

# SERVICE MANUAL

SOLID-STATE AM/FM MULTIPLEX STEREO TUNER AMPLIFIER

## SANSUI MODEL 3000



**Sansui®**

SANSUI ELECTRIC COMPANY LIMITED

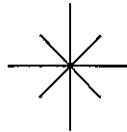
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# SANSUI

SOLID-STATE  
AM/FM MULTIPLEX  
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AMPLIFIER



MODEL  
**3000**

## **HOW TO USE THIS SERVICE MANUAL**

- Step 1 What type or nature of the trouble you are confronted with? Look it up in the troubleshooting charts in this service manual.
- Step 2 Isolate the trouble to a particular unit or part by referring to the charts.
- Step 3 Pinpoint the position of the parts by means of the circuit diagram and the co-ordinates listed in the parts list.
- Step 4 In the same way, by referring to the chassis diagram and the co-ordinates listed in the parts list, you can easily find out in what parts of chassis the parts is located.

# TROUBLESHOOTING AUDIO SYSTEM

If the amplifier is operating satisfactorily, the trouble may be attributed to the following:

1. Incorrect connections or loose terminal contact. Check the speakers, record player, tape recorder or tape deck, antenna and line cord.
2. Incorrect or improper operation. Before operating the audio equipments, be sure to

3. Improper location of audio equipments. The proper positioning of the audio equipments, such as speakers and record player, is vital to stereo.
4. Defective audio equipment or equipments.
5. The next step to do is listed below:

Program	Symptom	Probable Cause	What to Do
AM, FM or MPX reception	A. Constant or intermittent noise heard at times or in a certain area	<ol style="list-style-type: none"> <li>1. Discharge or oscillation caused by electrical appliances, such as fluorescent lamp, TV set, D.C. motor, rectifier and oscillator</li> <li>2. Natural phenomena, such as atmospherics, statics, strays and thunderbolt</li> <li>3. Insufficient antenna input due to thick reinforced concrete wall of a building or long distance from the station</li> <li>4. Wave interference from other electrical appliances</li> </ol>	<ul style="list-style-type: none"> <li>* Attach a noise limiter to the electrical appliance that causes the noise, or attach it to the power source of the amplifier.</li> <li>* Install an outdoor antenna and ground the amplifier to raise the signal-to-noise ratio.</li> <li>* Reverse the power cord plug-receptacle connections.</li> <li>* If the noise occurs at a certain frequency, attach a wave trap to the ANT. input.</li> <li>* Keep the set in proper distance from other electrical appliances.</li> </ul>
	B. The needle of the tuning meter does not move well.	The movement of the needle is one thing, the sensitivity of the amplifier is another.	Tune the set for maximum signal strength.
	C. The zero point of the meter diverges much.	Regional difference in field intensity	The unit is not at fault.
AM reception	A. Noise heard at a particular time of a day, in a certain area or over part of dial	This results from the nature of AM broadcast.	<ul style="list-style-type: none"> <li>* Install the antenna for maximum antenna efficiency. See "ANTENNA" in the operating instructions.</li> <li>* In some cases, the noise can be eliminated by grounding the amplifier or reversing the power cord plug-receptacle connections.</li> </ul>
	B. High-frequency noise	<ol style="list-style-type: none"> <li>1. Adjacent-channel interference or beat interference</li> <li>2. TV set too close to the audio system</li> </ol>	<ul style="list-style-type: none"> <li>* Although such noise cannot be eliminated by the amplifier, it is advisable to turn the TREBLE control properly from midpoint to left and switch on the HIGH FILTER.</li> <li>* Keep the TV set in proper distance from the audio system.</li> </ul>
FM reception	A. Noisy	<ol style="list-style-type: none"> <li>1. Poor noise limiter effect or too low S/N ratio due to insufficient antenna input</li> </ol> <p>Note: FM reception is affected considerably by the conditions of transmission by stations: power and antenna efficiency. As a result, you may receive one station quite well while having difficulty in receiving another station.</p>	<ul style="list-style-type: none"> <li>* Install the antenna (attached) for maximum signal strength.</li> <li>* If this does not prove effective, use an outdoor antenna designed exclusively for FM. When you use a TV antenna for both TV and FM with the help of a divider, make sure the TV reception is not affected.</li> <li>* Excessive long antenna may rather cause a noise.</li> </ul>

Program	Symptom	Probable Cause	What to Do
(Continued)	B. Noise heard like "scratch noise"	Ignition noise caused by the starting of an automobile engine	* Install the antenna and its lead-in wire in proper distance from the road or raise the antenna input as described above.
	C. Distortion or no sound during the reception	Drift of tuning resulted from the nature of FM	* Turn on the FM AFC switch.
	D. Tuning noise between stations	This noise results from the nature of the FM reception. As the station signal becomes weak, the noise limiter effect is also decreased. The amplification of the limiter, in turn, is enlarged and thus a big noise is generated.	If the amplifier is equipped with a muting switch, turn it on. Inasmuch as it also reduces the sensitivity, it should be used sparingly.
FM-MPX reception	A. Noise heard during FM-MPX reception while not heard during FM mono reception	The service area of the FM-MPX broadcast is only half as much as that of the FM mono broadcast.	* Install the antenna for maximum antenna input. * Switch on the noise filter and/or turn the TREBLE control properly from midpoint to left.
	B. Clearness of channel separation is decreased during the reception.	Excess heat	* Circulation of air is important to the amplifier. Make sure that air can flow underneath.
	C. The stereo indicator goes on and off.	Interference	* The indicator is not at fault. * Readjust VR <sub>502</sub> .
	D. The stereo indicator goes on and off even though a stereo station is not received.	Interference	* The indicator is not at fault. * Readjust VR <sub>502</sub> .
Record playing or tape playback	A. Hum or howling	1. Record player placed directly on the speaker box 2. Use of wire other than shielded wire 3. Loose terminal contact. 4. Shielded wire too close to the line cord, fluorescent lamp or other electrical appliances 5. Nearby amateur radio station or TV transmission antenna	* The connecting shield wire should be as short as possible. * Put a cushion between the player and the speaker box or place them separately from each other. * Switch on the LOW FILTER and turn the BASS control properly from midpoint to left. * Consult the nearest Radio Regulatory Bureau.
	B. Surface noise	1. Worn or old record 2. Worn pick-up needle 3. Needle covered with dust 4. Improper needle pressure	* Recondition the playback head of the tape recorder or the pick-up of the record player. * Turn the TREBLE control properly from midpoint to left. * Switch on the HIGH FILTER.
Over all stereo programs	The BALANCE control is not at the midpoint when equal sound comes from left and right channels.	It is important to adjust the control for equal sound from both channels. It should not be always set to the midpoint.	* Set the MODE switch to the MONO position and then set the BALANCE control to the position where the equal sound comes from both channels.

# AMPLIFIER TROUBLESHOOTING CHART

## OVER ALL PROGRAM SOURCES

Program	Probable Cause	Check Point	
No sound over all program sources	A. Defective system speaker	1. Speaker cord or network, broken or shorted 2. Broken or short-circuited voice coil	Check continuity of speaker and cord. Repair broken cord or replace speaker.
	B. No power	1. No power comes to the power source. 2. Defective on-off switch 3. Defective line cord 4. Loose plug contact 5. Blown fuse  If the fuse should be burnt out as soon as it is replaced, the trouble may be attributed to: a. Shorted power transformer b. Shorted capacitor c. Shorted power transistor  Note: Check the continuity between the collector and emitter of the power transistor. If it is 0 ohm or close to 0 ohm, the transistor is defective. If it is more than 20 ohms, the transistor is O.K. See Fig. 1, page 7.  d. B circuit open.	S <sub>001</sub>  P <sub>U</sub> <sub>001</sub> F <sub>005</sub>  T <sub>001</sub>  C <sub>001</sub> , C <sub>009</sub> , C <sub>010</sub> , C <sub>011</sub> , C <sub>012</sub> , C <sub>013</sub> , C <sub>014</sub> , C <sub>015</sub> TR <sub>002</sub> ~TR <sub>005</sub>  Check continuity of B circuit.
	C. Defective power circuit	Divergence of voltage specified in "CIRCUIT DIAGRAM"	Measure voltage in power circuit and replace defective element.
	D. Defective low-frequency circuit	1. Protector lamp is on. 2. Blown fuse If the fuse should be burnt out as soon as it is replaced, the trouble may be attributed to: a. Defective power transistor b. Shorted power transistor  Note: The continuity between the output terminal (+) and collector is less than 100 ohms. The continuity between 0.3-ohm R <sub>017</sub> (or R <sub>019</sub> ) and collector is less than 100 ohms. See Fig. 2, page 8.  c. Contact at output terminal	Push off the power switch; after 5, 6 seconds, push it on. F <sub>001</sub> , F <sub>002</sub> , F <sub>003</sub> , F <sub>004</sub>  TR <sub>805</sub> ~TR <sub>806</sub> , TR <sub>002</sub> ~TR <sub>005</sub>  TR <sub>805</sub> ~TR <sub>808</sub> , TR <sub>002</sub> ~TR <sub>005</sub>  Check the speaker system as well.
	3. Divergence of voltage specified in "CIRCUIT DIAGRAM"	Measure voltage in low-frequency circuit and replace defective element.	

Program	Probable Cause	Check Point
(Continued)		4. Defective transistor 5. Capacitor, shorted or open TR <sub>701</sub> ~TR <sub>708</sub> , TR <sub>801</sub> ~TR <sub>804</sub> , TR <sub>001</sub> C <sub>703</sub> , C <sub>707</sub> , C <sub>714</sub> , C <sub>717</sub> , C <sub>722</sub> , C <sub>726</sub> , C <sub>732</sub> , C <sub>736</sub>
	E. Not electrical trouble	1. MONITOR switch is in ON position. Turn it off. 2. SPEAKER switch is in ON position. Turn it off.
Weak sound over all program sources	A. Defective speaker circuit	Shorted voice coil Check voice coil for short circuit
	B. Defective power circuit	Divergence of voltage specified in "CIRCUIT DIAGRAM" Measure voltage in power circuit and replace defective element.
	C. Defective low-frequency circuit	1. Divergence of voltage 2. Shorted driver transformer 3. Insufficient capacity or short circuit of capacitor 4. Weak transistor 5. Incorrect speaker impedance Measure voltage in low-frequency circuit and replace defective element. T <sub>801</sub> , T <sub>802</sub> C <sub>703</sub> , C <sub>705</sub> , C <sub>707</sub> , C <sub>714</sub> , C <sub>715</sub> , C <sub>717</sub> , C <sub>722</sub> , C <sub>724</sub> , C <sub>726</sub> , C <sub>732</sub> , C <sub>734</sub> , C <sub>736</sub> , C <sub>801</sub> , C <sub>803</sub> , C <sub>804</sub> , C <sub>806</sub> , C <sub>808</sub> , C <sub>810</sub> , C <sub>811</sub> , C <sub>813</sub> TR <sub>701</sub> ~TR <sub>708</sub> , TR <sub>801</sub> ~TR <sub>808</sub> , TR <sub>002</sub> ~TR <sub>005</sub> S <sub>13</sub>
Distortion over all program sources	A. Defective speaker	1. Defective voice coil 2. Defective cone or damper Check and replace.
	B. Defective power circuit	Divergence of voltage specified in "CIRCUIT DIAGRAM" Measure voltage in power circuit and replace defective element.
	C. Defective low-frequency circuit	1. Divergence of voltage specified in "CIRCUIT DIAGRAM" 2. Aging or weak transistor 3. Quick acting fuse blown Measure voltage in low-frequency circuit and replace defective element. TR <sub>701</sub> ~TR <sub>708</sub> , TR <sub>801</sub> ~TR <sub>808</sub> TR <sub>002</sub> ~TR <sub>005</sub> F <sub>001</sub> ~F <sub>004</sub>
Hum over all program sources	A. Defective power circuit	1. Insufficient capacity of capacitor 2. Ripple filter transistor defective C <sub>001</sub> , C <sub>009</sub> ~C <sub>012</sub> TR <sub>001</sub>
	B. Defective low-frequency circuit	1. Insufficient capacity of capacitor 2. Fixed resistor blown C <sub>704</sub> , C <sub>711</sub> , C <sub>723</sub> , C <sub>733</sub> , C <sub>802</sub> , C <sub>809</sub> R <sub>809</sub> , R <sub>817</sub> , R <sub>819</sub> , R <sub>820</sub>
Noisy over all program sources	A. Defective speaker	1. Defective voice coil 2. Inner contact of speaker components 3. Defective cone or damper Check speaker system
	B. Defective power circuit	Divergence of voltage specified in "CIRCUIT DIAGRAM" Measure voltage in power circuit and replace defective element.

# AMPLIFIER TROUBLESHOOTING CHART

## OVER ALL PROGRAM SOURCES (CONTINUED)

Symptom	Probable Cause	Check Point
(Continued)	C. Defective low-frequency circuit 1. Driver transformer defective 2. Poor transistor 3. Master volume defective	T <sub>801</sub> , T <sub>802</sub> TR <sub>701</sub> ~TR <sub>708</sub> , TR <sub>801</sub> ~ <sub>808</sub> , TR <sub>002</sub> ~TR <sub>005</sub> VR <sub>701</sub> , VR <sub>702</sub>
SPEAKER switch does not work at all.	A. Defective headphone	Check headphone.
	B. Defective headphone circuit	S <sub>12a</sub> , S <sub>12b</sub> , R <sub>025</sub> , R <sub>026</sub>
HIGH FILTER switch does not work at all.	Defective filter circuit	C <sub>716</sub> , C <sub>737</sub> , S <sub>11a</sub> , S <sub>11b</sub>
LOW FILTER switch does not work at all.	Defective filter circuit	C <sub>719</sub> , C <sub>738</sub> , R <sub>726</sub> , R <sub>751</sub> , S <sub>10a</sub> , S <sub>10b</sub>
LOUDNESS switch does not work at all.	Defective filter circuit	C <sub>701</sub> , C <sub>702</sub> , C <sub>720</sub> , C <sub>721</sub> , R <sub>701</sub> , R <sub>727</sub> , VR <sub>701</sub> , VR <sub>702</sub> , S <sub>9a</sub> , S <sub>9b</sub>
TONE CONTROL does not work at all.	Defective tone control circuit	C <sub>708</sub> , C <sub>709</sub> , C <sub>710</sub> , C <sub>712</sub> , C <sub>713</sub> , C <sub>727</sub> , C <sub>728</sub> , C <sub>729</sub> , C <sub>730</sub> , C <sub>731</sub> , R <sub>713</sub> , R <sub>714</sub> , R <sub>738</sub> , R <sub>739</sub> , VR <sub>703</sub> , VR <sub>704</sub> , VR <sub>705</sub> , VR <sub>706</sub>

Fig-1 HOW TO CHECK TR<sub>002</sub>~TR<sub>005</sub>

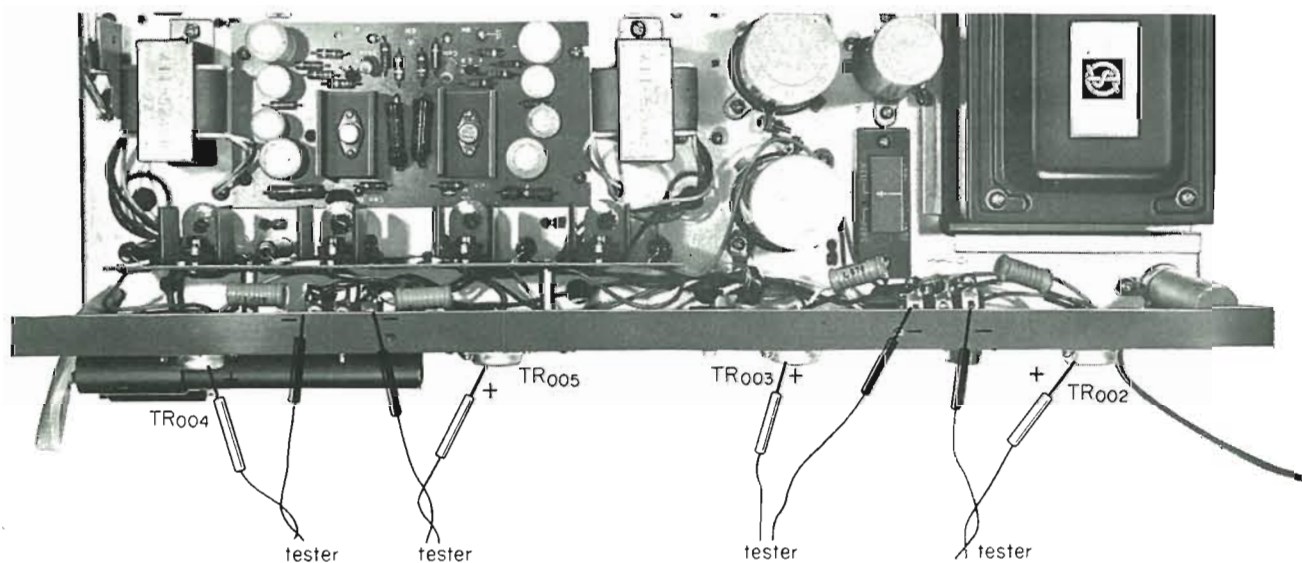
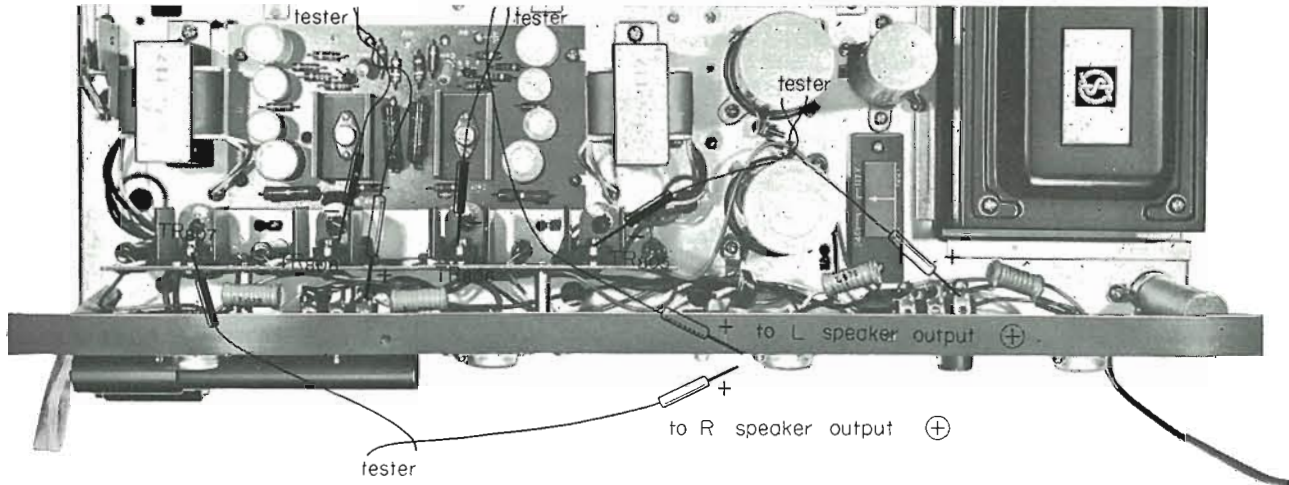




Fig-2 HOW TO CHECK TR<sub>805</sub>~TR<sub>808</sub>



## FM OR FM-MPX RECEPTION

Symptom	Probable Cause	Check Point
No sound	A. Defective over all section	See "No sound over all program sources".
	B. Defective FM or FM-MPX section	<ol style="list-style-type: none"> <li>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</li> <li>2. Aging or weak transistor</li> <li>3. Defective resistor</li> <li>4. Aging capacitor</li> <li>5. Aging defective IFT</li> <li>6. Defective coil</li> <li>7. Aging or Defective CR</li> <li>8. Defective oscillator circuit</li> <li>9. Divergence in adjustment of variable resistor</li> </ol>
Weak sound	A. Weak station signal	See "TROUBLESHOOTING AUDIO SYSTEM".
	B. Defective over all section	See "Weak sound over all program sources".
	C. Defective FM or FM-MPX section	<ol style="list-style-type: none"> <li>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</li> <li>2. Poor Q or divergence of adjustment of coil</li> <li>3. Insufficient capacity of capacitor</li> </ol>

