

MODEL ST520/ST520L TECHNICAL SPECIFICATIONS (DIN)

FM TUNER SECTION

Frequency Range	87.5 — 108 MHz
Sensitivity	
DIN Mono (S/N 26 dB, 75 ohms)	0.7 μ V
DIN Stereo (S/N 46 dB, 75 ohms)	20 μ V
Selectivity Adjacent Channel 98 MHz	70 dB
Image Frequency Rejection	78 dB
Intermed Frequency rejection	90 dB
Spurious Response	95 dB
AM Suppression	50 dB
Signal/Noise Ratio DIN	
Unweighted: Mono	70 dB
Stereo	63 dB
Weighted: Mono	76 dB
Stereo	68 dB
Pilot Signal Rejection 19 kHz	65 dB
Sub Carrier Rejection 38 kHz	65 dB
Total Harmonic Distortion: Mono (N/W)	0.1%
Stereo (N/W)	0.2%
Frequency Response (30 Hz — 15 kHz)	+0, -1 dB
Stereo Separation	45 dB
Channel Balance	0.2 dB

MW TUNER SECTION

Frequency Range	522 — 1611 kHz
Sensitivity (S/N 20 dB 30% Mod., 999 kHz)	10 μ V
Selectivity 999 kHz \pm 9 kHz	40 dB
Image Rejection at 999 kHz	45 dB
Interm. Frequency Rejection at 999 kHz	70 dB
Signal/Noise Ratio at 999 kHz	50 dB
Total Harmonic Distortion at 999 kHz	0.3%

LW TUNER SECTION

Frequency Range	153 — 281 kHz
Sensitivity (S/N 20 dB 30% Mod., 218 kHz)	100 μ V
Image Rejection at 218 kHz	45 dB
Interm. Frequency Rejection at 218 kHz	55 dB
Signal/Noise Ratio at 218 kHz	50 dB

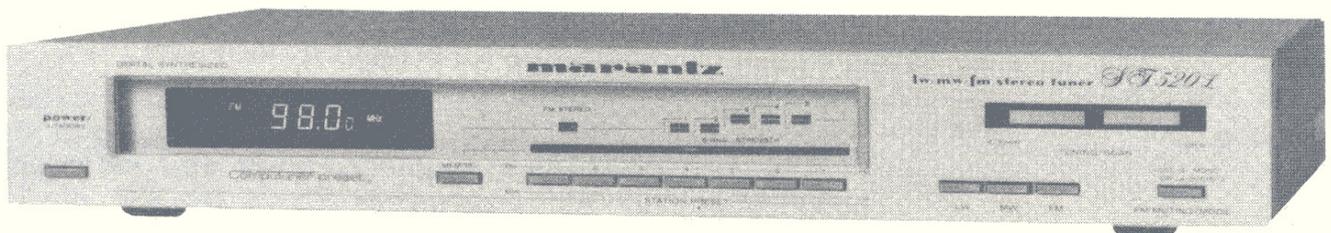
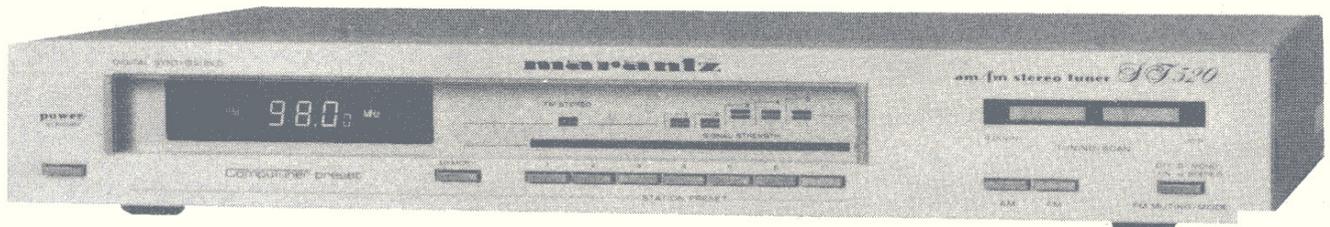
GENERAL

Power Requirements	220V AC, 50 Hz
	(E and N versions are featuring external voltage selector Other versions can be converted by a qualified technician to operate on 240V.)
Power Consumption at Rated Output, both Channels Driven	9W
Dimensions (W x H x D)	416 x 55 x 302 mm
Net Weight	3.3 kg

