Before connecting, operating or adjusting this product, please read these instructions completely.
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Precautions

Before using this unit please read these operating instructions carefully. Take special care to follow the warnings indicated on the unit itself as well as the safety suggestions listed below. Afterwards keep them handy for future reference.

Safety

1. **Power Source** -- The unit should be connected to power supply only of the type described in the operating instructions or as marked on the unit.

2. **Polarization** -- If the unit is equipped with a polarized AC power plug (a plug having one blade wider than the other), that plug will fit into the AC outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

3. **Power Cord Protection** -- AC power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Never take hold of the plug or cord if your hand is wet, and always grasp the plug body when connecting or disconnecting it.

4. **Nonuse Periods** -- When the unit is not used, turn the power off. When left unused for a long period of time, the unit should be unplugged from the household AC outlet.
Precautions (continued)

Installation

Environment

1. **Outdoor Antenna Grounding** -- If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70—1990, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See figure below.

![Antenna Grounding Diagram](image)

2. **Water and Moisture** -- Do not use this unit near water—for example, near a bathtub, washbowl, swimming pool, or the like. Damp basements should also be avoided.

3. **Heat** -- The unit should be situated away from heat sources such as radiators and the like. It also should not be placed in temperatures less than 5°C (41°F) or greater than 35°C (95°F).

Placement

1. **Ventilation** -- The unit should be situated so that its location or position does not interfere with its proper ventilation. Allow 10 cm (4") clearance from the rear of the unit.

2. **Foreign Material** -- Care should be taken so that objects do not fall into and liquids are not spilled into the unit. Do not subject this unit to excessive smoke, dust, mechanical vibration, or shock.

3. **Magnetism** -- The unit should be situated away from equipment or devices that generate strong magnetism.

4. **Stacking** -- Do not place heavy objects, other than system components, on top of the unit.

5. **Surface** -- Place the unit on a flat, level surface.

6. **Carts and Stands** -- The unit should be used only with a cart or stand that is recommended by the manufacturer. The unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit and cart combination to overturn.

7. **Wall or Ceiling Mounting** -- The unit should not be mounted to a wall or ceiling, unless specified in this operating instructions.

Maintenance

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution.

Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

Service

1. **Damage Requiring Service** -- The unit should be serviced by qualified service personnel when:
(a) The AC power supply cord or the plug has been damaged; or
(b) Objects have fallen or liquid has been spilled into the unit; or
(c) The unit has been exposed to rain; or

2. **Servicing** -- The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

(d) The unit does not appear to operate normally or exhibits a marked change in performance; or
(e) The unit has been dropped, or the enclosure damaged.
Preparations

Supplied accessories

AC power supply cord ......... 1 pc.
Remote-control transmitter
(RAK-SA501P1) ............... 1 pc.
Batteries
(UM-4, "AAA", R03) .......... 2 pcs.

AM loop antenna
(SPB1163T) .................. 1 pc.
AM antenna holder .......... 1 pc.
Screws ......................... 2 pcs.

FM indoor antenna
(SSA272M) .................... 1 pc.
Preparations (continued)

Rear panel terminals and functions

1. Antenna connection terminals
   See pages 8–9 for detailed information.

2. “VIDEO OUT” terminal
   Connect a video connection cable (not included) to the video input terminal of TV or projection TV.

3. Cooling fan
   The cooling fan operates at high output power levels only.

4. Outlets “SWITCHED”
   Power to these outlets is controlled by the power switch of this unit. Audio equipment rated up to 80 W (total for all outlets) can be connected here. For proper remote-control operation, connect the power cords of the tape deck and compact disc player to these outlets as indicated below:

5. AC IN socket (AC IN)
   Connect this socket to an AC outlet on the wall using the power supply cord.

6. “GND” terminal
   Connect the turntable’s ground wire to this terminal (if applicable).

7. “PHONO” terminals
   Connect a turntable only. Do not connect any other sound source to these terminals.

8. “CD” terminals
   Connect a stereo connection cable (not included) to the “LINE OUT” terminal of the compact disc player.

9. “TAPE/DAT” terminals
   Connect a tape deck or a digital audio tape deck (DAT) by using stereo connection cables (not included).
10 "VCR 2" terminals
Connect a second VCR or a video disc player by using stereo connection cable (not included) and video connection cable (not included).

![VCR 2 diagram]

11 "VCR 1" terminals
Connect a VCR by using stereo connection cables (not included) and video connection cables (not included).

![VCR 1 diagram]

12 Remote-control OUT terminal
(REMOTE CONTROL OUT)
This terminal can be used only with Technics components which have the appropriate remote-control terminal. (Consult your dealer for details.)
Proper connection with remote-control connection cables SJP2257T will allow control of some functions from this unit's remote-control transmitter. (See pages 37-45 for details.)
Connect to a tape deck and/or compact disc player as shown below.

![Remote-control OUT diagram]

13 Speaker connection terminals
See page 10 for detailed information.
Preparations (continued)

Antenna connections

FM antenna connections

■ FM outdoor antenna (not included)

If the FM indoor antenna does not provide satisfactory reception, an outdoor antenna should be used. The outdoor antenna may be required in a mountainous region, or if this unit is located inside a reinforced-concrete building, etc.

**Connection wire from the antenna**

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

---

**How to connect a 75-ohms coaxial cable**

1. Remove a piece of the outer vinyl insulator.

   ![Diagram](image)

   20 mm (7/8")

2. Twist the shield braid to expose the core wire.

   ![Diagram](image)

   10 mm (3/8")

3. Connect the shield braid and the center conductor as shown at the right.

---

■ FM indoor antenna (included)

Attach to a wall (using a tack or tape) facing in the direction of best reception.

**For best reception sound quality:**

- An FM outdoor antenna is recommended.
- The tack should not contact the internal antenna wire.
- Disconnect the antenna if an FM outdoor antenna is installed.
AM antenna connections

**AM loop antenna** (included)
Connect the AM loop antenna to the AM antenna terminals, and mount it vertically to a column, rack.
Move the antenna toward the right or left to find the point of best reception.
* If this antenna is not properly installed, AM broadcasts will not be received.
* Be sure to connect the AM loop antenna even when an outdoor antenna is used.
Pay attention to the following points when mounting the antenna.
* Do not mount it horizontally (Doing so will impair reception).
* Do not mount it close to power cords, speaker wires or metal surfaces (Doing so will result in noise).
* Do not mount it close to a tape deck. When the tape deck is being used, chirping or beeping sounds may result.

**AM outdoor antenna** (not included)
An outdoor antenna may be required in a mountainous region, or if this unit is located inside a reinforced-concrete building, etc.
Use 5–12 m (16–40 ft.) of vinyl-covered wire horizontally at the window, or convenient location.
When the unit is not in use, disconnect the outdoor antenna to prevent possible damage that may be caused by lightning. Never use an outdoor antenna during an electrical storm.

