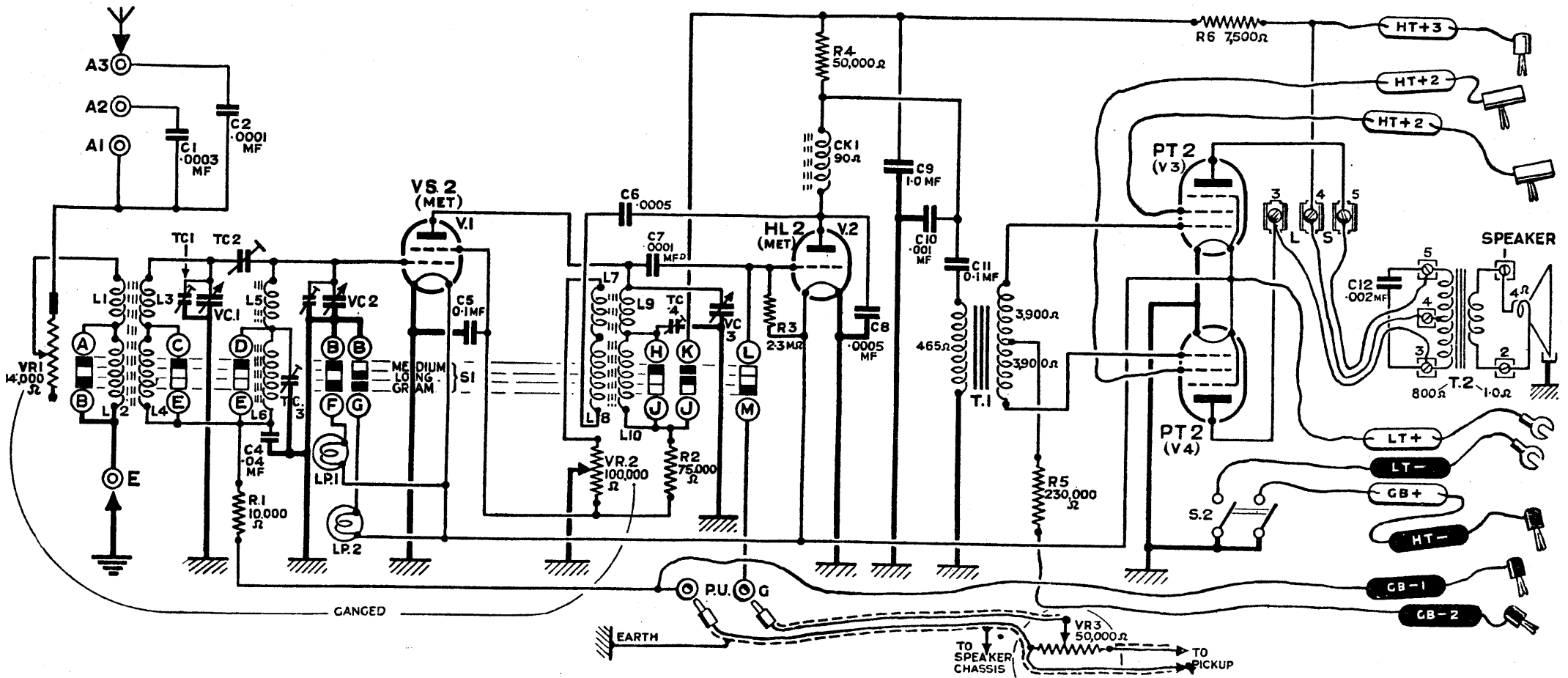


Fig. 1.

## VALVE TABLE.

All readings are  $\pm 10$  per cent.

|   | V1   | V2                                      | V3 & V4                          |
|---|--|---|----------------------------------|
| FILAMENT CURRENT ... ..   | 0.1  | 0.1                                     | 0.2 each                         |
| Avo Scale   | 0.012  | 0.012                                   | 0.012                            |
| ANODE FEED, M.A. ... ..   | Zero to 1.0  | 1.5                                     | *1.0 (normal signals) each valve |
| Avo Scale   | 1200   | 1200                                    | 1200                             |
| ANODE/FRAME VOLTS ... ..  | 112  | 60                                      | 166                              |
| Parts which should be checked if anode voltages and current are abnormal  | R2, R6, L9, L10<br>All battery leads and S1 and S2 | R4, R6, CK1<br>All battery leads and S2 | T2<br>All battery leads and S2   |
| Avo Scale   | 0.012  | —                                       | 0.012                            |
| SCREEN FEED, M.A. ... ..  | Zero to 0.6  | —                                       | *0.4 (normal signals) each valve |
| Avo Scale   | 1200   | —                                       | —                                |
| SCREEN/FRAME VOLTS ... ..   | 7 to 23  | —                                       | —                                |
| Parts which should be checked if screen voltages and current are abnormal | R6, R2, VR2<br>All battery leads and S1 and S2     | —                                       | —                                |

### TOTAL FILAMENT CURRENT :—

When operated on GRAM (2 lamps) ... .. 0.65 amp.  
When operated on RADIO (1 lamp) ... .. 0.62 amp.

