

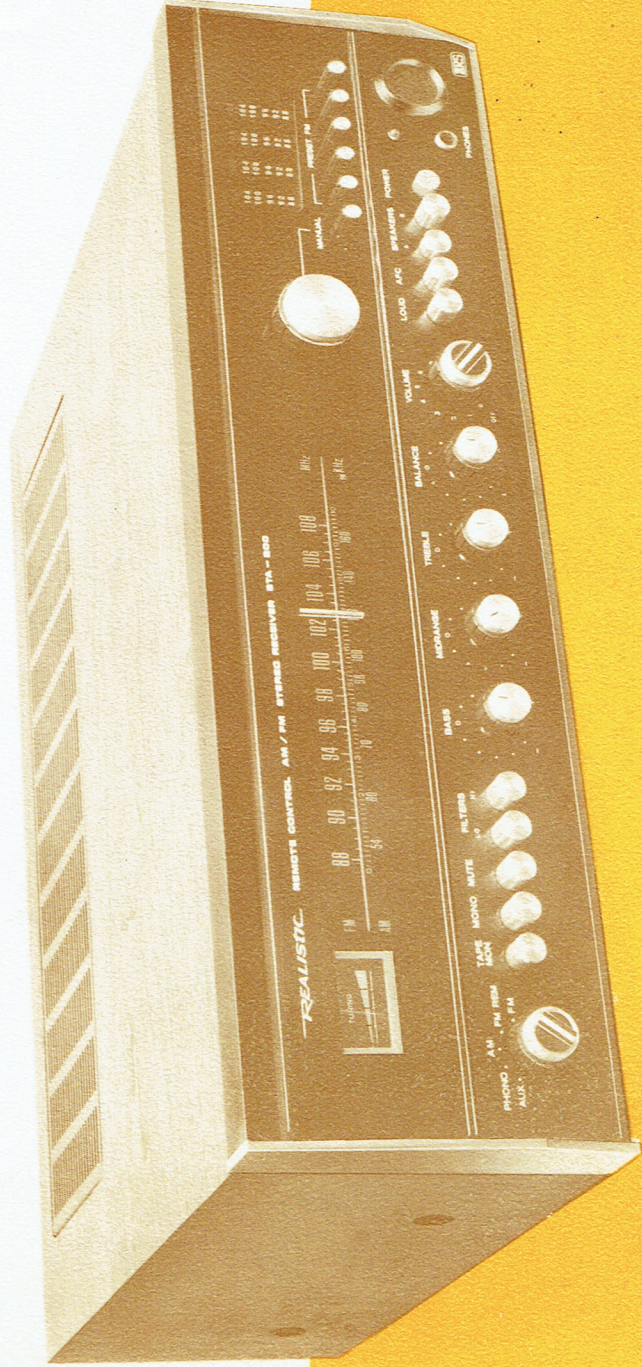
Please read before using this equipment.

OWNER'S MANUAL


REALISTIC® HIGH FIDELITY

Catalog No.
31-2050

MODEL STA-200 Solid-State 160-Watt Stereo FM-AM Receiver with Remote Control



Sold, Serviced and
Guaranteed from
Coast-to-coast

CUSTOM MANUFACTURED FOR
RADIO SHACK  A TANDY CORPORATION COMPANY



REALISTIC®

THE BRAND WITH OVER 1,000,000 CUSTOMERS

In choosing this fine Realistic product you have demonstrated a rather acute awareness of the good old American custom called "getting the most for your money". With Realistic this is not an idle boast.

The "line" was born in Boston, long famous for Yankee ingenuity — and thrift. Its original intent was to bridge a gap between \$100 equipment and \$25 equipment where, at the time, there was a real void in hi-fi merchandise.

Early products were a \$39.95 FM tuner, a \$29.95 preamp/amplifier, a \$19.95 speaker. Soon we found ourselves a unique niche as manufacturing retailers.

Capacity and ability grew simultaneously. Our Realistic Electrostat-3® electrostatic tweeter — now used in the Electrostat-2A speaker — was called a "best buy" by the country's leading product-review magazine. Our 10TRF radio out-performed practically anything then available. And dealers from all over the world began requesting a Realistic franchise.

Recent "firsts" include: the first medium cost DC/AC communications receiver totally engineered in solid state — the Realistic DX-150A; the first properly designed low-cost police band radio — the Realistic Patrolman; the Realistic Optimus-1 loudspeaker, bringing "over \$120 sound" down 33%; the first lifetime-guaranteed vacuum tube; and the Realistic STA-120B stereo receiver which combined massive power, modern styling, and a veritable host of new ideas — at a cost fully \$100-\$200 below its value under traditional marketing practices.

But of course! — Realistic marketing practices are NOT traditional. First: the line is restricted in distribution. Second: we do not have sales representatives and other normal "trade" costs, nor do we waste money and tools on frequent model changes to attract new dealers — a new model is a NEW model, a current model is one that gets a steady stream of improvements at no cost to you and without a lot of wild (and expensive) claims of novelty.



Speakers Recorders Components P.A. Products Radios Phonographs

REALISTIC AUDIO PRODUCTS are the proud result of Radio Shack engineering, research and development, and over 45 years of experience in electronics. Laboratories are maintained in Boston, Ft. Worth, Los Angeles, and abroad. In every sense a national brand, the Realistic label is worn with equal distinction by our highly original Communications and Citizens Band (two-way radio) products, and numerous other items including: tape, headphones, antennas, intercoms, and tubes.

The STA-200 is the culmination of Radio Shack's years of design and engineering experience. It is a no-compromise component with performance and convenience features that make it absolutely unique.

