

Technics

FM/AM Stereo Receiver

SA-505

SA-404

OPERATING INSTRUCTIONS



Simulated wood cabinet.

Before operating this unit, please read these instructions completely.

Dear Stereo Fan

We want to thank you for selecting this product and to welcome you to the growing family of satisfied Technics product owners around the world. We feel certain you will get maximum enjoyment

from this new addition to your home. Please read these operating instructions carefully, and be sure to keep them handy for convenient reference.

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ACCESSORY

- FM indoor antenna (feeder antenna) 1

PRODUCT SERVICE

■ Warning concerning removal of covers

This unit should be serviced by qualified technicians only. No service information is provided for customers. Should your "Technics" product ever require servicing, refer to the Directory of Authorized Service Centers or your franchised "Technics" dealer for detailed instructions.

■ Location of serial number

You will find the serial number located at the back of the unit.

MAINTENANCE OF EXTERNAL SURFACES

To clean, use a soft, dry cloth. If the surfaces are extremely dirty, use a soft cloth soaked in a detergent (such as used for washing dishes; diluted to 1/5 or 1/6 strength), and then wring the cloth well. Wipe once again with a soft, dry cloth.

The model number of this product may be found on the back of the unit; and the serial number on the label affixed to the back of the unit.

You should note the model and serial numbers of this unit in the space provided, and retain this booklet as a permanent record of your purchase to aid in identification in the event of theft.

MODEL NUMBER _____ SERIAL NUMBER _____

**WARNING: TO PREVENT FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.**

FOR SAFE USE OF THIS UNIT

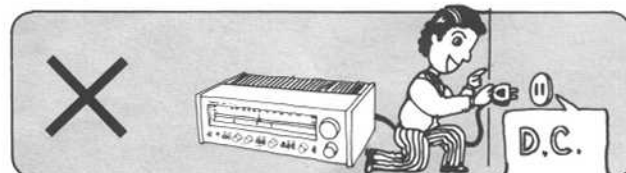
■ Use an ordinary household AC power source

1. Use from an AC power source of high voltage, such as for air conditioners, is very dangerous.

Be extremely careful not to make a connection to the electrical outlet for a large air conditioner or central-heating unit which uses high voltage, because there is the possibility of fire.

2. A DC power source cannot be used.

Be sure to check the power source carefully, especially on a ship or other place where DC is used.



■ Connection and disconnection of the power cord plug

1. Wet hands are dangerous.

A dangerous electric shock may result if the plug is touched by wet hands.

2. Don't pull the power cord.

Always grasp the plug; never pull the cord itself.



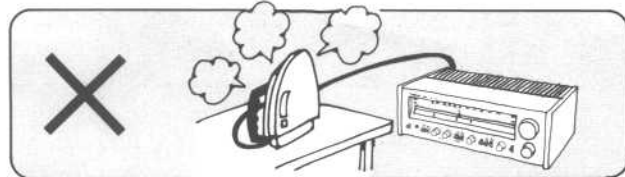
■ AC outlet on rear panel

1. Any equipment connected here should have specified power consumption or less.

This outlet is exclusively for the connection of other audio equipment, such as a tape deck. Be sure the power consumption does not exceed the wattage specified near the AC outlet.

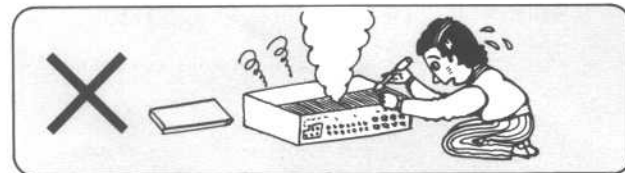
2. Never connect other electrical appliances, such as an iron or toaster.

If appliances with a large power consumption are connected, an unexpected accident might occur as a result of overheating.



■ Never attempt to repair or reconstruct this unit

A serious electric shock might occur if this unit is repaired, disassembled or reconstructed by unauthorized persons, or if the internal parts are accidentally touched.



■ For families with children

Never permit children to put anything, especially metal, inside this unit. A serious electric shock or malfunction could occur if articles such as coins, needles, screwdrivers, etc. are inserted through the ventilation holes, etc. of this unit.



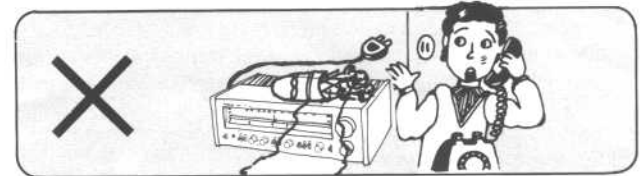
■ Turn off after use

If the unit is left for a long time with the power on, this will not only shorten its useful operation life, but may also cause other unexpected trouble.



■ If water is spilled on the unit

Be extremely careful if water is spilled on the unit, because a fire or serious electric shock might occur. Immediately disconnect the power cord plug, and consult with your dealer.



■ Place the unit where it will be well ventilated, and away from direct sunlight

Place this unit at least 10 cm (4") away from wall surfaces, etc., and away from direct sunlight. Be careful that curtains and similar materials do not obstruct the ventilation holes.



■ Keep the unit away from stoves, etc.

Heat can damage the external surfaces as well as internal circuits and components.



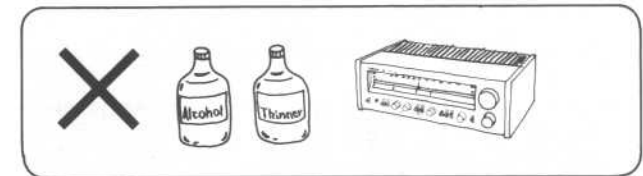
■ Avoid spray-type insecticides

Insecticides might cause cracks or "cloudiness" in the cabinet and plastic parts of this unit. The gas used in such sprays might, moreover, be ignited suddenly.



■ Never use alcohol or paint thinner

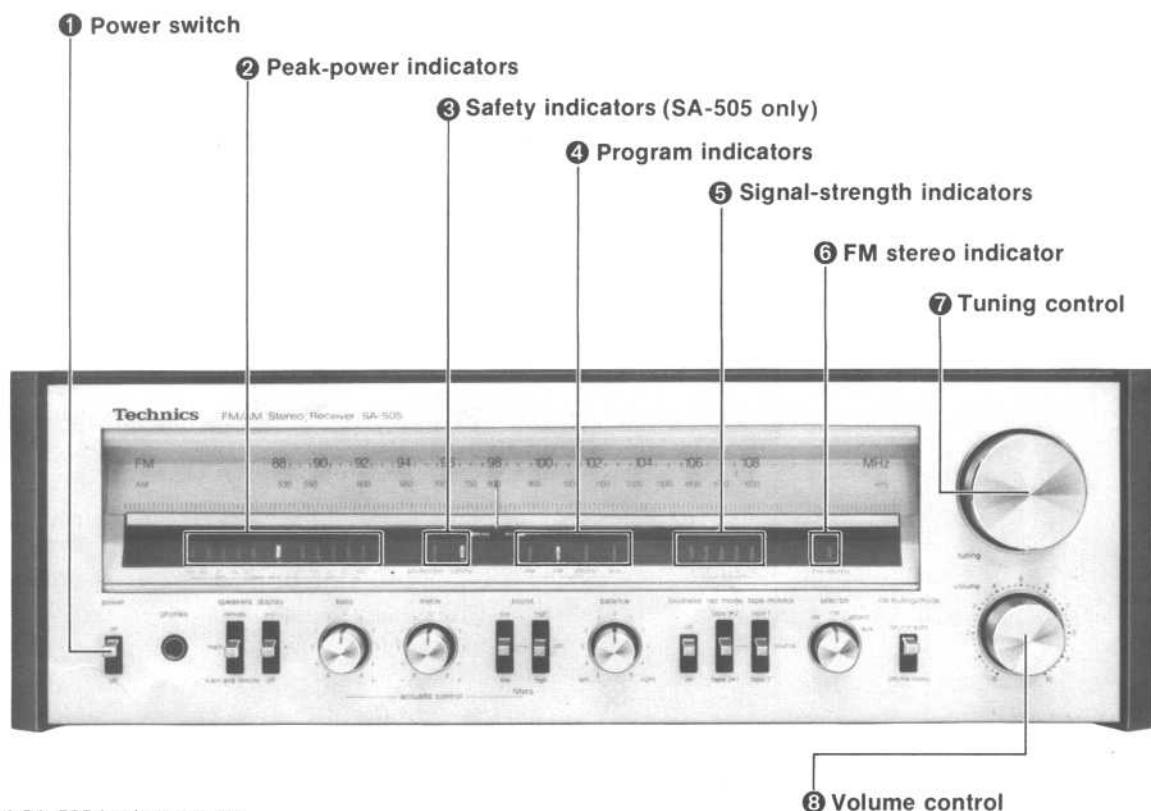
These and similar chemicals should never be used, because they may damage the finish.