### TOTAL H.T. FEED :—

With volume control at minimum (no signal) ... 6.0 m.A.  
With volume control at maximum (no signal) ... 6.75 m.A.  
Local station (normal volume) ... .. 7.5 m.A.  
(average)

Stress the importance to your customer of always connecting the accumulator the right way round, i.e., the L.T. + tag to the red terminal. A wrongly connected accumulator will cause the drain on H.T. current to be increased by approximately 100 per cent.

\* Anode feeds on V3 and V4 will vary considerably, depending on valves. Measure at outer L.S. terminals. Total feed of both valves can be checked at centre L.S. terminal.

ALTHOUGH INSTRUMENT WILL OPERATE ON 100 VOLTS, IT IS RECOMMENDED THAT THE H.T. BATTERY BE REPLACED WHEN VOLTAGE HAS FALLEN TO 120.

### GRID BIAS :—

When after an extended period of use, reception becomes distorted, reduce the value of G.B. -2 by  $1\frac{1}{2}$  volts. This may be done two or three times during the life of an H.T. Battery. Always switch the set OFF before making this adjustment. To ascertain whether the correct bias is being applied to the grid of the Pentodes, a milliampere meter must be inserted in the anode circuit. **LOWER THE GRID BIAS WHEN BATTERY VOLTAGE FALLS SO THAT "NO SIGNAL" CURRENT LIMITS ARE NOT EXCEEDED.** When testing voltage of H.T. battery with a view to adjusting bias voltage on Pentodes the reading must be taken after the instrument has been working for a few minutes and whilst signals are being received.

The following table gives the bias voltages which should be applied as the battery ages.

| VOLTAGE           | NEGATIVE BIAS    |
|-------------------|------------------|
| 166 (NEW BATTERY) | 9 VOLTS          |
| 145   "   "       | $7\frac{1}{2}$ " |
| 130   "   "       | 6   "            |
| 100   "   "       | $4\frac{1}{2}$ " |

**SUPPLY A NEW H.T. WHEN VOLTAGE FALLS BELOW 120**

**COMPONENT TESTS. (See Figs. 2 and 3.)**

\* Tests marked thus do not require removal of chassis from cabinet.

| Test No. | Part No.           | Test between—  | Ohms.                    |
|----------|--------------------|--|--------------------------|
| 1*       | VR1 ... ..         | Sockets A1 and E (Turn Vol. Control during this test) ...  | Zero to 14,000 ohms.     |
| 2*       | L1 and L2 ... ..   | A1 and E sockets—<br>(L1) switch M.W. } Volume Control at maximum {<br>(L1 + L2) switch L.W.   | 5.0 ohms.<br>21.0.       |
| 3        | L3 and L4 ... ..   | Fixed vanes VC1 and contact E of S1—<br>(L3) switch M.W. ... ..<br>(L3 + L4) switch L.W. ... ..  | 1.5.<br>13.0.            |
| 4        | L5 and L6 ... ..   | Fixed vanes VC2 and contact E of S1—<br>(L5) switch M.W. ... ..<br>(L5 + L6) switch L.W. ... ..  | 1.5.<br>13.0.            |
| 5        | L7 and L8 ... ..   | Dial side of C6 and outside tag of VR2 ... ..  | 4.0.                     |
| 6        | L9 and L10 ... ..  | Fixed vanes of VC3 and contact J of S1—<br>(L9) switch M.W. ... ..<br>(L9 + L10) switch L.W. ... ..  | 1.5.<br>13.0.            |
| 7        | R1 ... ..          | Contact E on S1 and G.B.—I socket ... ..   | 10,000.                  |
| 8        | R2 ... ..          | S.G. socket V1 and contact J on S1 ... ..  | 75,000.                  |
| 9*       | VR2 ... ..         | S.G. socket V1 and frame (E) (turn Vol. Control during this test)  | 8,000 to 100,000.        |
| 10       | R4 ... ..          | Anode socket HL2 and contact K of S1 ... ..  | 50,000.                  |
| 11*      | R5 ... ..          | G.B.—2 plug and grid socket of V3 or V4 (via half secondary of T1)   | 234,000.                 |
| 12       | R6 ... ..          | Contact K on S1 and H.T. + 3 plug ... ..   | 7,500.                   |
| 13       | T1 ... ..          | Primary. Joint on yellow lead and frame ... ..<br>Secondary. Grid V3 and R5 ... ..<br>Each half. Grid V4 and R5 ... ..   | 465.<br>3,900.<br>3,900. |
| 14*      | T2 ... ..          | Primary L.S. tags 3 and 4 on chassis ... ..<br>Primary L.S. tags 4 and 5 on chassis ... ..<br>Secondary. Disconnect speech coil from tag 1 or 2.<br>Measure between 1 and 2 ... .. | 400.<br>400.<br>1.0.     |
| 15*      | Speech coil ... .. | Tag 1 or 2 and free lead—see test 14 ... ..  | 4.0.                     |

Resistance values ( $\pm 10$  per cent.) are not necessarily "actual," and are only as indicated on AVO scale specified.

