SPECIFICATIONS

POWER SUPPLY:
240-250 volts, A.C., 50 Hz.

CONSUMPTION:
Radio: 9 watts (no signal)
Radio: 35 watts (8 watts per channel)
Gram.: 44 watts (8 watts per channel)

FREQUENCY RANGE:
520-1650 KHz.

INTERMEDIATE FREQUENCY:
455 KHz.

POWER OUTPUT:
8 watts r.m.s. each channel in 8 ohms.

LOUDSPEAKERS:
2 x 8" Magnavox, type 8WR (twin cone), 8 ohms at 400 Hz.

RECORD CHANGER:
T9 and TA: Garrard 4-speed, type 2025TC
TC: B.S.R. 4-speed, type MA70.

PICKUP:
T9 and TA: Sonotone, type 9TAG, ceramic cartridge.
TC: B.S.R., type C1.

STYLI:
T9 and TA: Sonotone, type N9TADS.
TC: B.S.R., type ST4.
Diamond, stereo and microgroove, 0.7 mil tip.

DIAL LAMPS:
6.3 volts, 0.3 amp.

ADDITIONAL FACILITIES:
Jack—input, left channel
Jack—input, right channel
Jack—output, left channel
Jack—output, right channel

SEMI-CONDUCTORS
OC933 or SE1010 (Silicon NPN)—Frequency Changer
OC933 or SE1001 (Silicon NPN)—1st IF Amplifier
OC933 or SE1001 (Silicon NPN)—2nd IF Amplifier
2 x BC109 or 2 x SE4010 (Silicon NPN)—Audio Pre-Amplifiers/Equalisers.
2 x BC107 or 2 x SE4002 (Silicon NPN)—Audio High Pass Filters
2 x BC109 or 2 x SE4010 (Silicon NPN)—Audio Amplifiers.
2 x BC177 or 2 x TT1108 (Silicon PNP)—Audio Drivers
2 x AD161/AD162—Push-Pull Audio Output (2 matched pairs)
AB1101 Silicon Diode—Signal Detector and AGC
OA90 Germanium Diode—Auxiliary AGC
2 x AS25 or OA610 or EM404 (Silicon Diode)—Power Rectifiers

Model TC-48 only

The following information is included as a guide for the fitting of a magnetic pickup and auxiliary equipment.

Note: The figures quoted are average.

AUDIO FREQUENCY RESPONSE:
Main Amplifier—within 3 dB; 50-20,000 Hz P.U. Pre-Amplifier—active 24 dB/octave rumble filter with 50 Hz roll off.

SENSITIVITY:
For 8 watts per channel (r.m.s.).
Main Amplifier input jacks: 130 mV.
Ceramic or Crystal P.U. input: 130 mV (via 470p source).
Magnetic P.U. input: 2 mV (via 600 ohm source).

PRE-AMPLIFIER OVERLOAD:
Ceramic or Crystal 5V, Magnetic 100 mV, 1 KHz.

DIMENSIONS

MODEL T9-4A:

Height (including 7½" legs)	26¼"
Width	48"
Depth	14¾"
Weight—	
Gross	94 lbs.
Nett	80 lbs.

Model T9-46:

Main Unit—	
Height (including 9" legs)	18"
Width	18"
Depth	19"
Speaker Cabinets—	
Height	22"
Width	15"
Depth	10"
Weight—	
Gross	88 lbs.
Nett	72 lbs.

Model TC-48

Control Unit—	
Height	6½"
Width	17½"
Depth	6½"
Playing Desk—	
Height	7½"
Width	17½"
Depth	13½"
Speaker Units—	
Height	22"
Width	15"
Depth	10"
Weight—	
Gross	80 lbs.
Nett	67½ lbs.

Y2-D3 Addendum to Y1-D3

1. **ELECTRICAL**

(a) **TV Chassis:**
Refer to Y1-D3 manual, noting the following minor modifications in the TV audio following the ratio detector — R71 is now 4.7K ohm (740-0071).