■ If trouble occurs

If, during operation, the sound is interrupted or lamps no longer illuminate, or if abnormal odor or smoke is detected, immediately disconnect the power cord plug, and contact your dealer or an Authorized Service Center.

FRONT PANEL CONTROLS AND THEIR FUNCTIONS



Model SA-505 is shown here.

1 Power switch (power)

Note:

Be sure to turn the volume control ⑧ to the minimum ("0") position before turning on the power.

2 Peak power indicators (power level)

These indicators indicate the peak power value of the output level from the speaker systems. Those marked "left" are for indication of the left channel, and those marked "right" are for the right channel.

When the power display-range selector ⑪ is set to the "×0.1" position, note that the displayed value should be read as 1/10 of the indicated value.

Note:

If speaker systems with an impedance of 8 ohms are connected, the indicated value can be directly read as it is, without modification. If, however, the impedance is 16 ohms, the actual output value should be read as 1/2 of the indicated value.

Actual output =

$$\text{indicated value} \times \frac{8 (\Omega)}{\text{speaker impedance} (\Omega)}$$

3 Safety indicators (protection safety) (SA-505 only)

These indicators indicate whether this unit is functioning normally or not.

When the power is turned on, the red indicator will illuminate first. It will extinguish after about 4 seconds, and the green indicator will then illuminate.

The green illumination indicates that the unit is functioning normally, and operation can then be started.

If there is an abnormal condition during use, the red indicator will illuminate, or the red and green indicators will illuminate alternately.

If the former, disconnect the power cord plug, and request assistance from the store where the unit was purchased. If the latter, the speaker connection wires may be short-circuited. Turn off the power and check these wires. If the problem cannot be found, request assistance from your dealer.

4 Program indicators (program)

When the program source is selected by the input selector ⑩, the one of these indicators which corresponds to the selected program source will also illuminate.

5 Signal-strength indicators (signal strength)

These indicators show the relative strength of broadcast signals being received by the antenna. The best condition for reception, for FM and AM, is when the indicators illuminate completely to the right.

6 FM stereo indicator (FM stereo)

This indicator automatically illuminates when an FM stereo broadcast is being received.

Note:

It will, however, not illuminate if the FM muting/mode selector ⑨ is set to the "off/FM mono" position.

7 Tuning control (tuning)

Tune to the desired FM and AM broadcasts while referring to the signal-strength indicators ⑤.

Refer to the section "TUNING" on page 6 when tuning to an FM broadcast.

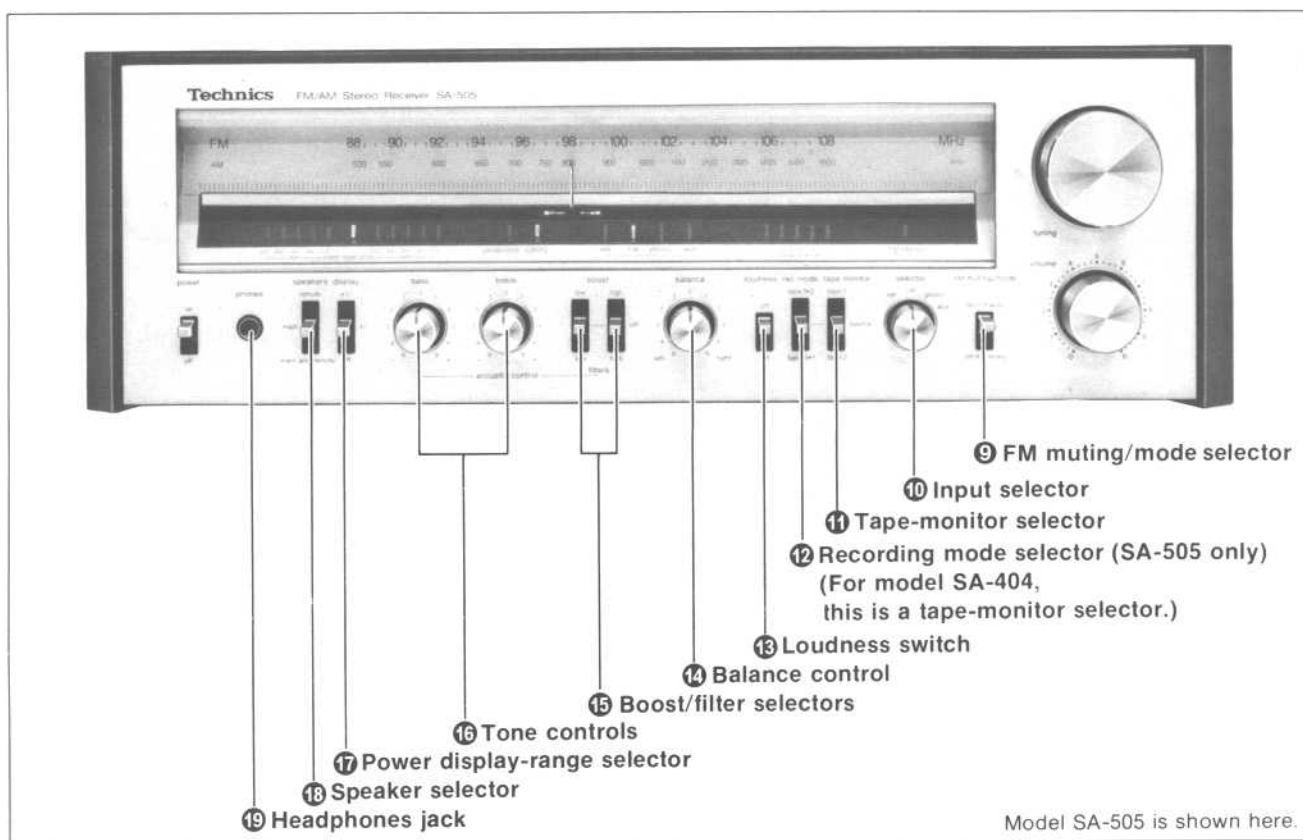
8 Volume control (volume)

This control is used to adjust the volume.

Note:

Be absolutely sure to set this control to its minimum ("0") position when turning on the power, and when connecting speaker systems.

FRONT PANEL CONTROLS AND THEIR FUNCTIONS (continued)



9 FM muting/mode selector (FM muting/mode)

This selector can be used during tuning to eliminate the annoying noise between FM broadcast stations, and to select either stereo or monaural reception of FM broadcasts. There is no effect upon AM broadcasts.

on/FM auto:

Set to this position for ordinary use. FM stereo and monaural broadcasts can be received, and between-station noise is eliminated.

off/FM mono:

All broadcasts will be received monaurally.

Use at this position if there is excessive noise in stereo broadcasts or if signals are weak because of reception far from the broadcasting station or in a mountainous region, when the broadcast cannot be heard at the "on/FM auto" position.

To avoid between-station noise, reduce the setting of the volume control before tuning.

10 Input selector (selector)

AM:

Set to this position for reception of AM broadcasts.

FM:

Set to this position for reception of FM broadcasts.

phono:

Set to this position to listen to phono discs.

aux:

Set to this position to use equipment connected to the auxiliary input terminals ("AUX").

11 Tape-monitor selector (tape monitor)

tape 1:

Set to this position to playback or monitor the sound from tape deck 1.

source:

Set to this position to listen to phono discs or radio broadcasts, and to record from tape deck 1 and/or 2, or to listen to equipment connected to the auxiliary input terminals ("AUX").

tape 2:

Set to this position to playback or monitor the sound from tape deck 2.

