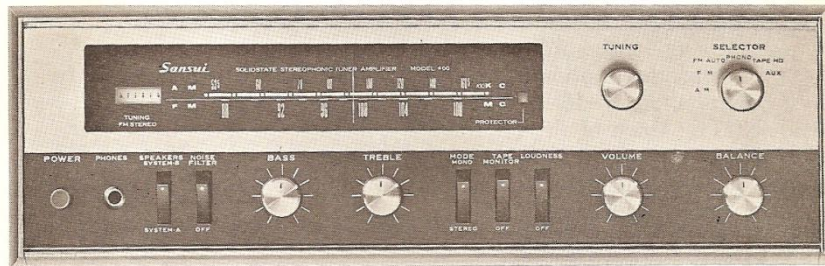

SERVICE MANUAL

SOLID-STATE AM/FM STEREOPHONIC TUNER AMPLIFIER

SANSUI MODEL 400



Sansui®

SANSUI ELECTRIC COMPANY LIMITED

SANSUI

SOLID-STATE am/fm-multiplex STEREO TUNER AMPLIFIER



MODEL-400

HOW TO USE THIS SERVICE MANUAL

1. Look up the type of trouble you are confronted with in either the General Troubleshooting charts provided in this manual from pp 2-11.
2. By referring to the charts, isolate the trouble to a particular unit or part. (See the column titled "What To Do" in the General Chart and "Check Point" in the Troubleshooting Chart)
3. Locate the section of the chassis (Parts Layout P. 13), in which the part is located by using the co-ordinates (Column D) in the Parts List pp. 25-29.
4. Using the co-ordinates given in the Parts List (Column C), pinpoint the position of the part in the Schematic Diagram of Circuits, pp. 15-16.

NOTE: Much of the information contained in this manual has been prepared for use by qualified service repairmen. Please read your Warranty thoroughly before attempting any internal adjustments on your own.

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GENERAL CHART

If the amplifier is otherwise operating satisfactorily, the more common causes of trouble may generally be attributed to the following:

1. Incorrect connections or loose terminal contacts. Check the speakers, record player, tape recorder, antenna and line cord.
2. Improper operation.

Before operating any audio component, be sure to the

manufacturer's instructions.

3. Improper location of audio components. The proper positioning of components, such as speakers and turntable, is vital to stereo.
4. Defective audio components.

The following are some other common causes of malfunction and what to do about them.

PROGRAM	SYMPTOM	PROBABLE CAUSE	WHAT TO DO
AM, FM or FM-MPX reception	A. Constant or intermittent noise heard at certain times or in a certain area	* Discharge or oscillation caused by electrical appliances, such as fluorescent lamp, TV set, A.C. motor, rectifier and oscillator * Natural phenomena, such as atmospheric conditions, statics and thunderbolts * Insufficient antenna input due to reinforced concrete walls of or long distance from the broadcasting station * Wave interference from other electrical appliances	* Attach a noise limiter to the electrical appliance that causes the noise, or attach it to the power source of the amplifier * Install an outdoor antenna and ground the amplifier to raise the signal-to-noise ratio * Reverse the power cord plug-receptacle connections * If the noise occurs at a certain frequency, attach a wave trap to the ANT. input * Keep the set at a proper distance from other electrical appliances
	B. The needle of the tuning indicator does not move well.	See Operating Instructions Manual, "Tuning Indicator" for explanation	Tune the set for maximum signal strength
AM reception	A. Noise heard at a particular time of a day, in a certain area or over part of the dial	Natural phenomenon of AM reception	* Install an antenna for maximum antenna efficiency. See "ANTENNA" in the Operating Instructions manual * In some cases, the noise can be eliminated by grounding the amplifier or reversing the power cord plug-receptacle connections
	B. High-frequency noise	1. Adjacent-channel interference or beat interference 2. TV set too close to the audio system	* 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 NOISE FILTER * Keep the TV set at a proper distance from the audio system
FM reception	A. Noisy	Poor noise limiter effect or too low S/N ratio due to insufficient antenna input Note: FM reception is affected considerably by the broadcasting station's power and antenna efficiency. As a result, you may receive one station quite well while having difficulty in receiving another station.	* Install an antenna (provided) for maximum signal strength * If this is not 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 * An excessively long antenna may cause noise

GENERAL CHART

PROGRAM	SYMPTOM	PROBABLE CAUSE	WHAT TO DO
FM reception (continued)	B. Emission of a scratching sound	* Ignition noise caused by the starting of an automobile engine	* Install the antenna and its lead-in wire at a proper distance from the road or raise the antenna input as previously described.
	C. Distortion or no sound during the reception	* Tuning drift results from the nature of FM	The built-in automatic frequency control prevents distortion during FM reception. If the FM program should be out of tune due to mechanical vibration or other factors, retune it.
	D. Tuning noise between stations	* This noise results from the nature of 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 emits a larger noise	The unit is not at fault. Reduce the sound level before turning the TUNING knob.
FM-MPX stereo reception	A. Noise heard during FM-MPX stereo reception while not heard during FM mono reception	* Weaker signal because the service area of the FM-MPX broadcast is only half that of the FM mono broadcast	* Install an 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	* Improper ventilation. Air circulation is important to the amplifier's performance	* Make sure that air can flow above and below the unit
	C. The stereo indicator goes on and off	* Interference. The indicator is not at fault.	Adjust VR ₅₀₂
	D. The stereo indicator goes on and off even though a stereo station is not received	* Interference. The indicator is not at fault.	Adjust VR ₅₀₂
Record or tape playing	A. Hum or howling	* Record player placed directly on the speaker box * Use of wire other than shielded wire * Loose terminal contact * Shielded wire too close to the line cord, fluorescent lamp or other electrical appliances * Nearby amateur radio station or TV transmission antenna	* Put a cushion between the player and the speaker box or separate them entirely * The connecting cord should be as short as possible * Reduce the bass loudness properly * Consult the nearest Radio Regulatory Bureau
	B. Surface noise	* Worn or old record * Worn pick-up needle * Needle covered with dust * Improper needle pressure	* Turn the TREBLE control properly from midpoint to left * Switch on the NOISE FILTER * Use the pick-up correctly
Over all stereo programs	The BALANCE control is not at the midpoint when equal sound comes from left and right channels	* The BALANCE control should not be always set at midpoint	* Set the control to the position where equal sound comes from both channels * Check for unequal program loudness

TROUBLESHOOTING CHART

OVER ALL PROGRAM SOURCES

SYMPTOM	PROBABLE CAUSE		CHECK POINT
No sound over all program sources	A. Defective speaker	1. Broken speaker cord 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 power cord 4. Loose plug contact 5. Blown fuse If the fuse burns out as soon as it is replaced, the trouble may be attributed to: a. Shorted power transformer; b. Shorted capacitor; c. +B circuit open. 6. Broken primary winding of power transformer	S ₀₀₁ PV ₀₀₁ F ₀₀₁ T ₀₀₁ C ₀₀₁ , C ₀₀₅ Check voltage in B circuit by means of a tester T ₀₀₁
	C. Defective power circuit	Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS"	Measure voltage in power circuit and replace defective element
	D. Defective low-frequency circuit	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" Note: If the PROTECTOR indicator should light up, push the POWER switch OFF and after about 5 seconds push it ON. If the indicator should still light up, push it OFF again and check for shorting of speaker terminals and improper connections between them. 2. Blown fuse If the fuse burns out as soon as it is replaced, the trouble may be attributed to: a. Defective main amplifier section b. Shorted power transistor c. Output terminals in contact with each other 3. Defective transistor 4. Electrolytic condenser, short or open	Measure voltage in low-frequency circuit and replace defective element. F ₀₀₁ , F ₀₀₂ TR ₅₀₁ ~TR ₅₀₂ , TR ₅₀₃ ~TR ₅₀₄ ⊕ and ⊖ terminals of right and left channels Check voltage in each section. Check voltage in each section.
	E. Troubles other than electrical	1. TAPE MONITOR switch in ON position 2. Headphone plugged in jack	Turn the TAPE MONITOR switch OFF. Remove the headphone plug.
Weak sound over all program sources	A. Defective speaker circuit	Shorted voice coil	Check voice coil for short circuit.

TROUBLESHOOTING CHART

OVER ALL PROGRAM SOURCES

SYMPTOM	PROBABLE CAUSE		CHECK POINT
Weak sound over all program sources (continued)	B. Defective power circuit	Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS"	Measure voltage in power circuit and replace defective element
	C. Defective low-frequency circuit	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Insufficient capacity or short-circuit of capacitor 3. Aging transistor	Measure voltage in low-frequency circuit and replace defective element $C_{701} \sim C_{734}, C_{801}, C_{802}$ $TR_{601} \sim TR_{604}, TR_{701} \sim TR_{710}, TR_{801} \sim TR_{804}$
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 "SCHEMATIC DIAGRAM OF CIRCUITS"	Measure voltage in power circuit and replace defective element
	C. Defective low-frequency circuit	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Aging or weak transistor	Measure voltage in low-frequency circuit and replace defective element $TR_{601} \sim TR_{604}, TR_{701} \sim TR_{710}, TR_{801} \sim TR_{804}$
Hum over all program sources	A. Defective power circuit	Insufficient capacity of capacitor	$C_{001} \sim C_{004}, C_{005}, C_{006}, C_{007}$
	B. Defective low-frequency circuit	1. Insufficient capacity of capacitor 2. Fixed resistor blown	$C_{001} \sim C_{004}, C_{005}$ R_{725}, R_{726} and other fixed resistors
Noise over all program sources	A. Defective speaker	1. Defective voice coil 2. Inner contact of speaker components 3. Defective cone or damper	
	B. Defective power circuit	Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS"	Measure voltage in power circuit and replace defective element
	C. Defective low-frequency circuit	1. Aging or weak transistor 2. Defective master volume	$TR_{601} \sim TR_{604}, TR_{701} \sim TR_{710}, TR_{801} \sim TR_{804}$ $VR_{701} \sim VR_{704}$
SPEAKER switch does not work	A. Defective headphone		Check S_{6a} and S_{6b} speaker switches
Noise FILTER switch does not work	A. Defective filter circuit		$C_{717}, C_{718}, S_{3a}, S_{3b}$
LOUDNESS switch does not work	A. Defective loudness circuit		$C_{010} \sim C_{013}, R_{006}, R_{007}$ $VR_{701}, VR_{702}, S_{40a}, S_{40b}$
TONE CONTROL does not work	A. Defective tone control circuit	1. Shorting or disconnection 2. Improper wiring or defective resistor 3. Defective VR	$C_{705} \sim C_{714}$ $R_{200} \sim R_{716}$ $VR_{705} \sim VR_{708}$

AM RECEPTION

SYMPTOM	PROBABLE CAUSE	CHECK POINT
No sound	A. Defective overall section	See "No sound over all program sources"
	B. Defective AM section 1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Aging or defective transistor 3. Aging or defective I.F.T. 4. Detector diode defective 5. Aging or defective capacitor 6. Defective or broken coil 7. Defective resistor	Measure voltage in AM section and replace defective element $TR_{301} \sim TR_{303}$ $T_{302} \sim T_{305}$ $D_{301} \sim D_{303}$ $C_{302}, C_{313}, C_{314}, C_{315}, C_{318}, C_{319}$
	C. Defective equalizer amplifier 1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Shorted capacitor 3. Broken resistor 4. Loose contact of rotary switch	Measure voltage in equalizer amplifier circuit and replace defective element $C_{601}, C_{602}, C_{604}, C_{605}, C_{606}, C_{611}, C_{612}, C_{614}, C_{615}, C_{616}$ $R_{602} \sim R_{607}, R_{615} \sim R_{621}$ $S_{1c} \sim S_{1h}$
Weak sound	A. Weak station signal	See "GENERAL CHART"
	B. Defective overall section	See "Weak sound over all program sources"
	C. Defective AM section 1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Voltage drop in local oscillator 3. Detector diode, aging or weak 4. Too low Q of coil 5. Insufficient capacity of capacitor 6. Aging or weak resistor 7. Divergence in adjustment of: a. Tracking b. I.F.T.	Measure Voltage in AM section and replace defective element $TR_{301}, C_{306}, C_{307}, C_{308}, C_{309}, T_{301}$ D_{302} $L_{301}, T_{301} \sim T_{305}$ $C_{303}, C_{304}, C_{305} \sim C_{311}$ R_{301}, R_{306} Use measuring instruments for optimum adjustment $TC_{301}, TC_{302}, L_{301}, T_{301}$ $T_{302} \sim T_{305}$
	D. Defective equalizer amplifier 1. Divergence or voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Insufficient capacity of capacitor 3. Loose contact of rotary switch	Measure voltage in equalizer amplifier circuit and replace defective element $C_{601}, C_{603}, C_{605}, C_{606}, C_{611}, C_{613}, C_{615}, C_{616}$ $S_{1c} \sim S_{1h}$
Distortion	A. Defective overall section	See "Distortion over all program sources"