When mounting the antenna to the unit
This type of installation may cause impaired reception or result in signal noise. If possible, mount the antenna to a rack, a wall, or a column.
Move the antenna toward the right or left to find the point of best reception.

When mounting the antenna to a column, a wall or rack
Mount it vertically.
Preparations (continued)

Speaker connections

See page 32 regarding the positioning of the speakers.

The load impedance of any speaker used with this unit must be 8 Ω.

"B" terminals
For connection to a second pair of speakers.

Connection of speaker cables

1. Twist the core of the speaker cables.

   15 mm (19/32") → Twist

2. Open the lever, and insert the core until it can no longer be seen.

   Lever

3. Close the lever, and pull the cable to assure a proper connection.

Notes:
To prevent damage to circuitry, never short-circuit positive (+) and negative (−) speaker wires.

Be sure to only connect positive (+) wires to positive (+) terminals, and negative (−) wires to negative (−) terminals.
Front Panel Controls and Functions

The functions indicated by the numbers with black background (for example 19) can be activated from the main unit and the remote control transmitter. (See pages 16 – 18.)

Amplifier section

14 Speaker selectors (SPEAKERS)
These selectors are used to select the speaker system(s) (A and/or B).

15 Display mode select button
(DISPLAY MODE, -DEMO)
This button is used to select either the spectrum analysis level ("Bar-type display" or "Dot display") or equalization level display.
If the button is pressed for 3 seconds or more, this unit will start a demonstration mode for the parametric EQ system.
(Refer to page 27 for detailed information.)

16 Parametric EQ band select buttons
These buttons are used to select the band to be adjusted.

17 Equalization preset buttons
(MANUAL PRESET)
These buttons are used for storing or recalling the curves made by the parametric EQ system.

18 Tape-monitor switch (TAPE/DAT MONITOR)
Press this button to listen to a tape or a digital audio tape connected to the "TAPE/DAT" terminals.
To listen to some other source, press this button once again (so that the indicator is switched OFF).

21 Parametric EQ system memory button
(MEMORY)
This button enables the curves to be stored in the parametric EQ system memory.

22 Fixed preset button (FIXED PRESET)
This button is used to recall a "fixed preset" curve from the main unit's memory.

23 Input selector buttons
These buttons are used to select the sound source to be heard, such as a disc, radio broadcasts, etc. The selected sound source is shown on the audio input selector/frequency display.
The "PHONO" input selector has two functions: When pressed momentarily it selects "PHONO". When pressed and held for about 4 seconds, it de-activates the muting function.

24 Loudness switch (LOUDNESS)
Set to the "ON" position (the loudness indicator will illuminate); when listening to music at low volume. Auditory perception of sound in the low frequency range falls off at low volume, but when the switch is in this position, this deficiency is compensated for, so that the full impact of the musical performance can be enjoyed.

25 Dolby surround input balance control
(SURROUND INPUT BALANCE)
This control is used to minimize dialogue leakage in the surround channel thereby optimizing the Dolby surround decoding operation.

26 Headphones jack (PHONES)

26 Balance control (BALANCE)
Front Panel Controls and Functions (continued)

Amplifier section (continued)

27 Parametric EQ system ON/OFF button (P. EQ SYS)
This button is used to turn the parametric EQ system ON or OFF.

31 Center frequency select/bass control (CENTER FREQ/BASS)
This control is used to select the center frequency in the parametric EQ mode or to adjust the low-frequency sounds in the tone mode.

28 Fine mode select button (FINE)
This button is used to fine-adjust the center frequency of the parametric EQ.

32 Frequency level/treble control (LEVEL/TREBLE)
This control is used to adjust the frequency level in the parametric EQ mode or the high-frequency sounds in the tone mode.

29 Slope changeover button [SLOPE (Q)]
This button is used to increase or decrease the slope of the parametric EQ curves.

30 Dolby surround ON/OFF button (SURROUND)
This button is used to activate the Dolby surround effect. When this button is switched OFF, no sound will be heard from the rear speaker systems.

31 Parametric EQ/tone mode select button (P.EQ/TONE)
This button is used to select parametric EQ mode or tone mode.

33 Rear speaker level adjustment buttons (REAR LEVEL)
These buttons are used to adjust the volume level of the rear speakers.
Tuner section

35 Power “STANDBY/ON” switch (POWER, STANDBY/ON)
This switch is used to turn the power to the main unit ON and OFF.
Selecting “OFF” from the remote control transmitter actually sets the main unit to the “STANDBY” mode.

36 Remote-control signal receptor (REMOTE SENSOR)
Receives the signals from the remote-control.

37 “STANDBY” indicator (STANDBY)
This indicator illuminates when the “STANDBY” mode is set by the main unit or the remote control transmitter.

38 Preset-tuning buttons (1 – 0) (30 CHANNEL RANDOM PRESET TUNING)
These buttons are used to preset broadcast frequencies into the memory of this unit and to recall the desired preset stations. (Refer to pages 22, 24.)

39 Tuning control (TUNING)
This control is used to select an FM or AM broadcast.
When turning the control to the left, the frequency changes downward. When turning the control to the right, the frequency changes upward.

40 Tuning-mode selector/indicator (TUNING MODE)
Each time this selector is pressed, the selection changes, in sequence, to “AUTO”, “MANUAL” and “LOCK”.
AUTO:
In this position, broadcast channels are automatically selected when the tuning control is momentarily turned to the left or right to start the frequency changing.
MANUAL:
In this position, the tuning control can be used to locate the desired channel manually.
The frequency changes only as the tuning control is turned to the right to left.
LOCK:
In this position, the broadcast channel presently being heard is locked in, and other broadcast stations cannot be tuned to, even if the tuning control is turned.

41 Band selectors
FM: Press this button to listen to an FM broadcast.
AM: Press this button to listen to an AM broadcast.

42 FM mode selector (FM MODE)
This unit automatically switches to the stereo mode when an FM stereo broadcast is received. This selector is used to select the mode (stereo or monaural) of FM broadcast signals.

43 Memory scan button (MEMORY SCAN)
This button is used to locate a desired broadcast station; each broadcast station is selected for about 3 seconds.

44 Memory button (MEMORY)
This button is used when presetting broadcast station frequencies into memory. (Refer to pages 22–23.)
Display section

45 FM stereo indicator (STEREO)
This indicator automatically illuminates when an FM stereo broadcast is being received.

It will not illuminate if the FM mode selector is set to the monaural mode.

46 Spectrum analysis/parametric EQ level display
(SPECTRUM ANALYZER/PARAMETRIC EQ)
This display shows the spectrum analysis level ("Bar-type display" or "Dot display") or equalization level.

