

YAMAHA TX-350/L *RS*

Natural Sound Stereo Tuner

40 Station Random Access Preset Tuning

Multi-Status Station Memory

Selectable Auto Search or Manual Up/Down Tuning

Direct PLL Synthesizer Tuning

Thank you for selecting the YAMAHA stereo tuner.



OWNER'S MANUAL

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IMPORTANT!

Please make a note of the serial number of this unit in the space indicated below.

Model:
Serial No.:

The serial number is inscribed on the rear of the unit.
Keep this Owner's Manual in a safe place for future reference.

WARNING

To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



• Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

SAFETY INSTRUCTIONS

- 1 Read Instructions – All the safety and operating instructions should be read before the appliance is operated.
- 2 Retain Instructions – The safety and operating instructions should be retained for future reference.
- 3 Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.
- 4 Follow Instructions – All operating and other instructions should be followed.
- 5 Water and Moisture – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6 Carts and Stands – The appliance should be used only with a cart or stand that is recommended by the manufacturer.

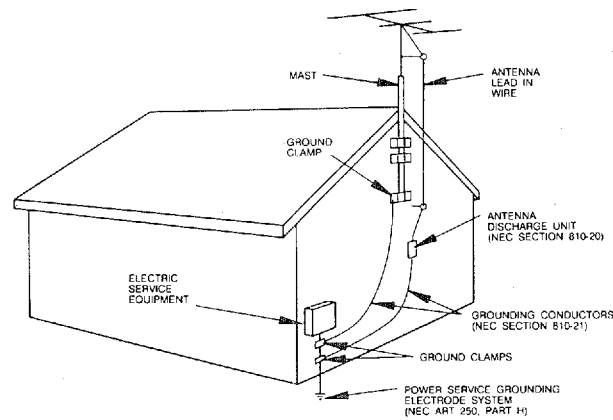
6A An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



- 7 Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 8 Ventilation – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface, that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- 9 Heat – The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.
- 10 Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- 11 Power-Cord Protection – 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, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- 12 Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
- 13 Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 14 Object and Liquid Entry – Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the appliance.
- 15 Damage Requiring Service – The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the cabinet damaged.
- 16 Servicing – The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

- 17 Power Lines – An outdoor antenna should be located away from power lines.
- 18 Grounding or Polarization – The precautions that should be taken so that the grounding or polarization is not defeated.
- 19 Outdoor Antenna Grounding – If an outside antenna is connected to this unit, 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. 70-1984, 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.

EXAMPLE OF ANTENNA GROUNDING



NEC – NATIONAL ELECTRICAL CODE

Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

CAUTION: READ THIS BEFORE OPERATING YOUR UNIT

- 1 This unit is a sophisticated AM/FM stereo tuner. To ensure proper operation for the best possible performance, please read this manual carefully.
- 2 Choose the installation location of this unit carefully. Avoid placing it in direct sunlight or close to a source of heat. Also avoid locations subject to vibration and excessive dust, heat, cold or moisture. Keep it away from such sources of hum as transformers or motors.
- 3 Do not open the cabinet as this might result in damage to the set, or electrical shock. If a foreign object should get into the set, contact your dealer.
- 4 To prevent lightning damage, pull out the power cord and remove the antenna cable during an electrical storm.
- 5 When removing the power plug from the wall outlet, always pull directly on the plug; never pull the cord itself.
- 6 Do not use force when using the switches.

- 7 When moving the set be sure to first pull out the power plug and remove cords connected to other equipment.
- 8 Do not attempt to clean this unit with chemical solvent as this might damage the finish. Use a clean, dry cloth.
- 9 Be sure to read the "Troubleshooting" section for advice on common operating errors before concluding that this unit is faulty.
- 10 Keep this manual in a safe place for future reference.

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE : DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. **IMPORTANT** : When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. **NOTE** : This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices.

Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Electronics Corp., U.S.A. 6722 Orangethorpe Ave, Buena Park, CA 90620.

