PIONEER®

SOLID STATE
AM/FM STEREO RECEIVER

Model

SX-1500TD

CAUTION

Before connecting the line cord to the wall socket, carefully read and follow the instructions described below, to assure the safety of your unit.

- This receiver is set for 240V operation when shipped. If this unit is used in a different line-voltage area, read and follow "LINE VOLTAGE SELECTION AND FUSE" on page 1.
  Be sure that the line voltage setting on your unit agrees with the line voltage in your area and that the fuse installed in your unit is a proper one.

INSTALLATION, OPERATING AND SERVICE MANUAL

Including PARTS LIST, CIRCUIT DIAGRAMS, TROUBLE-SHOOTING AND MOUNTING TEMPLATE.

FW

PIONEER ELECTRONIC CORPORATION

FEATURES

- **HIGH-PERFORMANCE FM TUNER**

  An FET (field-effect transistor) is used in the radio-frequency amplifier to attain a high sensitivity and selectivity. Further, four ICs (integrated circuits) are used for the intermediate-frequency amplifier to eliminate interference and noise.

- **BUILT-IN EXCELLENT FM MPX CIRCUIT**

  This switching circuit having excellent separation and frequency response is built in for reproduction of reality music.

- **BUILT-IN HIGHLY-SENSITIVE FERRITE ANTENNA FOR AM RECEPTION**

  The ferrite antenna provides high-sensitivity reception of AM programs.

- **HIGH-PERFORMANCE DESIGN FOR VERSATILITY**

  In addition to the high power output attained by strictly selected transistors, the versatile stereo receiver permits connection of three loudspeaker systems and two turntables. It is also provided with terminals for tape recording output, center channel output, preamplifier output and power amplifier input.

- **MICROPHONE IS USABLE**

  A microphone can be used by mixing during record play or other performance since an independent microphone amplifier and level control are incorporated.

- **A VARIETY OF ACCESSORIES**

  Accessories include the program lamps that indicate the program being played, the tuning meters vertically arranged for facilitating selection of an FM broadcast program, the loudspeaker selector switch, tape monitor switch, etc., all for enjoyable use of Model SX-1500TD.

- **ELEGANTLY DESIGNED FRONT PANEL**

  Newly designed knobs are uniquely arranged on the silver tone panel.

LINE VOLTAGE SELECTION AND FUSE

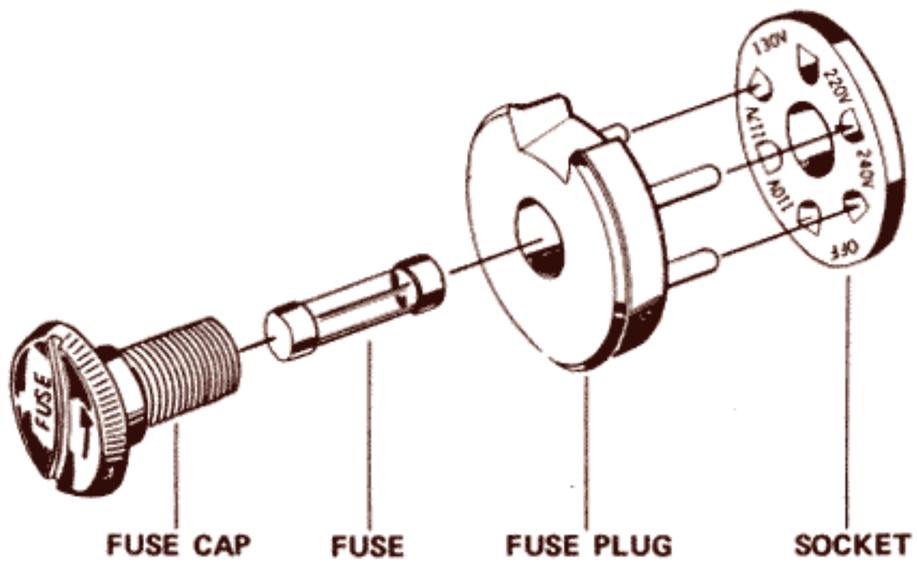
SWITCHING LINE VOLTAGE SETTING AND FUSE

In order to remove the fuse, turn the fuse cap located on the line voltage selector switch in the direction indicated by an arrow. Then remove the fuse plug from the unit. Put the fuse plug back so that the proper line voltage marking can be seen through the cut in the edge of the plug.

Whenever the set position of the selector switch is changed, check the rating of the fuse. A 1.5-ampere fuse is to be used for either 220V or 240V operation and 3-ampere fuse for any of 110V, 117V, or 130V operation. If the rating of the fuse is proper, install the fuse in the fuse cap.

- **REPLACING OF FUSE**

  When the fuse is blown, remove the fuse cap and replace the fuse with a new one.

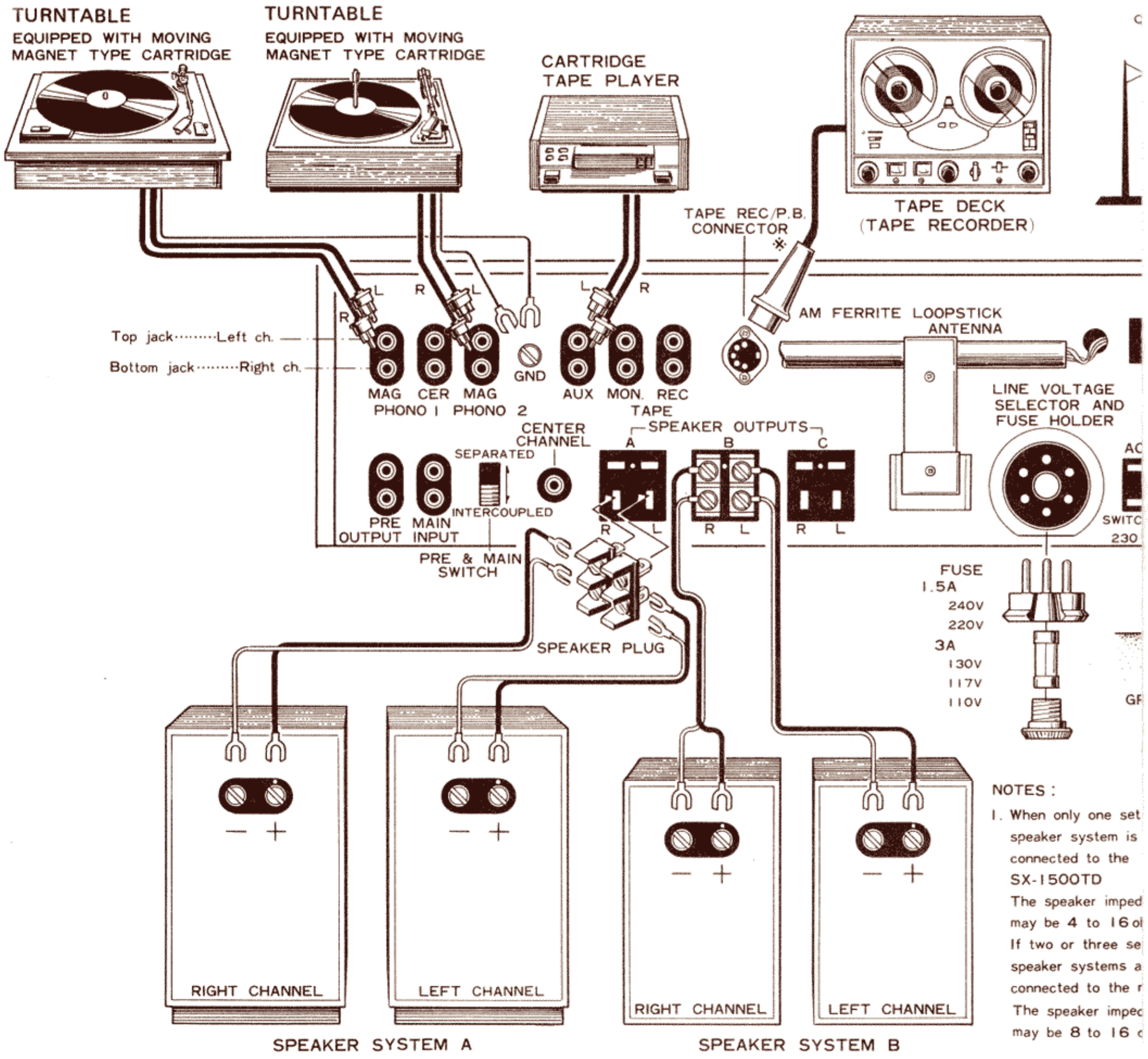


Take off the fuse cap by turning it with a coin, etc. in the direction indicated by the arrow mark.