Notes:

1) Refer to page 6 for detailed information concerning tape monitoring.

2) Tape deck 1 is the tape deck connected to the tape deck 1 terminals ("TAPE 1").

For model SA-404, there are two tape-monitor selectors ("TAPE 1" and "TAPE 2"). (Refer to page 6.) They are used in the same way as described above.

12 Recording mode selector (rec mode) (SA-505 only)

tape 1▶2:

Set to this position for recording from tape deck 1 to tape deck 2.

source:

Set to this position for recording phono disc sound, radio broadcasts or from equipment connected to the "AUX" terminals, to tape deck 1 and/or tape deck 2.

tape 2▶1:

Set to this position for recording from tape deck 2 to tape deck 1.

Notes:

1) Refer to page 6 for detailed information concerning tape monitoring.

2) Tape deck 1 is the tape deck connected to the tape deck 1 terminals ("TAPE 1").

(For SA-404; this is the tape-monitor selector.)

Refer to page 6 for details concerning tape-to-tape recording.)

13 Loudness switch (loudness)

It is usually difficult for human ears to clearly hear low-range sound when the volume level is low.

When listening at a low volume level, therefore, this switch can be set to the "on" position to compensate for this, making sound more dynamic and powerful.

14 Balance control (balance)

While listening to an AM broadcast or a monaural FM broadcast, balance the sound so that it seems to be heard from the center, between the speakers.

15 Boost/filter selectors (boost/filters)

These selectors can be used to select the characteristics of change of the low-sound range and high-sound range adjusted by using the tone controls (16).

boost:

When the "low" switch is set to the "boost" position, low-range sound is emphasized ("boosted") in the 100 Hz range. When the "high" switch is set to the "boost" position, high-range sound is emphasized in the 10 kHz range. The amount of actual emphasis will differ depending upon the settings of the bass and treble tone controls (16), but the maximum level of the emphasized range will be the same as when the tone controls (16) are set to their maximum position (+5). When listening to music with a strong beat, such as rock, set both switches ("low" and "high") to this position.

off:

When the switches are set to this position, the boost and filter functions are turned off.

filter:

When the "low" switch is set to the "filter" position, low-range sound of 100 Hz and lower is cut.

When the "high" switch is set to the "filter" position, high-range sound of 7 kHz and higher is cut.

Set the "low" switch to this position to eliminate low-range noises such as motor rumble, and set the "high" switch to this position to eliminate high-range noises such as tape "hiss" noise, etc.

16 Tone controls (bass/treble)

The bass control is for the low-frequency sound range, and the treble control is for the high-frequency sound range.

17 Power display-range selector (display)

This selector is used for changing the sensitivity of the peak-power indicators.

×0.1:

The output of this unit increased by 10 times is indicated in the indicators.

For reading the actual value, reduce the indication of the indicators to 1/10.

×1:

The output of this unit is indicated as it is in the indicator. For example, when the output is 60W, the pointer indicates 60W. (SA-505)

off:

The peak-power indicators will not illuminate.

18 Speaker selector (speakers)

remote:

Sound can be heard from the speaker systems connected to the "REMOTE" terminals.

main:

Sound can be heard from the speaker systems connected to the "MAIN" terminals.

main and remote:

Sound can be heard simultaneously from the speaker systems connected to the "MAIN" terminals and the "REMOTE" terminals.

19 Headphones jack (phones)

Note:

Be sure to set the volume control (8) to its minimum ("0") position before connecting headphones.

TUNING

The tuning system used for this unit is completely different from the ordinary system (in which one alternately watches the tuning dial indicator needle and the signal indicators).

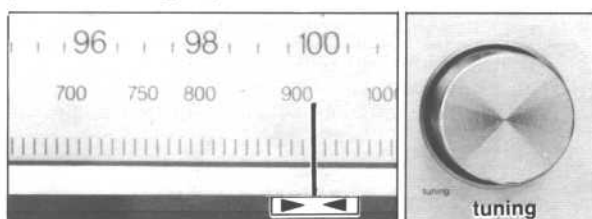
With this system, it is only necessary to concentrate on the indicator needle alone in order to easily locate the perfectly tuned point...the completely new active-sensor system, a system which could only be developed by Technics. Follow the procedure described below for tuning.

Note: There is no effect upon AM broadcasts.

■ Tuning of FM broadcasts

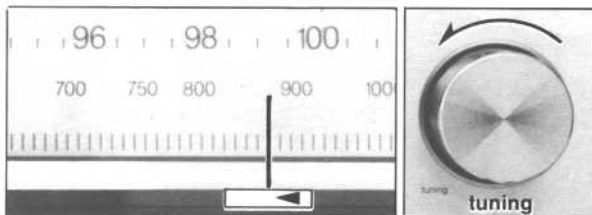
Example for reception of 98.1 MHz:

1. Turn the tuning control so that about 98 MHz is indicated (shown in the figure)

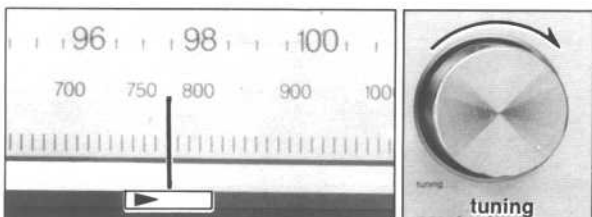


- The left and right arrows illuminate to indicate a non-tuned position.

2. When the tuning is close to the broadcast frequency (within 80 kHz), one of the arrows will no longer illuminate.
3. Turn the tuning control so that the dial indicator needle moves in the direction of the illuminated arrow (shown in the figure).

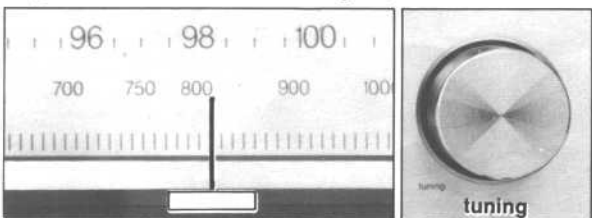


- If tuned point is too high: right arrow flashes.



- If tuned point is too low: left arrow flashes.

4. When the tuning is perfect, the left and right arrows will no longer illuminate (shown in the figure).



TAPE RECORDING AND TAPE-TO-TAPE RECORDING

(SA-505)

Refer to pages 3 to 5 for names of all controls.

■ Tape recording

The level of the disc or radio broadcast signal (when the recording mode selector ⑫ is set to the "source" position) emitted from the "TAPE 1" and "TAPE 2" recording output terminals ("REC OUT") on the rear panel is always at a constant level, unaffected by the settings of other controls and switches.

1. Operating of this unit

- 1) Tape-monitor selector ⑪ "source"
- 2) Recording mode selector ⑫ "source"
- 3) Input selector ⑩ Select the sound source for recording
- 4) Begin the disc play or tune to the radio broadcast.

2. Operation of tape deck

By using controls on the tape deck, make the adjustment of the recording level. Then begin recording.

■ Tape-to-tape recording

If two tape decks are connected to this unit, recording can be made from one deck to the other.

1. To record from tape deck 1 to 2 (or from 2 to 1)

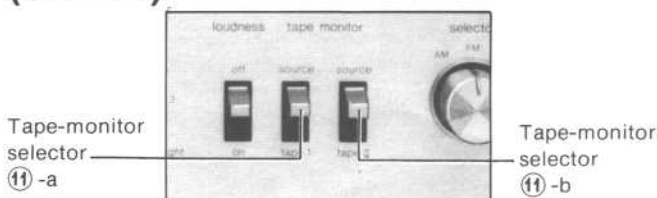
- 1) Recording mode selector ⑫ "tape 1▶2" or "tape 2▶1"
- 2) Tape deck 1 (or tape deck 2) To playback
- 3) Tape deck 2 (or tape deck 1) To recording
- 4) Make the adjustment of the recording level by using controls on tape deck 2 (or tape deck 1). Then begin the tape-to-tape recording.

■ Tape monitoring

If the tape deck being used is the 3-head type, the tape-monitor selector ⑪ can be used for tape monitoring (checking the recording as it is being made).

