

HIS MASTER'S VOICE



SERVICE SHEET

ISSUED BY SERVICE DIVISION, HIS MASTER'S VOICE (N.Z.) LTD., G.P.O. BOX 296, WELLINGTON.

This set comprises three separate units—

**Tuning Unit**—R.F., converter.

**Amplifier Unit**—I.F., detector, output, power supply.

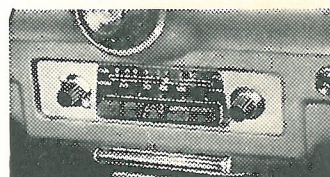
**Speaker**—Mounted separately.

The tuning unit is mounted either within or beneath the dash panel, the amplifier is concealed inside the bonnet or under the dash panel, and the speaker can be mounted in several suitable positions (see Bulletin).

An extension speaker can be fitted and installed in the rear of the passenger compartment.

#### VALVE TABLE

| Control Unit          | Amplifier               |
|-----------------------|-------------------------|
| W77—R.F. Amplifier    | W77 —I.F. Amplifier     |
| X78—Frequency changer | DH77—Detector 1st Audio |
|                       | N78 —Power output       |
|                       | U78 —Rectifier          |



#### GENERAL SPECIFICATIONS

**Low Tension Supply:** 12 volt or 6 volt. No voltage changeover is provided.

**Polarity of Supply:** Positive earth only.

**High Tension Supply:** Non-synchronous vibrator with hard valve rectifier.

**Power Consumption:** 12 volt—2.7 amps; 6 volt—6.5 amps.

**Frequency Coverage:** Broadcast band 550 kc/s to 1600 kc/s.

**Intermediate Frequency:** 465 kc/s.

**Speaker:** 6 inch, separately mounted.

**Three Unit Construction:** Separate tuning unit and power supply are connected by means of a flexible shielded cable.

**Controls: Tuning**—five push button automatic station selectors and manual tuning knob; **Volume** and ON/OFF switch;

**Tone Control**—four position slider switch.

**Aerial:** The set is designed for use with the aerial and shielded aerial lead supplied. Use of an aerial or lead cable of different length or capacity may cause considerable deterioration in the set's performance.

#### H.F. ADJUSTMENTS

All H.F. tests must be carried out in conjunction with the appropriate amplifier type "A", "B", "C" or "D"; both amplifier and control unit should be removed from the car.

For accurate servicing suitable test equipment and trimming tools should be used. An All-wave Service Generator, directly calibrated, covering the frequency range 100 kc/s to 120 mc/s and including a special bar Radio Dummy Aerial is particularly recommended.

If the I.F. circuits have been disturbed, complete I.F. and R.F. alignment must follow. Whilst ganging, the input to the receiver must be progressively reduced as the circuits are brought into line so that the output does not exceed 200 mW (1 volt across a 5 ohm non-inductive load).

An A.C. voltmeter (rectifier type) plugged into So 102 may be used as an output meter.

#### I.F. ALIGNMENT.

1. Set Volume Control fully clockwise; Tone Control fully anti-clockwise, and bring tuning carriage right out, i.e., towards the front panel.
2. Inject a modulated signal at 465 kc/s (modulated at 400 cycles to 30 per cent.) between the grid of V2 and chassis, leaving grid connection made.
3. Adjust cores of L103, L102, L101 and L6 in that order for maximum output. When adjusting any coil, its companion coil must be damped with a 47,000 ohm resistance, e.g., when L6 is adjusted, L101 must be damped.
4. Repeat operations 1-3 until no further output is obtained.

#### I.F. SENSITIVITY.

1. With controls and conditions as for I.F. Alignment, inject a modulated signal at 465 kc/s (modulated at 400 cycles to 30 per cent.) between the grid of V1 and chassis, leaving grid connection made.
2. With input level 54 db below 1 volt (2000 uV) check that the output is not less than 200 mW using "A" or "C" type Amplifier; 2W using "B" or "D" Amplifier.

