

# OPERATING INSTRUCTIONS & SERVICE MANUAL

AM/FM STEREO TUNER

## SANSUI TU-7500



**Sansui**

SANSUI ELECTRIC CO., LTD.

We are grateful for your choice of the TU-7500 FM/AM Stereo Tuner.

For over a quarter of a century, Sansui has been building hi-fi audio equipment, and nothing else. Our mission is very old and at once ever new to us: to bring the reproduced sound closer to the original.

The TU-7500 now in your hands is one answer from us to this never-ending quest. It is a product of the cream of sophisticated modern audio-electronics knowhow, coupled with our long experience, and as such, we present it to you with our full confidence.

The TU-7500 is a matching tuner for the Sansui AU-7500 Integrated Amplifier. It features an FM multiplex circuit utilizing a differential amplifier for outstanding channel separation, distortion and phase characteristics, the last one being of particular importance in receiving discrete 4-channel FM broadcasts anticipated in the future.

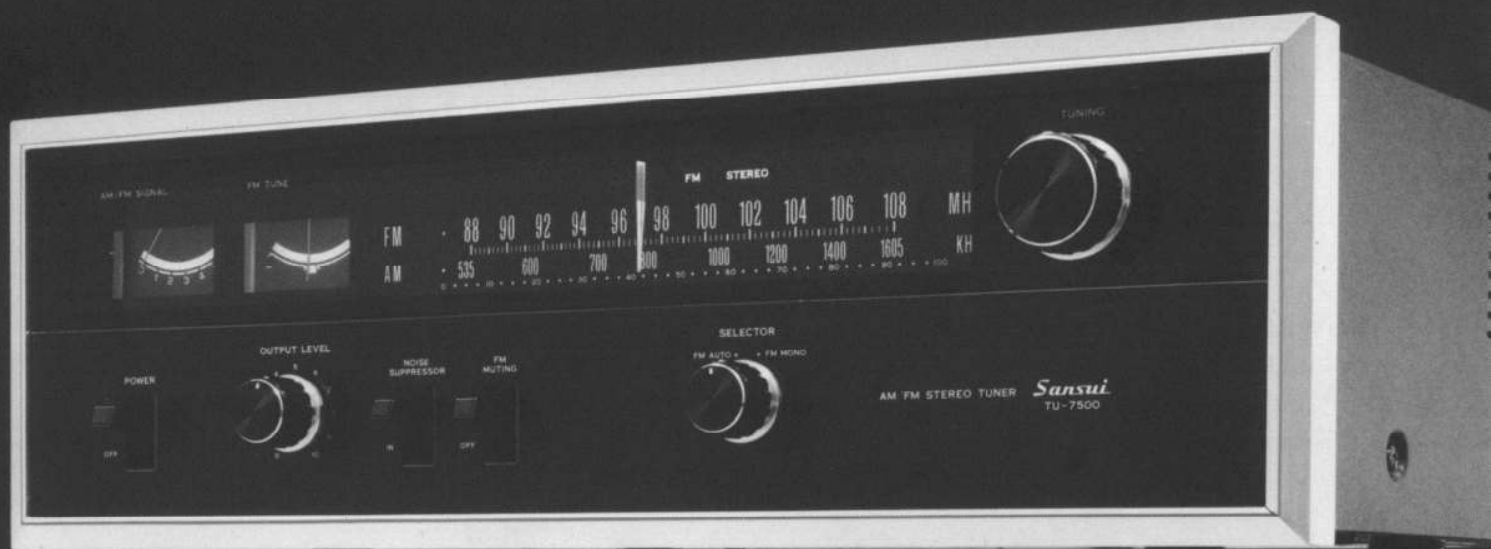
This manual has been prepared to guide you in operating and caring for the tuner correctly, so that you will get the most out of its built-in high performance.

May we suggest that you read it once carefully?

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# SWITCHES AND CONTROLS

## Signal and Tuning Meters

Tune in the desired station while watching these meters.

### If you are tuning in an FM station:

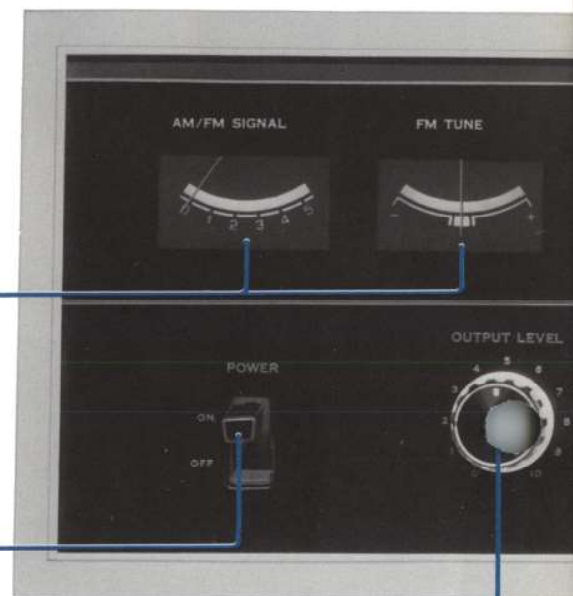
Adjust the Tuning Control first for maximum deflection of the Signal Meter on the left. Then adjust it so that the Tuning Meter on the right will indicate the exact center. The tuner will pinpoint the station and receive it with the best tone quality.

### If you are tuning in an AM station:

Simply adjust the Tuning Control for maximum deflection of the Signal Meter. Ignore the Tuning Meter when tuning on AM.

## AM Indicator

Lights when the Selector Control is set to AM.



## Power Switch

Pull up to ON to turn on the tuner.

## Output Level Control

Adjusts the output signal level of the tuner. Turn clockwise to increase it. (Output at the TAPE REC terminals is constant and independent of this control.)

## Noise Suppressor Switch

Push down to IN if loud noise is mixed with an FM stereo or AM broadcast. Noise will be suppressed and the broadcast will sound more pleasant to hear.

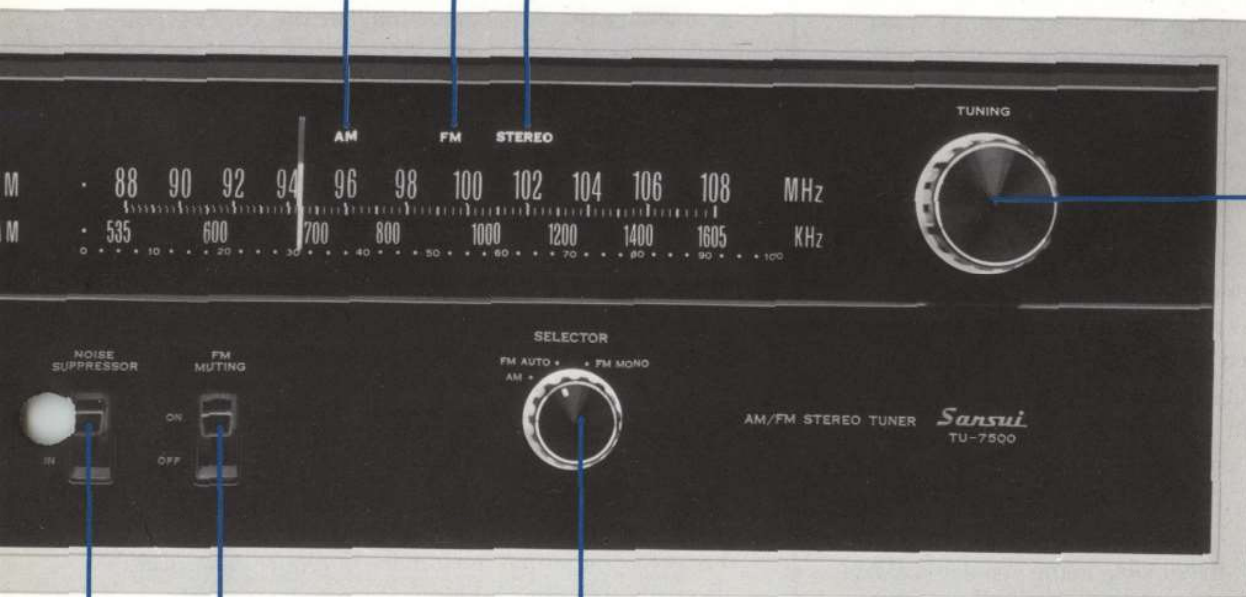
If you hear no noise, be sure to keep it at OUT.

### FM Indicator

Lights when the Selector Control is turned to FM AUTO or FM MONO.

### FM Stereo Indicator

Lights when the tuner is tuned in on an FM station broadcasting in stereo.



### FM Muting Switch

When tuning on the FM band, noise is usually heard between stations which is peculiar to FM. Setting this switch to ON cuts off that noise and lets you tune quietly.

If you are trying to tune in a weak station, however, setting the switch to ON may cause the tuner to miss it. In that case, it is better to push the switch down to OFF and then tune.

### Selector Control

AM: To receive AM broadcasts.

FM AUTO: To receive FM broadcasts, whether stereo or mono. When the broadcast signal changes from mono to stereo, the tuner will automatically switch itself to stereo reception.

FM MONO: If the FM stereo reception is too noisy for pleasant listening, set the control to this position. The broadcast will be received in mono but the noise will substantially decrease.

### Tuning Control

Tune in the desired station by turning this control.

# CONNECTIONS

## Connecting Antennas

The quality of reception depends pretty much on the effectiveness of the antennas. Connect and install them correctly for noise-free pleasant reception.

### FM Antennas

#### T-shaped Feeder Cable Antenna

If you live relatively close to FM stations, quality reception can be usually achieved by just installing the T-shaped feeder cable antenna supplied with the tuner. Connect it to the tuner's FM 300Ω terminals, referring to the diagram at right. Stretch the antenna to a complete T shape, then prepare the tuner for FM reception. Adjust the height and direction of the antenna while actually listening to your favorite FM station.

#### Outdoor FM Antenna

In areas remote from broadcast stations or blocked by such obstacles as mountains and large buildings, the above-mentioned feeder cable antenna may fail to give you a quality reception of FM stations. In that case, install an outdoor FM antenna. Many different types of outdoor FM antenna are commercially available, but it is advisable to use one with at least 5 or 7 elements. Connect it to the tuner's FM 300Ω terminals, using feeder cable. When making the connection, keep these points in mind:

1. Install the antenna as far away from streets as possible to prevent picking up automobile noise.
2. An antenna is directional. Adjust its direction for best reception while actually listening to your favorite FM station.
3. Keep the connecting feeder cable as short as possible.
4. Be careful not to let the antenna touch an electric cable, etc.

If you need long cable to connect the antenna or if automobile traffic is heavy around your house, it is better to use 75Ω coaxial cable. Unless the antenna itself has an impedance of 75Ω, you'll need an impedance matching transformer between the antenna and coaxial cable but the quality of FM reception will considerably improve. Connect the cable to the FM 75Ω terminals of the tuner.

## AM Antennas

### AM Ferrite Bar Antenna

The sensitive AM ferrite bar antenna provided on the tuner's rear panel provides a clear AM reception in most areas. To use, simply pull it out as illustrated.

### Outdoor AM Antenna

Should the bar antenna fail to give you clear reception, however, connect a piece of polyvinyl wire supplied to the AM-A terminal on the tuner's rear panel and stretch it outside a window or on the roof. Still better results would be obtained by grounding the tuner.