TROUBLESHOOTING CHART

AM RECEPTION

SYMPTOM	PROBABLE CAUSE		CHECK POINT
Distortion (continued)	B. Defective AM section	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Detector diode, aging or weak 3. Insufficient capacity of capacitor 4. Divergence in adjustment 5. Defective resistor 6. Excessive antenna input	Measure voltage in AM section and replace defective element D ₃₀₁ , D ₃₀₂ C ₃₀₈ , C ₃₁₅ , C ₃₁₈ , C ₃₁₉ See "Weak sound" Turn ANTENNA switch to DIST
	C. Defective equalizer amplifier	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Capacitor, short or broken 3. Defective resistor 4. Defective transistor	Measure voltage in equalizer amplifier circuit and replace defective element C ₆₀₁ , C ₆₀₃ , C ₆₀₅ , C ₆₀₆ , C ₆₁₁ , C ₆₁₃ , C ₆₁₅ , C ₆₁₆ R ₆₀₂ ~R ₆₁₂ , R ₆₁₅ ~R ₆₂₅ TR ₆₀₁ ~TR ₆₀₄
Hum	A. Defective overall section		See "Hum over all program sources"
	B. Defective AM section	Insufficient capacity of capacitor	C ₀₀₇ , C ₀₀₈ , C ₃₁₂ , C ₃₁₆ , C ₃₀₃
	C. Defective equalizer amplifier	Insufficient capacity of capacitor	C ₀₀₄
Noise	A. Amplifier is O.K.		See "GENERAL CHART"
	B. Defective overall section		See "Noisy over all program sources"
	C. Defective AM section	1. Aging or defective transistor 2. Loose contact of rotary switch 3. Broken antenna lead or shorted variable capacitor	TR ₃₀₁ ~TR ₃₀₃ , TR ₆₀₁ ~TR ₆₀₄ S _{1e} ~S _{1h} , S _{1j} L ₃₀₁ , VC ₃₀₁

FM MPX STEREO RECEPTION

SYMPTOM	PROBABLE CAUSE		CHECK POINT
No sound	A. Defective overall section		See "No sound over all program sources"
	B. Defective FM or FM STEREO section	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Defective transistor 3. Disconnected resistor	Measure voltage in FM or FM STEREO section and replace defective element TR ₁₀₁ ~TR ₁₀₃ , TR ₂₀₁ ~TR ₂₀₄ , TR ₄₀₁ , TR ₄₀₇ , TR ₅₀₁ ~TR ₅₀₅ Check resistors in each circuit

FM MPX STEREO RECEPTION

SYMPTOM	PROBABLE CAUSE		CHECK POINT
No sound (continued)		4. Aging capacitor 5. Defective IFT 6. Broken coil 7. Defective CR 8. Defective local oscillator	Check capacitors in each circuit $T_{101}, T_{201} \sim T_{204}, T_{401} \sim T_{403}$ $L_{101} \sim L_{103}, L_{201}, L_{401}, L_{402}$ CR_{401}, CR_{402} $TR_{102}, C_{105}, C_{108}, C_{109}$
Weak sound	A. Weak station signal		See "GENERAL CHART"
	B. Defective overall section		See "Weak sound over all program sources"
	C. Defective FM or FM STEREO section	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Poor Q of coil 3. Divergence adjustment of coil 4. Insufficient capacity of capacitor 5. Loose contact of rotary switch 6. Aging transistor 7. Aging diode 8. Defective local oscillator 9. Divergence in adjustment of: a. Tracking b. IFT	Measure voltage in FM or FM STEREO section and replace defective element $L_{101} \sim L_{103}, T_{101}, T_{201} \sim T_{204}$ $T_{401} \sim T_{405}$ Check capacitors in each circuit S_{1b}, S_{1j} $TR_{101} \sim TR_{103}, TR_{201} \sim TR_{204}, TR_{401} \sim TR_{407}, TR_{501} \sim TR_{505}$ $D_{201} \sim D_{204}, D_{401} \sim D_{406}, D_{501} \sim D_{503}$ $TR_{102}, C_{108}, C_{110}, L_{103}$ Use measuring instruments for optimum adjustment $TC_{101} \sim TC_{103}, L_{101} \sim L_{103}$ $T_{101}, T_{201} \sim T_{204}, T_{401} \sim T_{403}$
Distortion	A. Defective overall section		See "Distortion over all program sources"
	B. Defective FM or FM STEREO section	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Defective diode 3. Insufficient capacity of capacitor 4. Transistor bias 5. Divergence in adjustment of: a. Tracking b. IFT c. Multiplex coil	Measure voltage in FM or FM STEREO section and replace defective element $D_{203} \sim D_{206}, D_{403} \sim D_{406}$ Check capacitors in each circuit Check bias resistors in each circuit Use measuring instruments for optimum adjustment $TC_{101} \sim TC_{103}, L_{101} \sim L_{103}$ $T_{101}, T_{201} \sim T_{204}$ $T_{401} \sim T_{403}, VR_{401}$
Hum	A. Defective overall section		See "Hum over all program sources"
	B. Defective FM or FM STEREO section	Insufficient capacity of capacitor	$C_{003}, C_{205}, C_{216}, C_{420}$

TROUBLESHOOTING CHART

FM MPX RECEPTION

SYMPTOM	PROBABLE CAUSE	CHECK POINT
Noisy	A. Amplifier is O.K.	See "GENERAL CHART"
	B. Defective overall section	See "Noise over all program sources"
	C. Defective FM or FM STEREO section 1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Aging or weak transistor 3. Defective multiplex coil 4. Resistor, rubbing or blown 5. Insufficient capacity of capacitor 6. Malfunction of auto mechanism 7. Loose contact of rotary switch	Measure voltage in FM or FM-STEREO section and replace defective element TR ₁₀₁ ~TR ₁₀₃ , TR ₂₀₁ ~TR ₂₀₄ , TR ₄₀₁ ~TR ₄₀₃ T ₄₀₁ ~T ₄₀₃ Check resistors in each circuit C ₂₁₈ , C ₄₁₈ , C ₄₁₉ , C ₄₂₁ , C ₄₂₂ , C ₄₂₅ , C ₄₂₆ , C ₄₃₁ , C ₄₃₂ TR ₅₀₁ ~TR ₅₀₄ , C and R S _{1b} , S _{1j}
No stereo sound (The STEREO indicator lamp does not glow orange)	A. Subcarrier amplifying circuit defective 1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Aging or weak transistor 3. Aging or weak diode 4. Defective multiplex coil 5. Defective resistor 6. Insufficient capacity or shorting of capacitor 7. Divergence in adjustment of half-fixed resistor 8. Divergence in adjustment of: a. FM stereo circuit b. Indicator circuit 9. Defective pilot lamp	Measure voltage in subcarrier amplifying circuit (stereo indicator section) and replace defective element TR ₄₀₁ ~TR ₄₀₇ , TR ₅₀₁ ~TR ₅₀₅ D ₄₀₁ ~D ₄₀₆ , D ₅₀₁ ~D ₅₀₃ T ₄₀₁ ~T ₄₀₃ , T ₅₀₁ R ₄₀₇ ~R ₄₃₈ , R ₅₀₁ ~R ₅₁₁ C ₄₀₆ ~C ₄₃₂ , C ₅₀₁ ~C ₅₀₅ VR ₄₀₁ , VR ₅₀₁ , VR ₅₀₂ Use measuring instruments for optimum adjustment T ₄₀₁ ~T ₄₀₃ , T ₅₀₁ PL ₅₀₁
Poor channel separation	A. Defective FM stereo section 1. Same as above (1~8) 2. Defective coil or diode in FM stereo section	Check as above (1~8) Readjust or replace VR ₄₀₁
Stereo indicator changes in color between green and orange even when stereo program is not received	A. Amplifier is O.K.	See "GENERAL CHART"
	B. Divergence in adjustment of stereo indicator circuit: a. Aging or weak transistor in stereo indicator circuit b. Divergence in adjustment of circuit for protecting against malfunction of input	T ₅₀₁ , VR ₅₀₁ ~VR ₅₀₂ TR ₅₀₃ ~TR ₅₀₅ VR ₅₀₁ , VR ₅₀₂
Tuning meter does not work normally	A. Defective FM tuner	Check as above
	B. Defective tuning indicator circuit	D ₂₀₁ , D ₂₀₂ , C ₀₁₈ , R ₂₂₈
	C. Loose contact of function selector switch	S _{1a}

FOR USE WITH A RECORD PLAYER (MAGNETIC) OR A 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. Defective equalizer amplifier	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Insufficient capacity or capacitor 3. Loose contact of rotary switch 4. Loose contact of input terminal or pin plug 5. Defective resistor	Measure voltage in equalizer amplifier section and replace defective element $C_{601}, C_{602}, C_{604} \sim C_{606}, C_{611}, C_{612}, C_{614}$ $S_{1c} \sim S_{1h}$ $R_{602} \sim R_{607}, R_{615} \sim R_{621}$
Weak sound	A. Program source defective		Check and repair or replace
	B. Defective overall section		See "Weak sound over all program sources"
	C. Defective equalizer amplifier	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Divergence of capacity of capacitor 3. Loose contact of rotary switch 4. Loose contact of input terminal or pin plug	Measure voltage in equalizer amplifier section and replace defective element $C_{601}, C_{603}, C_{605}, C_{611}, C_{613}, C_{615}, C_{616}$ $S_{1c} \sim S_{1h}$ Check and repair
Distortion	A. Program source defective		Check and repair or replace
	B. Defective overall section		See "Distortion over all program sources"
	C. Defective equalizer amplifier	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Capacitor, shorted or blown 3. Defective resistor 4. Weak or aging transistor	Measure voltage in equalizer amplifier and replace defective element $C_{601}, C_{603}, C_{605}, C_{606}, C_{611}, C_{613}, C_{615}, C_{616}$ $R_{602} \sim R_{612}, R_{615} \sim R_{625}$ $TR_{601} \sim TR_{604}$
Hum	A. Program source defective		Check and repair or replace
	B. Amplifier is O.K.	Improper connections	See "GENERAL CHART"
	C. Defective overall section		See "Hum over all program sources"
	D. Defective equalizer amplifier	Insufficient capacity of capacitor	C_{604}
Noise	A. Program source defective		Check and repair or replace
	B. Amplifier is O.K.		See "GENERAL CHART"

TROUBLESHOOTING CHART

FOR USE WITH A RECORD PLAYER (MAGNETIC) OR A TAPE DECK

SYMPTOM	PROBABLE CAUSE	CHECK POINT
Noisy	C. Defective overall section	See "Noise over all program sources"
	D. Defective equalizer amplifier	1. Divergence of voltage specified in "SCHEMATIC DIAGRAM OF CIRCUITS" 2. Capacitor, shorted or blown 3. Defective resistor 4. Weak or aging transistor
		Measure voltage in equalizer amplifier and replace defective element $C_{601} \sim C_{606}$, $C_{611} \sim C_{616}$ $R_{601} \sim R_{612}$, $R_{614} \sim R_{625}$ TR_{601} , TR_{602}

OTHER PROGRAM SOURCES

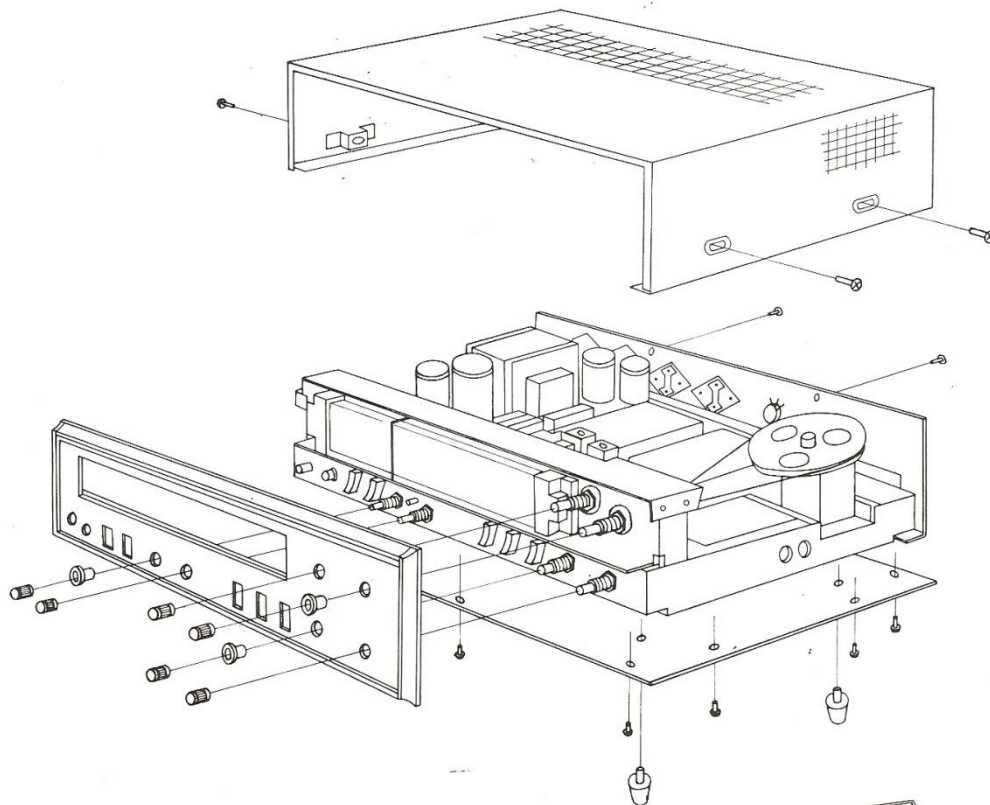
SYMPTOM	PROBABLE CAUSE	CHECK POINT
When you will listen to TV or other sound outputs, the unit does not work normally	1. Defective program source 2. Improper or incorrect connections 3. Defective overall section	Check the program source Check for improper or incorrect connections See "OVER ALL PROGRAM SOURCES"
The unit does not work normally for use with a pin-plug tape recorder	1. Defective program source 2. Improper or incorrect connections 3. Defective overall section	Check the program source. Check for improper or incorrect connections See "OVER ALL PROGRAM SOURCES"
The unit does not work normally for use with a single connector (German standard) tape recorder	1. Defective program source 2. Improper or incorrect connections 3. Defective overall section 4. Defective input circuit	Check the program source Check for improper or incorrect connections See "OVER ALL PROGRAM SOURCES" DIN connector $R_{015} \sim R_{021}$