#### R.F. ALIGNMENT—MEDIUM WAVES.

Set Volume Control fully clockwise; Tone Control fully anti-clockwise, and connect the signal generator to the aerial socket and chassis via the dummy aerial.

| Op. No. | Ganged Inductances or Tuner Pointer Setting | Tune Generator to m. | kc/s | Operation                                     |
|---------|---|----------------------|------|---|
| 1.      | 186.2m                                      | 186.2                | 1610 | Adjust TC5 for maximum output.                |
| 2.      | 500m  | 500                  | 600  | Adjust L13 for maximum output.                |
| 3.      | —   | —                    | —    | Repeat operations 1-2 for optimum results.    |
| 4.      | 250m  | 250                  | 1200 | Adjust TC1, TC3 and TC7 † for maximum output. |
| 5.      | —   | —                    | —    | Repeat operations 1-4 and reseal trimmers.    |

†Models 4202/3 only.

#### SENSITIVITY—MEDIUM WAVES.

With control and conditions as for M.W. Alignment inject the following signals (modulated at 400 c/s to 30 per cent.) via the dummy aerial.

- (a) 207 metres, input level 103 db below 1 volt (7 uV).
- (b) 250 metres, input level 103 db below 1 volt (7 uV).
- (c) 500 metres, input level 103 db below 1 volt (7 uV).

In each case the output is not to be less than 200 mW using "A" or "C" type Amplifier; 2W using "B" or "D" type Amplifier.

#### R.F. ALIGNMENT—LONG WAVES, Models 4200 and 4201 only.

Set Volume Control fully clockwise; Tone Control fully anti-clockwise, and connect the signal generator to the aerial socket and chassis via the dummy aerial.

| Op. No. | Ganged Inductances or Tuner Pointer Setting | Tune Generator to m. | kc/s  | Operation                                      |
|---------|---|----------------------|-------|--|
| 1.      | 1400m                                       | 1400                 | 214.3 | Adjust TC6 for maximum output.                 |
| 2.      | 1620m                                       | 1620                 | 185.2 | Adjust TC2 and TC4 for maximum output.         |
| 3.      | —   | —                    | —     | Repeat operations 1 and 2 and reseal trimmers. |

#### SENSITIVITY—LONG WAVES.

With controls and conditions as for L.W. Alignment inject the following signals (modulated at 400 c/s to 30 per cent.) via the dummy aerial.

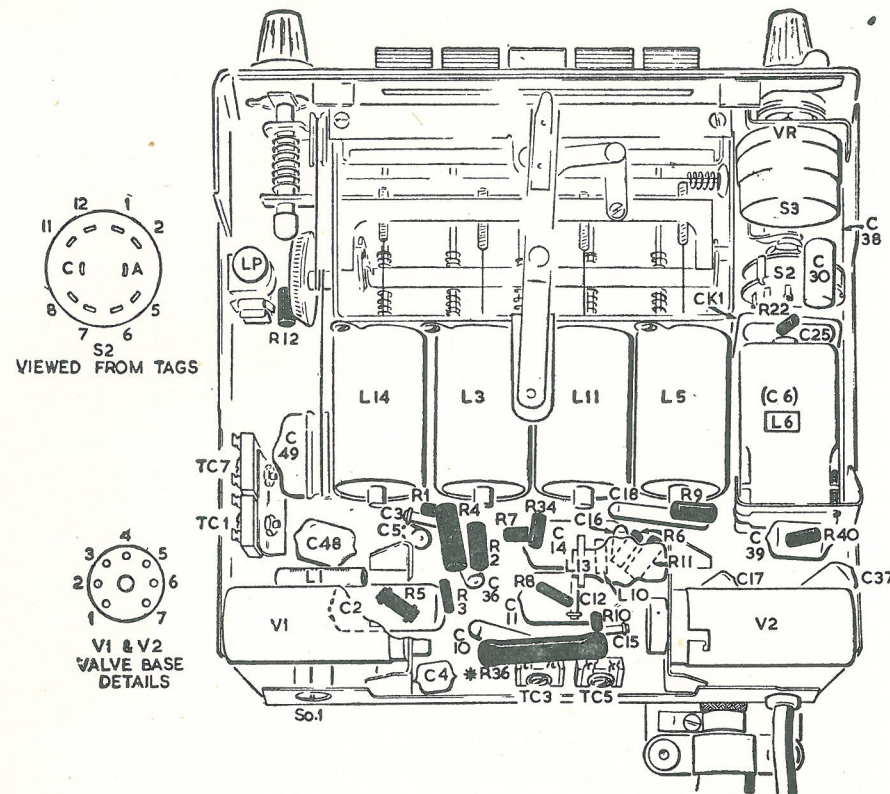
- (a) 1153 metres, input level 95 db below 1 volt (22 uV).
- (b) 1620 metres, input level 97 db below 1 volt (26 uV).