# AMPLIFIER TROUBLESHOOTING CHART

## FM OR FM-MPX RECEPTION (CONTINUED)

Symptom	Probable Cause	Check Point
(Continued)	<ol style="list-style-type: none"> <li>4. Improper contact of rotary switch</li> <li>5. Aging or weak transistor</li> <li>6. Aging diode</li> <li>7. Voltage drop in local oscillator</li> <li>8. Defective AGC circuit</li> <li>9. Divergence in adjustment of:               <ol style="list-style-type: none"> <li>a. Tracking</li> <li>b. I.F.T.</li> <li>c. MPX coil</li> <li>d. Variable resistor</li> </ol> </li> </ol>	<p><math>S_{1g}, S_{2b}, S_{2c}, S_{2d}, S_{2e}</math></p> <p><math>TR_{101} \sim TR_{103}, TR_{201} \sim TR_{205}, TR_{401} \sim TR_{407}</math></p> <p><math>D_{203}, D_{204}, D_{401} \sim D_{406}, D_{501} \sim D_{503}</math></p> <p><math>TR_{103}, C_{121}, L_{106}</math></p> <p><math>TR_{104}, D_{201}, D_{202}, C_{107}, C_{204}, C_{211}, C_{212}</math></p> <p>Use measuring instruments for the proper adjustment.</p> <p><math>TC_{101} \sim TC_{104}, L_{101}, L_{103}, L_{104}, L_{106}</math></p> <p><math>T_{101}, T_{201} \sim T_{205}</math></p> <p><math>T_{401} \sim T_{403}</math> for FM stereo</p> <p><math>VR_{201}</math></p>
Distortion	A. Defective overall section	See "Distortion over all program sources".
	B. Defective FM or FM-MPX section	<ol style="list-style-type: none"> <li>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</li> <li>2. Aging diode</li> <li>3. Insufficient capacity of capacitor</li> <li>4. Divergence in adjustment of:               <ol style="list-style-type: none"> <li>a. Tracking</li> <li>b. I.F.T.</li> <li>c. MPX coil</li> </ol> </li> <li>5. Aging or weak transistor</li> </ol>
Hum	A. Defective overall section	See "Hum over all program sources".
	B. Defective FM or FM-MPX section	<p>Insufficient capacity of capacitor</p> <p><math>C_{007}, C_{008}, C_{420}</math></p>
	C. Defective power circuit	<p>Aging or weak transistor</p> <p><math>TR_{001}</math></p>
Noisy	A. Amplifier is O.K.	See "TROUBLESHOOTING AUDIO SYSTEM".
	B. Defective overall section	See "Noisy over all program sources".
	C. Defective FM or FM-MPX section	<ol style="list-style-type: none"> <li>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</li> <li>2. Aging or weak transistor</li> <li>3. Defective MPX coil</li> <li>4. Resistor, rubbing or broken</li> </ol>

Symptom	Probable Cause	Check Point	
(Continued)	<ol style="list-style-type: none"> <li>5. Insufficient capacity of capacitor</li> <li>6. Poor performance of FM AUTO (more noisy in case of FM MONO)</li> <li>7. Improper contact of rotary switch</li> <li>8. Defective AGC circuit</li> </ol>	<p><math>C_{101} \sim C_{125}, C_{201} \sim C_{224}, C_{401}, C_{403}, C_{406}, C_{409}, C_{421}, C_{422}, C_{431}, C_{432}</math></p> <p><math>TR_{501} \sim TR_{504}, VR_{502}</math></p> <p><math>S_{2b}, S_{2c}, S_{2d}, S_{2e}</math></p> <p><math>TR_{104}, D_{201}, D_{202}, C_{107}, C_{204}, C_{211}, C_{212}</math></p>	
No MPX stereo sound (Orange indicator lamp is not lit)	A. Sub-carrier amplifying circuit defective	<ol style="list-style-type: none"> <li>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</li> <li>2. Aging or weak transistor</li> <li>3. Aging or weak diode</li> <li>4. Defective MPX coil</li> </ol>	<p>Measure voltage in MPX indicator section and replace defective element.</p> <p><math>TR_{401} \sim TR_{403}, TR_{501} \sim TR_{505}</math></p> <p><math>D_{401} \sim D_{406}, D_{501} \sim D_{503}</math></p> <p><math>T_{401} \sim T_{403}, T_{501}</math></p>
	B. Defective separation circuit	<ol style="list-style-type: none"> <li>1. Aging or weak transistor</li> <li>2. Defective resistor</li> <li>3. Insufficient capacity or short circuit of capacitor</li> </ol>	<p><math>TR_{401} \sim TR_{407}</math></p> <p><math>R_{407} \sim R_{438}, R_{501} \sim R_{511}</math></p> <p><math>C_{406} \sim C_{432}, C_{501} \sim C_{505}</math></p>
	C. Defective indicator circuit	<ol style="list-style-type: none"> <li>1. Divergence in adjustment of variable resistor</li> <li>2. Divergence in adjustment of: <ol style="list-style-type: none"> <li>a. MPX circuit</li> <li>b. Indicator circuit</li> <li>c. Pilot lamp blown</li> </ol> </li> </ol>	<p><math>VR_{401}, VR_{501}, VR_{502}</math></p> <p>Use measuring instruments for the proper adjustment.</p> <p><math>T_{401} \sim T_{403}, T_{501}</math></p> <p><math>PL_{501}</math></p>
Poor separation	Defective MPX section	<ol style="list-style-type: none"> <li>1. Same as above.</li> <li>2. Divergence of properties of circuit element (MPX coil and diode) due to temperature change</li> </ol>	<p>Same as above.</p> <p>Readjust <math>VR_{401}</math>. Taking account of the temperature change, our company has adjusted the circuit elements for the optimum conditions.</p>
Stereo indicator changes repeatedly from orange to green or from green to orange even though a station is not received.	A. Amplifier is O.K.		See "TROUBLESHOOTING AUDIO SYSTEM"
	B. Defective stereo indicator circuit <ol style="list-style-type: none"> <li>a. Aging or weak transistor in indicator circuit</li> <li>b. Divergence in adjustment of input and wrong action preventing circuit</li> </ol>		<p><math>TR_{503} \sim TR_{505}</math></p> <p><math>VR_{501}, VR_{502}</math></p>
Tuning meter does not work normally.	A. Defective FM tuner		Same as above.
	B. Defective tuning indicator circuit.		<p><math>TR_{206}, D_{205}, D_{206}, T_{206}, VR_{202}, R_{220}, R_{235} \sim R_{239}, C_{239}, C_{216}, C_{227} \sim C_{232}, C_{017}</math></p>
	C. Bad contact of BAND switch		$S_{2a}$
FM-AFC switch does not work at all.	A. Defective AFC circuit.		<p><math>D_{102}, C_{118}, C_{125}, C_{226}, C_{237}, R_{117}, R_{118}, R_{234}, R_{247}</math></p>
	B. Defective AFC switch		$S_6$
MUTING switch does not work at all.	A. Defective MUTING circuit.		<p><math>TR_{206} \sim TR_{208}, D_{205}, D_{206}, VR_{203}, C_{216}, C_{227} \sim C_{234}, R_{220}, R_{235} \sim R_{245}</math></p>
	B. Defective MUTING switch		$S_5$

# AMPLIFIER TROUBLESHOOTING CHART

## AM RECEPTION

Symptom	Probable Cause	Check Point
No sound	A. Defective overall section	See "No sound over all program sources".
	B. Defective AM section	<p>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</p> <p>2. Aging or defective transistor</p> <p>3. Aging or defective I.F.T.</p> <p>4. Detector diode defective</p> <p>5. Aging or defective capacitor.</p> <p>6. Defective resistor</p>
Weak sound	A. Weak station signal	See "TROUBLESHOOTING AUDIO SYSTEM"
	B. Defective overall section	<p>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</p> <p>2. Voltage drop in local oscillator</p> <p>3. Detector diode, aging or weak</p> <p>4. Too low Q of coil</p> <p>5. Insufficient capacity of capacitor</p> <p>6. Defective resistor</p> <p>7. Divergence in adjustment of:</p> <p>a. Tracking.</p> <p>b. I.F.T.</p>
Distortion	A. Defective overall section	See "Distortion over all program sources".
	B. Defective AM section	<p>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</p> <p>2. Detector diode, aging or weak</p> <p>3. Insufficient capacity of capacitor</p> <p>4. Divergence in adjustment</p> <p>5. Defective resistor</p> <p>6. Excessive antenna input</p>
Hum	A. Defective overall section	See "Hum over all program sources"
	B. Defective AM section	Insufficient capacity of capacitor.

Symptom	Probable Cause		Check Point
Noisy	A. Amplifier is O.K.		See "TROUBLESHOOTING AUDIO SYSTEM"
	B. Defective overall section		See "Noisy over all program sources".
	C. Defective AM section	<ol style="list-style-type: none"> <li>1. Aging or defective transistor</li> <li>2. Loose contact of rotary switch.</li> <li>3. Broken lead in antenna circuit or shorted V.C.</li> <li>4. Defective RF circuit</li> </ol>	TR <sub>301</sub> ~TR <sub>305</sub> S <sub>1g</sub> , S <sub>2b</sub> , S <sub>2c</sub> , S <sub>2d</sub> L <sub>301</sub> or VC <sub>301</sub> VC <sub>302</sub> , T <sub>301</sub>
Tuning meter does not work normally.	A. Defective AM tuner		Check as described above.
	B. Defective tuning indicator circuit		C <sub>316</sub> , R <sub>323</sub> , D <sub>302</sub>
	C. Bad contact of BAND switch		S <sub>2a</sub>

## USING WITH RECORD PLAYER (MAGNETIC) OR TAPE DECK

Symptom	Probable Cause		Check Point
No sound	A. Program source defective		Check and repair or replace.
	B. Defective overall section		See "No sound over all program sources".
	C. Divergence of voltage	<ol style="list-style-type: none"> <li>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</li> <li>2. Defective capacitor</li> <li>3. Defective resistor</li> <li>4. Loose contact of rotary switch</li> <li>5. Loose contact of input terminal or pin jack</li> </ol>	Measure voltage in head amplifier section and replace defective element. C <sub>601</sub> , C <sub>603</sub> , C <sub>604</sub> , C <sub>608</sub> , C <sub>610</sub> , C <sub>611</sub> R <sub>602</sub> ~R <sub>607</sub> , R <sub>615</sub> ~R <sub>621</sub> S <sub>1a</sub> , S <sub>1b</sub> , S <sub>1c</sub> , S <sub>1d</sub> , S <sub>1e</sub> , S <sub>1f</sub>
Weak sound	A. Program source defective		Check and repair or replace.
	B. Defective overall section		See "Weak sound over all program sources".
	C. Defective head amplifier	<ol style="list-style-type: none"> <li>1. Divergence of voltage specified in "CIRCUIT DIAGRAM"</li> <li>2. Insufficient capacity of capacitor</li> <li>3. Loose contact of rotary switch</li> </ol>	Measure voltage in head amplifier section and replace defective element. C <sub>601</sub> ~C <sub>604</sub> , C <sub>608</sub> ~C <sub>611</sub> S <sub>1a</sub> , S <sub>1b</sub> , S <sub>1c</sub> , S <sub>1d</sub> , S <sub>1e</sub> , S <sub>1f</sub>

# AMPLIFIER TROUBLESHOOTING CHART

## USING WITH RECORD PLAYER (MAGNETIC) OR TAPE DECK

Symptom	Probable Cause	Check Point
(Continued)	4. Loose contact of input terminal or pin jack 5. Defective resistor	
Distortion	A. Program source defective	Check and repair or replace.
	B. Defective overall section	See "Distortion over all program sources".
	C. Defective head amplifier	1. Divergence of voltage specified in "CIRCUIT DIAGRAM" 2. Capacitor shorted or blown 3. Defective resistor 4. Weak transistor  $C_{601} \sim C_{604}, C_{608} \sim C_{611}$ $R_{602} \sim R_{612}, R_{615} \sim R_{625}$ $TR_{601} \sim TR_{604}$
Hum	A. Program source defective	Check and repair or replace.
	B. Amplifier is O.K.	Improper connections See "TROUBLESHOOTING AUDIO SYSTEM"
	C. Defective overall section	See "Hum over all program sources".
	D. Defective head amplifier	Insufficient capacity of capacitor $C_{006}$
Noisy	A. Program source defective	Check and repair or replace.
	B. Amplifier is O.K.	See "TROUBLESHOOTING AUDIO SYSTEM".
	C. Defective overall section	See "Noisy over all program sources".
	D. Defective head amplifier	1. Fixed resistor defective 2. Defective capacitor 3. Weak transistor  $R_{601} \sim R_{612}, R_{614} \sim R_{628}, R_{629}, R_{630}$ $C_{601} \sim C_{610}, C_{611} \sim C_{620}$ $TR_{601} \sim TR_{604}$

## OTHER PROGRAM SOURCES

Symptom	Probable Cause	Check point
Record player with crystal cartridge does not operate properly.	<ol style="list-style-type: none"> <li>1. Program source defective</li> <li>2. Improper or incorrect connections</li> <li>3. Defective overall section</li> </ol>	<p>Check and repair or replace. See "TROUBLESHOOTING AUDIO SYSTEM".</p> <p>See "OVER ALL PROGRAM SOURCES".</p>
Sound input from additional tuner or others is not reproduced properly.	<ol style="list-style-type: none"> <li>1. Program source defective</li> <li>2. Improper or incorrect connections</li> <li>3. Defective overall section</li> </ol>	<p>Check and repair or replace. See "TROUBLESHOOTING AUDIO SYSTEM".</p> <p>See "OVER ALL PROGRAM SOURCES".</p>
Pin-jack tape recorder does not operate properly.	<ol style="list-style-type: none"> <li>1. Program source defective</li> <li>2. Improper or incorrect connections</li> <li>3. Defective overall section</li> </ol>	<p>Check and repair or replace. See "TROUBLESHOOTING AUDIO SYSTEM".</p> <p>See "OVER ALL PROGRAM SOURCES".</p>
One-connection tape recorder (DIN standard) does not operate properly.	<ol style="list-style-type: none"> <li>1. Program source defective</li> <li>2. Improper or incorrect connections</li> <li>3. Defective overall section</li> <li>4. Defective input circuit</li> </ol>	<p>Check and repair or replace. See "TROUBLESHOOTING AUDIO SYSTEM".</p> <p>See "OVER ALL PROGRAM SOURCES". DIN jack, R<sub>631</sub>~R<sub>634</sub></p>

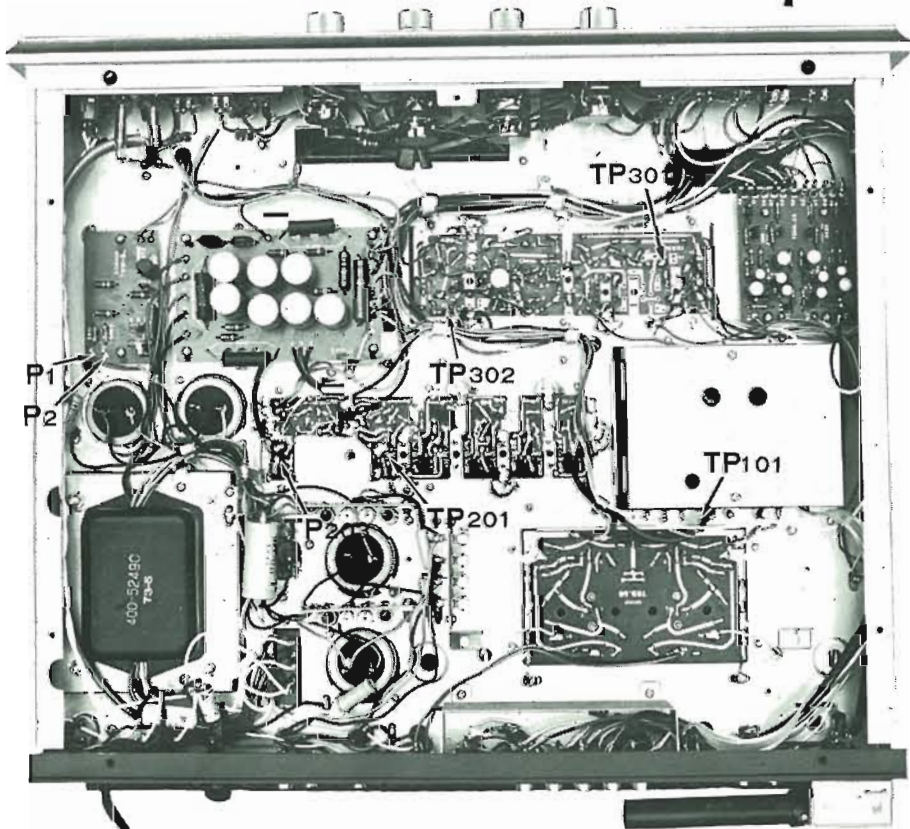
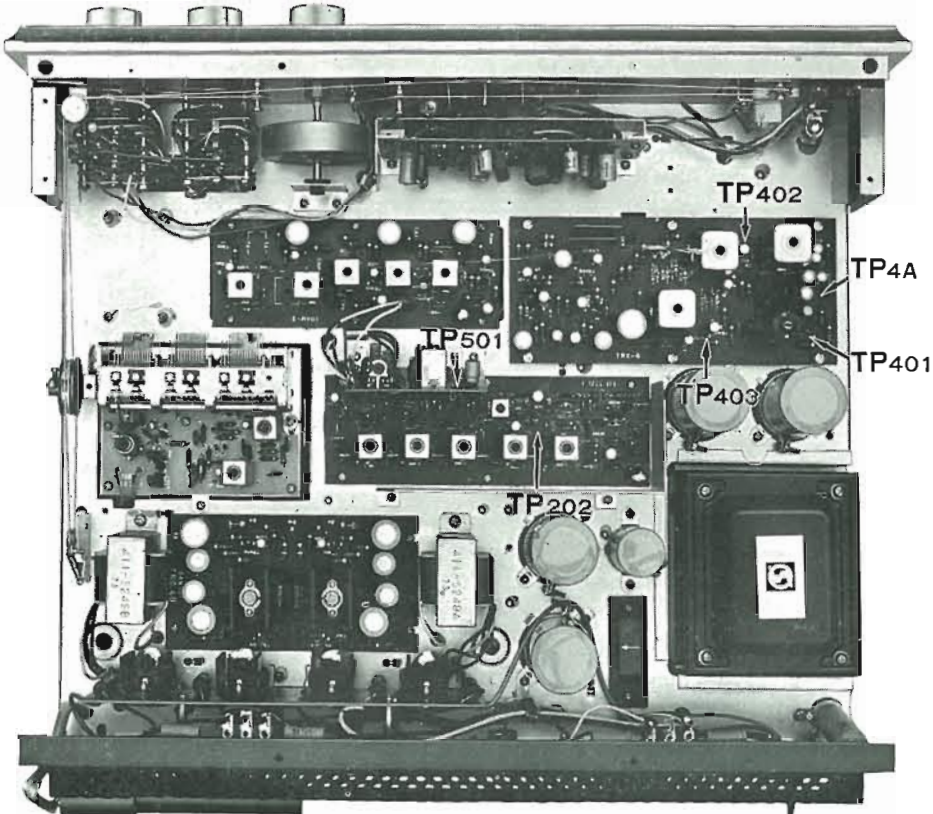
## RECORDING ON TAPE

Symptom	Probable Cause	Check point
Broadcast is not recorded well.	<ol style="list-style-type: none"> <li>1. Defective tape or tape recorder</li> <li>2. Improper or incorrect connections</li> <li>3. FM, FM-MPX or AM section defective</li> </ol>	<p>Check and repair or replace. See "TROUBLESHOOTING AUDIO SYSTEM".</p> <p>See "AM", "FM" or "FM-MPX RECEPTION".</p>
Record is not recorded well.	<ol style="list-style-type: none"> <li>1. Defective tape or tape recorder</li> <li>2. Improper or incorrect connections</li> <li>3. Record or record player defective</li> <li>4. Defective head amplifier</li> </ol>	<p>Check and repair or replace. See "TROUBLESHOOTING AUDIO SYSTEM".</p> <p>Check and repair or replace. See "USING WITH RECORD PLAYER: Defective head amplifier".</p>



# ALIGNMENT

## TEST POINT



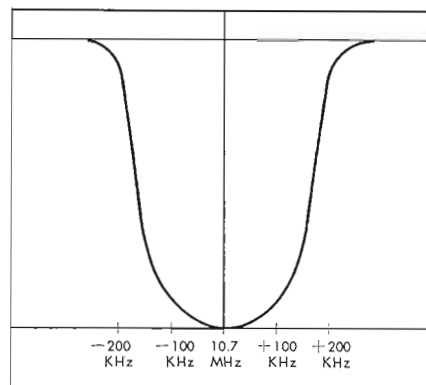


# FM ALIGNMENT PROCEDURE

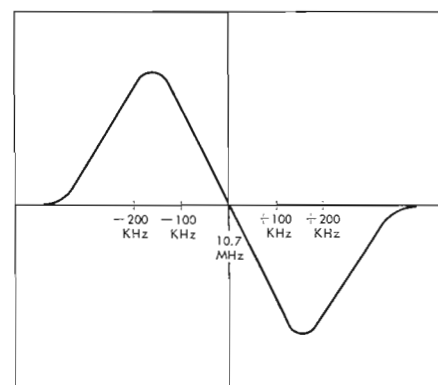
1. AFC-OFF      2. Turn tuning gang fully      Center carrier wave      Set pointer at reference mark.