RECORDING ON TAPE

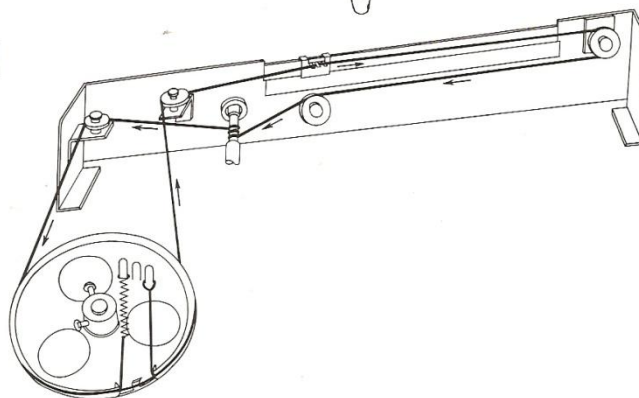
SYMPTOM	PROBABLE CAUSE	CHECK POINT
Broadcast is not recorded well	1. Defective tape or tape recorder 2. Improper or incorrect connections 3. AM, FM or FM-STEREO program source defective	Check and repair or replace
Poor recording from record or tape	1. Defective tape or tape recorder 2. Improper or incorrect connections 3. RECORD PLAYER, TAPE HEAD or AUX input defective 4. Defective equalizer amplifier	Check and repair or replace Check and repair See "FOR USE WITH A RECORD PLAYER OR A TAPE DECK: Defective head amplifier"

GENERAL DISASSEMBLY PROCEDURE

REMOVING THE FRONT PANEL, BONNET AND BOTTOM PLATE

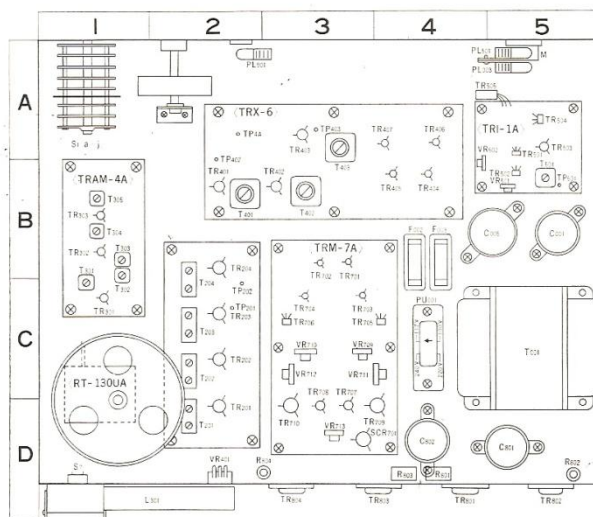


DIAL MECHANISM

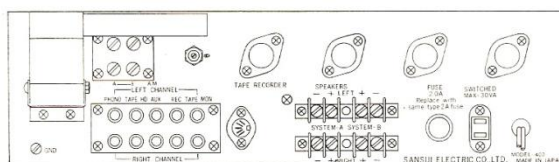


TOP VIEW OF UPPER CHASSIS

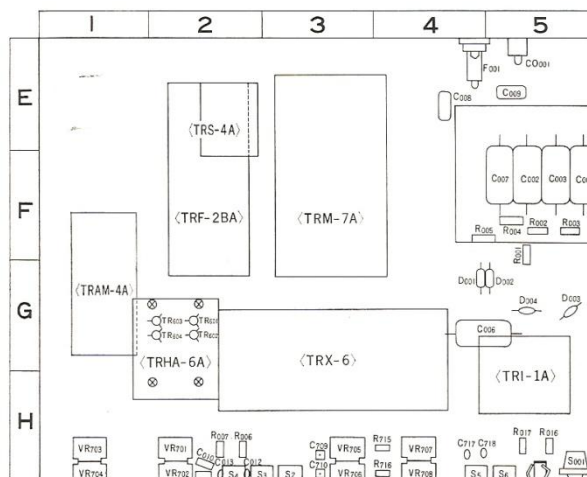
TOP VIEW OF UPPER CHASSIS



SIDE VIEW OF BACK PANEL

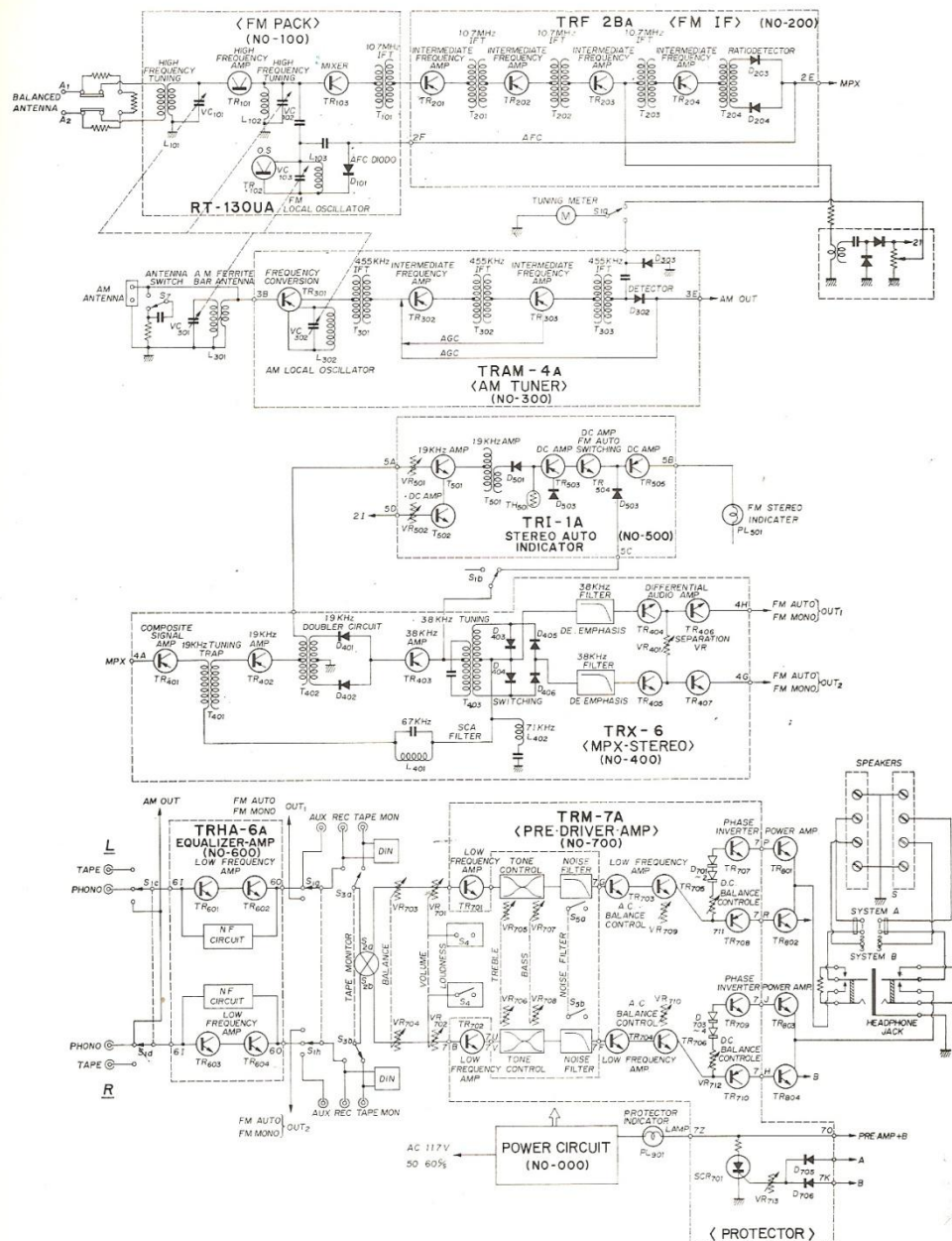


TOP VIEW OF LOWER CHASSIS

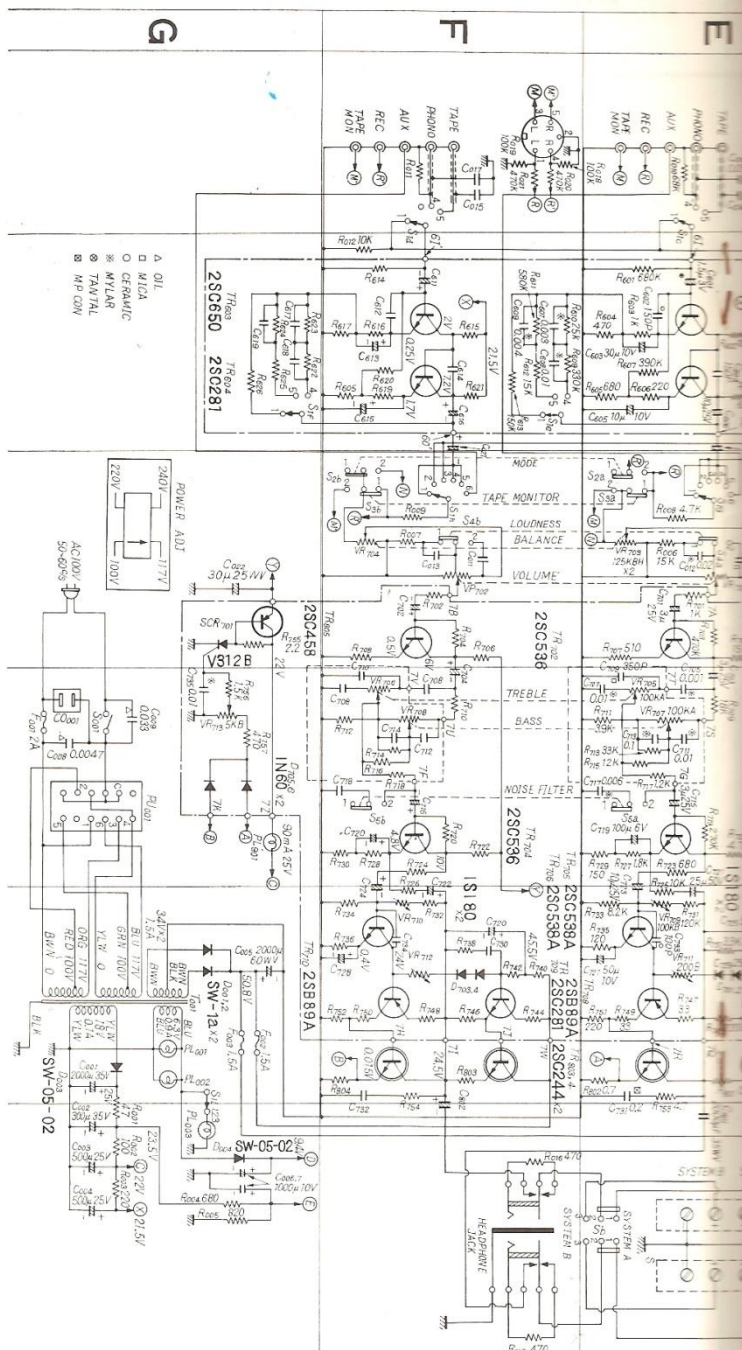


BLOCK DIAGRAM OF PRINTED CIRCUIT

(See "PRINTED CIRCUIT SHEETS"—P. 22)



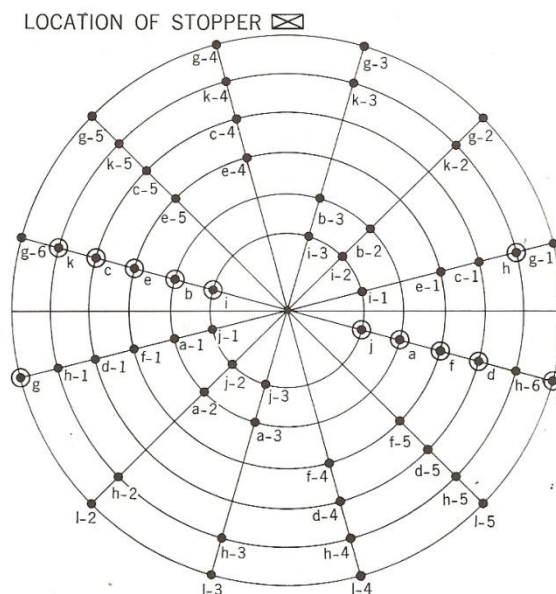
SCHEMATIC DIAGRAM OF CIRCUITS.



SELECTOR SWITCH CHART

Remove the bonnet and look at the switch 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 are located to the back of the amplifier.