When the tape-monitor selector ⑪ is set to the "source" position, the incoming sound can be heard immediately prior to recording. When it is set to the "tape 1" or "tape 2" position, the sound can be heard immediately after it is recorded.

(SA-404)



Refer to pages 3 to 5 for names of all controls.

■ Tape recording

The level of the disc or radio broadcast signal (when the tape-monitor selectors ⑪-a, ⑪-b are set to the "source" position) emitted from the "TAPE 1" and "TAPE 2" recording output terminals ("REC OUT") on the rear panel is always at a constant level, unaffected by the settings of other controls and switches.

1. Operating of this unit

- 1) Tape-monitor selectors ⑪-a, ⑪-b "source"
- 2) Input selector ⑩ Select the sound source for recording
- 3) Begin the disc play or tune to the radio broadcast.

2. Operation of tape deck

By using controls on the tape deck, make the adjustment of the recording level. Then begin recording.

■ Tape-to-tape recording

If two tape decks are connected to this unit, recording can be made from one deck to the other.

1. To record from tape deck 1 to 2 (use only 1 to 2)

- 1) Tape-monitor selector ⑪ -a "tape 1"
- 2) Tape-monitor selector ⑪ -b "source"
- 3) Tape deck 1 To playback
- 4) Tape deck 2 To recording
- 5) Make the adjustment of the recording level by using controls on tape deck 2. Then begin the tape-to-tape recording.

■ Tape monitoring

If the tape deck being used is the 3-head type, the tape-monitor selectors ⑪-a, ⑪-b can be used for tape monitoring (checking the recording as it is being made).

When the tape-monitor selectors ⑪-a, ⑪-b are set to the "source" position, the incoming sound can be heard immediately prior to recording. When they are set to the "tape 1" or "tape 2" position, the sound can be heard immediately after it is recorded.

FM ANTENNA

For best reception of FM broadcasts, select an FM antenna with the best characteristics for the area in which the unit is to be used.

Note:

For additional information, refer to the separate instruction sheet.

■ Included antenna

If this unit is used in a place which is near the broadcasting station and the signals are powerful enough, or in a place such as the outskirts of a city, where interference noise is comparatively slight, the antenna which is included with this unit may be used to obtain a certain degree of reception.

■ Antenna exclusively for FM reception

1. Selection

- 1) In areas where very strong broadcast signals are received (where the transmitting antenna can be seen), use an outside antenna with 3 ~ 5 elements.

Where signals are strong:
an antenna with 3 ~ 5 elements



- 2) In areas where weak broadcast signals are received (in mountainous regions or between tall buildings), use an outside antenna with 5 elements or more.

Where signals are weak:
an antenna with 5 elements or more



Note:

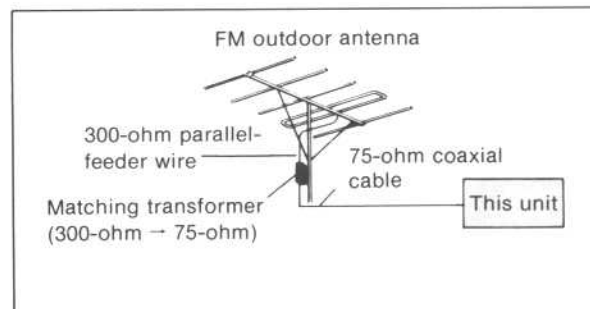
Consult with your dealer for detailed advice concerning the number of elements the antenna should have.

2. Connection wire from the antenna

Two types of wire are most commonly used for connection from the antenna: 300-ohm parallel feeder wire and 75-ohm coaxial cable. For best resistance to external interference noise, the use of 75-ohm coaxial cable is suggested.

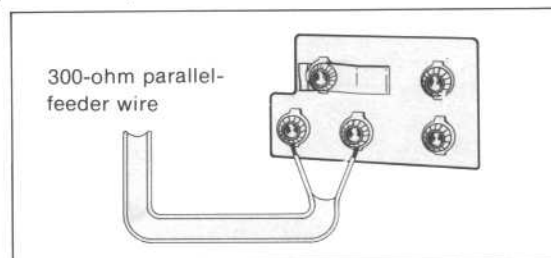
3. Impedance matching

If it is impossible to make a direct connection with 75-ohm coaxial cable from the antenna, a matching transformer should be installed, as close to the antenna itself as possible.

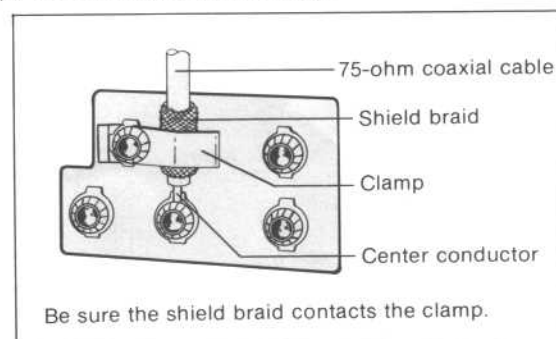


4. Connection

- 1) If 300-ohm parallel feeder wire is used:



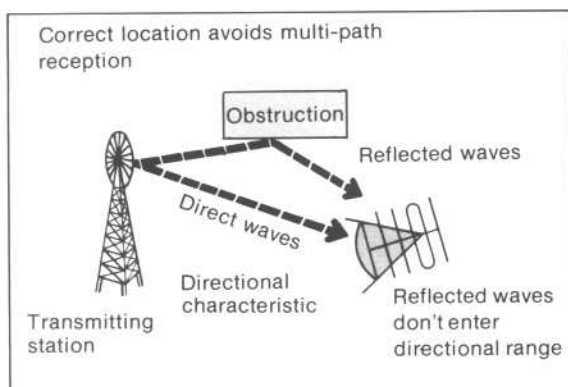
- 2) If 75-ohm coaxial cable is used:



5. Location of antenna

Install the antenna:

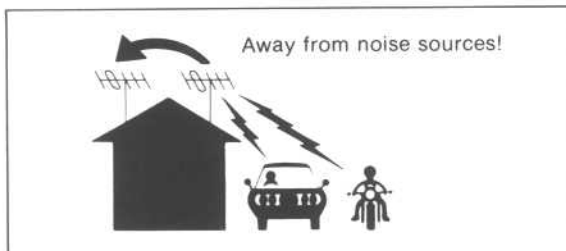
- 1) Where it will receive FM broadcast signals directly; not in the "shadow" of a building.



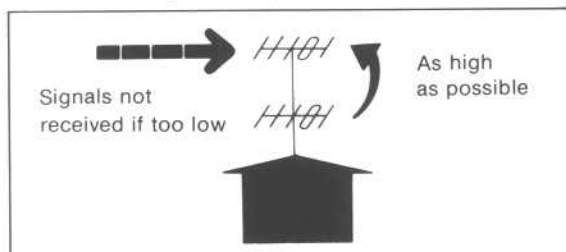
Note:

Multi-path distortion is the distortion which results from the reception of two types of signals: those reflected from nearby buildings, mountains, etc., and those received directly from the broadcasting station.

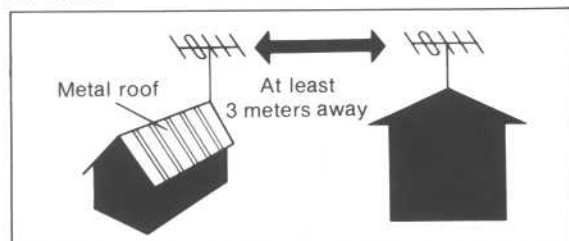
- 2) Away from busy roads, and away from neon signs.



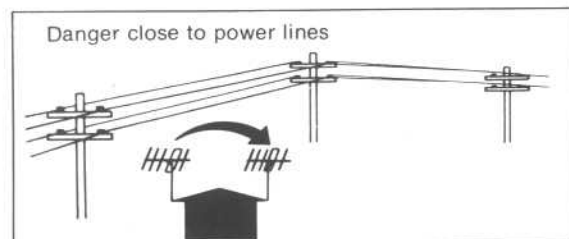
- 3) At least 4 meters (12 feet) above the ground (except in mountainous regions, etc.).



- 4) At least 3 meters (10 feet) away from a metal roof or other antennas.