Fig. 1

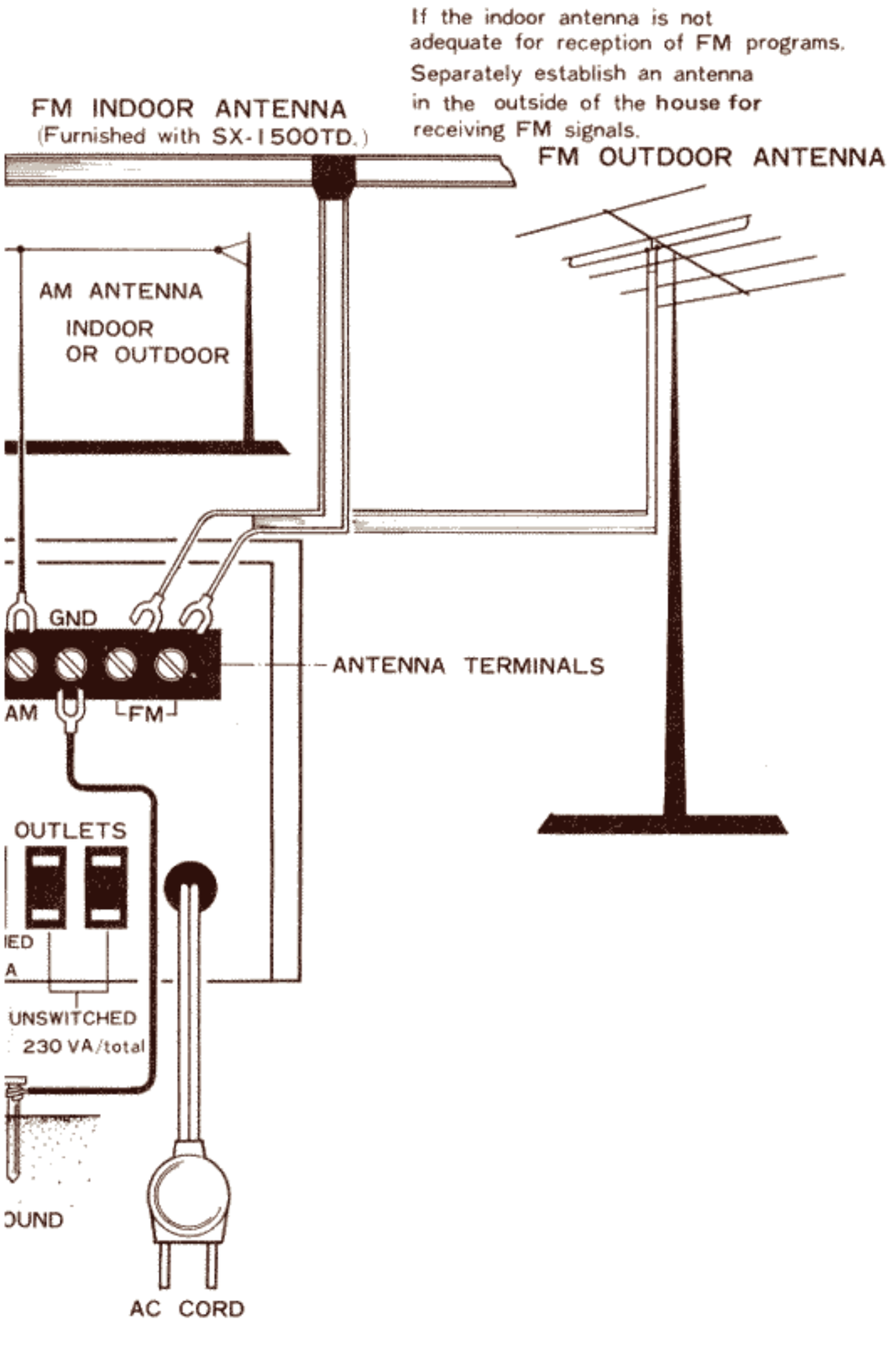
REAR CONNECTIONS

※ NOTE : If the DIN type REC/P.B. CONNECTOR is provided to the corresponding TAPE REC/P.B. CONNECTOR on this receiver, sparate connecting of the TAPE MON. and TAPE REC terminals to the receiver is not needed.



NOTES :

1. When only one set speaker system is connected to the SX-1500TD The speaker imped may be 4 to 16 o If two or three se speaker systems a connected to the r The speaker impec may be 8 to 16 c



of 2. Do not short the SPEAKER OUTPUT terminals.

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Fig. 2

STEREO SYSTEM

The SX-1500TD is a general-purpose stereo amplifier. Connect to it the loudspeaker systems (two to six), turntable, tape recorder, etc., which are separately available.

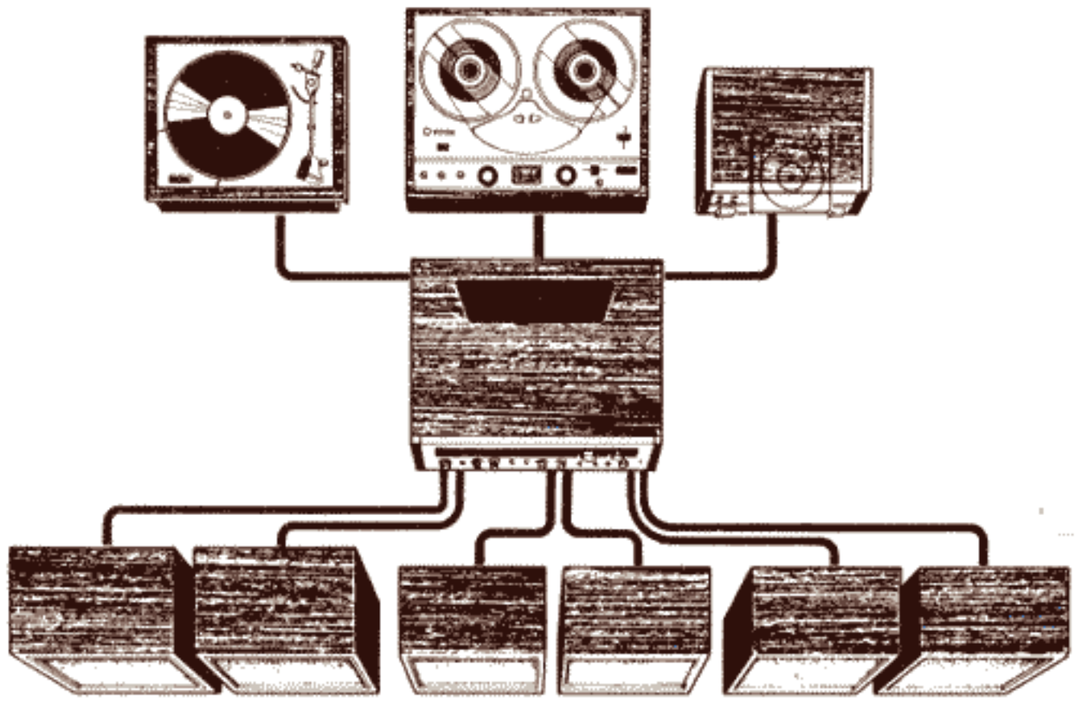


Fig. 3

INSTALLATION

For installation of the stereo systems, select a place meeting the following

- Well ventilated, and free from moisture and dust
- Unexposed to direct sunlight
- Far from heat radiators (space heaters, etc.)
- Stable without incurring vibrations

LISTENING ROOM

- When the stereo system is installed, listen to music according to the connection and operation instructions described below.
- The reproduced sound is very different depending on the size of the room, the furniture arrangement in the room, and the materials of walls, floor and ceiling.

Generally, the reproduced sound fills the room if the room has a low ceiling and hard floor, or the room has a small length and a hard wall opposing loudspeakers. This undesirable acoustic condition can be much alleviated by laying a carpet on the floor for the former room and by covering the wall with a thick curtain for the latter room. It is also an effective solution to change the arrangement of furniture for irregular reflection of the loudspeaker sound.

CONTROLS AND SWITCHES ON THE FRONT PANEL:

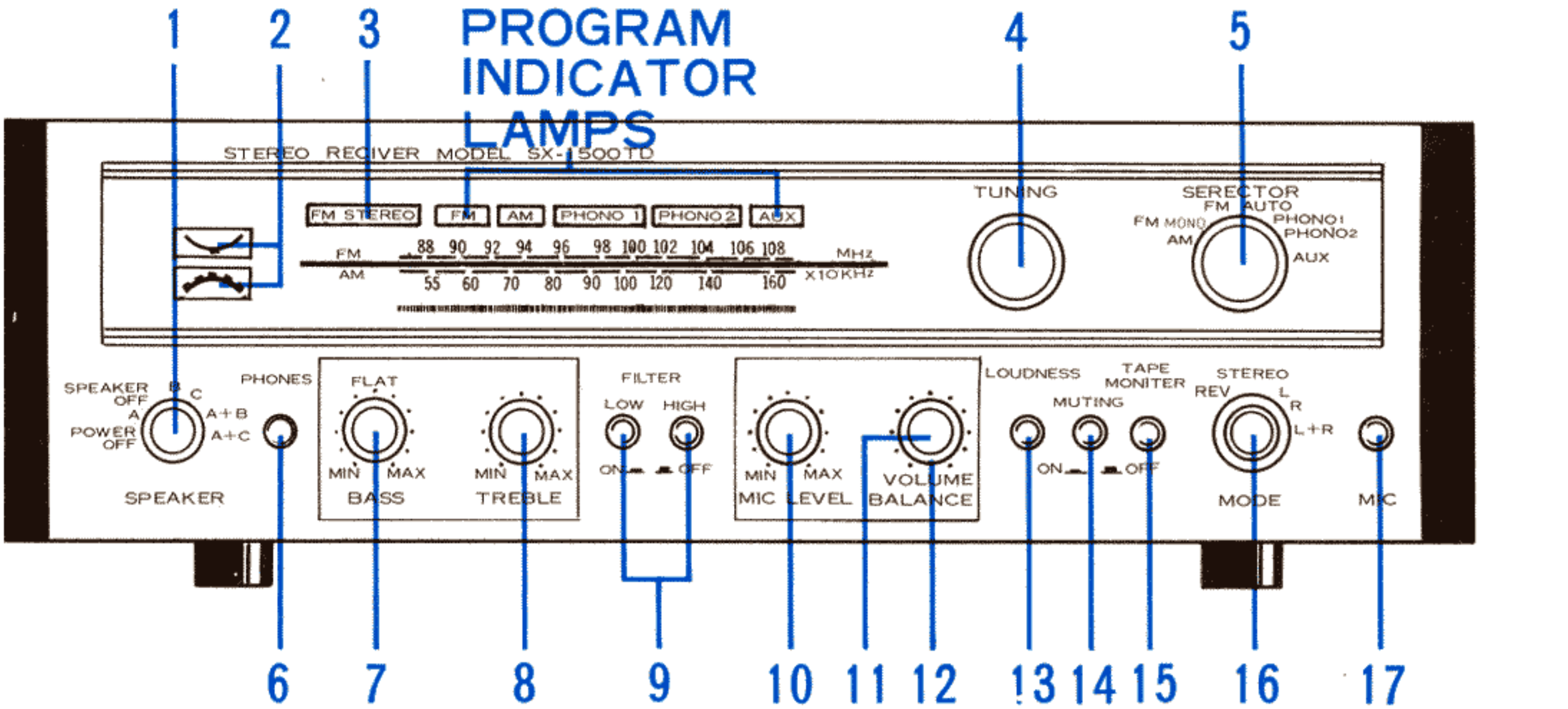


Fig. 4

1. SPEAKERS SWITCH

A combination of the power on/off switch and the loudspeaker system selector switch.