**CARRY A GOOD STOCK OF SPARE H.T.'S (B.550, 16/-)**

## MODEL 285 IS DESIGNED EXCLUSIVELY FOR MARCONI VALVES

### RESISTANCE COLOUR CODE.

Resistances are coded with three colours :—

BODY colour indicates 1st figure.

END colour indicates 2nd figure.

SPOT colour indicates additional 0's.

BODY and END Colours.  
(1st and 2nd figures.)

- 0 Black.
- 1 Brown.
- 2 Red.
- 3 Orange.
- 4 Yellow.
- 5 Green.
- 6 Blue.
- 7 Violet.
- 8 Grey.
- 9 White.

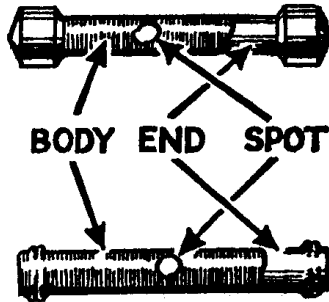


Fig. 4.

SPOT Colours.  
(Additional 0's.)

- .0 Black.
- 0. Brown.
- 00. Red.
- 000. Orange.
- 0,000. Yellow.
- 00,000. Green.

### Examples :—

|                                  |     |     |     |     |     |                 |
|----------------------------------|-----|-----|-----|-----|-----|-----------------|
| BODY—Brown, END—Blue, SPOT—Red   | ... | ... | ... | ... | ... | 1,600 ohms.     |
| Orange (whole resistance)        | ... | ... | ... | ... | ... | 33,000 ohms.    |
| BODY—Green, END—Black            | ... | ... | ... | ... | ... | 5,000,000 ohms. |
| BODY—Red, END—Violet, SPOT—Black | ... | ... | ... | ... | ... | 27.0 ohms.      |

All values must be read in three figures. Thus an all orange resistance equals—orange body (3) orange end (3) and orange tip (000).

**Note.**—An additional white spot may be found on resistances. THIS HAS NO BEARING ON THE RESISTANCE VALUE.

### WIRING COLOUR CODE.

|                         |     |     |     |     |     |   |
|-------------------------|-----|-----|-----|-----|-----|---|
| Black                   | ... | ... | ... | ... | ... | Earth.                                      |
| Red                     | ... | ... | ... | ... | ... | H.T. positive.                              |
| Green                   | ... | ... | ... | ... | ... | Grid.                                       |
| Blue                    | ... | ... | ... | ... | ... | Pick-up.                                    |
| Brown                   | ... | ... | ... | ... | ... | Filaments.                                  |
| Pink                    | ... | ... | ... | ... | ... | Loudspeaker.                                |
| Purple                  | ... | ... | ... | ... | ... | Aerial.                                     |
| Yellow                  | ... | ... | ... | ... | ... | Anode.                                      |
| Yellow with red tracer  | ... | ... | ... | ... | ... | Screen of screen grid valve.                |
| Green with black tracer | ... | ... | ... | ... | ... | Bottom of grid circuit not direct to earth. |
| Green with white tracer | ... | ... | ... | ... | ... | Mid position of tuning coil.                |

### RE-GANGING OF TUNED CIRCUITS.

Where new coils have been fitted, or H.F. wiring has been disarranged, the trimmer TC1 and the trimmer on the VC2 section of ganged condensers must be adjusted.

The L.W. trimmers TC3 and TC4 must also be re-set.

It is recommended that a local modulated oscillator be used for this work, which supplies a signal of constant power, wavelength and note. If, however, an oscillator is not available, the receiver may be ganged on a broadcast signal.

**ALWAYS STOCK MARCONI VS2, HL2 AND PT2 FOR REPLACEMENTS**



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## H.T. CURRENT IS PROPORTIONAL TO STRENGTH OF RECEPTION

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### GANGING WITH AN OSCILLATOR.

The control switch on the instrument to be re-ganged must be set to medium wave position, and the aerial lead-in (which must be plugged into A1) loosely coupled to the oscillator.

Set the oscillator to 220 metres and tune in the note on the receiver.

The trimmer TC1 should now be adjusted until signal is strongest.

**Do not attempt to Re-gang on a powerful Local Station.** Although signals may be judged aurally, greater accuracy will be obtained by the use of an output meter. This may be an 0-3 A.C. voltmeter connected across the secondary of the output transformer or, as an alternative, an 0-12 D.C. milliammeter may be used if connected in the H.T. + 3 lead.

Volume control must be advanced to a point where instrument is on the verge of oscillating. Having adjusted TC1 for strongest signal (maximum deflection of needle), TC2 trimmer should then be adjusted. Having adjusted TC1 and VC2, turn the control knob so that receiver is adjusted for L.W. (long wave) reception, and set the oscillator to 1,200 metres.

The trimmers TC3 and TC4 must now be adjusted in the order given until maximum response is obtained. **Do not adjust trimmers TC1 and VC2 on L.W.** Check all adjustment over in the order given, and drop a small quantity of melted wax on the side of each adjusting screw to secure position. Note: TC2 should always be fully unscrewed.

