

TECHNICAL INFORMATION
COVERING
BROADCAST RECEIVER TYPE 7150A.
COLLIER & BEALE Ltd. WELLINGTON.

Feb/1952

TYPE SET.—Automobile Battery Superhetrodyne.
TUBES (seven).—6BA6 R.F. Amp., 6BE6 Converter, 6BA6 I.F. Amp., 6AT6 Det.-A.F., EF22 Audio, 6V6 Power Output, 6X4 Rectifier.
POWER SUPPLY.—12 volts, 4 amps, or 6 volts, 6.5 amps.
TUNING RANGE.—Broadcast, 530-1520 Kc/s.

ALIGNMENT INSTRUCTIONS

To set pointer, fully mesh variable condenser and set pointer at last reference mark at left end of dial. Set volume control at maximum and keep output from signal generator no higher than necessary to obtain output reading.

| Dummy Antenna | Signal Generator Coupling | Sig. Gen. Frequency | Band Switch Position | Radio Dial Setting | Output Meter | Adjust | Remarks |
|--|--|---|----------------------|---|-------------------|--------------------------|--|
| 0.1 μfd. 100PF | High side to Pin No. 7 (Grid) of 6BE6. | 455 Kc. | — | High freq. end | Across voice coil | A1, A2. A3, A4. | Adjust for maximum output |
| R.M.A. Standard | High side to ant. Terminal | 1400 Kc. 1400 Kc. 1400 Kc. 600 Kc. | — — — — | 1400 Kc. 1400 Kc. 1400 Kc. Rock Variable | ” ” ” ” | C30 C29 C28 C23 | ” ” ” Recheck C30 & C29 at 1400 Kc/s. If necessary recheck C23 at 600 Kc/s. |
| ” | ” | | | | | | |
| ” | ” | | | | | | |

CAPACITORS

| Ref. No. | Cap. | Volts |
|----------|---------------|---------|
| C1-2 | 40 μ fd. | 450 |
| C3 | 20 ” | 450 |
| C4 | 25 ” | 35 |
| C5 | 0.001 ” | Mica |
| C6-8 | 0.25 ” | 200 |
| C9-11 | 0.1 ” | 500 |
| C12-14 | 0.05 ” | 500 |
| C15 | 0.03 ” | 600 |
| C16 | 0.03 ” | 600 |
| C17-18 | See below | 750 |
| C19 | 0.02 ” | 500 |
| C20-21 | 0.01 ” | 600 |
| C22 | 0.004 ” | Mica |
| C23 | 600 μ fd. | Padde |
| C23A | 500 ” | Mica |
| C24 | 250 ” | Mica |
| C25-27 | 100 ” | Mica |
| C28-30 | 3-30 ” | Trimmer |

MISCELLANEOUS

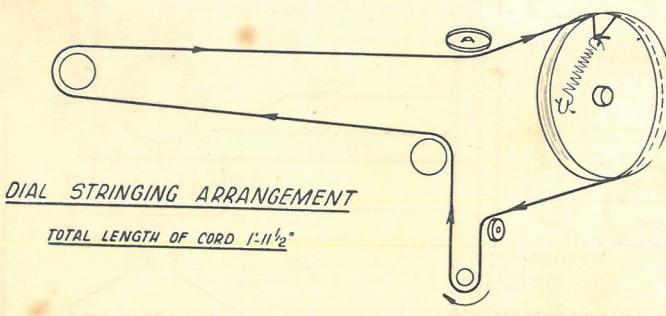
| Ref. No. | Res., Pri. | Res., Sec. |
|------------|---------------------------------------|------------|
| 717 | 1.3 ohm | 2 ohm |
| 417 | — | 2 ohm |
| 117 | 0.77 ohm | 5 ohm |
| I.F.1 | 14 ohm | 14 ohm |
| I.F.2 | 14 ohm | 14 ohm |
| CH958 | 0.4 ohm | |
| CH959 | 0.012 ohm | |
| CH960 | 0.03 ohm | |
| CH961 | 0.04 ohm | |
| SP1 | Celestion 6in. P.M. Speaker. | |
| SW1 | S.P.S.T. Switch attached to R4. | |
| SW2 | S.P.S.T. Tone Switch. | |
| TR5504-1 | 5000 ohm-3 ohm Output Trans. | |
| TR5519-6V | 6-volt Power Transformer. | |
| TR5519-12V | 12 ” | |
| CV | Polar C90-03/1" (Swing 351 μ fd.) | |
| PL | 6.3v. 0.3 amp. tub. M.E.S. | |