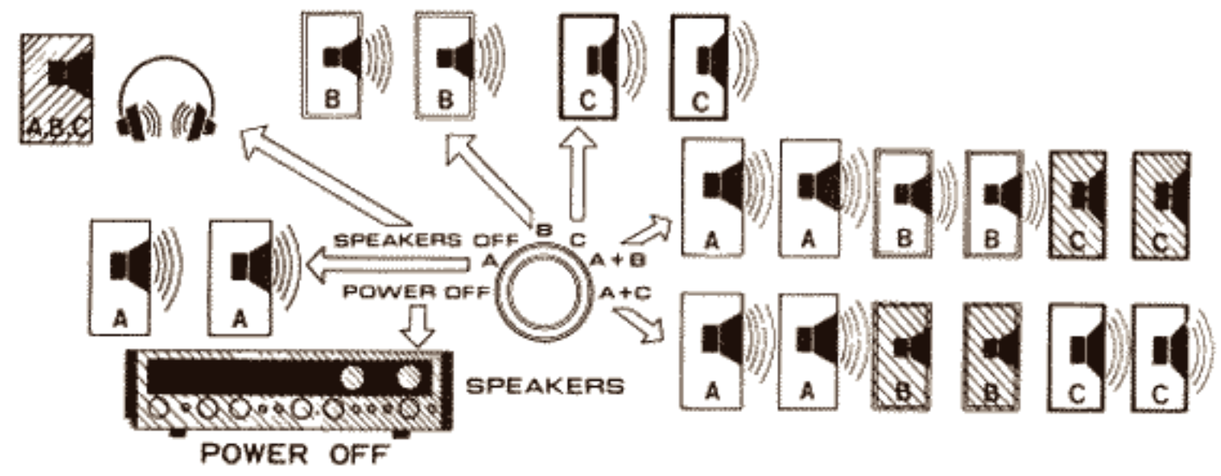


Fig. 5

POWER OFF: . . The equipment is deenergized. The power supplied from the SWITCHED AC outlet (40) is discontinued simultaneously.

A: . . . . . Sound is reproduced from the loudspeaker system connected to the SPEAKER OUTPUT A terminals (33 and 34).

SPEAKER OFF: Loudspeakers stop sounding. This position is selected when using a stereo headphone.

B: . . . . . The loudspeaker system connected to the SPEAKER OUTPUT B terminals (35 and 36) is put in operation.

C: . . . . . The loudspeaker system connected to the SPEAKER OUTPUT C terminals (37 and 38) is put in operation.

A + B: . . . . . The loudspeaker systems connected to SPEAKER OUTPUT A and B terminals are put in operation.

A + C: . . . . . The loudspeaker systems connected to the SPEAKER OUTPUT A and C terminals are put in operation.

2. TUNING METERS

When tuning the receiver to an AM station, adjust the TUNING knob (4) so the pointer of the lower one of the meters deflects largely rightward.
When tuning the receiver to an FM station, adjust the TUNING knob so the pointer of the lower meter deflects largely rightward and, in addition, the pointer of the upper meter is at the center.

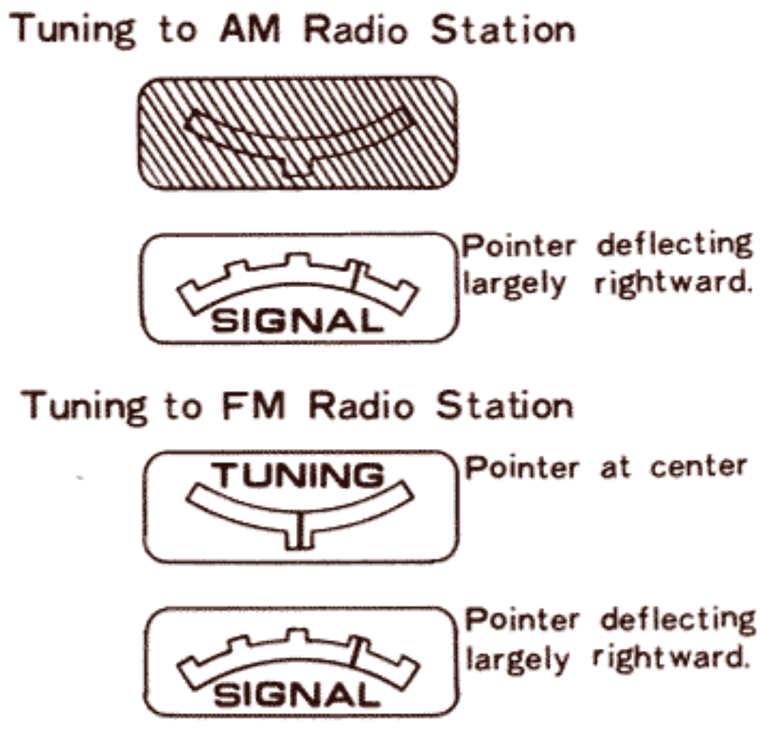


Fig. 6

3. FM STEREO INDICATOR

This lamp is lit during reception of an FM stereo program.

4. TUNING KNOB

The knob for tuning the receiver to an AM or FM station. Adjust the knob for the best tuning while observing the tuning meters (2).

5. SELECTOR SWITCH

The switch for selecting the program source.

AM: . . . . . For reception of an AM program.
FM MONO: · · · For reception of an FM monophonic program.
FM AUTO: · · · · For automatically selective reception of stereo or monophonic FM program.
PHONO 1: · · · · For playing a disk record by using the turntable connected to the PHONO 1 terminals (18).
PHONO 2: · · · · For playing a disk record by using the turntable connected to the PHONO 2 terminals (19).
AUX: . . . . . For using the cartridge tape player, reproducing the TV audio output, or operating other equipment connected to the AUX terminals (21).

When the SELECTOR switch is operated, the PROGRAM INDICATOR LAMP corresponding to the selected soruce lights.

6. PHONES JACK

When using a stereo headphone, insert its plug into this jack. For the headphone to be used with Model SX-1500TD, PIONEER's Model SE-20, SE-30 or SE-50 is recommended.

- When a longer cord is required for the stereo headphone, use PIONEER's Model JB-23 extension cord separately available.
- When desiring to connect two stereo headphones, use PIONEER's Model JB-22 "Y" cord separately available.

7. BASS CONTROL

When this knob is turned clockwise, bass is boosted; when turned counterclockwise, attenuated. With the knob set to the center, the frequency response curve is flat. The center and outer knobs of this double knob are friction-coupled with each other, and the tone of both left and right channels can be adjusted simultaneously by turning either knob. The center knob is for the left channel, and the outer knob is for the right channel. When adjusting the tone of only one of the channels, turn the knob for that channel while holding the other knob by the other hand.

Fig. 7

8. TREBLE CONTROL

Use of this knob is similar to that of the BASS control knob (7).

9. FILTER SWITCHES

LOW: A switch for suppressing low-frequency noise or hum.
HIGH: A switch for suppressing high-frequency noise.

These switches are of the pushbutton type. When the button is pressed once, the switch turns on, and when pressed once again, it turns off.

10. MIC LEVEL CONTROL

When using a microphone, adjust the level by turning this knob clockwise.

11. VOLUME CONTROL

The volume increases when the knob is turned clockwise.