## Connecting to an Amplifier

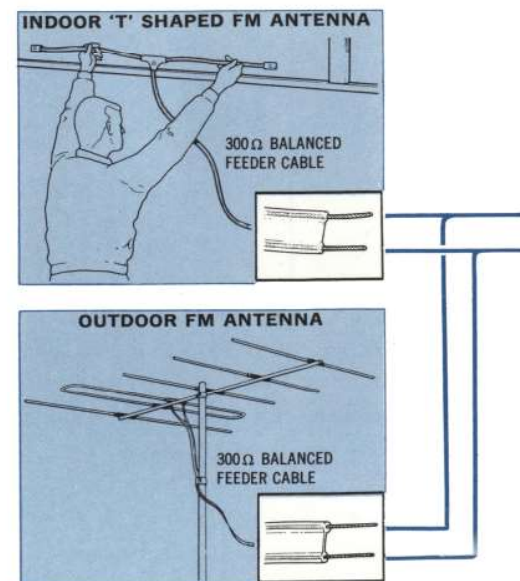
Connect the OUTPUT terminals of the tuner with the TUNER or AUX terminals of your amplifier (integrated amplifier or preamplifier), using the pair of pin plug cables supplied, as illustrated.

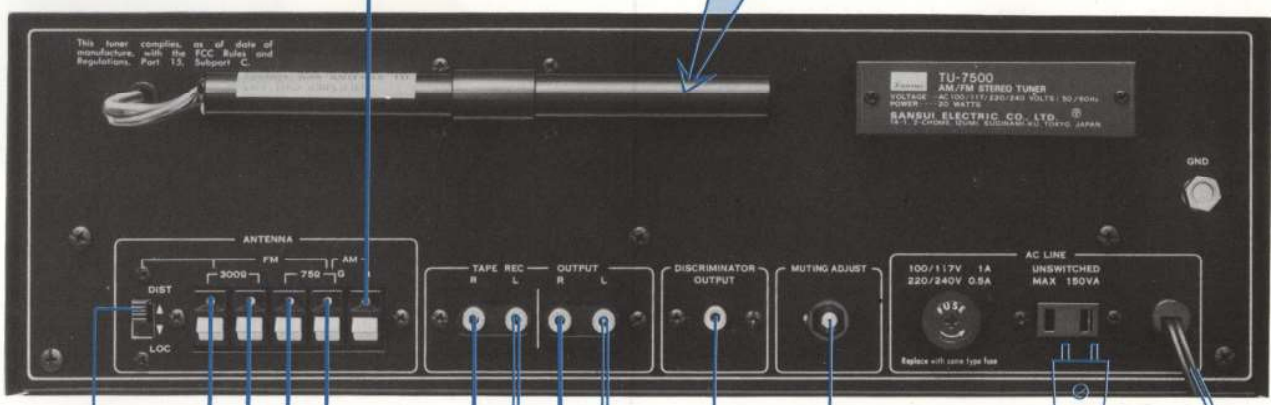
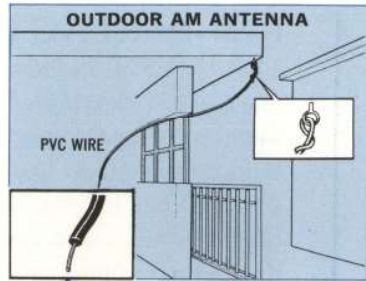
Be careful not to confuse the left and right channels.

## Connecting to a Tape Deck

If you connect the tuner to a stereo tape deck, you can record directly from the tuner.

Connect the TAPE REC terminals of the tuner with the recording input terminals of your tape deck, also using pin plug cables.



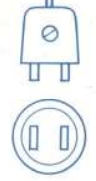


FM LOCAL/DISTANT SWITCH (SEE p. 7)

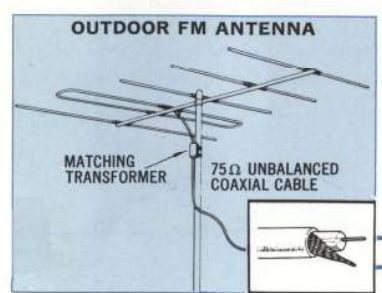
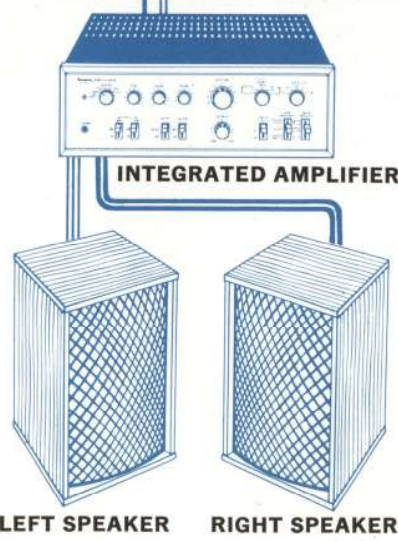
FM MUTING LEVEL CONTROL (SEE p. 7)

DISCRIMINATOR OUTPUT TERMINAL (SEE p. 8)

TO TAPEDECK, ETC.  
**CAUTION:**  
Never connect equipment with greater power requirements than specified maximum rating.



WALL AC OUTLET



== LEFT CHANNEL  
— RIGHT CHANNEL

# OPERATION / SIMPLE MAINTENANCE HINTS

## FM Reception

1. Set the Selector Control to FM AUTO.
2. Tune in the desired station by turning the Tuning Control. It is pinpointed when the Signal Meter pointer has swung as far to the right as possible and the Tuning Meter pointer is accurately centered.
3. Turn the Output Level Control as required.

### Note:

1. If a stereo broadcast is too noisy, push the Noise Suppressor Switch down to IN. If noise still persists, turn the Selector Control to FM MONO and hear the broadcast in mono.
2. When receiving a stereo broadcast, be sure that the mode switch of your amplifier is also set to a stereo mode.

## AM Reception

1. Set the Selector Control to AM.
2. Select the desired station by adjusting the Tuning Control so that the Signal Meter pointer will swing as far to the right as it will go near the frequency of that station.
3. Turn the Output Level Control as required.

**Note:** If the broadcast is too noisy, push the Noise Suppressor Switch down to IN.

### Important

As a rule, it is better to use the Output Level Control to match the tuner's output signal level with those of your turntable and tape deck, then adjust the over-all volume with the volume control of your amplifier.

## Rear-Panel AC Outlet

The AC outlet on the rear panel is always live and has a power capacity of 150VA. Its voltage is the same as the power supply voltage used.

Before you connect any appliance to it, be sure that it is adjusted for use at the same voltage and that its power consumption is not more than 150VA.



## Muting Level Control

This rear-panel control adjusts the working level of the FM muting circuit. Normally there is no need to touch it, but adjust it in these instances:

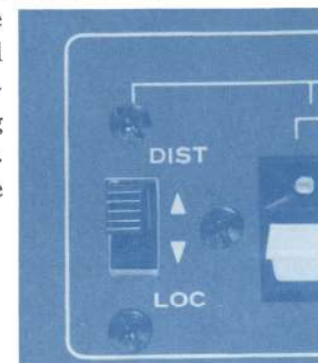
1. Turn it counterclockwise if the desired FM station(s) is cut off and cannot be received when you turn on the FM Muting Switch.
2. Turn it clockwise if you wish to receive only strong stations.



## FM Local/Distant Antenna Switch

Should you happen to live near a broadcast station, the radio wave from it may be excessively strong and the received broadcast sound may be distorted.

In such a case, change this switch to LOC, and the distortion will normally disappear, giving you a pleasant reception. Otherwise leave the switch at DIST.





## Discriminator Output Terminals

Four-channel stereo is fast becoming popular as a means of reproducing the live sound field. Four-channel stereo FM broadcasts are already underway in some areas of the world using matrix four-channel systems, but the discrete 4-channel system will also be introduced to FM in the near future.

To receive discrete 4-channel stereo FM broadcasts, you will need an adaptor in addition to the TU-7500. The DISCRIMINATOR OUTPUT terminal on the tuner's rear panel is for connecting such adaptor.



## Should the Power Fuse Blow

If the dial fails to glow and the tuner remains dead when you turn on the Power Switch, it is possible that its power fuse has blown.

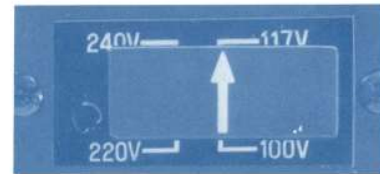
Should this happen, disconnect the power cord from the wall AC outlet at once and examine the power fuse on the rear panel. If you find it blown, find out the cause of the blowout and eliminate it, then replace the blown fuse with a new glass-tubed fuse of the rated capacity (1-ampere for 100/117 volt operation, 0.5-ampere for 220/240 volt operation). Never use a fuse of a different capacity or a piece of wire, even as a stopgap measure, or serious danger could result.



## Voltage Adjustment

The TU-7500 is equipped with a Voltage Selector so that it may be used anywhere in the world. It is set to the correct voltage of your area prior to shipment from our factory, and there is no need to touch it. But if you move after purchasing the tuner and find the power supply voltage is different, reset the selector as follows:

1. Remove the two screws securing the name plate on the rear panel, then remove the name plate.
2. Unplug the Voltage Selector once, and reset it so that the arrow mark on it faces the correct voltage indication.
3. Change the power fuse as well whenever the voltage has changed. For 100-117 volt operation, use a 1-ampere glass-tubed fuse. For 220-240 volt operation, use a 0.5-ampere one.
4. Where the power supply voltage considerably fluctuates, the Voltage Selector may be reset to avoid the unpleasant side effects of such fluctuation. Reset it to the voltage immediately higher than the peak of the fluctuation.



## Servicing

Should anything ever go wrong with your TU-7500 or if you have any question about it, please contact the Sansui dealer from whom you purchased it or your nearest Authorized Sansui Service Station.

# GENERAL TROUBLESHOOTING CHART

Many of the troubles which seem to be a fault of the tuner may be caused by wrong operation or by outside devices. These can be easily corrected by simple checking and easy remedies. If you notice a condition which looks like a breakdown of the tuner, examine the various connections and your operat-

ing procedure once, then look up the condition in the following chart to see if it cannot be easily removed. If this fails to improve the situation and the tuner definitely seems faulty, please contact the Sansui dealer from whom you purchased the tuner or your nearest Authorized Sansui Service Station.