47 Quartz-lock indicator (QUARTZ LOCK)
This indicator illuminates when the unit is tuned precisely to a broadcast station.

48 Channel display
This display shows the channel number selected by one of the preset-tuning buttons.
Also this display shows the channel number for about 3 seconds during memory scan operation.

49 Band indicators (AM, FM)
Indicates the selected band.

50 Memory indicator (MEMORY)
This indicator illuminates when the memory button is pressed.

51 Memory scan indicator (M. SCAN)
This indicator illuminates when the memory scan button is pressed.

52 Audio input selector/frequency display
(INPUT SELECTOR/FREQUENCY)
Displays the selected source or broadcast frequency.

53 Tape indicator (TAPE)
This indicator will illuminate when the tape-monitor switch is pressed.

54 VCR display (VCR)
Displays the selected VCR.

55 Loudness indicator (LOUDNESS)
This indicator will illuminate when the loudness switch is pressed.

56 Muting indicator (MUTING)
This indicator will illuminate when the muting button (on the remote-control transmitter) is pressed.

57 Rear level indicator
Displays the level adjusted by rear speaker level adjustment button.

58 Dolby surround indicator
(DOLBY SURROUND)
This indicator illuminates when the Dolby surround ON/OFF button is set to ON.
Fine mode indicator (FINE)
This indicator illuminates when the fine mode select button is pressed in the parametric EQ mode.

Parametric EQ system center frequency display
It displays the center frequency of the curves in the parametric EQ mode arranged by the user with the parametric EQ system or the curves pre-programmed in this unit's memory.

Parametric EQ system off indicator (OFF)
This indicator illuminates when the parametric EQ system is off.

Tone mode indicator (TONE MODE)
This indicator illuminates when the parametric EQ/tone mode select button is set to the tone mode.

Parametric EQ mode indicator (P.EQ MODE)
This indicator illuminates when the parametric EQ/tone mode select button is set to the parametric EQ mode.

Manual/fixed preset indicators (1 2 3 FLAT)
It displays the type of curve selected with the equalization preset buttons or fixed preset button in the parametric EQ mode.

Parametric EQ system memory indicator (M)
This indicator illuminates when the parametric EQ system memory button is pressed in the parametric EQ mode.

Parametric EQ system operation select indicators (MANUAL/FIXED)
One of these indicators will illuminate in accordance with the fixed preset button or equalization preset buttons setting.
Front Panel Controls and Functions (continued)

Remote control section

**Tuner controls** (Fig. 1)

- **Power switch (POWER)**
  This power switch is used for controlling the power (ON/OFF) of this system as well as any Panasonic remote controlled TV and/or VCR.
  When switching the power of each unit ON and OFF, be sure to first press the appropriate function selector button on the remote control transmitter.

- **Preset-tuning buttons (1—0)**
  These buttons are used to tune to broadcast stations that have been preset to the unit's memory.
  When these buttons are used, be sure to first press the "TUNER" button of the function selector buttons on the remote control transmitter.

**Cassette deck controls** (Fig. 2)

- **Record button (REC)**
  Press this button to change to the recording stand-by mode.

- **Deck 1/Deck 2 selector (DECK 1/2)**
  This button is used to select the deck to be operated by remote control when a double cassette deck is connected to this unit.

- **Fast-forward/cue/rewind/review buttons (>>, <<, >>)**
  Press this button to advance or rewind the tape while the unit is in the stop mode.
  Press this button to cue or review the contents at high speed, while the unit is in the play mode.

**Function selector controls** (Fig. 3)

- **Function selector buttons (TUNER, TV, VCR, CD)**
  These buttons are used to change the functions of this remote control.
Amplifier controls (Fig. 4)

66 Dolby surround ON/OFF button (SURROUND)
This button is used to activate the Dolby surround effect.

77 Muting button (MUTING)
This button is used to temporarily attenuate ("mute") the volume level.

Compact disc player controls (Fig. 5)

36 Numeric buttons (1 – 0, + 10)
These buttons are used to select the track or the disc number (only 1 – 5).
When these buttons are used, be sure to first press the "CD" button of the function selector buttons of the remote control transmitter.

81 Stop button (■ STOP)
To stop compact disc play.

82 Play button (► PLAY)
To start compact disc play.

83 Skip buttons (◄◄ SKIP ►►)
Press one of these buttons briefly to move the pickup (backward or forward) to the beginning of a specific track.

67 Rear speaker level adjustment buttons
(▼ REAR LEVEL ▲)
These buttons are used to adjust the volume level of the rear speaker systems.

68 Volume control (▼ VOLUME ▲)
These buttons are used to adjust the volume level.
▼: To reduce the volume level.
▲: To increase the volume level.

44 Program/continue button
(PROGRAM/CONTINUE)
This button is used to select either the sequential play or program play mode.

53 Disc button (DISC)
This button is used to select the disc when a multi compact disc player is connected with this unit.

56 Pause button (II PAUSE)
To temporarily stop compact disc play.
Remote control section  (continued)

**TV controls**  (Fig. 6)

When the buttons (①, ②) are used, be sure to first press the "TV" button of the function selector buttons of the remote control transmitter.

① **Preset channel buttons (1–0)**
These buttons are used to select TV channels.

② **Channel up/down buttons (▼ CH ▲)**
These buttons are used to select TV channels.

**Video controls**  (Fig. 7)

When the buttons (③, ④) are used, be sure to first press the "VCR" button of the function selector buttons of the remote control transmitter.

③ **Preset channel buttons (1–0)**
These buttons are used to select video channels.

④ **Channel up/down buttons (▼ CH ▲)**
These buttons are used to select video channels.

⑤ **Selector buttons (SELECTOR)**
- **VCR 1**: Press this button to select the "VCR 1" input selector position on the main unit.
- **VCR 2**: Press this button to select the "VCR 2" input selector position on the main unit.

⑥ **Fast-forward/rewind buttons**
رغタイプ REW, ▶▷ FF
Press one of these buttons to advance or rewind the tape while the unit is in the stop mode.

⑦ **Playback button (▶ PLAY)**
This button is used for video playback.

⑧ **Pause button (II PAUSE)**
This button is used to pause during playback or video recording.

⑨ **Stop button (■ STOP)**
This button is used to stop playback or video recording.

⑩ **Record buttons (● REC)**
These buttons are used to record.
Basic Operating Procedure

1 Set the power switch to ON.

2 Select the “A” and/or “B” speaker system(s) to be used.
   When only one speaker system is connected, no sound will be heard if both speaker selectors are pressed.