12. BALANCE CONTROL

This knob is used for adjusting the stereophonic balance. When the volume of the right channel loudspeaker is smaller, turn the knob clockwise toward RIGHT; when left channel volume is smaller, counterclockwise toward LEFT

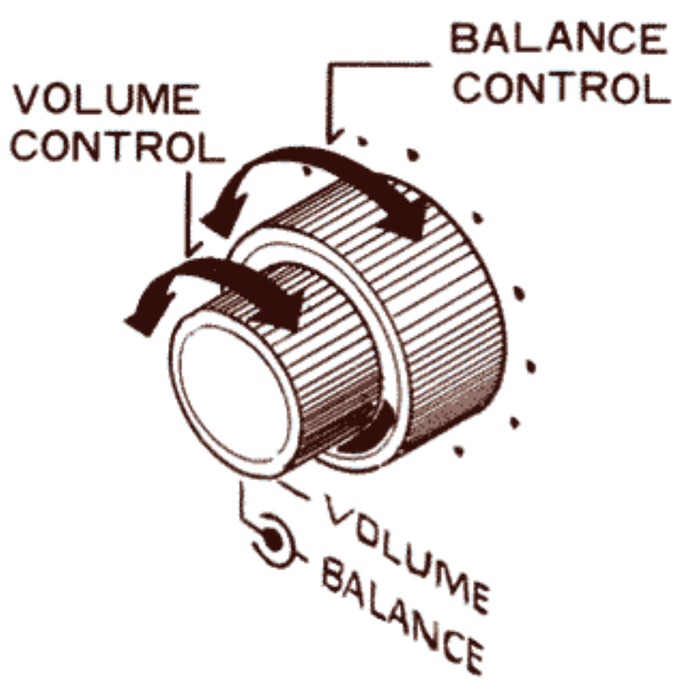


Fig. 8

13, 14 and 15 are pushbutton switches. Switches turn on when the pushbuttons are depressed once; turn off when depressed again.

13. LOUDNESS SWITCH

With this switch turned on when the sound volume is low, insufficiencies of bass and treble are compensated for. When the sound volume is high, it is recommended to keep this switch turned off.

14. MUTING SWITCH

Turning on this switch, the noise generated when tuning the receiver to an FM station can be eliminated. If Model SX-1500TD is used where the FM field strength is low, keep this switch turned off since the program sound is also suppressed with the switch turned on.

15. TAPE MONITOR SWITCH

Turn on this switch for listening to or monitoring only the signal reproduced by a tape deck (or tape recorder). When not using the tape deck (or tape recorder), keep this switch turned off. Otherwise loudspeakers will not sound.

16. MODE SWITCH

Functions as follows:

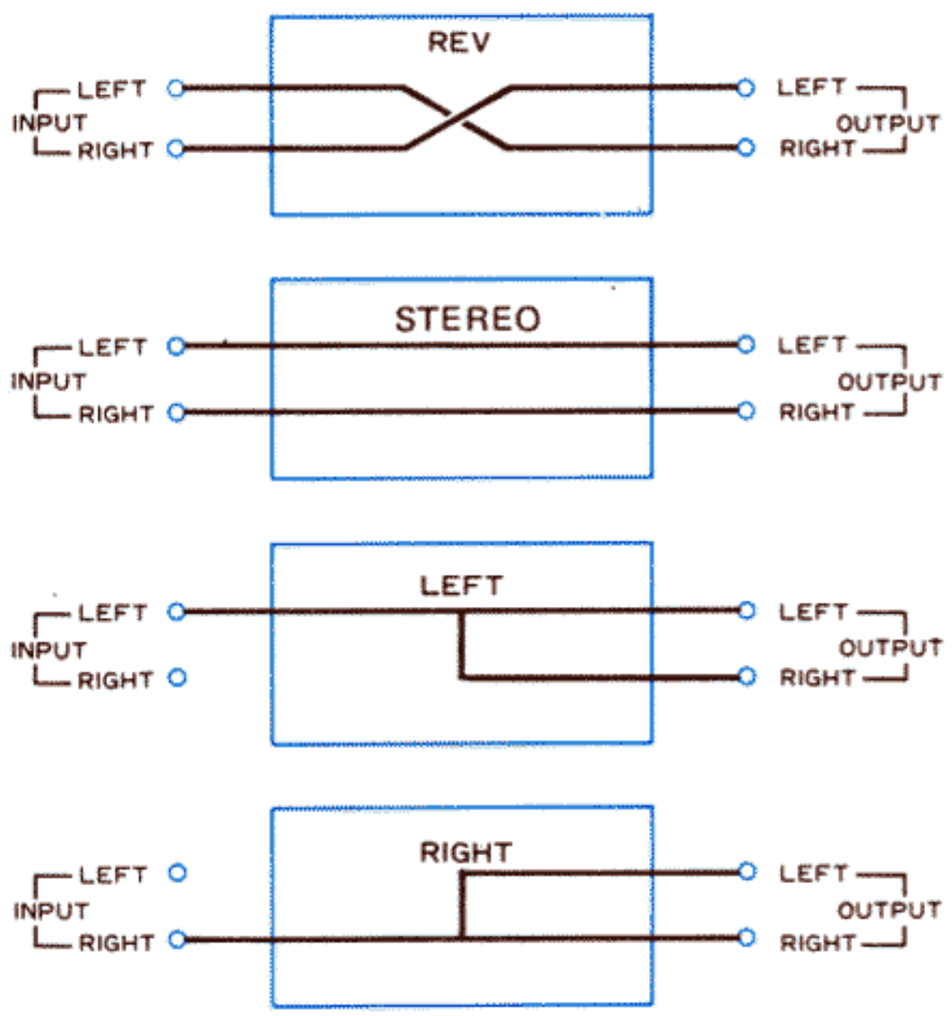
REV: . . . . . Stereo, with left and right channel input signals exchanged for each other.

STEREO: . . . . Normal stereo.

L: . . . . . Monophonic play with only the left channel input signal fed to both channel loudspeakers.

R: . . . . . Monophonic play with only the right channel input signal fed to both channel loudspeakers.

L + R: . . . . . Monophonic play with both left and right channel input signals mixed together and reproduced from both channel loudspeakers.



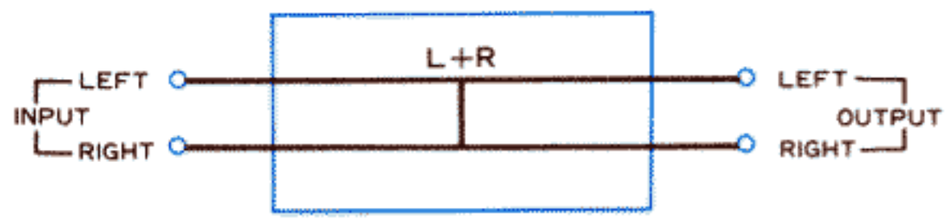


Fig. 9

17. MIC JACK

Jack for connecting a microphone.
Connect a microphone here and adjust the MIC LEVEL control (10), then the microphone can be used regardless of SELECTOR, MODE, VOLUME and other switches and controls.

TERMINALS AND CONNECTORS ON THE REAR PANEL:

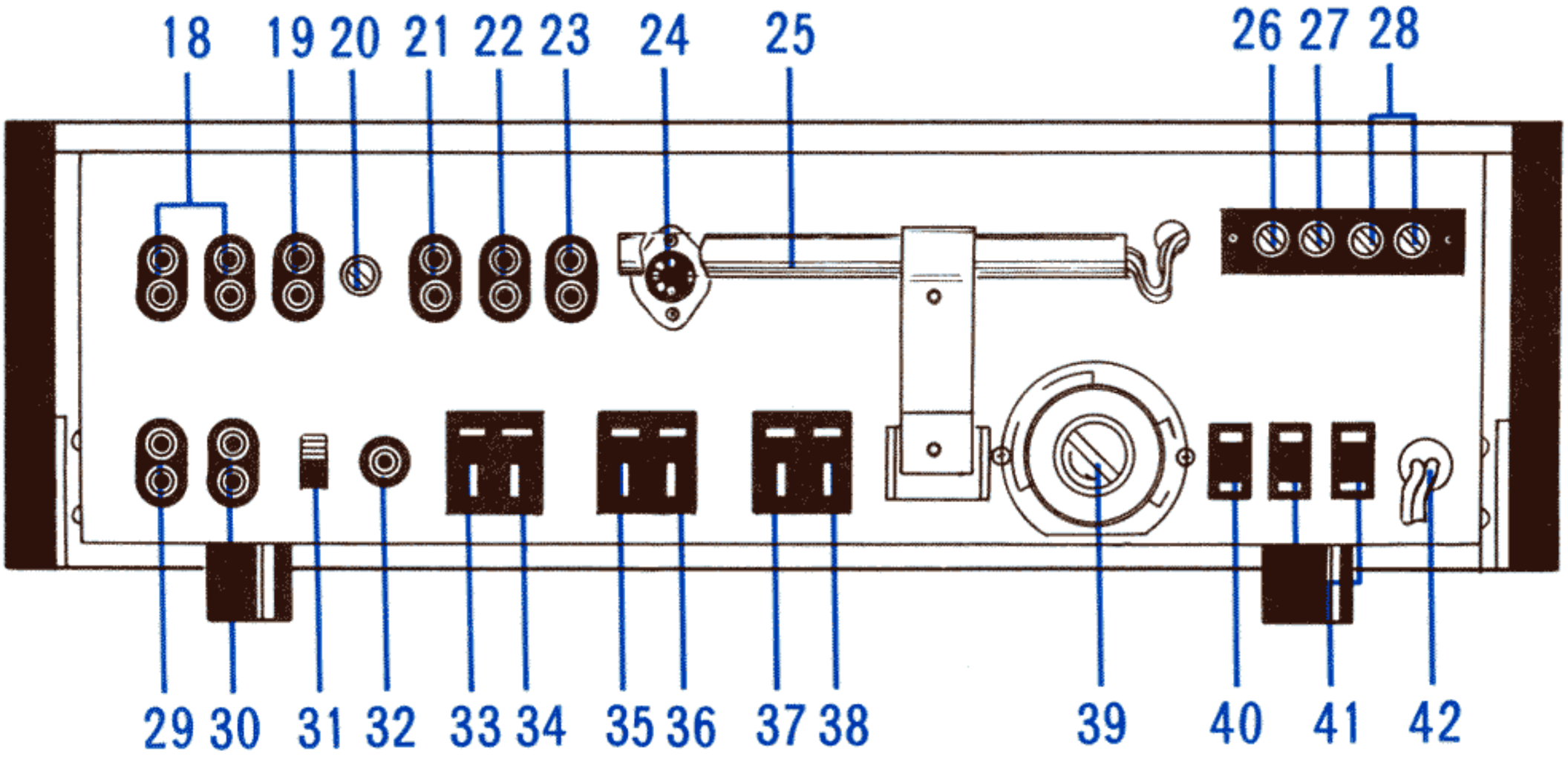


Fig. 10

The upper ones of the terminals 18, 19, 21, 22, 23, 29 and 30 are for the left channel respectively; the lower ones, for the right channel.