- The amplifier produces 160 watts—enough power to drive even two sets of speakers. And that's low-distortion power for deep, solid bass.
- The unconventional tuning system is electronic for the ultimate in precision reliability. A special voltage-controlled solid-state circuit replaces old-fashioned mechanical tuning capacitors.
- The wireless remote control lets you turn the volume up or down, choose up to 6 preset FM stations—even turn the receiver on and off—all from across the room.
- The front panel has a full range of controls that let you tailor the sound. FM muting and High and Low filters reduce annoying noise; **Bass, Treble and Midrange** give you total tone control. **Perfect Loudness™** adds just the right amount of bass at any listening level for dramatic sound.
- There's 3-way FM tuning with the STA-200's advanced circuitry. Tune up to 6 preset stations using the Remote Control, use push-buttons to tune any of five preset stations, or tune manually.
- The STA-200 is built to give you a lifetime of superb listening. You can take reliability and Radio Shack quality for granted, but you should notice the careful design which makes the STA-200 completely convertible to 4-channel sound!

There are a lot of important big things about the STA-200, but don't forget the "little" things that make a big difference. Things like the short-proof spring-clip speaker terminals, or like beautiful styling with blackout dial and gentle green dial lights. And at no extra cost you get a luxuriously finished wood case.

GUARANTEE: The Realistic guarantee is stated on the Guarantee Card packed with the receiver. It is in effect from coast-to-coast and in Alaska. At any time, Realistic equipment will be restored to new condition with original parts with MINIMUM delay anywhere in the U.S.A., usually right in your own neighborhood. In 98% of the cases, it is NOT necessary to return Realistic components to one of our Laboratories.

SPECIFICATIONS

AMPLIFIER

Audio Output at 4 ohms
(both channels driven)

80 watts per channel IHF,
±1 dB (160 watts total)
43 watts per channel RMS
(86 watts total)
62.5 watts per channel IHF,
±1 dB (125 watts total)
33 watts per channel RMS
(66 watts total)

Audio Output at 8 ohms
(both channels driven)

Frequency Response
Power Bandwidth
Signal-To-Noise Ratio

20–30,000 Hz
20–20,000 Hz

Phono: 50 dB
Aux: 60 dB

Total Harmonic Distortion
Input Sensitivity

Less than 1% at rated output
Phono: 2.5/5 mV
Aux: 200 mV

Damping Factor
Phono Equalization

20 or more
RIAA

FM TUNER

Sensitivity
Separation
Image Rejection
Capture Ratio

Better than 2 μ V (IHF)
Better than 30 dB
100 dB
Better than 3 dB

AM TUNER

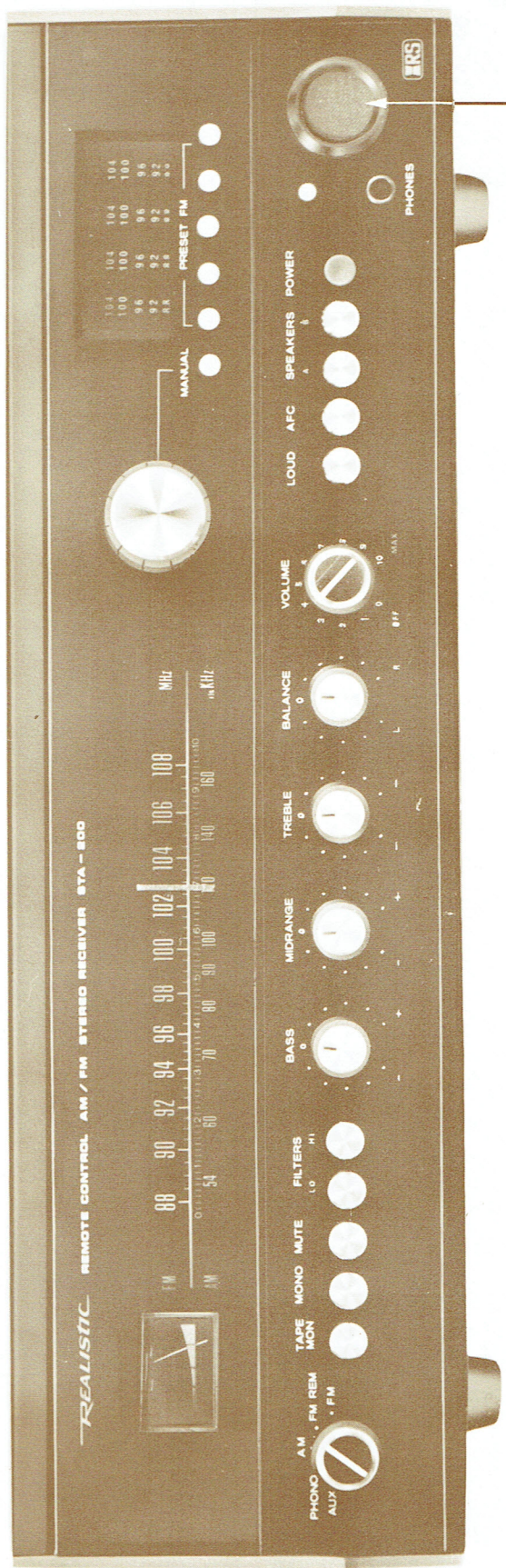
Sensitivity
Image Rejection
Selectivity

50 μ V or better
(at antenna terminals)
43 dB
23 dB

POWER REQUIREMENTS

120 VAC, 60 Hz,
45–220 watts

NOTE: Before operating the STA-200 for the first time, read this manual. It will tell you how to connect your Receiver and how to get the best sound from your system.



Remote Control Receiver

CONTROL FUNCTIONS

POWER Turns the STA-200 to standby and activates the Remote Control circuits. Pressing the button a second time turns the receiver completely off.

VOLUME Adjusts listening level and interlocks with **POWER** to turn the receiver on and off. Also operates with Remote Control.

Input Selector

Chooses one of five input positions:

AUX: High-output source—a second tuner, crystal or ceramic phono cartridge, a second tape deck, TV, Ham radio, etc.