PROGRAM	SYMPTOM	PROBABLE CAUSE	WHAT TO DO
AM, FM or MPX reception	<ul style="list-style-type: none"> <li>Constant or intermittent noise heard at times or in certain areas.</li> </ul>	<ul style="list-style-type: none"> <li>Discharge or oscillation caused by electrical appliances, such as fluorescent lamp, TV set, D.C. motor, rectifier or oscillator.</li> <li>Natural phenomena, such as atmospheric, static or thunderbolts.</li> <li>Insufficient antenna input due to ferroconcrete wall or long distance from station.</li> </ul>	<ul style="list-style-type: none"> <li>Attach noise limiter to electrical appliance producing noise, or attach it to tuner's power source.</li> <li>Install outdoor antenna and ground tuner to raise S/N ratio.</li> <li>Reverse power cord plug/receptacle connections.</li> <li>If noise occurs at certain frequency, attach wave trap to input.</li> <li>Keep tuner at proper distance from other electrical appliances.</li> </ul>
FM reception	<ul style="list-style-type: none"> <li>Noisy.</li> </ul> <p>Note: FM reception is affected considerably by transmitting conditions of station, such as power and antenna efficiency. As a result, you may receive one station quite well while receiving another station poorly.</p>	<ul style="list-style-type: none"> <li>Poor noise limiter effect or too low S/N ratio due to insufficient antenna input.</li> </ul>	<ul style="list-style-type: none"> <li>Install antenna (supplied) for maximum signal strength.</li> <li>If this does not prove effective, use exclusive FM outdoor antenna.</li> <li>Excessively long lead-in wire of antenna may cause noise.</li> </ul>
	<ul style="list-style-type: none"> <li>A series of pops.</li> </ul>	<ul style="list-style-type: none"> <li>Ignition noise caused by starting of nearby automobile engine.</li> </ul>	<ul style="list-style-type: none"> <li>Install antenna and its lead-in wire at proper distance from street or increase antenna input.</li> </ul>
	<ul style="list-style-type: none"> <li>Tuning noise between stations.</li> </ul>	<ul style="list-style-type: none"> <li>Results from nature of FM reception.</li> <li>FM Muting Switch at OFF.</li> </ul>	<ul style="list-style-type: none"> <li>Turn on FM Muting Switch.</li> <li>Ditto.</li> </ul>
FM-MPX reception	<ul style="list-style-type: none"> <li>Noise heard during FM-MPX reception but not during FM mono reception.</li> </ul>	<ul style="list-style-type: none"> <li>Weaker signal because service area of FM-MPX broadcast is only half that of FM mono broadcast.</li> </ul>	<ul style="list-style-type: none"> <li>Orient antenna for maximum antenna input.</li> <li>Set Noise Suppressor Switch to IN position.</li> </ul>
AM reception	<ul style="list-style-type: none"> <li>Noise heard at particular time of day, in certain area or over part of dial.</li> </ul>	<ul style="list-style-type: none"> <li>Peculiar to AM broadcasts.</li> </ul>	<ul style="list-style-type: none"> <li>Install antenna for maximum antenna efficiency. See 'AM Antennas'.</li> <li>Set Noise Suppressor Switch to IN position.</li> <li>In some cases, noise can be eliminated by grounding tuner or reversing power cord plug/receptacle connections.</li> </ul>
	<ul style="list-style-type: none"> <li>High-frequency noise.</li> </ul>	<ul style="list-style-type: none"> <li>Beat interference by adjacent station.</li> <li>TV set too close to stereo system.</li> </ul>	<ul style="list-style-type: none"> <li>Turn on amplifier's High Filter.</li> <li>Set Noise Suppressor Switch to IN position.</li> <li>Keep TV set at proper distance from stereo system.</li> </ul>

# SPECIFICATIONS / ACCESSORIES

## FM SECTION

TUNING RANGE:	88 to 108MHz
SENSITIVITY (IHF):	1.9 $\mu$ V
TOTAL HARMONIC DISTORTION	
(MONO):	less than 0.3%
(STEREO):	less than 0.5%
SIGNAL TO NOISE RATIO:	
	better than 70dB
SELECTIVITY:	better than 70dB
CAPTURE RATIO(IHF):	2dB
IMAGE FREQUENCY REJECTION:	
	better than 75dB at 98MHz
IF REJECTION:	better than 90dB
SPURIOUS RESPONSE REJECTION:	
	better than 80dB
STEREO SEPARATION:	better than 40dB at 400Hz
SPURIOUS RADIATION:	less than 34dB
ANTENNA INPUT IMPEDANCE:	
	300 $\Omega$ balanced, 75 $\Omega$ unbalanced
ANTENNA ATT.:	20dB
FREQUENCY RESPONSE (STEREO):	30 to 15,000Hz +0.5dB, -2.5dB

## AM SECTION

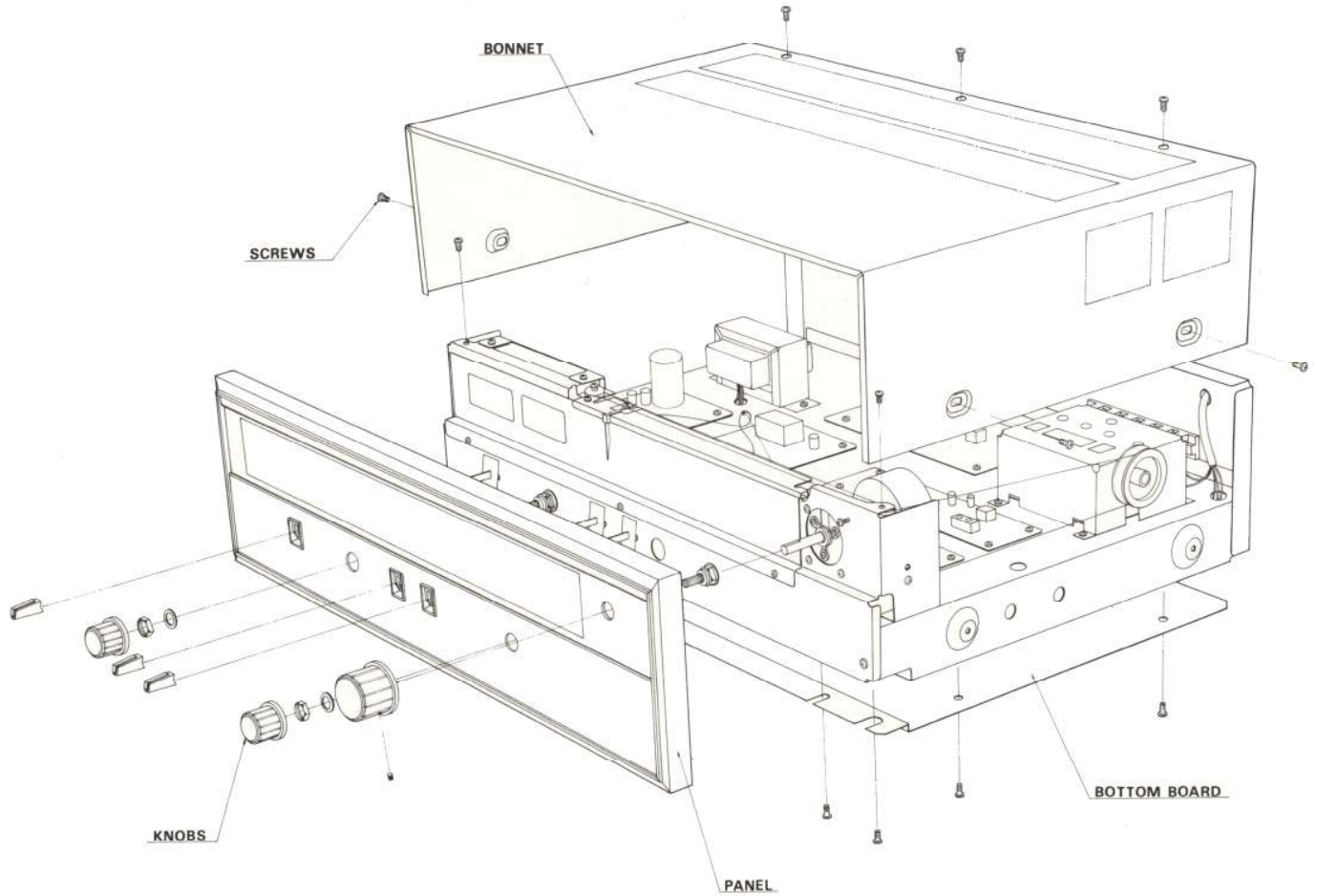
TUNING RANGE:	535 to 1,605kHz
SENSITIVITY (Bar Antenna):	
	50dB/m
SELECTIVITY ( $\pm$ 10kHz):	better than 25dB
IMAGE FREQUENCY REJECTION:	
	better than 80dB/m at 1,000kHz
IF REJECTION:	better than 80dB/m at 1,000kHz
OUTPUT:	0 to 1V
REC OUTPUT:	0.3V
CONTROLS AND SWITCHES:	
SELECTOR:	AM, FM AUTO, FM MONO
FM MUTING:	ON, OFF
NOISE SUPPRESSOR:	OUT, IN
FM ATT. SWITCH	LOCAL, DISTANT
SEMICONDUCTORS:	39 Transistors, 3 FETs, 21 Diodes, 3 ICs
POWER REQUIREMENTS:	
POWER VOLTAGE:	100, 117, 220, 240V 50/60Hz
POWER CONSUMPTION:	20W
DIMENSIONS:	440mm, 17 $\frac{3}{8}$ " W. 140mm, 5 $\frac{9}{16}$ " H. 322mm, 12 $\frac{11}{16}$ " D.
WEIGHT:	8.0kg (17.6 lbs)

## ACCESSORIES

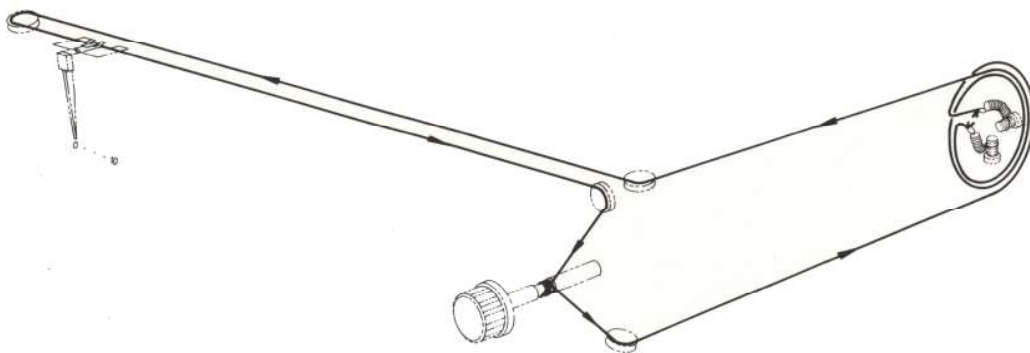
1. FM Antenna.....	1
2. AM Antenna.....	1
3. Connection Cable with Pin Plugs .....	2
4. Polishing Cloth .....	1
5. Butterfly Bolts.....	2
6. Washers .....	2
7. Operating Instructions and Service Manual	1
8. Operating Instructions Sheet .....	1