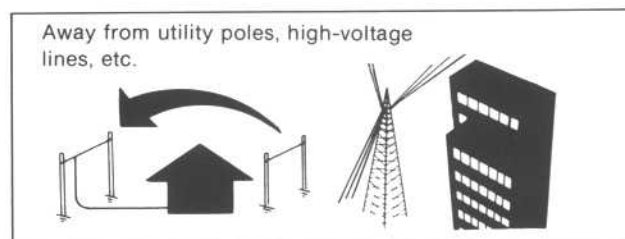
- 5) To avoid danger, away from electric power lines.



AM ANTENNA

■ Connection of an outdoor antenna

If an outside AM antenna is installed (in mountainous regions or between reinforced-concrete buildings), install it in a location away from utility poles, high-voltage power lines, high buildings and busy roads.



TROUBLESHOOTING GUIDE

Before requesting service for this unit, check this table to determine if the problem can be solved as described below. If the problem still persists after making these checks, or if there are symptoms of malfunction not described in this table, it is recom-

mended that you consult the store where this unit was purchased or your local Service Center (see list included) for further information and assistance.

	Problem	Probable cause(s)	Suggested remedy
During disc play	A loud and unusual sound ("howling") is heard when the volume level is increased.	The location of the record player and speaker systems is unstable.	• If the equipment is unstable because it is located upon a soft surface, such as a carpet, place a solid material (such as concrete blocks, bricks, a hard board, etc.) beneath the speaker systems. • Close the cover of the record player. • Try moving the record player farther away from the speaker systems. • Try placing a cushioning material (such as felt or commercially available audio insulators) beneath the record player.
	Unusual scratching noises are heard.	Disc is old or scratched.	• Turn the treble tone control ⑯ to reduce the treble sound.
		Dust in disc grooves.	• Use a disc cleaner to remove the dust from the disc grooves.
		Stylus needle is worn.	• If the noise is heard even when a new disc is played, probably the stylus is worn. Replace it with a new stylus.
		Dust is attached to stylus tip.	• Remove the dust by using a soft brush.
While listening to FM broadcasts	An unusual hissing noise is heard when listening to the broadcast in stereo, but not heard when listening monaurally.	A slight noise may be heard because the method used for modulation of FM stereo broadcasts is different than that used for monaural broadcasts.	• Try reducing the treble sound by turning the treble tone control ⑯. • Set the FM muting/mode selector ⑨ to the "off/FM mono" position. (Note that the broadcast will then be heard as monaural sound.)
	Noise is excessive in both stereo and monaural broadcasts.	Poor location and/or direction of the antenna. Transmitting station is too far away.	• Try changing the location, height and/or direction of the antenna. • If an interior antenna is being used, change to an exterior antenna. • Try using an antenna with more elements.
	The FM stereo indicator flickers, without completely illuminating.	Poor location and/or direction of the antenna. Transmitting station is too far away.	• Try changing the location, height and/or direction of the antenna. • If an interior antenna is being used, change to an exterior antenna. • Try using an antenna with more elements.
	Sound is distorted and/or the volume level becomes low.	Broadcast signals are being disturbed. Nearby automobile traffic or airplanes.	
	Excessive noise in stereo broadcasts; sometimes no sound is emitted.	Poor location and/or direction of the antenna. Transmitting station is too far away.	
	Excessive distortion in the sound of stereo broadcasts.	Nearby building or mountain. [Multi-path distortion is being caused by the mutual interference of broadcast signals received directly from the transmitting station (direct waves) and signals being reflected from nearby buildings or mountains (reflected waves).]	
	An unusual "popping" noise is heard when automobiles pass.	Such noise is called ignition noise, and occurs while the automobile engine is running.	• Relocate the antenna and the connection wires leading to it to a place farther away from where automobiles pass.
	A strange hissing noise is produced continuously or intermittently.	Caused by the "discharge phenomenon" and the "oscillation phenomenon" of electric appliances (such as fluorescent lights, TV, small series-type motors, rectification equipment, etc.).	• Try placing this unit farther away from such equipment. • Install noise-prevention equipment on this unit or on the electric appliance.

	Problem	Probable cause(s)	Suggested remedy
While listening to AM broadcasts	An unusual "beat" sound is heard.	Unit is being used at the same time as the television set.	• Turn off the television set, or use this unit farther away from it.
		Interference ("beat") from adjacent broadcast signal.	• By using the treble tone control (16), try reducing the treble sound.
	A low-pitched "hum" sound is heard when the broadcast is tuned.	The antenna connection wires are too close to the power cord.	• Place the antenna connection wires and the power cord farther apart.
Problems noted at all times		The power supply frequency from the power cord is modulated and heard from the speakers.	• Try reversing the connection of the power cord plug. • Install a special exterior antenna.
	A strange hissing noise is produced continuously or intermittently.	Caused by the "discharge phenomenon" and the "oscillation phenomenon" of electric appliances (such as fluorescent lights, TV, small series-type motors, rectification equipment, etc.).	• Try placing this unit farther away from such equipment. • Install noise-prevention equipment on this unit or on the electric appliance.
	No sound is heard when the power is turned on.	The power cord plug is not completely inserted.	• Confirm that the power cord plug is connected completely.
		The power supply fuse has failed.	• Request the store where this unit was purchased, or a Service Center, to replace the fuse.
		Connections are incomplete or incorrect to the speaker systems.	• Check to be sure that all connection wires are correctly connected.
		The setting of the input selector (10) has not been completely or correctly made.	• Check to be sure that the selector is set to the correct position.
		The tape-monitor selector (11) is incorrectly set to the "tape" position.	• Except for tape playback, set the tape-monitor selector to the "source" position.
		Headphones are connected.	• Disconnect the headphones from this unit.
	When listening to stereo sound, each sound of the various musical instruments is not heard from its correct position.	The positive (+) and negative (-) connections of the speaker connection wires are reversed.	• Reconnect the speaker connection wires so that the positive and negative connections are correct.
	When listening to stereo sound, the left and right sounds are reversed.	The left and right connections of the speaker connection wires are reversed.	• Check the connections of the speaker connection wires and make them correctly.
		The left and right connections of the connection wires connected to other equipment are reversed.	• Check the connections of the connection wires to other equipment and make them correctly.
	A low-pitched noise ("hum" or "buzz") is heard.	The power cord or a fluorescent light, etc., is near the connection wires.	• Try separating this unit and the electric appliance as far as possible. • Reverse the connection of the power cord plug.
		The connection of the ground wire is incorrect or incomplete.	• Check to be sure that the grounding connection is correct. • If the unit is not grounded, try doing so.
	Sound is not heard from the speaker system on one side.	The speaker connection wires are disconnected.	• Check and correct the connections of the speaker connection wires.
		The balance control (14) is not set to the center position.	• Set the mark on the balance control to the center position.
	The volume level for a radio broadcast is different from that for disc play.	The strength of the broadcast signal is not the same as the output from the record player.	• Adjust the volume level by using the volume control (8).
	While listening, sound is suddenly no longer heard. (Indication lamps of other equipment are still illuminated.)	A DC component is mixed with the input. (The protection circuitry of the amplifier has functioned.)	• Check the connections to other equipment (especially the speaker connection terminals, etc.), and, if still no sound is heard, request service from the store where the unit was purchased or from your local Service Center.

TECHNICAL SPECIFICATIONS

(SA-505)

(IHF '78)

AMPLIFIER SECTION

Rated minimum sine wave RMS power output
 20 Hz~20 kHz both channels driven
 0.04% total harmonic distortion
 63W per channel (8 ohms)

1 kHz continuous power output
 both channels driven
 0.04% total harmonic distortion

70W per channel (8 ohms)

80W per channel (4 ohms)

1.4 dB (8 ohms)

Dynamic headroom

Total harmonic distortion

rated power at 20 Hz~20 kHz 0.04% (8 ohms)

half power at 20 Hz~20 kHz 0.02% (8 ohms)

half power at 1 kHz 0.009% (8 ohms)

SMPTE intermodulation distortion 0.04% (8 ohms)

Frequency response

PHONO RIAA standard curve ± 0.3 dB

TUNER, AUX, TAPE 7 Hz~50 kHz, -1 dB

20 Hz~20 kHz, +0.2 dB, -0.2 dB

Input sensitivity

PHONO 0.3 mV (2.5mV, IHF '66)

TAPE 1, 2 17 mV (150mV, IHF '66)

S/N (IHF, A)

PHONO 73 dB (80 dB, IHF '66)

TUNER, AUX, TAPE 77 dB (95 dB, IHF '66)

Maximum input voltage

PHONO 120 mV (150 mV, 1 kHz)

Input impedance

PHONO 47 kilohms

TAPE 1, 2 27 kilohms

Tone controls

BASS 50 Hz, +10 dB~ -10 dB

TREBLE 20 kHz, +10 dB~ -10 dB

Acoustic controls (at tone "0" position)

LOW BOOST 100 Hz, +6 dB

HIGH BOOST 10 kHz, +6 dB

Low filter

100 Hz, -6 dB/oct.

High filter

7 kHz, -6 dB/oct.