### GANGING ON BROADCAST SIGNALS.

With aerial plugged into A1, tune in a weak station on about 220 metres. Choose a station which does not fade and, if possible, re-gang during the daytime, when fading is less severe. Adjust trimmers as for oscillator ganging.

## ELECTRICAL INTERFERENCE.

Attention is drawn to the activities of H.M. Post Office and the British Broadcasting Corporation in investigating the sources of interference in the reception of broadcast programmes from electrical sources exterior to radio receivers, such as tramways, electric signs, motors, &c., X-ray apparatus and similar installations.

### WHAT TO DO.

1. Make absolutely certain that the interference is not within the instrument by disconnecting the aerial to see whether the interference continues.
2. Obtain from a Post Office (or the B.B.C.) a copy of the special questionnaire form issued by them.
3. Fill in the form accurately, giving, in addition to the answers required :—
  - (a) Name of manufacturer of the receiver.
  - (b) The manufacturer's Cat. No. of the receiver.
4. Send the questionnaire back to the B.B.C., together with brief notes as to possible source of interference which your local knowledge may suggest.
5. **Do not** assure your customer that a cure will be effected.
6. The P.O./B.B.C. organisation is one for investigating the cause of complaint with a view to ascertaining whether a cure can be effected. Such investigations may be both delicate and lengthy, and require both goodwill and tact to bring to a successful conclusion. **Do not** suggest to the owner (if known) of the interfering apparatus that your application is in any way a measure of retaliation.
7. It is of the utmost importance that this valuable channel of co-operation with H.M. Post Office and the B.B.C. should not be employed until every possible test has been made to ensure that the interference complained of comes definitely from a source exterior to the instrument.

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**DO NOT USE MORE VOLUME THAN IS NECESSARY**

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## SPARE PART LIST—MODEL 285.

| Part No.                          | Description.   | Retail<br>List Price. | Per   |
|-----------------------------------|--|-----------------------|-------|
| <b>CABINET PARTS AND FITTINGS</b> |  |                       |       |
|                                   |  | £ s. d.               |       |
|                                   | <b>Cabinet, complete for Model 285</b> ... ..  | 3 8 0                 | Each. |
| 5897                              | Cabinet back ... ..  | 0 1 0                 | "     |
| 12754                             | Screw, securing back to brackets ... ..  | 0 0 1                 | "     |
| —                                 | Wood feet, front ... ..  | 0 0 7                 | "     |
| —                                 | Wood feet, back ... ..   | 0 0 6                 | "     |
| 10475                             | Felt feet ... ..   | 0 0 6                 | Doz.  |
| 16426                             | Guide rod, R.H., for station chart (if fitted) ... ..  | 0 0 6                 | "     |
| 16427                             | Guide rod, L.H., for station chart (if fitted) ... ..  | 0 0 6                 | "     |
| 2418                              | Screw, No. 4 × ½-inch, R.H.I.—two securing rods and one as stop for chart ... ..   | 0 0 3                 | "     |
| 4396                              | Washer ... ..  | 0 0 2                 | "     |
| 17690                             | Station List ... ..  | —                     | —     |
| 16347                             | Tuning escutcheon ... ..   | 0 1 8                 | Each. |
| 10716                             | Screw, No. 2 × ¼-inch, Rsd. Hd.I. ... ..   | 0 0 4                 | Doz.  |
| —                                 | Baffle board, with silk ... ..   | 0 2 0                 | Each. |
| 13700                             | Silk ... ..  | 0 1 0                 | "     |
| 8602                              | Screw, No. 4 × ⅜-inch, R.H.I. }securing baffle board ... ..  | 0 0 2                 | Doz.  |