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



SELECTOR SWITCH

$S_1 (a \sim j)$

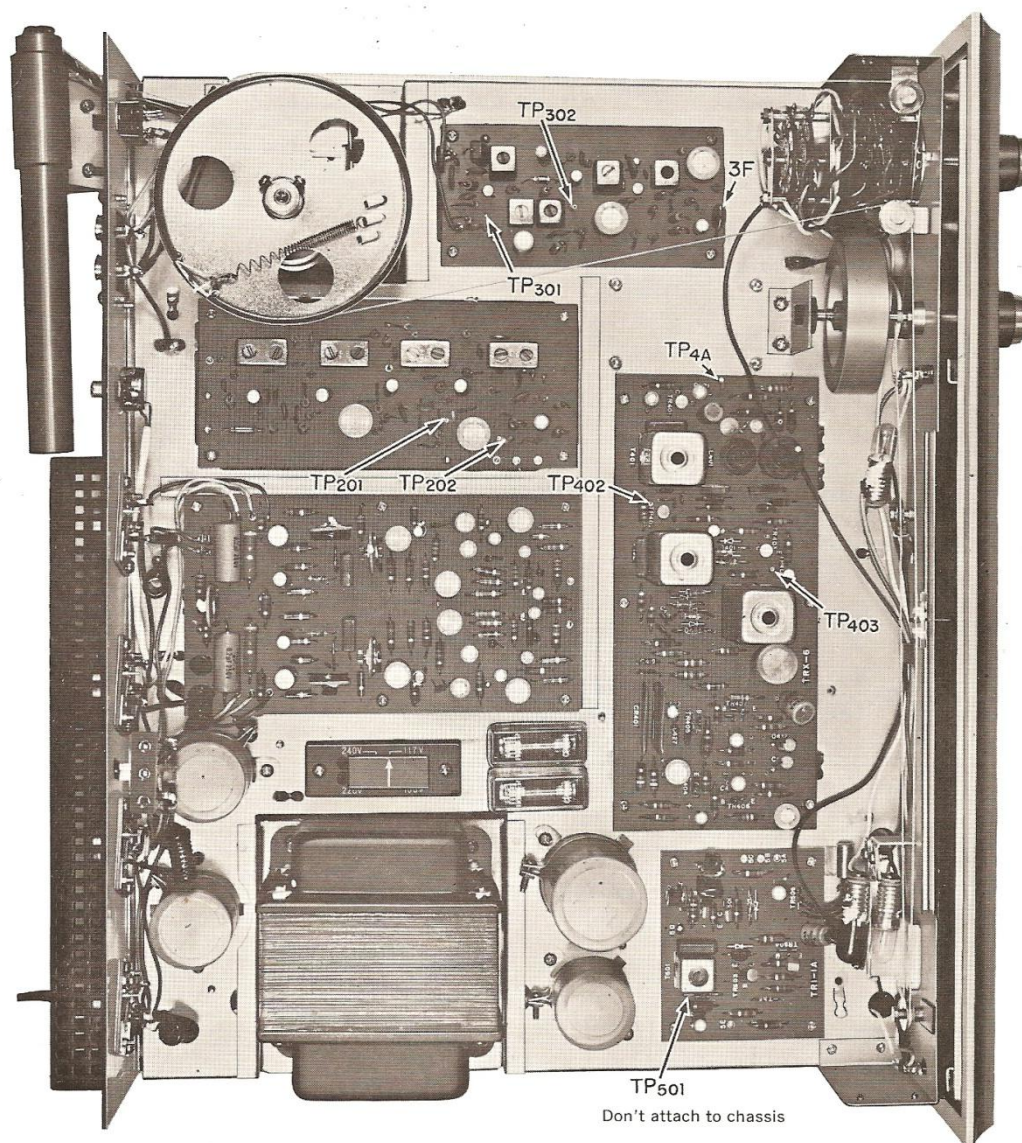
POSITION OF SWITCHES

(Co-ordinate numbers and letters in the circuit diagram)

$S_{1a} \dots 4 B$	$S_{1f} \dots 2 G$
$S_{1b} \dots 2 C$	$S_{1g} \dots 3 E$
$S_{1c} \dots 1 E$	$S_{1h} \dots 3 F$
$S_{1d} \dots 1 F$	$S_{1i} \dots 6 G$
$S_{1e} \dots 2 F$	$S_{1j} \dots 6 F$

ALIGNMENT

TEST POINTS



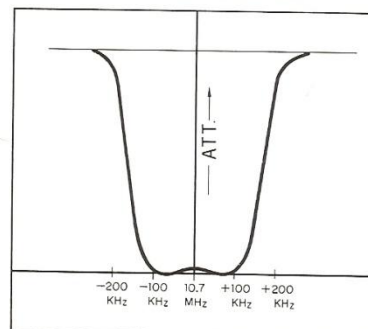
ALIGNMENT

ALIGNMENT PROCEDURE FOR FM TUNER

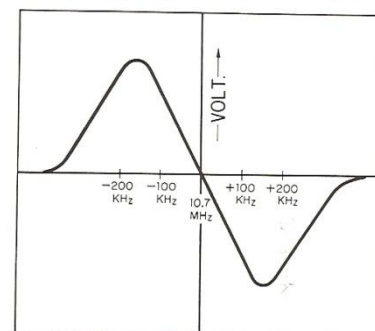
Note: To align, set the FM Signal Generator level to minimum

STEP	ALIGN	SIGNAL GENERATOR	FEED SIGNAL	DETECTOR OUTPUT	DIAL SETTING	ADJUST	ADJUST FOR
1.	IF transformer	10.7MHz ± 200 KHz sweep generator	Antenna terminal	Connect oscilloscope to Test Point TP ₂₀₁ through 0.02 μ F ceramic capacitor		Primary and secondary of IF transformer (T ₁₀₁ , T ₂₀₁ , T ₂₀₂ , T ₂₀₃)	Best wave form
2.	Discriminator	10.7MHz ± 200 KHz sweep generator	Antenna terminal	Connect oscilloscope to TP ₂₀₂ through CR circuit as shown right		Primary and secondary of discriminator transformer (T ₂₀₄)	S curve 
3.	Local oscillator	FM signal generator 88MHz, 400Hz, 100% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal (8 ohms)	88MHz	Local oscillator coil (L ₁₀₃)	Maximum wave form
4.	Local oscillator	FM signal generator 108MHz, 400Hz, 100% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal (8 ohms)	108MHz	Local oscillator trimmer capacitor (TC ₁₀₃)	Maximum wave form
5.	Same as steps 3 and 4						
6.	High-frequency amp. circuit	FM signal generator 88MHz, 400Hz, 100% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal (8 ohms)	88MHz	Antenna coil (L ₁₀₂ and L ₁₀₄)	Maximum wave form
7.	High-frequency amp. circuit	FM signal generator 108MHz, 400Hz, 100% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal (8 ohms)	108MHz	Trimmer capacitor (TC ₁₀₁ and TC ₁₀₂)	Maximum wave form
8.	Same as steps 6 and 7						
9.	Antenna	FM signal generator 98MHz, 400Hz, 100% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal (8 ohms)	98MHz	Antenna coil (L ₁₀₁)	Maximum wave form

FM IF CHARACTERISTIC



FM DISCRIMINATOR CHARACTERISTIC



ALIGNMENT PROCEDURE FOR FM MPX AND INDICATOR

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

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

STEP	ALIGN	SIGNAL GENERATOR	FEED SIGNAL	DETECTOR OUTPUT	ADJUST	ADJUST FOR
1.	67KHz trap	Audio signal generator, 67KHz	TP _{4A}	Connect V.T.V.M. to TP ₄₀₁	L ₄₀₁ (MFC-A)	Minimum wave form
2.	71KHz trap	Audio signal generator, 71KHz	TP _{4A}	Connect V.T.V.M. to TP ₄₀₁	L ₄₀₂ (MFC-B)	Minimum wave form
3.	19KHz tuning coil	1) FM signal generator, 98MHz, 60dB 2) Stereo signal generator, 100% modulation of composite signal (L or R) including pilot signal	Antenna terminal	Connect oscilloscope and V.T.V.M. to TP ₄₀₂	T ₄₀₁ (MPT-20A)	Maximum wave form
4.	19KHz tuning coil	1) FM signal generator, 98MHz, 60dB 2) Stereo signal generator, 100% modulation of composite signal (L or R) including pilot signal	Antenna terminal	Connect oscilloscope and V.T.V.M. to: 1) TP ₄₀₂ or 2) Lead on coil side of D ₄₀₁ and D ₄₀₂	T ₄₀₂ (MPT-20B)	1) Maximum point of upper and lower cores connected 2) Maximum wave form
5.	19KHz tuning coil	1) FM signal generator, 98MHz, 60dB 2) Stereo signal generator, 100% modulation of composite signal (L or R) including pilot signal	Antenna terminal	Connect V.T.V.M. to TP ₅₀₁	T ₅₀₁ (MPT-14A)	1) Maximum wave form 2) In this case, VR ₅₀₁ and VR ₅₀₂ should be at central point of the operation of the indicator
6.	38KHz tuning coil	1) FM signal generator, 98MHz, 60dB 2) Stereo signal generator, 100% modulation of composite signal (L or R) including pilot signal	Antenna terminal	Connect oscilloscope and V.T.V.M. to: 1) TP ₄₀₃ or 2) Lead on coil side of D ₄₀₃ ~D ₄₀₆	T ₄₀₃ (MPT-20B)	1) Maximum point of upper and lower cores connected 2) Maximum wave form
7.	38KHz tuning coil Separation VR	1) FM signal generator, 98MHz, 60dB 2) Stereo signal generator, 100% modulation of composite signal (L or R) including pilot signal	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal	T ₄₀₃ (MPT-20B) VR ₄₀₁	1) Observe the wave form of the L channel output and adjust it to maximum within $\frac{1}{4}$ turn of T ₄₀₃ 2) Adjust the separation VR (VR ₄₀₁) for optimum separation

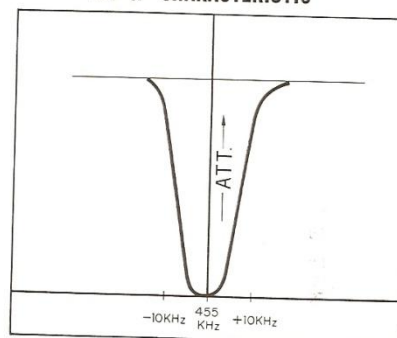
ALIGNMENT

ALIGNMENT FOR AM TUNER

Note: To align, set the AM Signal Generator level to minimum

STEP	ALIGN	SIGNAL GENERATOR	FEED SIGNAL	DETECTOR OUTPUT	DIAL SETTING	ADJUST	ADJUST FOR
1.	IF transformer	Sweep generator, 455KHz $\pm$ 30KHz	Antenna terminal	Connect oscilloscope to TP _{3F}	Set to the position in which the generator is not affected during the broadcast	Primary and secondary of IF transformer (T ₃₀₂ ~T ₃₀₅)	Best wave form
2.	Local oscillator	AM signal generator, 535KHz, 400Hz, 30% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal	535KHz	Local oscillator coil (T ₃₀₁)	Maximum wave form
3.	Local oscillator	AM signal generator, 1605KHz, 400Hz, 30% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal	1605KHz	Local oscillator trimmer capacitor (TC ₃₀₂)	Maximum wave form
4.	Same as steps 2 and 3						
5.	High-frequency amp	AM signal generator, 600KHz, 400Hz, 30% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal	600KHz	Ferrite bar antenna coil (L ₃₀₁)	Maximum wave form
6.	High-frequency amp	AM signal generator, 1400KHz, 400Hz, 30% modulation	Antenna terminal	Connect oscilloscope and V.T.V.M. to load terminal	1400KHz	Trimmer capacitor (TC ₃₀₁)	Maximum wave form
7.	Same as steps 5 and 6 Check 1,000 KHz as well and adjust so that there is not a remarkable difference in sensitivity between them						

AM IF CHARACTERISTIC



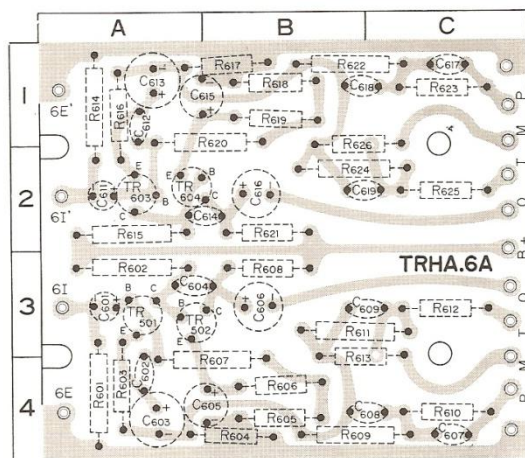
PRINTED-CIRCUIT SHEETS

(See "BLOCK DIAGRAM OF PRINTED CIRCUITS"—P. 14)

HEAD AMPLIFIER (TRHA-6A)

POSITION OF PARTS

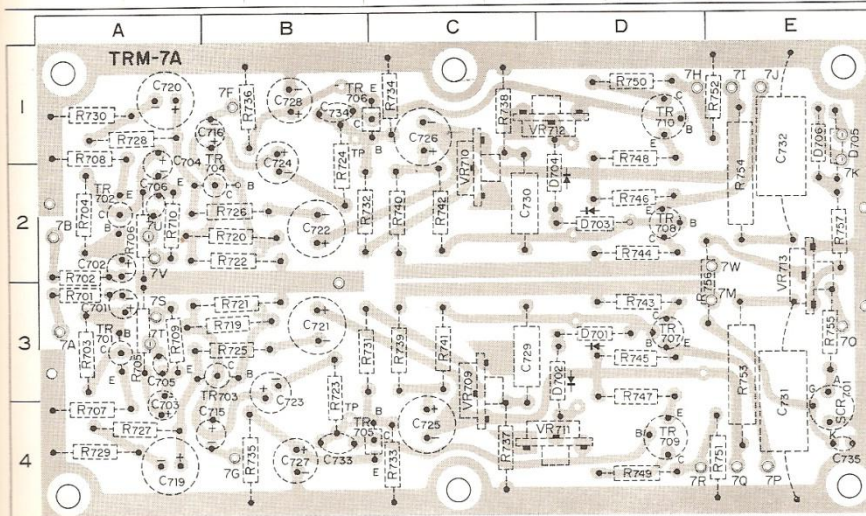
R601...4 A	R614...1 A	C601...3 A	C615...1 A
R602...3 A	R615...2 A	C602...4 A	C616...2 B
R603...4 A	R616...1 A	C603...4 A	C617...1 C
R604...4 B	R617...1 B	C604...3 A	C618...1 B
R605...4 B	R618...1 B	C405...4 A	C619...2 B
R606...4 B	R619...1 B	C606...3 B	
R607...4 B	R620...1 B	C607...4 C	TR601...3 A
R608...3 B	R621...2 B	C608...4 B	TR602...3 A
R609...4 B	R622...1 B	C609...3 B	TR603...2 A
R610...4 C	R623...1 C	C611...2 A	TR604...2 A
R611...3 B	R624...2 B	C612...1 A	
R612...3 C	R625...2 C	C613...1 A	
R613...4 B	R626...2 B	C614...2 A	