Loudness control (volume at -30 dB)

50 Hz, +9 dB

Output voltage

REC OUT 150 mV

Low frequency damping factor

34 (8 ohms)

17 (4 ohms)

Load impedance

MAIN or REMOTE 4~16 ohms

MAIN and REMOTE 8~16 ohms

FM TUNER SECTION

Frequency range 88~108 MHz

Sensitivity 10.8 dBf (1.9 μ V, IHF '58)

50 dB quieting sensitivity

MONO 13.7 dBf (2.7 μ V, IHF '58)

STEREO 37.2 dBf (39.7 μ V, IHF '58)

Total harmonic distortion

100 Hz 0.15% (MONO), 0.3% (STEREO)

1 kHz 0.15% (MONO), 0.3% (STEREO)

6 kHz 0.3% (MONO), 0.4% (STEREO)

S/N

MONO 75 dB

STEREO 70 dB

Frequency response 20 Hz~15 kHz, +1 dB, -2 dB

Alternate channel selectivity 70 dB

Capture ratio 1.2 dB

Image rejection at 98 MHz 60 dB

IF rejection at 98 MHz 75 dB

Spurious response rejection at 98 MHz 82 dB

AM suppression 55 dB

Stereo separation

1 kHz 45 dB

10 kHz 35 dB

Carrier leak

19 kHz -40 dB

38 kHz -50 dB

Antenna terminals

300 ohms (balanced)

75 ohms (unbalanced)

AM TUNER SECTION

Frequency range 525~1605 kHz

Sensitivity 30 μ V, 300 μ V/m

Selectivity 30 dB

Image rejection at 1000 kHz 50 dB

IF rejection at 1000 kHz 40 dB

GENERAL

Power consumption 340W, 430 VA

Power supply AC 120V, 60 Hz

Dimensions (W×H×D) 480 × 160 × 293 mm

(18-29/32" × 6-5/16" × 11-17/32")

Weight 9.5 kg

(20.9 lb.)

(SA-404)

(IHF '78)

AMPLIFIER SECTION

Rated minimum sine wave RMS power output
20 Hz~20 kHz both channels driven
0.04% total harmonic distortion
50W per channel (8 ohms)

1 kHz continuous power output
both channels driven
0.04% total harmonic distortion

55W per channel (8 ohms)
60W per channel (4 ohms)
1.4 dB (8 ohms)

Dynamic headroom

Total harmonic distortion
rated power at 20 Hz~20 kHz 0.04% (8 ohms)
half power at 20 Hz~20 kHz 0.02% (8 ohms)
half power at 1 kHz 0.009% (8 ohms)

SMPTE intermodulation distortion 0.04% (8 ohms)

Frequency response

PHONO RIAA standard curve ± 0.3 dB
TUNER, AUX, TAPE 7 Hz~45 kHz, -1 dB
20 Hz~20 kHz, $+0.2$ dB, -0.2 dB

Input sensitivity

PHONO 0.4 mV (2.5mV, IHF '66)
TAPE 1, 2 20 mV (150mV, IHF '66)

S/N (IHF, A)

PHONO 73 dB (80 dB, IHF '66)
TUNER, AUX, TAPE 78 dB (95 dB, IHF '66)

Maximum input voltage

PHONO 120 mV (150 mV, 1 kHz)

Input impedance

PHONO 47 kilohms
TAPE 1, 2 27 kilohms

Tone controls

BASS 50 Hz, $+10$ dB~ -10 dB
TREBLE 20 kHz, $+10$ dB~ -10 dB

Acoustic controls (at tone "0" position)

LOW BOOST 100 Hz, $+6$ dB
HIGH BOOST 10 kHz, $+6$ dB

Low filter 100 Hz, -6 dB/oct.

High filter 7 kHz, -6 dB/oct.

Loudness control (volume at -30 dB) 50 Hz, $+9$ dB

Output voltage

REC OUT 150 mV

Low frequency damping factor

34 (8 ohms)
17 (4 ohms)

Load impedance

MAIN or REMOTE 4~16 ohms
MAIN and REMOTE 8~16 ohms

FM TUNER SECTION

Frequency range 88~108 MHz
Sensitivity 10.8 dBf (1.9 μ V, IHF '58)

50 dB quieting sensitivity

MONO 13.7 dBf (2.7 μ V, IHF '58)
STEREO 37.2 dBf (39.7 μ V, IHF '58)

Total harmonic distortion

100 Hz 0.15% (MONO), 0.3% (STEREO)
1 kHz 0.15% (MONO), 0.3% (STEREO)
6 kHz 0.3% (MONO), 0.4% (STEREO)

S/N

MONO 75 dB
STEREO 70 dB

Frequency response 20 Hz~15 kHz, $+1$ dB, -2 dB

Alternate channel selectivity 70 dB

Capture ratio 1.2 dB

Image rejection at 98 MHz 60 dB

IF rejection at 98 MHz 75 dB

Spurious response rejection at 98 MHz 82 dB

AM suppression 55 dB

Stereo separation

1 kHz 45 dB
10 kHz 35 dB

Carrier leak

19 kHz -40 dB
38 kHz -50 dB

Antenna terminals 300 ohms (balanced)
75 ohms (unbalanced)

AM TUNER SECTION

Frequency range 525~1605 kHz

Sensitivity 30 μ V, 300 μ V/m

Selectivity 30 dB

Image rejection at 1000 kHz 50 dB

IF rejection at 1000 kHz 40 dB

GENERAL

Power consumption 300W, 345 VA

Power supply AC 120V, 60 Hz

Dimensions (W×H×D) 480 × 160 × 293 mm
(18-29/32" × 6-5/16" × 11-17/32")

Weight 8.4 kg
(18.5 lb.)