18. PHONO 1 TERMINALS

MAG: · · · · Connect here a turntable equipped with a moving magnet cartridge.

CER: · · · · Connect here a turntable equipped with a ceramic or crystal cartridge.

NOTE: Two turntables cannot be connected to the MAG and CER terminals simultaneously.

19. PHONO 2 MAG TERMINALS

Connect here a turntable equipped with a moving magnet cartridge.

20. GND (GROUND) TERMINAL 1

If the turntable or other equipment used with Model SX-1500TD is provided with a ground wire, connect the wire to this terminal.

21. AUX. (AUXILIARY) INPUT TERMINALS

Connect here the output of a cartridge tape player, the audio output of a TV, or other equipment.

22. TAPE MON TERMINALS (TAPE PLAY-BACK INPUTS)

Connect the line output or monitor output of tape deck (or tape recorder) to these terminals.

23. TAPE REC TERMINALS (TAPE RE-CORDING OUTPUTS)

Connect the line input of a tape deck (or tape recorder). Signal is always supplied to these terminals while SX-1500TD is working; however, the signal cannot be controlled with the VOLUME (11), BALANCE (12), TREBLE (8) or BASS (7) controls on the front panel.

24. TAPE REC/PB CONNECTOR (DIN TYPE)

If the tape deck (or tape recorder) to be used with Model SX-1500TD is provided with a record/playback connector of the DIN type, the tape deck (or tape recorder) can be connected to Model SX-1500TD for both recording and playback (and monitor) by simply connecting the DIN cable.

When this cable is used, connections to terminals (22) and (23) are unnecessary.

The detail of connection is shown on page 10. Connection of tape deck (or tape recorder)".

25. AM FERRITE ANTENNA

Where the field strength is high, adjust the direction of this ferrite antenna for good reception, without using an external antenna. If good reception cannot be obtained, see page 9. "Antenna Connection and Grounding".

26. AM ANTENNA INPUT TERMINAL

Connect a lead wire or outdoor AM antenna to this terminal if the ferrite antenna (25) cannot get good reception.

27. GND (GROUND) TERMINAL 2

Connect a ground wire to this terminal.

28. FM ANTENNA INPUT TERMINALS

Connect an FM antenna to these terminals.

NOTE: For the details of AM antenna, FM antenna and grounding, see "Antenna connection and grounding" on page 9.

29. PRE AMP OUTPUT TERMINALS

Output terminals of preamplifiers.
Since the signal being played is always supplied to these terminals, mixing and recording by using a microphone can be accomplished through these terminals. Also, with the PRE & MAIN SWITCH (31) in the SEPARATED (upper) position the preamplifiers can be used independent of the main (power) amplifiers.

30. MAIN AMP INPUT TERMINALS

Input terminals of the main (power) amplifiers. With the PRE & MAIN SWITCH (31) in the SEPARATED position, the power amplifiers can be used independent of other components.

31. PRE & MAIN SWITCH

With the switch in the INTERCOUPLED (lower) position, the SX-1500TD operates as an ordinary stereo receiver.
With the switch in the SEPARATED (upper) position, the preamplifier and main amplifier components of the SX-1500TD are usable separately from each other.

32. CENTER CHANNEL OUTPUT TERMINAL

The signals of left and right channels are mixed together and supplied to this terminal at all times. The terminal may be used for composing a 3-D system or connecting a center-channel amplifier.

33. & 34. SPEAKER OUTPUT A TERMINALS

Model SX-1500TD is designed to permit connection of three sets of stereo loudspeaker systems.
Connect the first set of loudspeaker system (system A) to these terminals; the right channel to terminal (33) and the left channel to terminal (34).

35. & 36. SPEAKER OUTPUT B TERMINALS

Connect the right channel loudspeaker of the second loudspeaker system (system B) to terminal (35) and the left channel loudspeaker of this system to terminal (36).

37. & 38. SPEAKER OUTPUT C TERMINALS

Connect the right channel loudspeaker of the third loudspeaker system (system C) to terminal (37) and the left channel loudspeaker of this system to terminal (38).

For connection of loudspeakers to the SPEAKER OUTPUT A, B and C terminals, the plugs supplied as accessories must be used. Follow the instructions under "Connection of loudspeaker system" on page 9, for the correct use of the plugs.

39. LINE VOLTAGE SELECTOR AND FUSE HOLDER

This selector is used for setting the SX-1500TD to suit the line voltage to be supplied. It also serves as a fuse holder.
For the selector setting and fuse replacement procedures, refer to the article "LINE VOLTAGE SELECTION AND FUSE". (Page 1)

40. SWITCHED AUXILIARY AC OUTLET

A power of 230 VA can be supplied to a turntable or other equipment from this outlet. The power supply is turned on and off corresponding to the turning-on and off operations of the SPEAKERS switch (1) on the front panel.

41. UNSWITCHED AUXILIARY AC OUTLET

The power outlet also having a capacity of 230 VA total. The power from this outlet is supplied regardless of the operation of the SPEAKERS switch (1).

42. AC POWER CORD

After all the external equipment is connected to Model SX-1500TD, connect this cord to a commercial power outlet having a sufficient capacity.

CONNECTION OF LOUDSPEAKER SYSTEM:

- To connect a loudspeaker, take out a speaker connector plug from the accessories bag, and connect it to the leads of the loudspeaker as illustrated in Fig. 11.
  Be sure to connect them for the correct polarity.
- When the plugs have been connected to loudspeakers, connect the plug of the right channel loudspeaker to the SPEAKER OUTPUT A terminal (33) and that of the left channel loudspeaker to the SPEAKER OUTPUT A terminal (34). (See Fig. 2)
- When using two or three loudspeaker systems with the SX-1500TD, connect the second loudspeaker system to SPEAKER OUTPUT B terminals (35 & 36), and the third system to SPEAKER OUTPUT C terminals (37 & 38).

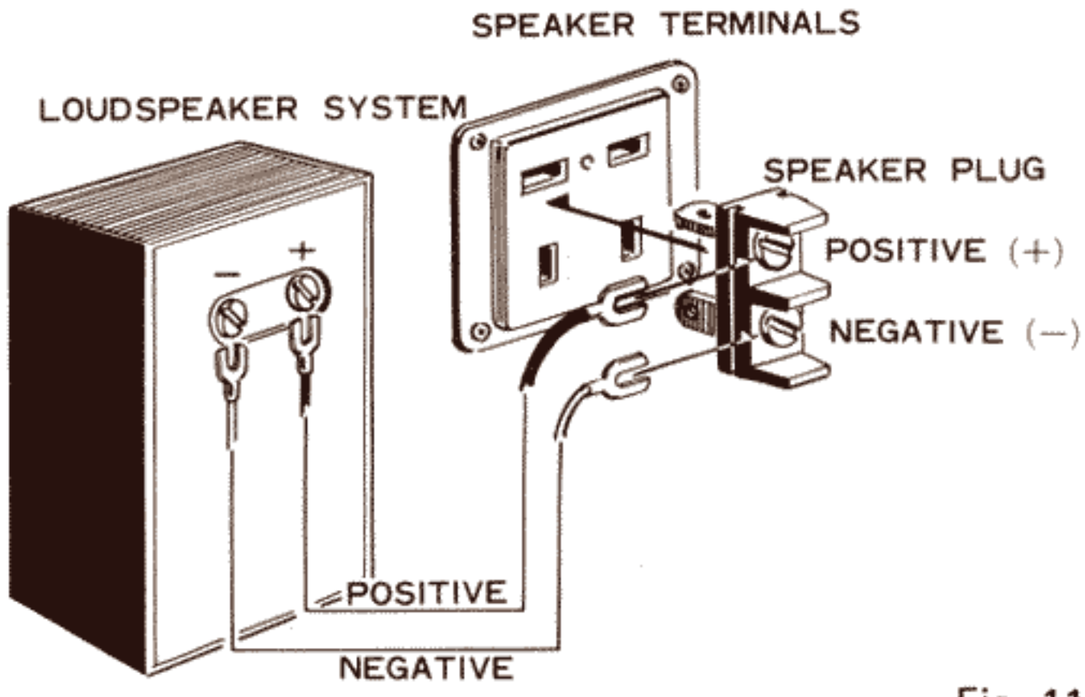


Fig. 11

ANTENNA CONNECTION AND GROUNDING:

FM ANTENNA

When using Model SX-1500TD at a place of low field strength or distant from the station, select the most suitable FM antenna as follows:

- Use the accessory T-type indoor antenna when using Model SX-1500TD within a wooden building near the FM station. Connect the free end of the vertical section of the antenna to the FM antenna terminals (28) as shown in Fig. 12. Expand the horizontal section of the antenna, and determine its direction for good reception while actually receiving a broadcast program. Fix the horizontal section on a wall or other place in the determined direction. For the operating procedure, see "Reception of FM broadcast" on page 11.
- When using Model SX-1500TD at a long distance from the station, or within a building, install an outdoor FM antenna, and connect it to the FM antenna terminals (28) as in Fig. 13.
  The FM antenna is various in type, consisting of 3 to 7 elements. Select the optimum antenna by consulting a nearby radio, TV or hi-fi equipment sales store.

