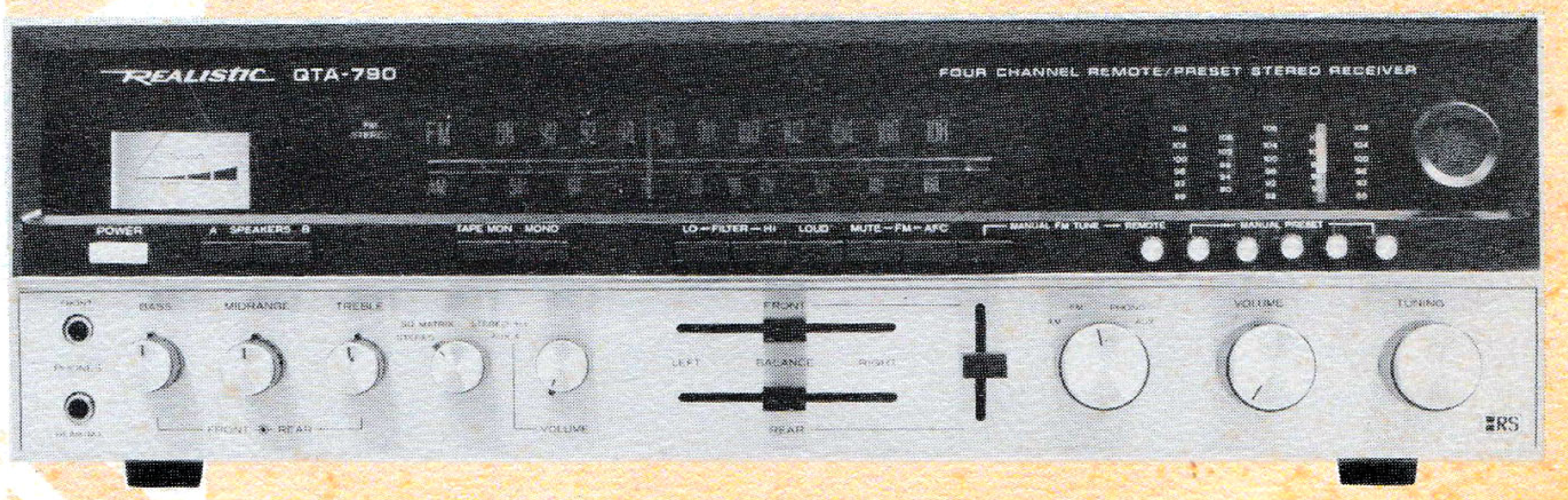
OWNERS MANUAL Catalog No. 31-4010

Please read before using this equipment

REALISTIC®

# HIGH-FIDELITY 4-CHANNEL/ STEREOPHONIC AM-FM RECEIVER with Remote Control

**Model QTA-790**
**Solid State 280-Watt**




**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

REALISTIC AUDIO PRODUCTS are the proud result of Radio Shack engineering, research and development and over 50 years of experience in electronics. Laboratories and major testing facilities are maintained in Fort Worth, Los Angeles, Chicago, Boston, Philadelphia, Columbus Ohio, Burlington Iowa, Toronto and Tokyo. 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.

In choosing this fine Realistic product you have demonstrated a rather acute awareness of "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.

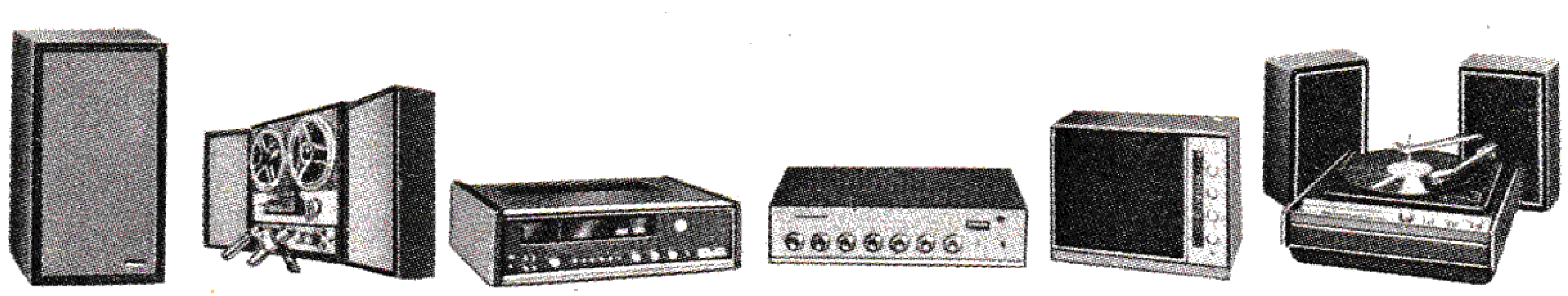
Early products were a $39.95 FM tuner, a $29.95 preamp/amplifier, a $19.95 speaker. Soon we found ourselves a unique niche as manufacturing retailers.

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.

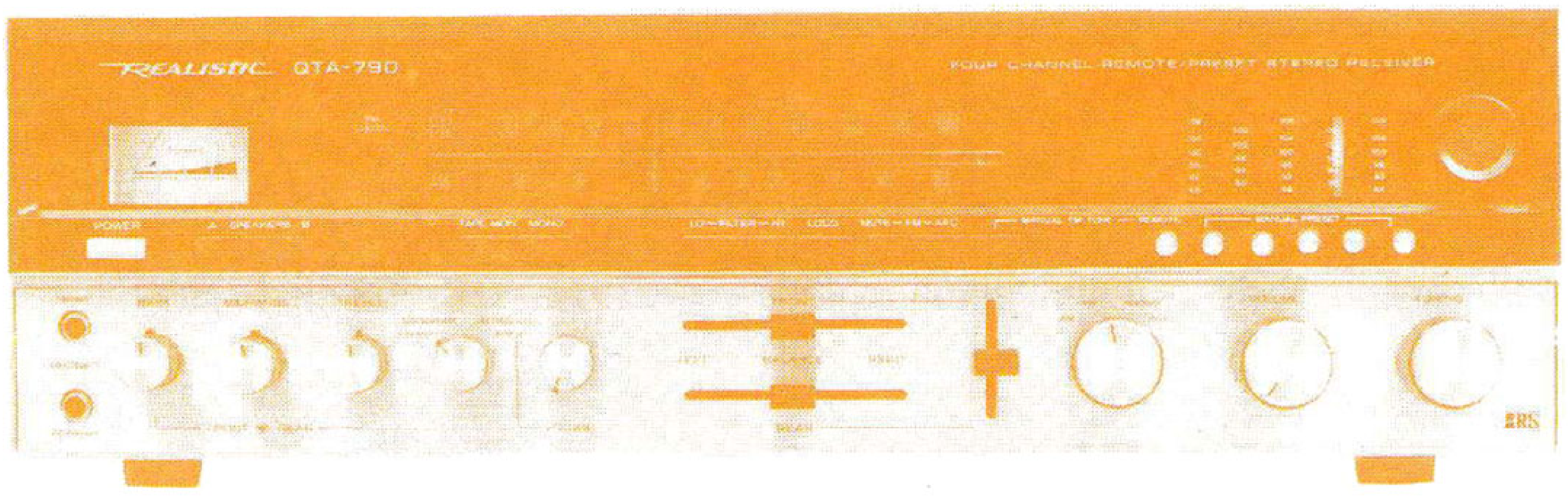
Other "firsts" include: the first medium-cost DC/AC communications receiver totally engineered in solid state – the Realistic DX-150A; the first properly designed low-cost police band radio – the Realistic Patrolman; the Realistic Optimus-1 loud-speaker, bringing "over $120 sound" down 33%; the first 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.

We do not "sell" watts of power or speakers by the number; or rely on the usual confusing array of "Manufacturer's Specifications", most of which are, sad to say, quite irresponsible. We sell three things only: sound with minimum distortion, value without hidden extras, and ingenuity. Realistic's market share has grown satisfactorily on this basis. We think it's the way YOU want us to be.



Speakers Recorders Components P.A. Products Radios Phonographs



## GENERAL DESCRIPTION

Your QTA-790 is a solid-state 4-Channel Stereophonic Receiver with a total output of 280 watts. It incorporates a full complement of controls for the AM and FM tuner, with provision for records and tapes and auxiliary input signals. The Remote Control permits selection of up to 6 pre-tuned FM stations and adjustment of Volume level from a remote position.

You will find your QTA-790 to be a deluxe receiver in all respects, with maximum flexibility and features you want for a superb stereo component system. The built-in SQ Matrix decoder system enables you to enjoy 4-channel stereo sound from most conventional 2-channel stereo programs (tapes, records, FM stereo).

We urge you to read this manual with great care; it fully explains each feature, function and use.

**GUARANTEE:** The Realistic guarantee is stated on the Fact Tag 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.

## GENERAL SPECIFICATIONS

*Note: these are given in general form only since Realistic does not believe in buying to or designing to numerical specifications. The latter are subject to variables unrelated to performance, just as frequency range, the number of IC's or watts, etc., is totally irrelevant to the end product in terms of sound quality. Our philosophy is that hi-fi equipment should be classified as musical instruments, their quality and relative value being judged the way a pianist selects between brands and styles of pianos.

Thus Realistic designs toward achieving a certain sound — regardless of cost, regardless of lab measurements, regardless of competitive advertising claims. Price is determined by parts, tool and labor costs, features and physical size. Sound is determined by our "electronic musicianship" tempered by your appreciation of the result.