The above statements apply **ONLY** to those products distributed by Yamaha Corporation of America or its subsidiaries.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the manufacture of this product contains LEAD. In addition, the electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT REMOVE ANY ENCLOSURE COMPONENTS!
There are no user serviceable parts inside. All service

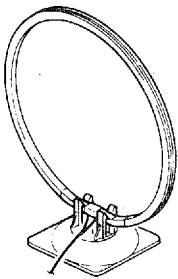
should be performed by a service representative authorized by Yamaha to perform such service.

IMPORTANT MESSAGE: Yamaha strives to produce products that are both user safe and environmentally "friendly". We sincerely believe that our products meet these goals. However, in keeping with both the spirit and the letter of various statutes we have included the preceding messages and others in various locations in this manual.

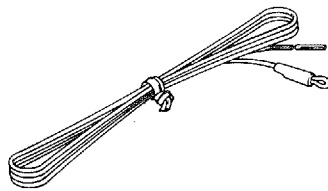
SUPPLIED ACCESSORIES

After unpacking, check that the following parts are contained.

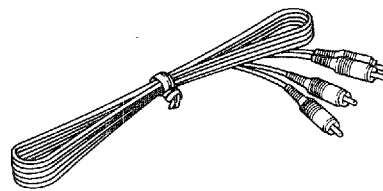
AM Loop Antenna



Indoor FM Antenna



Connection cords

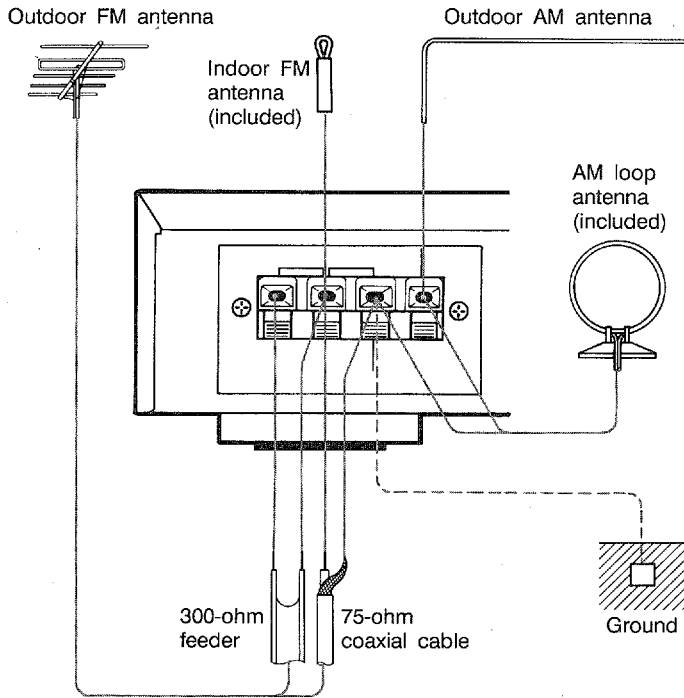


CONNECTIONS

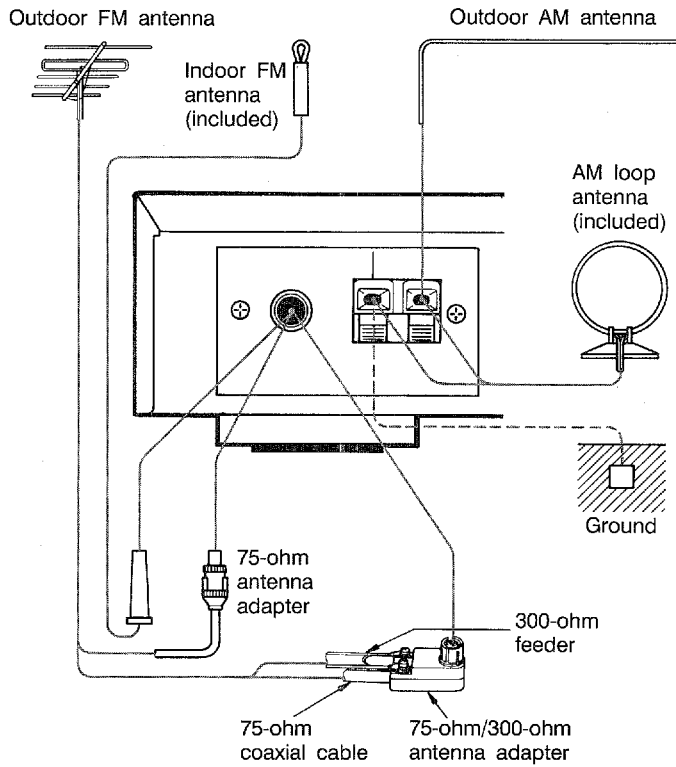
ANTENNA CONNECTIONS

- Each antenna should be connected to the designated terminals correctly, referring to the following figure.