| 9537                              | Screw, No. 3 × ¼-inch, F.H.I. } ... ..   | 0 0 2                 | "     |
| 16046                             | Loudspeaker fret ... ..  | 0 2 6                 | Each. |
| —                                 | Button, }securing fret ... ..  | 0 0 2                 | Doz.  |
| 9548                              | Screw, No. 4 × ⅝-inch, F.H.I. } ... ..   | 0 0 3                 | "     |
| —                                 | Battery shelf, complete with battery stops ... ..  | 0 1 6                 | Each. |
| —                                 | Battery partition side, with one support for battery shelf and one fixing strip for partition back rail ... ..                       | 0 1 3                 | "     |
| —                                 | Battery partition front ... ..   | 0 1 2                 | "     |
| —                                 | Battery partition back rail ... ..   | 0 0 2                 | "     |
| <b>LOUDSPEAKER.</b>               |  |                       |       |
| 16000J                            | Loudspeaker, complete with T2, Output transformer ... ..   | 2 1 3                 | "     |
| 16020                             | Screw }securing loudspeaker ... ..   | 0 0 1                 | "     |
| 14761                             | Washer } ... ..  | 0 0 7                 | Doz.  |
| 16000A                            | Cone chassis, with three fixing lugs, transformer base plate, four studs for securing magnet and two studs for spider of cone ... .. | 0 3 2                 | Each. |
| 16763A                            | Magnet ... ..  | 1 5 0                 | "     |
| 11627                             | Nut }securing magnet to studs on cone chassis ... ..   | 0 0 6                 | Doz.  |
| 3167                              | Washer, S.P. } ... ..  | 0 0 2                 | "     |
| 16006B                            | Speech coil and cone, complete with spider and inner and outer mounting rings ... ..   | 0 5 0                 | Each. |
| 11636                             | Nut }securing spider of cone to studs on cone chassis ... ..   | 0 0 4                 | Doz.  |
| 6314                              | Washer } ... ..  | 0 0 2                 | "     |
| 1883                              | Spring washer } ... ..   | 0 0 3                 | "     |
| 16007                             | Cardboard washer } ... ..  | 0 0 1                 | "     |
| 16012                             | Felt ... ..  | 0 0 2                 | Each. |
| 10616D                            | T2—Output transformer ... ..   | 0 10 6                | "     |
| 16013A                            | Terminal panel with five terminal screws ... ..  | 0 1 6                 | "     |
| 11228                             | Terminal screw on panel ... ..   | 0 0 4                 | Doz.  |
| 15159                             | Tag ... ..   | 0 0 3                 | "     |
| 8777                              | Screw, PK, securing panel ... ..   | 0 0 6                 | "     |
| 15719G                            | C12—·002 mfd. condenser ... ..   | 0 1 1                 | Each. |
| 12619                             | Screw, PK, securing T2 to base plate ... ..  | 0 0 6                 | Doz.  |
| 16024                             | Dust bag ... ..  | 0 1 0                 | Each. |
| <b>RADIO UNIT</b>                 |  |                       |       |
| 16300D                            | Radio Unit ... ..  | 6 10 0                | "     |
| 11313                             | Screw }securing radio unit ... ..  | 0 0 2                 | Doz.  |
| 3531                              | Washer } ... ..  | 0 0 2                 | "     |
| 3167                              | Washer, S.P. } ... ..  | 0 0 2                 | "     |
| <b>Marconi Valves.</b>            |  |                       |       |
|                                   | VS2 met.—H.F. valve ... ..   | —                     | —     |
|                                   | HL2 met.—Detector ... ..   | —                     | —     |
|                                   | PT2 }Plain—output ... ..   | —                     | —     |
|                                   | PT2 }  | —                     | —     |