The signal earth coming from the tertiary winding now "floats" above the TV chassis earth via C63a (.047uF +20% —80% Ceramic 271-0731). This eventually connects to the radiogram chassis earth at the function switch.

*C50 has part number 283-1321, not 283-1821.

(b) **Radiogram Specification:**
For parts list, circuit diagram, printed circuit board diagrams and adjustments, refer to relevant information for the type TA chassis contained elsewhere in this manual.

2. **MECHANICAL**

For dismantling of either radiogram or TV chassis, refer to Y1-D3 manual.

Removal of Tuner Knob:

1. Pull off front control knobs — Channel Selector, On/Off, Picture and Sound knobs.
2. Remove screw at right side of tuner.

Tuner may be hooked to left side of main chassis by dropping tongue on tuner bracket into special slot provided. Slide tuner forward and tighten self-tapping screw.

SERVICE NOTES (All Models)

Transistors can be permanently damaged by excessive external heat, or by heat generated within the circuit by excessive current flow. When servicing this equipment, the following precautions should be observed:

Supply polarity should never be reversed. Never remove or replace a transistor or circuit component without first switching off the power.

When soldering transistor leads, use a small iron. Solder as rapidly as possible, keeping the iron well clear of the transistor body. The use of a 240-volt soldering iron should be avoided, as leakage and capacitance effects can destroy a transistor. To avoid this problem, a low-voltage iron with a step-down transformer should be used.

To unsolder multi-terminal components (IF transformers, etc.), it is best to apply heat simultaneously to all terminals, using a special iron tip. If a normal tip is used, apply the iron to each soldered joint in turn, and brush away the solder with a stiff brush.

Disconnect transistors before making circuit checks with an ohm meter. Failure to do so will give misleading results.

When taking voltage measurements, avoid accidental short-circuits by the voltmeter probes.

When using a signal generator, a DC blocking capacitor should be used in the live lead to prevent disturbance of the transistor DC circuits.

Before connecting the generator, adjust its attenuator for minimum output. Signal generators designed for vacuum tube circuits can often deliver more signal that a transistor can safely handle.

The output must be correctly loaded with 8 ohms during these tests. If the output load is reduced below the correct value, the maximum dissipation of the output transistors will be exceeded at medium and high output levels.