RESISTORS

| Ref. No. | Res. | Watts |
|----------|------------|---------------|
| R1 | 10 meg | $\frac{1}{2}$ |
| R2 | 2 ” | $\frac{1}{2}$ |
| R3 | 500K ” ohm | $\frac{1}{2}$ |
| R4 | 500K ” | $\frac{1}{2}$ |
| R5-6 | 250K ” | $\frac{1}{2}$ |
| R7 | 100K ” | $\frac{1}{2}$ |
| R8-10 | 50K ” | $\frac{1}{2}$ |
| R11-12 | 25K ” | $\frac{1}{2}$ |
| R13-14 | 20K ” | $\frac{1}{2}$ |
| R15 | 3K ” | $\frac{1}{2}$ |
| R16 | 3K ” | 2 |
| R17 | 2K ” | $\frac{1}{2}$ |
| R18 | 500 ” | $\frac{1}{2}$ |
| R19 | 250 ” | 1 |
| R20 | 200 ” | $\frac{1}{2}$ |
| R21 | 150 ” | 1 |
| R22-24 | 50 ” | $\frac{1}{2}$ |
| R25 | 100 ” | 1 |

DIVERGENCIES:

Early production receivers used 7B7 and 6AQ5 audio tubes. (See "Interim Data," No. 0-116).
Twelve volt sets formerly used two 6V lamps in series, later models have 12V lamps.
If replacing output transformer TR5504 with TR5504/1 the secondary leads must be reversed.
Earlier models lacked the C5 antenna blocking capacitor which protects the coil from damage should battery leads contact the antenna.



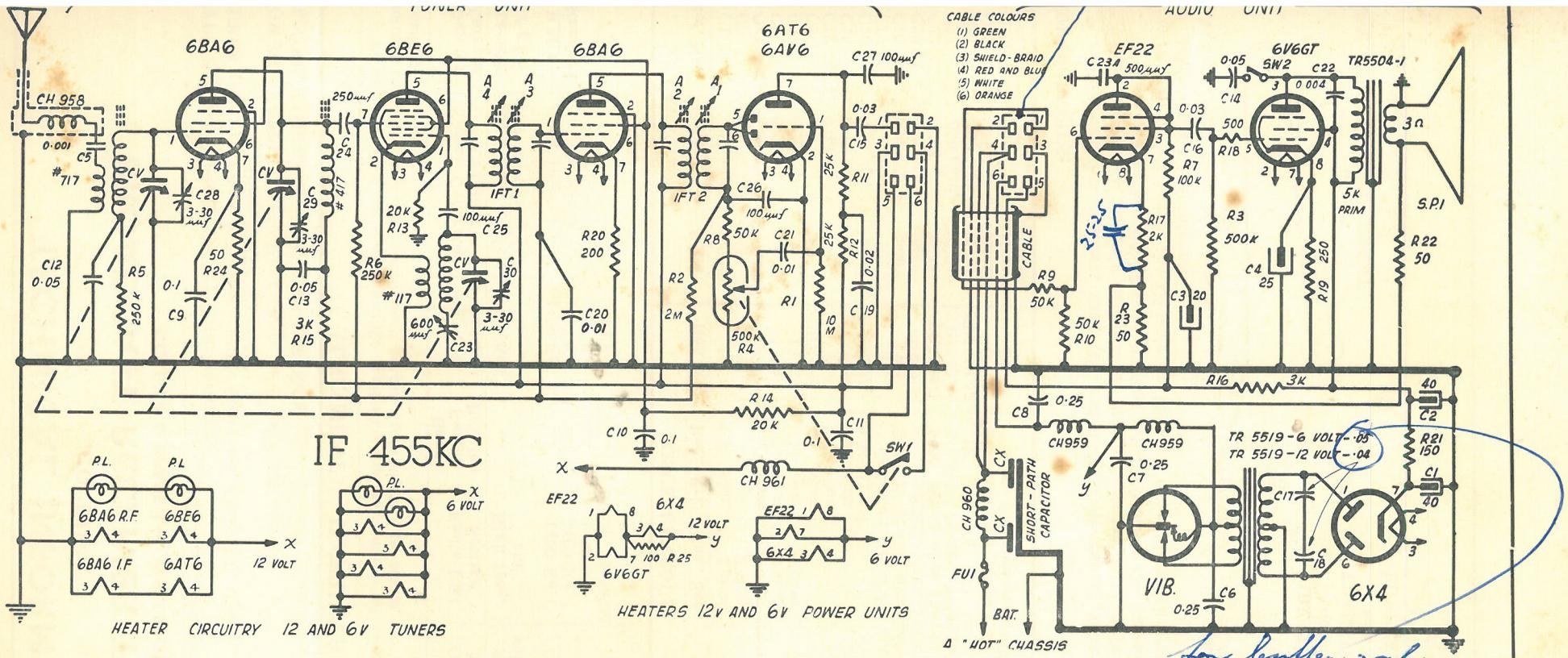
SIX AND TWELVE VOLT MODELS.