In each case output is not to be less than 200 mW using "A" or "C" type Amplifier; 2W using "B" or "D" type. Unless otherwise stated details apply to all the above models.

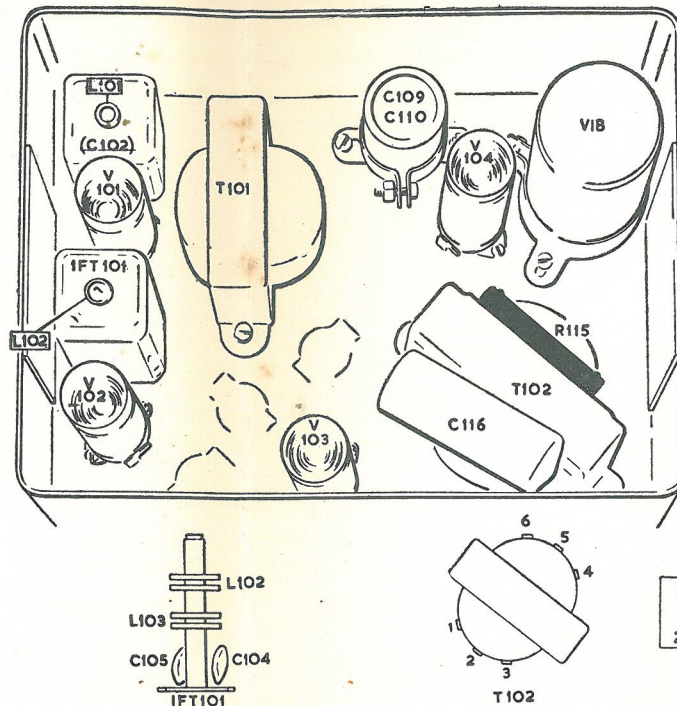