Model ST520/ST520L

OWNER'S MANUAL

STEREOPHONIC TUNER



marantz®

FOREWORD

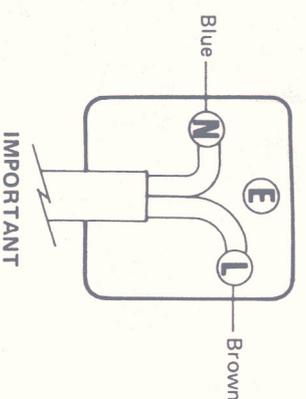
To obtain maximum performance and enjoyment from your Stereophonic Tuner, please study these instructions carefully. Installing and operating the Tuner is not complicated, but the flexibility provided by its numerous operating features merits your becoming familiar with its controls and connections.

This is a multilingual handbook designed to provide instruction in English, French, and German for the different versions of this tuner sold worldwide.

Your Marantz product has been specially prepared to comply with the household power and safety requirements that exist in your locale. Please check the alphabetical suffix following the serial number of your Marantz product. Refer to the following table to note the differences that exist between your unit and the unit pictured and described in this manual.

- A — Operating Voltage: 240V AC. No external fuse.
- C — Operating Voltage: 120V AC. Unit cannot be converted to operate on other voltages.
- N — Operating voltage: 220V AC. The voltage selector on the rear panel makes it possible to convert this unit to 110V AC.
- T — Operating voltage: 240V AC. The voltage selector on the rear panel makes it possible to convert this unit to 220V AC.
- P — Operating Voltage: 120V AC. Should it become necessary to convert this unit to a different operating voltage, be sure to unplug the cord from the wall outlet.

FOR UNITS SOLD IN THE UNITED KINGDOM:



The wire in this mains lead are coloured in accordance with the following code:

- Blue — Neutral
- Brown — Live

As the colours of the wires may not correspond with the terminal identification in your plug, proceed as follows:

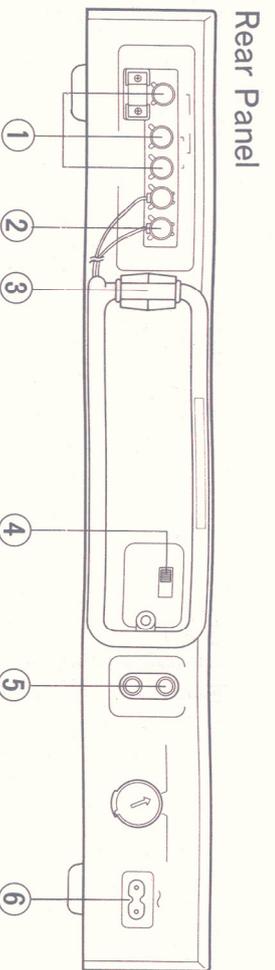
- Connect brown wire to the terminal marked "L" or coloured brown or red.
- Connect blue wire to the terminal marked "N" or coloured blue or black.

For 13A plugs, conforming to BS 1363, use a 3A fuse.

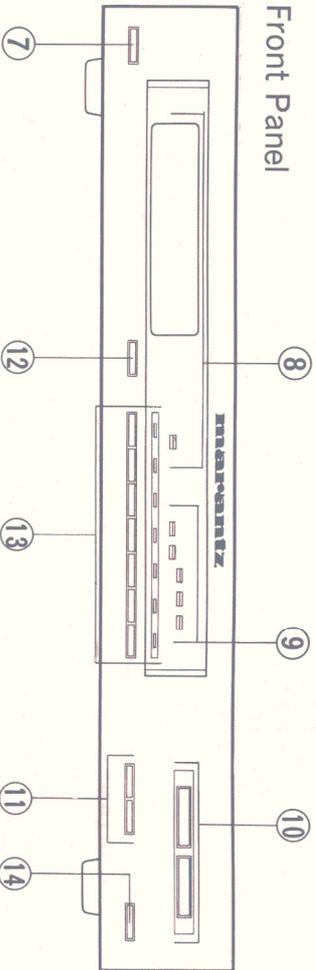
For other plugs, use a 5A or lower fuse in the plug or adaptor or at the distribution board.

For quick identification of the many controls, connection facilities, and adjustments on your Tuner, all references to them in this manual are printed in **BOLDFACE TYPE**.

At the beginning of this manual you will find front and rear panel illustrations. On these illustrations you will note that callout numbers (such as ①) are attached to each jack and control. These callout numbers correspond to those found in this handbook.