PHONO: Turntable equipped with a magnetic cartridge.

AM: Built-in wideband AM tuner.

FM REM: Remote control or pushbutton FM tuning of up to 6 preset stations.

FM: Tune manually.

TAPE MONITOR

Lets you play tapes or monitor a tape as it's being recorded.

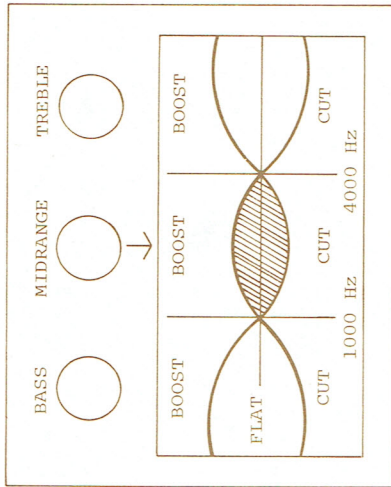
BASS, TREBLE, MIDRANGE

Give full-range, versatile sound control. **BASS** (low frequency), **TREBLE** (high frequency) and **MIDRANGE** (middle frequency) controls do not effect the sound at the "O" center position.

Turned clockwise, each boosts its frequency range; turned counterclockwise, each de-emphasizes its respective range.

The **MIDRANGE** control is not found on most receivers but gives you greater control over your stereo. To hear its maximum effect, listen to a record with a vocalist. By turning the **MIDRANGE** to the (+) position you can bring the singer "up front", or by turning it to (-) you can move the vocalist back into the ensemble.

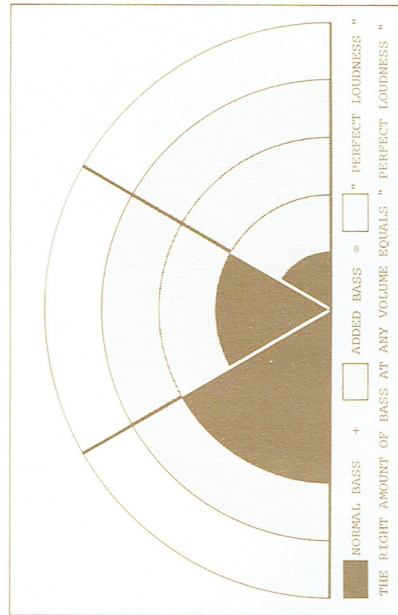
BR



Tone Control Action

BALANCE

Adjusts the relative volume of the left and right speakers. At the center "0" position the two speakers will have the same volume. Rotating it to the left or right will favor that speaker.



Perfect Loudness Effect

LOUDNESS

Boosts bass response at low volume to compensate for the ear's reduced sensitivity.

FILTERS

LO: Pressing the **LO FILTER** reduces turntable rumble and other bass noise.
HI: Pressing the **HI FILTER** reduces hiss, scratches and other high frequency noise.

SPEAKERS

A: Connects the main pair of stereo speakers.
B: Connects a pair of remote stereo speakers.

PHONES Accepts any pair of low impedance stereo headphones. The jack is live even with the speakers disconnected.

PRESET FM

Each button tunes in a preset FM station. Each button can be activated by remote control.

MANUAL

Disengages the **PRESET FM** buttons and lets you tune normally.

Tuning

Permits you to tune the **STA-200** like an ordinary Receiver when the **MANUAL** button is pressed.

AFC

Pressing activates **Automatic Frequency Control** which eliminates "drift" on FM

MUTE

Eliminates interstation hiss when tuning FM manually.

MONO

Switches amplifier and FM tuner from stereo to mono.

Remote Control Receiver

Receives ultrasonic signals from the hand-held remote control.

REMOTE CONTROL

VOLUME

UP: Press to raise STA-200's **VOLUME** when main **POWER** is on.

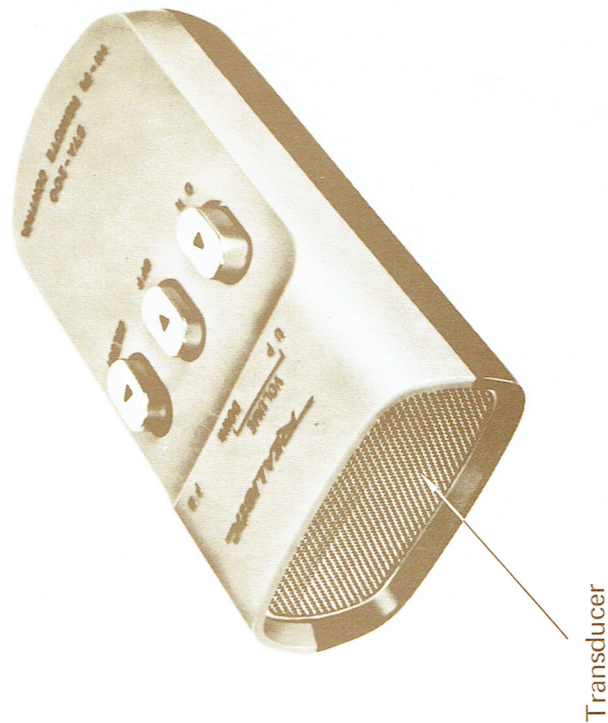
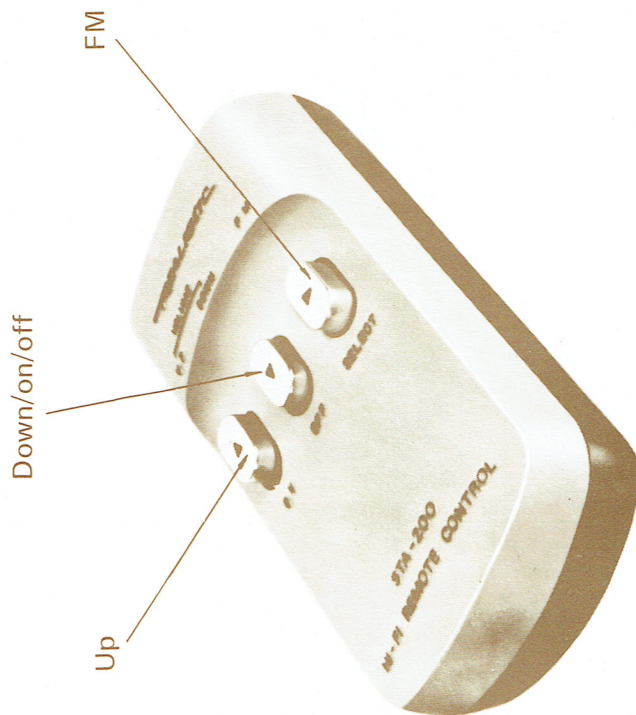
DOWN: Press to reduce **VOLUME** when main power button is on. At minimum **VOLUME** position the receiver turns itself off.