3 Select the audio or video source.
   VCR 1: Press this button to watch video tapes from the VCR connected to the “VCR 1” terminals.
   VCR 2: Press this button to watch video tapes from the VCR or video discs from the video disc player connected to the “VCR 2” terminals.
   TAPE/DAT MONITOR: Press this button to listen to tape or digital audio tape connected to the “TAPE/DAT” terminals. No other sources selected by the input selector can be heard while the tape indicator is illuminated. To listen to some other source, press this button once again.
   CD: Press this button to listen to compact discs.
   TUNER: Press this button to listen to radio broadcasts.
   PHONO: Press this button to listen to phono discs.

   It is recommended that the power to the compact disc player be switched OFF when it is not being used.

4 Start the audio or video source.
   (Refer to the appropriate operating instructions for details).

5 Adjust the volume level.
Basic Operating Procedure

To listen to a desired audio source while watching video picture

Refer to page 19 and follow the procedure below.

1. Follow steps 1～2 on page 19.

2. Select the desired video source and audio source in step 3 on page 19.
   Be sure to select the video source first.

3. Start the video and audio source.

When listening through headphones

Use the volume control to reduce the volume level, and connect the headphones to the headphones jack.
If sound from the speakers is not wanted, set the speaker selectors ("SPEAKERS") to the "OFF" position.
Set the Dolby surround ON/OFF button to OFF when the rear speakers are connected.
Avoid listening for prolonged periods of time to prevent hearing damage.

After use

Be sure to reduce the volume level, and switch OFF the power from the remote-control transmitter or by the power switch of this unit.

Note: The input selection and the muting settings will be retained (as they were at the time when the power was switched OFF) by the memory back-up function.
Manual tuner operation  (to listen to broadcasts by using the tuning control)

Have you completed the steps (on page 19) of "Basic Operating Procedure"?

1. Press the "TUNER" button.

2. Press the "FM" or "AM" button.

3. Select the desired tuning mode, "AUTO" or "MANUAL".

4. Turn the tuning control so as to tune to the desired broadcast.
   In "AUTO" mode, the next station, higher or lower in broadcast frequency, will be automatically tuned in.
   In "MANUAL" mode, the frequency will change, using the smallest step available, only as the tuning control is being turned. This will allow you to tune in all of the broadcast frequencies available in that band.

   If you want to lock the broadcast channel presently being heard, press the tuning-mode selector to select the "LOCK" position.

If noise is excessive in the FM mode

Press the FM mode selector.

The sound will then be heard in monaural and the FM stereo indicator will not illuminate. If the broadcast signal is weak, or if there is a large amount of interference, sounds can be heard more clearly.
Listening to Radio Broadcasts (continued)

Memory presets

You can program 30 AM/FM radio broadcast stations into memory, so that any desired station may be selected by simply touching one or two buttons. (See pages 22-24.)

Manual memory presetting

Have you completed the steps (on page 19) of “Basic Operating Procedure”?

1. Press the “TUNER” button.

2. Press the “FM” or “AM” button.

3. Select the desired tuning mode, “AUTO” or “MANUAL”.

4. Turn the tuning control so as to tune to the desired broadcast.

In “AUTO” mode, the next station, higher or lower in broadcast frequency, will be automatically tuned in.

In “MANUAL” mode, the frequency will change, using the smallest step available, only as the tuning control is being turned. This will allow you to tune in all of the broadcast frequencies available in that band.

5. Press the memory button momentarily.

(The memory indicator will illuminate.)

If the memory button is pressed and held until the frequency begins to change, the automatic memory presetting (See page 23) is activated. To stop the automatic memory presetting, once again press the memory button. Then begin again from step 4.

To cancel the memory function, press the memory button again.

6. Select the desired “CHANNEL”.

To designate channels 1-9:
Press the appropriate (1-9) preset-tuning button.
To designate channels 10-30:

1. Press the button for the most significant digit (1, 2 or 3).
2. Press the button for the least significant digit (1-0) within 2 seconds after pressing the first button.

If the interval between pressing the first button and pressing the second button is more than about 2 seconds, the setting may not be made correctly. If this happens, make the setting once again (following step 5).

7. Repeat steps 2 through 6 to make additional memory presettings; for later reference, note the presettings in the station memory file on page 24.
Automatic memory presetting

Have you completed the steps (on page 19) of “Basic Operating Procedure”? 

When this method is used, the frequencies of the selected broadcast stations are automatically preset (in sequence from lower to higher frequencies) into memory: “channels” 1 to 30 are available for the presetting of FM stations, and “channels” 21 to 30 are available for AM stations.

When a presetting is made to a channel that has already been preset, the prior presetting will be erased, so if, for example, FM frequencies are preset to channel 1 to 30 and then AM frequencies are preset, the first AM frequency will be preset to channel 21 (thus erasing the FM presetting to channel 21), the second AM frequency will be preset to 22 (erasing FM 22), and so on.

4 Turn the tuning control so as to set to the frequency from which you want to start automatic memory presetting.

In “AUTO” mode, the next station, higher or lower in broadcast frequency, will be automatically tuned in. 
In “MANUAL” mode, the frequency will change, using the smallest step available, only as the tuning control is being turned. This will allow you to tune in all of the broadcast frequencies available in that band.

5 Press the memory button until the frequency begins to change.

(Automatic memory presetting will start.)

For automatic presetting in areas where there are fewer than 30 stations for FM broadcasts, the remaining channels will be left unused. The unused channels can be filled by following steps 2 through 6 (on page 22.)

Back-up memory

The back-up function maintains the preset memory and the most-recent memory (see below) when the power is switched OFF, in the event of a power failure, or if the power cord is disconnected. The memory will be maintained for as long as approximately one month.

Most-recent memory

The most-recent memory system “remembers” the broadcast station last tuned to when the unit was switched OFF. That station will be automatically tuned to when the power is switched ON.

If frequency presettings are accidentally erased

1. Switch ON the power switch for an hour or longer.
2. Repeat the frequency presettings procedure once again.
Memory tuner operation
(to listen to broadcast stations preset into memory)

1 Press the "TUNER" button.

2 Select the desired "CHANNEL".
   To designate channels 1 – 9:
   Press the appropriate (1 – 9) preset-tuning button.
   To designate channels 10 – 30:
   ① Press the button for the most significant digit (1, 2 or 3).
   ② Press the button for the least significant digit (1 – 0) within
      2 seconds after pressing the first button.

   If the interval between pressing the first button and pressing
   the second button is more than about 2 seconds, the setting
   may not be made correctly. If this happens, make the setting
   once again.

Station Memory File (Use this file to record your memory selections.)

| ch. 1 | ch. 2 | ch. 3 | ch. 4 | ch. 5 | ch. 6 | ch. 7 | ch. 8 | ch. 9 | ch. 10 | ch. 11 | ch. 12 | ch. 13 | ch. 14 | ch. 15 | ch. 16 | ch. 17 | ch. 18 | ch. 19 | ch. 20 | ch. 21 | ch. 22 | ch. 23 | ch. 24 | ch. 25 | ch. 26 | ch. 27 | ch. 28 | ch. 29 | ch. 30 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

Channel selection using the memory scan button

This feature is convenient for use when trying to locate a certain
broadcast, or to listen to each station briefly to hear what is being
broadcast.