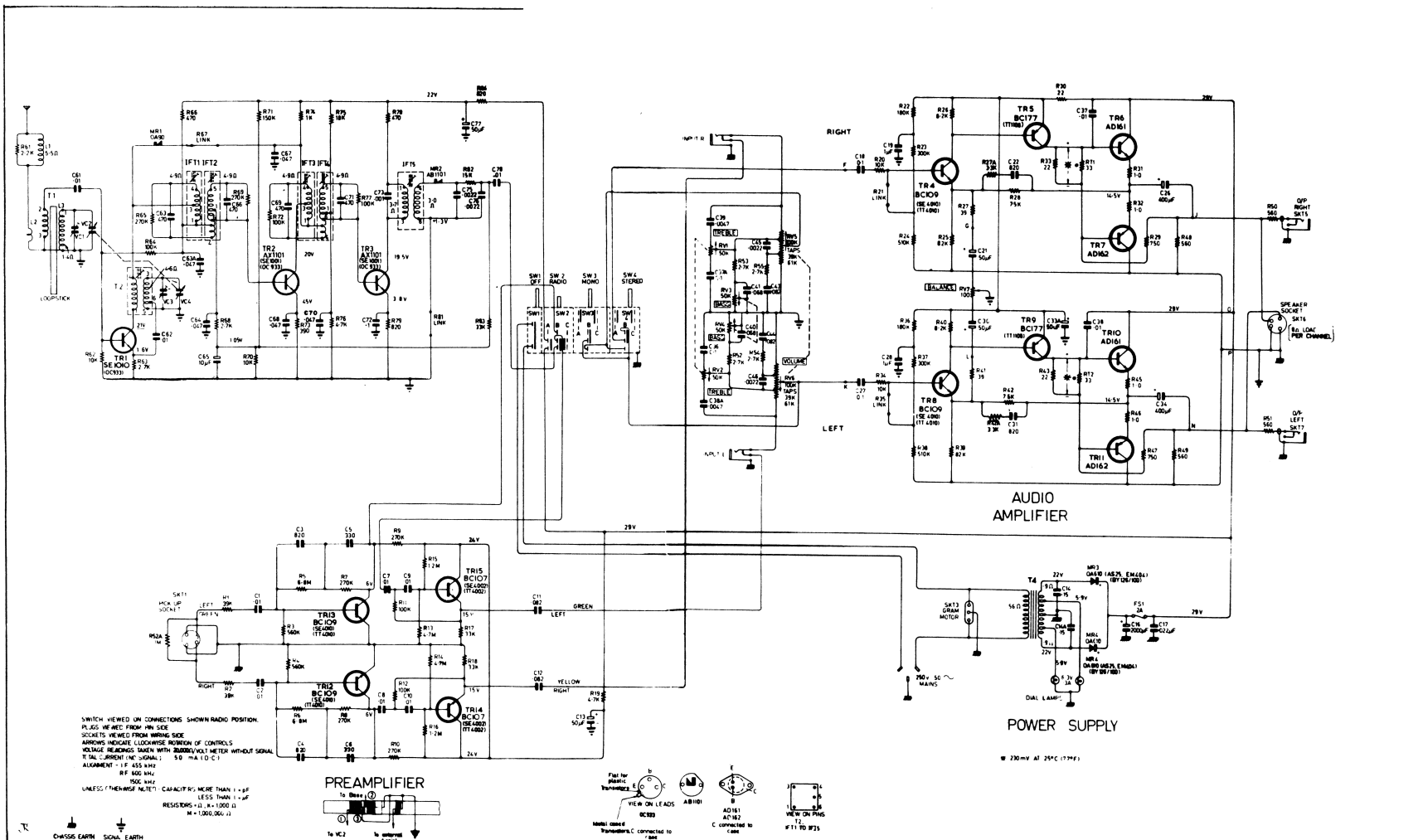
IMPORTANT

It is desirable that, when any repairs are done to the audio amplifiers, the supply rail be reduced to half the nominal voltage to enable a quick check on the performance to be made without the possibility of damage occurring due to faulty components, etc.