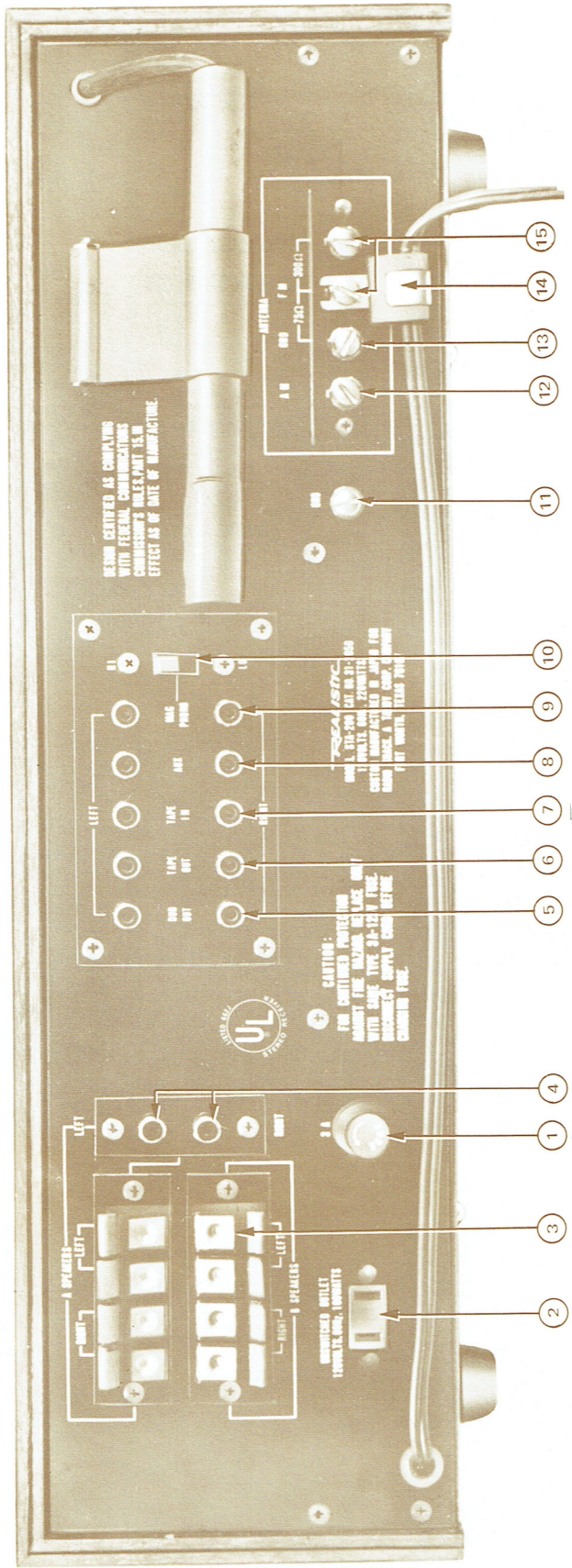
FM TUNING

Press to choose any of the five **PRESET FM** stations or the station tuned on the manual dial.

Transducer

Sends ultrasonic signal to the Remote Control Receiver on the STA-200.





REAR PANEL

1. **3 Amp FUSE** — Power supply fuse. Protects receiver from voltage surges, or other abnormal operating conditions.
2. **UNSWITCHED OUTLET** — Plug in any audio accessory up to 100 watts. Outlet is live at all times.
3. **SPEAKERS** — Easy connecting spring-clip terminals for two pairs of stereo speakers. Red terminals are (+) and black terminals are (-).
4. **LEFT & RIGHT Speaker Jacks** — May be used instead of A SPEAKER spring-clip terminals. Jacks accept phono plugs.
5. **DUB OUT** — Used for copying tapes from one machine to another or as outputs for second tape recorder. Connects to recorder's auxiliary inputs.
6. **TAPE OUT** — Connects to tape deck's auxiliary inputs for recording any receiver input. Output is unaffected by VOLUME, BALANCE, Tone or Filters.
7. **TAPE IN** — Connects to tape recorder's output for tape playback.
8. **AUXILIARY** — For use with any high-level input—second tape recorder, TV sound, second tuner, ceramic or crystal phono cartridges.
9. **PHONO** — Connects to any record player or turntable equipped with a magnetic cartridge.
10. **HI-LO Phono Sensitivity Switch** — Matches output of phono cartridge to level of other inputs.
11. **GND** — Grounds Receiver to other pieces of equipment, particularly turntable, to prevent hum.
12. **AM** — Screw terminals for connecting external antenna for fringe reception.
13. **GND** — For use with braided shield wire of 75-ohm FM antenna lead-in.
14. **Linecord FM Antenna** — Connects to first FM screw for suburban reception. Remove when using external antenna.
15. **FM Screw Terminals** — For connecting receiver to 300-ohm external FM antenna. Second terminal and ANTENNA GND are used with 75-ohm antenna systems.