**MODEL 285. SPARE PART LIST—continued.**

| Part No.                      | Description.   | Retail List Price. | Per   |        |      |
|-------------------------------|--|--------------------|-------|--------|------|
| <b>ELECTRICAL COMPONENTS.</b> |  |                    |       |        |      |
| <b>Inductances.</b>           |  |                    |       |        |      |
| 11991F                        | L1—M.W. aerial coupling coil<br>L2—L.W. aerial coupling coil<br>L3—M.W. band pass primary coil<br>L4—L.W. band pass primary coil | £ s. d.<br>0 11 3  | Each. |        |      |
| 11991D                        | L5—M.W. band pass secondary coil<br>L6—L.W. band pass secondary coil   |                    |       | 0 10 6 | "    |
| 17007                         | Bracket, supporting coil units ...   |                    |       |        |      |
| 12619                         | Screw, P.K. } securing bracket ...   |                    |       | 0 0 6  | Doz. |
| 1048                          | Washer } securing coil units to bracket ...  | 0 0 2              | "     |        |      |
| 11637                         | Nut } securing coil units to bracket ...   | 0 0 6              | "     |        |      |
| 3165                          | Washer, S.P. } securing coil units to bracket ...  | 0 0 2              | "     |        |      |
| 11991B                        | L7—M.W. reaction coil<br>L8—L.W. reaction coil<br>L9—M.W. tuned anode coil<br>L10—L.W. tuned anode coil                          | 0 10 9             | Each. |        |      |
| 17006                         | Bracket, supporting coil unit ...  |                    |       | 0 0 2  | "    |
| 12619                         | Screw, P.K., securing bracket ...  |                    |       | 0 0 6  | Doz. |
| 11637                         | Nut } securing coil unit to bracket ...  |                    |       | 0 0 6  | "    |
| 3165                          | Washer, S.P. } securing coil unit to bracket ...   | 0 0 2              | "     |        |      |
| 16816                         | Cover on above coil units ...  | 0 0 3              | Each. |        |      |
| 16885                         | Insulation under cover ...   | 0 0 3              | Doz.  |        |      |
| 11637                         | Nut } securing cover ...   | 0 0 6              | "     |        |      |
| 3165                          | Washer } securing cover ...  | 0 0 2              | "     |        |      |
| 11042A                        | CKI H.F. choke ...   | 0 3 3              | Each. |        |      |
| 16076F                        | T1—Intervalve transformer ...  | 0 12 0             | "     |        |      |
| 12619                         | Screw, PK, securing T1 ...   | 0 0 6              | Doz.  |        |      |
| <b>Resistances.</b>           |  |                    |       |        |      |
| 10450J                        | R1—10,000 ohms ...   | 0 0 9              | Each. |        |      |
| or 17140B                     |  | 0 0 9              | "     |        |      |
| 17140U                        | R2—75,000 ohms ...   | 0 0 9              | "     |        |      |
| or 5787U                      |  | 0 0 9              | "     |        |      |
| 17140AL                       | R3—2.3 megohms ...   | 0 0 9              | "     |        |      |
| or 5787AL                     |  | 0 0 9              | "     |        |      |
| 17140P                        | R4—50,000 ohms ...   | 0 0 9              | "     |        |      |
| or 5787P                      |  | 0 0 9              | "     |        |      |
| 17141R                        | R6—7,500 ohms ...  | 0 1 1              | "     |        |      |
| or 5786R                      |  | 0 0 9              | "     |        |      |
| 3084                          | Rubber sleeve ...  | 0 0 6              | Doz.  |        |      |
| 17140Z                        | R5—230,000 ohms ...  | 0 0 9              | Each. |        |      |
| or 5787Z                      |  | 0 0 9              | "     |        |      |
| 12613                         | Cleat ...  | 0 0 1              | "     |        |      |
| 10606                         | Screw, P.K. ...  | 0 0 7              | Doz.  |        |      |
| 6000AR                        | VR1—14,000 ohms } volume control ...   | 0 10 0             | Each  |        |      |
|                               | VR2—100,000 ohms }   |                    |       |        |      |
| 13978                         | Insulating washer ...  | 0 0 9              | Doz.  |        |      |
| 4400                          | Nut securing volume control ...  | 0 0 2              | Each. |        |      |
| <b>Condensers.</b>            |  |                    |       |        |      |
| 15719B                        | C1—.0001 mfd. ...  | 0 0 9              | "     |        |      |
| or 2308A                      |  | 0 0 9              | "     |        |      |
| 15719D                        | C2—.0003 mfd. ...  | 0 0 9              | "     |        |      |
| or 4774C                      |  | 0 1 4              | "     |        |      |
| 13809                         | Rivet, securing C1 and C2 ...  | 0 0 2              | Doz.  |        |      |
| 16316L                        | C3—.04 mfd. ...  | 0 0 9              | Each. |        |      |
| 15719B                        | C6—.0001 mfd. ...  | 0 0 9              | "     |        |      |
| or 2308A                      |  | 0 0 9              | "     |        |      |
| 11017                         | Distance-piece } securing C6 ...   | 0 0 3              | Doz.  |        |      |
| 13809                         | Rivet } securing C6 ...  | 0 0 2              | "     |        |      |
| 15719E                        | C7—.0005 mfd. ...  | 0 1 3              | Each. |        |      |
| or 15193A                     |  | 0 0 9              | "     |        |      |
| 15719F                        | C8—.0005 mfd. ...  | 0 0 9              | "     |        |      |
| or 10010A                     |  | 0 0 9              | "     |        |      |
| 13809                         | Rivet securing C7 and C9 ...   | 0 0 2              | Doz.  |        |      |
| 13806                         | Rivet securing C8 ...  | 0 0 4              | "     |        |      |
| 16294C                        | C5—0.1 mfd. } condenser block ...  | 0 3 9              | Each. |        |      |
|                               | C10—1.0 mfd. }   |                    |       |        |      |
|                               | C11—0.1 mfd. }   |                    |       |        |      |
| 12619                         | Screw, securing condenser block ...  | 0 0 6              | Doz.  |        |      |