Press the memory scan button.
Each frequency will then be heard (in sequence)
for about 3 seconds.

The preset channel number will be displayed in the channel
display.

If noise is excessive in the FM mode
Press the FM mode selector.

Preset channel number

When a broadcast you want to listen to is
found

Press the memory scan button
(The broadcast will continue, even after 3 seconds
have passed.)

The sound will then be heard in monaural and the FM stereo
indicator will not illuminate. If the broadcast signal is weak, or if
there is a large amount of interference, sounds can be heard
more clearly.
Concerning the Parametric EQ System

There are two methods for adjusting the frequency response of this system: the tone control and the parametric EQ. Select whichever method you prefer.

Tone control

After changing this unit to the tone mode, use the bass control or treble control to adjust the balance of high-frequency and low-frequency sounds.

Example: In case the high-frequency range and the low-frequency range are boosted.

Parametric EQ

Conventional Graphic Equalizer only allow you to adjust the level of certain fixed frequency “bands”. Additionally, adjusting one frequency “band” may also affect the level of adjacent frequency “bands”.

The Parametric Equalizer, on the other hand, gives you four selectable frequency bands with a choice of 27 different frequencies from 40 Hz to 16 kHz. Also, the band width can be set “wide” or “narrow” for each selected center frequency.

This will determine how adjacent frequencies are affected by level adjustments in each band.

Example: Four bands of 10 dB boost
Using the Tone Control

Adjustment of tone control

1 Turn on the parametric EQ system.
(The parametric EQ system off indicator goes out.)

2 Press the parametric EQ/tone mode select button to select the tone mode.
(The tone mode indicator will illuminate.)

3 Adjust the tone balance.

Adjust the low-frequency sound to the desired level.

Adjust the high-frequency sound to the desired level.

Note that these controls can be rotated beyond their positive (+) or negative (−) extremes. However, when either extreme is reached, the controls have no effect.

Caution:
Extreme level adjustments in either frequency band may cause damage to your receiver and/or speakers.
Using the Parametric EQ

Demonstration mode

In order to make the parametric EQ system easy to use, this unit comes with a factory programmed demonstration mode (adjustment example). Refer to the demonstration as you carry out the operations on the following page, if necessary.

Operation

1 Start the sound source.

2 Press and hold the display mode select button for 3 seconds or more.
The demonstration mode will start.
Sound will be changed according to the change of display.
The demonstration mode is automatically repeated.

3 Press the display mode select button momentarily.
The demonstration mode is cancelled and the display switches to the original display mode.
The preferred display mode can now be selected.
Adjustment of the parametric EQ

1. Select the sound source and start its playback at a moderate volume level.

2. Turn on the parametric EQ system.
   (The parametric EQ system on indicator goes out.)

3. Select the parametric EQ mode.
   (The parametric EQ mode indicator will illuminate.)

4. Select the band to be adjusted.
   (The center frequency level and band indication to be adjusted will flash for about 5 seconds.)

   **EQ1:** 40 Hz ~ 400 Hz to be adjusted

   **EQ2:** 160 Hz ~ 1 kHz to be adjusted

   **EQ3:** 630 Hz ~ 6.3 kHz to be adjusted

   **EQ4:** 4 kHz ~ 16 kHz to be adjusted
5 Set the center frequency level (flashing bar) to $\pm 10$ dB.
   The illustration shown below is an example for EQ1.
   ![Illustration of center frequency level]

6 Select the preferred slope, "narrow" or "wide".
   The curve slope selection changes from "narrow" to "wide" each time this button is pressed.
   The illustration shown below is an example for EQ1.
   When "narrow" is selected:
   ![Illustration of narrow slope]
   When "wide" is selected:
   ![Illustration of wide slope]

7 While listening to the sound source, select the desired center frequency.
   See the "characteristics of center frequency" section below to help you determine the desired center frequency.
   To select the center frequency more precisely, see "Fine adjustment of the center frequency" below.

8 While listening to the sound source, readjust the level as required.
   ![Illustration of level adjustment]

9 Repeat steps 4–8 to adjust the center frequency in the remaining bands.

**Caution:**
Extreme level adjustments in any frequency band may cause damage to your receiver and/or your speakers.

---

**Fine adjustment of the center frequency**

In step 7 above, press the fine mode select button to select the desired center frequency while watching the parametric EQ system center frequency display.
(The fine mode indicator will illuminate and you will notice that the frequency spectrum now has more resolution.)

---

**Characteristics of center frequency**

### 40 Hz – 63 Hz
This is the deep bass sound range. When this level is increased, the sound quality of a bass guitar, drums, etc. will be stabilized for a full, rich sound.

### 100 Hz – 160 Hz
This is the bass sound range. When this level is increased, the sound will seem to have a greater fullness and depth. Indistinct sounds can, moreover, be made distinct by lowering the level.

### 250 Hz – 400 Hz
This range is the fundamental sound range. When this level is increased, a forceful "punch" is added. This level adjustment is also used to add additional richness to male vocal sounds.

### 630 Hz – 1 kHz
This is the range in which most of the vocal range of the human voice is included. By increasing the control setting, vocal reproductions become more full of life, and greater realism and ambience can be added.

### 1.6 kHz – 2.5 kHz
String instruments and wind instruments are in this range. When this level is increased, their brilliance is emphasized for more colorful sound.

### 4 kHz – 6.3 kHz
This is the range for adjusting sound's luster and brightness. When this level is increased, an additional degree of brilliance and color is added. For sounds which seem too metallic, on the other hand, they can be softened by reducing the level.

### 10 kHz – 16 kHz
This is the range in which finely subtle tones of radiance and splendidous luminance can be added. By increasing the control setting, an extra measure of glitter can be added, for example, to the sounds of the cymbals, triangle, etc. This control can also be used, by reducing its setting, to decrease annoying tape "hisss" noises.
Using the Parametric EQ (continued)

1 Adjust the parametric EQ as desired.

2 MEMORY

3 MANUAL PRESET

4 Repeat steps 1–3.

Storing a curve in memory

Up to three curve presets can be stored in this unit's memory.

1. Adjust the parametric EQ as desired.
   (Refer to pages 28–29.)

2. Press the parametric EQ system memory button.
   (The parametric EQ system memory indicator illuminates.)

   Parametric EQ system memory indicator

3. Select the channel of your choice.
   (The selected channel illuminates.)

   Selected channel

4. Repeat steps 1–3.

To recall a curve from memory

Use the equalization preset button to select the channel of your choice.
(The selected channel illuminates and the stored curve will be displayed for about 2 seconds.)