Speakers

The STA-200's outputs are designed for use with 4-16 ohm speakers. To prevent overload, use 8 to 16 ohm speakers if you plan to have both main and remote speakers.

The STA-200 has two sets of **A SPEAKER** terminals—**choose only one set**. If your speakers have phono plug inputs, use the phono plugs on the receiver and a set of unshielded speaker cables.

To connect either **A** or **B SPEAKERS** to the spring clip terminals, use speaker cable or lamp cord. Strip away about 1/4" of insulation, push the appropriate terminal and insert the wire. Releasing the terminal will make a firm connection with the wire. For best bass response, be sure to observe proper phasing—connect the red spring-clip terminals to the (+) speaker terminals and the black terminals to the (-) speaker terminals. For easy phasing, most speaker wire is marked with one conductor a different color or with a raised line along one conductor.

- NOTES: 1. Do not let any stray wires from Receiver or speaker terminals touch another terminal or the chassis—a short could result.
2. Connect no more than **two** sets of stereo speakers to the receiver.
 3. Do not coil excess speaker wire. The inductance of the coil may filter out high frequency response.

Phonograph

Connect the turntable leads to the PHONO inputs. If the turntable has a ground wire (usually black or green) connect it to the GND screw. Plug the turntable's AC cord into the rear panel outlet or a wall socket.

Normally the rear panel sensitivity switch should be set to LO. If your cartridge has an especially high output, slide the switch to HI. Try to match the phono level to the tuner's so that there is little change in volume when switching sources.

Tape Deck

Connect your recorder's input (usually labeled AUX or LINE IN) to the Receiver's TAPE OUT jacks. The Receiver's TAPE IN should be connected to the deck's output (usually labeled LINE or OUT).

A second recorder or player can be connected into the AUX input and its input to the Receiver's DUB OUT. This arrangement will also permit you to copy tapes easily.

Antennas

The built-in AM and FM antennas should be adequate in most areas. If you think you need an external antenna see "Hints For Better Sound." Connect antennas to terminals as shown.

Pull out the built-in loopstick AM antenna on the back and adjust it for best reception.

Auxiliary

The AUX input may be used with any high-level source—a second tuner, TV, ceramic or crystal phono, tape player or recorder (see Tape Deck), shortwave radio, etc.

CHOOSING ASSOCIATED EQUIPMENT

SPEAKERS

No stereo can sound better than its speakers, so get the best you can afford. With a high-quality receiver like the STA-200 you should carefully consider Optimus® and Nova® series speakers. To fully appreciate the STA-200's superior performance we recommend one of the Minimus® or Electrostat® speaker series as an absolute minimum investment. Your Radio Shack salesman can help you find a speaker suited to your musical tastes and budget.

PHONOGRAPH

For convenience, most people prefer a record changer (often called an automatic turntable) to a manual turntable. A changer permits you to stack records for multiple play and returns the tonearm to rest at the end of the last record.

Your turntable should be equipped with a magnetic cartridge for best sound. Cartridges equipped with conical styli (needles) are usually cheapest and have good sound. But a cartridge with an elliptical stylus follows the record groove more accurately, and, so, produces better sound. Your Radio Shack store has a fine selection of changers with cartridges already installed.

TAPE DECK

Until very recently, reel-to-reel tape decks were the only possible choice for those interested in true high fidelity. Recent technological advances have made 8-track and cassette recorders approach the sound quality of reel-to-reel recorders. Reel-to-reel decks still have marginally better performance and are a must for those who want to splice and edit their own tapes.

The best cassette decks, equipped with special bias settings and Noise Reduction circuitry, will out-perform many reel-to-reel decks. They have the additional advantage of convenient pop-in loading and extremely small size. They can be used in the car as well as at home.

8-track cartridges offer slightly less fidelity than cassette or reel tape, but have several advantages. An 8-track recorder lets you use pre-recorded car tapes at home and also permits you to save money by recording new car tapes at home. In addition, an 8-track cartridge uses a continuous tape loop which can play for hours without attention. Many home 8-track playback decks are less expensive than record changers and let you enjoy your car tapes at home.

Your Radio Shack salesman can show you a full line of high-quality tape equipment in every price range.

HEADPHONES

Your STA-200 has a front panel headphone jack. Any low impedance stereo headphones will let you enjoy your music without disturbing others. In addition, headphones produce a far greater stereo effect than speakers.

When shopping, wear a pair of headphones long enough to be sure they'll be comfortable. The very finest headphones use a thin sheet of polyester rather than a speaker cone to produce the sound. This system is called "electrostatic" since the polyester sheet moves between two electrically charged plates.

ANTENNAS

Under most conditions your Receiver's built-in antennas should be adequate for AM and FM reception. If you have difficulty with reception see HINTS FOR BETTER SOUND.

OPERATING THE STA-200

BEFORE PLUGGING UNIT IN:

- 1) Double-check all connections.
- 2) Set **VOLUME** to **OFF**.
- 3) All pushbuttons should be out.

Plug the STA-200 into a wall outlet and press the red **POWER** button in. This turns the unit to standby and activates the remote control circuits.

Speakers/Headphones

Press **A** and/or **B SPEAKERS** buttons to engage main and/or remote speakers. For private listening turn both speaker pairs off (buttons out) and plug a pair of low impedance stereo headphones into the PHONES jack.

On/Off

After you have pressed the red **POWER** button in, the STA-200 turns itself on whenever the **VOLUME** control is turned from its minimum (OFF) position. During normal operation the **POWER** button may be left in. Before going on vacation or a long trip, turn the receiver completely off by putting the button into its out position.

Volume

Raise or lower the **VOLUME** for a pleasant listening level. At the OFF position it turns the unit to standby. **VOLUME** can be adjusted using the remote control.