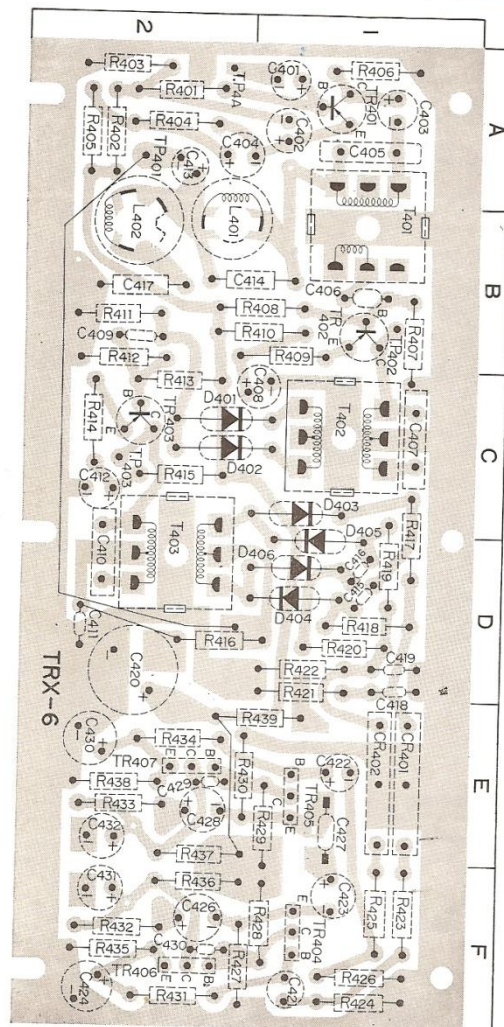
CONTROL AMPLIFIER (TRM-7A)

POSITION OF PARTS

R701...3 A	R722...2 B	R735...4 B	R750...1 D	C705...3 A	C728...1 B	VR713...3 D	D702...3 D
R702...2 A	R723...4 B	R736...1 B	R751...4 E	C706...2 A	C729...3 C	TR701...3 A	D703...2 D
R703...3 A	R724...2 B	R737...4 C	R752...1 E	C715...4 B	C730...2 C	TR702...2 A	D704...2 D
R704...2 A	R725...3 B	R738...1 C	R753...3 E	C716...1 B	C731...4 E	TR703...3 B	D705...1 E
R705...3 A	R726...2 B	R739...3 C	R754...2 E	C719...4 A	C732...1 E	TR704...2 B	D706...1 E
R706...2 A	R727...4 A	R740...2 C	R755...3 E	C720...1 A	C733...4 B	TR705...4 C	
R707...4 A	R728...1 A	R743...3 D	R756...3 D	C721...3 B	C734...1 B	TR706...1 C	SCR701...4 E
R708...1 A	R729...4 A	R744...2 D	R757...2 E	C722...2 B	C735...4 E	TR707...3 D	
R709...3 A	R730...1 A	R745...3 D		C723...3 B		TR708...2 D	
R710...2 A	R731...3 B	R746...2 D	C701...3 A	C724...2 B	VR709...3 C	TR709...4 D	
R719...3 B	R732...2 B	R747...4 D	C702...2 A	C725...4 C	VR710...2 C	TR710...1 D	
R720...2 B	R733...4 C	R748...1 D	C703...4 A	C726...1 C	VR711...4 D	D701...3 D	
R721...3 B	R734...1 C	R749...4 D	C704...2 A	C727...4 B	VR712...1 D		



PRINTED-CIRCUIT SHEETS



FM MULTIPLEX (TRX-6)

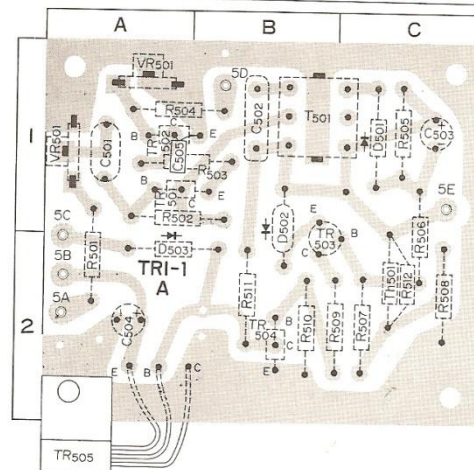
POSITION OF PARTS

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

STEREO INDICATOR (TRI-1A)

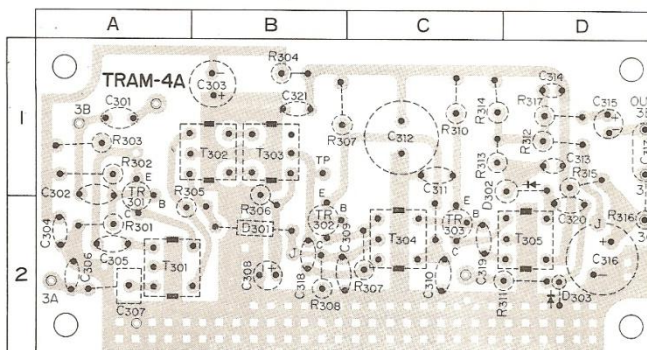
POSITION OF PARTS

R501...2 A	R509...2 C	C505...1 A	TR504...2 B
R502...1 A	R510...2 C	VR501...1 A	TR505...2 A
R503...1 A	R511...2 B	VR502...1 A	
R504...1 A			D501...1 C
R505...1 C	C501...1 A	T501...1 B	D502...1 B
R506...1 C	C502...1 B	TR501...1 A	D503...2 A
R507...2 C	C503...1 C	TR502...1 A	
R508...2 C	C504...2 A	TR503...2 B	Th501...2 C



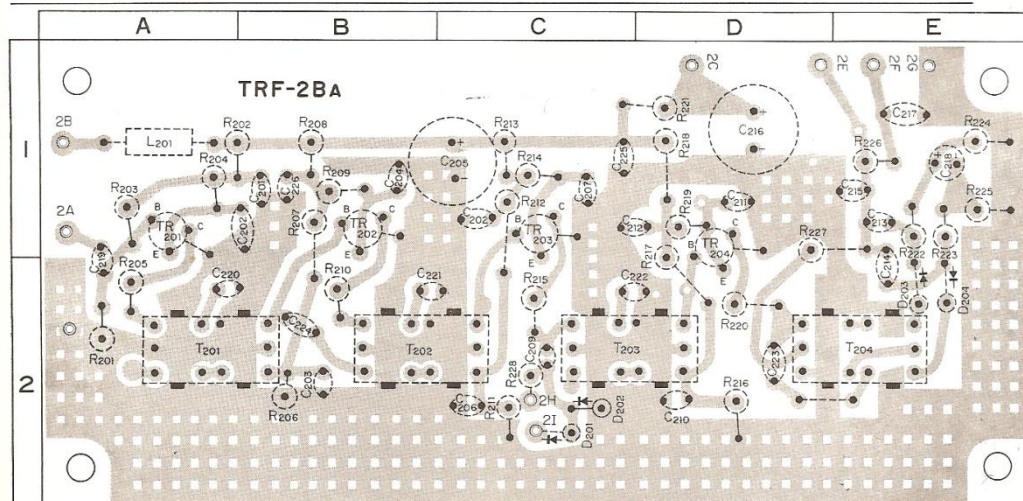
POSITION OF PARTS

R301...2 A	R317...1 D	C315...1 D
R302...1 A		C316...2 D
R303...1 A	C301...1 A	C317...1 D
R304...1 B	C302...1 A	C318...2 B
R305...2 A	C303...1 B	C319...2 C
R306...1 B	C304...2 A	C320...2 D
R307...2 C	C305...2 A	C321...1 B
R308...2 B	C306...2 A	
R309...1 B	C307...2 A	T301...2 A
R310...1 C	C308...2 B	T302...1 B
R311...2 C	C309...2 B	T303...1 B
R312...1 D	C310...2 C	T304...2 C
R313...1 C	C311...1 C	T305...2 D
R314...1 C	C312...1 C	TR301...2 A
R315...1 D	C313...1 D	TR302...2 B
R316...2 D	C314...1 D	TR303...2 C



POSITION OF PARTS

R201....2 A	R210....2 B	R219....1 D	R228....2 C	C208....1 C	C217....1 E	C226....1 B	TR201....1 A
R202....1 A	R211....2 C	R220....2 D		C209....2 C	C218....1 E		TR202....1 B
R203....1 A	R212....1 C	R221....1 D	C201....1 B	C210....2 D	C219....2 A	T201....2 A	TR203....1 C
R204....1 A	R213....1 C	R222....1 E	C202....1 B	C211....1 D	C220....2 A	T202....2 B	TR204....1 D
R205....2 A	R214....1 C	R223....1 E	C203....2 B	C212....1 D	C221....2 B	T203....2 C	
R206....2 B	R215....2 C	R224....1 E	C204....1 B	C213....1 E	C222....2 C	T204....2 E	D201....2 C
R207....1 B	R216....2 D	R225....1 E	C205....1 C	C214....1 E	C223....2 D		D202....2 C
R208....1 B	R217....1 D	R226....1 E	C206....2 C	C215....1 E	C224....2 B	L201....1 A	D203....2 E
R209....1 B	R218....1 D	R227....1 D	C207....1 C	C216....1 D	C225....1 C		D204....2 E



PARTS LIST

A: Parts No.
B: Parts Name
C: Position of Parts (Co-ordinates in "SCHEMATIC DIAGRAM OF CIRCUITS")
D: Position of Parts (Co-ordinates in "PARTS LAYOUT" or by name of printed circuit)