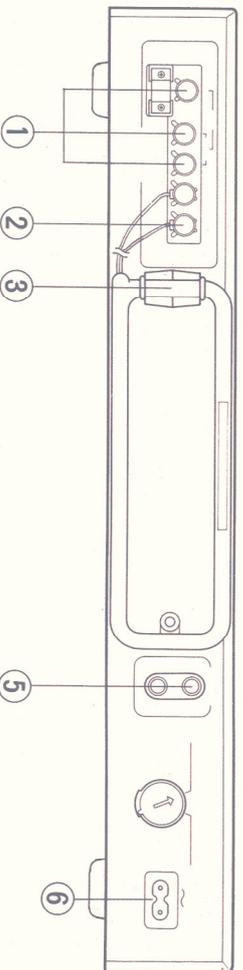
Rear Panel



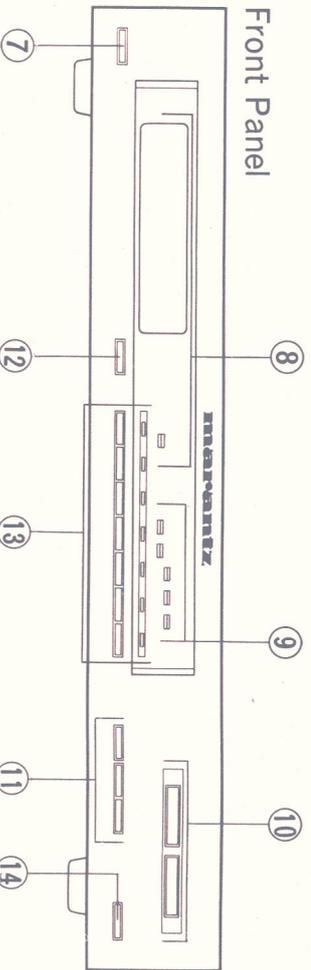
Front Panel

Model ST520L

Rear Panel



Front Panel



GENERAL DESCRIPTION

Your Marantz Stereo Tuner is a superb FM/AM synthesized tuner that was designed by our engineering team using state-of-the-art microcomputer and digital synthesizer technology.

The Unit features a sensitive stereo FM tuner and a highly selective AM tuner. The microcomputer controlled synthesizer tuner enables 2 types of tuning operations, i.e. preset tuning of 7 stations for each of the AM and FM bands and ordinary tuning.

The FM tuner utilizes a dual gate MOSFET front end, ceramic IF filters, and a phase locked loop multiplex decoder with pilot signal canceller. The AM tuner features an advanced intergrated circuit with ceramic and L-C filters for high selectivity and low interference.

It will be to your advantage to save all the packing materials, carton, fillers, cushioning, etc. They will prove valuable in preventing damage should it become necessary to transport or ship your tuner. Be careful that you do not inadvertently throw away or lose the parts packed with the unit.

Please inspect this unit carefully for any signs of damage incurred in transit. It has undergone very strict quality control inspections and tests prior to packing, and it left the factory unmarred and in perfect operating condition. If the unit was shipped directly to you and you discover damage, notify the transportation company without delay. Only you, the consignee, may institute a claim against the carrier for damage during shipment. However, the Marantz Company will cooperate fully with you in such an event. Save the carton as evidence of damage for their inspection. If you received the unit directly from a Marantz dealer, return it to him for adjustment.

REAR PANEL CONNECTIONS

Shows the location of input and output jacks on the rear panel. These jacks are for "permanent" connections. Front panel controls and their use will be discussed later.

FM ANTENNA

Included in the accessory kit is a ribbon type "folded dipole" FM antenna. This type of antenna is simple and practical and will give adequate results in primary signal areas. To use it, unfold it into a "T" shape and connect its leads to the terminals marked "300Ω" on the back of the tuner. The antenna is designed to operate in a horizontal position. Temporarily (for the purpose of getting started) attach it to a nearby wall.

AM ANTENNA

Your Tuner is equipped with an AM loop antenna. BEFORE USING YOUR TUNER, SWING THE ANTENNA OUT AS SHOWN IN FIGURE 1.

The loop antenna can be swiveled and will give you satisfactory results in primary signal areas. However, an outdoor antenna will provide better reception in weaker signal areas. See "OUTDOOR AM ANTENNA" section, page 5.