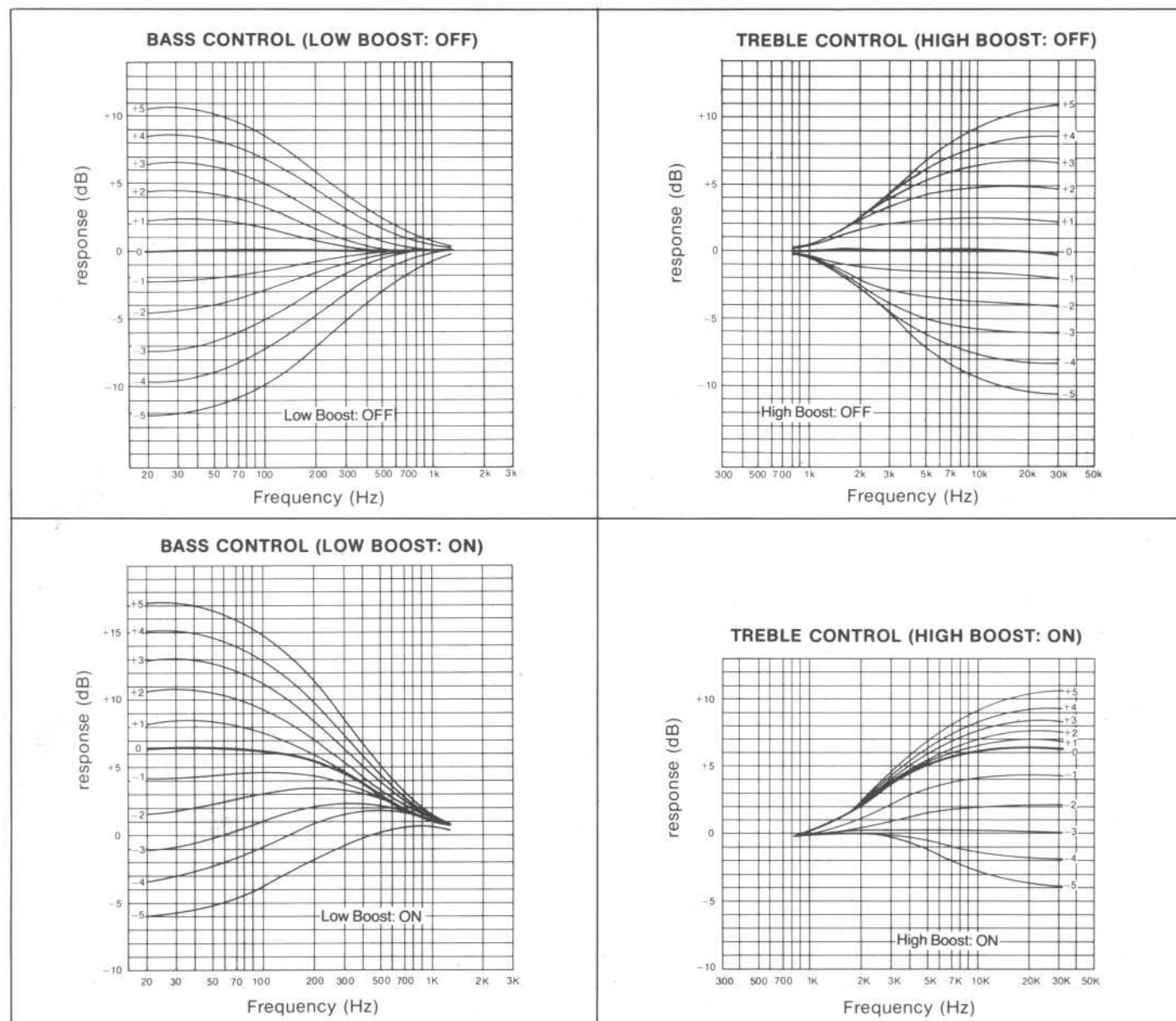
ACOUSTIC CONTROLS

This unit has two separate tone controls (16) (for bass and treble), plus boost/filter selectors (15) which can be used for immediate emphasis of the sound.

This unit is designed with "flat" characteristics, so that it is usually possible to obtain the desired tone quality level. If,

however, it is necessary to further emphasize or attenuate tone quality because of personal preference or listening room construction, use the tone controls (16) and boost/filter selectors (15).

Tone control frequency response



Panasonic Company
Division of Matsushita Electric
Corporation of America
One Panasonic Way, Secaucus
New Jersey 07094

Matsushita Electric of Canada, Ltd.
5770 Ambler Drive, Mississauga
Ontario L4W 2T3

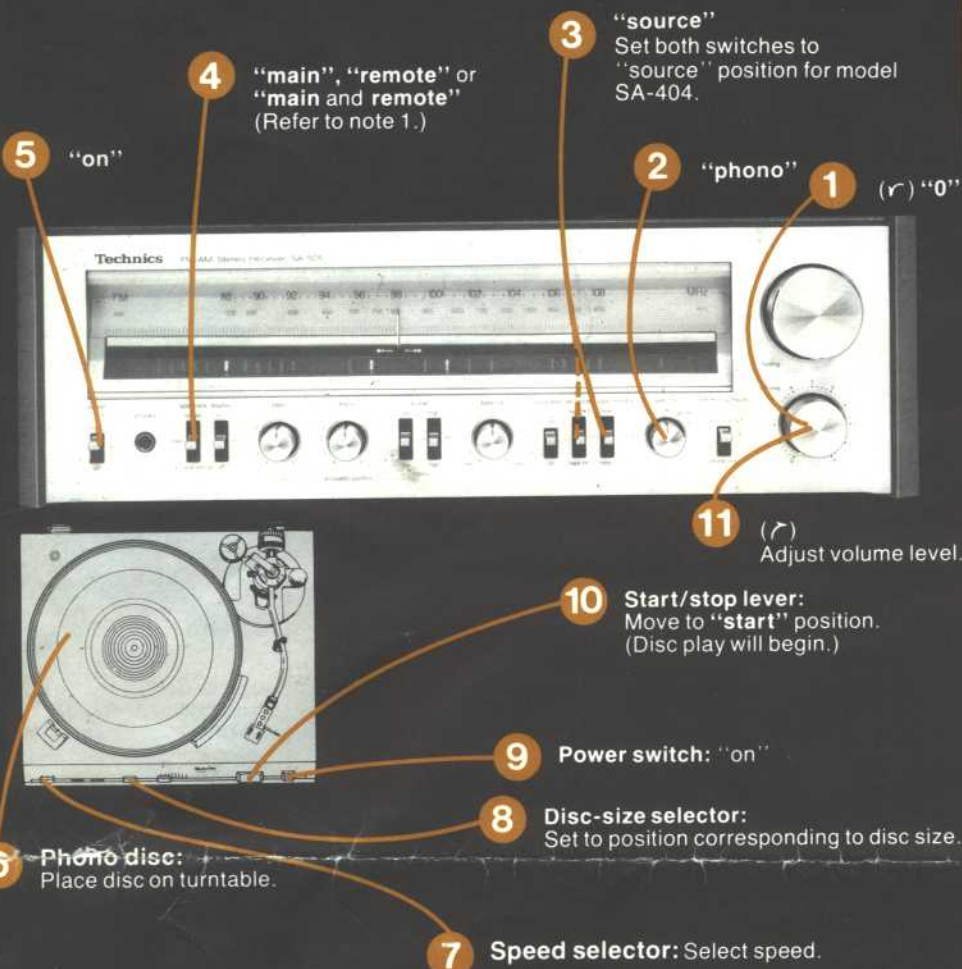
Panasonic Hawaii, Inc.
320 Waiakamilo Road, Honolulu
Hawaii 96817

SA-505/SA-404 — Operation (Follow all steps in numbered order.)

