With the function switch to "Gram" the supply rail (under no-signal conditions) will be approximately 14.5 volts. The voltage at the junction R31/32 (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.

**ALIGNMENT TABLE**

Set Function Switch to "Distant" for all Alignments

<table>
<thead>
<tr>
<th>ORDER OF OPERATIONS</th>
<th>CONNECT GENERATOR TO</th>
<th>TUNE GENERATOR TO</th>
<th>TUNE RECEIVER TO</th>
<th>ADJUST FOR MAXIMUM OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF Section of gang</td>
<td>455 kHz.</td>
<td>L.F. Limit</td>
<td>Core I.F.4</td>
</tr>
<tr>
<td>I.F.</td>
<td></td>
<td></td>
<td></td>
<td>Core I.F.3</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>Core I.F.2</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>Core I.F.1</td>
</tr>
<tr>
<td>4</td>
<td>Repeat steps 1 - 4</td>
<td>Repeat steps 1 - 4</td>
<td>Repeat steps 1 - 4</td>
<td>Repeat steps 1 - 4</td>
</tr>
<tr>
<td>5</td>
<td>Repeat steps 6 and 7</td>
<td>600 kHz.</td>
<td>Top markers at 600 kHz.</td>
<td>Repeat steps 6 and 7</td>
</tr>
<tr>
<td>6</td>
<td>Aerial input**</td>
<td>600 kHz.</td>
<td>Top markers at 600 kHz.</td>
<td>Aerial Trimmer (VC1)</td>
</tr>
<tr>
<td>R.F.</td>
<td></td>
<td>1500 kHz.</td>
<td>Top markers at 1500 kHz.</td>
<td>R.F. Trimmer (VC3)</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>Aerial Coil (T1)**</td>
</tr>
<tr>
<td>8</td>
<td>Repeat steps 8 - 11</td>
<td>1500 kHz.</td>
<td>Top markers at 1500 kHz.</td>
<td>Core R.F. Coil***</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*These transformers are a very high Q miniature type. It should be appreciated then, that the amount of travel for the tuning core to cover its tuning range, is much less than in normal I.F. transformers. Tuning the I.F. thus becomes more critical, and the following hint will prove useful.

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

(b) When tuning the core, do not use any downward pressure, as the thread in the former has enough resilience to detune the I.F. when the pressure is removed.

(c) The thread in the former may be damaged if the core is wound in and forced against the printed board. This should never happen, as only a light torque is necessary to turn the tuning core.

Note: I.F. alignment should only be necessary when I.F. coils or tuning condensers are replaced, or where misalignment is obvious. A reduction in sensitivity at the L.F. end of the dial is normal when switching to "local" due to the reactive loading in the aerial and R.F. circuits.

**Use a resistor of 4.7K ohms in series with the generator for accurate alignment.

***Rock the tuning control back and forth through the signal and allow for maximum of 1 pointer width error between the white line and 600 kHz. generator frequency for maximum output.

****These coils have been pre-aligned in production and under normal conditions no adjustment is necessary. To find if these coils are aligned, place a piece of ferrite and then a piece of brass near the loopstick and at the end of the R.F. coil. If the coils are properly aligned, the receiver's output will drop. If the output increases at any stage in this check, re-alignment of these coils is necessary.
The following information is included as a guide for the fitting of a magnetic pickup and auxiliary equipment.

**AUDI0 FREQUENCY RESPONSE:**
- Main Amplifier—50 Hz - 20,000 Hz.
- P.U. Pre-Amplifier—Active 24 dB/octave rumble filter, 50 Hz, roll off.

**SENSITIVITY:**
- For 8 watts/channel r.m.s.
- Main Amplifier Input Jacks — 130 mV
- Ceramic or Crystal P.U. Input — 130 mV (via 470 pf source).
- Magnetic P.U. Input — 2.2 mV.

**PRE-AMPLIFIER OVERLOAD:**
- Ceramic or Crystal—SV (R.M.S.) at 1 kHz
- Magnetic—100 mV (R.M.S.).

**RECOMMENDED MAGNETIC CARTRIDGE:**
- Shure M44-J or M44-MB using N447 “conical” stylus or N44-E elliptical stylus.

**DIMENSIONS:**
- Height: 29½”
- Width: 55½”
- Depth: 17”

**WEIGHT:**
- Unpacked: 95 lbs.
- Packed: 136 lbs.

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**DISMANTLING**

**To Remove Chassis:**
- Remove power plug from mains supply socket.
- Raise lid and place a piece of felt or similar material on top of cabinet.
- Remove two gold screws in front wall of record storage compartment and one in side wall of mechanism well.
- Lift right-hand end of chassis and move approximately ¼” to the right.
- Withdraw chassis and place it on the felt.
- The chassis is freed by removing the aerial, pickup, power and speaker cables.

**SERVICE NOTES**

- 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 the 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 over 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 than a transistor can safely handle.

The output must be correctly loaded with 8 ohms during the tests. If the output load is reduced below the correct value, 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 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.