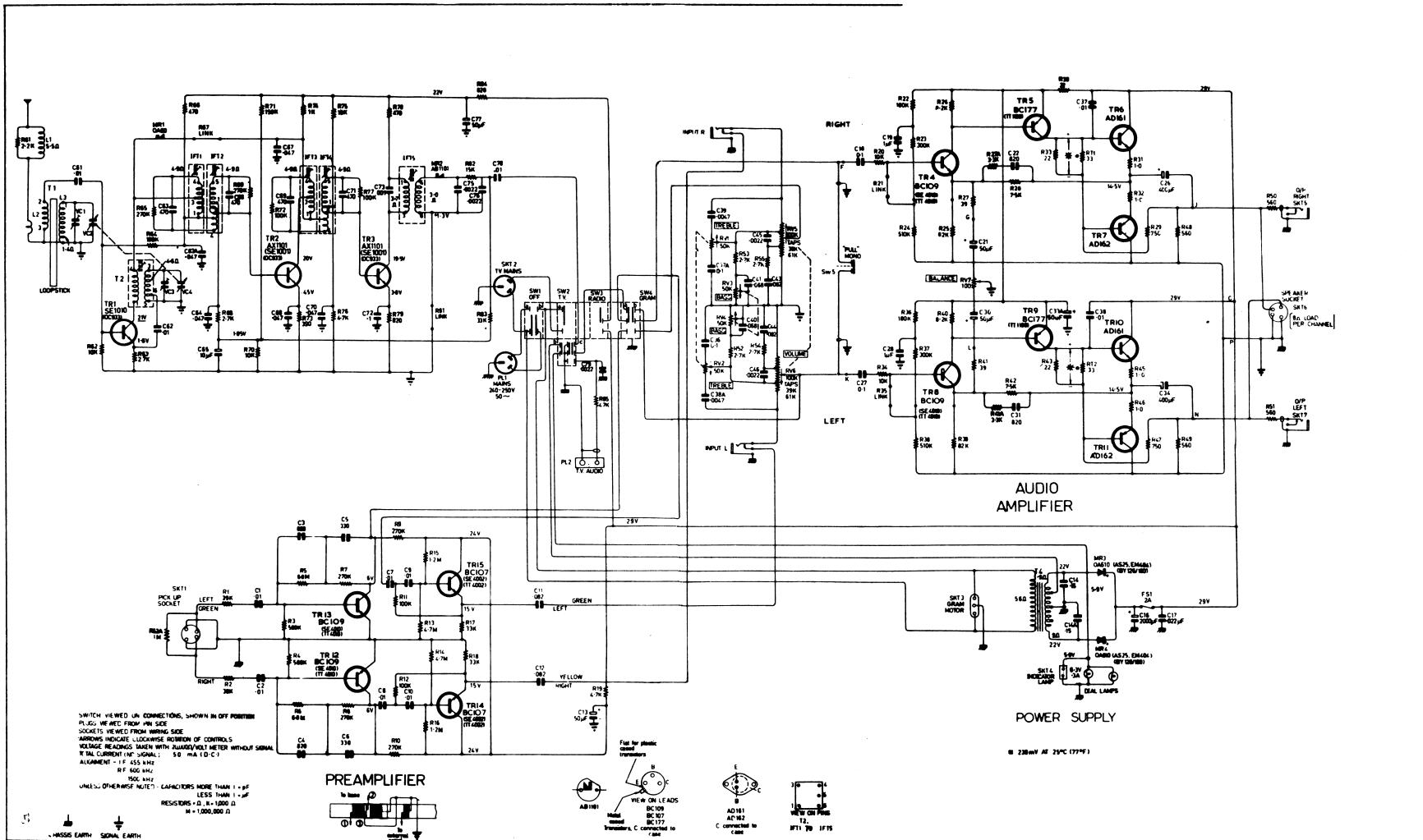
This is best done by inserting a series resistor of 500 ohms between the rectifier diodes and the supply rail before the electrolytic filter capacitor.

With the function switch to "Gram," the supply rail (under no-signal conditions) will be approximately 14.5 volts; the voltage at the junction R31/R32 (Vm) will be 6.0 volts, approximately.

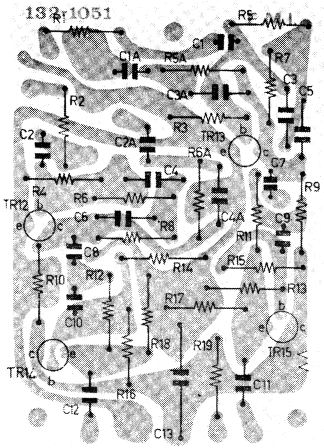
The amplifiers will continue to operate, but at reduced power and with non-symmetrical clipping of the output stage. If the amplifiers do not operate, do not restore the full supply rail voltage until the fault has been rectified.



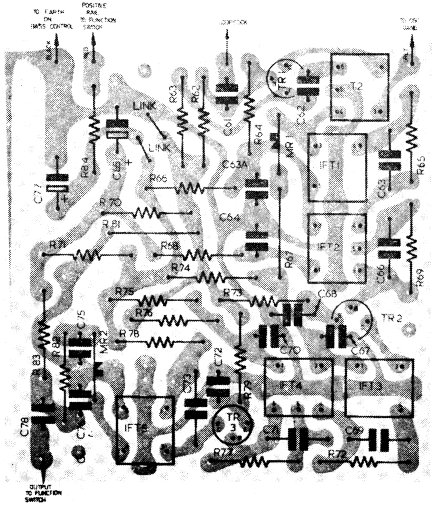
CIRCUIT DIAGRAM — MODELS T9-4A AND T9-46