**MODEL 285. SPARE PART LIST—continued.**

| Part No.   | Description.  | Retail List Price.  | Per   |
|--|---|---------------------|-------|
| <b>Condensers —</b>                                  |   |                     |       |
|  |   | £ s. d.             |       |
| 13639F   | <b>VC1, VC2 and VC3</b> —three-gang variable condenser with one trimmer ... | 0 18 0              | Each. |
| 11211  | Screw } securing condenser ...  | 0 0 8               | Doz.  |
| 3167   | Washer } ...  | 0 0 2               | "     |
| 13657  | Trimmer plate ...   | 0 1 4               | "     |
| 13658  | Mica for trimmer ...  | 0 0 7               | "     |
| 13659  | Insulating washer ...   | 0 0 5               | "     |
| 13672  | Adjusting screw ...   | 0 0 5               | "     |
| 13661  | Earth spring ...  | 0 0 1 $\frac{1}{2}$ | Each. |
| 16286B   | Condenser drive assembly, complete with S2 ...                              | 0 2 7               | "     |
| 11033  | Tapped plate } ...  | 0 0 2               | "     |
| 11219  | Screw } securing drive bracket to condenser gang ...                        | 0 0 3               | Doz.  |
| 3166   | Washer, S.P. } ...  | 0 0 2               | "     |
| 16286A   | Condenser drive bracket with bush ...                                       | 0 0 9               | Each. |
| 16282A   | Contact strip with two contacts ...   | 0 0 3               | "     |
| 211  | Screw, P.K., securing contact strip to bracket ...                          | 0 0 6               | Doz.  |
| 11012A   | Drive spindle, with rubber drive ...  | 0 0 8               | Each. |
| 11041  | Split ring, securing drive spindle ...                                      | 0 0 6               | Doz.  |
| 16274A   | Switch spindle, complete with contact spring ...                            | 0 0 4               | Each. |
| 16280  | Thrust bracket ...  | 0 0 2               | "     |
| 11227  | Screw } securing thrust bracket to bush ...                                 | 0 0 6               | Doz.  |
| 3165   | Washer, S.P. } ...  | 0 0 2               | "     |
| 11034E   | Scale support and scale complete ...  | 0 1 9               | Each. |
| 11025  | Grub screw, securing scale support to condenser spindle ...                 | 0 0 6               | Doz.  |
| 16299A   | Scale guide, with felt ...  | 0 0 7               | Each. |
| 11620  | Screw, P.K., countersunk head, securing scale guide ...                     | 0 0 8               | Doz.  |
| 16285A   | Lamp holder, with bracket ...   | 0 0 6               | Each. |
| 211  | Screw, P.K., securing lampholders ...                                       | 0 0 6               | Doz.  |
| 16240F }<br>or 11737F }                              | TC1—5-70 mmfd. pre-set condenser ...  | 0 1 0               | Each. |
| 10436  | Adjusting nut ...   | 0 0 1               | "     |
| 10429  | Screw ...   | 0 0 7               | Doz.  |
| 10452  | Bracket supporting TC1 ...  | 0 0 2               | Each. |
| 8777   | Screw, P.K. } securing TC1 to bracket ...                                   | 0 0 6               | Doz.  |
| 1048   | Washer } ...  | 0 0 2               | "     |
| 11219  | Screw } securing bracket to condenser gang ...                              | 0 0 3               | "     |
| 3165   | Washer, S.P. } ...  | 0 0 2               | "     |
| 11033  | Tapped plate } ...  | 0 0 2               | Each. |
| 14575B   | TC2—Trimmer condenser ...   | 0 0 9               | "     |
| 15058  | Spacer } securing TC2 ...   | 0 0 3               | Doz.  |
| 13517  | Screw, P.K. } ...   | 0 0 1               | Each. |
| 16240C   | TC3—5-70 mmfd. pre-set condenser ...  | 0 1 2               | "     |
| 16240C   | TC4—5-70 mmfd. pre-set condenser ...  | 0 1 2               | "     |
| 11743  | Adjusting screw on TC3 and TC4 ...  | 0 0 8               | Doz.  |
| 11328  | Screw } securing TC3 and TC4 ...  | 0 0 2               | "     |
| 11629  | Nut } ...   | 0 0 6               | "     |
| 3165   | Washer } ...  | 0 0 2               | "     |
| <b>Switch.</b>                                       |   |                     |       |
| 11056E   | S1—Change over switch ...   | 0 5 9               | Each. |
| 12619  | Screw, P.K., securing switch ...  | 0 0 6               | Doz.  |
| 11051G   | Rotor with four contacts, rear end of switch ...                            | 0 1 0               | Each. |
| 11051H   | Rotor with three contacts, front end of switch ...                          | 0 1 0               | "     |
| 11063  | Collar, between rotors on spindle ...                                       | 0 0 2               | "     |
| 11059  | Locating cam ...  | 0 0 3               | "     |
| 10674  | Grub screw, securing collar and cam to spindle ...                          | 0 0 4               | Doz.  |
| 9016   | Spring for locating arm ...   | 0 0 1               | Each. |
| 1039   | Washer } on rear end of spindle ...   | 0 0 2               | Doz.  |
| 12567  | Spring } ...  | 0 0 6               | "     |
| 11062  | Guard strip, holds ends of contacts ...                                     | 0 0 2               | Each. |
| 211  | Screw, P.K., securing guard strip ...                                       | 0 0 6               | Doz.  |
| 11054A   | Contact strip with 12 contacts ...  | 0 3 5               | Each. |
| 211  | Screw, P.K., securing contact strip ...                                     | 0 0 6               | Doz.  |
| <b>Chassis Fittings, Valveholders, Sockets, etc.</b> |   |                     |       |
| 16300A   | Chassis, bare ...   | 0 3 5               | Each. |
| 10545  | Valve panel ...   | 0 0 2               | "     |
| 10546  | Valve leg clip ...  | 0 0 7               | Doz.  |
| 13703  | Valve panel cover ...   | 0 0 2               | Each. |
| 10547  | Valve panel cover with red spot ...   | 0 0 2               | "     |
| 13804  | Rivet securing valveholder to chassis ...                                   | 0 0 3               | Doz.  |