Balance

Adjusts the relative volume of left and right speakers. Set this control so that a mono signal appears to come from a point halfway between the speakers.

Tone

The three-way tone controls give you complete control over your system's sound. The controls have no effect on the sound in the middle ("O") position. Each boosts its tone range when turned clockwise (+) and de-emphasizes its range when turned counterclockwise (-).

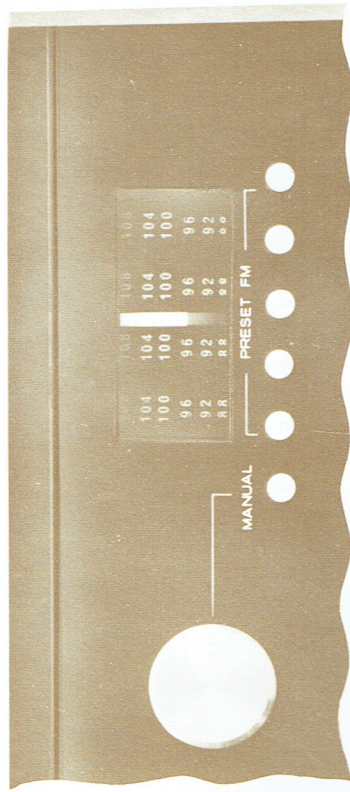
The **BASS** control varies the low frequencies while **TREBLE** controls the high frequencies. The **MIDRANGE** (often called "presence") is not found on most receivers. To hear its maximum effect listen to a record with a vocalist. By turning the **MIDRANGE** to its (+) position you can bring the vocalist "up front", or by turning it to (-) you can move the singer back into the ensemble.

Loudness

When listening at low volumes, press the **LOUDness** button. This overcomes the ear's reduced sensitivity to bass at low volumes by boosting the low frequencies. Radio Shack's exclusive **Perfect Loudness™** adds just the right amount of bass boost at every listening level.

MONO

Pressing the **MONO** button defeats stereo operation, the resulting signal is a composite (left + right). When you listen to weak FM stations, pressing the **MONO** button will give reduced noise, but of course the signal will no longer be stereo.



Presetting FM Stations

Turn the input selector to **FM** and the **VOLUME** to a pleasant listening level. Press the first of the **PRESET FM** buttons. To tune a station, turn the pressed in button until the green tuning bar on the lighted dial reaches the desired mark. Fine-tune for the highest reading on the Tuning Meter. Follow the same procedure with the remaining **4 PRESET FM** buttons. To return to manual tuning press the **MANUAL** button.

Filters

The **LO** and **HI FILTERS** eliminate noise on any program source. The **HI Filter** removes FM hiss and record noise while the **LO Filter** reduces turntable rumble. Both filters are activated when pressed in.

Inputs

AUXiliary — Adjust **VOLUME**, tone, **BALANCE**, etc. for best sound.

PHONO — Set rear panel **HI-LO** switch so that phono volume matches radio volume. Adjust front panel controls for pleasant sound.

AM — Use the manual Tuning Knob to find the desired station. Fine-tune for the highest reading of the Tuning meter.

FM REMote — Use one of three tuning methods:

- 1) Use manual tuning Knob to select desired station then fine-tune for highest reading of Tuning Meter.
- 2) Press one of the pushbuttons to choose one of five preset FM stations.
- 3) Press the **FM SELECTOR** button on the remote control to choose one of the **PRESET FM** stations or a station tuned in manually.

To switch from remote/pushbutton tuning to manual tuning press the **MANUAL** button. Pressing the **AFC** (automatic frequency control) button makes fine-tuning less critical and prevents drift. The **MUTE** button eliminates interstation hiss when tuning manually. The stereo beacon lights to indicate a stereo broadcast.

FM — Use the manual tuning knob to select the desired station. Fine-tune for the highest reading of the Tuning Meter. The red stereo beacon lights to indicate a stereo broadcast. The **AFC** locks stations in for best reception and freedom from drift. The **MUTE** button eliminates interstation hiss when tuning manually.

NOTE: When tuning weak FM stations it may be necessary to disable the **AFC** and **MUTE** for the best reception. Pressing the **MONO** button will make a weak station less noisy, although the signal will no longer be stereo.

Tape

Recording

Set the input selector to the source you want to record. Adjust **VOLUME** and **Tone** for your listening pleasure—they will not effect the output to the recorder. If you have a three-head tape deck, you can press the **TAPE MON** button to hear the recording immediately after it passes the record head.

Playback

Regardless of the input selector press the **TAPE MON** button. When finished with the tape, release the **TAPE MON** button.

Remote Control

VOLUME — Press the **UP** button to turn the STA-200 on and to increase the volume. Press the **DOWN** button to lower the volume or turn the STA-200 off.

FM — Press the **SELECTOR** button to choose one of the pushbutton preset FM stations or the station tuned manually on the dial. The STA-200's input selector must be turned to **FM REMote** for remote control tuning.

NOTE: The remote control will only operate when the STA-200's **POWER** button is in. The hand-held remote control has a range of approximately 25 feet. For best operation point it directly at the round Remote Control Receiver on the STA-200's front panel.

HINTS FOR BETTER SOUND

Placing Your Speakers

Where you put your speakers is a highly personal matter, depending on the arrangement of your listening room and how you listen to music. Before settling on a final arrangement, try several alternatives.

Normally, stereo speakers should be 6 to 8 feet apart. Speakers too close together have inadequate separation, while placing them too far apart creates a "hole in the middle." Since most speakers have a tweeter dispersion of about 60° your listening position should ideally be in the "overlap" between the speakers. You may want to angle the speakers toward you for better stereo.

Bass response is highly dependent on speaker location. For maximum bass response place the speakers in the corners of your room. If the speaker is placed directly on the floor the bass will be even stronger. If the bass seems boomy and exaggerated, move the speakers away from the corner slightly or raise them off the floor 6 to 18 inches.