AM ANTENNA

When using Model SX-1500TD near the station or inside a wooden building, connection of an external AM antenna is unnecessary. Adjust the direction of the AM ferrite antenna (25) located on the rear panel for the best radio reception while actually listening to broadcasts, referring to "Reception of AM broadcast" on page 11.

- If good radio reception cannot be attained with the AM ferrite antenna (25), use the accessory AM lead wire antenna. Connect one end of the antenna to the AM antenna terminal (26), and expand the wire along a wall of the room. (See Fig. 12.)
- If input is still not enough, install an AM antenna outdoors instead of using the lead wire antenna. (See Fig. 13).

NOTE: A standard AM outdoor antenna can be formed by purchasing PVC wire from an electric appliance store and installing it 25 feet (7.5 m) above the ground for a horizontal length of 50 feet (15 m), with a feeder line 30 feet (10 m) long. These antenna dimensions need not be so precise, and may be as large as allowable by the place of installation. However, the height of the horizontal section of the antenna should not be too low to attain a good antenna effect.

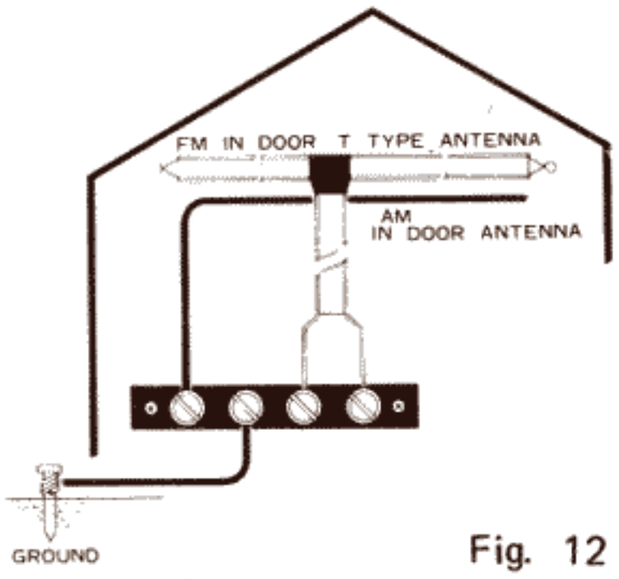


Fig. 12

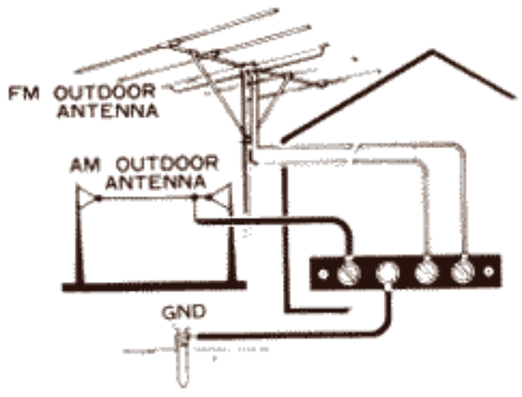


Fig. 13

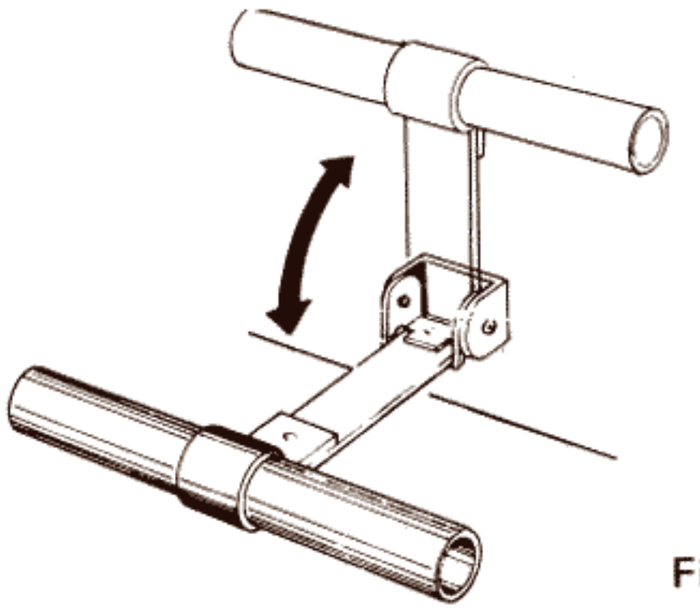


Fig. 14

- Whether or not Model SX-1500TD is grounded does not much affect the performance of the equipment. However, grounding is recommended for stabilization of the performance.
- Connect to the GND terminal 2 (27) a ground conductor leading to the earth.

CONNECTION OF TURNTABLE:

- If the turntable to be used is equipped with a moving magnet cartridge, connect the output cords of the turntable to the MAG terminals of PHONO 1 (18) on the rear panel; if equipped with a ceramic cartridge, to the CER terminals of PHONO 1 (18).
  Connect the left channel output cord of the turntable to the upper terminal, and the right channel output cord to the lower terminal.
  When using a monophonic turntable, its output cord may be connected to either upper or lower terminal.
- To use two turntable both having a moving magnet cartridge, connect one to the PHONO 1 MAG terminals (18) and the other to the PHONO 2 – MAG terminals (19).

NOTE: 1. When desiring to use a turntable equipped with a moving coil (MC) cartridge, use a matching transformer for MC cartridge, or a separate head amplifier for connection of the turntable to Model SX-1500TD.

2. The output cords of some turntable are provided with plugs which do not meet the input terminals of Model SX-1500TD. In such a case, replace the plugs with the pin plugs contained in the accessories bag.

CONNECTION OF TAPE DECK (TAPE RECORDER):

- The tape deck to be connected to Model SX-1500TD should have a record/playback preamplifier built in, such as PIONNER's Model T-600, T-500.
- The tape recorder to be connected should have output terminals (line output) for external amplifier, or tape monitor terminals.

CONNECTION FOR TAPE RECORDING

Connect the LINE INPUT terminals of the tape deck (or tape recorder) to the TAPE REC terminals (23) on the rear panel. For this connection, use the cords accessory to the tape deck (or tape recorder). The upper terminal is for the left channel, and the lower one is for the right channel. If the tape recorder is monophonic, connect it to the upper terminal.

CONNECTION FOR TAPE PLAYBACK (OR TAPE RECORDING MONITOR)

Connect the LINE OUTPUT or TAPE MONITOR terminals of the tape deck (or tape recorder) to the TAPE MON terminals (22). Use of the terminals is similar to that for the connection for recording described above.

USE OF RECORD/PLAYBACK CONNECTOR

If the tape deck (or tape recorder) is equipped with a record/playback connector of the DIN type, connect the connector to the TAPE REC/P.B. connector (24) by using the DIN cable that is separately available. In this case, connections as described in "Connection for tape recording" and "Connection for tape playback (or tape recording monitor)" above are unnecessary.

CONNECTION OF CARTRIDGE TAPE PLAYER:

When using a cartridge tape player, such as PIONEER's Model H-60, connect its output to the AUX terminals (21) on the rear panel.

RECEPTION OF BROADCAST:

- Set the SPEAKERS switch (1) to the "A" position after ensuring the following:
  1. The BALANCE knob (12) is in the NORMAL (center) position.
  2. The VOLUME knob (11) is in the MIN position (turned fully counterclockwise).
  3. The TAPE MONITOR switch (15) is set to OFF position.
  4. The MODE switch (16) is in the STEREO position.

RECEPTION OF FM BROADCAST

1. Set the SELECTOR switch (5) to the FM AUTO position.
2. Turn on the MUTING switch (14). (Keep the switch turned off, if the field strength is low).
3. While observing the pointer deflection of the tuning meters (2), tune the receiver to the desired station by adjusting the TUNING knob (4).
   The best radio reception is attained when the pointer of the lower tuning meter deflects largely rightward, and the pointer of the upper tuning meter indicates the center. When the tuned-in station is broadcasting a stereo program, the FM stereo indicator (3) lights, and Model SX-1500TD operates automatically for stereo broadcast reception. If the received program is monophonic, the indicator does not light, and the equipment operates for monophonic broadcast reception.
4. When the desired station has been tuned in, turn the VOLUME control (11) gradually clockwise for the desired volume. Adjust the BASS (7) and TREBLE (8) controls as desired.

- If Model SX-1500TD is used very far from the broadcasting station, or where external noise is high, the noise is suppressed and better reception can be attained by keeping the SELECTOR switch (5) set to the FM MONO position. With the switch in this position, however, a stereo program is received as a monophonic program.
- If good radio reception cannot be attained by the operations instructed in Items 1 through 4 above, reconsider the antenna, referring to "Antenna connection and grounding", on page 9.

RECEPTION OF AM BROADCAST

1. Set the SELECTOR switch (5) to the AM position.
2. While observing the pointer deflection of the tuning meter (2), tune the receiver to the desired station by adjusting the TUNING knob (4).
   The best radio reception is attained when the pointer of the lower tuning meter deflects largely rightward.
3. When the desired station has been tuned in, adjust the VOLUME (11), BASS (7) and TREBLE (8) controls for desired volume and tone.