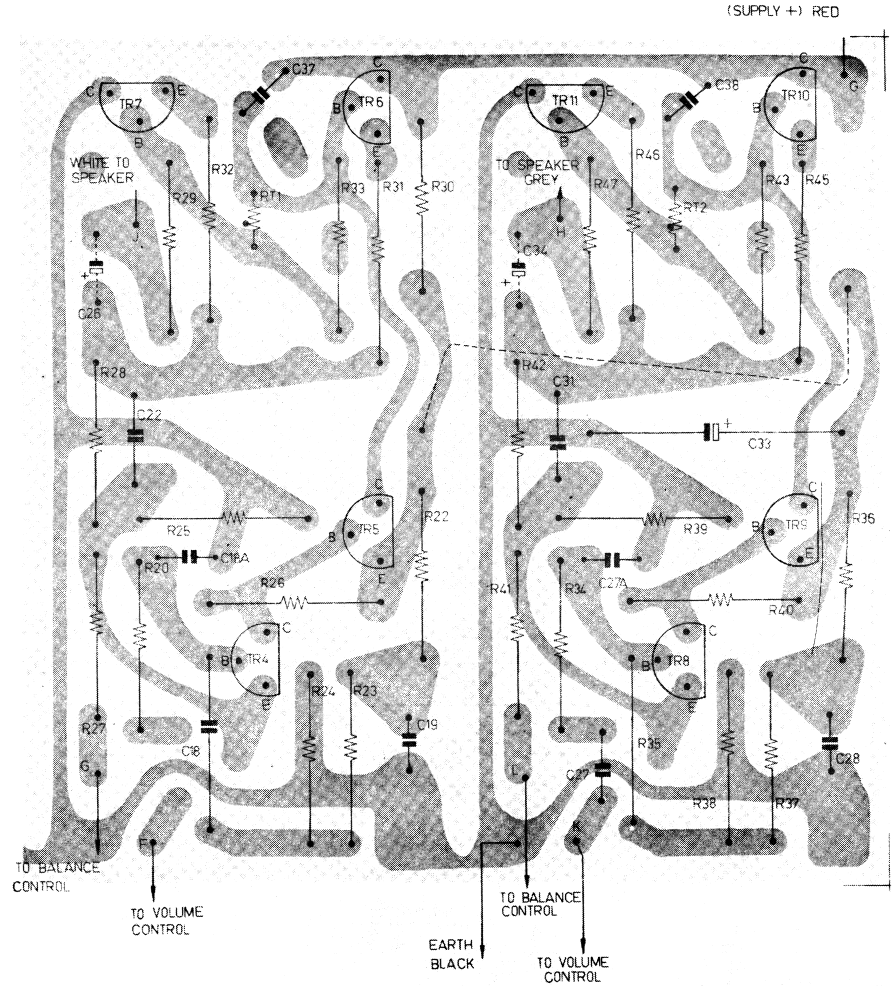
CIRCUIT DIAGRAM — MODEL Y2-D3 (CHASSIS TYPE TA)



PRE-AMPLIFIER — VIEW FROM COPPER SIDE
ALL MODELS



TUNER — VIEW FROM COPPER SIDE
ALL MODELS



AUDIO AMPLIFIER — VIEW FROM COPPER SIDE
ALL MODELS

DISMANTLING

Model Y2-D3

See Y1-D3 Service Manual.

Model T9-4A

Remove the power plug from the mains supply socket. Raise the lids at each end of the cabinet. Place a piece of felt or similar material on top of the cabinet. Unscrew the two top chassis fixing screws, one at each end of the escutcheon. Loosen the two bottom screws, withdraw the chassis and place it on the felt. The chassis is freed by removing the aerial, pickup, power and speaker cables.

Speakers (Model T9-4A)

1. Raise both lids.
2. Unscrew the four countersunk screws retaining the loudspeaker grille, two each located at the front of the record storage and record player compartments, respectively.
3. Withdraw the grille by a slight upward movement.
4. Remove the speaker retaining screws, unplug the speaker leads and note phasing.