STEP	ALIGN	GENERATOR	FEED SIGNAL	OUTPUT INDICATOR	DIAL SETTING	ADJUST	ADJUST FOR
1.	IF Transformer	10.7 MHz ±200 KHz	Sweep signal is sent to TP <sub>101</sub> via the 10pF ceramic condenser	Oscilloscope is connected to TP <sub>202</sub> via the 0.05μF ceramic condenser		Primary and secondary sides of T <sub>101</sub> , T <sub>201</sub> , T <sub>202</sub> , T <sub>203</sub> and T <sub>204</sub>	Best I.F.T. wave form
2.	Discriminator	10.7 MHz ±200 KHz	Sweep signal is sent to TP <sub>201</sub> via the 0.05μF ceramic condenser	Oscilloscope is connected to TP <sub>4A</sub> via the 0.05μF ceramic condenser		FM Discriminator transformer T <sub>205</sub> primary and secondary	S curve
3.	O.S.C.	88 MHz 400 Hz 100% Modulation	To antenna terminals	Oscilloscope and V.T.V.M. at output load	88 MHz	O.S.C. coil L <sub>106</sub>	Maximum
4.	O.S.C.	108 MHz 400 Hz 100% Modulation	To antenna terminals	Oscilloscope and V.T.V.M. at output load	108 MHz	O.S.C. trimmer TC <sub>104</sub>	Maximum
5.	Reiterate 3 and 4.						
6.	High-frequency Amp. Circuit	90 MHz 400 Hz 100% Modulation	To antenna terminals	Oscilloscope and V.T.V.M. at output load	90 MHz	Antenna coil L <sub>101</sub> , L <sub>103</sub> and L <sub>104</sub>	Maximum
7.	High-frequency Amp. Circuit	106 MHz 400 Hz 100% Modulation	To antenna terminals	Oscilloscope and V.T.V.M. at output load	106 MHz	Trimmer TC <sub>101</sub> , TC <sub>102</sub> and TC <sub>103</sub>	Maximum
8.	Reiterate 6 and 7.						

FM IF WAVE FORM



FM DISCRIMINATOR WAVE FORM



# ALIGNMENT

## FM M.P.X. ALIGNMENT PROCEDURE

1. Do not attempt to align the Multiplex Circuit unless the following equipment is available:

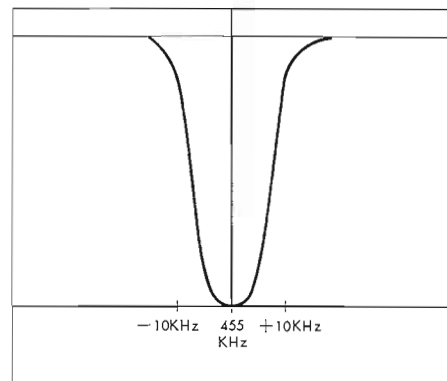
a. Multiplex Stereo Generator b. Oscilloscope c. AC. V.T.V.M. d. Audio Oscillator e. FM Signal Generator

STEP	ALIGN	GENERATOR	FEED SIGNAL	OUTPUT INDICATOR	ADJUST	ADJUST FOR
1.	67 KHz Trap	67 KHz Audio Signal	Connect to T.P.4A	V.T.V.M. at T.P. <sub>401</sub>	L <sub>401</sub> (MFC-A)	Maximum
2.	71 KHz Trap	71 KHz Audio Signal	Connect to T.P.4A	V.T.V.M. at T.P. <sub>401</sub>	L <sub>402</sub> (MFC-B)	Maximum
3.	19 KHz Transformer	FM Signal Gen. Modulated 30% by STEREO Gen. sub-channel	Antenna terminals Tune to signal	V.T.V.M. and Oscilloscope at T.P. <sub>402</sub>	T <sub>401</sub> (MPT-20A)	Maximum
4.	19 KHz Transformer	FM Signal Gen. Modulated 30% by STEREO Gen. sub-channel	Antenna terminals Tune to signal	V.T.V.M. and Oscilloscope at T.P. <sub>403</sub>	T <sub>402</sub> (MPT-20B)	Smaller peakvalue of two peakvalues
5.	38 KHz Transformer	FM Signal Gen. Modulated 30% by STEREO Gen. sub-channel	Antenna terminals Tune to signal	V.T.V.M. and Oscilloscope at T.P. <sub>403</sub>	T <sub>403</sub> (MPT-20B)	Smaller peakvalue of two peakvalues
6.	38 KHz Transformer and Separation VR	FM Signal Gen. Modulated 30% by STEREO Signal Gen. channel-L	Antenna terminals Tune to signal	V.T.V.M. and Oscilloscope at output load channel-R	T <sub>403</sub> (MPT-20B) within ¼ turn and Separation VR(VR <sub>401</sub> )	Channel-R Minimum

# AM ALIGNMENT PROCEDURE

STEP	ALIGN	GENERATOR	FEED SIGNAL	OUTPUT INDICATOR	DIAL SETTING	ADJUST	ADJUST FOR
1.	I.F. Transformer	455 KHz ± 30 KHz Sweep-generator	Antenna terminals	Oscilloscope and V.T.V.M. at T.P. 30		Primary and secondary sides from the 1st I.F.T. (T <sub>302</sub> ) to the 3rd I.F.T. (T <sub>304</sub> )	Best I.F.T. wave form
2.	O.S.C.	AM-generator 535 KHz 400 Hz 30% Modulation	Antenna terminals	Oscilloscope and V.T.V.M. at output load	535 KHz	O.S.C. Coil L <sub>302</sub>	Maximum
3.	O.S.C.	AM-generator 1600 KHz 400 Hz 30% Modulation	Antenna terminals	Oscilloscope and V.T.V.M. at output load	1600 KHz	O.S.C. Trimmer cap. TC <sub>303</sub>	Maximum
4.	Reiterate 2 and 3						
5.	RF amp.	AM-generator 600 KHz 400 Hz 30% Modulation	Antenna terminals	Oscilloscope and V.T.V.M. at output load	600 KHz	RF transformer T <sub>301</sub>	Maximum
6.	Antenna circuit	AM-generator 600 KHz 400 Hz 30% Modulation	Antenna terminals	Oscilloscope and V.T.V.M. at output load	1400 KHz	Ferrite bar Antenna coil L <sub>301</sub>	Maximum
7.	RF amp.	AM-generator 1400 KHz 400 Hz 30% Modulation	Antenna terminals	Oscilloscope and V.T.V.M. at output load	1400 KHz	RF Trimmer TC <sub>302</sub>	Maximum
8.	Antenna circuit	AM-generator 1400 KHz 400 Hz 30% Modulation	Antenna terminals	Oscilloscope and V.T.V.M. at output load		Antenna circuit Trimmer TC <sub>301</sub>	Maximum
9.	Reiterate 5, 6, 7, 8						

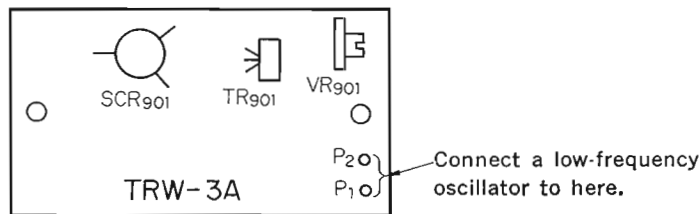
**AM IF WAVE FORM**



# ALIGNMENT

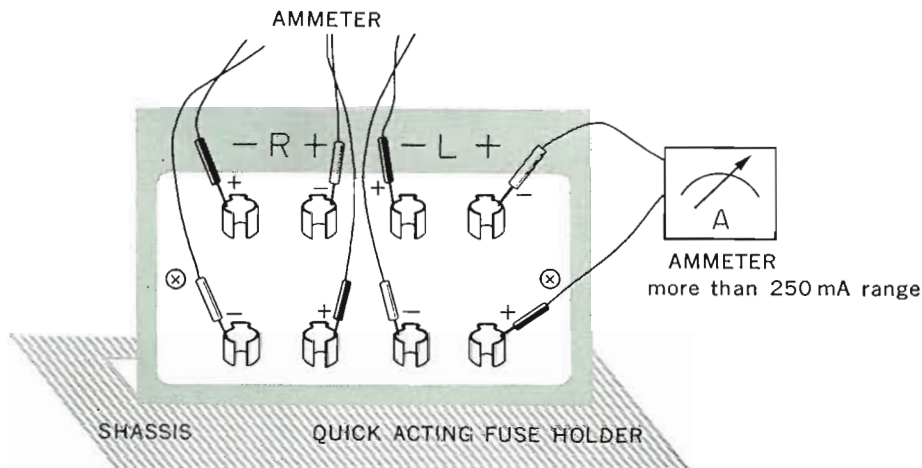
## TO ADJUST THE PROTECTOR CIRCUIT (TRW-3A)

1. Remove leads from the  $P_1$  and  $P_2$ .
2. Connect the output (output impedance: 600 ohms, 1 KHz) of a low-frequency oscillator to the  $P_1$  and raise its output little by little. Adjust the  $VR_{901}$  so that the protector lamp is lit and no power comes to the SPEAKER output terminals at 1.4V RMS.
3. Connect the low-frequency output terminal to the  $P_2$  and make sure the protector circuit functions normally as soon as the output of the oscillator reaches 1.4V RMS.
4. Solder the leads to the  $P_1$  and  $P_2$ .



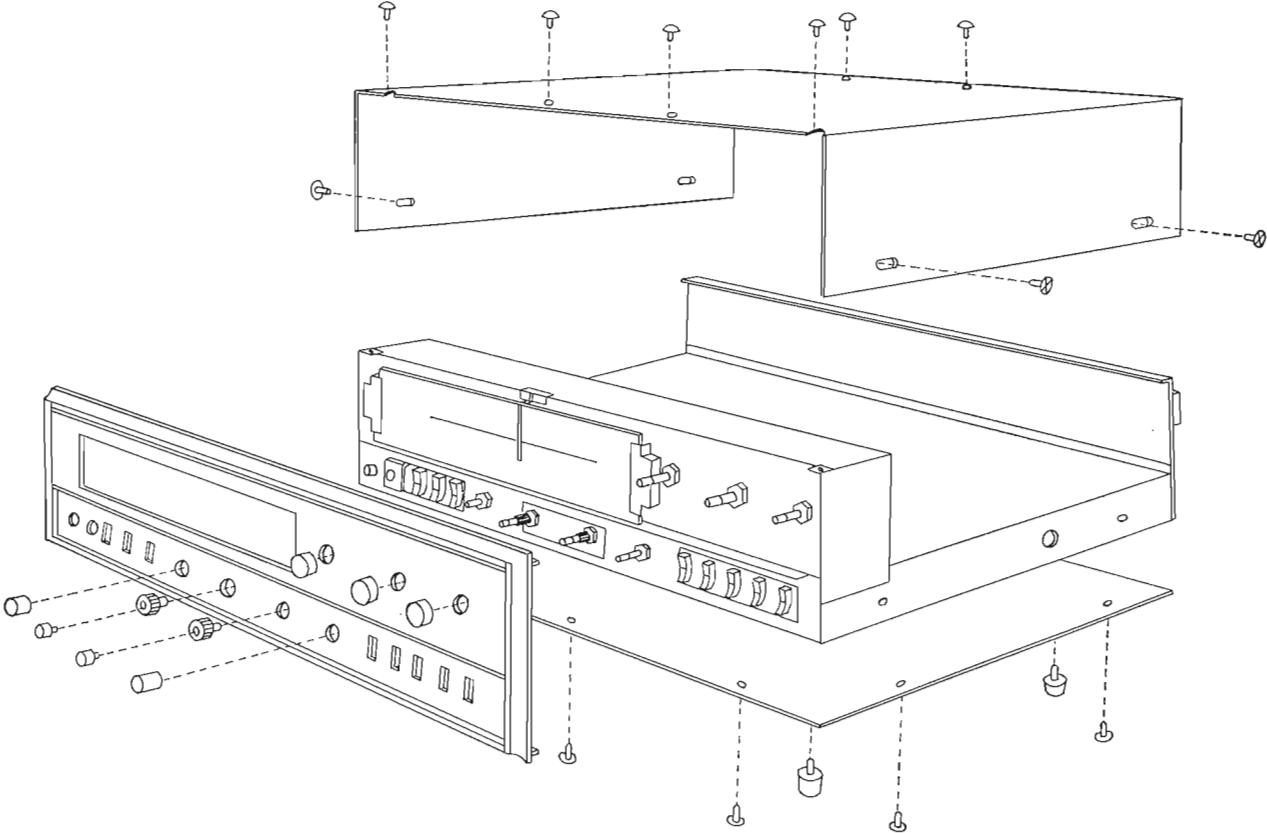
## TO ADJUST THE BIAS CURRENT IN THE OUTPUT STAGE

1. Set the MAIN VOL. control to the MINIMUM position.
2. Connect a resistor (approx. 10 ohms and 1 watt) to each of the SPEAKER output terminals.
3. Remove a quick-acting fuse from its holder.
4. Connect an ammeter (about 250 milliamperes) to the CHANNEL R as illustrated.
5. Adjust the  $VR_{803}$  and  $VR_{804}$  on the TRZ-2C sheet so that the ammeter indicates 80 milliamperes.
6. Remove the ammeter and secure the fuse in place.
7. Adjust the CHANNEL L as above.