**MODEL 285. SPARE PART LIST—continued.**

| Part No.  | Description.   | Retail List Price. | Per   |
|---|--|--------------------|-------|
| <b>Chassis Fittings, Valveholders, Sockets, etc.—continued.</b> |  |                    |       |
|   |  | £ s. d.            |       |
| 16074A  | Aerial and earth terminal panel with four sockets and tags ... ..            | 0 0 7              | Each. |
| 16073A  | P.U. terminal panel with two sockets and tags... ..                          | 0 0 4              | "     |
| 16072A  | Loudspeaker terminal panel with three tags and terminal screws ... ..        | 0 0 7              | "     |
| 11228   | Terminal screw on L.S. panel ... ..  | 0 0 4              | Doz.  |
| 13803   | Rivet securing above three panels ... ..                                     | 0 0 3              | "     |
| 16576   | Tag, for earthing leads ... ..   | 0 0 3              | "     |
| 12619   | Screw, securing tags ... ..  | 0 0 6              | "     |
| 3338  | Tag, on S.G. anode lead ... ..   | 0 0 6              | "     |
| 12613   | Cleat ... ..   | 0 0 1              | Each. |
| 10606   | Screw, P.K. } securing R5 ... ..   | 0 0 7              | Doz.  |
| 7155  | Cleat for battery leads ... ..   | 0 0 1              | Each. |
| 11228   | Screw ... ..   | 0 0 4              | Doz.  |
| 11629   | Nut } securing cleat for battery leads ... ..                                | 0 0 6              | "     |
| 3165  | Washer, S.P. } ... ..  | 0 0 2              | "     |
| 16756   | Insulation bush—large ... ..   | 0 0 1              | Each. |
| or 4714   |  |                    |       |
| 16755   | Insulation bush—small ... ..   | 0 0 1              | "     |
| or 10086  |  |                    |       |
| <b>Leads, Plugs, Labels, etc.</b>                               |  |                    |       |
| 11532A  | Battery lead ... ..  | 0 3 0              | "     |
| 16288A  | Plug, red ... ..   | 0 0 2              | "     |
| 16288B  | Plug, black ... ..   | 0 0 2              | "     |
| 15453C  | Lead label, H.T. negative ... ..   | 0 0 1              | "     |
| 15453F  | Lead label, H.T. positive 3 ... ..   | 0 0 1              | "     |
| 15453H  | Lead label, G.B. negative 1 ... ..   | 0 0 1              | "     |
| 15453J  | Lead label, G.B. negative 2 ... ..   | 0 0 1              | "     |
| 11534A  | Screen lead ... ..   | 0 0 6              | "     |
| 16287A  | Plug ... ..  | 0 0 2              | "     |
| 15453E  | Lead label, H.T. positive 2 ... ..   | 0 0 1              | "     |
| 11535A  | L.T. positive lead ... ..  | 0 0 5              | "     |
| 8519  | Tag ... ..   | 0 0 1              | "     |
| 15453A  | Lead label L.T. positive ... ..  | 0 0 1              | "     |
| 11536A  | L.T. negative lead ... ..  | 0 0 5              | "     |
| 8519  | Tag ... ..   | 0 0 1              | "     |
| 15453B  | Lead label L.T. negative ... ..  | 0 0 1              | "     |
| 11533A  | Loudspeaker lead ... ..  | 0 1 9              | "     |
| 11802   | Tag—radio unit end ... ..  | 0 0 3              | Doz.  |
| 15159   | Tag—loudspeaker end ... ..   | 0 0 3              | "     |
| 7155  | Cleat ... ..   | 0 0 1              | Each. |
| 8692  | Screw ... ..   | 0 0 3              | Doz.  |
| 10606   | Screw, P.K. ... ..   | 0 0 7              | "     |
| 16296A  | Pilot lamp ... ..  | 0 0 6              | Each. |
|   | H.T. battery... ..   | —                  | —     |
|   | 2-v. 38 a.h. accumulator ... ..  | —                  | —     |
| 16751B  | Accumulator cover ... ..   | 0 2 4              | Each. |
| 16757   | Insulating bush ... ..   | 0 0 1              | "     |
| or 4712   |  |                    |       |
| 8602  | Screw, No. 4 × $\frac{3}{8}$ -inch R.H.I., securing accumulator cover ... .. | 0 0 2              | Doz.  |
| 16343A  | Knob—volume ... ..   | 0 0 7              | Each. |
| 16342A  | Knob—switch ... ..   | 0 0 7              | "     |
| 16341A  | Knob—tuning ... ..   | 0 0 7              | "     |
| 10674   | Grub screw ... ..  | 0 0 4              | Doz.  |
| 16276   | Knob—battery switch ... ..   | 0 0 5              | Each. |
| 11038   | Washer } securing battery switch knob ... ..                                 | 0 0 2              | Doz.  |
| 16277   | Nut } ... ..   | 0 0 8              | "     |
| 16289E  | Aerial plug—mauve ... ..   | 0 0 2              | Each. |
| 16289B  | Earth plug—black ... ..  | 0 0 2              | "     |
| 16289D  | P.U. plug—blue ... ..  | 0 0 2              | "     |
| 11896   | Model, Warning and Patents label ... ..                                      | 0 0 1              | "     |
| 13874   | Label—" Use Marconi Valves " ... ..  | 0 0 2              | "     |
| 11055   | Instruction Book ... ..  | 0 0 3              | "     |
| 17064   | Accumulator label ... ..   | 0 0 4              | Doz.  |

In order to expedite delivery of spare part orders, please quote :—

1. Model number and unit type number.
2. Spare Part number and description as given in the list.
3. Quantity required.

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