Model T9-46

Remove the power plug from the mains supply socket. Raise the lid of the cabinet. Unscrew the two chassis fixing screws which are located underneath the cabinet. The chassis can now be lifted out and freed by removing the aerial, pickup, power and speaker cables.

Model TC-48

Control Unit

1. Remove the power plug from the mains supply socket and unwrap the excess mains lead which may be wrapped around brackets at the rear of the unit.
2. Remove the pickup and speaker leads from the terminals at the rear of the cabinet.
3. Unscrew the two retaining screws on either side of the terminal panel and withdraw the chassis.

Playing Desk

1. Remove the power plug from the mains supply socket and firmly secure the overarm and pickup arm in their rest positions.
2. Rest the cabinet on its right-hand side and loosen screws which hold the mains and pickup leads, at back left-hand corner of the cabinet. Free the leads.
3. Release the spring catches on the mechanism by lining up with the transit screw through the access holes underneath and at the rear of the cabinet.
4. Return the cabinet to a horizontal position and lift out the turntable.

Speakers (Models T9-46 and TC-48)

1. Remove the speaker leads from the terminals at the rear of the control unit.
2. Unscrew the two countersunk screws located near the front edge of the cabinet base.
3. Insert a screwdriver through the remaining hole on the base of the cabinet and prise off the front of the cabinet.
4. Remove the four screws holding the speaker and unplug the speaker leads from the speaker. Take careful note of the order of the colours, as they must be replaced in exactly the same way.

All Models:

ALIGNMENT PROCEDURE

In any case where a coil or tuning capacitor replacement has been made in either IF or RF circuits of the receiver, all circuits should be re-aligned. IF alignment should always precede RF alignment. An output meter, having a resistance of at least 250 ohms, is connected across the voice coil of one of the speakers.

In carrying out the following operations, it is important that the input to the receiver from the signal generator be kept low and progressively reduced as the circuits are brought into line, in order that overloading should be avoided.

Note:

(a) The tuning tool should be a small plastic screwdriver with a tip which fits cleanly into the tuning core.

(b) When tuning the core, do not use any downward pressure, as the threaded former has enough resilience to detune the circuit, after the pressure is released.

IF ALIGNMENT

(1) Set the signal generator to 455 KHz with 30% modulation at 400 Hz. Turn the receiver volume control to maximum and set the tuning control to the LF end of the band.

(2) Detune the five cores of the IF transformers by screwing them well out.

(3) Inject the signal from the generator via a 0.1 uF capacitor, into the base of TR3. Adjust the core of T7 for maximum reading on the output meter.

(4) Inject the signal into the base of TR2. Adjust the cores of T5 and T6 for maximum reading on the output meter.

(5) Inject the signal into the base of TR1. Adjust the cores of T3 and T4 for maximum reading on the output meter.

RF ALIGNMENT

(1) With the controls set as for IF alignment, connect signal generator output via a standard dummy aerial to the aerial lead and chassis of the receiver.

(2) Check that the pointers coincide with the setting lines at the left of the dial scale, when the gang capacitor is fully enmeshed. Correct if necessary.

(3) Set the signal generator to 600 KHz.

(4) Turn tuning control until the pointer is exactly over the 600 KHz calibration mark. Adjust the core in T2 for maximum reading on the output meter.

(5) Set signal generator to 1500 KHz.

(6) Turn tuning control until the pointer is exactly over the 1500 Hz calibration mark. Adjust VC4 and VC2 for maximum reading on the output meter.

(7) Repeat operations (3) to (6) for optimum alignment.