# DISASSEMBLY PROCEDURE

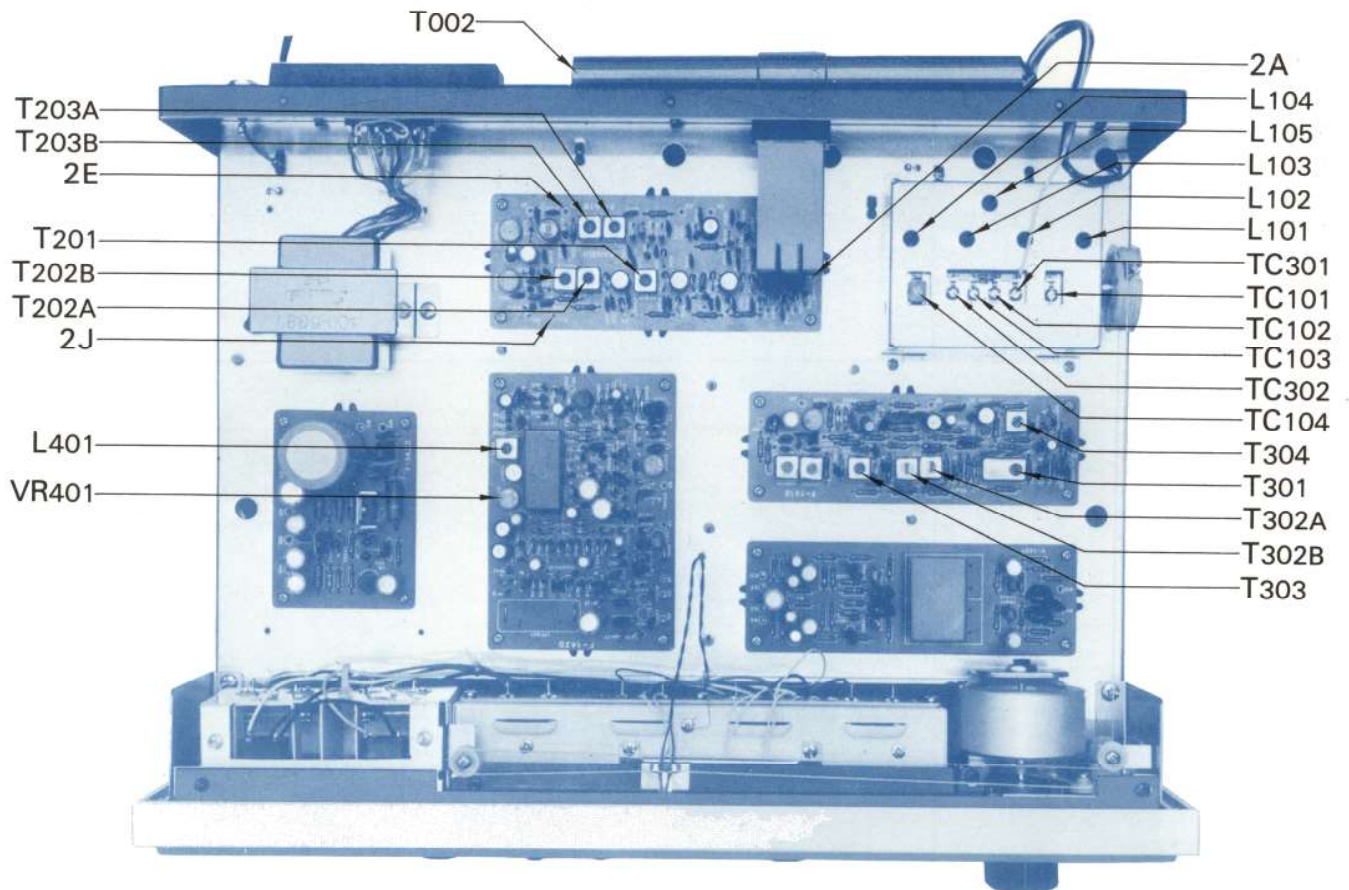
## REMOVING FRONT PANEL, METAL BONNET AND BOTTOM BOARD



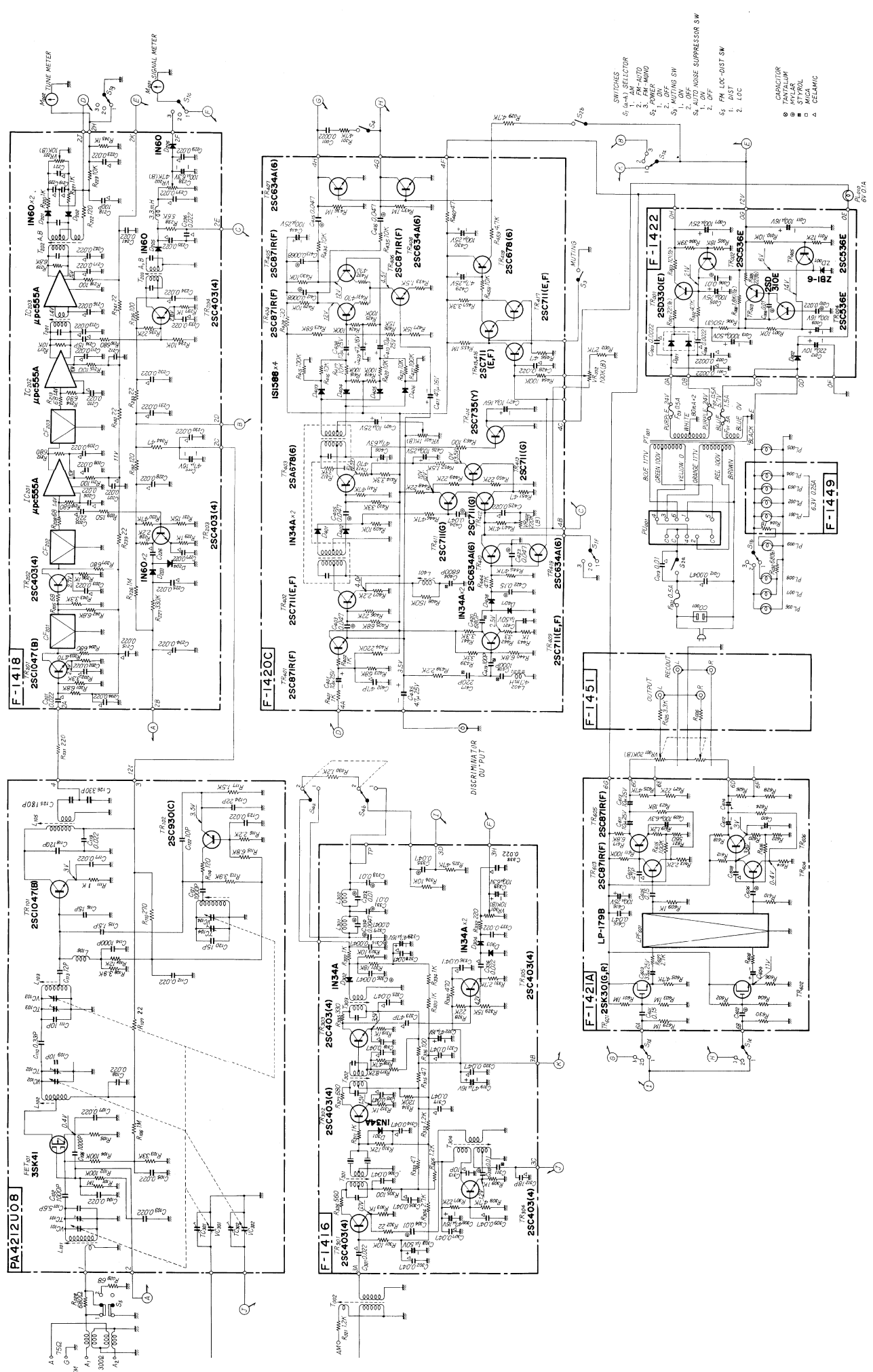
## DIAL MECHANISM



# TEST POINTS



# SCHEMATIC DIAGRAM



# ALIGNMENT

## FM TUNER SECTION

STEP	FEED SIGNAL		MEASURE OUTPUT		SET TUNING CONTROL TO	ADJUST	ADJUST FOR
	FROM	TO	AT	WITH			
1.	Sweep generator 10.7MHz $\pm$ 200kHz (output 60dB)	2A (via 10pF ceramic capacitor)	2J	Oscilloscope		T <sub>202A, B</sub>	S curve
2.	Sweep generator 10.7MHz $\pm$ 200kHz (output at limiter point)	2A (via 10pF ceramic capacitor)	2E	Oscilloscope		T <sub>203A, B</sub>	Match centers of S curve and output waveform of meter (see Fig. 1)
3.	FM signal generator 98MHz (400Hz 100% mod., output 60dB)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	98MHz	L <sub>105</sub> , T <sub>201</sub>	Max. output
4.	FM signal generator 98MHz (400Hz 100% mod., output at limiter point)	Antenna terminal	Output terminal	Oscilloscope & distortion meter	98MHz	T <sub>202A</sub>	Min. distortion factor
5.	FM signal generator 88MHz (400Hz 100% mod.)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	88MHz	L <sub>104</sub>	Max. output
6.	FM signal generator 108MHz (400Hz 100% mod.)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	108MHz	TC <sub>104</sub>	Max. output
7.	Repeat steps 5, 6						
8.	FM signal generator 90MHz (400Hz 100% mod.)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	90MHz	L <sub>101, 102, 103</sub>	Max. output
9.	FM signal generator 106MHz (400Hz 100% mod.)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	106MHz	TC <sub>101, 102, 103</sub>	Max. output
10.	Repeat steps 8, 9						

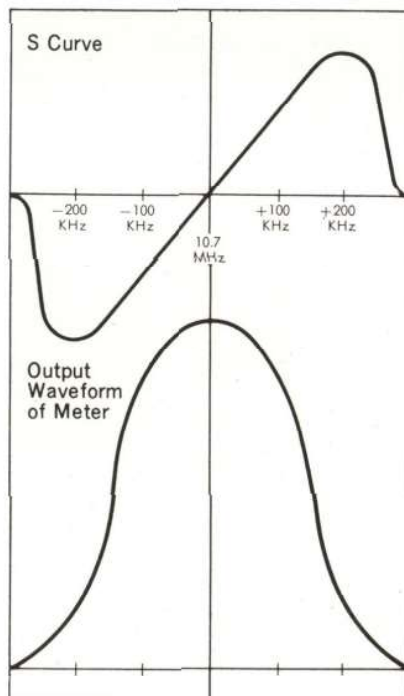
## FM MPX SECTION

STEP	FEED SIGNAL		MEASURE OUTPUT		SET TUNING CONTROL TO	ADJUST	ADJUST FOR
	FROM	TO	AT	WITH			
1.	FM signal generator 84MHz & stereo signal generator (composite signal containing pilot signal, L ch. 40% mod.)	Antenna terminal	Output terminal (L ch.)	Oscilloscope, V.T.V.M. & distortion meter	84MHz	L <sub>401</sub>	Turn VR <sub>401</sub> fully counterclockwise. Max. output, Min. distortion in L ch.
2.	FM signal generator 84MHz & stereo signal generator (composite signal containing pilot signal, L ch. 40% mod.)	Antenna terminal	Output terminal (R ch.)	Oscilloscope & V.T.V.M.	84MHz	VR <sub>401</sub>	Min. output in R ch.