- Both AM and FM indoor antennas are included with this unit. In general, these antennas will probably provide sufficient sensitivity. Furthermore, a properly installed outdoor antenna will give clearer reception than an indoor one. If you experience poor reception quality, an outdoor antenna may result in improvement.

U.S.A., CANADA AND GENERAL MODELS

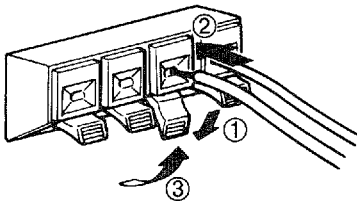


AUSTRALIA, U.K. AND EUROPE MODELS

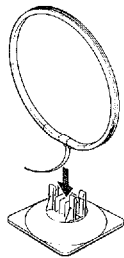


Connecting the AM loop antenna

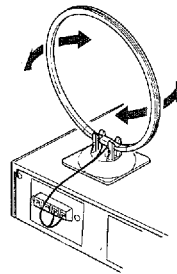
1



2



3

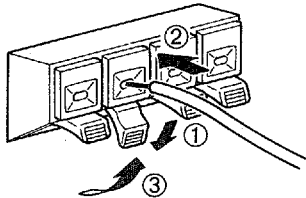


Orient so that the best reception is obtained.

- * The antenna may be hung on a wall.
- * The AM loop antenna should be kept being connected, even if an outdoor AM antenna is connected to this unit.

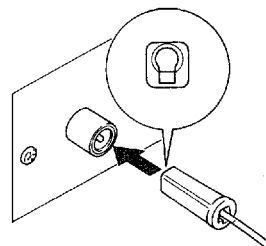
Connecting the indoor FM antenna

(U.S.A., Canada and General models)



(Australia, U.K. and Europe models)

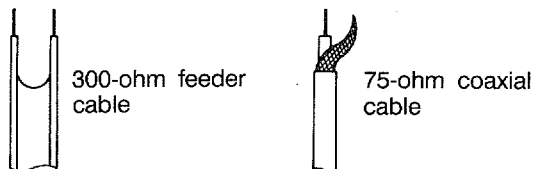
- * Insert so that the grooved part of the connector hole is facing downward when the connection is made.



Optional outdoor FM antenna

Consult with your dealer or service personnel about the best method of selecting and erecting an outdoor FM antenna.