4202 in 4203

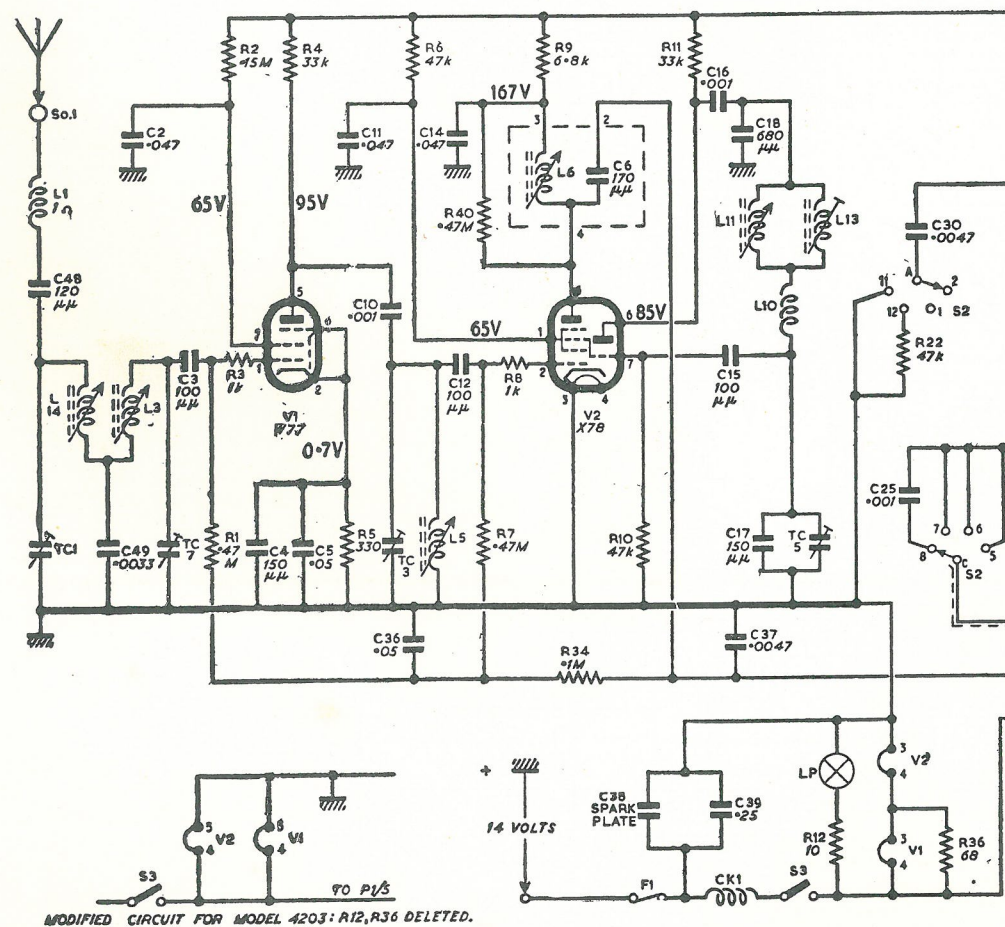
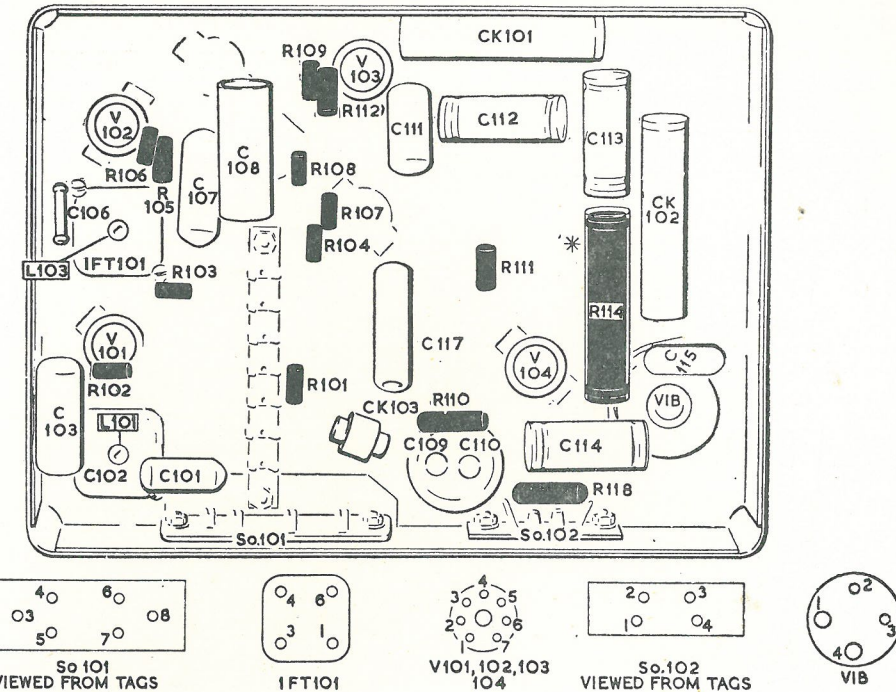
\* R36 USED ON MODEL 4202 ONLY.



GENERAL CHASSIS VIEW



\* R114 is used with 46028A (12V) only.