# AM TUNER SECTION

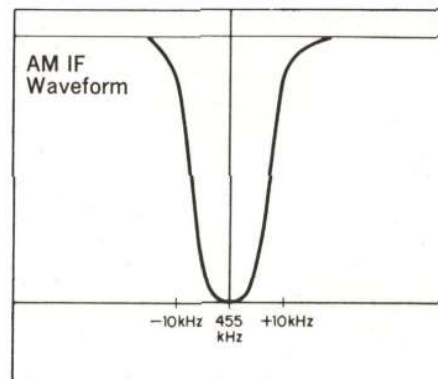
STEP	FEED SIGNAL		MEASURE OUTPUT		SET TUNING CONTROL TO	ADJUST	ADJUST FOR
	FROM	TO	AT	WITH			
1.	Sweep generator 455kHz $\pm$ 30kHz	Antenna terminal	TP (F-1416)	Oscilloscope	Any frequency not occupied by broadcast stations	T <sub>301, 302A, 302B, 303</sub>	Best AM IF waveform (set Noise Suppressor SW to IN)
2.	AM signal generator 535kHz (400Hz 30% mod.)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	535kHz	T <sub>304</sub>	Max. output
3.	AM signal generator 1600kHz (400Hz 30% mod.)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	1600kHz	TC <sub>302</sub>	Max. output
4.	Repeat steps 2, 3						
5.	AM signal generator 600kHz (400Hz 30% mod.)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	600kHz	T <sub>002</sub>	Max. output
6.	AM signal generator 1400kHz (400Hz 30% mod.)	Antenna terminal	Output terminal	Oscilloscope & V.T.V.M.	1400kHz	TC <sub>301</sub>	Max. output
7.	Repeat steps 5, 6						

## FM DISCRIMINATOR WAVEFORM



## OUTPUT WAVEFORM OF METER

## AM IF WAVEFORM





# PRINTED CIRCUIT BOARDS AND PARTS LIST

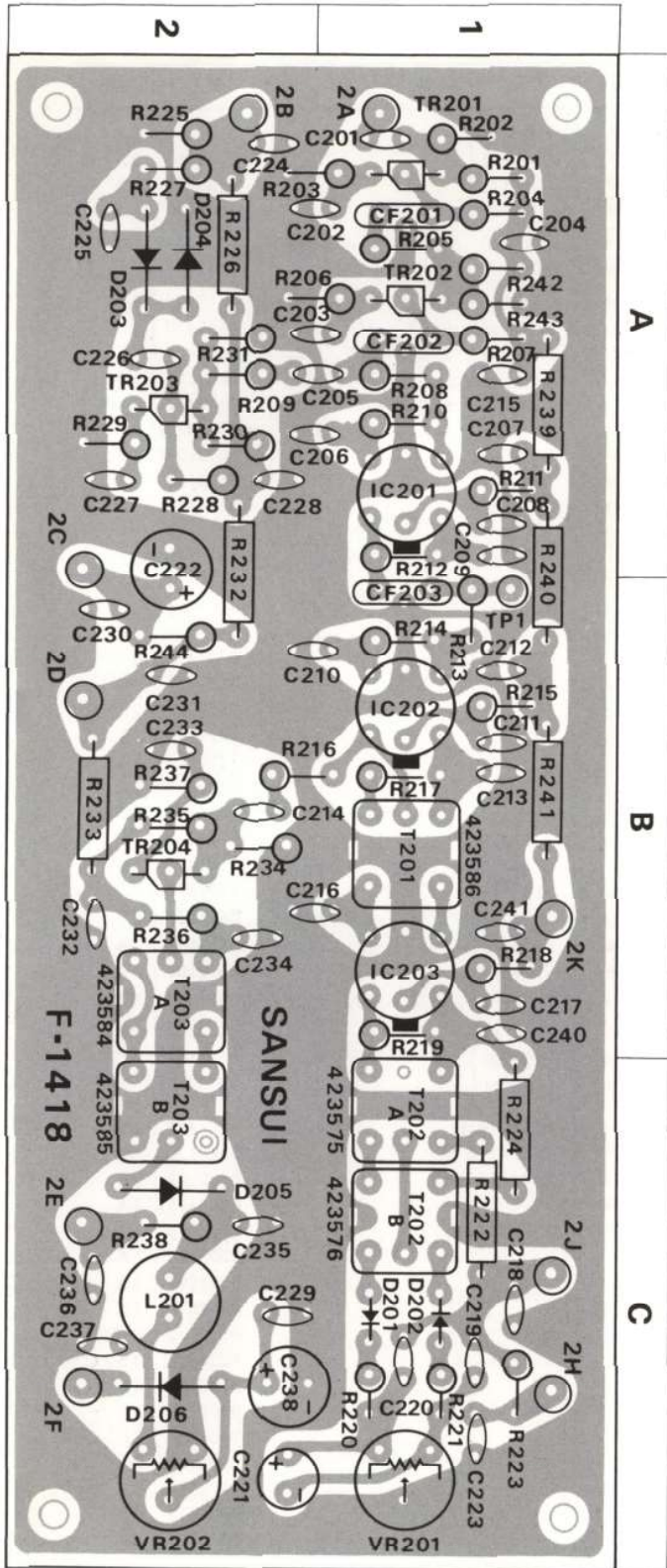
W: Parts No. X: Parts Name Y: Stock No. Z: Position of Parts

## FM IF BLOCK <F-1418>

Stock No. 7520540

W	X	Y	Z
R201	6.8kΩ	0106682	1 A
R202	3.3kΩ	0106332	1 A
R203	470Ω	0106471	1, 2 A
R204	680Ω	0106681	1 A
R205	68Ω	0106680	1 A
R206	1kΩ	0106102	1, 2 A
R207	680Ω	0106681	1 A
R208	68Ω	0106680	1 A
R209	150Ω	0106151	2 A
R210	680Ω	0106681	1 A
R211	100Ω	0106101	1 A
R212	680Ω	0106681	1 A
R213	68Ω	0106680	1 B
R214	680Ω	0106681	1 B
R215	100Ω	0106101	1 B
R216	680Ω	0106681	1, 2 B
R217	10kΩ	0106103	1 B
R218	100Ω	0106101	1 B
R219	6.8kΩ	0106682	1 B
R220	1kΩ	0106102	1 C
R221	1kΩ	0106102	1 C
R222	120Ω	0107121	1 C
R223	10kΩ	0106103	1 C
R224	2.2Ω	0107229	1 C
R226	1MΩ	0107105	2 A
R227	330kΩ	0106334	2 A
R228	2.2kΩ	0106222	2 A
R229	1kΩ	0106102	2 A
R230	47kΩ	0106473	2 A
R231	15kΩ	0106153	2 A
R232	120Ω	0107121	2 A
R233	22Ω	0107220	2 B
R234	10kΩ	0106103	2 B
R235	22kΩ	0106223	2 B
R236	100Ω	0106101	2 B
R237	1kΩ	0106102	2 B
R238	5.6kΩ	0106562	2 C
R239	22Ω	0107220	1 A
R240	22Ω	0107220	1 A, B
R241	22Ω	0107220	1 B
R242	6.8kΩ	0106682	1 A
R243	3.3kΩ	0106232	1 A
R244	47Ω	0106470	2 B
R245	1kΩ	0107102	
VR201	10kΩ(B) FM Tuning Meter Adj.	1935130	1 C
VR202	47kΩ(B) FM Signal Meter Adj.	1935170	2 C
C201	0.022μF	0656223	1 A
C202	0.022μF	0656223	1, 2 A
C203	0.022μF	0656223	1, 2 A
C204	0.022μF	0656223	1 A
C205	22pF ±10% 50V CC.	0660220	1, 2 A
C206	0.022μF	0656223	1, 2 A
C207	0.022μF	0656223	1 A
C208	0.022μF	0656223	1 A
C209	0.022μF	0656223	1 A

W	X	Y	Z
C210	0.022μF	0656223	1, 2 B
C211	0.022μF	0656223	1 B
C212	0.022μF $\left. \begin{matrix} +80\% \\ -20\% \end{matrix} \right\}$ 25V CC.	0656223	1 B
C213	0.022μF	0656223	1 B
C214	15pF ±10% 50V CC.	0660150	2 B
C215	0.022μF	0656223	1 A
C216	0.022μF $\left. \begin{matrix} +80\% \\ -20\% \end{matrix} \right\}$ 25V CC.	0656223	1, 2 B
C217	0.022μF	0656223	1 B
C218	100pF	0660101	1 C
C219	220pF	0660221	1 C
C220	220pF	0660221	1 C
C221	10μF	0512100	2 C
C222	47μF	0512470	2 A, B
C223	0.022μF	0656223	1 C
C224	0.022μF $\left. \begin{matrix} +80\% \\ -20\% \end{matrix} \right\}$ 25V CC.	0656223	1, 2 A
C225	0.022μF	0656223	2 A
C226	0.001μF $\left. \begin{matrix} +80\% \\ -20\% \end{matrix} \right\}$ 50V CC.	0657102	2 A
C227	0.022μF	0656223	2 A
C228	0.022μF	0656223	2 A
C229	0.022μF	0656223	2 C
C230	0.022μF	0656223	2 B
C231	0.022μF	0656223	2 B
C232	0.022μF $\left. \begin{matrix} +80\% \\ -20\% \end{matrix} \right\}$ 25V CC.	0656223	2 B
C233	0.022μF	0656223	2 B
C234	0.022μF	0656223	2 C
C235	0.022μF	0656223	2 C
C236	0.022μF	0656223	2 C
C237	0.022μF	0656223	2 C
C238	100μF	0510101	1, 2 C
C240	0.022μF $\left. \begin{matrix} +80\% \\ -20\% \end{matrix} \right\}$ 25V CC.	0656223	
TR201	2SC1047 (B)	0305801	1 A
TR202		0305992	1 A
TR203	2SC403C (4)	0305992	2 B
TR204		0305992	2 B
IC201		0360070	1 A
IC202	μPC555A	0360070	1 B
IC203		0360070	1 B
D201	IN60P	0311050	1 C
D202	IN60P	0311050	1 C
D203		0310332	2 A
D204	IN60	0310332	2 A
D205		0310332	2 C
D206	DS430	0340090	2 C
T201		4235860	1 B
T202A		4235750	1 C
T202B	FM IF Coil	4235760	2 B, C
T203A		4235840	2 C
T203B		4235850	2 C
L201	33mH Micro Inductor	4900180	2 C
CF201		0910150	1 A
CF202	SFE-10.7MA	0910150	1 A
CF203		0910150	1 B
	F-1418 Printed Circuit Board	2520330	



### Abbreviations

- CR** : Carbon Resister
- CC** : Ceramic Capacitor
- EC** : Electrolytic Capacitor
- MC** : Mylar Capacitor
- SC** : Styrol Capacitor