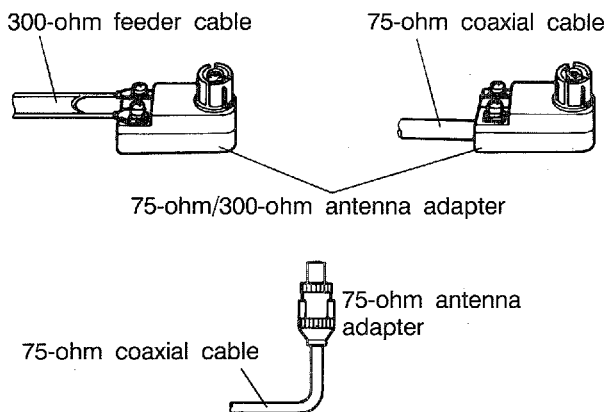
The choice of the feeder cable is also important. Flat ribbon-shaped twin-lead cable performs well electrically, and is cheaper and somewhat easier to handle when routing it through windows and around rooms. Coaxial cable is more expensive, does a much better job of minimizing interference, is less prone to the effects of weather and close-by metal objects, and is nearly as good a signal conductor as feeder cable, particularly for foam-type coaxial cables. Coaxial cable is somewhat more difficult to install at the point where the cable enters the building. If coaxial cable is selected, make sure the antenna is designed to be used with that type of cable.



Notes for FM antenna installation

- To minimize automobile ignition noise, locate the antenna as far from heavy traffic as possible.
- Keep the feeder cable or coaxial cable as short as possible. Do not bundle or roll up excess cable.
- The antenna should be at least two meters (6.6 feet) from reinforced concrete walls or metal structures.

* Australia, U.K. and Europe models need a 75-ohm/300-ohm antenna adapter (not included) or a 75-ohm antenna adapter (not included) for connections.



Optional outdoor AM antenna

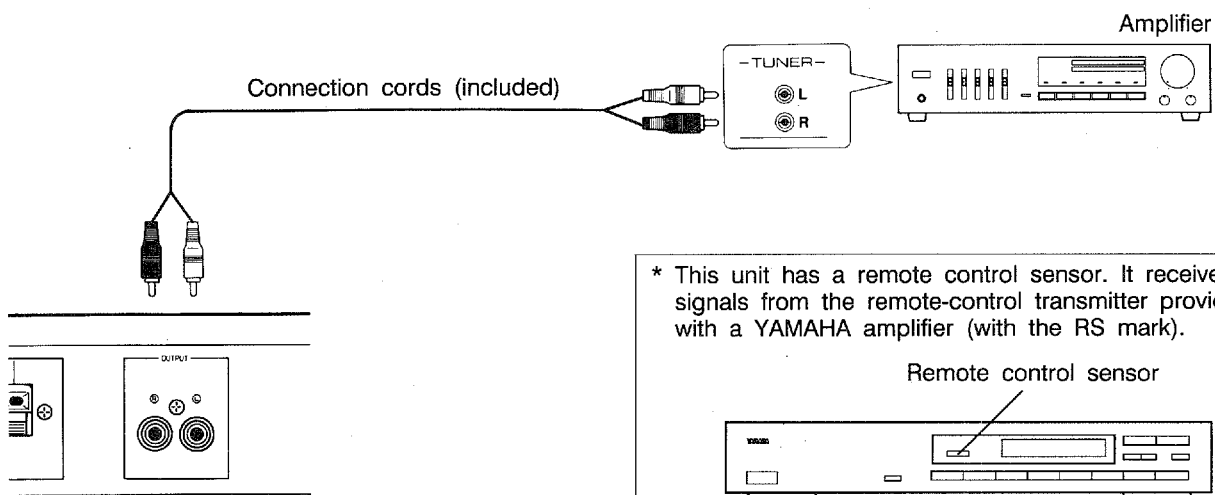
In steel buildings or at a great distance from the transmitter, it may be necessary to install an outside long wire antenna.

GND terminal

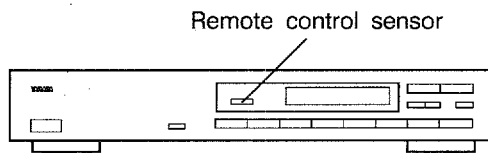
For maximum safety and minimum interference, connect the **GND** terminal to a good earth ground if practical. A good earth ground is a metal stake driven into moist earth.

CONNECTIONS TO THE AMPLIFIER

- Before making any connections, switch OFF the power to this unit and the amplifier or other component.
- Be sure that the connections from the left ("L") OUTPUT terminal and from the right ("R") terminal are to the correct corresponding (left and right) input terminals of the amplifier or other component.