Selected channel

— 30 —
To recall factory pre-programmed curves

Four factory pre-programmed curves are conveniently arranged in this unit's memory. These are: PRESET 1 (heavy), PRESET 2 (vocal), PRESET 3 (soft) and FLAT.
Select the one of your choice.

Press the fixed preset button.

Each time the button is pressed, the fixed preset indicators illuminate and the display changes as shown below.

PRESET 1 (heavy)
This curve can be used to add "punch" to rock and other music.

PRESET 2 (vocal)
This curve can be used to clarify vocals.

FLAT
This curve can be used to return to the initial state.

PRESET 3 (soft)
This curve can be used to listen to background music, etc. at a low volume level.
About the Dolby Surround System

The Dolby surround system is a system that provides the concert hall effect of reflected sound when playback of signals recorded by the Dolby surround system.

To enjoy the Dolby surround system, be sure to connect the rear speakers to the "REAR" speaker terminals on the rear panel.

Location of speaker systems

The listening position at which the effect is the greatest is a position slightly to the rear of a center position of four-speaker systems. However, the position should be adjusted to our personal preference, because the effect varies to some degree depending upon the type of music and the music source.
Using Dolby surround

1. Start the desired Dolby surround recorded program source.

2. Set the volume to a comfortable level.

3. Press the Dolby surround ON/OFF button to activate the Dolby surround effect. (The Dolby surround indicator will illuminate.)

4. Set the speaker selectors to “OFF”. When monaural sound such as conversation, etc. is heard from the rear speakers, adjust with the Dolby surround input balance control so the conversation, etc. is not heard.

5. Set the speaker selectors to “ON”.

6. Adjust the volume level of the rear speakers as desired. (The volume level of the rear speakers will be displayed on the rear level indicator.)

7. Adjust the volume level. (The volume level of the front and rear speakers will be adjusted simultaneously.)

Note: Sound may be heard from the rear speakers even if the rear speakers volume level is set to the minimum.
While listening to music

To emphasize low-frequency sound

Set the loudness switch to "ON" position.
The loudness indicator will illuminate.

This feature is especially useful when listening to music at low volume levels, as it enhances the low frequency sounds that are usually lost.

To adjust the left/right sound balance

Adjust the balance control.
The left/right volume balance of the rear speaker systems cannot be adjusted.
Have you completed the steps (on page 19) of “Basic Operating Procedure”? 

1. Select the audio/video source for recording.

2. Begin recording.

3. Begin the audio/video source to be recorded.

---

**Tape recording**

To record on the tape deck or digital audio tape deck (DAT) connected to the “TAPE/DAT” terminals. Before recording, prepare the tape deck or DAT for recording (recording level adjustment, etc.).

1. Select the audio/video source for recording.

2. Begin recording.
   Follow your tape deck’s or DAT’s operating instructions.

---

**To listen to the sound being recorded to the tape deck**

Press the tape-monitor switch while recording.
(The tape indicator will illuminate.)

Follow your tape deck’s or DAT’s operating instructions for availability and operation of the tape monitor function.

---

**VCR (VCR 1) recording**

Before recording, prepare the VCR for recording (recording level adjustment, etc.). Be sure to set the input selector on the VCR to the external input position.

1. Select the video source for recording.
   Then, select the audio source if it is different from the video source as in simulcast broadcasting.

2. Begin recording.
   Follow your VCR’s operating instructions.

3. Begin the audio/video source to be recorded.
Edit-recording from VCR 2 to VCR 1

Before recording, prepare the VCR for recording (recording level adjustment, etc.).

1. **Press the “VCR 2” button.**
   (The “2” will be displayed on the VCR display.)

2. **Begin recording on the VCR 1 and playback the tape on the playback VCR 2.**
   Follow your VCR’s operating instructions.
Concerning the Remote Control

Battery installation

1. Open the cover.
   Press gently and move the cover in the direction of the arrow.

2. Insert the batteries.
   Use two UM-4 "AAA", IEC R03 (1.5 V) or equivalent batteries.

   Be sure that the batteries are inserted so that their positive (+) and negative (−) polarities match the polarities indicated in the compartment. Batteries installed incorrectly may leak and cause damage.

   Refer to “Use of batteries” for additional information.

3. Close the cover.

Use of batteries

Do not mix old and new batteries, or batteries of different types (carbon and alkaline, etc.).

Always remove old, weak or worn-out batteries promptly and dispose of them properly.

The battery life is about one year. Although the battery life varies depending on how often the device is used, the batteries should be replaced about once every year on the average.

The batteries should be replaced if commands from the remote control transmitter do not operate the unit even when transmitter is held close to the front panel.

Never subject batteries to excessive heat or flame; do not attempt to disassemble them; and be sure they are not short-circuited.

Operation notes

Aim the remote-control's transmission window toward the unit's sensor. Avoid any obstacles.

Be sure the transmission window and the unit's sensor are free from dust. Excessive dust might affect its performance.

The operation may not be correct if direct sunlight or other strong light source strikes the receiving sensor of this unit. If there is a problem, place the unit away from the light source.

The control panel of the remote control may be covered by a clear plastic protective sheet. This sheet may be removed if desired.

6 meters (20 ft.)

Use the remote control within a 60 angle and within 6 meters (20 ft.) from the unit.
Remote Control Operation (Audio)

For detailed information concerning operation steps, etc., please see the appropriate page of the operating instructions for each unit.

1. Set the power of each component to ON.

2. Press the "TUNER" button.

3. Press the power switch.
   (The power of each component will be switched OFF.)
   The "STANDBY" indicator ("STANDBY") on the receiver will illuminate, and the indicators of all other components will switch OFF.

   To restore power to all components, follow step 3 again.

To switch each component's power ON/OFF

Have you connected the power cords as indicated on page 6?

1. Set the power of each component to ON.

2. Press the "TUNER" button.

To attenuate the volume level

Press the muting button. MUTING

The volume level is attenuated by approx., 20 dB (1/10).
(The muting indicator on the receiver will illuminate.)

Press once again to resume to the previous volume level.
(The muting indicator on the receiver will turn OFF.)

To adjust the volume level

Use the volume control. ▼ VOLUME ▲

To resume to the previous volume level from the main unit, press and hold the "PHONO" input selector for about 4 seconds.
(The unit will switch to the phono mode.)
Listening to radio broadcasts

Have you completed the steps (on pages 22—23) of “Memory presets”?

1. Press the “TUNER” button.

2. Select the desired “channel”.

   To designate channels 1—9:
   Press the appropriate (1—9) preset-tuning button.

   To designate channels 10—30:
   ① Press the button for the most significant digit (1, 2 or 3).
   ② Press the button for the least significant digit (1—0)
      within 2 seconds after pressing the first button.

