

T14

OWNERS MANUAL

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PRODUCT RECORD

Serial No. _____

Purchased From:

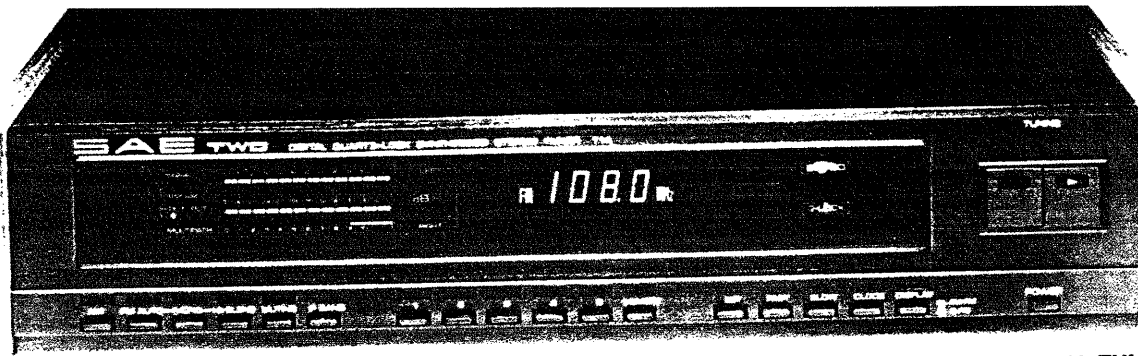
Name: _____

Address _____

Date Purchased _____

Sales Invoice No. _____

Salesman _____



T14 DIGITAL TUNER

UNPACKING

Before leaving the factory, your component was inspected for physical imperfections as a routine part of the systematic quality control used to ensure a flawless appearance. After you have unpacked your receiver please inspect it for physical damage. Save the shipping carton and all packing materials as they were designed to reduce to a minimum the possibility of transportation damage. In the unlikely event that damage has occurred, immediately notify your dealer so that a written claim to cover the damages can be initiated.

THE RIGHT TO ANY CLAIM AGAINST A PUBLIC CARRIER CAN BE FORFEITED IF THE CARRIER IS NOT NOTIFIED PROMPTLY AND IF THE SHIPPING CARTON AND PACKING MATERIALS ARE NOT AVAILABLE FOR INSPECTION BY THE CARRIER. SAVE ALL PACKING MATERIALS UNTIL THE CLAIM IS SETTLED.

CAUTION: To prevent fire or shock hazard do not expose this appliance to rain or moisture.

INSTALLATION

Adequate ventilation will extend the trouble-free life of your tuner. The unit may be mounted either horizontally or vertically. However, it should not be totally enclosed with other heat producing components. Although wood sides are included, rack handle adapters are available as an optional accessory. These rack adapters replace the wood sides and allow the T14 to be installed in any 19 inch wide EIA standard rack. The product can be supported by the rack handles alone, however, if extensive traveling is going to occur, rear or side supports should be used. Rack handles can be ordered directly through your dealer. The part number is H3.

PHILOSOPHY

For the past twelve years, Scientific Audio Electronics, has been designing, developing, and manufacturing a unique line of high end components and accessories. Utilizing their full production capabilities with a completely mechanized metal fabrication plant, ultra-clean assembly lines and elaborate quality control facilities, SAE has been able to produce a line of products with incomparable quality and integrity.

The original SAE line included a power amplifier and a preamplifier. The following 12 years has seen SAE successfully broaden that first line of amps and preamps as well as develop a long list of now standard high fidelity components including the first graphic equalizer, the first digital readout FM tuner, the first parametric equalizer, and the first impulse noise reduction system.

Recently, SAE has extended this engineering superiority to the SAE TWO line. Each SAE TWO product reflects the expertise long associated with the SAE name. By utilizing the efficiency of Japanese manufacturing for this special line, SAE's engineering preeminence has now been brought to markets previously unattainable.

CONNECTIONS

All audio signal connections should be made with high quality co-axial audio cables. Whenever rear panel connections are being made, the T14 and all associated components should be switched off.