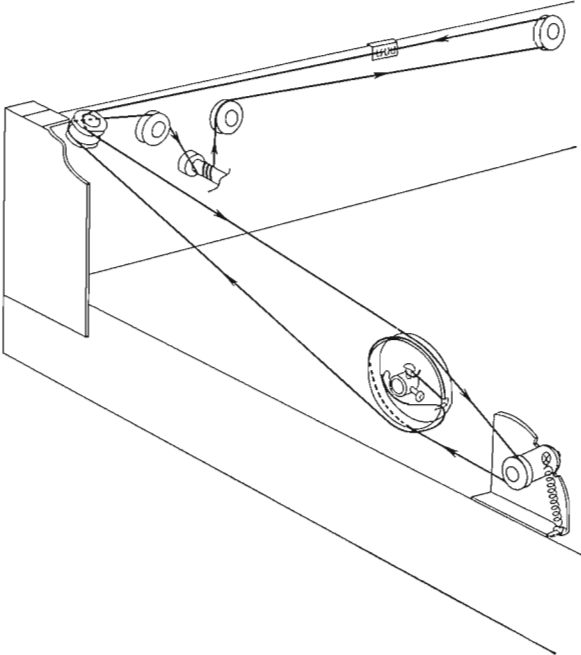


# REMOVING THE FRONT PANEL, BONNET AND BOTTOM PLATE/DIAL MECHANISM

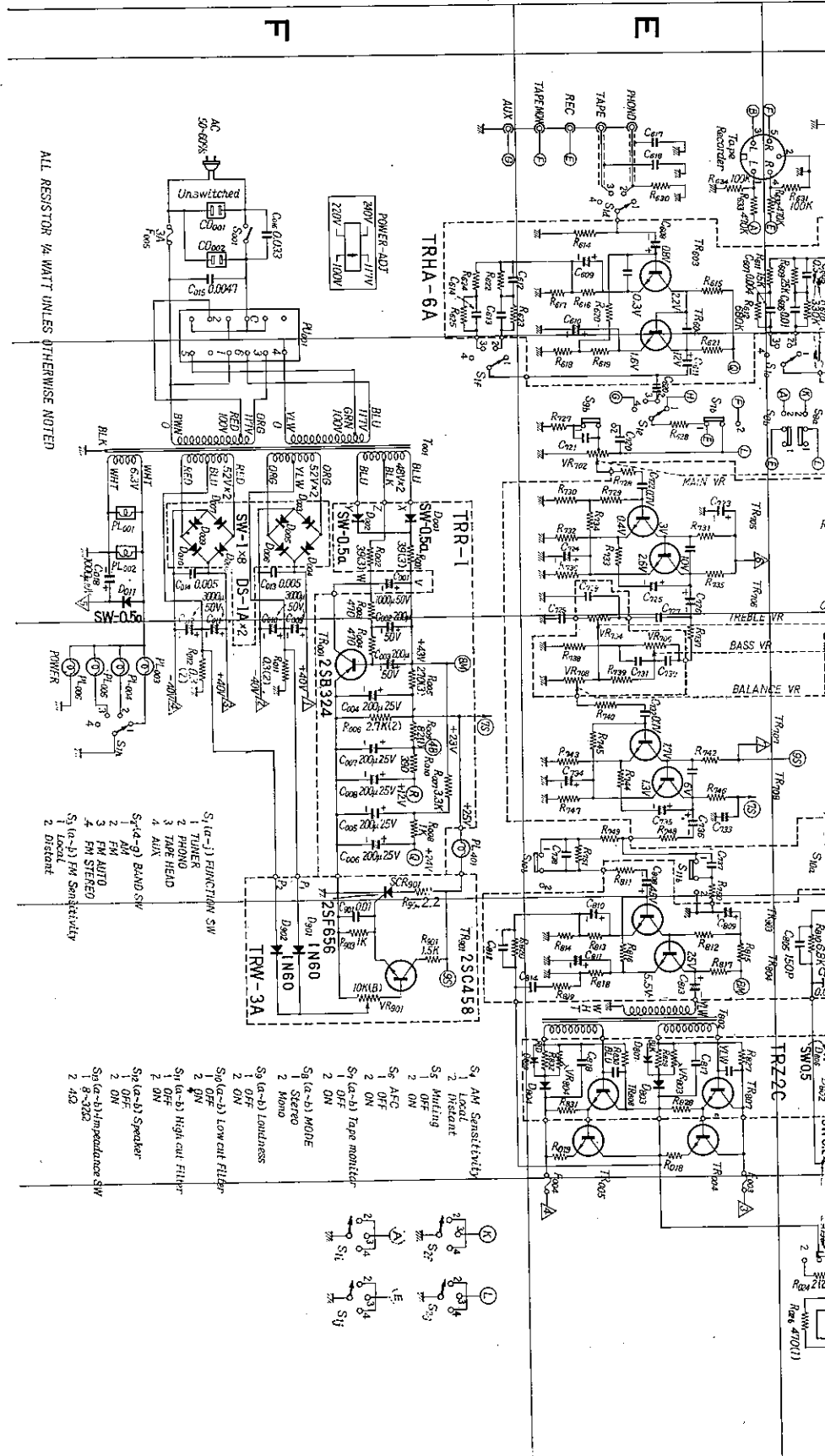
## REMOVING THE FRONT PANEL, BONNET AND BOTTOM PLATE

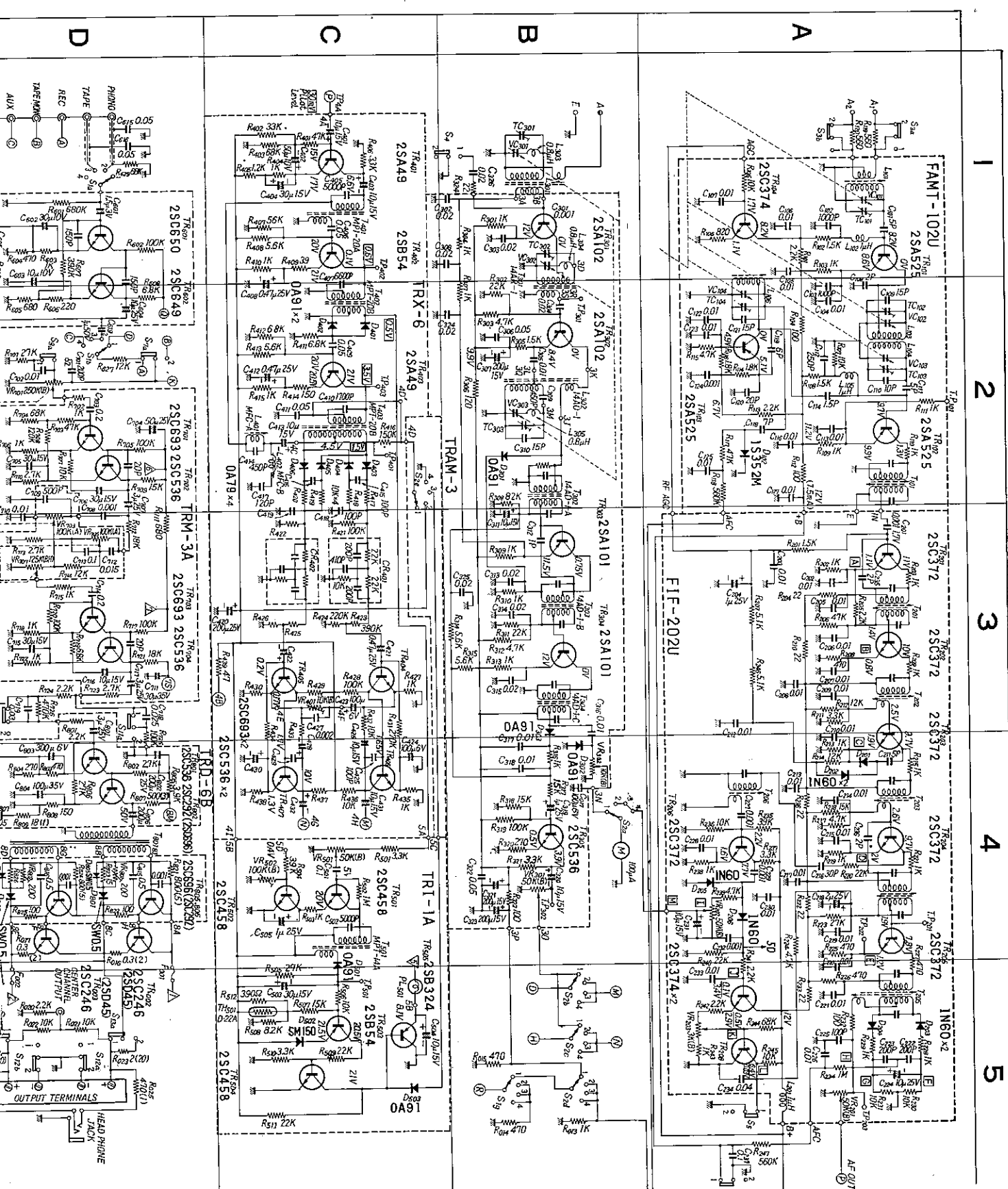


## DIAL MECHANISM

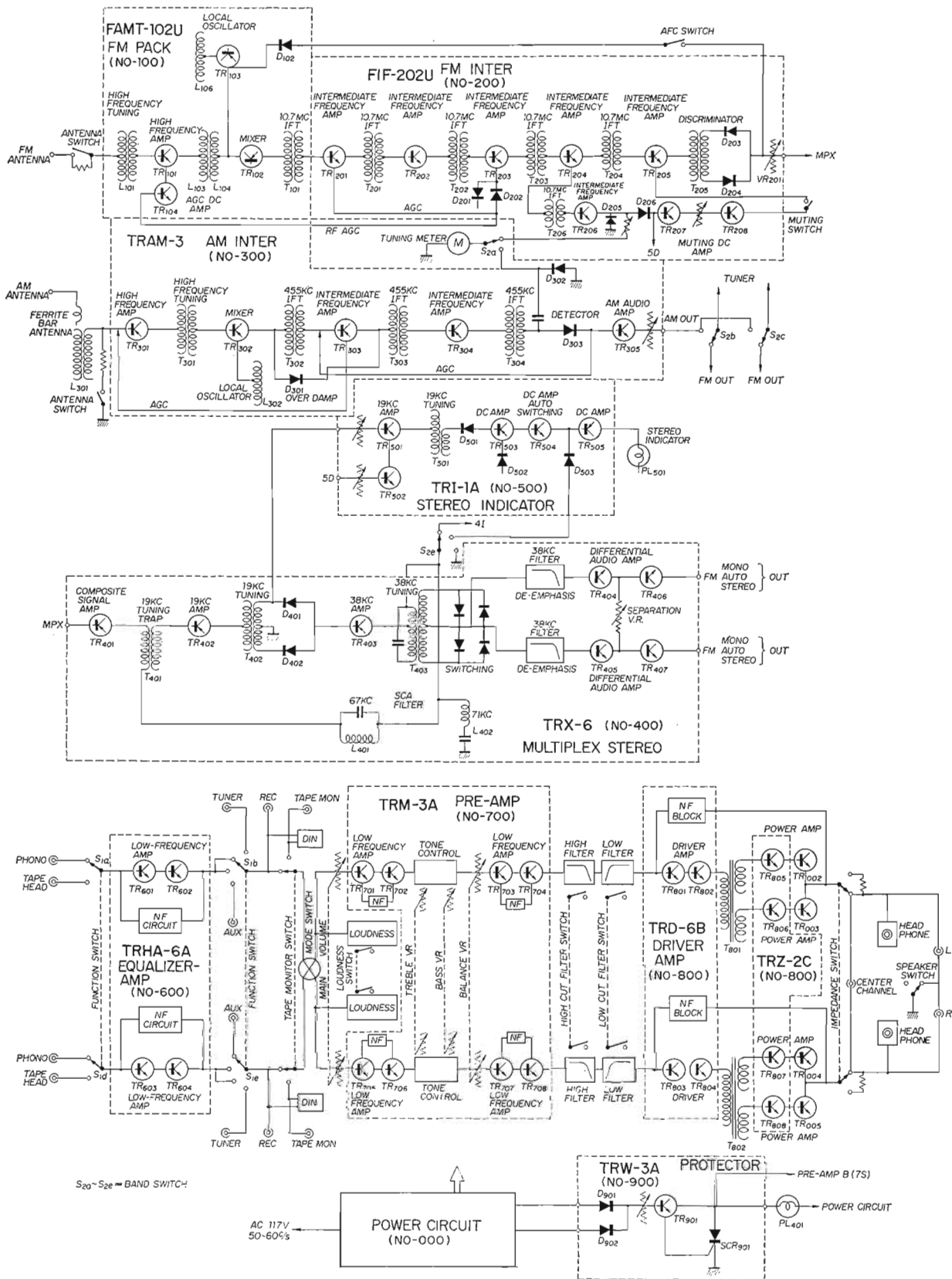


# SCHEMATIC DIAGRAM



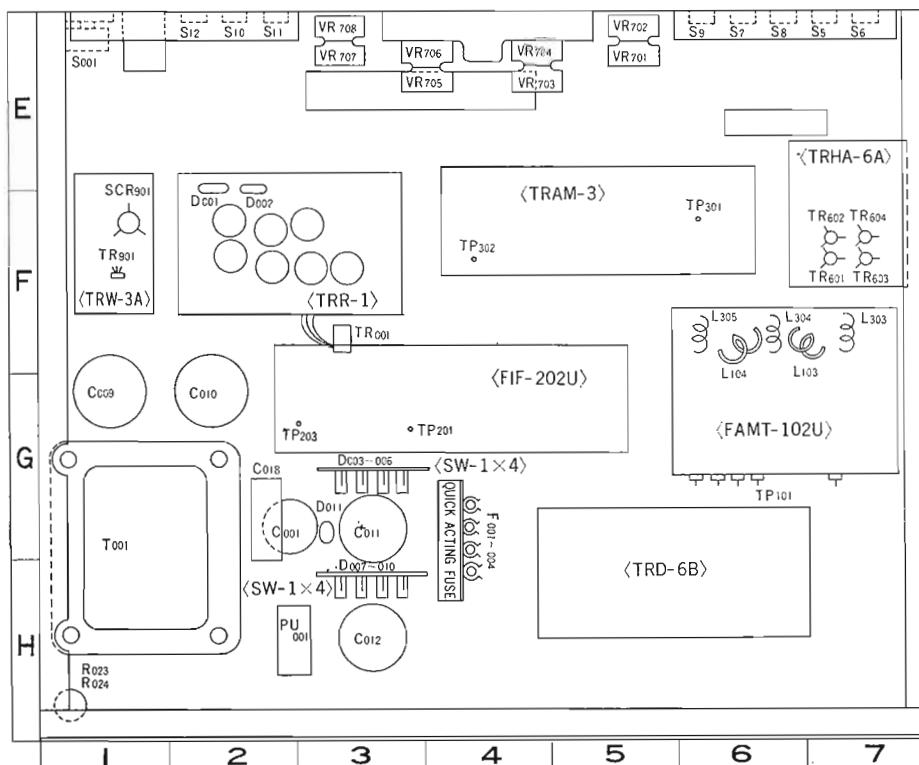
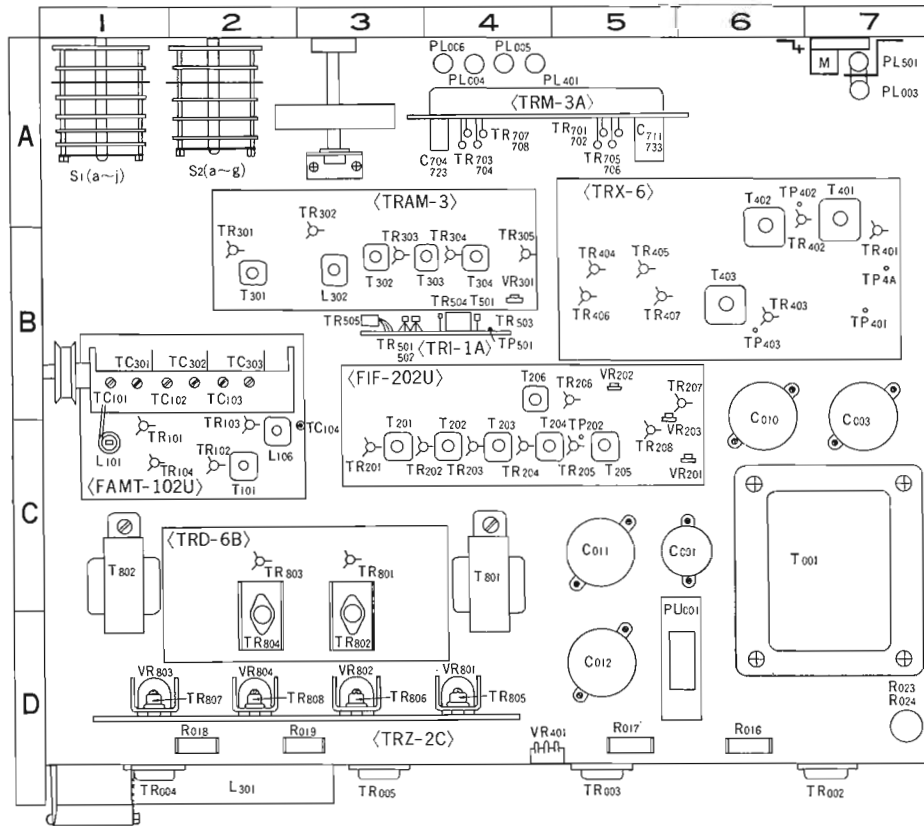


# BLOCK DIAGRAM





# PARTS LAYOUT

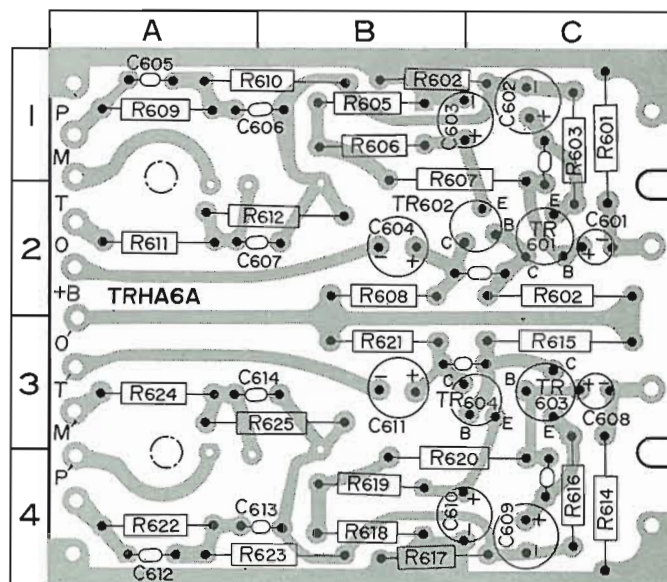


# PRINTED-CIRCUIT SHEETS

## EQUALIZER AMP. TRHA-6A

### CO-ORDINATES OF PARTS USED

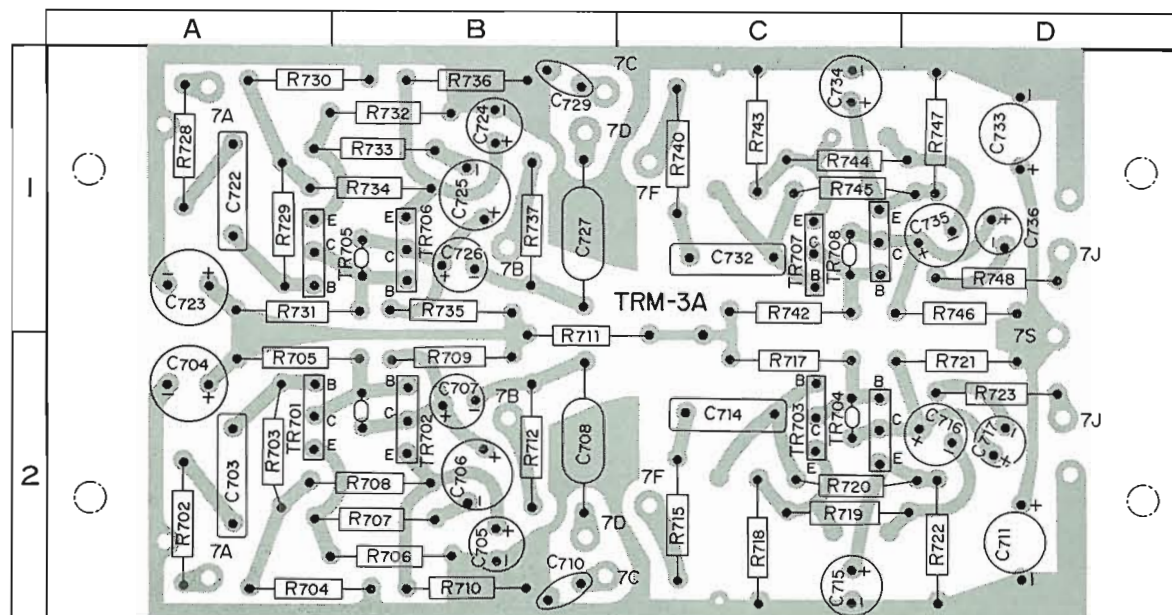
R601...1 C	R612...2 B	R624...3 A	C609...4 C
R602...2 C	R614...4 C	R625...3 B	C610...4 C
R603...1 C	R615...3 C		C611...3 B
R604...1 B	R616...4 C	C601...2 C	C612...4 A
R605...1 B	R617...4 B	C602...1 C	C613...4 B
R606...1 B	R618...4 B	C603...1 C	C614...3 A
R607...1 B	R619...4 B	C604...2 B	
R608...2 B	R620...4 B	C605...1 A	TR601..2 C
R609...1 A	R621...3 B	C606...1 B	TR602..2 C
R610...1 B	R622...4 A	C607...2 A	TR603..3 C
R611...2 A	R623...4 B	C608...3 C	TR604..3 C



## CONTROL AMP. TRM-3A

### CO-ORDINATES OF PARTS USED

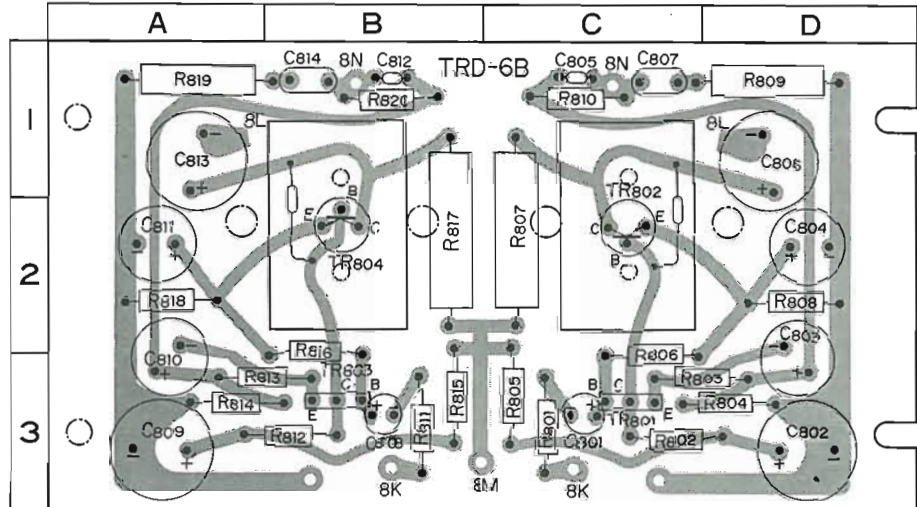
R702...2 A	R710...2 B	R721...2 D	R733...1 D	R744...1 C	C705...2 B	C716...2 D	C729...1 B	TR702..2 B
R703...2 A	R711...1 B	R722...2 D	R734...1 B	R745...1 C	C706...2 B	C717...2 D	C732...1 C	TR703..2 B
R704...2 A	R712...2 B	R723...2 D	R735...1 B	R746...1 D	C707...2 B	C722...1 A	C733...1 D	TR704..2 C
R705...2 A	R715...2 C	R728...1 A	R736...1 B	R747...1 D	C708...2 B	C723...1 A	C734...1 C	TR705..1 A
R705...2 B	R717...2 C	R729...1 A	R737...1 B	R748...1 D	C710...2 B	C724...1 B	C735...1 D	TR706..1 B
R707...2 B	R718...2 C	R730...1 A	R740...1 C		C711...2 D	C725...1 B	C736...1 D	TR707..1 C
R708...2 B	R719...2 C	R731...1 A	R742...1 C	C703...2 A	C714...2 C	C726...1 B		TR708..1 C
R709...2 B	R720...2 C	R732...1 B	R743...1 C	C704...2 A	C715...2 C	C727...1 B	TR701..2 A	



# DRIVER AMP. TRD-6B

## CO-ORDINATES OF PARTS USED

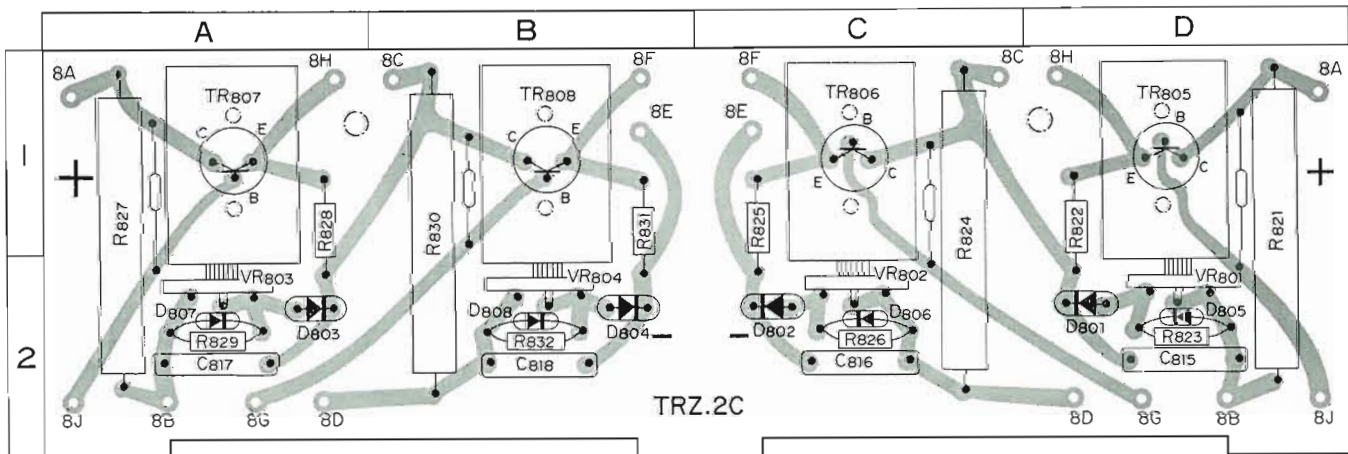
R801...3 C	R815...3 B	C808...3 D
R802...3 C	R816...2 B	C809...3 A
R803...3 C	R817...2 B	C810...3 A
R804...3 D	R818...2 A	C811...2 A
R805...3 C	R819...1 A	C812...1 B
R806...2 C	R820...1 B	C813...1 A
R807...2 C		C814...1 B
R808...2 D	C801...3 C	
R809...1 D	C802...3 D	TR801...3 C
R810...1 C	C803...3 D	TR802...2 C
R811...3 D	C804...2 D	TR803...3 B
R812...3 B	C805...1 C	TR804...2 B
R813...3 A	C806...1 D	
R814...3 A	C807...1 C	