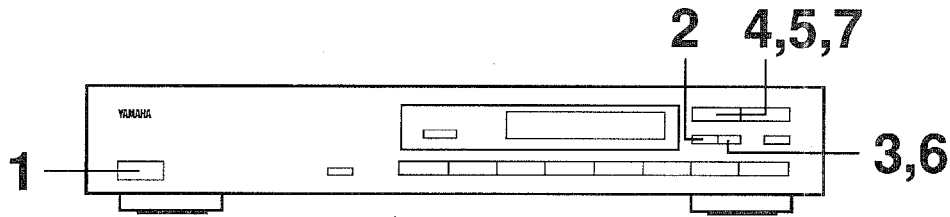


* This unit has a remote control sensor. It receives signals from the remote-control transmitter provided with a YAMAHA amplifier (with the RS mark).



TUNING OPERATIONS

Normally, if station signals are strong and there is no interference, quick automatic-search tuning is possible. However, if signals of the station you want to select are weak, you must tune to it manually.



1 POWER

2 Select the reception band while watching the display.

<TX-350>
FM/AM
→ FM or AM

<TX-350L>
FM/MW/LW
→ FM, MW or LW

3 MODE
AUTO/M/MONO →

4 DOWN TUNING UP

5 If the station where tuning search stopped is not the desired one, press again.

6 If the tuning search does not stop at the desired station;

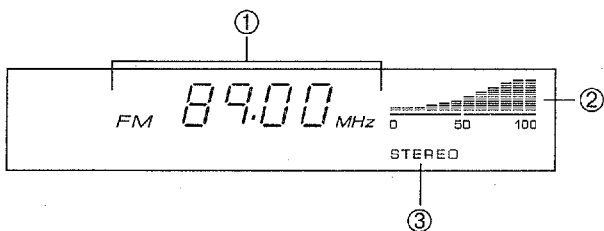
MODE
AUTO/M/MONO → "AUTO" goes off.

7

* You can tune to the desired station manually.

* To continue tuning search, press and hold the button.

Display information



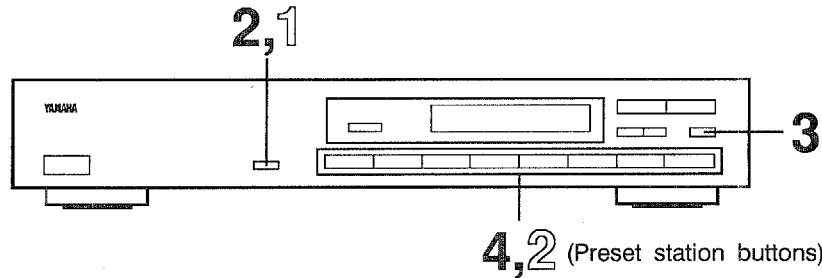
- ① Displays the band and frequency of the received station.
- ② Indicates the signal level of the received station.
- ③ Illuminates when an FM stereo broadcast with sufficient signal strength is received.

Note

If you tune to a FM station manually, it is received in monaural automatically to increase the signal quality.

PRESET TUNING

This unit can store station frequencies (selected by tuning operation) by using preset station buttons. With this function, you can select any desired station by only pressing the corresponding preset station button. Up to 40 stations (8 stations per page) can be programmed.



To program stations

- 1 Tune to a desired station.
(Refer to the previous page for tuning procedures.)
- 2 Select a desired page (A – E) of preset station buttons while watching the display.
- 3

Flashes on and off for about 5 seconds.
- 4

Shows the displayed station has been programmed to A1.

* In the same way, program other stations to A2, A3 ... A8.
* You can program more stations to the preset station buttons at other pages in the same way by selecting other pages in step 2.

To recall a preset station

- 1 Select the page of preset station buttons.
- 2

Select the desired one.