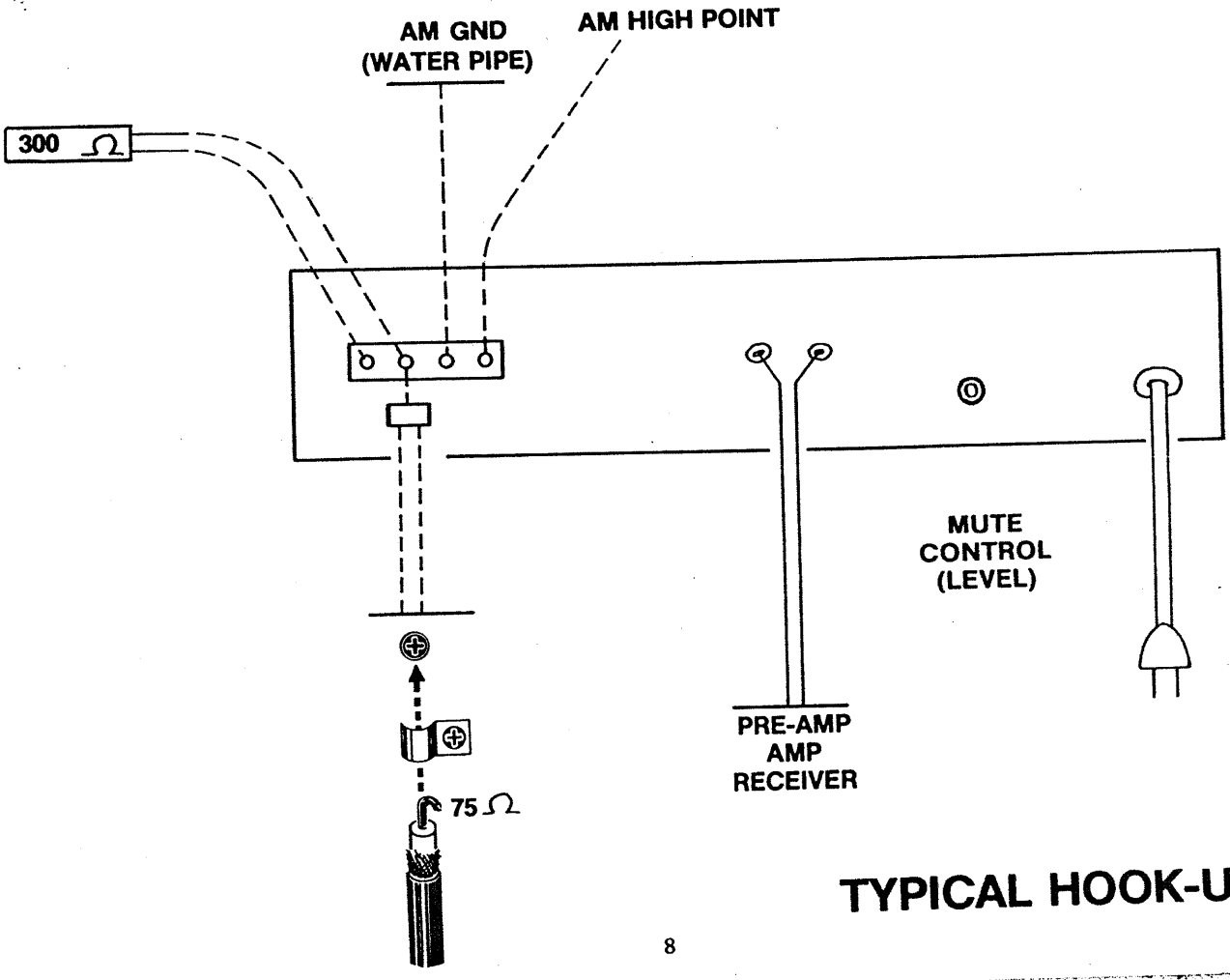
OUTPUT — Using the high quality stereo cable provided, connect the OUTPUT LEFT and OUTPUT RIGHT jacks of your T14 to the appropriate inputs marked "tuner" or "aux" on your control amplifier or preamplifier.