## SPECIFICATIONS

### AMPLIFIER-PREAMPLIFIER SECTION

POWER OUTPUT @ 8 OHMS

- 36 Watts RMS per channel, 144 Watts total
- 55 Watts IHF per channel, 220 Watts total
- 70 Watts IHF ±1 dB per channel, 280 Watts total

HARMONIC DISTORTION

- Less than 1 % at full rated power

| | | |
|---|---|---|
| POWER BANDWIDTH | 18 — 45,000 Hz (IHF) | |
| HUM AND NOISE | | |
| PHONO | −62 dB | |
| AUX/TAPE | −70 dB | |
| FREQUENCY RESPONSE | 20 — 30,000 Hz | |
| INPUT IMPEDANCE | | |
| PHONO, AUX, TAPE | 50K | |
| INPUT SENSITIVITY | | |
| PHONO | High=5.0mV; Low=2.5mV | |
| AUX | 200mV | |
| TAPE | Adjustable: 0.2 — 2 volts | |
| CHANNEL SEPARATION | 45 dB | |
| TONE CONTROL | | |
| BASS: | ±12 dB | @ 100 Hz |
| MID: | ± 6 dB | @ 1,500 Hz |
| TREBLE: | ±12 dB | @ 10,000 Hz |

### FM TUNER

| | |
|---|---|
| SENSITIVITY | 2.0$\mu$V (IHF) |
| SIGNAL-TO-NOISE | 60 dB |
| IMAGE REJECTION | 78 dB |
| STEREO SEPARATION | 35 dB |
| HARMONIC DISTORTION | 0.3 % |
| SELECTIVITY | 55 dB |
| CAPTURE RATIO | 1.5 dB |

### AM TUNER

| | |
|---|---|
| SENSITIVITY | 7$\mu$V |
| SELECTIVITY | 23 dB |
| SIGNAL-TO-NOISE | 50 dB |
| IMAGE REJECTION | 45 dB |

### ANTENNA:

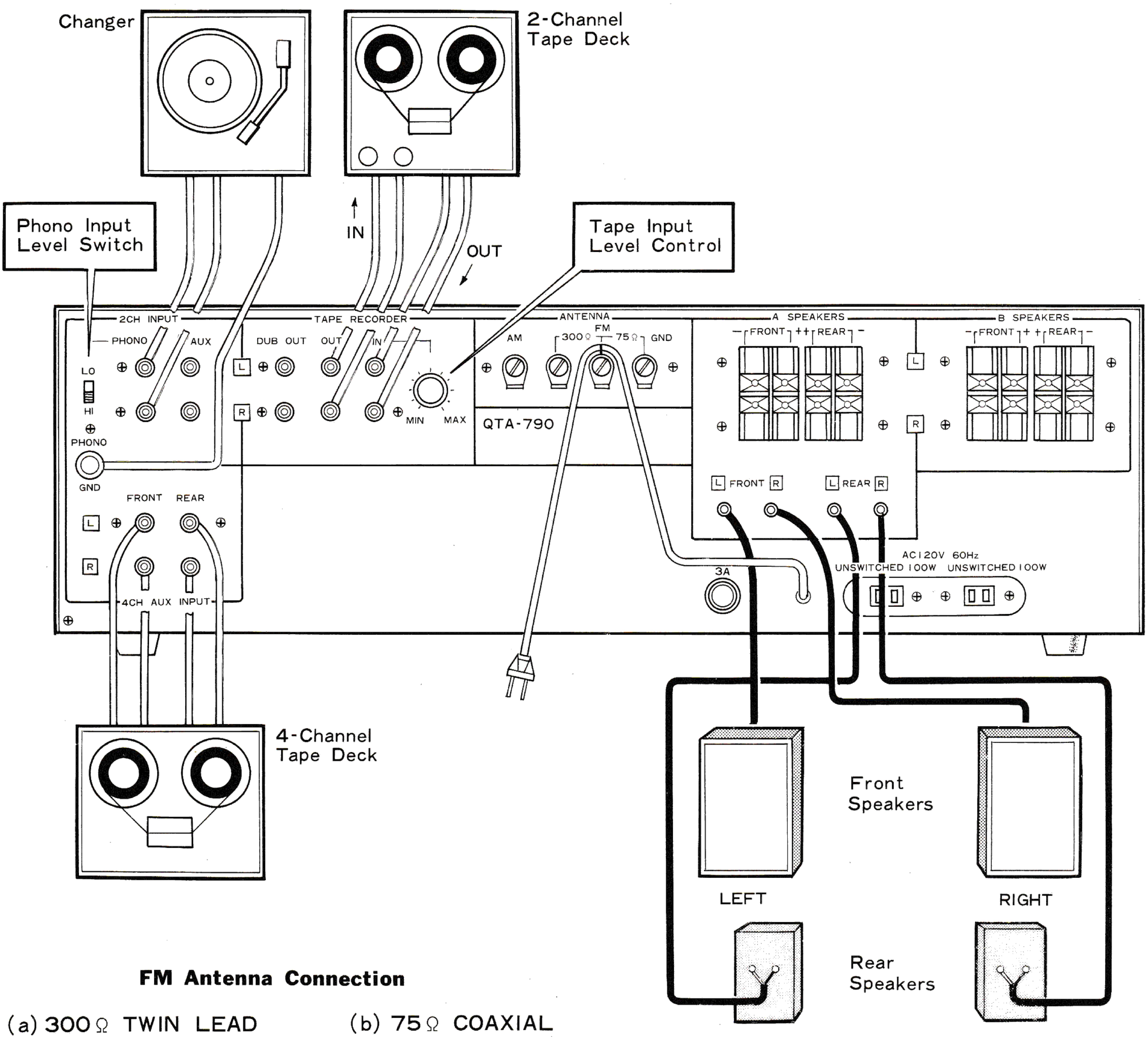
Built-in Ferrite AM, Line Cord FM, plus terminals for external antennas.

### POWER REQUIREMENTS:

120 Volts AC, 60 Hz (40 — 400 watts)

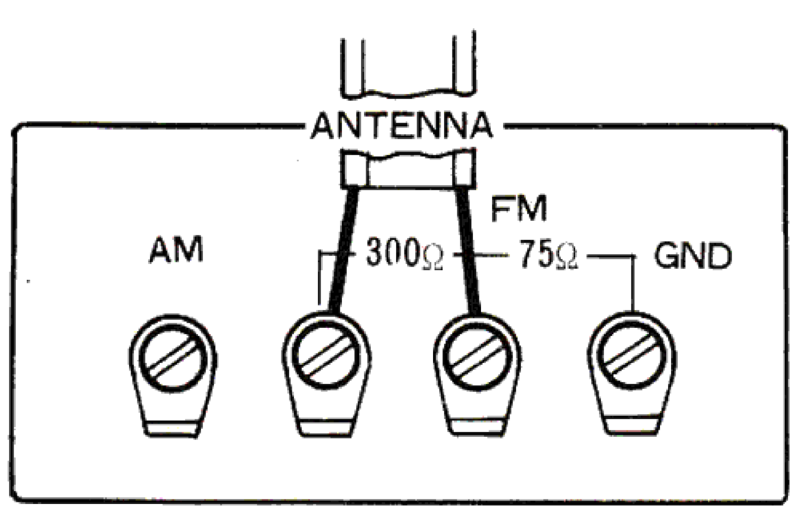
**NOTE:** Before operating for the first time, read this manual; be sure speakers are properly attached; be sure volume is turned down.

# TYPICAL SYSTEM WIRING DIAGRAM

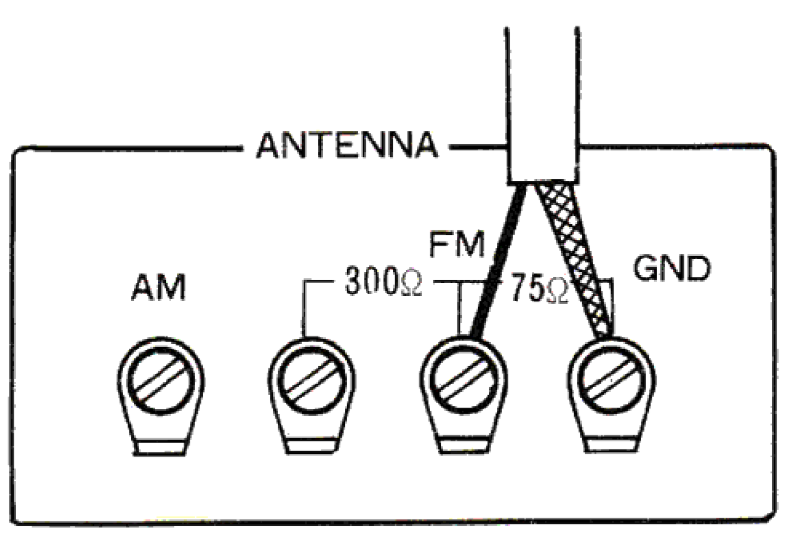



## FM Antenna Connection

(a) 300Ω TWIN LEAD




(b) 75Ω COAXIAL



# HOW TO INSTALL THE QTA-790

The QTA-790 is designed for use with 120 volts, 60 Hz (cycle) AC power. Do **not** connect the power cord or turn on the receiver until all connections for your system have been made.

## 1. Connecting the "A" speakers

Position the four speakers in your listening room as shown in the system diagram. (IMPORTANT: If you intend to use only **two** "A" speakers for conventional 2-channel stereo, position, connect and phase them as if they were the **front** pair in the following instructions).

Place the **front** pair of speakers along the **front** wall (or on a shelf on the wall) **facing** your listening position. (Note: the terms "front" and "rear" and "left"and "right" refer to speaker locations as viewed from your listening position).

Place the **rear** pair of speakers along the **rear** wall (or shelf on a wall), **facing your back** when seated in the listening position.

Typically, when selecting speakers, you should have 2 matched pairs of speakers — all identical in quality and performance. To assure maximum benefit from discrete 4-channel sound, each amplifying channel and speaker should be of equivalent quality. With encoded or matrix sound sources (anything other than discrete 4-channel program material), the Rear speakers need not be of the very finest quality to appreciate to the fullest extent this form of 4-channel sound.

In any case, we strongly recommend that you obtain the finest quality speaker systems you can afford. Your Radio Shack store has a complete line of speaker systems.