# PRINTED CIRCUIT BOARDS AND PARTS LIST

W: Parts No. X: Parts Name Y: Stock No. Z: Position of Parts

## FM MPX BLOCK <F-1420C>

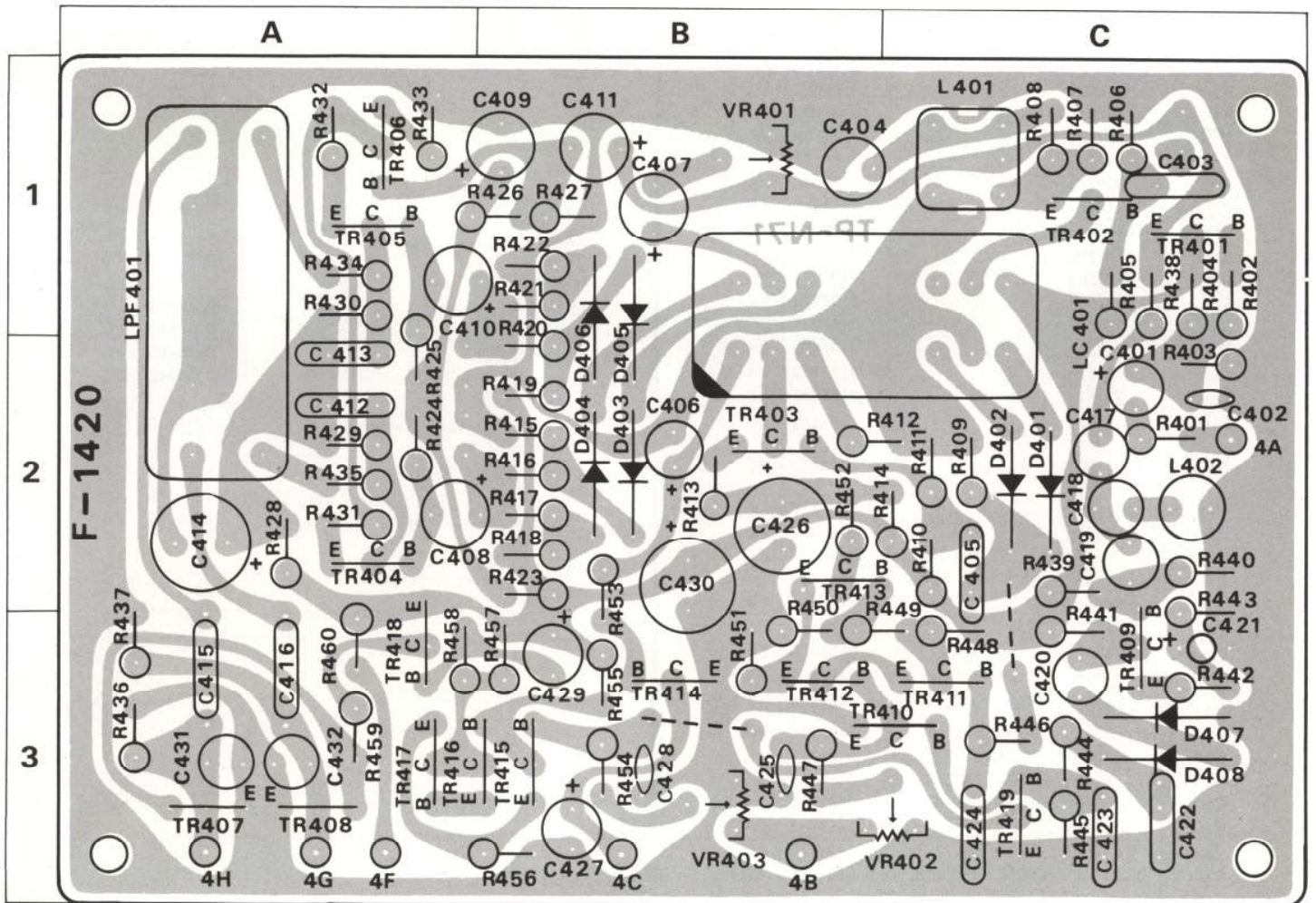
Stock No. 7540690

W	X	Y	Z
R401	1kΩ	0106102	2C
R402	1kΩ	0106102	1B
R403	68kΩ	0106683	2C
R404	220kΩ	0106224	1C
R405	68kΩ	0106683	1C
R406	22kΩ	0106223	1C
R407	2.2kΩ	0106222	1C
R408	150kΩ	0106154	1C
R409	10kΩ	0106103	2C
R410	33kΩ	0106333	2C
R411	47kΩ	0106473	2C
R412	33kΩ	0106333	2B, C
R413	470Ω	0106471	2B
R414	3.3kΩ	0106332	2C
R415	100kΩ	0106104	2B
R416	10kΩ	0106103	2B
R417	10kΩ	0106103	2B
R418	100kΩ	0106104	2B
R419	100kΩ	0106104	2B
R420	10kΩ	0106103	1, 2 B
R421	10kΩ	0106103	1B
R422	100kΩ	0106104	1B
R423	68kΩ	0106683	2B
R424	100kΩ	0106104	2A
R425	100kΩ	0106104	1, 2 A
R426	15kΩ	0106153	1A, B
R427	15kΩ	0106153	1B
R428	100Ω	0106101	2A
R429	10kΩ	0106103	2A
R430	10kΩ	0106103	1A
R431	470Ω	0106471	2A
R432	470Ω	0106471	1A
R433	1.8kΩ	0106182	1A
R434	10kΩ	0106103	1A
R435	10kΩ	0106103	2A
R436	1MΩ	0106105	3A
R437	1MΩ	0106105	3A
R438	2.2kΩ	0106222	1A
R439	33kΩ	0106333	2A
R440	6.8kΩ	0106682	2A
R441	3.3kΩ	0106332	3A
R442	33Ω	0106330	3A
R443	1kΩ	0106102	2, 3C
R444	47kΩ	0106473	3C
R445	47kΩ	0106473	3C
R446	47kΩ	0106473	3C
R447	47kΩ	0106473	3B
R448	22kΩ	0106223	3C
R449	22kΩ	0106223	3B, C
R450	22kΩ	0106223	3B
R451	47Ω	0106470	3B
R452	1.5kΩ	0106152	2B
R453	100Ω	0106101	2, 3B
R454	100kΩ	0106104	3B
R455	1MΩ	0106105	3B
R456	47Ω	0106470	3A, B

W	X	Y	Z
R457	3.3kΩ	0106332	3B
R458	10kΩ	0106103	3A, B
R459	4.7kΩ	0106472	3A
R460	47Ω	0106470	2, 2A
VR401	1kΩ(B) Stereo Separation Adj.	1035070	1B
VR402	220kΩ(B) FM Muting Adj.	1035210	3B, C
C401	10μF 25V EC.	0513100	2C
C402	47pF ±10% 50V CC.	0660470	2C
C403	0.047μF ±10% 50V MC.	0601477	1C
C404	6800pF ±5% 50V SC.	0629001	1B, C
C405	0.047μF ±10% 50V MC.	0601477	2, 3C
C406	47μF 6.3V EC.	0510470	2B
C407	10μF	0513100	1B
C408	10μF	0513100	2A, B
C409	47μF 16V EC.	0512470	1A, B
C410	10μF 25V EC.	0513100	1B
C411	47μF 16V EC.	0512470	1B
C412	0.0082μF	0600826	2A
C413	0.0082μF ±5% 50V MC.	0600826	2A
C414	100μF 25V EC.	0513101	2A
C415	0.047μF ±10% 50V MC.	0601477	3A
C416	0.047μF ±10% 50V MC.	0601477	3A
C417	220pF	0620221	2C
C418	1000pF ±5% 50V SC.	0620102	2C
C419	100pF	0620101	2C
C420	680pF	0620681	3C
C421	1μF 50V EC.	0515109	3C
C422	0.15μF	0601158	3C
C423	0.047μF ±10% 50V MC.	0601477	3C
C424	0.047μF	0601477	3C
C425	0.022μF $\begin{matrix} +80\% \\ -20\% \end{matrix}$ 50V CC.	0657223	3B
C426	100μF 25V EC.	0513101	2B
C427	10μF 16V EC.	0512100	3B
C428	0.022μF $\begin{matrix} +80\% \\ -20\% \end{matrix}$ 50V CC.	0657223	3B
C429	4.7μF	0513479	3B
C430	100μF	0513101	2, 3B
C435	4.7μF	0513479	
TR401	2SC871R (F)	0305475	1C
TR402	2SC711 (E, F)	0306731, 2	1C
TR403	2SA678 (6)	0300291	2B
TR404		0305475	2A
TR405	2SC871R (F)	0305475	1A
TR406		0305475	1A
TR407		0305891	3A
TR408	2SC634A(6)	0305891	3A
TR409	2SC711 (E, F)	0305731, 2	2, 3C
TR410	2SC634A (6)	0305891	3B, C
TR411		0305733	3C
TR412	2SC711 (G)	0305733	3B
TR413		0305733	2B, C
TR414	2SC735 (Y)	0305641	3B, C
TR415		0305731, 2	3B
TR416	2SC711 (E, F)	0305731, 2	3B
TR417		0305731, 2	3A

W	X	Y	Z
TR418	2SA678 (6)	0300291	2, 3 A
TR419	2SC634A (6)	0305891	3 C
D401	} IN34A	0310400	2 C
D402		0310400	2 C
D403		0311180	2 B
D404	} IS1588	0311180	2 B
D405		0311180	1, 2 B
D406		0311180	1, 2 B

W	X	Y	Z
D407	} IN34A	0310400	3 C
D408		0310400	3 C
L401	SLV-40S MPX Coil	4240510	1 C
L402	4.7mH $\pm$ 5% Micro Inductor	4900170	2 C
LC401	SMU-203S LC Unit	4240490	1, 2 B C
F-1420 Printed Circuit Board		2540280	



# PRINTED CIRCUIT BOARDS AND PARTS LIST

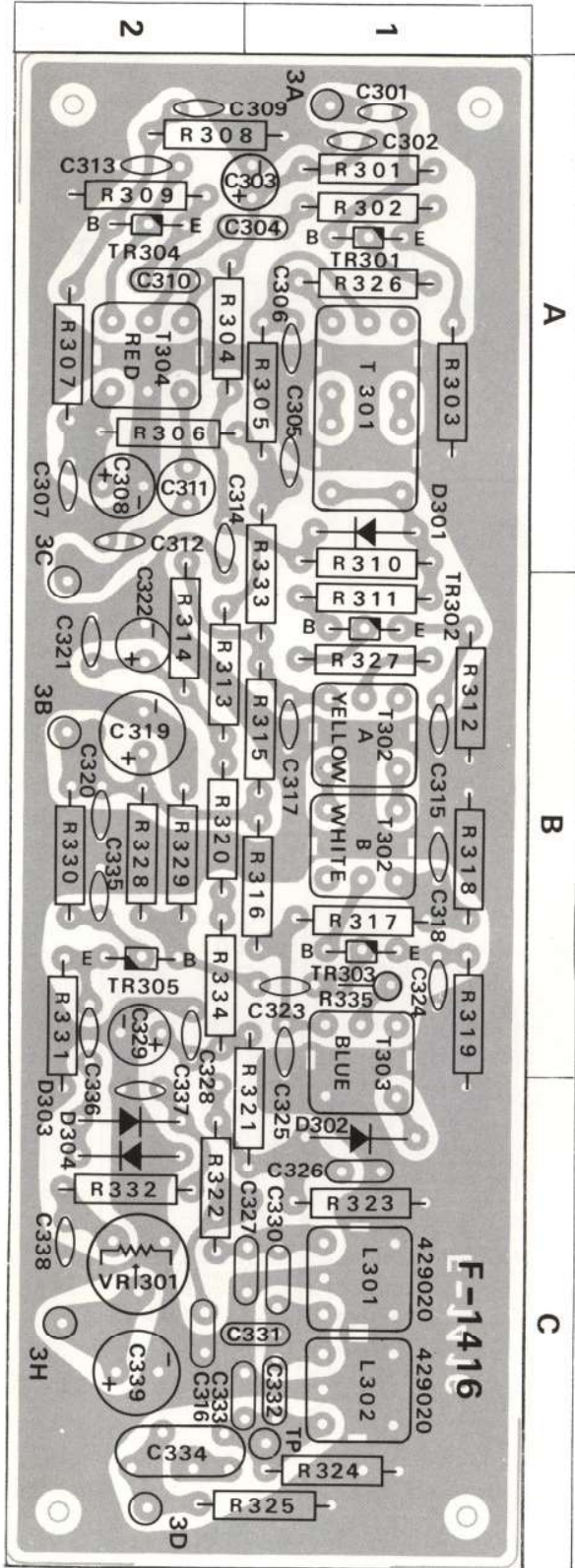
W: Parts No. X: Parts Name Y: Stock No. Z: Position of Parts