A	B	C	D	A	B	C	D
R001	47Ω 1/2W ±10% Solid Fixed Resistor	6G 5G		R223	1KΩ 1/2W ±10% Solid Fixed Resistor	5A	TRF-2BA
R002	100Ω 1/2W ±10% Solid Fixed Resistor	6G 5F		R224	4.7KΩ 1/2W ±10% Solid Fixed Resistor	6A	TRF-2BA
R003	220Ω 1/2W ±10% Solid Fixed Resistor	6G 5F		R225	4.7KΩ 1/2W ±10% Solid Fixed Resistor	6A	TRF-2BA
R004	680Ω 1W ±10% RT Carbon Fixed Resistor	6G 5F		R226	1.5MΩ 1/2W ±10% Solid Fixed Resistor	5A	TRF-2BA
R005	820Ω 1/2W ±10% Solid Fixed Resistor	6G 5G		R227	100Ω 1/2W ±10% Solid Fixed Resistor	5A	TRF-2BA
R006	15KΩ 1/2W ±10% Solid Fixed Resistor	3E 2H		R228	33KΩ 1/2W ±10% Solid Fixed Resistor	4A	TRF-2BA
R007	15KΩ 1/2W ±10% Solid Fixed Resistor	3F 2H		R229	22KΩ 1/2W ±10% Solid Fixed Resistor	6B	TRF-2BA
R008	4.7KΩ 1/2W ±10% Solid Fixed Resistor	3F 1A		R2201	39KΩ 1/2W ±10% Solid Fixed Resistor	4A	TRS-4A
R009	4.7KΩ 1/2W ±10% Solid Fixed Resistor	3F 1A		R2202	10KΩ 1/2W ±10% Solid Fixed Resistor	6B	TRS-4A
R010	68KΩ 1/4W ±10% R Carbon Fixed Resistor (noiseless)	1E 1E		R2203	1KΩ 1/2W ±10% Solid Fixed Resistor	6B	TRS-4A
R011	68KΩ 1/4W ±10% R Carbon Fixed Resistor (noiseless)	1F 1E		R2204	3.3KΩ 1/2W ±10% Solid Fixed Resistor	6B	TRS-4A
R012	820Ω 1/2W ±10% Solid Fixed Resistor	2F 1A		R301	82KΩ 1/2W ±10% Solid Fixed Resistor	2B	TRAM-4A-6
R016	470Ω 1/2W ±10% Solid Fixed Resistor	6E 5H		R302	4.7KΩ 1/2W ±10% Solid Fixed Resistor	2B	TRAM-4A-6
R017	470Ω 1/2W ±10% Solid Fixed Resistor	6E 5H		R303	1.8KΩ 1/2W ±10% Solid Fixed Resistor	2B	TRAM-4A-6
R018	100KΩ 1/2W ±10% Solid Fixed Resistor	1F 2E		R304	120Ω 1/2W ±10% Solid Fixed Resistor	2B	TRAM-4A-6
R019	100KΩ 1/2W ±10% Solid Fixed Resistor	1F 2E		R305	68KΩ 1/2W ±10% Solid Fixed Resistor	3B	TRAM-4A-6
R020	470KΩ 1/2W ±10% Solid Fixed Resistor	1F 2E		R306	68KΩ 1/2W ±10% Solid Fixed Resistor	3B	TRAM-4A-6
R021	470KΩ 1/2W ±10% Solid Fixed Resistor	1F 2E		R307	56KΩ 1/2W ±10% Solid Fixed Resistor	3B	TRAM-4A-6
R023	1KΩ 1/2W ±10% Solid Fixed Resistor	5B		R308	2.2KΩ 1/2W ±10% Solid Fixed Resistor	3B	TRAM-4A-6
R024	4.7KΩ 1/2W ±10% Solid Fixed Resistor	5B		R309	1KΩ 1/2W ±10% Solid Fixed Resistor	4B	TRAM-4A-6
R025	4.7KΩ 1/2W ±10% Solid Fixed Resistor	5B		R310	330Ω 1/2W ±10% Solid Fixed Resistor	4B	TRAM-4A-6
R026	330Ω 1/2W ±10% Solid Fixed Resistor	5B		R311	3.3KΩ 1/2W ±10% Solid Fixed Resistor	4B	TRAM-4A-6
R101	3KΩ 1/2W ±10% Carbon Fixed Resistor	1A RT-130UA-6		R312	3.9KΩ 1/2W ±10% Solid Fixed Resistor	4B	TRAM-4A-6
R102	10KΩ 1/2W ±10% Carbon Fixed Resistor	1A RT-130UA-6		R313	1KΩ 1/2W ±10% Solid Fixed Resistor	4B	TRAM-4A-6
R103	700Ω 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R314	4.7KΩ 1/2W ±10% Solid Fixed Resistor	4B	TRAM-4A-6
R104	3KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R315	100Ω 1/2W ±10% Solid Fixed Resistor	5B	TRAM-4A-6
R105	1KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R316	4.7KΩ 1/2W ±10% Solid Fixed Resistor	5B	TRAM-4A-6
R106	1.5KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R317	15KΩ 1/2W ±10% Solid Fixed Resistor	5B	TRAM-4A-6
R107	1KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R401	47KΩ 1/2W ±10% Solid Fixed Resistor	1C	TRX-6
R108	3KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R402	33KΩ 1/2W ±10% Solid Fixed Resistor	1C	TRX-6
R109	10KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R403	68KΩ 1/2W ±10% Solid Fixed Resistor	1C	TRX-6
R110	15KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R404	1KΩ 1/2W ±10% Solid Fixed Resistor	1C	TRX-6
R111	10KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R405	1.2KΩ 1/2W ±10% Solid Fixed Resistor	1C	TRX-6
R112	500KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R406	3.3KΩ 1/2W ±10% Solid Fixed Resistor	1C	TRX-6
R113	10KΩ 1/2W ±10% Carbon Fixed Resistor	2A RT-130UA-6		R407	56KΩ 1/2W ±10% Solid Fixed Resistor	2C	TRX-6
R201	27KΩ 1/2W ±10% Solid Fixed Resistor	3A TRF-2BA		R408	5.6KΩ 1/2W ±10% Solid Fixed Resistor	2C	TRX-6
R202	100Ω 1/2W ±10% Solid Fixed Resistor	3A TRF-2BA		R409	39Ω 1/2W ±10% Solid Fixed Resistor	2C	TRX-6
R203	3.3KΩ 1/2W ±10% Solid Fixed Resistor	3A TRF-2BA		R410	1KΩ 1/2W ±10% Solid Fixed Resistor	2C	TRX-6
R204	1KΩ 1/2W ±10% Solid Fixed Resistor	3A TRF-2BA		R411	6.8KΩ 1/2W ±10% Solid Fixed Resistor	2C	TRX-6
R205	1.5KΩ 1/2W ±10% Solid Fixed Resistor	3A TRF-2BA		R412	68KΩ 1/2W ±10% Solid Fixed Resistor	2C	TRX-6
R206	15KΩ 1/2W ±10% Solid Fixed Resistor	3A TRF-2BA		R413	5.6KΩ 1/2W ±10% Solid Fixed Resistor	3C	TRX-6
R207	3.3KΩ 1/2W ±10% Solid Fixed Resistor	3A TRF-2BA		R414	150Ω 1/2W ±10% Solid Fixed Resistor	3C	TRX-6
R208	100Ω 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R415	1KΩ 1/2W ±10% Solid Fixed Resistor	3C	TRX-6
R209	1KΩ 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R416	150KΩ 1/2W ±10% Solid Fixed Resistor	3C	TRX-6
R210	1KΩ 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R417	10KΩ 1/2W ±10% Solid Fixed Resistor	3C	TRX-6
R211	15KΩ 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R418	10KΩ 1/2W ±10% Solid Fixed Resistor	3C	TRX-6
R212	3.3KΩ 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R419	10KΩ 1/2W ±10% Solid Fixed Resistor	3C	TRX-6
R213	100Ω 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R420	10KΩ 1/2W ±10% Solid Fixed Resistor	3C	TRX-6
R214	1KΩ 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R421	100KΩ 1/2W ±10% Solid Fixed Resistor	4C	TRX-6
R215	1KΩ 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R422	100KΩ 1/2W ±10% Solid Fixed Resistor	4C	TRX-6
R216	10KΩ 1/2W ±10% Solid Fixed Resistor	4A TRF-2BA		R423	330KΩ 1/2W ±10% Solid Fixed Resistor	4C	TRX-6
R217	3.3KΩ 1/2W ±10% Solid Fixed Resistor	5A TRF-2BA		R424	220KΩ 1/2W ±10% Solid Fixed Resistor	4C	TRX-6
R218	100Ω 1/2W ±10% Solid Fixed Resistor	5A TRF-2BA		R425	330KΩ 1/2W ±10% Solid Fixed Resistor	4C	TRX-6
R219	1KΩ 1/2W ±10% Solid Fixed Resistor	5A TRF-2BA		R426	220KΩ 1/2W ±10% Solid Fixed Resistor	4C	TRX-6
R220	1.5KΩ 1/2W ±10% Solid Fixed Resistor	5A TRF-2BA		R427	1KΩ 1/2W ±10% Solid Fixed Resistor	5C	TRX-6
R221	47Ω 1/2W ±10% Solid Fixed Resistor	5A TRF-2BA		R428	100KΩ 1/2W ±10% Solid Fixed Resistor	5C	TRX-6
R222	1KΩ 1/2W ±10% Solid Fixed Resistor	5A TRF-2BA		R429	100KΩ 1/2W ±10% Solid Fixed Resistor	5C	TRX-6
				R430	1KΩ 1/2W ±10% Solid Fixed Resistor	5C	TRX-6
				R431	270KΩ 1/2W ±10% Solid Fixed Resistor	5C	TRX-6

A	B	C	D
R432	10KΩ ½W ±10% Solid Fixed Resistor	5C	TRX-6
R433	10KΩ ½W ±10% Solid Fixed Resistor	5C	TRX-6
R434	270KΩ ½W ±10% Solid Fixed Resistor	5C	TRX-6
R435	1KΩ ½W ±10% Solid Fixed Resistor	5C	TRX-6
R436	10KΩ ½W ±10% Solid Fixed Resistor	5C	TRX-6
R437	10KΩ ½W ±10% Solid Fixed Resistor	5C	TRX-6
R438	1KΩ ½W ±10% Solid Fixed Resistor	5C	TRX-6
R439	47Ω ½W ±10% Solid Fixed Resistor	6C	TRX-6
R501	3.3KΩ ½W ±10% Solid Fixed Resistor	3D	TRI-1A
R502	1MΩ ½W ±10% Solid Fixed Resistor	4D	TRI-1A
R503	1KΩ ½W ±10% Solid Fixed Resistor	4D	TRI-1A
R504	39KΩ ½W ±10% Solid Fixed Resistor	3D	TRI-1A
R505	27KΩ ½W ±10% Solid Fixed Resistor	4D	TRI-1A
R506	10KΩ ½W ±10% Solid Fixed Resistor	4D	TRI-1A
R507	15KΩ ½W ±10% Solid Fixed Resistor	4D	TRI-1A
R508	8.2KΩ ½W ±10% Solid Fixed Resistor	4D	TRI-1A
R509	22KΩ ½W ±10% Solid Fixed Resistor	5D	TRI-1A
R510	3.3KΩ ½W ±10% Solid Fixed Resistor	5D	TRI-1A
R511	22KΩ ½W ±10% Solid Fixed Resistor	5D	TRI-1A
R512	390Ω ½W ±10% Solid Fixed Resistor	5D	TRI-1A
R601	680KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2E	TRHA-6A
R602	100KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2E	TRHA-6A
R603	1KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2E	TRHA-6A
R604	470Ω ¼W ±10% R Carbon Fixed Resistor (noiseless)	2E	TRHA-6A
R605	680Ω ¼W ±10% R Carbon Fixed Resistor (noiseless)	2E	TRHA-6A
R606	220Ω ¼W ±10% R Carbon Fixed Resistor (noiseless)	2E	TRHA-6A
R607	390KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2E	TRHA-6A
R608	6.8KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2E	TRHA-6A
R609	330KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R610	25KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R611	680KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R612	15KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R613	150KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R614	680KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R615	100KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R616	1KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R617	470Ω ¼W ±10% R Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R618	680Ω ¼W ±10% R Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R619	220Ω ¼W ±10% R Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R620	390KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R621	6.8KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2F	TRHA-6A
R622	330KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2G	TRHA-6A
R623	25KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2G	TRHA-6A
R624	680KΩ ¼W ±10% RD Carbon Fixed Resistor (noiseless)	2G	TRHA-6A
R625	15KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2G	TRHA-6A
R626	150KΩ ¼W ±10% R Carbon Fixed Resistor (noiseless)	2G	TRHA-6A
R701	1KΩ ½W ±10% Solid Fixed Resistor	3E	TRM-7A
R702	1KΩ ½W ±10% Solid Fixed Resistor	3E	TRM-7A
R703	470KΩ ½W ±10% Solid Fixed Resistor	3E	TRM-7A
R704	470KΩ ½W ±10% Solid Fixed Resistor	3F	TRM-7A
R705	15KΩ ½W ±10% Solid Fixed Resistor	3E	TRM-7A
R706	15KΩ ½W ±10% Solid Fixed Resistor	3F	TRM-7A

A	B	C	D
R707	510Ω ½W ±10% Solid Fixed Resistor	3E	TRM-7A
R708	510Ω ½W ±10% Solid Fixed Resistor	3F	TRM-7A
R709	18KΩ ½W ±10% Solid Fixed Resistor	4E	TRM-7A
R710	18KΩ ½W ±10% Solid Fixed Resistor	4F	TRM-7A
R711	3.9KΩ ½W ±10% Solid Fixed Resistor	4E	4H
R712	3.9KΩ ½W ±10% Solid Fixed Resistor	4F	4H
R713	33KΩ ¼W ±10% R Carbon Fixed Resistor	4E	4H
R714	33KΩ ¼W ±10% R Carbon Fixed Resistor	4F	4H
R715	12KΩ ½W ±10% Solid Fixed Resistor	4E	4H
R716	12KΩ ½W ±10% Solid Fixed Resistor	4F	4H
R717	1.2KΩ ½W ±10% Solid Fixed Resistor	4E	3H
R718	1.2KΩ ½W ±10% Solid Fixed Resistor	4F	3H
R719	270KΩ ½W ±10% Solid Fixed Resistor	4E	TRM-7A
R720	270KΩ ½W ±10% Solid Fixed Resistor	4F	TRM-7A
R721	4.7KΩ ½W ±10% Solid Fixed Resistor	4E	TRM-7A
R722	4.7KΩ ½W ±10% Solid Fixed Resistor	4F	TRM-7A
R723	680Ω ½W ±10% Solid Fixed Resistor	4E	TRM-7A
R724	680Ω ½W ±10% Solid Fixed Resistor	4F	TRM-7A
R725	10KΩ ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R726	10KΩ ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R727	1.8KΩ ½W ±10% Solid Fixed Resistor	4E	TRM-7A
R728	1.8KΩ ½W ±10% Solid Fixed Resistor	4F	TRM-7A
R729	150Ω ½W ±10% Solid Fixed Resistor	4E	TRM-7A
R730	150Ω ½W ±10% Solid Fixed Resistor	4F	TRM-7A
R731	120KΩ ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R732	120KΩ ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R733	8.2KΩ ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R734	8.2KΩ ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R735	120Ω ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R736	120Ω ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R737	3.3KΩ ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R738	3.3KΩ ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R739	1.5KΩ ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R740	1.5KΩ ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R741	5.6KΩ ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R742	5.6KΩ ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R743	10Ω ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R744	10Ω ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R745	220Ω ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R746	220Ω ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R747	33Ω ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R748	33Ω ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R749	33Ω ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R750	33Ω ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R751	220Ω ½W ±10% Solid Fixed Resistor	5E	TRM-7A
R752	220Ω ½W ±10% Solid Fixed Resistor	5F	TRM-7A
R753	4.7Ω 1W ±10% RT Carbon Fixed Resistor	6E	TRM-7A
R754	4.7Ω 1W ±10% RT Carbon Fixed Resistor	6F	TRM-7A
R755	2.2Ω ½W ±10% Solid Fixed Resistor	3G	TRM-7A
R756	1.5KΩ ½W ±10% Solid Fixed Resistor	4G	TRM-7A
R757	470Ω ½W ±10% Solid Fixed Resistor	4G	TRM-7A
R801	0.7Ω 2W ±10% Wire Wound Resistor	5E	4D
R802	0.7Ω 2W ±10% Wire Wound Resistor	5E	5D
R803	0.7Ω 2W ±10% Wire Wound Resistor	5F	4D
R804	0.7Ω 2W ±10% Wire Wound Resistor	5F	3D
C001	2000μF 35WV Lug Electrolytic Capacitor	5G	5B
C002	300μF 35WV Tubular Electrolytic Capacitor	6G	5F

PARTS LIST

A: Parts No.
B: Parts Name
C: Position of Parts (Co-ordinates in "SCHEMATIC DIAGRAM OF CIRCUITS")
D: Position of Parts (Co-ordinates in "PARTS LAYOUT" or by name of printed circuit)