1 OUTDOOR FM ANTENNAS

As stated before, the supplied folded dipole antenna will give satisfactory results in primary signal areas. It should be obvious, however, that if you are located in a fringe area where signals are weak, then an outdoor antenna will be necessary. Even if you live in a strong signal location, an outdoor directional antenna may be needed to eliminate "multipath" reflections.

Multipath reflections are responsible for much of the distortion and sibilance associated with poor FM reception. They occur when radio waves from the transmitter bounce off of nearby mountains and

tall buildings. The reflected waves follow different, more roundabout paths to your tuner and arrive slightly delayed and out of phase with the direct signal (hence, the term "multipath"). This causes distortion in the same manner that "ghost" images are generated on television.

The way to minimize multipath is to use a "beam type" antenna that can be aimed toward the FM transmitter and away from the multipath reflections. The best types of antennas to use are either a "Yagi" or "Log-Periodic" configuration with six or more elements designed expressly for FM reception.

If you want to receive stations from more than one general direction, then you will need a good quality antenna rotor system. This will enable you to point the antenna in the direction giving the least multipath interference, by means of a control box located near the tuner.

Another important factor is the type of lead-in wires to use. Unshielded lead-in wires, such as 300-ohm twin lead, can act as an omnidirectional antenna, and can cancel the directional benefits of your antenna. Therefore, we recommend using a balanced, shielded, 300-ohm cable or a coaxial 75-ohm cable with a 300 to 75-ohm matching transformer at the antenna.

Shielded antenna cable will be available at the store where you buy your antenna.

It is considered good practice to connect the antennal mast to an earth ground, both for reasons of safety and noise reduction. If 300-ohm shielded cable is used, connect the shield to ground (GND) at the tuner end only. When using 75-ohm coaxial antenna cable, connect its shield through the ground strap and the center conductor to the screw terminal as shown in Figure 2.

For rural areas, it is recommended to consult a local dealer about installation and lightning arrestor protection.

We do not recommend using master antenna system, such as those found in apartment buildings. Such systems are usually designed expressly for television reception and frequently suppress or reduce the quality of the FM signals before distribution.

Where outdoor antennas are prohibited or

inconvenient, the simplest form of "rabbit-ear" TV antenna is the most practical and will give satisfactory results. This type is preferred over the folded dipole because it can be more readily rotated for the best reception.

2 OUTDOOR AM ANTENNA

Two single wires are required to make an AM outdoor antenna. First connect one end of a single wire to the **AM ANTENNA** terminal on the rear panel, and the other end to a very high horizontal antennal wire of 7 to 20 meters in length suspended between insulators in an outdoor location (the higher the better). Connect the second single wire between the **GND** terminal of your tuner and an authenticated earth ground. **Be sure not to disconnect AM LOOP ANTENNA lead.**

3 AM LOOP ANTENNA

Your tuner is equipped with a high performance noise-free **AM LOOP ANTENNA**. The **AM LOOP ANTENNA** is held on the rear panel with a snap-in hinge. Swivel it out for best AM reception as shown in Fig. 1-A. (page 24) For improved AM reception, remove the antenna from the hinge in the direction of the arrow as shown in Fig. 1-B and hang it on a nearby wall. The length of the antenna cord is 60 cm and it should not be pulled tight.

Compared with a ferrite-rod antenna, the **AM LOOP ANTENNA** enables better AM reception, free from noise or the influence of nearby metallic objects.

4 SCAN STEP SELECTOR

This selector changes the steps when the tuner searches for the next station up and down the scale.

Normally, this switch should be set for 50 kHz steps in FM and 9 kHz steps in AM.

CAUTION:

The unit must be turned off before changing the scan step selector switch position.

5 OUTPUT JACKS

The signal output selected by the AM or FM pushswitch on the front panel is fed to the left and right **OUTPUT** jacks. Using stereo shield audio cable supplied connect the **OUTPUT** to the **TUNER INPUT** jacks on your preamplifier or integrated amplifier.

If no **TUNER INPUT** jacks are available, connect them to the **AUX INPUT** jacks. If your installation requires a longer cable than the one supplied, longer cables are available at your dealer. Distances of up to about 7 meters may be used.

6 AC POWER CONNECTIONS

The correct voltage for operating your equipment is printed on the rear panel. Be sure the **POWER** pushswitch is "OUT" before plugging the AC LINE cord into an electrical outlet.