ANTENNA — Once the above connections have been made, the unit is operable; however, both the AM and the FM antennas play a critical role in the overall quality of reception and we strongly suggest that you take the time to adjust them correctly.

FM Antenna — Your T14 is provided with a folded dipole antenna. Before the unit is plugged in, connect this antenna to the terminals marked "300 Ohms" on the rear of your tuner. Once the T14 has been plugged in, switched on and tuned to a desired FM station, adjust the dipole antenna by moving it around to obtain the best quality signal from that particular station. As you tune from station to station, you may need to reorient this antenna.

Although basic, the folded dipole is an extremely sensitive antenna which allows for the reception of a large number of available FM stations with your tuner. Should you find that the dipole is not adequate for your reception needs, please contact your dealer to obtain further information about the variety of antennas that will provide the performance characteristics you require.

You may find in your listening areas that many stations tend to have a harsh high end where the "s's" and "t's" sound distorted. This phenomenon is a result of the tuner receiving both direct and delayed signals from the station. The delayed signals are reflections off of buildings, mountains and even passing aircraft. To correct



TYPICAL HOOK-UP

this condition, it may be necessary to obtain a much more directional antenna than the dipole. This type of antenna will permit you to single out the strongest signal for reception and ensure that the delayed signals will not interfere with the sound quality of your tuner.

Antennas used with FM and TV receivers fall into two basic categories: those that require 300 Ohm termination, and those requiring 75 Ohm termination. The T14 provides input terminals for either of these systems. The cable used in a 300 Ohm system is usually denoted by a flat appearance and sometimes in its highest quality form is available with two inner conductors and a shielded ground.

The 75 Ohm termination system is usually characterized by a round cable (co-axial). When a 75 Ohm system is used the ends should be prepared so that the center lead protrudes from the surrounding shielding and insulation and the metal shielding itself should protrude from the outer insulation. This will allow it to be used with the 75 Ohm terminals on the back of the T14. This setup is described in Figure A.

AM — The T14 comes with a movable ferrite core antenna for AM reception. This is the bar that protrudes from the rear of the T14. Simply moving it away from the unit will provide extremely high quality AM reception. Should you find in your signal area that even with this highly sensitive bar antenna, you are not receiving adequate AM reception, you may make your own AM antenna. This is accomplished by taking one end of a single insulated wire

and running it to the highest spot on your rooftop and connecting to EXT AM terminal. Running another insulated wire from the ground terminal and attaching it to a good ground such as the center screw on your AC outlet or a water pipe may also be helpful.

AC CONNECTIONS — With the power switch in the off position, plug the line cord into any outlet furnishing 105 to 125 Volts, 50 to 60 Hz.

Special Note:

The memory and time functions of the T14 are maintained as long as power is supplied to the AC plug. This is independent of whether the unit's power switch is on or off. Should AC power be interrupted, time will be lost (the display will flash once power is returned) and memory will be lost.

OPERATION OF CONTROLS

AM — This button selects the AM mode on the T14.

FM Auto — This selects the FM mode. When stations are tuned in this mode, the T14 automatically switches to stereo when the stereo pilot signal is being broadcast by the station. Otherwise the tuner will receive only mono.

FM Mono — In this mode the tuner will receive all FM stations in mono (Whether broadcast in mono or stereo).

Hi-Blend — FM Stereo signal has a unique property in that the majority of noise is out-of-phase. This blend switch reduces the high frequency separation between the left and right channels and by doing so reduces the noise without sacrificing fidelity.

FM Mute — The T14 provides a muting circuit to reduce interstation noise which occurs as you tune from station

to station on FM. If you are searching for an extremely low level signal, the mute can be defeated by releasing the button to its out position. The sensitivity of this muting circuit is adjustable by a rear panel control. This control should be set so as not to mute the weakest station you intend to listen to.