To listen to phono discs

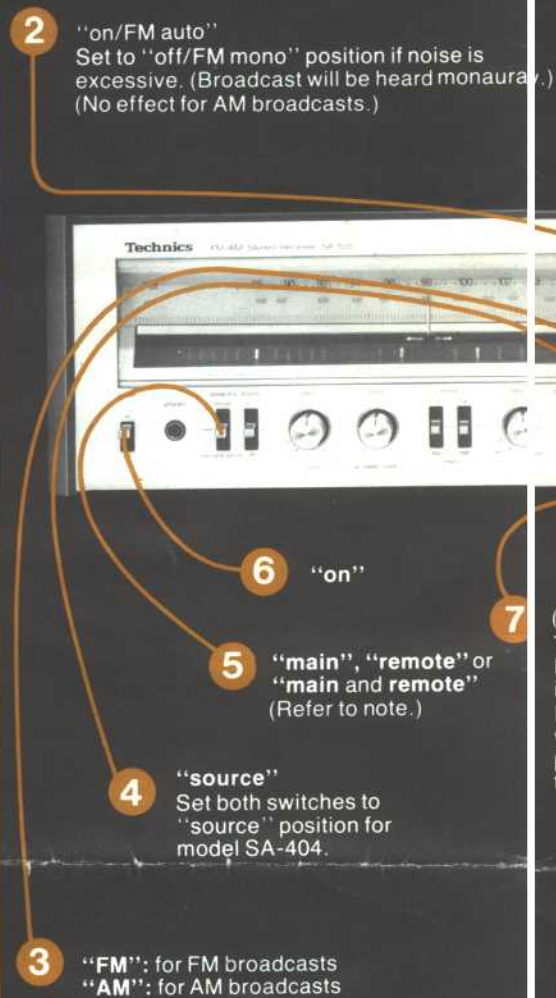
To listen to radio broadcasts

To listen to tape



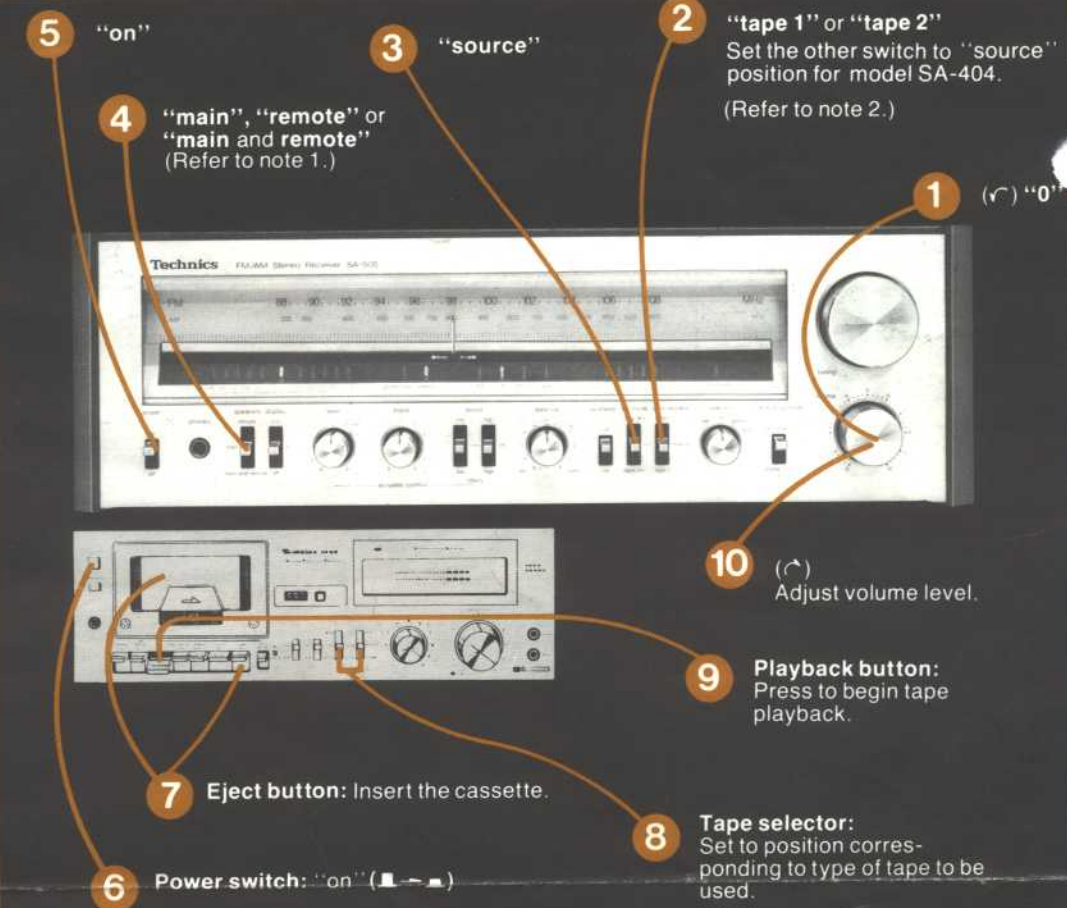
Notes:

1. Set to the "main" position to use the speaker systems connected to the "MAIN" terminals.
2. Steps 6 to 10 may differ depending upon the type of record player.



Note:

Set to the "main" position to use the speaker systems connected to the "MAIN" terminals.

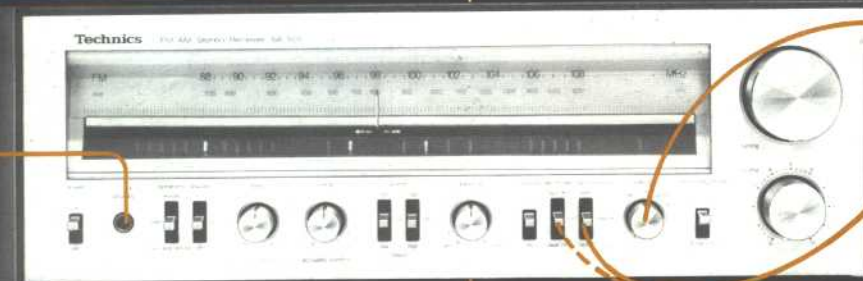


Notes:

1. Set to the "main" position to use the speaker systems connected to the "MAIN" terminals.
2. Set to the "tape 1" position to use the tape deck connected to the "TAPE 1" terminals.
3. Steps 6 to 9 may differ depending upon the type of tape deck.

• When listening through headphones

• To use equipment connected to auxiliary input ("AUX") terminals



The sound will not be heard when headphones are connected to the jack.

Note: Set volume control to minimum ("0") position before connecting headphones.

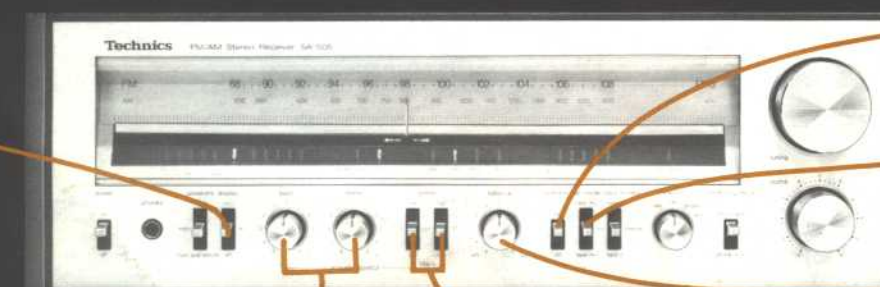
3

- If a stereo tuner is connected to "AUX" terminals on rear panel, operate in same way as described in the section "To listen to radio broadcasts."
- If a tape deck is connected to "AUX" terminals on rear panel, operate in same way as described in the section "To listen to tape."

Set to "x0.1" if illumination range of peak-power indicators is low; set to "off" position if unnecessary.

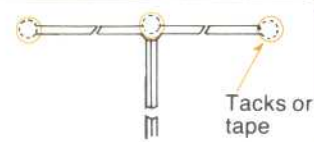
Steps required for all operations

(Follow these steps, as necessary, for all operations after adjustment of volume level.)



- After listening is finished, power switches of all equipment should be turned "off".
- Model SA-505 is shown here.

SA-505/SA-404 : Connections to other equipment

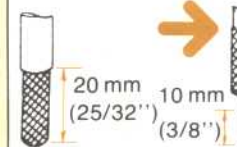


- Unfold to T-shape, and attach to a wall (using tacks or tape) facing in direction of best reception.
- Tacks should not contact internal antenna wire.
- For best reception sound quality, an FM outdoor antenna is recommended.
- Disconnect this antenna if an FM outdoor antenna is installed.

Applicable cartridge types:
Moving-magnet, induced-magnet and high-output moving-coil cartridges.
Cartridge output voltage:
1~10 mV.

FM indoor antenna (included)

Connection:



Be sure the shield braid contacts the clamp.

Clamp

75-ohm coaxial cable

Center conductor

Shield braid

FM outdoor antenna

(Necessary in mountainous region, inside reinforced-concrete building, etc.)

AM outdoor antenna

5~12 m (16~40 ft.)

Use 5~12m (16~40 ft.) of vinyl-covered wire horizontally at the window.

(Necessary in mountainous region, inside reinforced-concrete building, etc.)

Vinyl-covered wire

"UNSWITCHED" outlet:

Power is always available, regardless of power switch setting. Equipment rated up to 150 W can be connected.

Connection of speaker wires

- Strip off the outer covering, and twist the center conductor.



- Turn completely left.



- Insert wire and turn completely to the right.



- Pull wire to be sure it won't come out.



Note:
To prevent damage to circuitry, never short-circuit plus (+) and minus (-) speaker terminals.

Remote speaker system (right)

Main speaker system (right)

Record player

Tape deck 2

Receiver SA-505/SA-404

AC OUTLET

Main speaker system (left)

Input impedance:
MAIN and REMOTE: 8~16Ω
MAIN or REMOTE: 4~16Ω

AC outlets

Remote speaker system (left)

"AUX" terminals:
8-track stereo tape deck (playback only) or tuner.



"AUX" terminals

Receiver (SA-505/SA-404)

"REMOTE" terminals:
Connection to second pair of speakers.

Output terminals ("LINE OUT")

(right)

(left)