FUSES: Warning—Fuses above these ratings must not be fitted. 6 volt sets, 10 amp rating. 12 volt sets, 6 amp rating.

VIBRATORS: Non-synchronous, 4 pin. Reed frequency nominally 100 c/s.

TRANSFORMERS: 6 volt sets TR.5519-6V. 12 volt sets TR.5519-12V.

BUFFERS C17/18: 6 volt sets, two 0.05uF. 12 volt sets, two 0.04 uF. If vibrators differing in frequency from original 100 c/s units are used, the buffer values must be changed.



SCHEMATIC DIAGRAM MODEL 7150A

VOLTAGE READINGS FOR 6-VOLT MODEL

| Use | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|----------|-------|----------|-------|-------|-------|-------|----------|-------|-------|
| R.F. | 6BA6 | — | — | — | 5.5 | 165 | 50 | 0.3 | — |
| Conv. | 6BE6 | — | — | — | 5.5 | 175 | 50 | — | — |
| I.F. | 6BA6 | — | — | — | 5.5 | 175 | 50 | 0.8 | — |
| Det-A.F. | 6AT6 | — | — | — | 5.5 | — | 130 | — | — |
| A.F. | EF22 | 5.5 | 43 | 43 | 43 | — | — | 2.1 | — |
| Output | 6V6GT | 230 a.c. | — | 210 | 230 | — | 230 a.c. | 245 | 10 |
| Rect. | 6X4 | 230 a.c. | — | 236 | 258 | — | 275V | — | — |

NOTE → (Voltages in 12V. Model are approx. 12% higher)

1. D.C. voltage measurements are at 20,000 ohms per volt—A.C. voltage measurements at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to chassis.

RESISTANCE READINGS

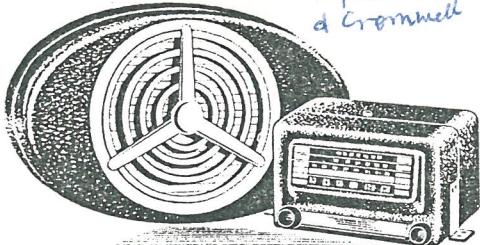
| Use | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|----------|-------|---------|----------|---------|---------|---------|---------|-----------|---------|
| R.F. | 6BA6 | 2.8 meg | — | — | 0.5 ohm | 2 meg | 2 meg | 50 | — |
| Conv. | 6BE6 | 20K | 0.75 ohm | — | 0.5 ohm | 2 meg | 2 meg | 3.5 meg | — |
| I.F. | 6BA6 | 2.5 meg | — | — | 0.5 ohm | 2 meg | 2 meg | 200 | — |
| Det-A.F. | 6AT6 | 10 meg | — | — | 0.5 ohm | 0.5 meg | 0.5 meg | 2.05 meg | — |
| A.F. | EF22 | 0.5 ohm | 2.1 meg | 2.1 meg | 2.1 meg | — | 50 K | 2,027 ohm | — |
| Output | 6V6GT | — | — | — | 2 meg | 2 meg | 0.5 meg | — | 0.5 ohm |
| Rect. | 6X4 | 200 ohm | — | 0.5 ohm | — | — | 210 ohm | — | 2 meg |

4. Nominal tolerance on component values make possible a variation of $\pm 10\%$ in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.
6. Resistance readings in B+ circuits may vary widely according to the condition of filter capacitors.

for buffer values
see Service letter
of 16/6/53

model 7150A

Pacemaker
a Cromwell



17 Bondabond's

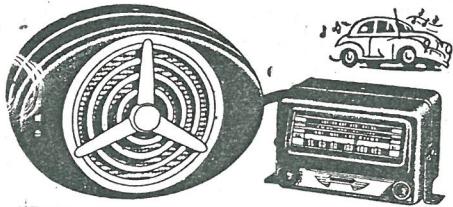
SKYMASTER "ROVER" 7-Valve
Broadcast Auto. The car radio of the
year. Fits any car. Circuit remarkable
for its tuning sensitivity and selec-
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background noise.