# PRE-POWER TRZ-2C

## CO-ORDINATES OF PARTS USED

R821...1 D	R831...1 B	VR803...2 A	D803...2 A
R822...1 D	R832...2 B	VR804...2 B	D804...2 B
R823...2 D			
R824...1 C	C815...2 D	TR805...1 D	
R825...1 C	C816...2 C	TR806...1 C	
R826...2 C	C817...2 A	TR807...1 A	
R827...1 A	C818...2 B	TR808...1 B	
R828...1 A			
R829...2 A	VR801...2 D	D801...2 D	
R830...1 B	VR802...2 C	D802...2 C	



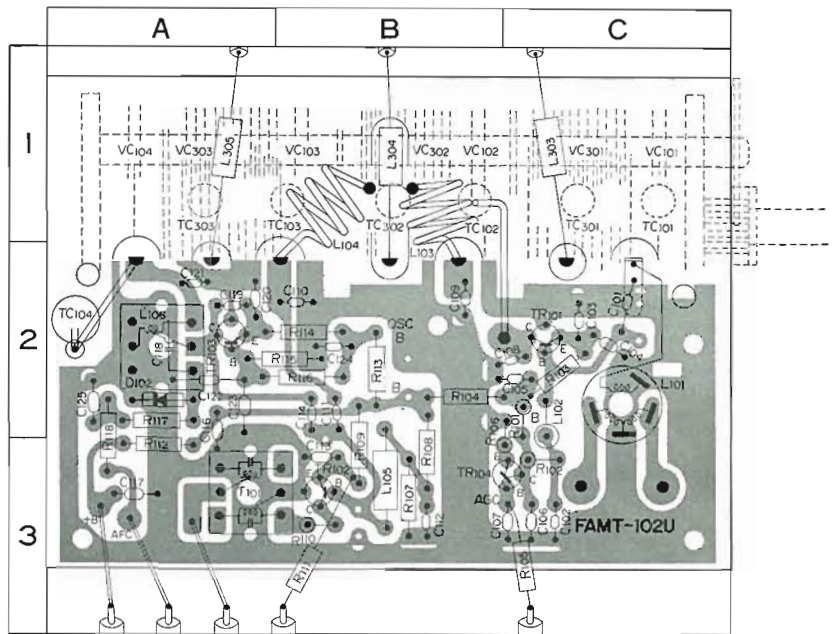


# PRINTED-CIRCUIT SHEETS

## FM TUNER FAMT-102U

### CO-ORDINATES OF PARTS USED

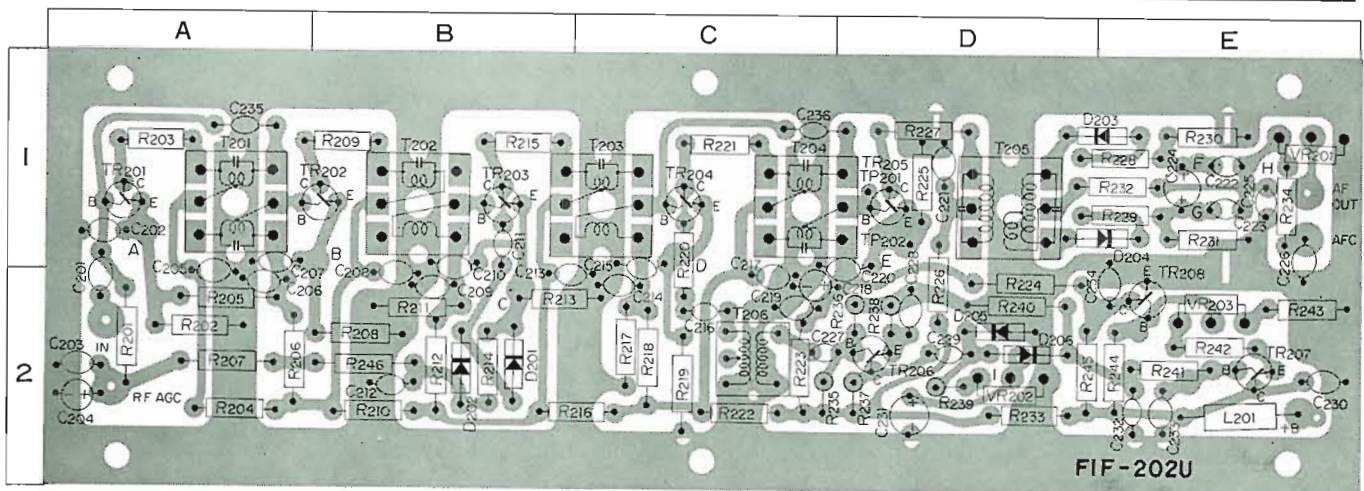
R101...2C	C102...3C	C123...2A	TC102...1B
R102...1C	C103...2C	C124...2B	TC103...1B
R103...2C	C104...2C	C125...2A	TC104...2A
R104...2B	C105...2C		
R105...3C	C106...3C	L101...2C	VC101...1C
R106...3C	C107...3C	L102...2C	VC102...1B
R107...3B	C108...2C	L103...1B	VC103...1B
R108...3B	C109...2B	L104...1B	VC104...1A
R109...3B	C110...2B	L105...3B	
R110...3B	C111...2B	L106...2A	L303...1C
R111...3B	C112...3B		L304...1B
R112...3A	C113...3B	TR101...2C	L305...1A
R113...2B	C114...2B	TR102...3B	
R114...2B	C116...2A	TR103...2A	TC301...1C
R115...2B	C117...3A	TR104...3C	TC302...1B
R116...2B	C118...2A		TC303...1A
R117...2A	C119...2A	D102...2A	
R118...2A	C120...2A	T101...3A	VC301...1C
	C121...2A		VC302...1B
C101...2C	C122...3A	TC101...1C	VC303...1A



## FM-IFT FIF-202U

### CO-ORDINATES OF PARTS USED

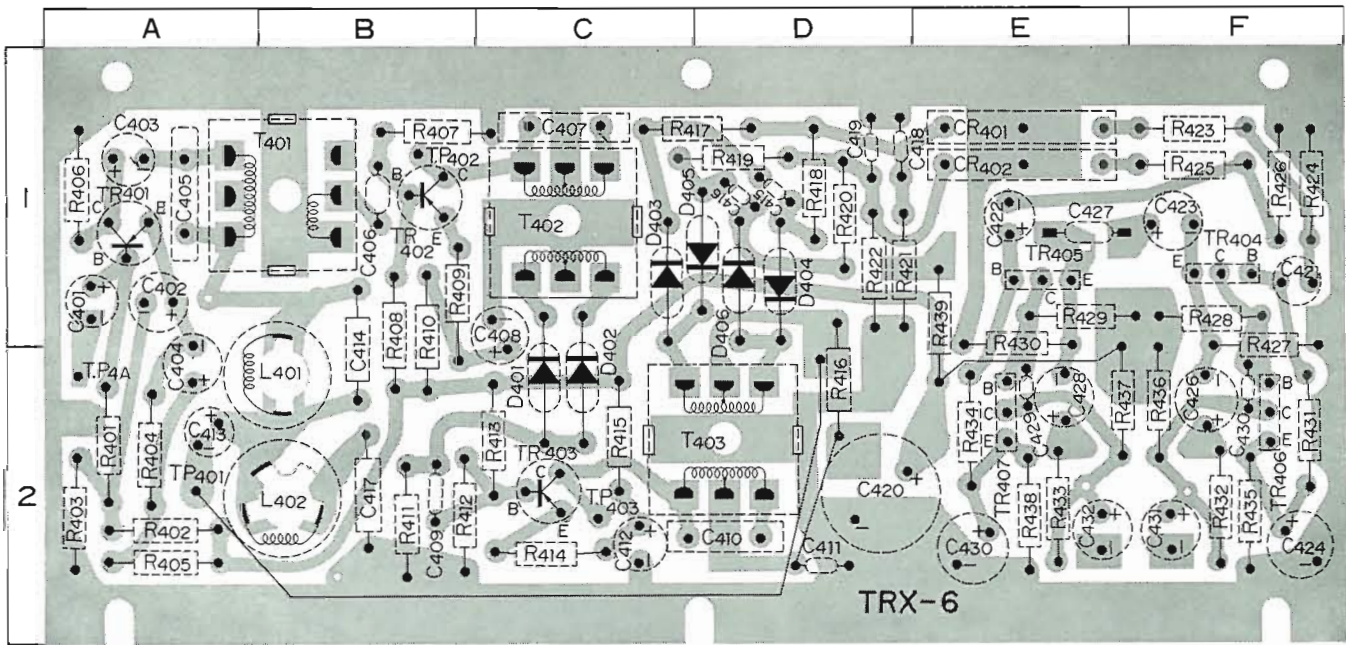
R201...2A	R212...2B	R223...2C	R234...1E	R245...2D	C209...2B	C220...1D	C231...2D	TR205...1D	VR201...1E
R202...2A	R213...2B	R224...2D	R235...2C	R246...2B	C210...1B	C221...1D	C232...2E	TR206...2D	VR202...2D
R203...1A	R214...2B	R225...1D	R236...2D		C211...1B	C222...1E	C233...2E	TR207...2E	VR203...2E
R204...2A	R215...1B	R226...2D	R237...2D	C201...2A	C212...2B	C223...1E	C234...2E	TR208...2E	
R205...2A	R216...2C	R227...1D	R238...2D	C202...1A	C213...2B	C224...1E	C235...1A		T201...1A
R206...2A	R217...2C	R228...1E	R239...2D	C203...2A	C214...2C	C225...1E	C236...1C	D201...2B	T202...1B
R207...2A	R218...2C	R229...1E	R240...2D	C204...2A	C215...1C	C226...1E		D202...2B	T203...1C
R208...2B	R219...2C	R230...1E	R241...2E	C205...2A	C216...2C	C227...2C	TR201...1A	D203...1E	T204...1C
R209...1B	R220...1C	R231...1E	R242...2E	C206...2A	C217...2C	C228...2D	TR202...1B	D204...1E	T205...1D
R210...2B	R221...1C	R232...1E	R243...2E	C207...1A	C218...2C	C229...2D	TR203...1B	D205...2D	T206...2C
R211...2B	R222...2C	R233...2B	R244...2E	C208...2B	C219...2C	C230...2E	TR204...1C	D206...2D	L201...2E



# FM MULTIPLEX TRX-6

## CO-ORDINATES OF PARTS USED

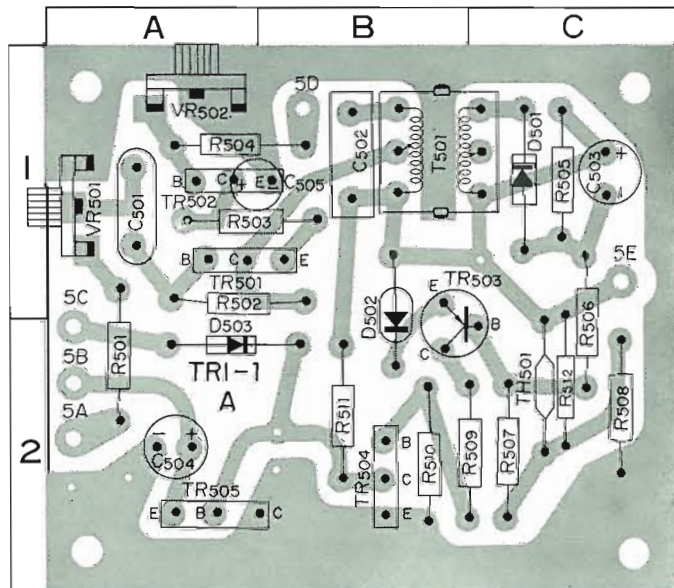
R401...2 A	R411...2 B	R421...1 D	R431...2 F	C401...1 A	C411...2 D	C421...1 F	C431...2 F	TR405...1 E	L401...2 B
R402...2 A	R412...2 B	R422...1 D	R432...2 F	C402...1 A	C412...2 C	C422...1 E	C432...2 E	TR406...2 F	L402...2 B
R403...2 A	R413...2 C	R423...1 E	R433...2 E	C403...1 A	C413...2 A	C423...1 F		TR407...2 E	
R404...2 A	R414...2 C	R424...1 F	R434...2 E	C404...2 A	C414...1 B	C424...2 F	CR401...1 E		T401...1 B
R405...2 A	R415...2 C	R425...1 F	R435...2 F	C405...1 A	C415...1 D	C425...2 F	CR402...1 E	D401...2 C	T402...1 C
R406...1 A	R416...2 D	R426...1 F	R436...2 F	C406...1 B	C416...1 D	C426...2 F		D402...2 C	T403...2 D
R407...1 B	R417...1 C	R427...1 F	R437...2 E	C407...1 C	C417...2 B	C427...1 E	TR401...1 A	D403...1 C	
R408...1 B	R418...1 D	R428...1 F	R438...2 E	C408...1 C	C418...1 D	C428...2 E	TR402...2 C	D404...1 D	
R409...1 B	R419...1 D	R429...1 E	R439...1 E	C409...2 B	C419...1 D	C429...2 E	TR403...2 C	D405...1 D	
R410...1 B	R420...1 D	R430...1 E		C410...2 D	C420...2 D	C430...2 E	TR404...1 F	D406...2 D	



# FM STEREO INDICATOR TRI-1A

## CO-ORDINATES OF PARTS USED

R501...2 A	R510...2 C	T501...1 B	TR503...2 B
R502...1 A	R511...2 B		TR504...2 B
R503...1 A	R512...2 C	VR501...1 A	TR505...2 A
R504...1 A		VR502...1 A	
R505...1 C	C501...1 A		D501...1 C
R506...1 C	C502...1 B	TH501...2 C	D502...1 B
R507...2 C	C503...1 C		D503...2 A
R508...2 C	C504...2 A	TR501...1 A	
R509...2 C	C505...1 A	TR502...1 A	



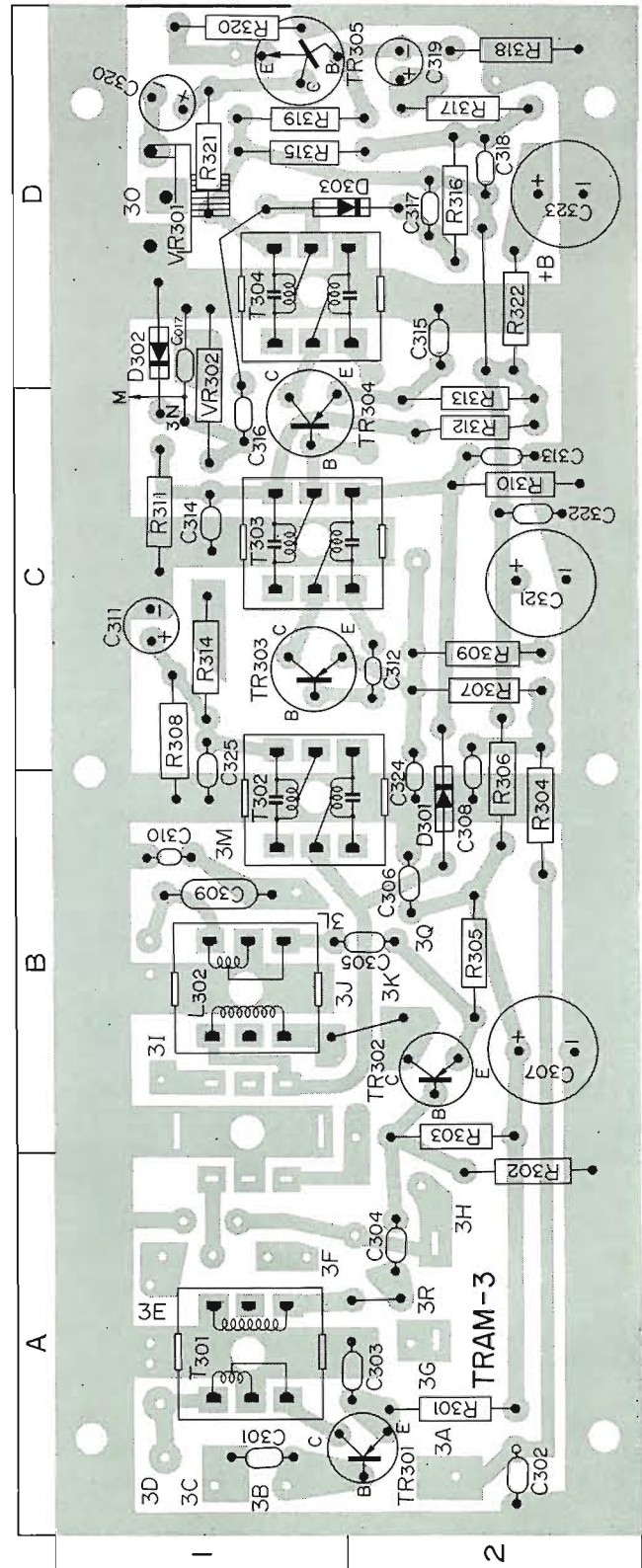


# PRINTED-CIRCUIT SHEETS

## AM TUNER TRAM-3

### CO-ORDINATES OF PARTS USED

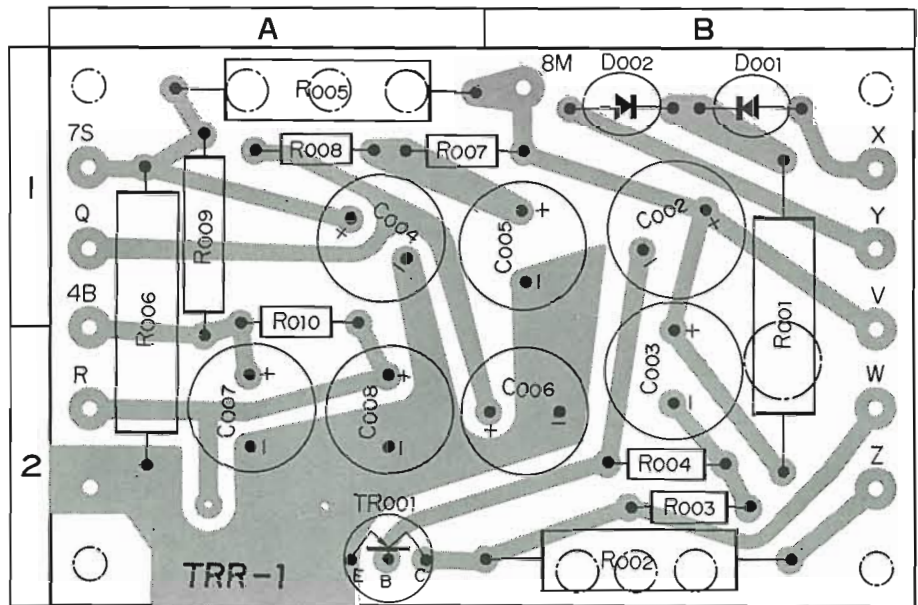
R301...2 A	R318...2 D	C310...2 B	TR301...2 A
R302...2 A	R319...1 D	C311...2 B	TR302...2 B
R303...2 B	R320...1 D	C312...2 C	TR303...1 C
R304...2 B	R321...1 D	C313...2 C	TR304...1 C
R305...2 B	R322...2 D	C314...1 C	TR305...1 D
R306...2 B	R323...1 C	C315...2 D	
R307...2 C		C316...1 C	D301...2 B
R308...1 C	C017...1 D	C317...2 D	D302...1 D
R309...2 C	C301...1 A	C318...2 D	D303...1 D
R310...2 C	C302...2 A	C319...2 D	
R311...1 C	C303...2 A	C320...1 D	L302...1 B
R312...2 C	C304...2 A	C321...2 C	
R313...2 C	C305...2 B	C322...2 C	T301...1 A
R314...1 C	C305...2 B	C323...2 D	T302...1 B
R315...1 D	C307...2 B	C324...2 B	T303...1 C
R316...2 D	C308...2 B	C325...1 B	T304...1 D
R317...2 D	C309...1 B	VR301...1 D	