- If good reception cannot be attained by the operations instructed in Items 1 through 3 above reconsider the antenna, referring to the "Antenna connection and grounding", on page 9.
- When the broadcasting station is very near, a much distorted sound may result from the high field strength. If this occurs, shorten or remove the antenna connected to the AM antenna terminal (26) for the best radio reception.

PLAY OF DISK RECORD:

1. Set the SELECTOR switch (5) to the PHONO 1 position, when operating the turntable connected to the PHONO 1 terminals (18) on the rear panel. Set the switch to the PHONO 2 position when operating the turntable connected to the PHONO 2 terminals (19).
2. If the record player to be operated is monophonic, set the MODE switch (16) to the "L" or "R" position.
3. Adjust the VOLUME (11), BASS (7) and TREBLE (8) controls for desired volume and tone.

PLAY OF CARTRIDGE TAPE:

1. Set the SELECTOR switch (5) to the AUX position.
2. The succeeding procedure is identical with its counterpart of "Play of disk record" above.

USE OF MICROPHONE:

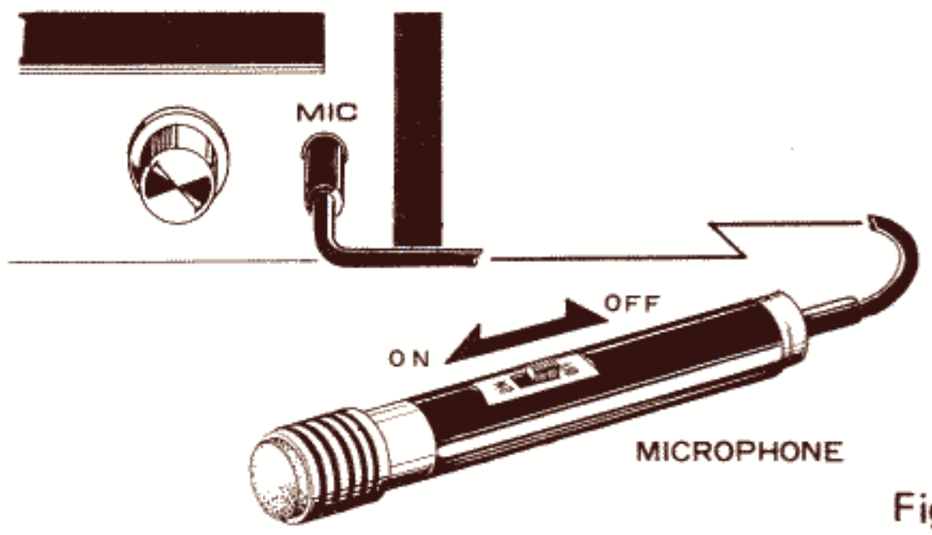


Fig. 15

Be sure to turn the switch to ON when using this microphone. When it is not in use, see to it that the switch is set to OFF.
It is recommended that the MIC LEVEL control be set to MIN.

Adjust the MIC LEVEL control (10) for a proper sound volume. The signal from the microphone is always reproduced from both left and right channel loudspeakers; therefore, the microphone is usable (mixing effected) even while playing a record or receiving a radio program.

Note: Do not increase the level too much, or howling may result. Keep the microphone as far from the loudspeaker system as possible.

RECORDING AND PLAYBACK WITH TAPE DECK (OR TAPE RECORDER):

RECORDING

The same signal as that reproduced from loudspeakers is always supplied to the TAPE REC terminals (23). According to the program source desired to be recorded, operate the SELECTOR switch (5) and MODE switch (16), referring to "Reception of broadcast" and "Play of disk record". The signal does not concern the VOLUME, BASS or TREBLE controls of Model SX-1500TD. Adjust the recording level with the controls provided on the tape deck (or tape recorder)

NOTE: When using a monophonic tape recorder set the MODE switch (16) to the L + R position, and monophonic signal is supplied to the recorder. In this case, however, the sound reproduced from loudspeakers is also monophonic.

RECORDING WHILE USING A MICROPHONE

1. Connect the line input terminals of the tape deck (or tape recorder) to the PRE-AMP OUTPUT terminals (29) of the SX-1500TD.
2. Since the signal being played is always supplied to the PRE-AMP OUTPUT terminals, the signal level is controllable by the VOLUME, BASS, TREBLE and MIC LEVEL knobs of the Model SX-1500TD.

PLAYBACK

Turn on the TAPE MONITOR switch (15), and adjust the VOLUME (11), BASS (7) and TREBLE (8) controls for desired volume and tone.

- When the TAPE MONITOR switch (15), is in the "ON" position, the position to which the SELECTOR switch (5) is set is unrelated to the equipment operation.

TAPE MONITOR

When using a 3-head tape deck (or tape recorder) for recording, monitor can be conducted as follows:

- Turn on the TAPE MONITOR switch (15), and the after recording signal will be monitored.
- Turn off the switch, and the before-recording signal will be monitored.

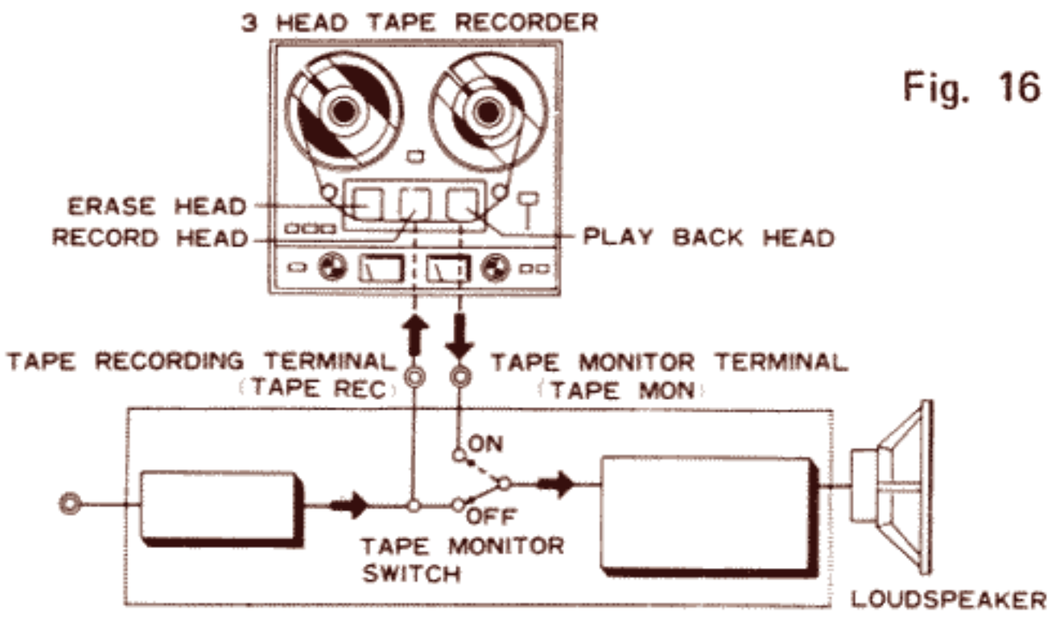


Fig. 16

IN ADDITION TO THE FOREGOING, MODEL SX-1500TD CAN ALSO BE USABLE AS FOLLOWS:

MULTI-AMPLIFIER SYSTEM

- A multi-amplifier system can be composed by using a two- or three-division band-pass filter and one or two stereo power amplifiers besides Model SX-1500TD.
  a) Set the PRE & MAIN switch (31) to the "SEPARATED" position (upper position).
  b) Connect the PRE-AMP OUTPUT terminals (29) to the input terminals of the dividing band-pass filter, and the MAIN-AMP INPUT terminals (30) to the output terminals of one of the dividing band-pass filters.
  c) Connect the input of the other stereo power amplifiers to the output terminals of the other dividing band-pass filters.

INTEGRATE STEREO SYSTEM

By connecting one or more of PIONEER's Model IS-60, IS-70 or IS-80 units, which are separately available, to the PRE-AMP OUTPUT terminals for both left and right channels, respectively, an integrate stereo system having minimum sound distortion can be composed. Also, a PA system to be used in a large place can be formed by using several power systems with Model SX-1500TD.

3-D STEREO SYSTEM

A 3-D stereo system can be produced by connecting to the CENTER CHANNEL OUTPUT terminal (32) a power amplifier equipped with a low-pass filter (f=150 to 250 Hz).

CENTER-CHANNEL LOUDSPEAKER SYSTEM

By connecting a power amplifier and loudspeaker to the CENTER CHANNEL OUTPUT terminal and placing the loudspeaker at the center between the left and right channel loudspeakers, the "hole effect" of stereo sound can be prevented.