6/24
1951

in
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CAB

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G.P.O. Box 1693

WELLINGTON,

2nd April, 1952.

Dear Sir/s,

Service Data.

We hasten to bring to your attention the serious error which has been discovered in the text of the newly issued Technical Data Sheet No.116 covering the Auto Radio.

The dummy antenna required for the alignment of the signal circuit is specified as being the R.M.A. standard, this should be changed to read 100 P.F. condenser.

It will be realised that the peaking of the antenna trimmer would be virtually impossible if the R.M.A. load is used.

It may be noted that it would be desirable practise to adjust the antenna trimmer after the receiver has been installed in the vehicle thus ensuring the highest performance irrespective of the arrangement of the antenna cable in the individual car.

Commending the above to your kind attention and apologising for any inconvenience caused you.

Yours faithfully,
H.W.CLARKE (N.Z.) LTD.

Encl.

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WELLINGTON,

2nd May, 1952.

Dear Sir/s,

Subject: Auto Radio Over-heating.

We have had several reports of over-heating of Auto Radios and with a view of helping your Service Department give below the extracts of two reports from the factory on the above subject, particulars being as follows:-

"For your information, investigations so far carried out show that the incidence of gross over-heating of our Auto Radio receivers is not by any means high and that the trouble where it exists, is confined to the units designed for 12 volt vehicles. Furthermore, as can be adjudged at the present time the difficulty only occurs when the unit is installed in certain makes of English cars. For your information, the open circuit voltage, or the voltage under a condition of light load, (such as would be represented by a car radio receiver) of a lead acid storage battery, is equivalent to 2.55 volts per cell when in a fully charged state and under a condition of charge. This means that under normal circumstances it is possible to supply to a 12 volt receiver, approximately 15 *doubtless* volts under certain conditions. This factor was taken into consideration in the design of this receiver and provided this voltage is not exceeded, no over-heating to the point of producing damage would result. However, it is possible, as a result of mal-adjustment of the vehicle's charging system, to have an excessive charging rate to the point that an open circuit voltage in excess of the fully charged state, can be reached. Most 12 volt vehicles have what is known as a low ampere-hour capacity battery and it is considered likely that Dealers may in an endeavour to avoid any possible discharge of the battery, increase the charging rate beyond that normally fixed by the car manufacturers. This is a matter that should be strongly discouraged as in long runs,

the battery can quite easily reach a fully charged and even an over-charged state with over-voltage conditions obtaining when the car radio is employed.

Notwithstanding the foregoing and the need to caution Dealers accordingly, an investigation is being made into the availability of barreters which would have the effect of maintaining a fairly constant voltage in the radio receiver irrespective of varying battery voltages. In the event that suitable units are available, these will be introduced into any new model vehicle receiver or subsequent run of the present model."

Extract of a later report on the same subject reads as follows :-

"Further to our earlier report on above we have examined the position in regard to the electrical installations of certain makes of English cars and find that there is quite a serious inherent weakness in these installations which could give rise to the gross over-heating which has been reported in connection with one or two 12 volt auto radio receivers.

The question of the electrical installation of these English cars was referred to a well known battery service organisation and they report that the electrical equipment insofar as battery rating and the connections of the battery to the vehicle's electrical system is concerned, is deficient in the extreme. A very low capacity battery is employed which, of itself, is capable of becoming grossly overcharged during long runs but probably the worst feature is the very uncertain manner of connecting the battery to the electrical system of the vehicle. The method employed relies in the main, in the tightness of a single brass screw at the battery terminals and whereas a satisfactory contact is made when the battery is freshly installed, vibration and corrosion early render the connection unreliable and possessing very high resistance. This is actually borne out in fact and our informant reports a very high incidence of headlamp bulb failure in the cars concerned. Headlamp failure can only result from prolonged operation under excessive voltage and it is this very same condition that could give rise to excessive heat generation in an auto radio receiver powered from the same equipment.

We were advised that the only real solution to the problem is to replace the "Cap" type lead terminals

such as
PK peren
to batt
New port

informant

normally employed with the batteries fitted to the vehicles concerned, with the more usual saddle clamp type. A recommendation also is to increase the conductor size of the flexible terminal strips connecting the battery to the vehicle's wiring."

Trusting that this information may be useful to your Service Department in the event of your experiencing any similar trouble.

Yours faithfully,
H.W.CLARKE (N.Z.) LTD.