Tuning — The T14 employs a unique digitally synthesized tuning system. The heart of the system is a Quartz Reference Digital Counter, which synthesizes precise steps that coincide with the exact center frequencies of all assignable FCC AM and FM frequencies. The tuning system is activated by either touch tuning button for up scale (higher numbers) or down scale (lower numbers). The T14 provides two alternate methods of tuning with the touch tuning system. The auto mode (out) provides tuning to the next available broadcast station. In the scan mode (in), as long as either tuning button is depressed, the tuner will continue to scan. Once released, it will stop at the next FCC assigned frequency, whether there is a station there or not. Once this digitally synthesized tuning system reaches an assigned frequency it will automatically activate the Quartz-Lock. If a broadcast signal is present, the Quartz-Lock will then precisely center to the station frequency for optimum performance. This digitally synthesized tuning method was first developed for telemetry reception in NASA space programs.

Frequency Readout — The blue fluorescent digital frequency readout is a precise Quartz reference frequency counter that displays either FM frequency in MHz (millions of cycles) or AM frequency in KHz (1000's

of cycles).

Stereo — The stereo indicator becomes illuminated when an FM Stereo (or multiplex) signal is being received by the T14. In some instances, the signal level at the antenna may be so low that the noise generated in stereo will be unacceptable for listening purposes. It is recommended that the mode switch be moved to the mono position which will reduce the noise and defeat the stereo circuit. However, this should only be done in the case of extremely weak stereo signals.

IF Band — The T14 provides selection of wide (out) or narrow (in) Intermediate Frequency (IF) Filters. The wide position is recommended for normal listening since this provides optimum separation and low distortion. The narrow position is recommended for weak signal reception where a much stronger nearby station is interfering with it.

Memory — The T14 provides memory for 5 AM and 5 FM stations. To store a station in memory: 1) select the desired station; 2) press the memory button, then, 3) press the desired memory location (1, 2, 3, 4, or 5).

DISPLAY

The dual fluorescent bar graph displays at the left hand side of the T14, serve a multipurpose role.

AM/FM — When the selector is moved to the AM/FM position, the upper bar graph becomes the signal strength indicator for both AM and FM reception. The lower bar

graph display becomes the multipath distortion indicator for FM tuning. As indicated in our discussion under FM antenna, in the CONNECTIONS portion of this book, multipath distortion can cause a very real and audible distortion problem in FM tuning, this is not readily indicated by signal strength or center tuning. The multipath display can indicate the presence of multipath distortion, and is useful as an indicator in tuning your antenna to reduce or remove this distortion. Optimum reception is when signal strength indication is at its highest level and multipath distortion is at its lowest level.

Output — When the display selector is in the "Display Auto" or output position, the center scale is indicated in dB and is referenced to 100% modulation. This display monitors the level appearing at the outputs. This display is more accurate and responsive than conventional meters, and can be quite useful for monitoring channel balance, broadcast signal strength and overall output.

Display Auto — When this button is depressed, the following sequence occurs: 1) when not tuning the display will indicate output level and the digital readout will indicate time; 2) when either tune button is pushed, the display automatically switches to the Tuning Mode [multipath (FM), signal-strength (AM/FM)], and the digital readout to frequency; 3) once tuning is completed (tune button released) the display will change back to step 1, after 5 seconds.

If the Display Auto button is released, the display will stay in the tuning mode and the Frequency Readout will indicate station frequency.

Clock — The T14 incorporates a Quartz Reference Clock which displays if the Clock button is pushed and the T14 is either: 1) off with power supplied to the AC cord or 2) the Display Auto switch is depressed and either tune button is not depressed.

Clock Set — To set the clock, depress the Set and Hour or Min buttons, depending on which needs to be reset. If a power failure occurs or when the T14 is first connected the display will flash to indicate that power has been lost.

Power Switch — The power switch supplies power to the tuner and the switched power outlets.

The lights come on when this switch is depressed. If this does not occur, power is not being supplied to the tuner.

GENERAL MAINTENANCE

Great care has been taken to ensure that your tuner is as flawless in appearance as it is electronically. The panel is finished with a high grade black anodize process for durability as well as beauty. If it should become finger-printed, it can best be cleaned by using a soft cloth dampened with a solution of liquid detergent and water.