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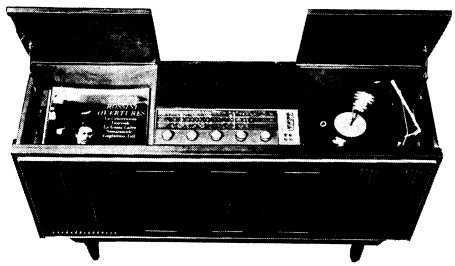
SERVICE MANUAL

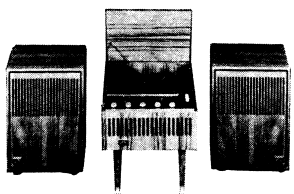
15-TRANSISTOR STEREOPHONIC RADIOGRAMS

Single Unit Model T9-4A
Three-Piece Model T9-46
Four-Piece Model TC-48
Also Radiogram Chassis, type TA, for Y2-D3 TV Gram

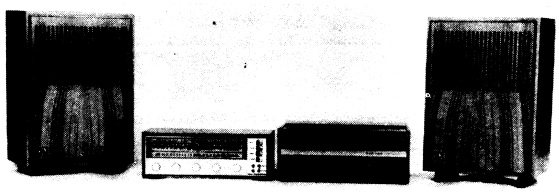
"HIS MASTER'S VOICE"



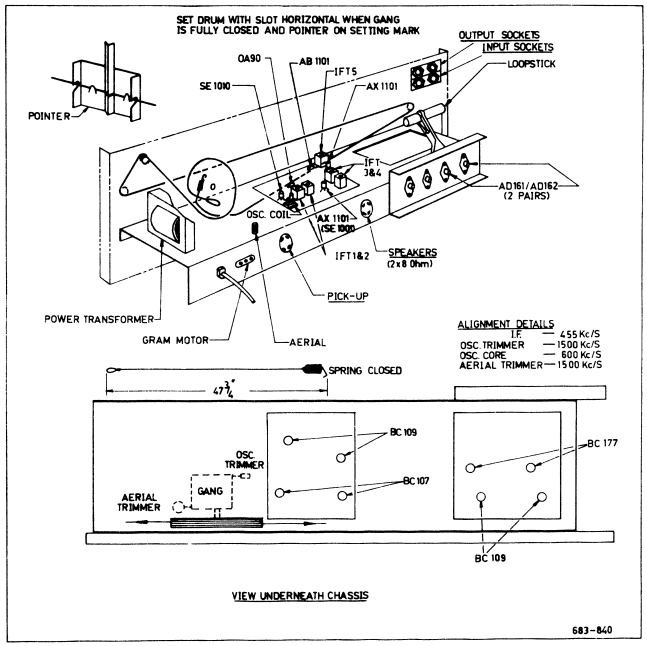
T9-4A



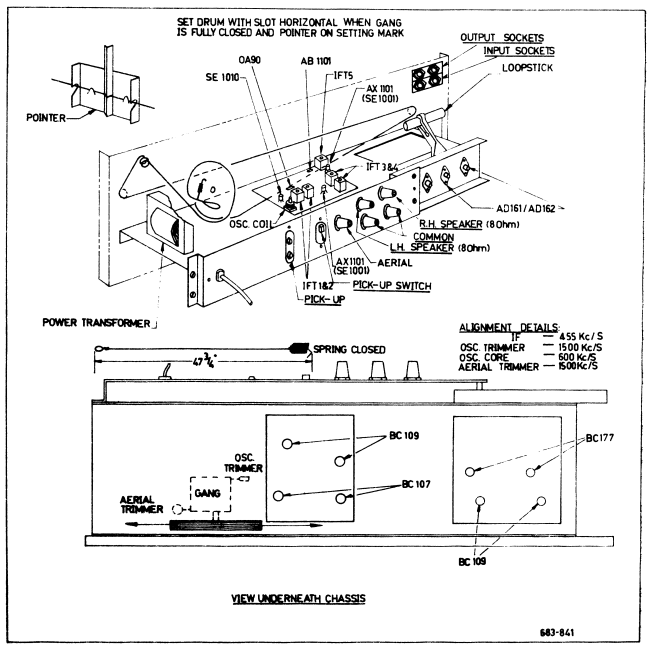
T9-46



TC-48



DIAL CORD AND TRANSISTOR LOCATION — MODELS T9-4A, T9-46 AND Y2-D3



DIAL CORD AND TRANSISTOR LOCATION — MODEL TC-48