# RIPPLE FILTER

## CO-ORDINATES OF PARTS USED

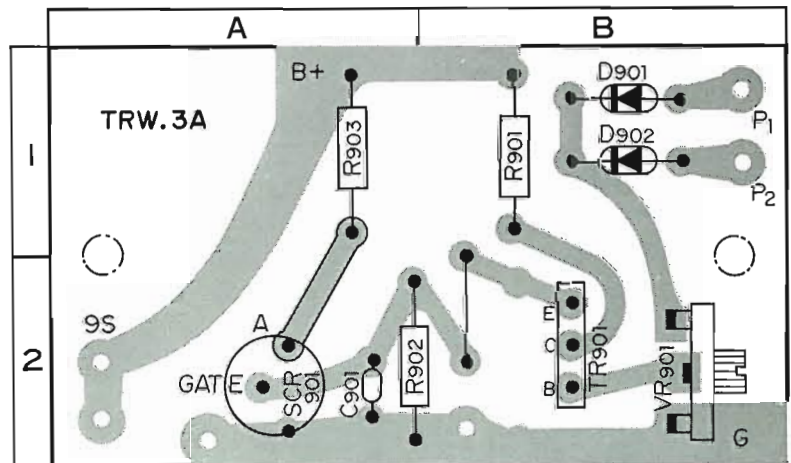
R001 . . . . 1 B	C003 . . . . 2 B
R002 . . . . 2 B	C004 . . . . 1 A
R003 . . . . 2 B	C005 . . . . 1 B
R004 . . . . 2 B	C006 . . . . 2 B
R005 . . . . 1 A	C007 . . . . 2 A
R006 . . . . 1 A	
R007 . . . . 1 A	TR001 . . . 2 A
R008 . . . . 1 A	
R009 . . . . 1 A	D001 . . . . 1 B
R010 . . . . 1 A	D002 . . . . 1 B
C002 . . . . 1 B	



# PROTECTOR TRW3-A

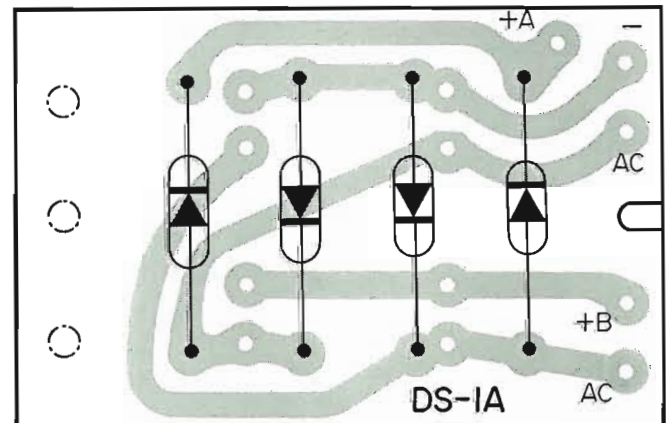
## CO-ORDINATES OF PARTS USED

R901 . . . . 1 B	TR901 . . . 2 B
R902 . . . . 2 B	
R903 . . . . 2 A	D901 . . . . 1 B
R904 . . . . 1 A	D902 . . . . 1 B
	D903 . . . . 2 B
C901 . . . . 2 A	
	SCR901 . . 2 A
VR901 . . . 2 B	



# DIODES STACK DS-1A

## CO-ORDINATES OF PARTS USED



# SELECTOR CHART

Remove the bonnet and look at the switches from the back side of the amplifier. This chart tells you the location of their contact and supporting points. The smaller the circle, the nearer the points locate to the back of the amplifier.

- indicates a contact point of the selector switch.
- indicates a supporting point of the selector switch.
- ▲ indicates a terminal point of the selector switch.

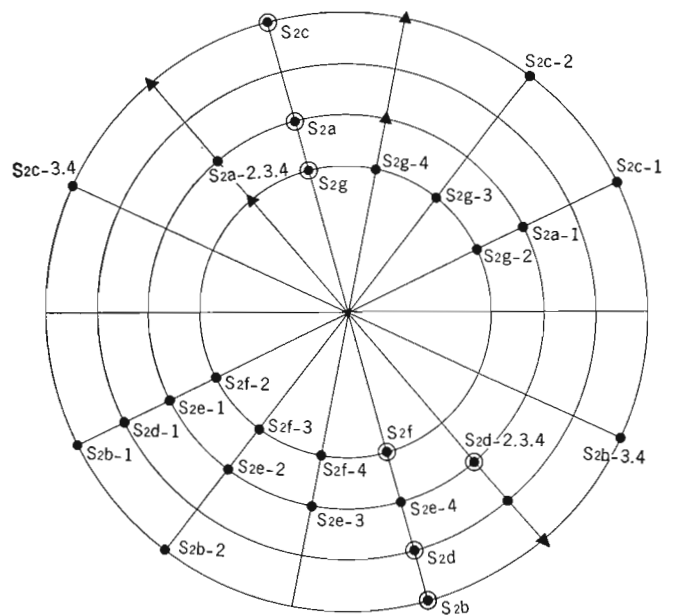
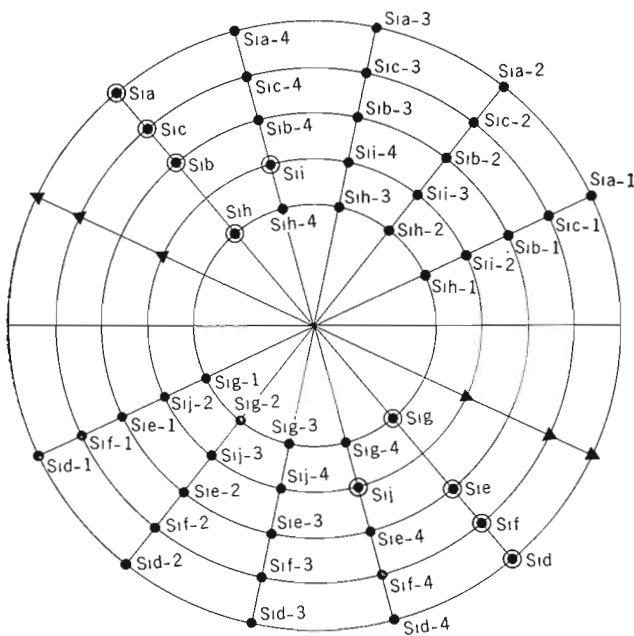
Ex. 1 ○ 2 ○ 3 ○ 4 ○ ....Contact Point  
 ● ....Supporting Point

## FUNCTION

- $S_1$  (a~j)
1. TUNER
  2. PHONO
  3. TAPE HEAD
  4. AUX

## BAND

- $S_2$  (a~g)
1. AM
  2. FM MONO
  3. FM AUTO
  4. FM STEREO





# PARTS LIST

## DESIGNATORS

<b>C</b>	Capacitor
<b>CR</b>	Capacitor-resistor modulated parts
<b>D</b>	Diode
<b>F</b>	Fuse
<b>L</b>	Inductor
<b>M</b>	Meter
<b>NL</b>	Neon lamp
<b>PL</b>	Pilot lamp
<b>PU</b>	Line voltage controller
<b>R</b>	Resistor
<b>RLY</b>	Relay
<b>S</b>	Switch
<b>SCR</b>	Silicon controlled rectifier
<b>T</b>	Transformer
<b>TC</b>	Trimmer capacitor
<b>TH</b>	Thermistor
<b>T-P</b>	Test point
<b>TR</b>	Transistor
<b>V</b>	Vacuum tube
<b>VC</b>	Variable capacitor
<b>VR</b>	Variable resistor

## ABBREVIATIONS

<b>(A)</b>	A type taper
<b>(B)</b>	B type taper
<b>(BH)</b>	BH type taper
<b>(C)</b>	C type taper
<b>CER.</b>	Ceramic capacitor
<b>COMP.</b>	Composition
<b>Hz</b>	Cycles per second
<b>ELECT.</b>	Electrolytic
<b>f</b>	Farad
<b>FET</b>	Field effect transistor
<b>Ge</b>	Germanium
<b>Gnd</b>	Ground (ed)
<b>H</b>	Henry
<b>Ins</b>	Insulation (ed)
<b>K</b>	Kilo, $10^3$
<b>m</b>	Milli, $10^{-3}$
<b>mA</b>	Milli ampere(s), $10^{-3}$ ampere(s)
<b>Mc.</b>	Mica
<b>M</b>	Meg, $10^6$
<b>MET. FLM.</b>	Metal film
<b><math>\mu</math></b>	Micro, $10^{-6}$
<b>My.</b>	Mylar <sup>®</sup>
	<sup>®</sup> Dupont de Nemours
<b>Ne</b>	Neon
<b><math>\Omega</math></b>	ohm(s)
<b>PC</b>	Printed circuit
<b>P</b>	Pico: $\mu\mu$ : $10^{-12}$
<b>Pos</b>	Position(s)
<b>Poly</b>	Polystyrene
<b>Pot</b>	Potentiometer
<b>PREC.</b>	Precision (temperature coefficient, long term stability, and/or tolerance)
<b>ROT</b>	Rotary
<b>Si</b>	Silicon
<b>SI</b>	Slide
<b>Ta.</b>	Tantalum
<b>Tog</b>	Toggle
<b>Tol</b>	Tolerance
<b>Trim</b>	Trimmer
<b>V</b>	Volt(s)
<b>VACW</b>	Alternating current working volt(s)
<b>VDCW.</b>	Direct current working volt(s)
<b>W</b>	Watt
<b>W/</b>	With
<b>W/O</b>	Without
<b>WW</b>	Wire-wound

# PARTS LIST

**A:** Parts No.  
**B:** Parts Name  
**C:** Co-ordinates in Schematic Diagram  
**D:** Co-ordinates in Chassis Diagram

A	B	C	D	A	B	C	D
R001	39Ω 3 W ±10% MET. FLM.	2 F	TRR-1	R207	5.1KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U
R002	39Ω 3 W ±10% MET. FLM.	2 F	TRR-1	R208	470Ω ¼W ±10% PREC. Fixed	3 A	FIF-202U
R003	470Ω ½W ±10% COMP. Fixed	2 F	TRR-1	R209	1KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U
R004	470Ω ½W ±10% COMP. Fixed	3 F	TRR-1	R210	22Ω ¼W ±10% PREC. Fixed	3 A	FIF-202U
R005	270Ω 3 W ±10% MET. FLM.	3 F	TRR-1	R211	3.3KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U
R006	2.7KΩ 2 W ±10% R type PREC. Fixed	3 F	TRR-1	R212	12KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U
R007	3.3KΩ ½W ±10% COMP. Fixed	3 F	TRR-1	R213	1KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R008	1KΩ ½W ±10% COMP. Fixed	3 F	TRR-1	R214	12KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R009	82Ω 1 W ±10% R type PREC. Fixed	3 F	TRR-1	R215	1KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R010	390Ω ½W ±10% COMP. Fixed	3 F	TRR-1	R216	22Ω ¼W ±10% PREC. Fixed	4 A	FIF-202U
R011	0.3Ω 2 W ±10% WW	3 F	1G	R217	4.7KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R012	0.3Ω 2 W ±10% WW	3 F	3H	R218	15KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R013	1KΩ ½W ±10% COMP. Fixed	5 B	2E	R219	1KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R014	470Ω ½W ±10% COMP. Fixed	5 B	1E	R220	22KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R015	470Ω ½W ±10% COMP. Fixed	5 B	2E	R221	1KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R016	0.3Ω 2 W ±10% WW	4 D	6D	R222	22Ω ¼W ±10% PREC. Fixed	4 A	FIF-202U
R017	0.3Ω 2 W ±10% WW	4 D	5D	R223	27KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R018	0.3Ω 2 W ±10% WW	4 E	2D	R224	4.7KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R019	0.3Ω 2 W ±10% WW	4 E	3D	R225	470Ω ¼W ±10% PREC. Fixed	4 A	FIF-202U
R020	2.2KΩ ½W ±10% COMP. Fixed	5 D	3H	R226	470Ω ¼W ±10% PREC. Fixed	5 A	FIF-202U
R021	10KΩ ½W ±10% COMP. Fixed	5 D	3H	R227	470Ω ¼W ±10% PREC. Fixed	5 A	FIF-202U
R022	10KΩ ½W ±10% COMP. Fixed	5 D	3H	R228	1KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R023	2Ω 20W ±10% Cementing Fixed	5 D	7D	R229	1KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R024	2Ω 20W ±10% Cementing Fixed	5 D	7D	R230	10KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R025	470Ω 1 W ±10% R type PREC. Fixed	5 D	1E	R231	10KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R026	470Ω 1 W ±10% R type PREC. Fixed	5 D	1E	R232	100Ω ¼W ±10% PREC. Fixed	5 A	FIF-202U
R027	470KΩ ½W ±10% COMP. Fixed	1 F	2H	R233	22Ω ¼W ±10% PREC. Fixed	5 A	FIF-202U
R101	2.2KΩ ¼W ±10% PREC. Fixed	1 A	FAMT-102U	R234	1MΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R102	1.5KΩ ¼W ±10% PREC. Fixed	1 A	FAMT-102U	R235	39KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R103	1KΩ ¼W ±10% PREC. Fixed	1 A	FAMT-102U	R236	10KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R104	100Ω ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R237	3.3KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R105	10KΩ ¼W ±10% PREC. Fixed	1 A	FAMT-102U	R238	1KΩ ¼W ±10% PREC. Fixed	4 A	7E
R106	820Ω ¼W ±10% PREC. Fixed	1 A	FAMT-102U	R239	4.7KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R107	10KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R240	22KΩ ¼W ±10% PREC. Fixed	4 A	FIF-202U
R108	1.5KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R241	2.2KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R109	1KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R242	2.2KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R110	1KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R243	1KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R111	1KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R244	68KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R112	100Ω ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R245	10KΩ ¼W ±10% PREC. Fixed	5 A	FIF-202U
R113	2.2KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R246	5.1KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U
R114	1.8KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R247	560KΩ ¼W ±10% PREC. Fixed	5 A	7E
R115	4.7KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R301	1KΩ ½W ±10% COMP. Fixed	1 B	TRAM-3
R116	1.8KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R302	22KΩ ½W ±10% COMP. Fixed	2 B	TRAM-3
R117	47KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R303	4.7KΩ ½W ±10% COMP. Fixed	2 B	TRAM-3
R118	560KΩ ¼W ±10% PREC. Fixed	2 A	FAMT-102U	R304	1KΩ ½W ±10% COMP. Fixed	1 B	TRAM-3
R119	560Ω ¼W ±10% PREC. Fixed	1 A	6H	R305	1.5KΩ ½W ±10% COMP. Fixed	2 B	TRAM-3
R120	560Ω ¼W ±10% PREC. Fixed	1 A	6H	R306	120Ω ½W ±10% COMP. Fixed	2 B	TRMA-3
R201	1.5KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U	R307	1KΩ ½W ±10% COMP. Fixed	2 B	TRAM-3
R202	1KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U	R308	82KΩ ½W ±10% COMP. Fixed	2 B	TRAM-3
R203	1KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U	R309	1KΩ ½W ±10% COMP. Fixed	3 B	TRAM-3
R204	22Ω ¼W ±10% PREC. Fixed	3 A	FIF-202U	R310	1KΩ ½W ±10% COMP. Fixed	3 B	TRAM-3
R205	2.2KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U	R311	22KΩ ½W ±10% COMP. Fixed	3 B	TRAM-3
R206	47KΩ ¼W ±10% PREC. Fixed	3 A	FIF-202U	R312	4.7KΩ ½W ±10% COMP. Fixed	3 B	TRAM-3

A	B	C	D
R313	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 B	TRAM-3
R314	5.6K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 B	TRAM-3
R315	5.6K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 B	TRAM-3
R316	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 B	TRAM-3
R317	15K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 B	TRAM-3
R318	15K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 B	TRAM-3
R319	100K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 B	TRAM-3
R320	270 $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 B	TRAM-3
R321	3.3K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 B	TRAM-3
R322	100 $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 B	TRAM-3
R324	22 $\Omega$ 1/4W $\pm$ 10% PREC. Fixed	1 B	7H
R401	47K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R402	33K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R403	68K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R404	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R405	1.5K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R406	3.3K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R407	56K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R408	5.6K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R409	39 $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R410	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 C	TRX-6
R411	6.8K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R412	68K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R413	5.6K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R414	150 $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R415	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R416	150K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R417	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R418	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R419	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R420	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 C	TRX-6
R421	100K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R422	100K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R423	390K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R424	220K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R425	390K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R426	220K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R427	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R428	100K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R429	100K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R430	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R431	270K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R432	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R433	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R434	270K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R435	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 C	TRX-6
R436	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 C	TRX-6
R437	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 C	TRX-6
R438	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 C	TRX-6
R439	47 $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	3 C	TRX-6
R501	3.3K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 C	TRI-1A
R502	1M $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 C	TRI-1A
R503	1K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 C	TRI-1A

A	B	C	D
R504	39K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	4 C	TRI-1A
R505	27K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	5 C	TRI-1A
R506	10K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	5 C	TRI-1A
R507	15K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	5 C	TRI-1A
R508	8.2K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	5 C	TRI-1A
R509	22K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	5 C	TRI-1A
R510	3.3K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	5 C	TRI-1A
R511	22K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	5 C	TRI-1A
R512	390 $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	5 C	TRI-1A
R601	680K $\Omega$ 1/4W $\pm$ 10% RD type Noise Less PREC. Fixed	1 D	TRHA-6A
R602	100K $\Omega$ 1/4W $\pm$ 10% RD type Noise Less PREC. Fixed	1 D	TRHA-6A
R603	1K $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	1 D	TRHA-6A
R604	470 $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	1 D	TRHA-6A
R605	680 $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	2 D	TRHA-6A
R606	220 $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	2 D	TRHA-6A
R607	390K $\Omega$ 1/4W $\pm$ 10% RD type Noise Less PREC. Fixed	1 D	TRHA-6A
R608	6.8K $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	2 D	TRHA-6A
R609	25K $\Omega$ 1/4W $\pm$ 10% R type PREC. Fixed	1 D	TRHA-6A
R610	330K $\Omega$ 1/4W $\pm$ 10% RD type PREC. Fixed	1 D	TRHA-6A
R611	15K $\Omega$ 1/4W $\pm$ 10% R type PREC. Fixed	1 D	TRHA-6A
R612	680K $\Omega$ 1/4W $\pm$ 10% RD type PREC. Fixed	1 E	TRHA-6A
R614	680K $\Omega$ 1/4W $\pm$ 10% RD type Noise Less PREC. Fixed	1 E	TRHA-6A
R615	100K $\Omega$ 1/4W $\pm$ 10% RD type Noise Less PREC. Fixed	1 E	TRHA-6A
R616	1K $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	1 E	TRHA-6A
R617	470 $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	1 E	TRHA-6A
R618	680 $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	2 E	TRHA-6A
R619	220 $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	2 E	TRHA-6A
R620	390K $\Omega$ 1/4W $\pm$ 10% RD type Noise Less PREC. Fixed	1 E	TRHA-6A
R621	6.8K $\Omega$ 1/4W $\pm$ 10% R type Noise Less PREC. Fixed	2 E	TRHA-6A
R622	25K $\Omega$ 1/4W $\pm$ 10% R type PREC. Fixed	1 F	TRHA-6A
R623	330K $\Omega$ 1/4W $\pm$ 10% RD type PREC. Fixed	1 F	TRHA-6A
R624	15K $\Omega$ 1/4W $\pm$ 10% R type PREC. Fixed	1 F	TRHA-6A
R625	680K $\Omega$ 1/4W $\pm$ 10% RD type PREC. Fixed	1 F	TRHA-6A
R627	12K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 D	1A
R628	12K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	2 E	1A
R629	68K $\Omega$ 1/2W $\pm$ 10% RD type Noise Less PREC. Fixed	1 D	3H
R630	68K $\Omega$ 1/2W $\pm$ 10% RD type Noise Less PREC. Fixed	1 E	5H
R631	100K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 D	4H
R632	470K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 D	4H
R633	470K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 E	4H
R634	100K $\Omega$ 1/2W $\pm$ 10% COMP. Fixed	1 E	4H