Speaker connections are most easily made by using audio cables which terminate with phono plugs. Simply connect the phono plugs as shown in the system diagram. If phono cables are not used, connect speakers to the spring-type terminals using any 2-conductor wire such as "zip-cord", which is color-coded for convenient phasing of the speakers. These terminals are arranged in four pairs, one pair per speaker. Connect the (+) terminal of the left-front speaker to the Left-FRONT "orange" spring-terminals of the QTA-790 by pressing the tab and inserting about 1/4" of bare wire into the open jaw of the terminal, and then releasing the tab to grip the bare wire in the jaw. Repeat the process for the (—) "black" terminals. Continue the process for right-front and left-rear and right-rear speakers. Take every care to observe correct polarity matching, i.e., (+) or red on the speakers to the orange spring-terminals of the QTA-790 and (—) or common (also identified as "COM", "GND" "C" or "G") to the black spring-terminals of the QTA-790. It is vital that you observe correct speaker wiring polarity; this is termed "speaker phasing". Improper phasing will result in degrading of low frequency components in the sound.

## 2. Connecting the "B" speakers

An additional pair of front and rear speakers can be connected to the QTA-790 for operation in a separate room. Connect these speakers to the B SPEAKERS terminals in the same manner as described above.

NOTE: If the "A" speakers and the "B" speakers are to be operated simultaneously, the impedance of the "A" and "B" speakers should be 8 ohms or more.

## 3. Connecting an Antenna

For most metropolitan areas, you will obtain suitable reception of both AM and FM/FM Stereo signals without the addition of external antennas.

The built-in AM Antenna assures reception of all local AM stations. In many cases the Line Cord antenna will be suitable for FM reception (spade lug fastened under the FM screw terminal as shown).

For reception of distant AM stations, mount an external antenna (use 50 feet of wire or more) outside and connect a wire between this outside antenna and the AM antenna screw. Or, obtain a standard AM/Short-wave Antenna from your Radio Shack store (Catalog Number 278-1373 or 278-758).

For best FM reception, use a simple Dipole antenna or an external FM antenna such as Radio Shack Catalog Number 15-546, 15-1635 or 15-1636. For proper FM Stereo reception, it is important to have an adequate antenna. Provision is made for either 300 ohm or 75 ohm connections. Be sure to use the appropriate screw terminals.

You also can use your present outside TV antenna if you install a simple, inexpensive "coupler" or "splitter". Stop by at your Radio Shack store for all such accessories.

## 4. Connecting a Record Player

Practical considerations call for a record changer (often called an automatic turntable) to be used instead of a manual player. Use the best you can afford — Realistic, Miracord and Garrard are the preferred brands. Be sure to use a **magnetic-type** cartridge with a diamond stylus. Several excellent cartridges are offerred by Realistic/Shure.

Every record player includes two shielded audio cables for stereo — these take the small currents generated in the cartridge by the mechanical movement of the stylus in the record grooves, and apply these signals to the preamplifier circuit of the

QTA-790. They connect from the record player to the Phono input jacks. These jacks are for use with magnetic-type cartridges only.

Every player also has a line cord to provide AC power to the motor. Plug this into either a wall plug or one of the AC Receptacles on the rear of the Receiver. These AC Receptacles are "unswitched", which means power is always applied to them even when the Receiver is turned "off". This prevents accidental turn-off while the record player is still in the operating mode.

Typically there is one other wire coming from a record player. It is usually green and has either a bare wire end or a small spade lug connector on the end. It is the Ground wire and is incorporated to prevent hum. Connect this wire to the Ground screw on the back of the Receiver.

A special Hi-Low phono level switch is provided on the QTA-790 to let you match the output level of the cartridge to that of AM or FM, thus avoiding sudden "blasting" when switching from AM or FM to Phono or Aux. Set this switch as appropriate during operation.

## 5. Connecting A Four-Channel Tape Deck

The QTA-790 has inputs for both 4-channel and 2-channel tape decks. Connections for a 4-channel deck (either open-reel type or "Q8" cartridge-types may be used) are made to the 4CH Aux (Front and Rear) jacks as shown in the system diagram, using two pairs of shielded audio cables with phono plugs. Plug the deck's AC cord into the wall or a QTA-790 AC convenience outlet. The Aux input is discrete 4-channel. Each of the 4 inputs will be heard only through the speaker of the same channel (discrete 4-channel).

## 6. Connecting A 2-Channel Tape Deck or Recorder

The system diagram shows how a conventional 2-channel stereo tape record/playback deck (cassette, 8-track cartridge or open-reel type) is connected for both recording and playback. Connect the Tape-Out jacks of the QTA-790 to the recording inputs of the tape deck, using shielded audio cables terminating in phono plugs. Connect the two playback outputs on the tape deck to the Tape-In jacks on the QTA-790, using the same type of audio cables.

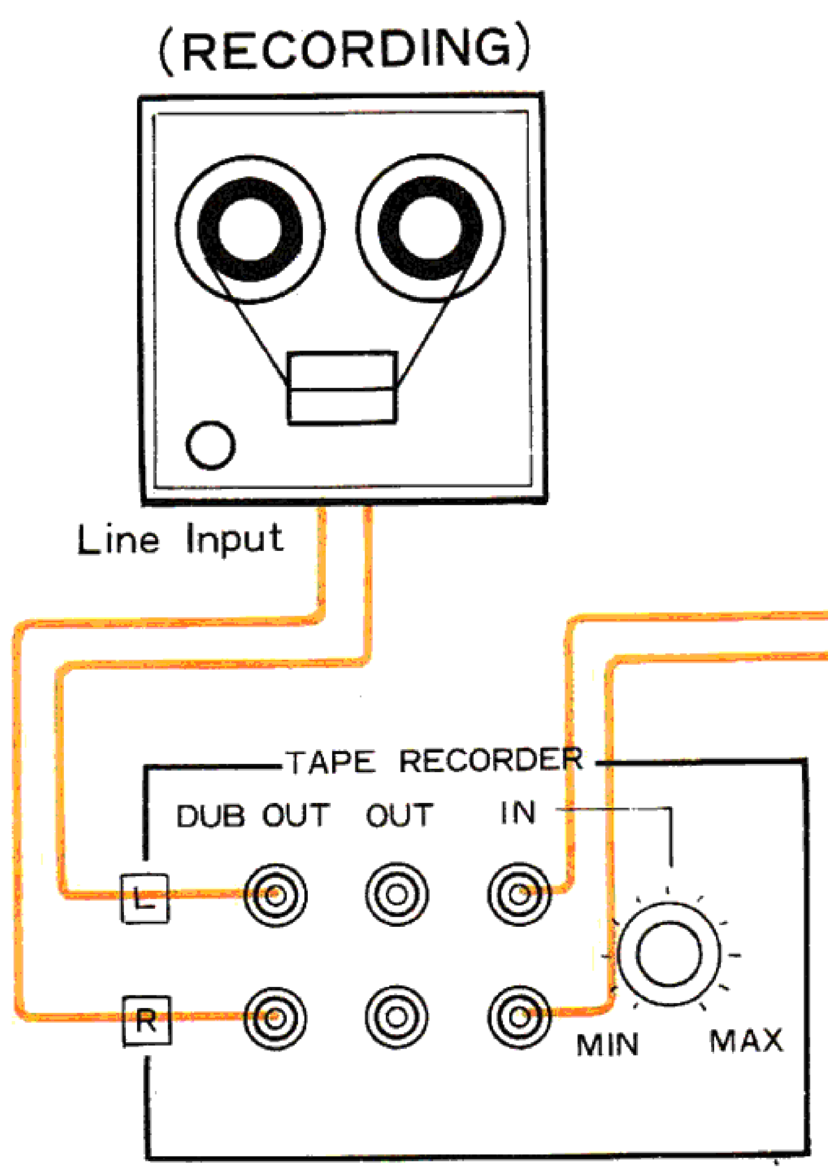
A TAPE INPUT LEVEL CONTROL is provided on the QTA-790 to balance the output level of the tape deck to that of the Phono and Aux input, thus avoiding sudden "blasting" when switching programs. Turn it toward MIN if the tape deck output level is stronger than that of Phono and Aux, and toward MAX if the reverse is the case. Adjust for proper matching of output levels during operation.

With the QTA-790, you can make a copy of a tape recording from one tape deck to another (tape dubbing). Connect the playback outputs of the first tape deck to the TAPE IN jacks (see rear panel) and the recording inputs of the second tape deck to the receiver's DUB OUT jacks. Operate the first tape deck in playback mode, and the second tape deck in recording mode. The TAPE MON switch of the QTA-790 (front panel) should be depressed and locked "in" for tape dubbing operations.

AM, FM, Phono or Aux program sources can also be recorded simultaneously into two tape decks with the QTA-790. In this case the TAPE MON switch should be in the "out" position. This provides identical signals at DUB OUT and TAPE OUT jacks, which can be fed to the two tape decks to make a pair of recordings at one time.