A	B	C	D
C003	500 μ F 25WV Tubular Electrolytic Capacitor	6G 5F	
C004	500 μ F 25WV Tubular Electrolytic Capacitor	6G 5F	
C005	2000 μ F 60WV Lug Electrolytic Capacitor	5G 5B	
C006	1000 μ F 10WV Tubular Electrolytic Capacitor	6G 4G	
C007	1000 μ F 10WV Tubular Electrolytic Capacitor	6G 5F	
C008	0.0047 μ F 600WV $\pm 10\%$ Oil Capacitor	4G 4E	
C009	0.033 μ F 600WV $\pm 10\%$ Oil Capacitor	4G 5E	
C010	180 pF 250WV $\pm 10\%$ Mica Capacitor	3E 2H	
C011	180 pF 250WV $\pm 10\%$ Mica Capacitor	3F 2H	
C012	0.02 μ F 50WV $\pm 10\%$ Mylar Capacitor	3E 2H	
C013	0.02 μ F 50WV $\pm 10\%$ Mylar Capacitor	3F 2H	
C014	0.05 μ F 50WV $\pm 10\%$ Mylar Capacitor	1E 2E	
C015	0.05 μ F 50WV $\pm 10\%$ Mylar Capacitor	1F 2E	
C016	0.05 μ F 50WV $\pm 10\%$ Mylar Capacitor	1E 1E	
C017	0.05 μ F 50WV $\pm 10\%$ Mylar Capacitor	1F 1E	
C018	100 μ F 6WV RB Electrolytic Capacitor	4B 1A	
C020	3 μ F 25WV RB Electrolytic Capacitor	2E 1A	
C021	3 μ F 25WV RB Electrolytic Capacitor	2F 1A	
C022	30 μ F 25WV RB Electrolytic Capacitor	2F 1A	
C101	6 pF 50WV Ceramic Capacitor	1A RT-130UA-6	
C102	17 pF 50WV Ceramic Capacitor	1A RT-130UA-6	
C103	0.002 μ F 50WV Ceramic Capacitor	2A RT-130UA-6	
C104	10 pF 50WV Ceramic Capacitor	2A RT-130UA-6	
C105	0.01 pF 50WV Ceramic Capacitor	2A RT-130UA-6	
C106	20 pF 50WV Ceramic Capacitor	2A RT-130UA-6	
C107	10 pF 50WV Ceramic Capacitor	2A RT-130UA-6	
C108	10 pF 50WV Ceramic Capacitor	2A RT-130UA-6	
C109	10 pF 50WV Ceramic Capacitor	2A RT-130UA-6	
C110	0.002 μ F 50WV Ceramic Capacitor	2A RT-130UA-6	
C111	8 pF 50WV Ceramic Capacitor	2A RT-130UA-6	
C112	4 pF 50WV Ceramic Capacitor	2A RT-130UA-6	
C113	12 pF 50WV Ceramic Capacitor	3A RT-130UA-6	
C114	0.01 μ F 50WV Ceramic Capacitor	2A RT-130UA-6	
C115	0.01 μ F 50WV Ceramic Capacitor	2A RT-130UA-6	
C116	0.002 μ F 50WV Ceramic Capacitor	1A RT-130UA-6	
C117	40 pF 50WV Ceramic Capacitor	1A RT-130UA-6	
C118	40 pF 50WV Ceramic Capacitor	1A RT-130UA-6	
C119	0.01 μ F 50WV Ceramic Capacitor	1A RT-130UA-6	
C120	0.01 μ F 50WV Ceramic Capacitor	1A RT-130UA-6	
C121	0.01 μ F 50WV Ceramic Capacitor	1A RT-130UA-6	
C201	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3A TRF-2BA	
C202	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3A TRF-2BA	
C203	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3A TRF-2BA	
C204	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3A TRF-2BA	
C205	200 μ F 10WV RB Electrolytic Capacitor	4A TRF-2BA	
C206	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	4A TRF-2BA	
C207	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	4A TRF-2BA	
C208	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	4A TRF-2BA	
C209	0.02 μ F 25WV $\pm 10\%$ Ceramic Capacitor	4A TRF-2BA	
C210	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	4A TRF-2BA	
C211	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	5A TRF-2BA	
C212	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	5A TRF-2BA	
C213	200 pF 25WV $\pm 10\%$ Ceramic Capacitor	5A TRF-2BA	
C214	200 pF 25WV $\pm 10\%$ Ceramic Capacitor	5A TRF-2BA	
C215	50 pF 25WV $\pm 10\%$ Ceramic Capacitor	5A TRF-2BA	

A	B	C	D
C216	200 μ F 10WV RB Electrolytic Capacitor	5A TRF-2BA	
C217	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	5A TRF-2BA	
C218	5 μ F 10WV RB Electrolytic Capacitor	5A TRF-2BA	
C219	0.001 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3A TRF-2BA	
C220	50 pF 25WV $\pm 10\%$ Ceramic Capacitor	3A TRF-2BA	
C221	50 pF 25WV $\pm 10\%$ Ceramic Capacitor	4A TRF-2BA	
C222	50 pF 25WV $\pm 10\%$ Ceramic Capacitor	4A TRF-2BA	
C223	30 pF 25WV $\pm 10\%$ Ceramic Capacitor	5A TRF-2BA	
C224	2 pF 25WV $\pm 0.5\mu$ F Ceramic Capacitor	3A TRF-2BA	
C225	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3A TRF-2BA	
C226	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3A TRF-2BA	
C2201	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	6B TRS-4A	
C2202	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	6B TRS-4A	
C2203	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	6B TRS-4A	
C2204	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	6B TRS-4A	
C2205	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	6B TRS-4A	
C2206	10 μ F 15WV RB Electrolytic Capacitor	6B TRS-4A	
C301	0.001 μ F 25WV $\pm 100\%$ Ceramic Capacitor	2B TRAM-4A-6	
C302	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	2B TRAM-4A-6	
C303	30 μ F 10WV RB Electrolytic Capacitor	2B TRAM-4A-6	
C304	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	2B TRAM-4A-6	
C305	0.005 μ F 25WV $\pm 20\%$ Ceramic Capacitor	2B TRAM-4A-6	
C306	15 pF 25WV $\pm 10\%$ Ceramic Capacitor	2B TRAM-4A-6	
C307	430 pF 50WV $\pm 5\%$ Mica Capacitor	2B TRAM-4A-6	
C308	10 μ F 10WV RB Electrolytic Capacitor	3B TRAM-4A-6	
C309	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3B TRAM-4A-6	
C310	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	3B TRAM-4A-6	
C311	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	4B TRAM-4A-6	
C312	200 μ F 10WV RB Electrolytic Capacitor	4B TRAM-4A-6	
C313	0.01 μ F 50WV $\pm 10\%$ Mylar Capacitor	4B TRAM-4A-6	
C314	0.01 μ F 50WV $\pm 10\%$ Mylar Capacitor	4B TRAM-4A-6	
C315	0.47 μ F 25WV RB Electrolytic Capacitor	5B TRAM-4A-6	
C316	200 μ F 10WV RB Electrolytic Capacitor	5B TRAM-4A-6	
C317	0.1 μ F 50WV $\pm 10\%$ Mylar Capacitor	5B TRAM-4A-6	
C318	2 pF 25WV $\pm 0.5\mu$ F Ceramic Capacitor	3B TRAM-4A-6	
C319	1 pF 25WV $\pm 0.5\mu$ F Ceramic Capacitor	4B TRAM-4A-6	
C320	0.005 μ F 25WV $\pm 20\%$ Ceramic Capacitor	4B TRAM-4A-6	
C321	0.02 μ F 25WV $\pm 100\%$ Ceramic Capacitor	4B TRAM-4A-6	
C401	10 μ F 15WV RB Electrolytic Capacitor	1C TRX-6	
C402	50 μ F 10WV RB Electrolytic Capacitor	1C TRX-6	
C403	10 μ F 15WV RB Electrolytic Capacitor	1C TRX-6	
C404	30 μ F 15WV RB Electrolytic Capacitor	1C TRX-6	
C405	5000 pF 50WV $\pm 5\%$ Mica Capacitor	1C TRX-6	
C406	0.05 μ F 50WV $\pm 10\%$ Mylar Capacitor	2C TRX-6	
C407	6600 pF 50WV $\pm 5\%$ Mica Capacitor	2C TRX-6	
C408	0.47 μ F 25WV RB Electrolytic Capacitor	2C TRX-6	
C409	0.05 μ F 50WV $\pm 10\%$ Mylar Capacitor	2C TRX-6	
C410	1700 pF 50WV $\pm 5\%$ Mica Capacitor	3C TRX-6	
C411	0.05 μ F 50WV $\pm 10\%$ Mylar Capacitor	3C TRX-6	
C412	0.47 μ F 25WV RB Electrolytic Capacitor	3C TRX-6	
C413	10 μ F 10WV RB Electrolytic Capacitor	3C TRX-6	
C414	450 pF 250WV $\pm 10\%$ Mica Capacitor	3C TRX-6	
C415	100 pF 25WV $\pm 10\%$ Ceramic Capacitor	3C TRX-6	

A	B			C	D
C416	100 pF	25WV	±10% Ceramic Capacitor	3C	TRX-6
C417	120 pF	250WV	±10% Mica Capacitor	3C	TRX-6
C418	100 pF	25WV	±10% Ceramic Capacitor	4C	TRX-6
C419	100 pF	25WV	±10% Ceramic Capacitor	4C	TRX-6
C420	200 μ F	25WV	RB Electrolytic Capacitor	5C	TRX-6
C421	0.1 μ F	50WV	±10% Mylar Capacitor	4C	TRX-6
C422	0.1 μ F	50WV	±10% Mylar Capacitor	4C	TRX-6
C423	100 μ F	6WV	RB Electrolytic Capacitor	5C	TRX-6
C424	100 μ F	6WV	RB Electrolytic Capacitor	5C	TRX-6
C425	100 pF	25WV	±10% Ceramic Capacitor	5C	TRX-6
C426	10 μ F	15WV	RB Electrolytic Capacitor	5C	TRX-6
C427	0.002 μ F	25WV	±10% Ceramic Capacitor	5C	TRX-6
C428	10 μ F	15WV	RB Electrolytic Capacitor	5C	TRX-6
C429	100 pF	25WV	±10% Ceramic Capacitor	5C	TRX-6
C430	100 μ F	6WV	RB Electrolytic Capacitor	5C	TRX-6
C431	0.47 μ F	25WV	RB Electrolytic Capacitor	5C	TRX-6
C432	0.47 μ F	25WV	RB Electrolytic Capacitor	5C	TRX-6
C501	0.1 μ F	50WV	±10% Mylar Capacitor	3D	TRI-1A
C502	5000 pF	50WV	±5% Mica Capacitor	4D	TRI-1A
C503	30 μ F	15WV	RB Electrolytic Capacitor	4D	TRI-1A
C504	10 μ F	15WV	RB Electrolytic Capacitor	5D	TRI-1A
C505	1 μ F	25WV	RB Electrolytic Capacitor	4D	TRI-1A
C601	1.5 μ F	3WV	Tantalum Solid Capacitor	2E	TRHA-6A
C602	150 pF	25WV	±10% Ceramic Capacitor	2E	TRHA-6A
C603	30 μ F	10WV	RB Electrolytic Capacitor	2E	TRHA-6A
C604	150 pF	25WV	±10% Ceramic Capacitor	2E	TRHA-6A
C605	10 μ F	10WV	RB Electrolytic Capacitor	2E	TRHA-6A
C606	10 μ F	25WV	RB Electrolytic Capacitor	2E	TRHA-6A
C607	0.003 μ F	50WV	±10% Mylar Capacitor	2F	TRHA-6A
C608	0.01 μ F	50WV	±10% Mylar Capacitor	2F	TRHA-6A
C609	0.004 μ F	50WV	±10% Mylar Capacitor	2F	TRHA-6A
C611	1.5 μ F	3WV	Tantalum Solid Capacitor	2F	TRHA-6A
C612	150 μ F	25WV	±10% Ceramic Capacitor	2F	TRHA-6A
C613	30 μ F	10WV	RB Electrolytic Capacitor	2F	TRHA-6A
C614	150 pF	25WV	±10% Ceramic Capacitor	2F	TRHA-6A
C615	10 μ F	10WV	RB Electrolytic Capacitor	2F	TRHA-6A
C616	10 μ F	25WV	RB Electrolytic Capacitor	2F	TRHA-6A
C617	0.003 μ F	50WV	±10% Mylar Capacitor	2G	TRHA-6A
C618	0.01 μ F	50WV	±10% Mylar Capacitor	2G	TRHA-6A
C619	0.004 μ F	50WV	±10% Mylar Capacitor	2G	TRHA-6A
C701	3 μ F	25WV	RB Electrolytic Capacitor	3E	TRM-7A
C702	3 μ F	25WV	RB Electrolytic Capacitor	3F	TRM-7A
C703	3 μ F	25WV	RB Electrolytic Capacitor	4E	TRM-7A
C704	3 μ F	25WV	RB Electrolytic Capacitor	4F	TRM-7A
C705	0.001 μ F	50WV	±10% Mylar Capacitor	4E	TRM-7A
C706	0.001 μ F	50WV	±10% Mylar Capacitor	4F	TRM-7A
C707	0.01 μ F	50WV	±10% Mylar Capacitor	4E	
C708	0.01 μ F	50WV	±10% Mylar Capacitor	4F	
C709	350 pF	250WV	±10% Mica Capacitor	4E	3H
C710	350 pF	250WV	±10% Mica Capacitor	4F	3H
C711	0.01 μ F	50WV	±10% Mylar Capacitor	4E	4H
C712	0.01 μ F	50WV	±10% Mylar Capacitor	4F	4H
C713	0.1 μ F	50WV	±10% Mylar Capacitor	4E	4H
C714	0.1 μ F	50WV	±10% Mylar Capacitor	4F	4H
C715	3 μ F	25WV	RB Electrolytic Capacitor	4E	TRM-7A
C716	3 μ F	25WV	RB Electrolytic Capacitor	4F	TRM-7A
C717	0.006 μ F	50WV	Mylar Capacitor	4E	5H
C718	0.006 μ F	50WV	Mylar Capacitor	4F	4H