# PARTS LIST

**A:** Parts No.  
**B:** Parts Name  
**C:** Co-ordinates in Schematic Diagram  
**D:** Co-ordinates in Chassis Diagram

A	B	C	D	A	B	C	D
R701	27KΩ ½W ±10% COMP. Fixed	2 D	6E	R805	3.9KΩ ½W ±10% COMP. Fixed	4 D	TRD-6B
R702	1KΩ ½W ±10% COMP. Fixed	2 D	TRM-3A	R806	27KΩ ½W ±10% COMP. Fixed	4 D	TRD-6B
R703	47KΩ ½W ±10% COMP. Fixed	2 D	TRM-3A	R807	500Ω 3 W ±10% MET. FLM.	4 D	TRD-6B
R704	68KΩ ½W ±10% COMP. Fixed	2 D	TRM-3A	R808	150Ω ½W ±10% COMP. Fixed	4 D	TRD-6B
R705	100KΩ ½W ±10% COMP. Fixed	2 D	TRM-3A	R809	18Ω 1 W ±10% R type PREC. Fixed	4 D	TRD-6B
R706	1KΩ ½W ±10% COMP. Fixed	2 D	TRM-3A	R810	6.8KΩ ½W ±10% COMP. Fixed	4 D	TRD-6B
R707	10KΩ ½W ±10% COMP. Fixed	2 D	TRM-3A	R811	2.2KΩ ½W ±10% COMP. Fixed	3 E	TRD-6B
R708	120KΩ ½W ±10% COMP. Fixed	2 D	TRM-3A	R812	2.7KΩ ½W ±10% COMP. Fixed	4 E	TRD-6B
R709	15KΩ ½W ±10% COMP. Fixed	2 D	TRA-3M	R813	470Ω ½W ±10% COMP. Fixed	4 E	TRD-6B
R710	2.7KΩ ½W ±10% COMP. Fixed	2 D	TRM-3A	R814	270Ω ½W ±10% COMP. Fixed	4 E	TRD-6B
R711	680Ω ½W ±10% COMP. Fixed	3 D	TRM-3A	R815	3.9KΩ ½W ±10% COMP. Fixed	4 E	TRD-6B
R712	18KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R816	27KΩ ½W ±10% COMP. Fixed	4 E	TRD-6B
R713	2.7KΩ ½W ±10% COMP. Fixed	3 D	3E	R817	500Ω 3 W ±10% MET. FLM.	4 E	TRD-6B
R714	12KΩ ½W ±10% COMP. Fixed	3 D	3E	R818	150Ω ½W ±10% COMP. Fixed	4 E	TRD-6B
R715	1KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R819	18Ω 1 W ±10% R type PREC. Fixed	4 E	TRD-6B
R717	100KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R820	6.8KΩ ½W ±10% COMP. Fixed	4 F	TRD-6B
R718	1KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R821	800Ω ½W ±10% COMP. Fixed	4 D	TRZ-2C
R719	6.8KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R822	100Ω ½W ±10% COMP. Fixed	4 D	TRZ-2C
R720	100KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R823	15Ω ½W ±10% COMP. Fixed	4 D	TRZ-2C
R721	18KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R824	800Ω 5 W ±10% MET. FLM.	4 D	TRZ-2C
R722	1KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R825	100Ω ½W ±10% COMP. Fixed	4 D	TRZ-2C
R723	2.7KΩ ½W ±10% COMP. Fixed	3 D	TRM-3A	R826	15Ω ½W ±10% COMP. Fixed	4 D	TRZ-2C
R724	2.2KΩ ¼W ±10% R type PREC. Fixed	3 D	2E	R827	800Ω 5 W ±10% MET. FLM.	4 E	TRZ-2C
R725	100KΩ ¼W ±10% R type PREC. Fixed	3 D	2E	R828	100Ω ½W ±10% COMP. Fixed	4 E	TRZ-2C
R726	470KΩ ¼W ±10% R type PREC. Fixed	3 D	2E	R829	15Ω ½W ±10% COMP. Fixed	4 E	TRZ-2C
R727	27KΩ ½W ±10% COMP. Fixed	2 E	6E	R830	800Ω 5 W ±10% MET. FLM.	4 E	TRZ-2C
R728	1KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	R831	100Ω ½W ±10% COMP. Fixed	4 E	TRZ-2C
R729	47KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	R832	15Ω ½W ±10% COMP. Fixed	4 E	TRZ-2C
R730	68KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	R901	1.5KΩ ½W ±10% COMP. Fixed	4 F	TRW-3A
R731	100KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	R903	1KΩ ½W ±10% COMP. Fixed	4 F	TRW-3A
R732	1KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	R904	2.2Ω ½W ±10% COMP. Fixed	3 F	TRW-3A
R733	10KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	C001	1000μF 50 VDCW. ELECT.	2 F	TRR-1
R734	120KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	C002	200μF 50 VDCW. ELECT.	3 F	TRR-1
R735	15KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	C003	200μF 50 VDCW. ELECT.	3 F	TRR-1
R736	2.7KΩ ½W ±10% COMP. Fixed	2 E	TRM-3A	C004	200μF 25 VDCW. ELECT.	3 F	TRR-1
R737	18KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C005	200μF 25 VDCW. ELECT.	3 F	TRR-1
R738	2.7KΩ ½W ±10% COMP. Fixed	3 E	3E	C006	200μF 25 VDCW. ELECT.	3 F	TRR-1
R739	12KΩ ½W ±10% COMP. Fixed	3 E	3E	C007	200μF 25 VDCW. ELECT.	3 F	TRR-1
R740	1KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C008	200μF 25 VDCW. ELECT.	3 F	TRR-1
R742	100KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C009	3000μF 50 VDCW. ELECT.	3 F	1G
R743	1KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C010	3000μF 50 VDCW. ELECT.	3 F	2G
R744	6.8KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C011	3000μF 50 VDCW. ELECT.	3 F	3G
R745	100KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C012	3000μF 50 VDCW. ELECT.	3 F	3H
R746	18KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C013	0.005μF ±10% 250 VDCW. Oil	2 F	4G
R747	1KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C014	0.005μF ±10% 250 VDCW. Oil	2 F	4H
R748	2.7KΩ ½W ±10% COMP. Fixed	3 E	TRM-3A	C015	0.0047μF ±10% 600 VDCW. Oil	1 F	3H
R749	2.2KΩ ¼W ±10% R type PREC. Fixed	3 E	2E	C016	0.033μF ±10% 600 VDCW. Oil	1 F	1E
R750	100KΩ ¼W ±10% R type PREC. Fixed	3 E	2E	C017	100μF 6 VDCW. ELECT.	4 B	2A
R751	470KΩ ¼W ±10% R type PREC. Fixed	3 E	2E	C018	1000μF 10 VDCW. ELECT.	2 F	2G
R801	2.2KΩ ½W ±10% COMP. Fixed	3 D	TRD-6B	C019	0.022μF ±10% 600 VDCW. Oil	1 F	2H
R802	2.7KΩ ½W ±10% COMP. Fixed	4 D	TRD-6B	C101	5 pF ±0.5 pF 50 VDCW. CER.	1 A	FAMT-102U
R803	470Ω ½W ±10% COMP. Fixed	4 D	TRD-6B	C102	1000 pF ±100% 50 VDCW. CER.	1 A	FAMT-102U
R804	270Ω ½W ±10% COMP. Fixed	4 D	TRD-6B				

A	B	C	D
C103	1000 pF $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C104	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C105	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	1 A	FAMT-102U
C106	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	1 A	FAMT-102U
C107	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	1 A	FAMT-102U
C108	2 pF $\pm 0.5$ pF 50 VDCW. CER.	2 A	FAMT-102U
C109	15 pF $\pm 10\%$ 50 VDCW. CER.	2 A	FAMT-102U
C110	10 pF $\pm 10\%$ 50 VDCW. CER.	2 A	FAMT-102U
C111	5 pF $\pm 0.5$ pF 50 VDCW. CER.	2 A	FAMT-102U
C112	250 pF $\pm 10\%$ 50 VDCW. CER.	2 A	FAMT-102U
C113	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C114	1.5 pF $\pm 0.25$ pF 50 VDCW. CER.	2 A	FAMT-102U
C116	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C117	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C118	7 pF $\pm 0.5$ pF 50 VDCW. CER.	2 A	FAMT-102U
C119	6 pF $\pm 0.5$ pF 50 VDCW. CER.	2 A	FAMT-102U
C120	20 pF $\pm 10\%$ 50 VDCW. CER.	2 A	FAMT-102U
C121	15 pF $\pm 10\%$ 50 VDCW. CER.	2 A	FAMT-102U
C122	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C123	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C124	0.001 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C125	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 A	FAMT-102U
C201	0.001 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C202	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C203	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C204	1 $\mu$ F 25 VDCW. ELECT.	3 A	FIF-202U
C205	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C206	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C207	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C208	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C209	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C210	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C211	5 pF $\pm 0.5$ pF 50 VDCW. CER.	4 A	FIF-202U
C212	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 A	FIF-202U
C213	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C214	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C215	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C216	30 pF $\pm 10\%$ 50 VDCW. CER.	4 A	FIF-202U
C217	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C218	2 $\mu$ F 25 VDCW. ELECT.	4 A	FIF-202U
C219	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C220	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	5 A	FIF-202U
C221	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	5 A	FIF-202U
C222	200 pF $\pm 10\%$ 50 VDCW. CER.	5 A	FIF-202U

A	B	C	D
C223	200 pF $\pm 10\%$ 50 VDCW. CER.	5 A	FIF-202U
C224	10 $\mu$ F 25 VDCW. ELECT.	5 A	FIF-202U
C225	100 pF $\pm 10\%$ 50 VDCW. CER.	5 A	FIF-202U
C226	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	5 A	FIF-202U
C227	0.001 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C228	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C229	0.001 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C230	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C231	10 $\mu$ F 15 VDCW. ELECT.	4 A	FIF-202U
C232	0.001 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 A	FIF-202U
C233	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	5 A	FIF-202U
C234	0.04 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	5 A	FIF-202U
C235	2 pF $\pm 0.5$ pF 50 VDCW. CER.	3 A	FIF-202U
C236	2 pF $\pm 0.5$ pF 50 VDCW. CER.	4 A	FIF-202U
C237	0.1 $\mu$ F $\pm 01\%$ 50 VDCW. My.	5 A	7E
C301	0.001 $\mu$ F $\pm 20\%$ 50 VDCW. CER.	1 B	TRAM-3
C302	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	1 B	TRAM-3
C303	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	1 B	TRAM-3
C304	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 B	TRAM-3
C305	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 B	TRAM-3
C306	0.05 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 B	TRAM-3
C307	200 $\mu$ F 15 VDCW. ELECT.	2 B	TRAM-3
C308	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	1 B	TRAM-3
C309	450 pF $\pm 5\%$ 50 VDCW. Poly	2 B	TRAM-3
C310	15 pF $\pm 5\%$ 50 VDCW. CER.	2 B	TRAM-3
C311	10 $\mu$ F 15 VDCW. ELECT.	3 B	TRAM-3
C312	1 pF $\pm 0.25$ pF 50 VDCW. CER.	3 B	TRAM-3
C313	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 B	TRAM-3
C314	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 B	TRAM-3
C315	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 B	TRAM-3
C316	0.01 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 B	TRAM-3
C317	0.01 $\mu$ F $\pm 10\%$ 50 VDCW. My.	4 B	TRAM-3
C318	0.01 $\mu$ F $\pm 10\%$ 50 VDCW. My.	4 B	TRAM-3
C319	1 $\mu$ F 25 VDCW. ELECT.	4 B	TRAM-3
C320	10 $\mu$ F 15 VDCW. ELECT.	4 B	TRAM-3
C321	200 $\mu$ F 15 VDCW. ELECT.	4 B	TRAM-3
C322	0.05 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	4 B	TRAM-3
C323	200 $\mu$ F 15 VDCW. ELECT.	4 B	TRAM-3
C324	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	2 B	TRAM-3
C325	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	3 B	TRAM-3
C326	0.02 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	1 B	7H
C401	10 $\mu$ F 15 VDCW. ELECT.	1 C	TRX-6
C402	50 $\mu$ F 10 VDCW. ELECT.	1 C	TRX-6
C403	10 $\mu$ F 15 VDCW. ELECT.	1 C	TRX-6
C404	30 $\mu$ F 15 VDCW. ELECT.	1 C	TRX-6
C405	5000 pF $\pm 5\%$ 50 VDCW. Mc.	1 C	TRX-6
C406	0.05 $\mu$ F $\frac{+100}{-0}\%$ 50 VDCW. CER.	1 C	TRX-6
C407	6600 pF $\pm 5\%$ 50 VDCW. Mc.	1 C	TRX-6

# PARTS LIST

**A:** Parts No.  
**B:** Parts Name  
**C:** Co-ordinates in Schematic Diagram  
**D:** Co-ordinates in Chassis Diagram

A	B	C	D	A	B	C	D		
C408	0.47 $\mu$ F	25 VDCW. ELECT.	2 C	TRX-6	C705	30 $\mu$ F	15 VDCW. ELECT.	2 D	TRM-3A
C409	0.05 $\mu$ F $\pm 100\%$	50 VDCW. CER.	2 C	TRX-6	C706	30 $\mu$ F	15 VDCW. ELECT.	2 D	TRM-3A
C410	1700 pF $\pm 5\%$	50 VDCW. Mc.	2 C	TRX-6	C707	3 $\mu$ F	25 VDCW. ELECT.	2 D	TRM-3A
C411	0.05 $\mu$ F $\pm 100\%$	50 VDCW. CER.	2 C	TRX-6	C708	0.001 $\mu$ F $\pm 10\%$	250 VDCW. Oil	3 D	TRM-3A
C412	0.47 $\mu$ F	25 VDCW. ELECT.	2 C	TRX-6	C709	500 pF $\pm 10\%$	50 VDCW. Mc.	2 D	5E
C413	10 $\mu$ F	15 VDCW. ELECT.	2 C	TRX-6	C710	0.01 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 D	TRM-3A
C414	450 pF $\pm 10\%$	50 VDCW. Mc.	2 C	TRX-6	C711	30 $\mu$ F	35 VDCW. ELECT.	3 D	TRM-3A
C415	100 pF $\pm 10\%$	50 VDCW. CER.	2 C	TRX-6	C712	0.015 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 D	4E
C416	100 pF $\pm 10\%$	50 VDCW. CER.	2 C	TRX-6	C713	0.1 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 D	4E
C417	120 pF $\pm 10\%$	50 VDCW. Mc.	2 C	TRX-6	C714	0.2 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 D	TRM-3A
C418	100 pF $\pm 10\%$	50 VDCW. CER.	3 C	TRX-6	C715	30 $\mu$ F	15 VDCW. ELECT.	3 D	TRM-3A
C419	100 pF $\pm 10\%$	50 VDCW. CER.	3 C	TRX-6	C716	30 $\mu$ F	15 VDCW. ELECT.	3 D	TRM-3A
C420	200 $\mu$ F	25 VDCW. ELECT.	3 C	TRX-6	C717	3 $\mu$ F	25 VDCW. ELECT.	3 D	TRM-3A
C421	0.47 $\mu$ F	25 VDCW. ELECT.	3 C	TRX-6	C718	0.025 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 D	2E
C422	0.47 $\mu$ F	25 VDCW. ELECT.	3 C	TRX-6	C719	0.03 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 D	2E
C423	100 $\mu$ F	6 VDCW. ELECT.	3 C	TRX-6	C720	200 pF $\pm 10\%$	50 VDCW. Mc.	2 E	6E
C424	100 $\mu$ F	6 VDCW. ELECT.	4 C	TRX-6	C721	0.01 $\mu$ F $\pm 10\%$	50 VDCW. My.	2 E	6E
C425	100 pF $\pm 10\%$	50 VDCW. CER.	4 C	TRX-6	C722	0.2 $\mu$ F $\pm 10\%$	50 VDCW. My.	2 E	TRM-3A
C426	10 $\mu$ F	15 VDCW. ELECT.	4 C	TRX-6	C723	50 $\mu$ F	25 VDCW. ELECT.	2 E	TRM-3A
C427	0.002 $\mu$ F $\pm 100\%$	50 VDCW. CER.	3 C	TRX-6	C724	30 $\mu$ F	15 VDCW. ELECT.	2 E	TRM-3A
C428	10 $\mu$ F	15 VDCW. ELECT.	4 C	TRX-6	C725	30 $\mu$ F	15 VDCW. ELECT.	2 E	TRM-3A
C429	100 pF $\pm 10\%$	50 VDCW. CER.	4 C	TRX-6	C726	3 $\mu$ F	25 VDCW. ELECT.	2 E	TRM-3A
C430	100 $\mu$ F	6 VDCW. ELECT.	4 C	TRX-6	C727	0.001 $\mu$ F $\pm 10\%$	250 VDCW. Oil	3 E	TRM-3A
C431	10 $\mu$ F	15 VDCW. ELECT.	4 C	TRX-6	C728	5000 pF $\pm 10\%$	50 VDCW. Mc.	2 E	5E
C432	10 $\mu$ F	15 VDCW. ELECT.	4 C	TRX-6	C729	0.01 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 E	TRM-3A
C501	0.1 $\mu$ F $\pm 10\%$	50 VDCW. My.	4 C	TRI-1A	C730	0.015 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 E	4E
C502	5000 pF $\pm 5\%$	50 VDCW. Mc.	4 C	TRI-1A	C731	0.1 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 E	4E
C503	30 $\mu$ F	15 VDCW. ELECT.	5 C	TRI-1A	C732	0.2 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 E	TRM-3A
C504	10 $\mu$ F	15 VDCW. ELECT.	5 C	TRI-1A	C733	30 $\mu$ F	35 VDCW. ELECT.	3 E	TRM-3A
C505	1 $\mu$ F	25 VDCW. ELECT.	4 C	TRI-1A	C734	30 $\mu$ F	15 VDCW. ELECT.	3 E	TRM-3A
C601	1.5 $\mu$ F	3 VDCW. Ta.	1 D	TRHA-6A	C735	30 $\mu$ F	15 VDCW. ELECT.	3 E	TRM-3A
C602	30 $\mu$ F	10 VDCW. ELECT.	1 D	TRHA-6A	C736	3 $\mu$ F	25 VDCW. ELECT.	3 E	TRM-3A
C603	10 $\mu$ F	10 VDCW. ELECT.	1 D	TRHA-6A	C737	0.025 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 E	2E
C604	10 $\mu$ F	25 VDCW. ELECT.	2 D	TRHA-6A	C738	0.03 $\mu$ F $\pm 10\%$	50 VDCW. My.	3 E	2E
C605	0.003 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 D	TRHA-6A	C801	3 $\mu$ F	25 VDCW. ELECT.	3 D	TRD-6B
C606	0.01 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 D	TRHA-6A	C802	200 $\mu$ F	25 VDCW. ELECT.	4 D	TRD-6B
C607	0.004 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 D	TRHA-6A	C803	300 $\mu$ F	6 VDCW. ELECT.	4 D	TRD-6B
C608	1.5 $\mu$ F	3 VDCW. Ta.	1 E	TRHA-6A	C804	100 $\mu$ F	35 VDCW. ELECT.	4 D	TRD-6B
C609	30 $\mu$ F	10 VDCW. ELECT.	1 E	TRHA-6A	C805	150 pF $\pm 5\%$	50 VDCW. CER.	4 D	TRD-6B
C610	10 $\mu$ F	10 VDCW. ELECT.	1 E	TRHA-6A	C806	200 $\mu$ F	50 VDCW. ELECT.	4 D	TRD-6B
C611	10 $\mu$ F	25 VDCW. ELECT.	2 E	TRHA-6A	C807	0.05 $\mu$ F $\pm 10\%$	50 VDCW. My.	4 D	TRD-6B
C612	0.003 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 F	TRHA-6A	C808	3 $\mu$ F	25 VDCW. ELECT.	3 E	TRD-6B
C613	0.01 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 F	TRHA-6A	C809	200 $\mu$ F	25 VDCW. ELECT.	4 E	TRD-6B
C614	0.004 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 F	TRHA-6A	C810	300 $\mu$ F	6 VDCW. ELECT.	4 E	TRD-6B
C615	0.05 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 D	5H	C811	100 $\mu$ F	35 VDCW. ELECT.	4 E	TRD-6B
C616	0.05 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 D	5H	C812	150 pF $\pm 5\%$	50 VDCW. CER.	4 F	TRD-6B
C617	0.05 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 E	5H	C813	200 $\mu$ F	50 VDCW. ELECT.	4 F	TRD-6B
C618	0.05 $\mu$ F $\pm 10\%$	50 VDCW. My.	1 E	5H	C814	0.05 $\mu$ F $\pm 10\%$	50 VDCW. My.	4 E	TRD-6B
C701	200 pF $\pm 10\%$	50 VDCW. Mc.	2 D	6E	C815	0.5 $\mu$ F $\pm 10\%$	50 VDCW. My.	4 D	TRZ-2C
C702	0.01 $\mu$ F $\pm 10\%$	50 VDCW. My.	2 D	6E	C816	0.5 $\mu$ F $\pm 10\%$	50 VDCW. My.	4 D	TRZ-2C
C703	0.2 $\mu$ F $\pm 10\%$	50 VDCW. My.	2 D	TRM-3A	C817	0.5 $\mu$ F $\pm 10\%$	50 VDCW. My.	4 E	TRZ-2C
C704	50 $\mu$ F	25 VDCW. ELECT.	2 D	TRM-3A	C818	0.5 $\mu$ F $\pm 10\%$	50 VDCW. My.	4 E	TRZ-2C
					C901	0.01 $\mu$ F $\pm 10\%$	50 VDCW. My.	4 F	TRW-3A