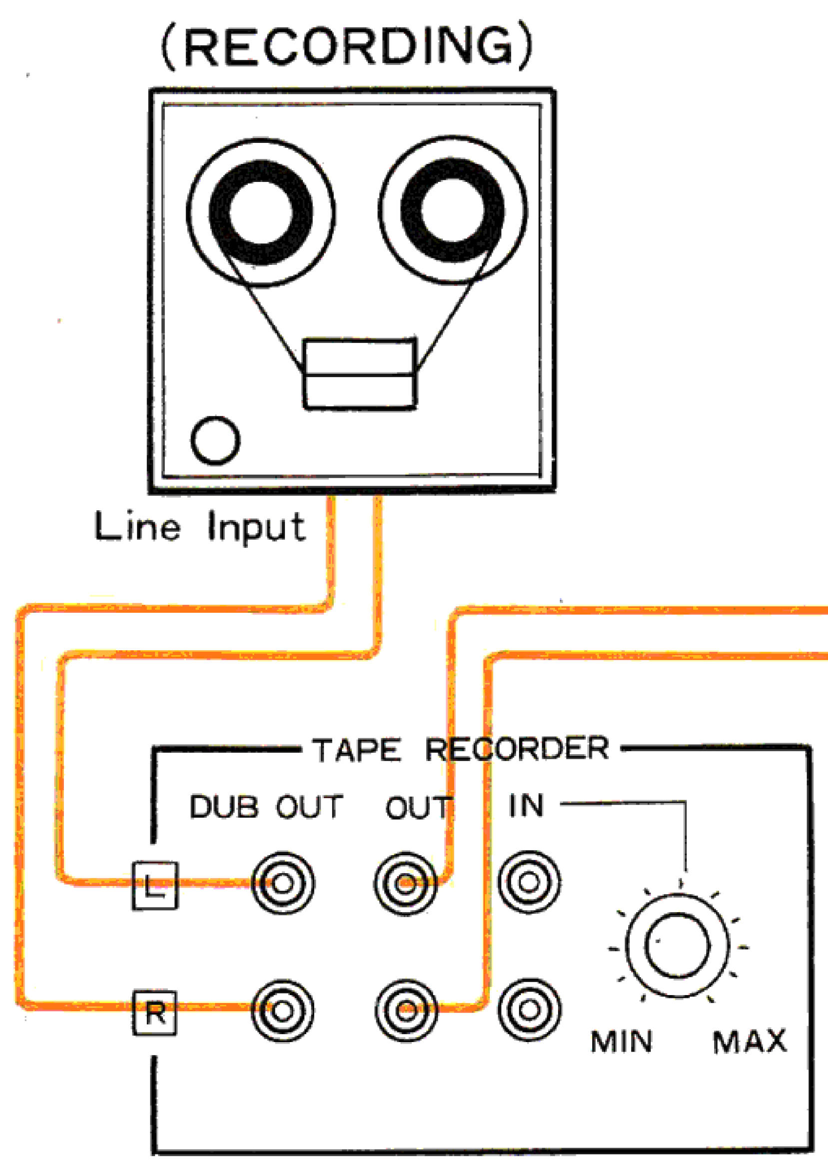
## 7. Connecting Auxiliary Equipment

If you are going to use an auxiliary input signal (another tuner, radio, TV sound, etc.), connect it to the 2CH AUX INPUT jacks. If you use a record player with ceramic or crystal cartridge, connect its cables to the 2CH AUX INPUT jacks.




Note:
The TAPE MON switch should be depressed and locked "in".

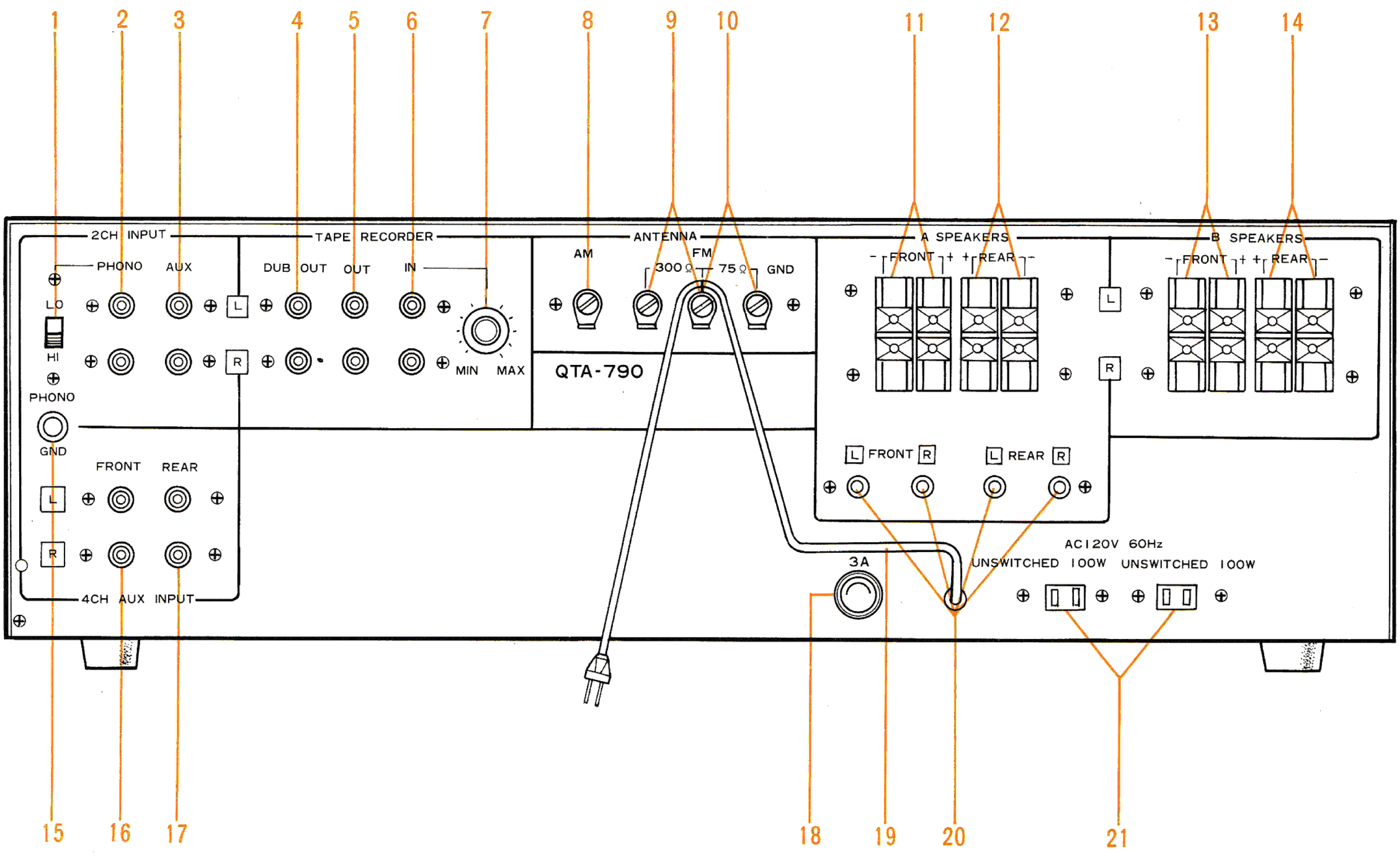
**Connections for Tape Dubbing.**




Note:
The TAPE MON switch should be in extended "out".

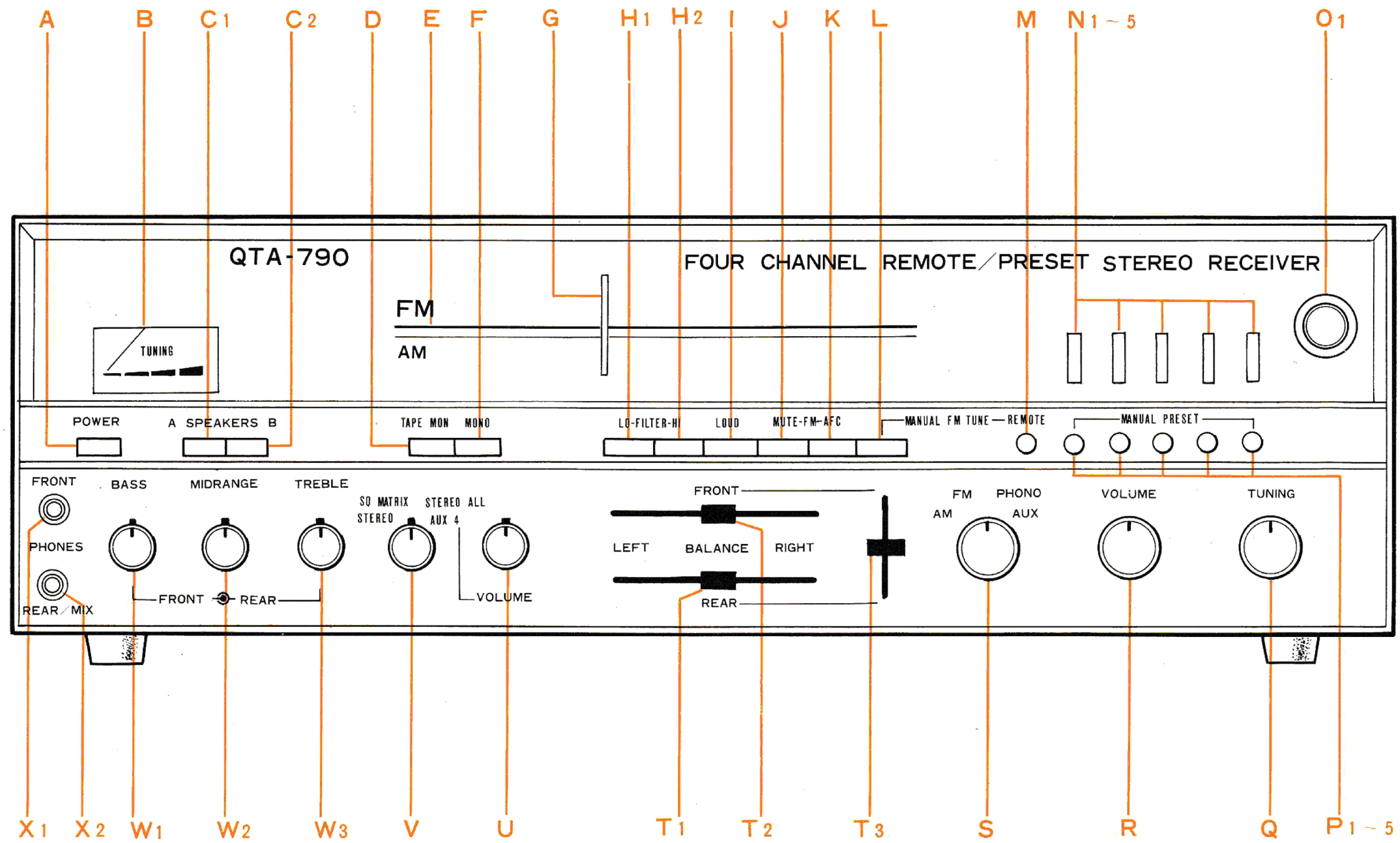
**Connections for Simultaneous Recording with Two Tape Recorders.**