A	B			C	D
C719	100 μ F	6WV	RB Electrolytic Capacitor	4 E	TRM-7A
C720	100 μ F	6WV	RB Electrolytic Capacitor	4 F	TRM-7A
C721	25 μ F	50WV	RB Electrolytic Capacitor	5 E	TRM-7A
C722	25 μ F	50WV	RB Electrolytic Capacitor	5 F	TRM-7A
C723	10 μ F	25WV	RB Electrolytic Capacitor	5 E	TRM-7A
C724	10 μ F	25WV	RB Electrolytic Capacitor	5 F	TRM-7A
C725	50 μ F	25WV	RB Electrolytic Capacitor	5 E	TRM-7A
C726	50 μ F	25WV	RB Electrolytic Capacitor	5 F	TRM-7A
C727	50 μ F	10WV	RB Electrolytic Capacitor	5 E	TRM-7A
C728	50 μ F	10WV	RB Electrolytic Capacitor	5 F	TRM-7A
C729	250 pF	250WV $\pm$ 10%	Mica Capacitor	5 E	TRM-7A
C730	250 pF	250WV $\pm$ 10%	Mica Capacitor	5 F	TRM-7A
C731	0.2 μ F	250WV $\pm$ 10%	M.P. Capacitor	6 E	TRM-7A
C732	0.2 μ F	250WV $\pm$ 10%	M.P. Capacitor	6 F	TRM-7A
C733	100 pF	25WV $\pm$ 10%	Ceramic Capacitor	5 E	TRM-7A
C734	100 pF	25WV $\pm$ 10%	Ceramic Capacitor	5 F	TRM-7A
C735	0.01 μ F	50WV $\pm$ 10%	Mylar Capacitor	4 G	TRM-7A
C801	2000 μ F	35WV	Lug Electrolytic Capacitor	6 E	5 D
C802	2000 μ F	35WV	Lug Electrolytic Capacitor	6 F	4 D
CR401	38KC Filter & De-emphasis			4 C	TRX-6
CR402	38KC Filter & De-emphasis			4 C	TRX-6
VR2201	Meter adjust			6 B	TRS-4A
VR401	10K Ω (B)	MPX Separation adjustment		6 C	2 D
VR501	50K Ω (B)	Stereo indicator adjustment		3 D	TRI-1A
VR502	100K Ω (B)	Stereo indicator adjustment		3 D	TRI-1A
VR701	250K Ω (B)	Volume control		3 E	2 H
VR702				3 F	2 H
VR703	125K Ω (BH)	Balance control		3 E	1 H
VR704				3 F	1 H
VR705	100K Ω (A)	Treble control		4 E	3 H
VR706				4 F	3 H
VR707	100K Ω (A)	Bass control		4 E	4 H
VR708				4 F	4 H
VR709	100K Ω (B)	AC Balance adjustment		5 E	TRM-7A
VR710	100K Ω (B)	AC Balance adjustment		5 F	TRM-7A
VR711	200 Ω (B)	DC Balance adjustment		5 E	TRM-7A
VR712	200 Ω (B)	DC Balance adjustment		5 F	TRM-7A
VR713	5K Ω (B)	PSC Sensitivity adjustment		4 G	TRM-7A
VC101	FM RF tuning			1 A	RT-130UA-6
VC102	FM RF tuning			2 A	RT-130UA-6
VC103	FM local oscillator			2 A	RT-130UA-6
VC301	AM RF tuning			1 B	RT-130UA-6
VC302	AM local oscillator			2 B	RT-130UA-6
TC101	Trimer condenser			1 A	RT-130UA-6
TC102	Trimer condenser			2 A	RT-130UA-6
TC103	Trimer condenser			2 A	RT-130UA-6
TC301	Trimer condenser			1 B	RT-130UA-6
TC302	Trimer condenser			2 B	RT-130UA-6
L101	FM Antenna coil			1 A	RT-130UA-6
L102	FM RF Tuning coil			2 A	RT-130UA-6
L103	FM Local oscillator coil			2 A	RT-130UA-6
L201	3.5 μ H	FM RF Coil		3 A	TRF-2BA
L301	AM Antenna coil		ARS-48	1 B	1 D
L401	MPX SCA Trap coil		MFC-A	3 C	TRX-6
L402	MPX SCA Trap coil		MFC-B	3 C	TRX-6

PARTS LIST

A: Parts No.
B: Parts Name
C: Position of Parts (Co-ordinates in "SCHEMATIC DIAGRAM OF CIRCUITS")
D: Position of Parts (Co-ordinates in "PARTS LAYOUT" or by name of printed circuit)

A	B	C	D	A	B	C	D
T001	Power transformer	5G	5C	TR905	2SC458 Protector	Si NPN	
T101	FM 1st IFT 10.7MC	2A	RT-130UA-6	D001	SW-1a(1S-1062)	Si Diode	5G 4G
T201	FM 2nd IFT 10.7MC	10FD-1-A ₁	3A	D002	SW-1a(1S-1062)	Si Diode	5G 5G
T202	FM 3rd IFT 10.7MC	10FD-1-A ₁	4A	D003	SW-05-02	Si Diode	5G 5G
T203	FM 4th IFT 10.7MC	10FD-1-A ₁	4A	D004	SW-05-02	Si Diode	6G 5G
T204	FM Discriminator	10FD-1-B	5A	D101	FM AFC		2A RT-130UA-6
T2201	FM tuning 10.7MC	10FS-1-A ₁	6B	D203	OA91 FM Detector	Ge Diode	5A TRF-2BA
T301	AM Local oscillator coil	TMOC-2	2B	D204	OA91 FM Detector	Ge Diode	5A TRF-2BA
T302	AM 1st IFT 455KC	10AD-1-A ₁	3B	D2201	IN60 or MA790	Ge Diode	6B TRS-4A
T303	AM 1st IFT 455KC	10AD-1-A ₂	3B	D2202	IN60 or MA790	Ge Diode	6B TRS-4A
T304	AM 2nd IFT 455KC	10AS-1-A ₂	4B	D301	IN60 AGC	Ge Diode	3B TRAM-4A-6
T305	AM 3rd IFT 455KC	10AS-1-A ₃	4B	D302	OA79 AM Detector	Ge Diode	4B TRAM-4A-6
T401	MPX 19KC Tuning coil	MPT-20A	1C	D303	IN60	Ge Diode	4B TRAM-4A-6
T402	MPX 19KC Tuning coil	MPT-20B	2C	D401	IN60 19KC Doubler	Ge Diode	2C TRX-6
T403	MPX 38KC Tuning coil	MPT-20B	3C	D402	IN60 19KC Doubler	Ge Diode	2C TRX-6
T501	19KC Tuning coil	MPT-14A	4D	D403	OA79 Switching	Ge Diode	3C TRX-6
TR101	CT-1500 FM RF AMP. Si NPN	1A	RT-130UA-6	D404	OA79 Switching	Ge Diode	3C TRX-6
TR102	CT-1500 FM Local oscillator Si NPN	2A	RT-130UA-6	D405	OA79 Switching	Ge Diode	3C TRX-6
TR103	CT-1500 FM Mixer Si NPN	2A	RT-130UA-6	D406	OA79 Switching	Ge Diode	3C TRX-6
TR201	2SA234(B) AM 1st IF Amp. Ge PNP	3A	TRF-2BA	D501	IN60	Ge Diode	4D TRI-1A
TR202	2SA234(B) FM 2nd IF Amp. Ge PNP	3A	TRF-2BA	D502	SM-150-01	Si Diode	5D TRI-1A
TR203	2SA234(B) FM 3rd IF Amp. Ge PNP	4A	TRF-2BA	D503	IN60	Ge Diode	5D TRI-1A
TR204	2SA234(B) FM 4th IF Amp. Ge PNP	5A	TRF-2BA	D701	IS180	Si Diode	5E TRM-7A
TR2201	2SC372 (2SC536) DC Amp.	6B	TRS-4A	D702	IS180	Si Diode	5E TRM-7A
TR301	2SA102 AM Frequency converter Ge PNP	2B	TRAM-4A-6	D703	IS180	Si Diode	5F TRM-7A
TR302	2SA101(X) AM 1st IF Amp. Ge PNP	3B	TRAM-4A-6	D704	IS180	Si Diode	5F TRM-7A
TR303	2SA101(Y) AM 2nd IF Amp. Ge PNP	4B	TRAM-4A-6	D705	IN60	Ge Diode	4G TRM-7A
TR401	2SA49 M.P.X Amp. Ge PNP	1C	TRX-6	D706	IN60	Ge Diode	4G TRM-7A
TR402	2SB54 19KC Amp. Ge PNP	2C	TRX-6	SCR701	V-312B		3G TRM-7A
TR403	2SA49 38KC Amp. Ge PNP	3C	TRX-6	TH501	D-22A		4D TRI-1A
TR404	2SC536 Differential Amp. Si NPN	5C	TRX-6	S001	Power switch		4G 5H
TR405	2SC536 Differential Amp. Si NPN	5C	TRX-6	S1a, b	Function switch	Y-6-11-6	1A
TR406	2SC536 Differential Amp. Si NPN	5C	TRX-6	S2a, b	Mode switch		3E, 3F 3H
TR407	2SC536 Differential Amp. Si NPN	5C	TRX-6	S3a, b	Tape Monitor switch		3E, 3F 2H
TR501	2SC458 19KC Amp. Si NPN	4D	TRI-1A	S4a, b	Loudness switch		3E, 3F 2H
TR502	2SC458 D.C. Amp. Si NPN	4D	TRI-1A	S5a, b	Noise filter switch		4E, 4F 4H
TR503	2SB54 D.C. Amp. Ge PNP	5D	TRI-1A	S6a, b	Speaker selector switch		4E, 4F 5H
TR504	2SC458 Stereo Auto Si NPN	5D	TRI-1A	S7a, b	Antenna switch		1B 1D
TR505	2SC324 D.C. Amp. Ge PNP	5D	TRI-1A	PL001	Pilot Lamp Fuse type	6.3V 0.3A	5G 2A
TR601	2SC650 Equalizer Amp. Si NPN	2F	TRHA-6A	PL002	Pilot Lamp Fuse type	6.3V 0.3A	5G 5A
TR602	2SC281 Equalizer Amp. Si NPN	2F	TRHA-6A	PL003	Meter Indicator Lamp	8V 0.15A	6G 5A
TR603	2SC650 Equalizer Amp. Si NPN	2E	TRHA-6A	PL501	FM Stereo Indicator Lamp	8V 0.15A	6D 5A
TR604	2SC281 Equalizer Amp. Si NPN	3E	TRM-7A	PL901	Protector Indicator Lamp	25V 0.09A	4G 2A
TR701	2SC536 Audio Amp. Si NPN	3F	TRM-7A	F001	Fuse Tubular	2A	4G 4E
TR702	2SC536 Audio Amp. Si NPN	4E	TRM-7A	F003	Super-quick fuse	1.5A	5G 4B
TR703	2SC693 Audio Amp. Si NPN	4F	TRM-7A	F004	Super-quick fuse	1.5A	5G 4B
TR704	2SC693 Audio Amp. Si NPN	5E	TRM-7A	PU001	Voltage selector plug(100, 117, 220, 240V)		4G 4C
TR705	2SC538A Driver Amp. Si NPN	5E	TRM-7A	CO001	AC Outlet MAX 30VA		4G 5E
TR706	2SC538A Driver Amp. Si NPN	5F	TRM-7A	M	Tuning meter (100μA)		4A 5A
TR707	2SC281 Si NPN	5E	TRM-7A				
TR708	2SB89A Ge PNP	5E	TRM-7A				
TR709	2SC281 Si NPN	5F	TRM-7A				
TR710	2SB89A Ge PNP	5F	TRM-7A				
TR801	2SC244 Power Amp. Si NPN	5E	4D				
TR802	2SC244 Power Amp. Si NPN	5E	5D				
TR803	2SC244 Power Amp. Si NPN	5F	4D				
TR804	2SC244 Power Amp. Si NPN	5F	3D				

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.

Common to All Parts				Fixed Resistor	Mica Capacitor				Paper Capacitor		Ceramic Capacitor			
Color	1st Figure	2nd Figure	Multiplier	Allowance (%)	Grade	Property	Allowance (%)	Rated Voltage (V)	Allowance (%)	Rated Voltage (V)	Grade	Property	Allowance (%)	Rated Voltage (V)
black	0	0	1		X	A	±20(M)		±20(M)	100	X		±20	
brown	1	1	10 ¹			B			±5(J)	200				
red	2	2	10 ²	±2	Z	C	±2(G)		±2(G)	250	Z			250
orange	3	3	10 ³			D		300						
yellow	4	4	10 ⁴			E			±15(L)	400				
green	5	5	10 ⁵			F	±5(J)	500	+20(V) -15(V)					
blue	6	6	10 ⁶						+40(X) -15(X)	600			+100 0	500
purple	7	7	10 ⁷											
grey	8	8	10 ⁸		Y				+10(Y) -25(Y)		(Y)			
white	9	9	10 ⁹					1000	±10(K)	1000				
golden			10 ⁻¹	±5										
silver			10 ⁻²	±10								YY YZ		
non-colored				±20										
Note														

Property	Temperature Coefficient	Divergence of Capacity	Q tan δ	Insulation Resistance	Grade	Usable Temperature Range	Test Classification	Letter	Allowance
A	Not specified	Not specified	0.5 under	3000MΩ under	X	-55~+85	I or II	G	±2
B	Not specified	Not specified			Y	-30~+85	I or II	J	±5
C	-20~+200	±(0.5%+0.5pF)	0.5 over	7500MΩ over but 0.1 over 3000MΩ over	Z	-30~+85	I	K	±10
D	-100~+100	±(0.3%+0.1pF)						M	±20
E	-20~+100	±(0.1%+0.1pF)							
F	0~+70	±(0.05%+0.1pF)							

Sansui®

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