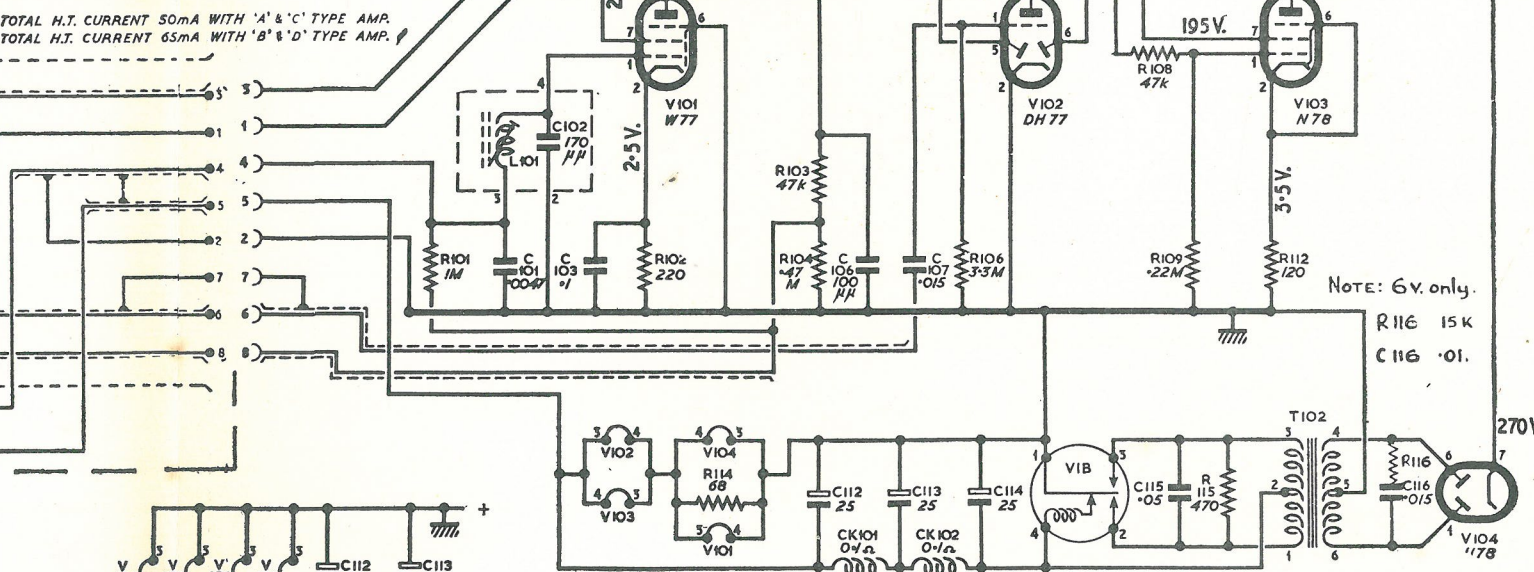


CIRCUIT FOR 4202-3 CONTROL UNIT

NOTE: POTENTIOMETER SHOWN IN MAX ANTI-CLOCKWISE POSITION. METALLISED SCREENING CONNECTED TO CHASSIS. NUMBERS ADJACENT TO VALVE ELECTRODE CONNECTIONS REFER TO VALVE BASE PINS (KEY GIVEN ON UNDERSIDE CHASSIS ILLUSTRATION). VOLTAGES ARE SHOWN AT THE RELEVANT POINTS ON THE CIRCUIT AND WERE TAKEN WITH A METER HAVING A RESISTANCE OF 500 OHMS PER VOLT. THE DC INPUT WAS 14 VOLTS FOR MODEL 4202, THE DC INPUT WAS 7 VOLTS FOR MODEL 4203.

MODEL 4202 TOTAL CURRENT 3 AMPS WITH 'A' AMPLIFIER. MODEL 4203 TOTAL CURRENT 4.5 AMPS WITH 'C' AMPLIFIER.

TOTAL H.T. CURRENT 50mA WITH 'A' & 'C' TYPE AMP. TOTAL H.T. CURRENT 65mA WITH 'B' & 'D' TYPE AMP.



CIRCUIT FOR A & C AMPLIFIER

NOTE: METALLISED SCREENING CONNECTED TO CHASSIS. NUMBERS ADJACENT TO VALVE ELECTRODE CONNECTIONS REFER TO VALVE BASE PINS (KEY GIVEN ON UNDERSIDE CHASSIS ILLUSTRATION). VOLTAGES ARE SHOWN AT THE RELEVANT POINTS ON THE CIRCUIT AND WERE TAKEN WITH A METER HAVING A RESISTANCE OF 500 OHMS PER VOLT. THE D.C. INPUT WAS 14 VOLTS ('A' AMPLIFIER) AND 7 VOLTS ('C' AMPLIFIER).