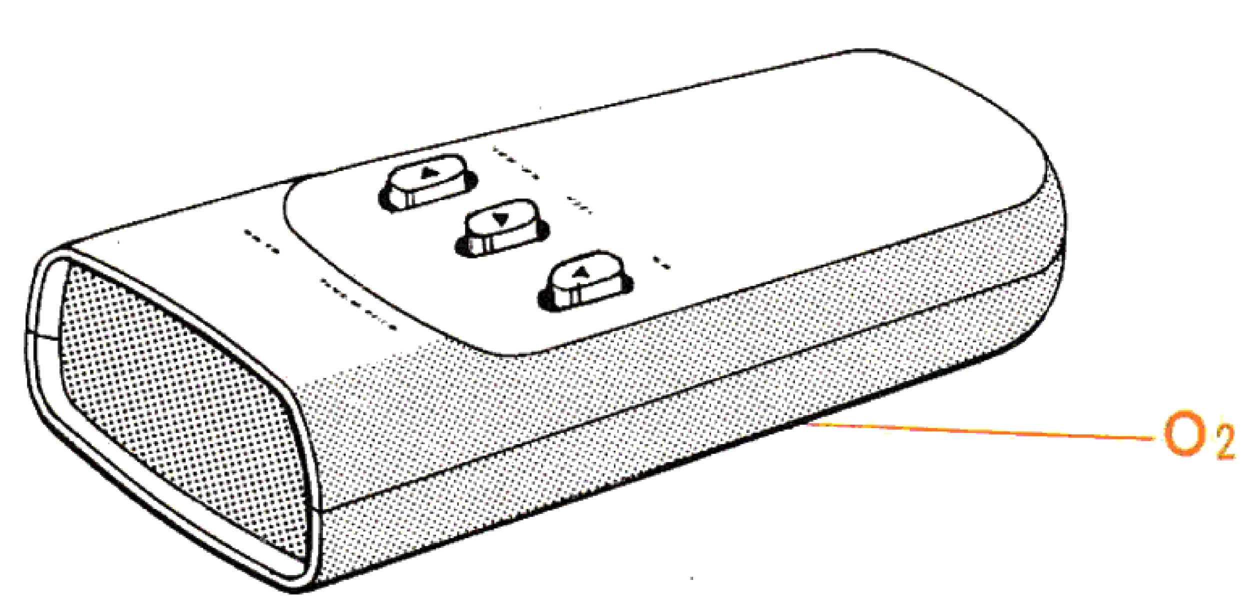
# REAR PANEL INPUTS AND OUTPUTS:IDENTITY AND LOCATION




1– Phono Input Level Switch
2– Magnetic PHONO input jacks
3– AUXiliary input jacks for 2-channel source
4– TAPE DUBBING jacks
5– TAPE OUT (for making Tape Recording)
6– TAPE IN (for Tape Monitoring or playing)
7– Tape Input Level Control
8– Screw terminal for external AM Antenna
9– Screw terminals for external 300Ω FM Antenna
10– Screw terminals for external 75Ω FM Antenna
11– Spring terminals for "A" FRONT Speaker pair (right and left)
12– Spring terminals for "A" REAR Speaker pair (right and left)
13– Spring terminals for "B" FRONT Speaker pair (right and left)
14– Spring terminals for "B" REAR Speaker pair (right and left)
15– Ground screw for connecting ground lead of changer
16– AUXiliary input jacks for Front (left and right)
17– AUXiliary input jacks for Rear (left and right)
18– Main Fuse (3 amp/125V)
19– AC Line cord for 120 volts, 60 Hz AC Power, FM Line Cord Antenna
20– RCA-type phono jacks for Front and Rear (right and left) Speaker pairs when utilizing phono-plugs
21– AC Receptacles (unswitched) for changer or deck

# FRONT PANEL CONTROLS:IDENTITY AND LOCATION




A— POWER On-Off Switch
B— Illuminated FM-AM Signal Strength Tuning Meter
C1— "A" SPEAKERS Switch
C2— "B" SPEAKERS Switch
D— TAPE MONitor Switch
E— Illuminated FM-AM Slide-Rule Dial
F— MONO Switch
G— Illuminated FM-AM Dial Pointer
H1— LOW FILTER Switch
H2— HIgh FILTER Switch
I— LOUDness Switch
J— FM MUTING Switch
K— Automatic Frequency Control Switch
L— MANUAL FM Tuning Switch
M— REMOTE Switch
N1~5— Dial Scale for Preset Tuning
O1— Remote Control Receiving Transducer
O2— Remote Control Box
P1~5— MANUAL PRESET Tuning Pushbutton
Q— FM-AM TUNING Knob
R— Main VOLUME Control
S— Input SELECTOR Switch

T1— REAR Balance Control (Left/Right)
T2— FRONT Balance Control (Left/Right)
T3— Front/Rear Balance Control
U— VOLUME Control for Discrete 4-Channel (AUX 4 INPUT)
V— MODE Switch
W1— BASS Tone Control (Front/Rear)
W2— MIDRANGE Tone Control (Front/Rear)
W3— TREBLE Tone Control (Front/Rear)
X1— Headphone Jack for FRONT
X2— Headphone Jack for REAR/MIX (Front and Rear)

## PRESETTING THE CONTROLS BEFORE OPERATION

Before turning on your Receiver, all system connections should be completed as outlined previously. This is particularly true of the speakers; not only be sure they are connected, but also check to be sure no wire strands of the interconnecting cables touch between adjacent speaker terminals connections.

The normal position for all controls is as follows (before turning on the system):

**Pushbuttons**
Press in SPEAKERS "A" and/or "B" (depending on which speakers you want operative); leave all other pushbuttons in the "out" position.

**Bass, Midrange and Treble Controls**
Set both "Front" and "Rear" portions of these concentric, clutch-type controls to the "12 o'clock" (center) position.

**Balance Controls**
Seat each of these controls to the center detent position.

**Volume Control**
Set VOLUME at about 9 o'clock position (1/4 turn).

## OPERATING THE QTA-790

POWER is a pushbutton. Push – it's ON. Push again – it's OFF. Most Receivers incorporate the AC power switch as a part of the Volume control. By removing this function from the Volume control, you can leave the Volume control at the desired setting when turning the Receiver "off". A solid feature – not a gadget!

### PROGRAM SELECTOR switch

The 4-position Selector switch (AM, FM, PHONO, AUX) determines the signal source. AM is for AM radio; FM is for FM radio; PHONO is for phono input; and AUX for auxiliary input of 2-channel stereo material. This switch is deactivated when the Mode switch (see below) is set to AUX 4 position.

### MODE switch

MODE determines the mode of operation of the entire receiver (STEREO, SQ MATRIX, STEREO ALL, AUX 4).

STEREO position provides conventional 2-channel stereo from the front speakers only. There is no sound from the rear speakers.

SQ MATRIX position activates the SQ Decoder. This means that any 2-channel input will pass through the decoder and produce 4-channel sound through all four speakers(front and rear). Use this position to play SQ encoded records, tapes or FM broadcasts. It can also be used to enhance any stereo material by decoding the ambience found in most stereo programs and directing it to the rear speakers. If a stereo program produces noise in the rear channels, switch back to STEREO.

STEREO ALL position produces conventional 2-channel stereo from both the front and rear speakers. The front left and rear left speakers will reproduce the left stereo channel and the right front and rear speakers will reproduce the right stereo channel.

AUX 4 position is used for the reproduction of 4-channel discrete program material. It must be noted that when this position is used, the small VOLUME knob immediately to the right should be used for level control (the main VOLUME control does not function for AUX 4). This position also deactivates the Input Selector Switch, as well as the TAPE MON, MONO and LOUD (Loudness) buttons.

### TONE controls

BASS, MIDRANGE and TREBLE adjust the tone response of all four amplifier channels. Each of these controls is a dual, clutch-type control; the large outer knob controls the rear speakers tone, and the smaller center knob controls the front speakers tone. They are clutched so that both will move together or, by holding either the outer or the center knob, the other may be moved to make adjustments of the front or rear speaker tones separately. Each knob affects both left and right channels equally.

Normally the front and rear speakers should operate with the same quality of sound, so both left and right controls should be adjusted together. If the front and rear speakers are not identical or room acoustics require it, the tone of the front and rear speakers may be adjusted separately as explained above.

Always start with the controls set "flat," that is, with the markers on the knobs in the "12 o'clock" position. Then adjust them gradually if you feel the tonal quality of the program needs to be altered. Rotating the knobs to the left (counterclockwise) will decrease bass, midrange or treble. Turning them to the right (clockwise) accentuates the respective tonal quality.

### BALANCE controls

There are three Balance controls, two that slide horizontally, and one that slides vertically.

The two BALANCE controls which slide horizontally control the balance levels of the left and right speakers. The upper slide control balances the FRONT speakers. The lower slide control balances the REAR speakers. When set at the middle position, both speakers (left and right) will operate with the same power. If the speakers are not identical, or the room acoustics require it, the relative volume of each speaker may be adjusted with these controls. Push the control knob to the right to decrease the volume of the left speaker and keep the right speaker at the same volume. Push the control to the left to decrease the volume of the right speaker and keep the left speaker at the same volume.

The vertically oriented Balance control sets the balance between the front and rear speakers. In the middle position, all four speakers will operate with the same power. If the speakers are different or the room acoustics require it, the relative volume between the front and rear speakers can be adjusted with this control. Push the control knob UP to decrease the volume of the rear speakers and keep the front speakers at the same volume. Push the control DOWN to decrease the volume of the front speakers and keep the rear speakers at the same volume.

## VOLUME controls

The large main VOLUME knob controls the levels of all four channel speakers simultaneously. Volume is at minimum in the full counterclockwise position. Any clockwise rotation will increase the volume level. Volume can also be adjusted with the Remote Control unit.

The smaller VOLUME knob (at the right of the AUX 4 position of the Mode switch), controls the volume of all four channels simultaneously when the AUX 4 position is used to reproduce discrete four-channel program sources (through the AUX 4 INPUTS).