## AM BLOCK <F-1416>

Stock No. 7530240

W	X	Y	Z
R301	10k $\Omega$	0107103	1 A
R302	22 $\Omega$	0107220	1 A
R303	1k $\Omega$	0107102	1 A
R304	2.7k $\Omega$	0107272	2 A
R305	100 $\Omega$	0107101	2 A
R306	1.2k $\Omega$	0107122	2 A
R307	22k $\Omega$	0107223	2 A
R308	4.7k $\Omega$	0107472	2 A
R309	1k $\Omega$	0107102	2 A
R310	12k $\Omega$	0107123	1 A, B
R311	1k $\Omega$	0107102	1 B
R312	1k $\Omega$	0107102	1 B
R313	1.2k $\Omega$	0107122	2 B
R314	120k $\Omega$	0107124	2 B, C
R315	47 $\Omega$	0107470	2 B
R316	100 $\Omega$	0107101	2 B
R317	8.2k $\Omega$	0107822	1 B
R318	4.7k $\Omega$	0107472	1 B
R319	1k $\Omega$	0107102	1 B, C
R320	1k $\Omega$	0107102	2 B
R321	18k $\Omega$	0107183	2 B, C
R322	1k $\Omega$	0107002	2 C
R323	10k $\Omega$	0107103	1 C
R324	10k $\Omega$	0107103	1 C
R325	47k $\Omega$	0107473	1, 2 C
R326	560 $\Omega$	0107561	1 A
R327	680 $\Omega$	0107681	1 B
R328	22k $\Omega$	0107223	2 B
R329	15k $\Omega$	0107153	2 B
R330	470 $\Omega$	0107471	2 B
R331	2.7k $\Omega$	0107272	2 B, C
R332	220 $\Omega$	0107221	2 C
R333	47 $\Omega$	0107470	2 A, B
R334	1k $\Omega$	0107102	2 B
R335	330 $\Omega$	0106331	1 B
R337	47 $\Omega$	0107470	
VR301	10k $\Omega$ (B) AM Meter Adj.	1035130	2 C
C301	0.022 $\mu$ F } +80% 25V CC.	0656223	1 A
C302	0.047 $\mu$ F } -20%	0656473	1 A
C303	1 $\mu$ F	0515109	2 A
C304	0.01 $\mu$ F } $\pm$ 10% 50V MC.	0601107	1, 2 A
C305	0.047 $\mu$ F	0656473	1 A
C306	0.047 $\mu$ F } +80% 25V CC.	0656473	1 A
C307	0.047 $\mu$ F } -20%	0651473	2 A
C308	47 $\mu$ F	0512470	2 A
C309	0.047 $\mu$ F } +80% 25V CC.	0656473	2 A
C310	0.01 $\mu$ F } $\pm$ 10% 50V MC.	0601107	2 A
C311	360 pF } $\pm$ 5% 50V SC.	0621361	2 A
C312	18 pF } $\pm$ 10% 50V CC.	0660180	2 A
C313	10 pF } $\pm$ 10% 50V CC.	0660100	2 A
C314	0.047 $\mu$ F } +80% 25V CC.	0656473	2 A, B
C315	0.047 $\mu$ F } -20%	0656473	1 B
C316	0.0047 $\mu$ F } $\pm$ 10% 50V MC.	0601476	2 C

W	X	Y	Z
C317	0.047 $\mu$ F } +80% 25V CC.	0656473	1 B
C318	0.047 $\mu$ F } -20%	0656473	1 B
C319	47 $\mu$ F	0512470	2 B
C320	0.047 $\mu$ F } +80% 25V CC.	0656473	2 B
C321	0.047 $\mu$ F } -20%	0656473	2 B
C322	1 $\mu$ F	0515109	2 B
C323	47 pF } $\pm$ 10% 50V CC.	0660470	1, 2 B
C324	0.047 $\mu$ F } +80% 25V CC.	0656473	1 B
C325	0.047 $\mu$ F } -20%	0656473	1 B
C326	0.0047 $\mu$ F } +80% 50V MC.	0601476	1 C
C327	0.0047 $\mu$ F } -20%	0601476	2 C
C328	0.047 $\mu$ F } +80% 25V CC.	0656473	2 B
C329	4.7 $\mu$ F	0513479	2 B
C330	0.0047 $\mu$ F	0601476	1 C
C331	0.01 $\mu$ F	0601107	1, 2 C
C332	0.01 $\mu$ F } $\pm$ 10% 50V MC.	0601107	1, 2 C
C333	0.01 $\mu$ F	0601107	2 C
C334	0.047 $\mu$ F	0601477	2 C
C335	0.047 $\mu$ F	0656473	2 B
C336	0.047 $\mu$ F } +80% 25V CC.	0656473	2 B
C337	0.022 $\mu$ F } -20%	0656223	2 C
C338	0.022 $\mu$ F	0656223	2 C
C339	100 $\mu$ F	0510101	2 C
TR301	2SC403C (4)	0305992	1 A
TR302		0305992	1 B
TR303		0305992	1 B
TR304	2SC403C (3)	0305991	2 A
TR305		0305991	2 B
D301	1N34A	0310400	1 A
D302		0310400	1 C
D303		0310400	2 C
D304		0310400	2 C
T301	YEL-455E <sub>2</sub> Ceramic Filter	0910180	1 A
T302A	AM IF Coil	4230590	1 B
T302B		4230600	1 B
T303		4230580	1 B, C
T304	AM O $\ddot{S}$ C Coil	4220380	2 A
L301	59mH Filter Coil	4290200	1 C
L302		4290200	1 C
	F-1416 Printed Circuit Board	2530140	



## LAMP HOLDER BLOCK <F-1449>

Stock No. 7591210

W	X	Y
R024	18Ω ± 5% ¼W CR.	0107180
PL001	6.3V 0.25A } Dial Scale Lamp.	0420020
PL002		0420020
PL003		0420020
PL004		0420020
	Fuse Holder (× 8)	2310051
	F-1449 Printed Circuit Board	2591210

## TERMINAL BLOCK <F-1451>

Stock No. 7591220

W	X	Y
R025	3.3kΩ } ± 5% ¼W CR.	0107332
R026		0107332
	F-1451 Printed Circuit Board	2591220

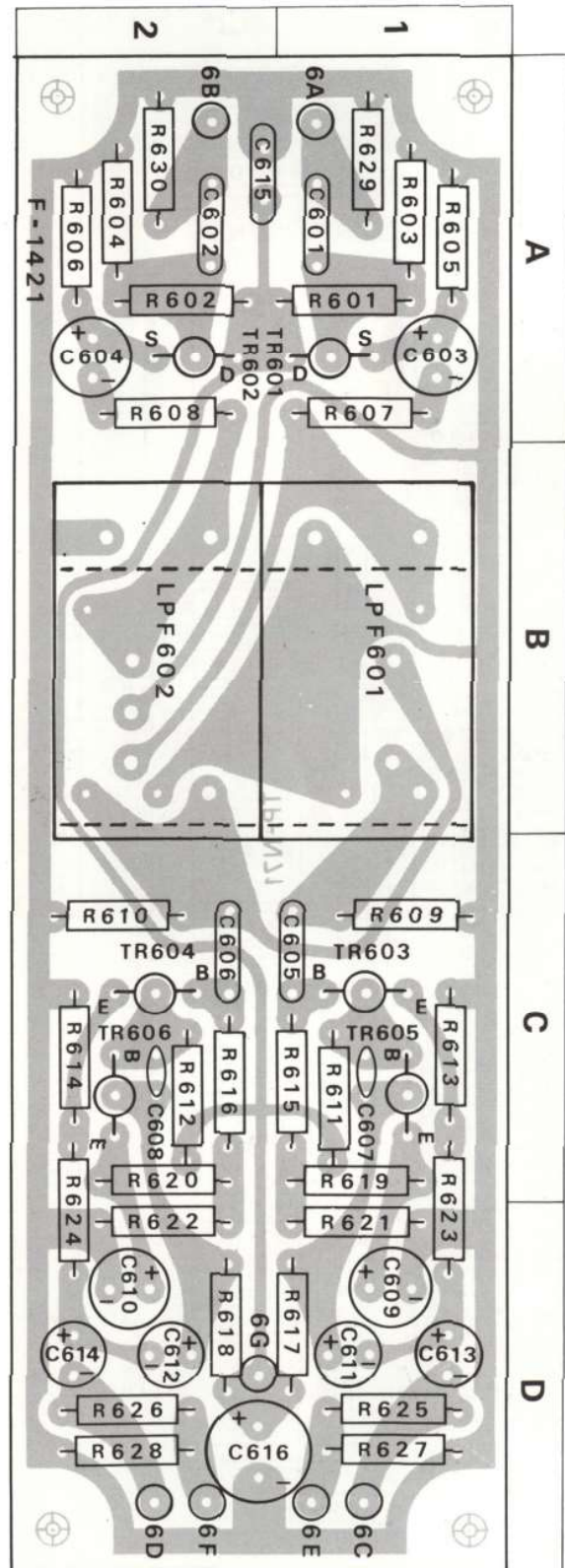
# PRINTED CIRCUIT BOARDS AND PARTS LIST

W: Parts No. X: Parts Name Y: Stock No. Z: Position of Parts

## FILTER BLOCK <F-1421A>

Stock No. 7591200

W	X	Y	Z
R601	1MΩ	0107105	1 A
R602	1MΩ	0107105	2 A
R603	1MΩ	0107105	1 A
R604	1MΩ	0107105	2 A
R605	4.7kΩ	0107472	1 A
R606	4.7kΩ	0107472	2 A
R607	2.7kΩ	0107272	1 A
R608	2.7kΩ	0107272	2 A
R609	1kΩ	0107102	1 C
R610	1kΩ	0107102	2 C
R611	100kΩ	0107104	1 C
R612	100kΩ	0107104	2 C
R613	2.2kΩ	0107222	1 C
R614	2.2kΩ	0107222	2 C
R615	100kΩ	0107104	1 C
R616	100kΩ	0107104	2 C
R617	6.8kΩ	0107682	1 D
R618	6.8kΩ	0107682	2 D
R619	1.2kΩ	0107122	1 C
R620	1.2kΩ	0107122	2 C
R621	560Ω	0107561	1 D
R622	560Ω	0107561	2 D
R623	18kΩ	0107183	1 C, D
R624	18kΩ	0107183	2 C, D
R625	47kΩ	0107473	1 D
R626	47kΩ	0107473	2 D
R627	22kΩ	0107223	1 D
R628	22kΩ	0107223	2 D
R629	1MΩ	0107105	1 A
R630	1MΩ	0107105	2 A
C601	0.15μF	0601158	1 A
C602	0.15μF	0601158	2 A
C603	33μF	0513330	1 A
C604	33μF	0513330	2 A
C605	0.15μF	0601158	1 C
C606	0.15μF	0601158	2 C
C607	47 pF	0660470	1 C
C608	47 pF	0660470	2 C
C609	100μF	0510101	1 D
C610	100μF	0510101	2 D
C611	10μF	0513100	1 D
C612	10μF	0513100	2 D
C613	10μF	0513100	1 D
C614	10μF	0513100	2 D
C615	0.047μF	0601477	1 A
C616	100μF	0513101	1, 2 D
TR601	2SK30 (GR)	0370103	1 A
TR602		0370103	2 A
TR603		0305475	1 C
TR604		0305475	2 C
TR605		0305475	1 C
TR606		0305475	2 C
LPF601	Low Pass Filter LP-179B	0910170	1, 2 B, C
	F-1421 Printed Circuit Board	2591190	