   If the interval between pressing the first button and pressing
   the second button is more than about 2 seconds, the setting
   may not be made correctly. If this happens, make the setting
   once again.
Remote Control Operation (Audio)

(continued)

Listening to compact discs

For a Technics compact disc player with the proper remote-control terminal or a remote-control sensor only.
Consult your dealer for details.

Sequential play

Sequential play refers to play of the first track of the first disc to the last track of the last disc.

1 Press the “CD” button.

2 Set the program/continue button to the continuous mode.
   (The program indicator of the compact disc player should be OFF.)

3 Press the play button.
   (Play will start.)

To stop play temporarily

Press the pause button.
Press the play button to resume play.

To stop play

Press the stop button.
Direct access play

To start sequential play from a specific disc and track. Play will progress to the last track of the last disc.

Steps 3 and 4 are only applicable to a Technics multi-compact disc player.

1 Press the “CD” button.

2 Set the program/continue button to the continuous mode.
   (The program indicator of the compact disc player should be OFF.)

3 Press the disc button.

4 Select the desired disc number.
   If only the disc is selected, play of all tracks on that disc (beginning from its first track) will begin.

5 Select the desired track number.
   (Play will start from the selected track.)
   Tracks 1–9: Press the appropriate numeric button $1 - 9$ directly.
   To select a two-digit track number over 10:
   Press the $\bigoplus$ button to select the “tens” digit, and then one of the $1 - 9$ buttons to select the “units” digit.
   To select track number such as 30:
   Press the $\bigoplus$ button three times and then $0$. 
Listening to compact discs (continued)

Program play

The desired tracks from a desired disc can be programmed to play in any desired sequence.

Steps 3 and 4 are only applicable to a Technics multi-compact disc player.

1 Press the “CD” button.

2 Set the program/continue button to the program mode.
   (The program indicator of the compact disc player will illuminate.)

3 Press the disc button.

4 Select the desired disc number.
   Repeat steps 3-4 instead of steps 5-6 if selecting the disc only.

5 Select the desired track number.
   Tracks 1--9: Press the appropriate numeric button 1 -- 9 directly.
   To select a two-digit track number over 10:
   Press the 0 button to select the “tens” digit, and then one of the 0 -- 9 buttons to select the “units” digit.
   To select track number such as 30:
   Press the 0 button three times and then 3.

6 Repeat steps 3-5 until the desired program is completed.

7 Press the play button to start play.
   To program additional selections during play, repeat steps 3, 4 and 5.

To clear the entire program

Press the stop button one time while programming or two times while in the program play mode.

\[STOP\]
Skip play

Press one of the skip buttons during play.

Press the skip button momentarily until the desired track has been located.

- SKIP  ▶️ Pickup skips forward.
- SKIP  ◀️ Pickup skips backward.

During program play, the pickup skips forward or backward within the programmed tracks.
Remote Control Operation (Audio)
(continued)

Listening to tapes
For Technics tape decks with the proper remote-control terminal only. Consult your dealer for details.

1 Only when using a double cassette deck
   Select tape deck (1 or 2).
   The remote-control indicator of the cassette deck is changed each time the button is pressed.

2 Press the appropriate playback button.
   ►: For the “A”-side of the tape (side facing outward)
   ◄: For the “B”-side of the tape

To search for the desired tune
Press one of the fast-forward/cue, rewind/review buttons during playback.
During playback of side “A” (forward) (►):
   ◄: Press to review.
   ►: Press to cue.

To fast-forward or rewind the tape
Press one of the fast-forward/cue, rewind/review buttons while in the stop mode.
If the side “A” (forward) indicator is illuminated:
   ◄: Press to rewind.
   ►: Press to fast-forward.

If the side “B” (reverse) indicator is illuminated:
   ◄: Press to fast-forward.
   ►: Press to rewind.

To stop playback temporarily
Press the pause button.

To stop playback
Press the stop button.

For Technics tape decks with the “music select” functions, these buttons can be used to select the desired tune during playback.

During playback of side “B” (reverse) (◄):
   ◄: Press to cue.
   ►: Press to review.

To resume playback, press the playback button corresponding to the side of the tape being played.
Recording on tape deck

For Technics tape decks with the proper remote-control terminal only. Consult your dealer for details.

Before recording, prepare the tape deck for recording (recording level adjustment, etc.)

1 Select the sound source to be recorded.

2 Only when using a double cassette deck
   Select tape deck (1 or 2).

3 Press the record button.
   (The tape deck will be in the recording stand-by mode.)

4 Press the appropriate playback button to begin the recording.
   ▶: For the "A"-side of the tape
   ◄: For the "B"-side of the tape

5 Begin the sound source to be recorded.

To stop recording temporarily

Press the pause button.
To resume recording, press the playback button corresponding to the side of the tape being recorded upon.

To stop recording

Press the stop button.
Remote Control Operation (Video)

Have you connected the VCR and TV as indicated on pages 6–7?

This remote-control transmitter can control any Panasonic television or VCR which is equipped with remote-control functions that have been introduced since 1984.

When operating the TV and VCR, face the remote-control transmitter toward the remote-control signal receptor of each unit.

For detailed information concerning TV or VCR operation, please read the operating instructions for each unit carefully.

Watching TV broadcasts

1. Press the “TV” button.

2. Facing toward the TV:
   Press the power button.
   (Power for TV will be switched ON.)

3. Press the “VCR” button.

4. Facing toward the VCR:
   Press the power button.
   (Power for VCR will be switched ON.)

5. Set the TV/VIDEO mode on the TV to “VIDEO”.

6. Facing toward the receiver:
   Press the “VCR 1” (or “VCR 2”) button.

7. Facing toward the VCR:
   Select the desired channel.

   a. When using the preset channel buttons.
      Press two keys consecutively to tune to the desired TV broadcast directly.

   b. When using the channel up/down buttons.
      Press “▼ CH” or “CH ▲” to select the desired channel.
Watching video tapes

1. Press the “TV” button.
2. Facing toward the TV:  
   Press the power button.  
   (Power for TV will be switched ON.)
3. Press the “VCR” button.
4. Facing toward the VCR:  
   Press the power button.  
   (Power for VCR will be switched ON.)
5. Set the TV/VIDEO mode on the TV to “VIDEO”.
6. Facing toward the receiver:  
   Press the “VCR 1” (or VCR 2) button.
7. Facing toward the VCR:  
   Press the playback button.  
   (Playback will begin.)

To stop playback temporarily

Facing toward the VCR:  
Press the pause button.  
Press again to start the playback

To stop playback

Facing toward the VCR:  
Press the stop button.
Remote Control Operation (Video)
(continued)

Watching video tapes (continued)

To fast-forward or rewind the video tape

Facing toward the VCR:
Press one of the fast-forward/rewind buttons while in the stop mode.