## LOUDNESS switch

LOUD (loudness) push-button switch introduces a special low-frequency emphasis into the amplifier circuitry. Loudness enhances the sound quality at low listening levels by boosting bass frequencies which the human ear does not hear as well as the higher frequencies. Use the switch position which provides the most pleasing sound reproduction.

## SPEAKERS switches

Pushbuttons "A" for A speakers, and "B" for B speakers, when depressed, turn on all speakers. These switches (along with all the rectangular pushbutton switches on both sides, excluding MANUAL FM TUNE switch) operate in the following manner: when depressed they lock in the operating "on" position. When pushed again they pop out to the "off" position.

When both A and B speaker buttons are "out" all the speakers will be off. To turn only the A speakers on, press A button, and to turn only the B speakers on, press the B button. When both A and B buttons are pressed, both A and B speakers will be on.

## TAPE MONITOR switch

TAPE MON push-button switch is normally left in the "off" or "out" position; its use is limited to tape recorders and decks. If you are not using a tape recorder/deck, pressing this button in will silence the entire Receiver. Use this switch only when operating your Tape Recorder/Deck (press in); otherwise leave in the "out" position.

## MONO switch

MONO switch determines the operation of the amplifier section whether it functions as a stereo or mono amplifier. In the "out" position stereo is operative; press "in" for MONO operation (all 4 speakers will be reproducing the same sounds). This button is especially useful when receiving weak FM stereo signals (resulting in noise and flutter in the stereo separation) – in such cases, press this button in for normal Mono listening.

## LO (Low) and HI (High) FILTER switches

Press the LO FILTER to reduce low frequency noise such as hum, turntable rumble, etc.

Press the HI FILTER button to reduce high frequency noise such as tape hiss, record scratch, etc.

The above buttons should normally be left in the "out" position when noise reduction measures are not required.

## FM MUTE (Muting) switch

Press this button to silence inter-station noise on the FM band, (but it may also eliminate weak and/or distant station signals along with the inter-station noise). Therefore, leave this push button switch in the "out" position for the reception of weak and distant stations.

## FM AFC switch

Press this button to activate the Automatic Frequency Control (AFC) circuit. It should be depressed after an FM station has been correctly tuned in as indicated by the maximum deflection of the tuning meter. The AFC circuit will then automatically keep the station locked in-tune, thus assuring stable FM reception. This circuit functions only during FM operation.

## PHONES jacks

Phones Jacks are for private listening with stereo headphones. For 4-channel listening, use Catalog Number 33-1016; for 2-channel stereo, use Catalog

Number 33-1003 or 33-1002. When using 2-channel stereo phones, plug them into "Front" jack. For 4-channel, plug the "front" plug into "Front" and the "rear" plug into "Rear". Connecting 2-channel stereo headphones into "Rear" will produce a mixed signal of "front" and "rear" signals.

When listening to headphones, you can turn the speakers off by leaving SPEAKERS switches "out". With these SPEAKERS switches "in", the speakers will be producing sound, which may distract others or interfere with the unique realism achieved with headphone listening.

## TUNING

The QTA-790 incorporates three methods of tuning — regular AM and FM manual tuning; pre-set pushbutton FM station selection; and, remote control pre-set FM station selection from your listening position (no need to get up from your listening position to change stations).

### 1. Manual Tuning

A. Set the Selector switch to AM or FM.
B. Press the round REMOTE pushbutton, and check whether the dial pointer of the main dial is lit. If it is not illuminated, press the rectangular MANUAL FM TUNE button. The dial pointer should then light up. (Ignore this paragraph for AM operation).
C. The rectangular AFC button should be in the "out" position. (Also not applicable for AM operation).
D. Tune in the desired station with the TUNING knob. Maximum needle deflection of the Tuning Meter indicates correct tuning for both AM and FM.
E. Depress the AFC switch for FM operation after a station has been tuned in.

Note: When a weak, noisy FM stereo signal is encountered from a distant station which you may wish to receive, press the MONO switch "in" for better reception (but with loss of stereo effect).

If a Stereo FM signal is being received, the STEREO light will automatically come on. When receiving Stereo FM, and the MODE switch is set to "Stereo" and the MONO switch is in the "out" position (for stereo operation), the Receiver will automatically function as a Stereo Receiver. If the FM signal is monaural, the Receiver will automatically operate as a monaural Receiver regardless of the other switch settings. This is true for all forms of tuning.

### 2. MANUAL PRESET Pushbuttons for FM Station Selection

When the round, MANUAL PRESET pushbuttons 1 — 5 have been preset to any desired five FM stations, these stations can be tuned in by merely pressing the respective preset button.
Presetting those buttons is accomplished as follows.

A. Set the Selector Switch to FM.
B. Set the AFC button to the "out" position.
C. Press one of the five MANUAL PRESET buttons. The dial scale above that button will light up. Now tune in a desired FM station by turning the depressed button until maximum meter deflection is obtained.
D. In the same manner, the other four MANUAL PRESET buttons can be pressed one at a time and preset to other desired FM stations. Pressing any one button will automatically eject any previously pressed button.

When you use these buttons to select FM stations, press AFC switch in for stable FM reception.

### 3. REMOTE CONTROL tuning

After five FM stations have been preset as described above, you can select any one of them by remote control using the REMOTE CONTROL unit supplied with the receiver. This can be done from your listening position without getting up (if the receiver is already set for FM operation and the REMOTE button is locked in the "in" position)

If the FM button on the Remote Control unit is now pressed, the station preset with the first MANUAL PRESET button will be tuned in, and the dial pointer on the vertical scale above it will light up. If the Remote Control FM button is pushed again, the station preset with the second button will be tuned in. In the same manner, the third, fourth and fifth preset FM stations will come in, each time the Remote Control FM button is pushed, and this will also be indicated visually by the illumination of the pointer on the vertical dial scales.

Pushing the Remote Control FM button after the fifth station has been tuned in, shifts the receiver operation to the manual tuning condition. This means that the main horizontal dial pointer now indicates the FM frequency that will be received. Thus, a total of six FM stations can be selected by remote control if five are preset with the buttons and the sixth is tuned in beforehand with the main tuning knob.

To return to Manual tuning, be sure the round REMOTE button is pressed in. If the main dial pointer is lit, proceed with normal manual tuning; if the pointer is not lit, press the rectangular MANUAL FM TUNE button (this releases the internal remote control circuitry and permits manual FM tuning).

## REMOTE CONTROL

Two functions can be accomplished by remote control, using the REMOTE CONTROL supplied.

One is the selection of FM stations that have been preset with the five MANUAL PRESET pushbuttons.

The other is complete control of the volume level of any program source that is selected with the Selector Switch. This is accomplished with the UP and DOWN buttons on the Remote Control Unit. Pressing the UP button moves the main VOLUME control clockwise and increases volume level. Pressing the DOWN button moves it counterclockwise and decreases volume level.

NOTES:
1. The volume level of discrete program sources selected with the Aux 4 position of the Mode switch cannot be controlled by remote control.
2. Since the remote control unit has directional properties, it should be pointed toward the receiver when it is used. Obstacles which may impede the line of sight should not be placed between the remote control unit and the receiver.
3. If the remote control unit fails to function after prolonged use, replace the battery. Avoid placing objects on top of the remote control unit. They may activate the buttons and dissipate the battery.

# ADDITIONAL COMPONENT OPERATION

## Record Player or Changer

After making all connections as indicated in the system diagram, the operation of a record player thru the Receiver may be controlled in the following manner.

(1) Set SELECTOR switch to "Phono".

(2) Press "Speakers" pushbuttons in accordance with your system arrangement.

(3) Set the "Volume", "Bass", "Midrange", "Treble", and "Balance" controls to their pre-set positions as explained previously.

(4) Set MODE switch as follows (depending on the type of record being played): "SQ Matrix" position will produce four separate channels of sound. Use this position for SQ or "encoded" records. "Stereo" position will produce two separate channels of sound (Left Front and Right Front). "Stereo All" position will provide 2-channel stereo from all four speakers (Left Front & Rear and Right Front & Rear).

(5) For Monaural records, press MONO button "in".

(6) Adjust VOLUME, BASS, MIDRANGE, TREBLE and BALANCE controls as desired for best sound.

NOTE: Set the slide switch on the rear panel (PHONO INPUT LEVEL) to the position which provides an output level most nearly balanced to FM, AM or Aux input signals.

## Tape Recorder, Deck or Player

Your Receiver has provisions for connecting an external tape recorder or tape deck so that you can record any program source to which you are listening and then playback the recording (or any previously recorded tape) through the amplifier at your convenience. (With some specially equipped recorders or decks, your Receiver will also permit you to "monitor" the quality of the taped signal while recording.) If you wish playback only (of commercially pre-recorded tapes), you can connect a tape player (having self-contained pre-amplifiers) instead of the recorder or deck. In any event, the tape unit may be a reel-to-reel, cartridge or cassette type.

NOTE: Set the rear panel Tape Input Level Control to match the input level of your Tape Deck to provide approximately the same level of output as an FM, AM, Phono or AUX signal.

After making all connections as indicated in the system diagram, the operation of a tape recorder, deck or player thru the Receiver can be controlled in the following manner.

## Recording and Monitoring

Use the following instructions as a general guide to recording. The tape unit's Instruction Manual will provide specific recording instructions.

(1) Choose the desired program source with the Receiver's SELECTOR switch. The program you select is automatically connected to the TAPE OUTPUT jacks and so into the recorder. The Receiver's SELECTOR switch is the only Receiver control that has any effect on recording; you can therefore adjust all other controls in the usual manner to suit your listening conditions.

(2) If your tape unit has TRUE tape-monitor facilities (different circuits and heads for recording than for playback) you may monitor the tape, while recording, to compare its sound quality with that of the original program material. This feature permits you to detect and correct any recording errors almost immediately. To monitor, alternate the TAPE MON pushbutton between the out (off) position and depressed (to hear the same material, a fraction of a second later, **as it sounds on tape**). You can repeat this as often as you like, or even keep the switch on (depressed), without affecting or interrupting the recording process in any way.