CAUTION:

Do not plug your stereo tuner into a DC outlet as serious damage will occur.

The **AC mains-switch is secondary connected and doesn't disconnect the unit from the AC mains in "OFF" position.** **Observerna vid nätdrift: I läge "OFF" are apparaten ej elektriskt ctkiljd från nätet.**

FRONT PANEL FEATURES

7 POWER/STANDBY SWITCH

The **POWER** switch on the left side of the front panel controls the AC power to the tuner.

LAST STATION MEMORY: This memory keeps in storage the situation (frequency) which had been selected before power was cut. That station can be automatically recalled when power is applied again.

8 FREQUENCY/TUNER MODE DISPLAY

Receiving frequency is indicated on the **FREQUENCY/TUNER MODE DISPLAY**. The tuner mode is also indicated on this display as follows:

FM STEREO:
Lights up when a stereo broadcast is received.

MEMORY:
MEMORY WRITE ENABLE indication. When the **MEMORY** switch on the front panel is pressed, this is displayed and a station can be memorized onto one of the seven **PRESET** switches. The **MEMORY WRITE ENABLE** function will turn itself off after 5 seconds if one of the **PRESET** switches is not programmed. Refer to "TUNING PROCEDURES" on page 7.

AM or FM:
Indicates the band being received.

MHz or KHz:
Indicates the unit of receiving frequency. MHz will illuminate when the FM band is selected and KHz when the AM band is selected.

9 SIGNAL STRENGTH

These LEDs (Light Emitting Diodes) indicate the strength of the incoming signal. The greater the number of LEDs that light, the stronger the signal.

10 TUNING/SCAN SWITCH

When the **UP** or **DOWN TUNING/SCAN** switch is depressed momentarily, the frequency scans up or down in single steps (channel spaces) in accordance with the position of the **SCAN STEP SELECTOR** switch located on the rear panel.

When the **UP** or **DOWN TUNING/SCAN** switch is depressed for more than 0.5 sec, the frequency scans up or down continuously.

11 AM AND FM SWITCHES

Depress the corresponding switch to select **FM** or **AM** mode.

LAST STATION MEMORY: This memory keeps in storage the station (frequency which had been selected before the **FM** or **AM** switch was pressed. That station can be automatically recalled when the **FM** or **AM** switch is reset.

12 MEMORY SWITCH

This switch is depressed when it is desired to program one of the seven **PRESET** switches. If no **PRESET** is programmed within 5 seconds of activating the **MEMORY** switch, this function will automatically turn itself off.

To program one of the **PRESET** switches, first use the **TUNING/SCAN** switch to tune in the desired station. Then momentarily press the **MEMORY** switch and, while the **MEMORY** light is still on, depress the desired **PRESET** switch.

Refer to "TUNING PROCEDURES" on page 7.

13 PRESET BUTTONS 1 - 7

When one of these buttons is depressed, the corresponding LED located above the button lights up and the frequency stored in the corresponding memory is recalled. When the FM switch is depressed, the tuner will immediately tune in the pre-programmed FM station. When the AM switch is depressed, the tuner will immediately tune in the pre-programmed AM station.

Refer to "TUNING PROCEDURES" on page 7.

14 FM MUTING/MODE SWITCH

This switch controls FM muting and mode at the same time. When this switch is set to the IN position, the **FM MUTING** function is turned ON, and **MODE** is put into **STEREO**. Setting this switch to the OUT position turns **FM MUTING** off and puts **FM MODE** into **MONO**.

When tuning to FM broadcasts with the **FM MUTING/MODE** switch in its IN position, the muting circuit will eliminate interstation noise. To prevent muting very weak stations along with the noise, the muting function may be switched out of the FM circuits by depressing the **FM MUTING/MODE** pushswitch.

When a marginal FM stereo signal is received, random noise and phase modulation may cause the tuner's multiplex circuitry to trigger the **STEREO** indicator intermittently. In this case, it is sometimes desirable to cancel the multiplex operation entirely in favour of obtaining a more

listenable signal. The **FM MUTING/MODE** switch performs this function and converts all output signals to **MONOPHONIC** mode.

SIMPLIFIED OPERATING PROCEDURES

When operating your Stereo Tuner for the first time, follow these simple directions. Later, full advantage can be taken of its versatility with the remaining controls and pushswitches.