REW: Press to rewind.
FF: Press to fast-forward.

To activate the Dolby surround effect

Press the Dolby surround ON/OFF button.
(The Dolby surround indicator on the receiver will illuminate.)

To adjust the rear volume level

Adjust the volume level of the rear speakers as desired.
The volume level of the rear speakers will be displayed on the rear level indicator.
Recording of TV broadcasts

Before recording, prepare the VCR for recording.
(recording level adjustment, etc.).
Be sure to set the input selector on the VCR to the tuner position.

1 Press the “VCR” button.

2 Facing toward the VCR: Press the power button.

3 Facing toward the VCR: Select the desired channel.

4 Facing toward the VCR: Press the record buttons simultaneously.
(Recording will begin.)

To stop recording temporarily

Facing toward the VCR: Press the pause button.
Press again to start the recording.

To stop recording

Facing toward the VCR: Press the stop button.
Technical Specifications  (IHF’78)

- AMPLIFIER SECTION

Rated minimum sine wave
RMS power output
20 Hz–20 kHz both channels driven
0.05% total harmonic distortion
85 W per channel (8 Ω)

1 kHz continuous power output
both channels driven
0.05% total harmonic distortion
87 W per channel (8 Ω)

Total harmonic distortion
rated power at 20 Hz–20 kHz
0.05% (8 Ω)
half power at 1 kHz
0.03% (8 Ω)
Dynamic headroom
1.2 dB (8 Ω)
SMpte intermodulation distortion
0.3% (8 Ω)

Frequency response
PHONO
RIAA standard curve ±0.8 dB
CD, VCR 1, VCR 2, TAPE
7 Hz–70 kHz, ±3 dB

Input sensitivity
PHONO
0.4 mV (3 mV, IHF ’66)
CD, VCR 1, VCR 2, TAPE
27 mV (200 mV, IHF ’66)
S/N (IHF, A)
PHONO
70 dB (80 dB, IHF ’66)
CD, VCR 1, VCR 2, TAPE
70 dB (90 dB, IHF ’66)

Phono maximum input voltage
160 mV (IHF ’66)

Input impedance
PHONO
47 kΩ
CD, VCR 1, VCR 2, TAPE
22 kΩ

Tone controls
BASS
50 Hz, +10~−10 dB
TREBLE
20 kHz, +10~−10 dB
4 band parametric equalizer
+10~−10 dB

Low frequency damping factor
20 (8 Ω)

Load impedance
A or B
8 Ω
A and B
8 Ω

Total harmonic distortion
MONO
0.2%
STEREO
0.3%

S/N
MONO
75 dB
STEREO
70 dB

Frequency response
20 Hz–15 kHz, +1 dB, −2 dB

Alternate channel selectivity
65 dB

Capture ratio
1.0 dB

Image rejection at 98 MHz
45 dB
IF rejection at 98 MHz
80 dB

Spurious response rejection at 98 MHz
75 dB

AM suppression
50 dB

Stereo separation
1 kHz
40 dB
10 kHz
30 dB

Carrier leak
19 kHz
−35 dB
38 kHz
−50 dB

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

- AM TUNER SECTION

Frequency range
530~1710 kHz

Sensitivity
20 μV, 330 μV/m

Selectivity
55 dB

Image rejection at 1000 kHz
40 dB

IF rejection at 1000 kHz
60 dB

- VIDEO SECTION

Output voltage at 1 V input (unbalanced)
1±0.1 Vp-p

Maximum input voltage
1.5 Vp-p

Input/output impedance
75 Ω (unbalanced)

- GENERAL

Power consumption
275 W, 370 VA

Power supply
AC 120V, 60Hz

Dimensions (W × H × D)
430×134×305 mm
(16-1/16"×5-1/4"×12")

Weight
8.5 kg (18.7 lb.)

Notes:
1. Specifications are subject to change without notice. Weight and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

Troubleshooting Guide

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation.

If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of authorized service centers (enclosed with this unit) to locate a convenient service center, or consult your Technics dealer for instructions.

(In U.S.A. consult MSC Authorized Servicecenters for detailed instructions.)
# While listening to FM broadcasts

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable cause(s)</th>
<th>Suggested remedy</th>
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| 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 using the frequency level/treble control.  
• Set the FM mode selector to the monaural position. (Note that the broadcast will then be heard as monaural sound.)  
• Try changing the location, height and/or direction of the antenna.  
• If an indoor antenna is being used, change to an outdoor antenna.  
• Try using an antenna with more elements. |
| Noise is excessive in both stereo and monaural broadcasts. | Poor location and/or direction of the antenna.  
Transmitting station is too far away. | |
| The FM stereo indicator or the quartz lock 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 indoor antenna is being used, change to an outdoor antenna.  
• Try using an antenna with more elements. |
| Excessive distortion in the sound of stereo broadcasts. | Nearby building or mountain.  
[Multipath 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).] | |

# While listening to AM broadcasts

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable cause(s)</th>
<th>Suggested remedy</th>
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</table>
| An unusual "beat" sound is heard. | Unit is being used at the same time as the television set.  
Interference from adjacent broadcast signal. | • Turn off the television set, or use this unit farther away from it.  
• Try reducing the treble sound by using the frequency level/treble control. |
| A low-pitched “hum” sound is heard when the broadcast is tuned. | The AM loop antenna connection wires are too close to the power cord.  
The power supply frequency from the power cord is modulated and heard from the speakers. | • Place the antenna connection wires and the power cord farther apart.  
• Install a special outdoor 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. |

# Problems noted at all times

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<th>Problem</th>
<th>Probable cause(s)</th>
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</table>
| No sound is heard when the power is switched ON. | The power cord plug is not completely inserted.  
Connections are incomplete or incorrect to the speaker systems, etc.  
The incorrect input selector has been pressed.  
The speaker selectors are incorrectly set to the "OFF" position. | • Confirm that the power cord plug is connected completely.  
• Check to be sure that all connection wires are correctly connected.  
• Check to be sure that the correct selector is pressed.  
• Set to the "ON" position. |
| Sound stops during a performance, or no sound is heard when the power is switched ON. | The protection circuitry has functioned because the positive and negative speaker connection wires are "shorted" or speaker systems with an impedance less than the indicated rated impedance of this unit are used. | • Switch off the power, and, after determining and correcting the cause, switch on the power once again.  
• Use a speaker system of the proper impedance rating. |
| Remote-control transmitter does not function. | Batteries are incorrectly installed. | • Insert the batteries so that the positive (+) and negative (−) polarities are correct. |

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**Product service**

Do not attempt to remove the cover(s) or repair the unit yourself.  
Refer servicing to qualified personnel only.

**Product information**

For product service, product information or assistance with product operation, refer to the servicenter directory.
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