UNDER NO CIRCUMSTANCES SHOULD A LYE SOLUTION OR AN ABRASIVE CLEANER SUCH AS SCOURING POWDER BE USED ON ANY PART OF THE TUNER.

FM SECTION

| | |
|---|---------------|
| Usable IHF Sensitivity—Mono (uV/dBf) | 1.8/10.3 |
| Stereo (uV/dBf) | 4/17.3 |
| 50dB Quieting Sensitivity—Mono (uV/dBf) | 4/17.3 |
| Stereo (uV/dBf) | 30/34.8 |
| Signal to Noise Ratio (IHF)—Mono (dB) | 76 |
| Stereo (dB) | 70 |
| Image Rejection Ratio (dB) | 85 |
| Spurious Response Ratio (dB) | 95 |
| IF Rejection Ratio (dB) | 95 |
| AM Suppression (dB) | 55 |
| Capture Ratio (dB) | 1.5(w)/1.0(n) |
| Alternate Channel Selectivity (dB) | 40(w)/70(n) |
| Harmonic Distortion—Mono 100Hz(%) | 0.09 |
| 1kHz(%) | 0.08 |
| 7.5kHz(%) | 0.22 |
| Stereo 100Hz(%) | 0.15 |
| 1kHz(%) | 0.15 |
| 7.5kHz(%) | 0.30 |
| Stereo Separation 50Hz | 46(w)/38(n) |
| 1kHz | 48(w)/40(n) |
| 10kHz | 40(w)/36(n) |
| Frequency Response 30-15kHz | +0.5, -2dB |
| Muting Sensitivity (uV) | 7 |
| Subcarrier Suppression (dB) | 65 |
| Output Level (mV) | 150 |

AM SECTION

| | |
|----------------------------|-----------|
| AM Section | |
| Usable Sensitivity (uV) | 15 |
| Selectivity (dB) | 32 |
| Signal to Noise Ratio (dB) | 45 |
| Harmonic Distortion (dB) | 0.5 |
| Image Rejection Ratio (dB) | 45 |
| IF Rejection Ratio (dB) | 40 |
| Output level (mV) | 150 |
| H (in/cm) | 3.5/102 |
| W (in/cm) | 18.25/464 |
| D (in/cm) | 14.3/363 |
| W (lbs/kg) | 12/5.4 |

(w) — wide, (n) — narrow

| SYMPTOM | PROBABLE CAUSE | POSSIBLE REMEDY |
|---|---|--|
| 1. Unit will not turn on. | <ul style="list-style-type: none"> A. Not plugged into AC outlet or AC outlet lacks power. B. Blown Fuse. | <ul style="list-style-type: none"> A. Connect AC line cord to outlet or try different outlet. B. Refer to Fuse Replacement section and place fuse. |
| 2. Unit turns on but no sound is heard. | <ul style="list-style-type: none"> A. Switches in wrong position such as both Mono and Stereo only buttons are depressed. B. Cables not connected properly. C. Preamplifier not set to proper functions. D. Tuner is muted. | <ul style="list-style-type: none"> A. Check positions, (Note: the Tuner will be muted when both Mono and Stereo Only buttons are depressed) B. Check cable connections. C. Adjust preamp. to Tuner position and make sure tape monitor switch is "out." D. Depress Mute Defeat Switch. |
| 3. One or both channels inoperative. | <ul style="list-style-type: none"> A. Bad cables. | <ul style="list-style-type: none"> A. Try other cables (or interchange cables). |
| 4. Most stations are received clearly but one station is distorted. | <ul style="list-style-type: none"> A. Multipath reception on distorted station. | <ul style="list-style-type: none"> A. Reorient antenna for minimum on unsatisfactory station. |
| 5. Sputtering noise is heard while listening to station. | <ul style="list-style-type: none"> A. Auto ignition interference. B. Electric motor interference as from Kitchen appliances or elevator motor. | <ul style="list-style-type: none"> A. Move antenna farther away from road where automobiles are being driven. B. Move antenna farther away from interfering motor or install RF filter on interfering motor. |