- Step 1. Place the selector switch of your preamplifier or amplifier to the **TUNER** or **AUX** position.
- Step 2. Turn on your stereo tuner by depressing the **POWER/STANDBY** switch.
- Step 3. Select the AM band by depressing the AM pushswitch. Select the FM band by depressing the FM pushswitch.
- Step 4. Press the **UP** or **DOWN TUNING/SCAN** switch to tune in the desired station.

TUNING PROCEDURES

The stereo tuner does not have a conventional tuning dial or tuning knob. There are two tuning methods: preset tuning and ordinary tuning.

PRESET TUNING

When one of the seven **PRESET** buttons is pressed the tuner will immediately tune in the station that has been programmed in. A total of fourteen stations (7 AM and 7 FM) can be programmed into the seven **PRESET** buttons. The procedure for preset tuning is as follows:

1. Set up the **PRESET** buttons as described in "MEMORY SWITCH" on page 6. Once this is done, turning on and off the stereo tuner will not cause the tuner to "forget" the stations programmed into the presets. Built-in storage capacitors will supply power to the memory circuits for about one week if the unit is unplugged.
2. Turn the **SELECTOR** to AM or FM and depress the desired **PRESET** button. The tuner will tune in the desired station.

ORDINARY TUNING

To receive FM or AM broadcasting, depress the FM or AM switch respectively.

When the **UP** or **DOWN TUNING/SCAN** switch is depressed momentarily, the frequency scans up or down by 50 KHz in the FM mode and 9 KHz in the AM mode.

Depress the **TUNING/SCAN** switch until the desired frequency is displayed on the digital display.

In a weak signal area, release the **FM MUTING/MODE** switch (OUT position).

TO PRESERVE THE MEMORY

When power is not supplied to the tuner for more than a week, the memory disappears. The memory should be reset when:

- (1) the power plug is disconnected from the AC outlet.
- (2) the tuner is connected to an audio timer and the timer is not used for more than a week.
- (3) there is a power cut.

MAINTENANCE

CLEANING

The satin gold anodized finish of the knobs and heavy aluminum front panel will last indefinitely with proper care and cleaning. **NEVER** use scouring pads, steel wool, scouring powders, or harsh chemical agents, such as lye solution. These will mar the finish. Clean with a soft, lint-free cloth or cotton swab slightly dampened with a mild solution of detergent and water.

IN CASE OF DIFFICULTY

Should you experience difficulties when operating your system for the first time, and you have followed the procedure outlined in the "Simplified Operating Procedures", use of the following data will help you correct or isolate the problem. If these hints fail to remedy the situation, refer the problem to your nearest authorized service facility.

Tuner does not operate, and display does not illuminate.

1. Make sure power cord is properly connected.

Tuner does not operate, but display is illuminated.

1. Check settings of preamplifier controls such as selector, tape monitor, speaker switches, volume, power, etc.
2. Check connection of shielded cables from tuner to preamplifier.

Tuner operates in one channel only.

1. Turn off system power and transpose (left for right) the shielded cable at the tuner **OUTPUT**. If the same speaker remains inoperative when turned back on, either the input equipment or the speaker are at fault.

FM reception sounds scratchy or raspy.

1. Make sure FM antenna is connected properly.
2. Try re-orienting antenna.
3. Determine if you are in a poor reception area. If so, refer to "Outdoor FM Antennas" section.

AM reception poor.

1. Swing out AM loop antenna on rear panel.
2. Re-orient the AM antenna.
3. Determine if other components in our system, appliances, or fluorescent lights are causing interference.
4. Try an outdoor antenna.

REPAIRS

Only the most competent and qualified service technicians should be allowed to service your stereo tuner. The Marantz Company and its factory-trained warranty station personnel have the knowledge and special equipment needed for repair and calibration of this precision instrument.

In the event of difficulty, refer to your dealer or write directly to one of the locations listed on page 24 for the name and address of the Marantz Authorized Service Station nearest your home or business. Please include the Model and serial number of your unit together with a full description of what you feel is abnormal in its behaviour.

REPACKING FOR SHIPMENT

Should it become necessary to repack your stereo tuner for shipment to the factory, to

an authorized service station, or elsewhere, please observe the following precautions:

- a. Pack the unit carefully, using the original material as shown in Figure 3.
- b. Ship via reputable carrier (do not use Parcel Post) and obtain a shipping receipt form the carrier.
- c. Insure the unit for its full value.
- d. Be sure to include your return address on the shipping label.

BLOCK DIAGRAM Model ST-520L