Antennas

Under most conditions your STA-200's built-in antennas should be adequate for AM and FM reception. If you don't get good reception, try one of the arrangements listed below. Your Radio Shack salesman knows about reception problems in your area, see him for expert advice.

For FM, build the low-cost folded dipole (illustrated). Just splice regular 300-ohm lead-in wire as shown. Apply a small amount of solder and heat the twisted ends until solder flows evenly over each strand of wire. This antenna can be tacked to the back of a record cabinet or onto a wall—the higher the better. An assembled folded dipole is available from Radio Shack (Catalog Number 42-2385).

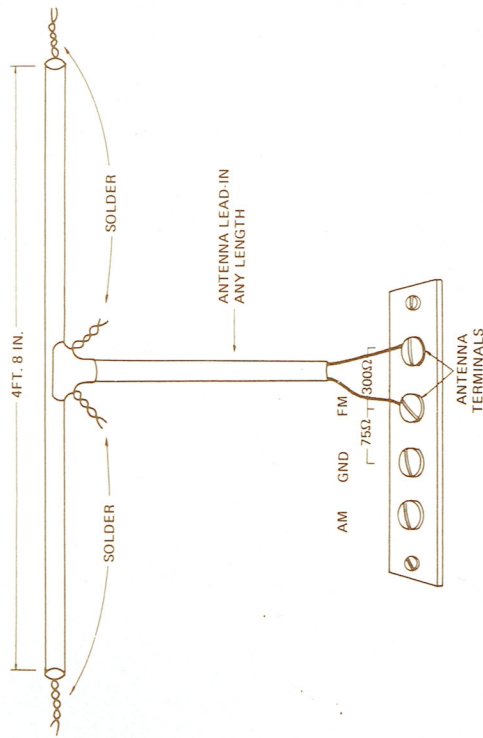
A set of VHF TV rabbit ears or ones made specially for FM reception work well in suburban areas. Some deluxe models feature electronic "tuning" for better directionality.

An ordinary roof-top VHF TV antenna provides excellent FM reception. An inexpensive "splitter" permits you to use the TV and FM at the same time with very little signal loss.

In extremely weak reception areas, a special outdoor FM antenna may be the only solution. Such antennas can pick up stations up to 175 miles away over flat terrain.

Under very rare circumstances you may need an external AM antenna. A long piece of bare wire strung outdoors between two insulators can greatly increase long-distance AM reception.

NOTE: To protect your receiver, use a lightning arrester on any outdoor antenna.



FM ANTENNA CONNECTION

(a) 300 ohm TWIN LEAD (b) 75 ohm COAXIAL



Headphones

Any stereo system can benefit from a good pair of headphones. They provide convenient private listening and many people find the heightened stereo effect very exciting. Stop by your Radio Shack store and listen to some of the ones on display—you'll be pleasantly surprised.

The STA-200 will accept any low impedance stereo headphone through its front panel jack. Through its speaker outputs it will drive even the finest electrostatic headphones.

Record & Phono Care

Even a very small record library is a large investment, which, with proper care, can give years of full-fidelity musical enjoyment.

Generally speaking the best way to reduce record wear is to decrease the stylus force—but **only** if your cartridge and tonearm are designed for light tracking. If the force is less than the cartridge or tonearm were designed for, the needle will bounce around in the groove. This causes breakup, distortion, skipping and excessive record wear. Always track your cartridge within the range suggested by the manufacturer. If you play mostly rock or classical records (typically recorded at high volume) you should use one of the heavier suggested tracking forces.

Records often carry dust-attracting static charges and should be cleaned before use. Playing a dirty record grinds dust against the record wall until it wears away the high frequencies and increases background noise. The most effective cleaners use an ionizing formula to remove the static charge and a cut velvet pad to lift particles from the grooves. Occasionally you will need to remove dust and dirt from the needle.

For best results trim the bristles of a #2 or smaller camel's hair brush to 1/4". Dip the brush in rubbing alcohol and touch the needle lightly. Brush **forward** very gently to remove the dust. **CAUTION:** Brushing from front-to-back or from side-to-side may cause permanent damage.



New Worn

To reduce record wear and maintain top performance, you should examine the stylus carefully every 6 months. An inexpensive stylus microscope (Radio Shack Catalog Number 42-747) will let you check the needle yourself, or you can take it to the nearest Radio Shack store for a free checkup.

Caring For Your Receiver

Your STA-200 is built for a lifetime of precision musical reproduction. The receiver's wood case should be polished periodically with lemon oil. (Note: Wax produces a glossier finish but may eventually cause a dull wax buildup.) If the front panel requires cleaning use a soft, damp cloth (DO NOT use solvents).

When the Remote Control becomes weak or intermittent, replace the 9-volt battery. Loosen the retaining screw on the bottom of the unit to remove the cover.

Tape Recorder Care

A clean, demagnetized recorder will give its best performance for many years, while a dirty recorder can mangle and break tapes and even ruin pre-recorded tapes in a very short time.