NOTES:
1. When you've finished recording, remember to set the TAPE MON pushbutton to the "out" (off) position, otherwise any program selected will be silenced.
2. If the MONO switch is set at "IN" position, only monaural signals will be available at the TAPE OUT jacks even though the input may be a 2-

channel stereo signal.

### Playback

To play back a pre-recorded tape, turn the Receiver "on". Then, press in the TAPE MON switch to play back from a Tape Recorder (or player). The MODE and MONO switches affect the tape playback. For SQ or "encoded" tapes, use the "SQ MATRIX" position; for 2-channel stereo tapes use the "Stereo" (or "Stereo All") position; for discrete 4-channel tapes use the "Aux 4" position.

### Auxiliary Program Sources

Any extra 2-channel program sources, a ceramic cartridge changer, another tape deck, etc., can be attached to the 2CH INPUT AUX jacks. Operation of the Receiver is the same as for Phono, except the SELECTOR Switch must be set to "AUX" position.

A 4-channel source such as a Q-8 deck or 4-channel reel-to-reel deck can be connected to the 4CH AUX INPUT jacks. When the MODE switch is set to AUX 4, the Receiver operates as a discrete 4-channel amplifier only — the TAPE MONITOR switch, MONO switch, LOUD (Loudness) switch, the Selector and the main VOLUME control **do not** operate during this mode.

## PLAYBACK OF TWO SOURCES SIMULTANEOUSLY

The 4CH AUX inputs of the QTA-790 are discrete, that is, the input to the 4CH AUX right front jack will only be heard on the right front speaker and so on for all 4 inputs. Because of this, you can connect a stereo source to the front jacks and hear it through the front speakers and another stereo source to the rear jacks and hear it through the rear speakers. By placing the speakers in separate rooms you can play completely different programs in each, such as background music and rock.

There are two alternate ways to do this.

### 1. Using 4CH AUX INPUT Jacks Only

Any two high level sources such as a tuner and a tape deck, or two tape decks, can be connected — one to the "front" 4CH AUX INPUT jacks and the other to the "rear" 4CH AUX INPUT jacks. Set the volume in the first room by using the AUX 4 volume control then, if one room is too loud, use the front/rear balance control to adjust between the two rooms.

### 2. Using a 2CH INPUT and one 4CH AUX INPUT Pair

The other method to play two sources simultaneously allows you to select the front speaker source with the Selector switch (AM, FM, PHONO or AUX) while the rear speaker source is connected to the 4CH AUX "rear" input jacks.

A) Make normal connections for Phono or 2 channel Aux, etc.

B) Connect the high level sources you wish to play — tape deck, tuner, etc. to the 4CH AUX "rear" input jacks.

C) Connect 6" phono-to-phono-plug cables as follows: The TAPE OUT "left" to 4CH AUX front "left" jack and TAPE OUT "right" to 4CH AUX front "right" jack. The rear panel connections are complete.

Note that this specialized hookup does not allow tape recording from the QTA-790 since the TAPE OUT jacks are used.

D) Set the front panel controls as follows: MODE switch to AUX 4, Selector switch to AM, FM, PHONO or AUX. Leave MONO switch in the "out" position.

E) Adjust volume with the small AUX 4 Volume Control

F) Technically what you have done is to select AM, FM, PHONO or AUX 2 sources which automatically feed to the TAPE OUT jacks and bridge the source with the 6" cables back into the QTA-790 4CH AUX front input jacks. The second source comes from the 4CH AUX rear input jacks.

## REPLACING THE AC POWER

WARNING: Do not attempt to remove the cover, there are no user serviceable parts inside this receiver. Refer servicing only to a qualified service technician.

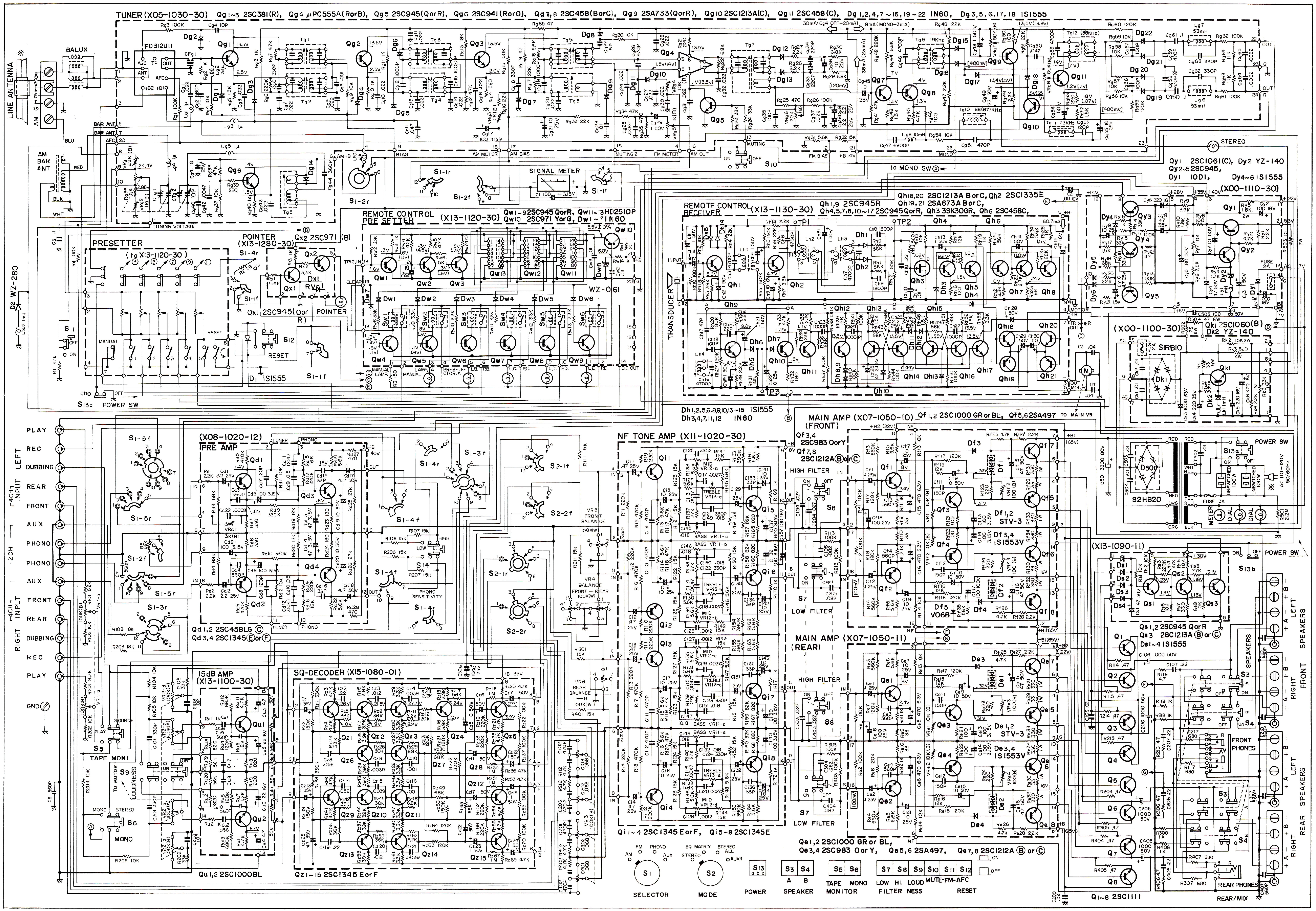
## REPLACING THE AC POWER FUSE

If the pilot light fails to come on, and the receiver is completely inoperative after the POWER button has been pressed, check to make sure the AC cord is plugged into a 120V AC electrical outlet. If this is not the problem, the AC power fuse on the rear panel may be blown. To check the fuse, disconnect the AC cord and unscrew the fuse cap and remove the fuse. The small thin fuse wire within the cartridge should be intact. If it is not, replace the fuse with one of the same rating (3A-250V type), and reinsert into the receiver.