Notes

- In step 4, press a preset station button before "MEMORY" goes off from the display.
- A new setting can be programmed in place of the former one.
- For presets, the setting of the reception mode (stereo or monaural) is stored along with the station frequency.

Memory back-up

The memory back-up circuit prevents the programmed data from being lost even if the power is cut (for timer use or due to temporary power failure). If, however, the power is cut (because of disconnection of the AC power plug etc.) for more than two weeks, the memory may be erased. If so, it can be re-programmed by simply following the PRESET TUNING steps.

TROUBLESHOOTING

If the unit fails to operate normally, check the following points to determine whether the fault can be corrected by the simple measures suggested. If it cannot be corrected, or if the fault is not listed in the SYMPTOM column, disconnect the power cord and contact your dealer or service center for help.

	SYMPTOM	CAUSE	REMEDY
FM	Crackling sounds from time to time (especially in weak signal areas).	Ignition noise from passing vehicles.	The FM antenna should be put up as high as possible, away from the road, and a coaxial cable used.
		Noise from thermostats or other electrical equipment.	Attach a noise suppressor to the equipment causing the noise.
	FM stereo reception is noisy.	Because of the characteristics of FM stereo broadcasts, this is limited to cases where the transmitter is far away or the antenna input is poor.	Check the antenna connections. Try using a multiple element FM antenna. Set the MODE AUTO/MAN'L MONO button to the manual tuning mode.
	The FM STEREO indicator flickers and reception is noisy.	Insufficient antenna input.	Use an antenna appropriate for the reception condition in your area.
		Not tuned correctly.	Tune again.
	There is distortion and clear reception cannot be obtained even with a good FM antenna.	There is multi-path interference.	Adjust antenna placement to eliminate multi-path interference.
	No stereo effect even with a stereo broadcast.	The MODE AUTO/MAN'L MONO button is set to the manual tuning mode.	Set the button properly.
	A desired station cannot be tuned in with Automatic tuning.	The station is too weak.	Use the manual tuning mode. Use a high quality directional FM antenna.
AM (MW)	Previously preset stations can no longer be tuned in.	The tuner has been unplugged for a long period.	Repeat the presetting procedure.
	Insufficient sensitivity.	Weak signal or loose antenna connections.	Tighten the AM loop antenna connections and rotate it for best reception.
			Use the manual tuning mode.
	A desired station cannot be tuned in with Automatic tuning.		
	There are continuous crackling and hissing noises.	These noises result from lightning, fluorescent lamps, motors, thermostats and other electrical equipment.	Use an outdoor antenna and a ground wire. This will help somewhat but it is difficult to eliminate all noise.
There are buzzing and whining noises (especially in the evening).	Another station is interfering with the received station.	This is impossible to remedy.	
	A television set is being used nearby.	Move the television away.	

SPECIFICATIONS

FM SECTION

Tuning Range	[U.S.A., Canada and General models] 87.5 to 107.9 MHz
	[U.K., Australia, Europe and General models] 87.5 to 108 MHz
50 dB Quieting Sensitivity (IHF) [Except Europe model]	75 ohms Mono 1.6 μ V (15.3 dBf)
	75 ohms Stereo 21 μ V (37.7 dBf)
Usable Sensitivity	[Except Europe model]
	75 ohms, 1 kHz, 100% mod. (30 dB S/N Quieting) 0.8 μ V (9.3 dBf)
	[Europe model] (DIN)
	75 ohms Mono (S/N 26 dB) 0.9 μ V
	75 ohms Stereo (S/N 46 dB) 24 μ V
Image Response Ratio	[Except Europe model] 40 dB
	[Europe model] 75 dB
IF Response Ratio	[Except Europe model] 90 dB
	[Europe model] 75 dB
Spurious Response Ratio	..... 70 dB
AM Suppression Ratio	..... 55 dB
Capture Ratio	..... 1.5 dB
Alternate Channel Selectivity	[Except Europe model] 85 dB
	Selectivity (two signals, 40 kHz Dev., \pm 300 kHz) [Europe model] 70 dB
Signal-to-Noise Ratio	[Except Europe model] (IHF)
	Mono 82 dB
	Stereo 76 dB