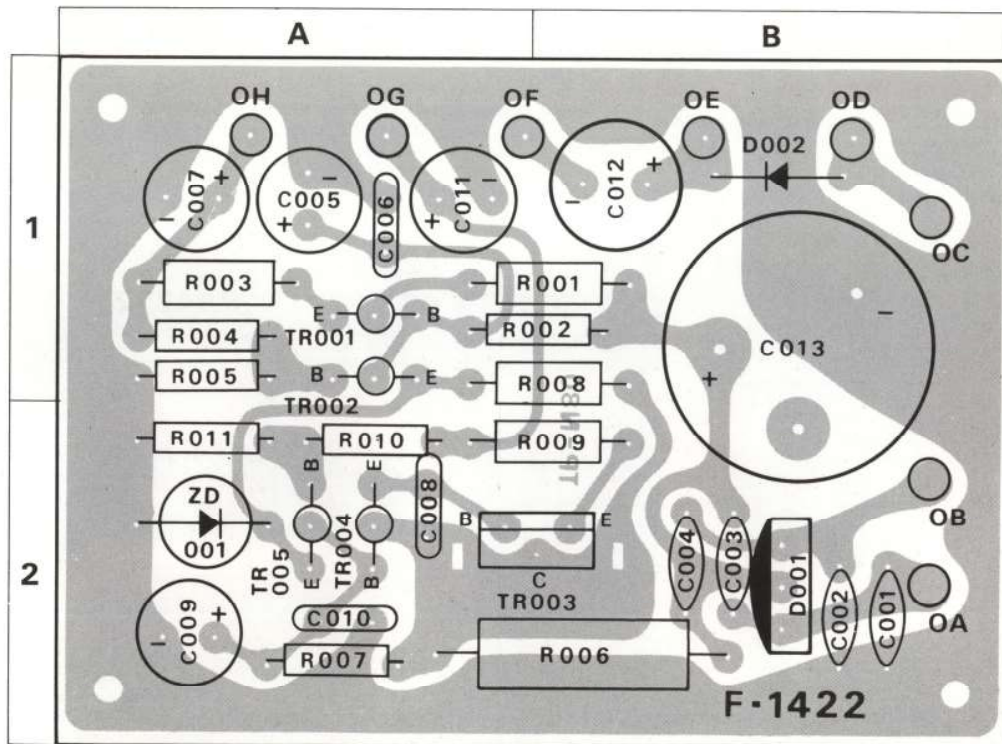


# POWER SUPPLY BLOCK <F-1422>

Stock No. 7500680

W	X	Y	Z	
R001	22Ω ±10% ½W CR.	0103220	1 A, B	
R002	4.7kΩ ±5% ¼W CR.	0107472	1 A, B	
R003	10Ω ±10% ½W CR.	0103100	1 A	
R004	39kΩ } ±5% ¼W CR.	0107393	1 A	
R005		18kΩ } ±5% ¼W CR.	0107183	1 A
R006	150Ω ±10% 2W CR.	0105151	2 A, B	
R007	10kΩ ±5% ¼W CR.	0107103	2 A	
R008	1.8kΩ } ±10% ½W CR.	0103182	1 A, B	
R009		22Ω } ±10% ½W CR.	0103220	2 A, B
R010	10kΩ } ±5% ¼W CR.	0107103	2 A	
R011		12kΩ } ±5% ¼W CR.	0107123	2 A
C001	0.0022μF } +80% -20% 500V CC.	0659009	2 B	
C002		0.0022μF } +80% -20% 500V CC.	0659009	2 B
C003		0.0022μF } +80% -20% 500V CC.	0659009	2 B
C004		0.0022μF } +80% -20% 500V CC.	0659009	2 B
C005	100μF	0513101	1 A	
C006	0.01μF ±10%	0601107	1 A	
C007	100μF	0513101	1 A	

W	X	Y	Z
C008	0.01μF ±10%	50V EC.	0601107 2 A
C009	100μF	16V EC.	0512101 2 A
C010	0.022μF ±10%	50V MC.	0601227 2 A
C011	100μF	16V EC.	0512101 1 A
C012	470μF	10V EC.	0511471 1 B
C013	1000μF	50V EC.	0549106 1, 2 B
TR001	2SD330 (E)		0308362 1 A
TR002	2SC536 (E)		0305154 1 A
TR003	2SD313 (E)		0308392 2 A, B
TR004	2SC536 (E)		0305154 2 A
TR005			0305154 2 A
D001	10DC-1		0310680 2 B
D002	F-14A		0310940 1 B
ZD001	ZB1-6		0315570 2 A
F-1422 Printed Circuit Board			2500560





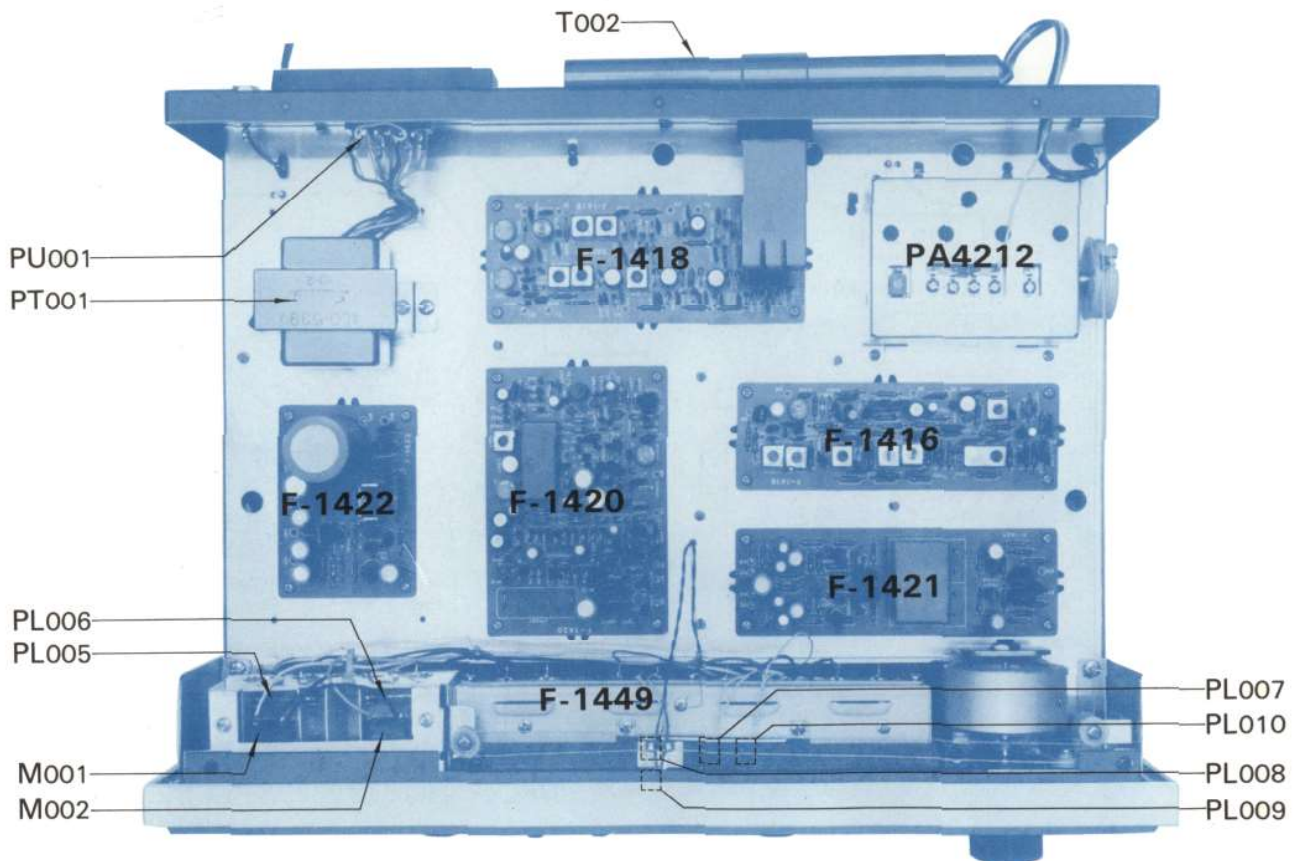
# OTHER PARTS AND THEIR LOCATION ON CHASSIS

W: Parts No. X: Parts Name Y: Stock No.

## OTHER PARTS

W	X	Y
R021	1.2k $\Omega$	0107122
R022	27k $\Omega$	0107473
R023	4.7k $\Omega$	0107472
R027	68 $\Omega$	0107680
R028	680 $\Omega$	0107681
R029	4.7k $\Omega$	0107472
R030	1.2k $\Omega$	0107122
R031	220 $\Omega$	0107221
R032	6.8 $\Omega$	0111689
VR001	20k $\Omega$ (B) $\times$ 2 Output Level	1010810
VR002	100k $\Omega$ (B) FM Muting Level	1005041
C021	0.0022 $\mu$ F $\pm$ 10% 50V MC.	0601226
C022	0.0047 $\mu$ F $\begin{matrix} +80\% \\ -20\% \end{matrix}$ 150V CC.	0659802
C023	0.01 $\mu$ F $\begin{matrix} +80\% \\ -20\% \end{matrix}$ 900V CC.	0659801

W	X	Y
PT001	Power Transformer	4000650
T001	300 $\Omega$ : 75 $\Omega$ Baloon	4290021
T002	AM Bar Antenna	4200550
M001	200 $\mu$ A Signal Meter	4300540
M002	$\pm$ 100 $\mu$ A Tuning Meter	4300550
S1(a-h)	Selector Switch Y-2-7-3	1102200
S2	Power Switch	1170310
S3	FM Muting Switch	1170270
S4	Noise Suppressor Switch	1170270
S5	FM LOC-DIST Switch	1110040
CO001	AC Outlet	2450040



\* Design and specifications subject to change without notice for improvements.

W	X	Y
F001	1A Power Fuse (100/117V)	0431222
	0.5A Power Fuse (220/240V)	0431212
	Fuse Holder	2300070
F01	3A Wired in Fuse	0432870
F02	0.5A Wired in Fuse	0432810
F03	0.5A Wired in Fuse	0432810
	F-2026 Printed Circuit Board	2591370
PL005	6.3V 0.25A Signal Meter Lamp	0420020
PL006	6.3V 0.25A Tuning Meter Lamp	0420020
PL007	7V 0.16A FM Indicator	0400170
PL008	7V 0.16A AM Indicator	0400170
PL009	6V 75mA Dial Pointer Lamp	0400200
PL010	6V 0.1A Stereo Indicator	0400161
	Lamp Socket (×2)	2310080
	Power Cord	3800020
	Lug Board (×2)	2110100

W	X	Y
PU001	Voltage Selector Socket	2410080
	Voltage Selector Plug	2410090
PA4212U08	FM Frontend	7510560
F-1418	FM IF Unit	7520540
F-1420C	FM MPX Unit	7540690
F-1416	AM Unit	7530240
F-1421A	Filter Unit	7591200
F-1422	Power Supply Unit	7500680
F-1451	Terminal Unit	7591220
F-1449	Lamp Holder Unit	7591210