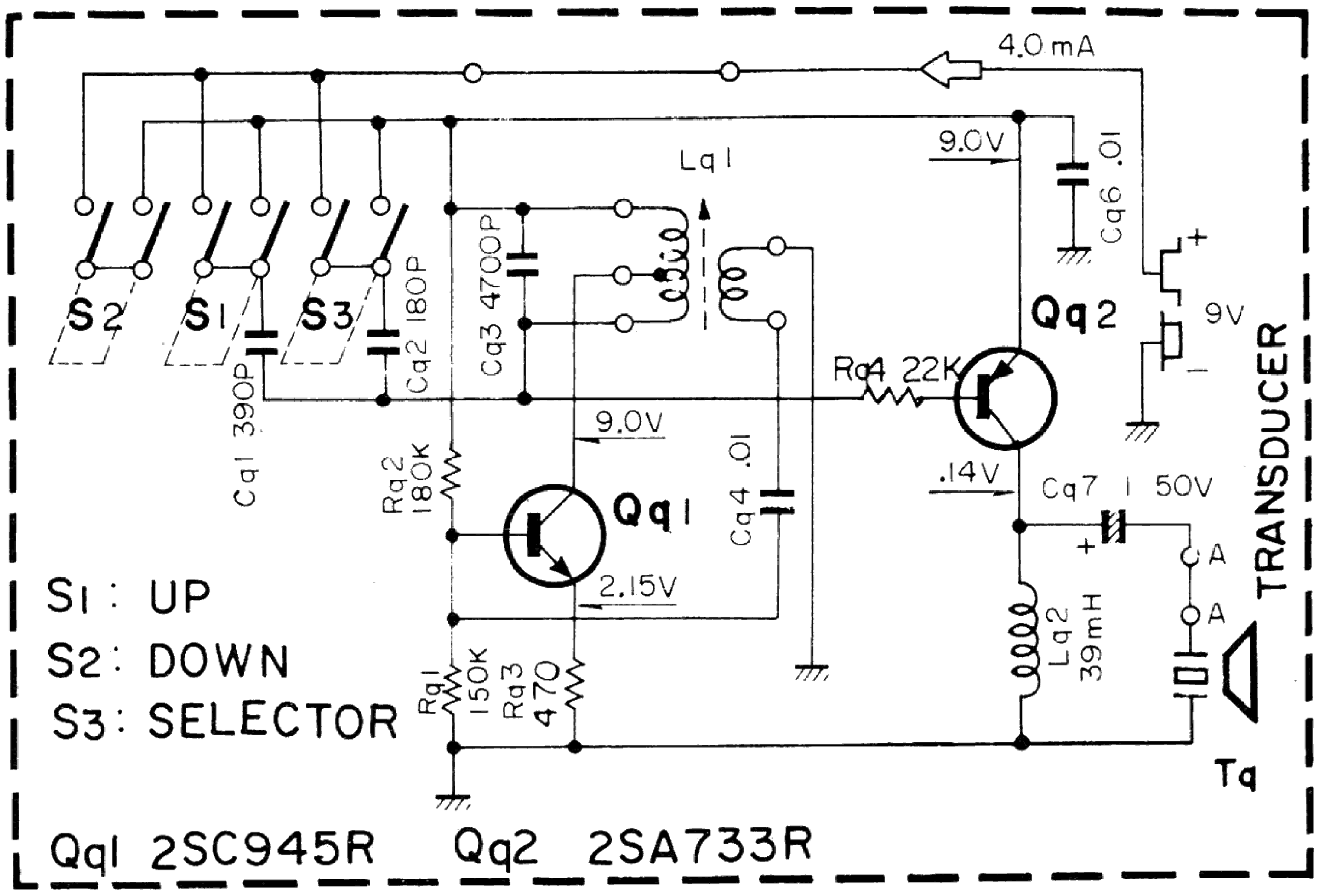
## RETURNING THE UNIT FOR SERVICE

In the event that repair becomes necessary (whether the unit is in or out of warranty), we recommend that you return the unit to the store from which it was purchased. This is the fastest and most efficient means of obtaining service performed by qualified technicians.
In the event a repair cannot be made on the premises, the store manager will advise an alternate handling.

# SCHEMATIC DIAGRAM

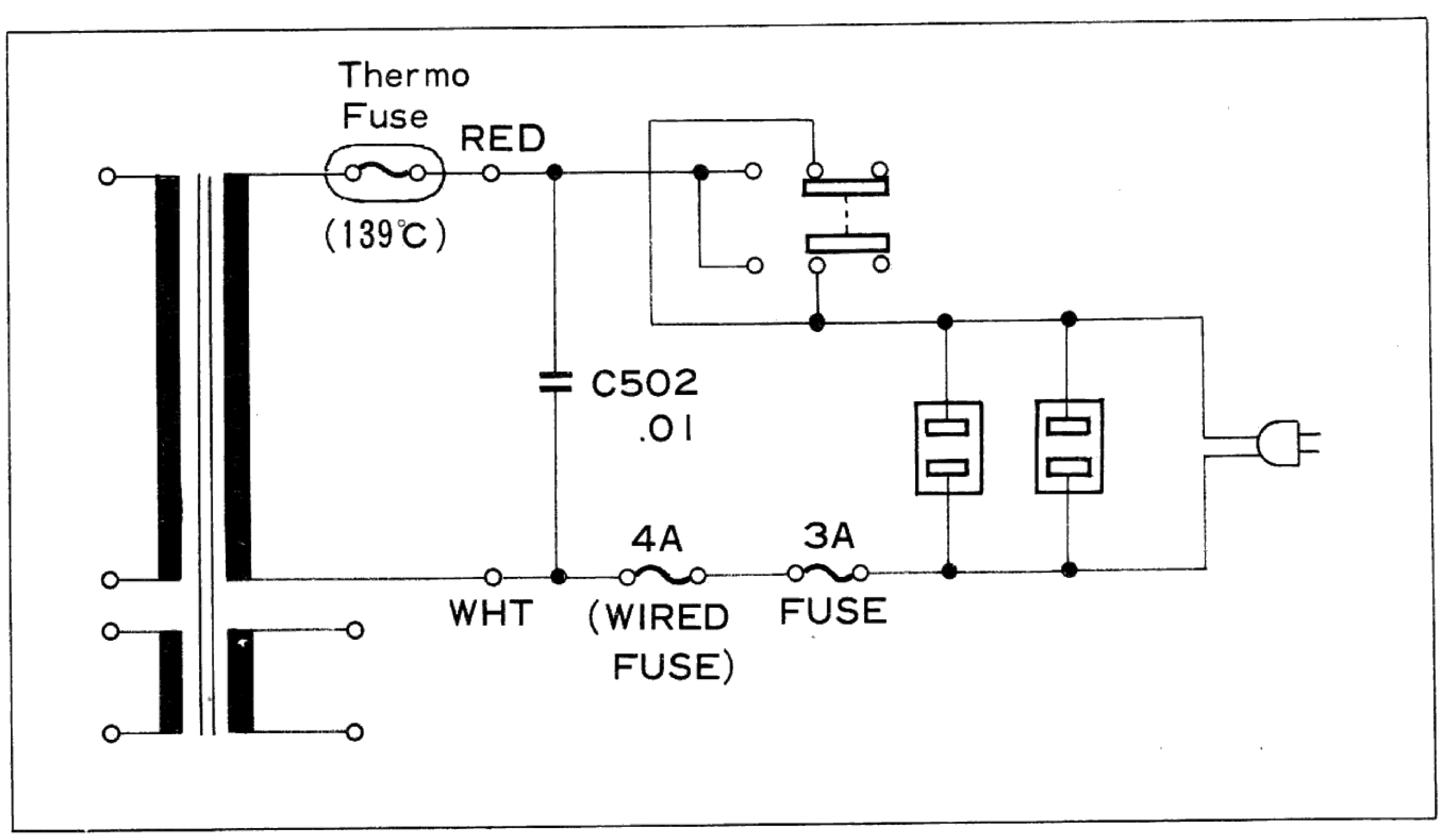


## REMOTE CONTROL TRANSMITTER
## (X13-1140-30)




NOTE: In this schematic diagram, small letters (e, g, h, etc.) are added to the alphabetic designators on the various blocks of the schematic. These are not shown on the actual PCB's.

## ■ For sets sold in Canada only.



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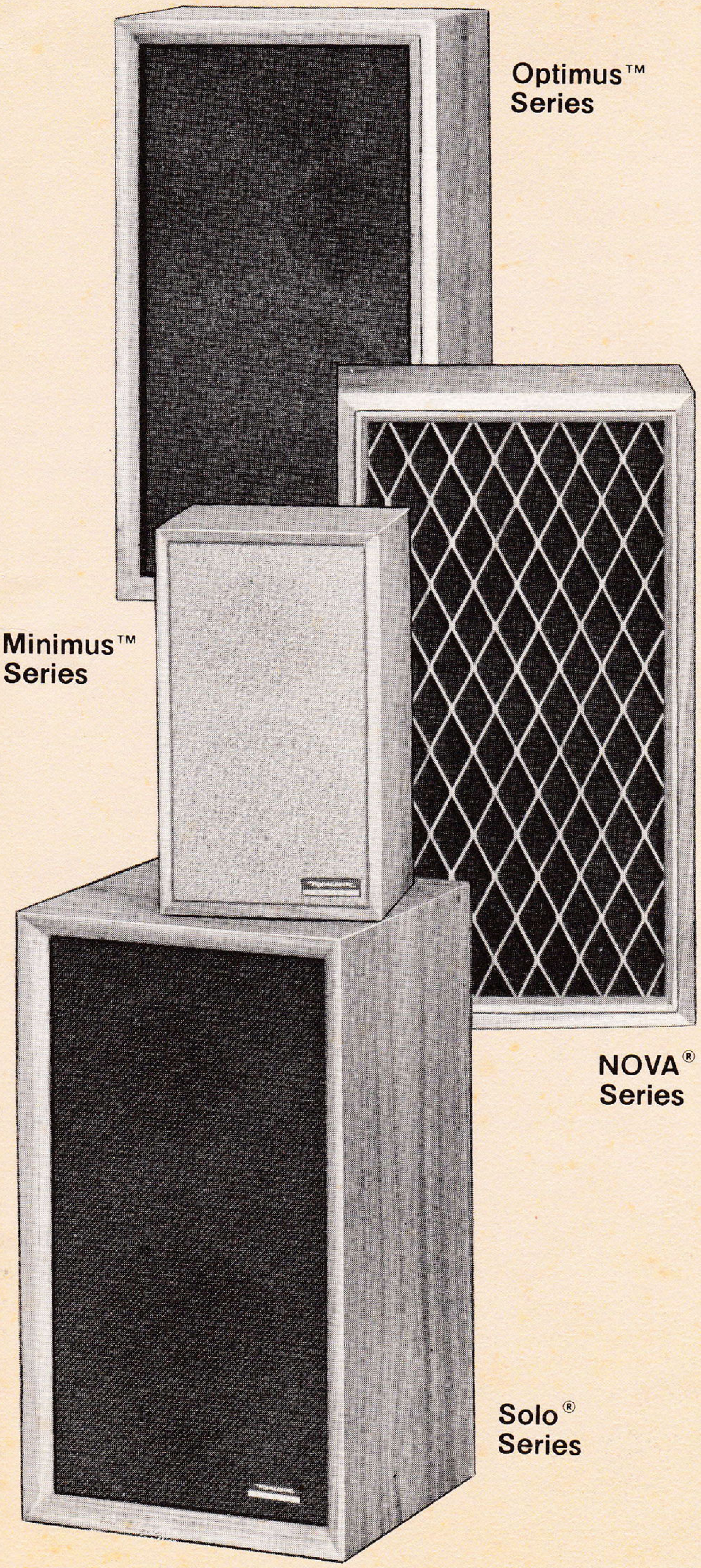


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