A	B	C	D
CR401	38K $\Omega$ Filter & de-emphasis	3 C	TRX-6
CR402	38K $\Omega$ Filter & de-emphasis	3 C	TRX-6
VR201	50K $\Omega$ (B) FM output adjust	5 A	FIF-202U
VR202	50K $\Omega$ (B) FM TUNING Meter adjust	4 A	FIF-202U
VR203	3K $\Omega$ (B) Muting adjust	5 A	FIF-202U
VR301	50K $\Omega$ (B) AM output adjust	4 B	TRAM-3
VR302	10K $\Omega$ (B) AM TUNING Meter adjust	4 A	TRAM-3
VR401	10K $\Omega$ (B) Separation adjust	3 C	4D
VR501	50K $\Omega$ (B) Stereo indicator adjust	4 C	TRI-1A
VR502	100K $\Omega$ (B) Stereo indicator adjust	4 C	TRI-1A
VR701	250K $\Omega$ (B) Main control	2 D	5E
VR702	250K $\Omega$ (B) Main control	2 E	5E
VR703	100K $\Omega$ (A) Treble control	3 D	4E
VR704	100K $\Omega$ (A) Treble control	3 E	4E
VR705	100K $\Omega$ (A) Bass control	3 D	4E
VR706	100K $\Omega$ (A) Bass control	3 E	4E
VR707	125K $\Omega$ (BH) Balance control	3 D	3E
VR708	125K $\Omega$ (BH) Balance control	3 E	3E
VR801	200 $\Omega$ (B) Bias current adjust	4 D	TRD-6B
VR802	200 $\Omega$ (B) Bias current adjust	4 D	TRD-6B
VR803	200 $\Omega$ (B) Bias current adjust	4 F	TRD-6B
VR804	200 $\Omega$ (B) Bias current adjust	4 F	TRD-6B
VR901	10K $\Omega$ (B) Protector adjust	4 F	TRD-3A
VC101	5~24pF FM RF tuning	1 A	FAMT-102U
VC102	5~24pF FM RF tuning	2 A	FAMT-102U
VC103	5~24pF FM RF tuning	2 A	FAMT-102U
VC104	5~18pF FM local oscillator	2 A	FAMT-102U
VC301	10~436pF AM RF tuning	1 B	FAMT-102U
VC302	10~436pF AM RF tuning	1 B	FAMT-102U
VC303	10~436pF AM local oscillator	2 B	FAMT-102U
TC101	2~10pF Trim.	1 A	FAMT-102U
TC102	2~10pF Trim.	2 A	FAMT-102U
TC103	2~10pF Trim.	2 A	FAMT-102U
TC104	3~20pF Trim.	2 A	FAMT-102U
TC301	2~15pF Trim.	1 B	FAMT-102U
TC302	2~15pF Trim.	1 B	FAMT-102U
TC303	2~15pF Trim.	2 B	FAMT-102U
TR001	2SB324 Ge P-N-P Alloy	3 F	TRR-1
TR002	2SC246 (2SD45) Si N-P-N Planar (Mesa)	4 D	7D
TR003	2SC246 (2SD45) Si N-P-N Planar (Mesa)	4 D	5D
TR004	2SC246 (2SD45) Si N-P-N Planar (Mesa)	4 E	1D
TR005	2SC246 (2SD45) Si N-P-N Planar (Mesa)	4 E	3D
TR101	2SA525 Ge P-N-P Mesa	1 A	FAMT-102U
TR102	2SA525 Ge P-N-P Mesa	2 A	FAMT-102U
TR103	2SA525 Ge P-N-P Mesa	2 A	FAMT-102U
TR104	2SC374 Si N-P-N Epitaxial Planar	1 A	FAMT-102U

A	B	C	D
TR201	2SC372 Si N-P-N Epitaxial Planar	3 A	FIF-202U
TR202	2SC372 Si N-P-N Epitaxial Planar	3 A	FIF-202U
TR203	2SC372 Si N-P-N Epitaxial Planar	4 A	FIF-202U
TR204	2SC372 Si N-P-N Epitaxial Planar	4 A	FIF-202U
TR205	2SC372 Si N-P-N Epitaxial Planar	4 A	FIF-202U
TR206	2SC372 Si N-P-N Epitaxial Planar	4 A	FIF-202U
TR207	2SC374 Si N-P-N Epitaxial Planar	5 A	FIF-202U
TR208	2SC374 Si N-P-N Epitaxial Planar	5 A	FIF-202U
TR301	2SA102 Ge P-N-P Drift	1 B	TRAM-3
TR302	2SA102 Ge P-N-P Drift	2 B	TRAM-3
TR303	2SA101 (X) Ge P-N-P Drift	3 B	TRAM-3
TR304	2SA101 (Y) Ge P-N-P Drift	3 B	TRAM-3
TR305	2SC536 Si N-P-N Planar	4 B	TRAM-3
TR401	2SA49 Ge P-N-P Alloy	1 C	TRX-6
TR402	2SB54 Ge P-N-P Alloy	1 C	TRX-6
TR403	2SA49 Ge P-N-P Alloy	2 C	TRX-6
TR404	2SC693 Si N-P-N Planar	3 C	TRX-6
TR405	2SC693 Si N-P-N Planar	3 C	TRX-6
TR406	2SC536 Si N-P-N Planar	4 C	TRX-6
TR407	2SC536 Si N-P-N Planar	4 C	TRX-6
TR501	2SC458 Si N-P-N Planar	4 C	TRI-1A
TR502	2SC458 Si N-P-N Planar	4 C	TRI-1A
TR503	2SB54 Ge P-N-P Alloy	5 C	TRI-1A
TR504	2SC458 Si N-P-N Planar	5 C	TRI-1A
TR505	2SB324 Ge P-N-P Alloy	5 C	TRI-1A
TR601	2SC650 Si N-P-N Epitaxial	1 D	TRHA-6A
TR602	2SC649 Si N-P-N Epitaxial	1 D	TRHA-6A
TR603	2SC650 Si N-P-N Epitaxial	1 E	TRHA-6A
TR604	2SC649 Si N-P-N Epitaxial	1 E	TRHA-6A
TR701	2SC693 Si N-P-N Planar	2 D	TRM-3A
TR702	2SC536 Si N-P-N Planar	2 D	TRM-3A
TR703	2SC693 Si N-P-N Planar	3 D	TRM-3A
TR704	2SC536 Si N-P-N Planar	3 D	TRM-3A
TR705	2SC693 Si N-P-N Planar	2 E	TRM-3A
TR706	2SC536 Si N-P-N Planar	2 E	TRM-3A
TR707	2SC693 Si N-P-N Planar	3 E	TRM-3A
TR708	2SC536 Si N-P-N Planar	3 E	TRM-3A
TR801	2SC536 Si N-P-N Planar	4 D	TRD-6B
TR802	2SC696 Si N-P-N Epitaxial	4 D	TRD-6B
TR803	2SC536 Si N-P-N Epitaxial	4 E	TRD-6B
TR804	2SC292 Si N-P-N Epitaxial	4 E	TRD-6B
TR805	2SC696 Si N-P-N Epitaxial	4 D	TRZ-2C
TR806	2SC696 Si N-P-N Epitaxial	4 D	TRZ-2C
TR807	2SC696 Si N-P-N Epitaxial	4 E	TRZ-2C
TR808	2SC696 Si N-P-N Epitaxial	4 E	TRZ-2C
TR901	2SC458 Si N-P-N Planar	4 F	TRW-3A
D001	SW-0.5a Si Rectifier	2 F	TRR-1
D002	SW-0.5a Si Rectifier	2 F	TRR-1
D003	SW-1(DS-1) Si Bridge rectifier	2 F	DS-1A
D004	SW-1(DS-1) Si Bridge rectifier	2 F	DS-1A
D005	SW-1(DS-1) Si Bridge rectifier	2 F	DS-1A
D006	SW-1(DS-1) Si Bridge rectifier	2 F	DS-1A
D007	SW-1(DS-1) Si Bridge rectifier	2 F	DS-1A

# PARTS LIST

**A:** Parts No.  
**B:** Parts Name  
**C:** Co-ordinates in Schematic Diagram  
**D:** Co-ordinates in Chassis Diagram

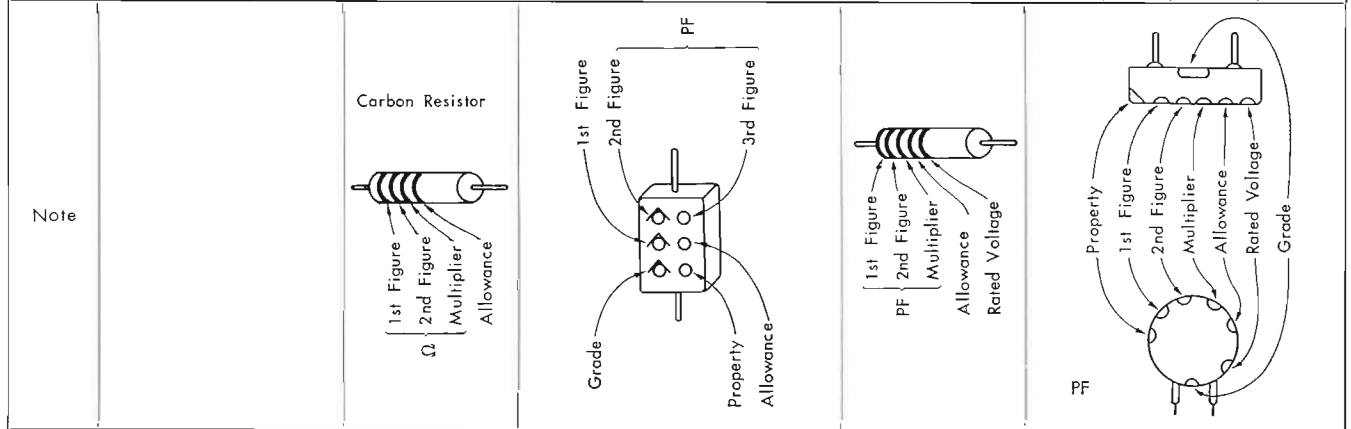
A	B	C	D	A	B	C	D
D008	SW-1(DS-1) Si Bridge rectifier	2 F	DS-1A	T101	FM IFT 10.7MC tuning	2 A	FAMT-102U
D009	SW-1(DS-1) Si Bridge rectifier	2 F	DS-1A	T201	FM IFT 10.7MC tuning	3 A	FIF-202U
D010	SW-1(DS-1) Si Bridge rectifier	2 F	DS-1A	T202	FM IFT 10.7MC tuning	3 A	FIF-202U
D011	SW-0.5a Si Rectifier	2 F	3G	T203	FM IFT 10.7MC tuning	4 A	FIF-202U
D102	IS352M Si FM AFC variable C	2 A	FAMT-102U	T204	FM IFT 10.7MC tuning	4 A	FIF-202U
D201	IN60 Ge Rectifier	4 A	FIF-202U	T205	FM discriminator	5 A	FIF-202U
D202	IN60 Ge Rectifier	4 A	FIF-202U	T206	FM IFT 10.7MC tuning	4 A	FIF-202U
D203	IN60 Ge FM detector	5 A	FIF-202U	T301	14AR-1 AM RF tuning coil	2 B	TRAM-3
D204	IN60 Ge FM detector	5 A	FIF-202U	T302	14AD-1-A AM IFT 455KC tuning	2 B	TRAM-3
D205	IN60 Ge Rectifier	4 A	FIF-202U	T303	14AD-1-B AM IFT 455KC tuning	3 B	TRAM-3
D206	IN60 Ge Rectifier	4 A	FIF-202U	T304	14AD-1-C AM IFT 455KC tuning	3 B	TRAM-3
D301	OA91 Ge AM over damp	2 B	TRAM-3	T401	MPT-20A 19KC tuning trap	1 C	TRX-6
D302	OA91 Ge Rectifier	4 B	TRAM-3	T402	MPT-20B 19KC tuning	2 C	TRX-6
D303	OA91 Ge AM detector	3 B	TRAM-3	T403	MPT-20B 38KC tuning	2 C	TRX-6
D401	OA91 Ge 19KC doubler	2 C	TRX-6	T501	MPT-14A 19KC tuning	4 C	TRI-1A
D402	OA91 Ge 19KC doubler	2 C	TRX-6	T801	(Primary: 500Ω Secondary: 50Ω) driver	4 D	4 C
D403	OA79 Ge Switching	2 C	TRX-6	T802	(Primary: 500Ω Secondary: 50Ω) driver	4 E	1 C
D404	OA79 Ge Switching	2 C	TRX-6				
D405	OA79 Ge Switching	2 C	TRX-6	S1(a~j)	Function		1 A
D406	OA79 Ge Switching	2 C	TRX-6	S2(a~g)	Band		1 A
D501	OA91 Ge	5 C	TRI-1A	S3(a~b)	FM antenna sensitivity	1 A	6 H
D502	SM150 Si	5 C	TRI-1A	S4	AM antenna sensitivity	1 B	7 H
D503	OA91 Ge Reverse current stop	5 C	TRI-1A	S5	Muting	4 A	7 E
D801	SW0.5 Si	4 D	TRD-6B	S6	AFC	5 A	7 E
D802	SW0.5 Si	4 D	TRD-6B	S7(a~b)	Tape monitor	2D, E	6 E
D803	SW0.5 Si	4 E	TRD-6B	S8(a~b)	Mode	2 D	6 E
D804	SW0.5 Si	4 E	TRD-6B	S9(a~b)	Loudness	2D, E	6 E
D805	SW0.5 Si	4 D	TRD-6B	S10(a~b)	Low cut filter	3D, E	2 E
D806	SW0.5 Si	4 D	TRD-6B	S11(a~b)	High cut filter	3D, E	2 E
D807	SW0.5 Si	4 E	TRD-6B	S12(a~b)	Speaker	5 D	2 E
D808	SW0.5 Si	4 E	TRD-6B	S13(a~b)	Impedance	5 D	3 H
D901	SM150 Si Reverse current stop	4 F	TRW-3A	PL001	Pilot lamp F type 6.3V 0.25A	2 F	6 A
D902	IN60 Ge Reverse current stop	4 F	TRW-3A	PL002	Pilot lamp F type 1.3V 0.25A	2 F	3 A
SCR901	2SF656	3 F	TRW-3A	PL003	Meter indicator 8V 0.15A	3 F	4 A
TH501	D-22A	5 C	TRI-1A	PL004	Phone indicator 8V 0.15A	3 F	4 A
L101	FM antenna coil	1 A	FAMT-102U	PL005	Tape indicator 8V 0.15A	3 F	4 A
L102	1μH FM peaking coil	1 A	FAMT-102U	PL006	Power indicator 8V 0.15A	3 F	4 A
L103	FM RF coil	2 A	FAMT-102U	PL401	Protector indicator 25V 90mA	3 F	4 A
L104	FM RF coil	2 A	FAMT-102U	PL501	MPX indicator 8V 0.15A	5 C	7 A
L105	1μH FM peaking coil	2 A	FAMT-102U	F001	F tubular 3A	4 G	4 G
L106	FM local oscillator	1 A	FAMT-102U	F002	Super-quick acting F tubular 1.5A	4 G	4 G
L201	1μH FM chark coil	5 A	FIF-202U	F003	Super-quick acting F tubular 1.5A	4 G	4 G
L301	AM loop stick antenna coil	1 B	1-2D	F004	Super-quick acting F tubular 1.5A	4 G	4 G
L302	14AO-1 AM local oscillator	2 B	TRAM-3	F005	Super-quick acting F tubular 1.5A	2 H	2 H
L303	0.8μH AM peaking coil	1 B	FAMT-102U	S001	Power S	1 E	1 E
L304	0.8μH AM peaking coil	1 B	FAMT-102U	M	Tuning meter 100 μA	4 B	7 A
L305	0.8μH AM peaking coil	2 B	FAMT-102U				
L401	MFC-A SCA 67KC filter	2 C	TRX-6				
L402	MFC-B SCA 71KC filter	2 C	TRX-6				
T001	Power transformer	2 F	7 C				



# COLOR CODE

The color code indicates 10 different colors by the help of the figures of 1 to 9. This code agrees with IEC and JIS.

Color	Common to All Parts			Fixed Resistor Allowance (%)	Mica Capacitor				Paper Capacitor		Ceramic Capacitor				
	1st Figure	2nd Figure	Multiplier		Grade	Property	Allowance (%)	Rated Voltage (V)	Allowance (%)	Rated Voltage (V)	Grade	Property	Allowance (%)	Rated Voltage (V)	
black	0	0	1	± 2	X	A	± 20(M)	300	± 20(M)	100	X	± 20	250		
brown	1	1	10 <sup>1</sup> (10)		Z	B	± 2(G)		± 5(J)	200	500			(Y)	+100 - 0
red	2	2	10 <sup>2</sup> (K)		Y	C			± 5(J)	± 2(G)					
orange	3	3	10 <sup>3</sup>			D	500			± 15(L)					
yellow	4	4	10 <sup>4</sup>		E	1000			+20 -15(V)	600					
green	5	5	10 <sup>5</sup> (M)		F		1000		+40 -15(X)						
blue	6	6	10 <sup>6</sup>		YY	± 10(K)			± 10(Y)	1000					
purple	7	7	10 <sup>7</sup>				YZ								
grey	8	8	10 <sup>8</sup>		± 5	± 10			± 10(K)	1000					
white	9	9	10 <sup>9</sup>				± 10								
gold			10 <sup>-1</sup> (0.1)	± 20	± 20	± 10(K)		1000							
silver			10 <sup>-2</sup> (0.01)				± 20		± 20	± 10(K)	1000				
non-colored				± 20	± 20	± 10(K)		1000							



Property	Temperature Coefficient	Divergency of Capacity	Q tanδ	Insulation Resistance
A	Not specified	Not specified	0.5 under	3000MΩ under
B	Not specified	Not specified		0.5 over
C	-20~+200	±(0.5%+0.5pF)		
D	-100~+100	±(0.3%+0.1pF)		
E	-20~+100	±(0.1%+0.1pF)		
F	0~+70	±(0.05%+0.1pF)		

Grade	Usable Temperature Range	Test Classification
X	-55~+85	I or II
Y	-30~+85	I or II
Z	-30~+85	I

Letter	Allowance
G	± 2
T	± 5
K	± 10
M	± 20

The Sansui logo is centered between two thick black horizontal bars. It features the word "Sansui" in a stylized, italicized serif font, with a registered trademark symbol (®) to its upper right.

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Printed in Japan (57840M4)