[Europe model] (DIN-Weighted)	
Mono (40 kHz Dev.)	..... 75 dB
Stereo (40 kHz Dev.)	..... 70 dB
Harmonic Distortion (1 kHz)	[Except Europe model]
	Mono/Stereo 0.1%/0.2%
	[Europe model (40 kHz Dev.)]
	Mono/Stereo 0.1%/0.2%
Stereo Separation	..... 1 kHz 40 dB
Frequency Response	[Except Europe model]
	30 Hz to 15 kHz 0 \pm 0.5 dB
	[Europe model]
	30 Hz to 13 kHz 0 \pm 0.5 dB
	20 Hz to 15 kHz 0 \pm 1.5 dB

AM (MW) SECTION

Tuning Range	[U.S.A., Canada and General models] 530 to 1,710 kHz
	[U.K., Australia and Europe models] 531 to 1,611 kHz
Usable Sensitivity	..... 200 μ V/m
Selectivity	..... 32 dB
Signal-to-Noise Ratio	..... 50 dB
Image Response Ratio	..... 40 dB
Spurious Response Ratio	..... 50 dB
Harmonic Distortion; 400Hz	..... 0.3%

AM (LW) SECTION (TX-350L only)

Tuning Range	..... 153 to 288 kHz
Usable Sensitivity	..... 400 μ V/m
Selectivity	..... 32 dB

Signal-to-Noise Ratio	..... 50 dB
Image Response Ratio	..... 30 dB
Spurious Response Ratio	..... 45 dB
Harmonic Distortion; 400 Hz	..... 0.3%

AUDIO SECTION

Output Level/Impedance	
FM (100 % mod. 1 kHz)	[Except Europe model] 500 mV/2.2 k-ohms
	[Europe model (40 kHz Dev.)] 400 mV/2.2 k-ohms
AM (MW) (30% mod. 400 Hz)	..... 150 mV/2.2 k-ohms
AM (LW) (30% mod. 400 Hz)	[TX-350L only] 150 mV/2 k-ohms

GENERAL

Power Supply	
U.S.A. and Canada models	..... 120V, 60 Hz
Europe model	..... 230V, 50 Hz
U.K. and Australia models	..... 240V, 50 Hz
General model	..... 110-120/220-240V, 50/60 Hz
Power Consumption	..... 7W
Dimensions (W x H x D)	..... 435 x 76 x 237.5 mm (17-1/8" x 3" x 9-3/8")
Weight	..... 2.2 kg (4 lbs. 13 oz.)
Accessories	..... AM loop antenna Indoor FM antenna Connection cords

Specifications subject to change without notice.

YAMAHA ELECTRONICS CORPORATION, USA 8722 ORANGETHORPE AVE., BUENA PARK, CALIF. 90620, U.S.A.
 YAMAHA CANADA MUSIC LTD. 135 MILNER AVE., SCARBOROUGH, ONTARIO M1S 3R1, CANADA
 YAMAHA ELECTRONIK EUROPA G.m.b.H. SIEMENSSTR. 22-34, D-2064 BELLINGEN BEI HAMBURG, F.R. OF GERMANY
 YAMAHA ELECTRONIQUE FRANCE S.A. 17 RUE DES CAMPANULES, LOGNES 77321 MARNE LA VALLEE CEDEX 2, FRANCE
 YAMAHA ELECTRONICS (UK) LTD. YAMAHA HOUSE, 200 RICKMANSWORTH ROAD WATFORD, HERTS WD1 7J5, ENGLAND
 YAMAHA SCANDINAVIA A.B. J A WETTERGRENS GATA 1, BOX 30053, 400 43 VÄSTRA FRÖLUNDA, SWEDEN
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VK68940-0 Printed in Japan BWWBI, BR®