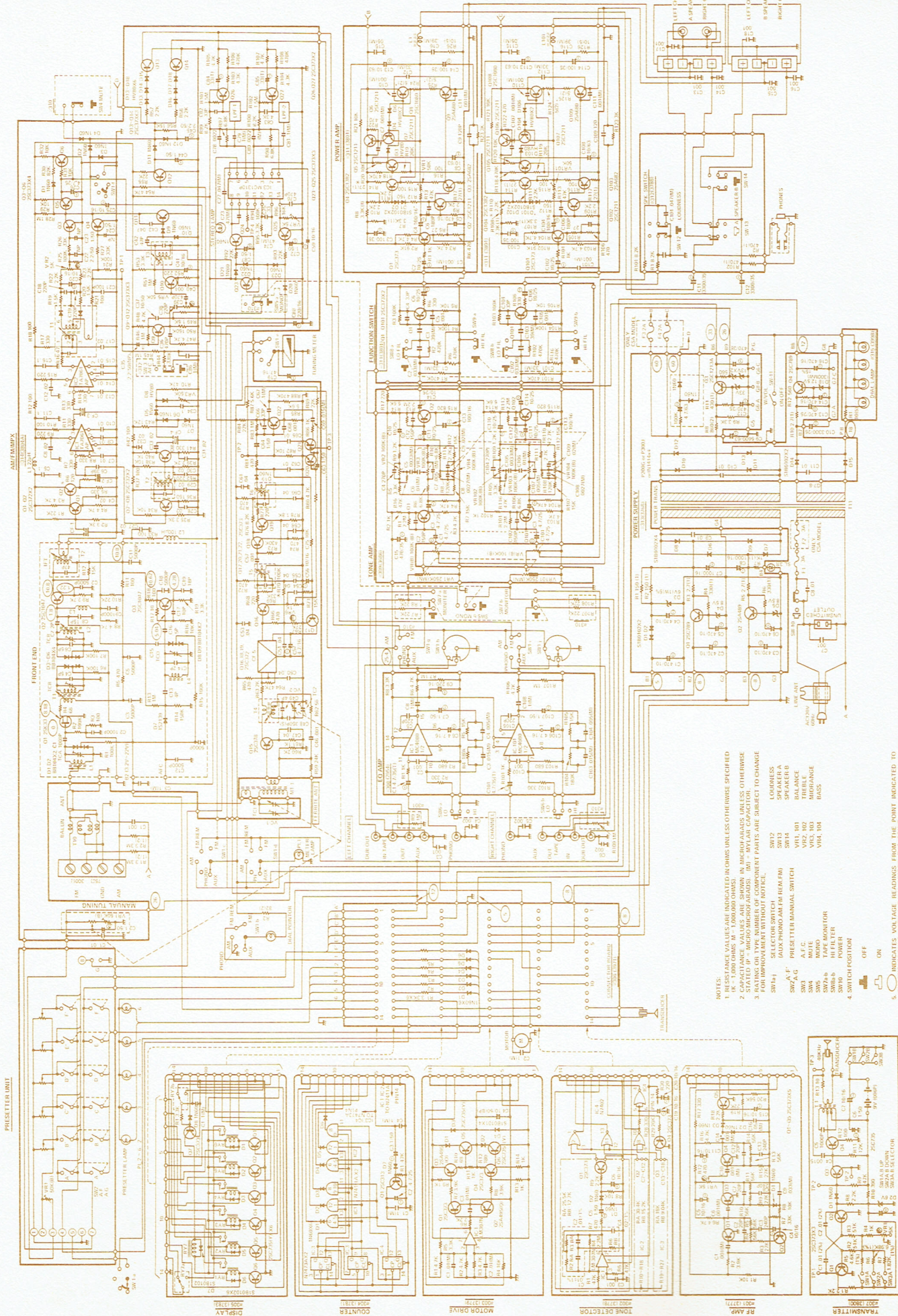
An inexpensive demagnetizer (degausser) removes residual magnetism from the tape heads. This will insure the lowest possible hiss and distortion and the best possible high frequency response. Always clean and demagnetize your recorder before making critical recordings. Under normal conditions you should demagnetize your recorder after every 10-15 hours of play.

With normal use you should clean the heads and metal tape guides once or twice a month with a special solvent such as Realistic Recorder Cleaner (#44-1010). Moisten a clean cotton swab with fluid and rub the heads with short, circular movements. Then clean oxide deposits from all metal tape guides. There are also a number of cloth cleaner tapes which can be played through the machine for fast, easy cleaning.

You can even use your demagnetizer to help remove oxide particles trapped deep in the head gaps. Place a cleaner-moistened cotton swab over the gap and bring the demagnetizer into contact with it. Move the swab and demagnetizer in short circular sweeps. Gradually withdraw the demagnetizer and remove the dirty swab.

Yearly preventive maintenance by an authorized technician discourages expensive major breakdowns and keeps your recorder in peak operating condition.

SCHEMATIC DIAGRAM

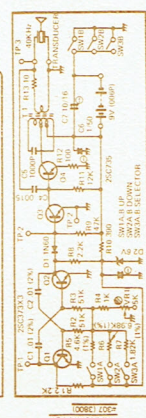


- NOTES:
- 1 RESISTANCE VALUES ARE INDICATED IN OHMS UNLESS OTHERWISE SPECIFIED (K = 1,000 OHMS; M = 1,000,000 OHMS). IN MICROFARADS UNLESS OTHERWISE STATED (P = MICROFARAD; M = MILLIFARAD).
 - 2 RATINGS ON TYPE NUMBER OF COMPONENT PARTS ARE SUBJECT TO CHANGE WITHOUT NOTICE.
 - 3 RATINGS ON TYPE NUMBER OF COMPONENT PARTS ARE SUBJECT TO CHANGE WITHOUT NOTICE.
 - 4 SWITCH POSITION
 - 5 OFF
 - 6 CHASSIS GROUND WITH V.T. VIA UNDER THE POINT.
 - 7 P.T. 2.5A FOR C5A MODEL.
 - 8 P.T. 14 C5A MODEL.

- LOUDSPEAKER
- SPEAKER A
- SPEAKER B
- PHONE
- THERM. 103
- MIDRANGE
- BASS

- SW2 SELECTOR SWITCH (AUX PHONO JAM IN HEAD)
- SW3 PRESETTER MANUAL SWITCH
- SW4 A.F.C.
- SW5 TONE MONITOR
- SW6 POWER
- SW7 SWITCH POSITION
- SW8
- SW9
- SW10

- VIA 101
- VIA 102
- VIA 103
- VIA 104



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PRINTED IN JAPAN