SPECIFICATIONS

SEMICONDUCTORS

Tuner Section	
FET	1
ICs	5
Transistors	11
Diodes	12
Audio Section	
Transistors	28
Diodes, etc.	8

FM SECTION

Circuitry	Front end using FET and 4-gang tuning capacitor. IF amplifier using 4 ICs (Integrated circuits)
Frequency Range	87.5 – 108 MHz
IHF Usable Sensitivity	1.7μv
Capture Ratio	0.7 dB (at 98 MHz)
Image Rejection	72 dB (at 98 MHz)
Selectivity	40 dB (IHF rating)
Signal to Noise Ratio	60 dB (IHF rating)
Antenna Input	300-ohm (balanced)

MULTIPLEX SECTION

Circuitry	Time-switching type de-modulator. (using IC) FM Mono Stereo Automatic selection
Channel Separation	42 dB (at 1 kHz)

AM SECTION

Circuitry	Superheterodyne
Frequency Range	525 – 1605 kHz
IHF Usable Sensitivity	18μ
Image Rejection	77 dB (at 1000 kHz)
Antenna Input	Built-in Ferrite Loopstick Antenna

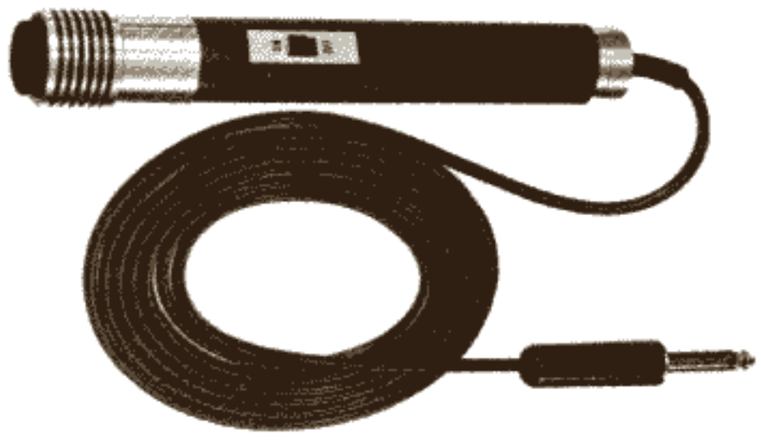
AUDIO SECTION

Circuitry	Single ended push pull
Music Power Output	8Ω 145 watts total (IHF rating) 4Ω 180 watts total
Continuous Power Output	8Ω 58 watts/58 watts (Each channel driven) 4Ω 70 watts/70 watts (Each channel driven)
Harmonic Distortion	Less than 0.5% (at 1 kHz continuous power output)
Damping Factor	8Ω 50 (at 1 kHz)
Frequency Response	±3 dB, from 10 Hz to 100 kHz (Over-all)
Power Bandwidth	15 Hz to 40 kHz (AUX, IHF)
Hum & Noise Ratio (at continuous power output)	MAG: better than 80 dB AUX: better than 100 dB
Input Impedance and Audio Sensitivity (for continuous power output, at 1 kHz)	MAGnetic PHONO: 2.7 mv, 50 kΩ CERamic PHONO: 60 mv, 100 kΩ MICrophone: 3.2 mv, 30 kΩ TAPE MONITOR: 200 mv, 100 kΩ AUXiliary: 200 mv, 100 kΩ MAIN IN: 480 mv, 80 kΩ
Output Terminals and Jacks	Speakers: Impedance 4 to 16 ohms. Stereo headphones jack. Simultaneous tape Recording jacks, equipped with TAPE MONITOR switch. Tape recording/playback jack (DIN type) PREamplifier OUTPUT jacks. CENTER CHANNEL output jack.
Equalization curves	PHONO: RIAA
Tone Controls (each channel)	BASS: boost 11 dB, cut 16 dB (at 50 Hz) TREBLE: boost 10 dB, cut 9 dB (at 10 kHz)
Filters	LOW: cut 8 dB (at 50 Hz) HIGH: cut 6 dB (at 10 kHz)
Loudness Contour	Switchable to ON-OFF boost 12 dB at 50 Hz, boost 9 dB at 10 kHz, with VOLUME control set at –40 dB

MISCELLANEOUS

Power Requirements	110/117/130/220/240 volts, (switchable), 50–60 Hz.	
Power Consumption	250 VA, 230 watts (Max)	
Dimensions	(overall)	18-1/16" 459 mm (Width) 5-11/16" 145 mm (Height) 14-1/2" 369 mm (Depth)
Weight	Without package	25 lb 2 oz 11.4kg
	With package	29 lb 2 oz 13.2kg

NOTE:
Specifications and the design may be subject to modification without notice.



MICROPHONE FOR SX-1500TD

CONDITIONS FREQUENTLY MISTAKEN FOR MALFUNCTION

Noise: There are a variety of noises relating to the operation of a hi-fi unit. These are generally divided into two types; (1) the unit is faulty (a transistor or part has deteriorated) and (2) an external source of noise is adding noise to the unit.
When a hi-fi unit produces an unpleasant noise, it is often assumed that the unit is faulty, but statistical records indicate that the majority of noises produced in hi-fi acoustic units result from external sources of noise. Due to the inherent high sensitivity and the high fidelity in reproduction, the unit amplifies and reproduces extraneous noises, however small, into definite output noise. If your receiver produces a noise, check according to the following table and trace out the source of noise for the appropriate corrective action.

	Symptom	Suspected Source of Noise	Diagnosis and Remedy
When Listening to Broadcast	Continuous or intermittent noise like jjjjjj or zzzzzz.	• Static (lightning) • Fluorescent lamp, motor, or thermostat may be used in house or in the vicinity of the house.	In many cases, it is very difficult to remove the source of noise. In order to make the radio input larger than the noise level, set up a good outdoor antenna and make a complete grounding.
	When a station is tuned in, hum is mixed in the program.	• Poor fluorescent lamp, motor, or electric heater may be used in house or near the house.	Reversing the line plug may occasionally alleviate this noise problem. Usually it is very difficult to eliminate the noise.
	Hissing sound noise in AM (medium wave) reception.	• The frequency of an adjacent station is interfering with that of the station being tuned in (10kHz beat interference). • TV set is on in the same house with the receiver.	Impossible to remove such interference. If the cause of such noise is in the TV set, increase the distance between the TV set and receiver.
	Static noise in FM reception (in particular, when automobiles run close to the house).	• White noise generated from automobile engines. • Radio frequency sewing machine or welding machine being used near your house.	In an area surrounded by hills or high buildings, the FM input signals are very weak. Thus the noise limiter in the circuit loses its function. Set up an outdoor FM antenna having many reflector elements.
	Reception of FM stereo program contains more noise than FM mono program.	• Note that the service area covered by an FM stereo broadcast is about 50% of that of a regular mono broadcast.	Increasing FM input signal may alleviate this problem. Use an exclusive FM outdoor antenna instead of the indoor T-antenna.
When Playing Records	Hum or buzz. When switched to radio reception, the noise disappears.	• Poor connection of shielded wire (a). • Jack connection is loose. (b) • Line cord or fluorescent lamp is near the shielded wire. (c) • Poor grounding. (d) • HAM transmitting station or TV transmitting station is near your house. (e)	Correct the conditions stated in (a), (b), (c) or (d). In case of (e), report it to an official activity.
	Output tone quality is poor and mixed with noise. Treble is not clear.	• Stylus is worn out. (a) • Record is worn out. (b) • Dust adheres to stylus. (c) • Stylus is improperly mounted. (d) • Stylus pressure is not proper. (e) • The TREBLE level is too high.	Check (a) through (e) and correct the condition. Lower the TREBLE level.

Watch for the following conditions; these are also apt to be mistaken for malfunction.

	Symptom	Suspected Source of Noise	Diagnosis and Remedy
	Power is not turned on although the power switch is set to ON.	• Fuse is blown. (a) • Line plug is loose. (b)	Check (a) and (b) and correct the condition.
	In playing a record, increasing the volume causes howling.	• Distance between the turntable and the speakers is too short. • The place on which the turntable or speakers are set is unstable.	Change the distance or rearrange the installation positions of the unit and speakers. (Installing the turntable on a firm, solid stand may alleviate this problem.) Do not enhance the BASS sound level excessively.

ALIGNMENT INSTRUCTIONS

ALIGNMENT OF FM SECTION

Disconnect OUTPUT terminal of front end from IN terminal of IF unit
Position of Switch: SELECTOR . . . . . FM MONO
MUTING . . . . . OFF
Volume Control Setting: Fully Counterclockwise

STEPS	Input		Level	Dial Setting	Output Equipment Connections	Alignment	
	Equipment Connections	Frequency				Adjust	Remarks
1	Sweep Generator IN terminal of IF unit	10.7MHz	40dB		Oscilloscope Ⓜ terminal	T_1 of IF Unit T_2 T_3	Adjust for maximum sensitivity and symmetrical characteristics
2			80dB			Check symmetry of curve	
3	Remove electrolytic capacitor C_{12} (of FM IF Unit 4.7μF) in detector circuit						
4	Sweep Generator IN terminal of IF unit	10.7MHz	40dB		Oscilloscope OUT terminal	T_4 of IF Unit	Adjust the primary core of T_4 so that slope of straight portion of "S" curve will become the steepest and adjust the secondary core so that the center of "S" curve will concide with the center of the marker.
5	Connect OUTPUT terminal of fronted to IN terminal of IF unit						
6	Sweep Generator TP of Frontend	10.7MHz	40dB	Point of no interference as near as 88MHz	Oscilloscope Ⓜ terminal	T_2 of frontend	Adjust for maximum sensitivity and symmetrical characteristics
7			80dB			Check symmetry of curve	
8			40dB		Oscilloscope OUT terminal	T_4 of IF Unit	Adjust similarly to STEP 4.
9	Connect electrolytic capacitor C_{12} (4.7μF)						
10	Signal Generator FM Antenna terminal	90MHz	20dB (400Hz 30%)	90MHz	Oscilloscope V.T.V.M. OUT terminal	L_5 of frontend	Adjust for maximum deflection
11		106MHz		106MHz		CT_4 of frontend	
12	Repeat STEPS 10 and 11 several times						
13	Signal Generator FM Antenna terminal	90MHz	10dB (400Hz 30%)	90MHz	Oscilloscope V.T.V.M. OUT terminal	L_1, T_1, T_2 of frontend	Adjust for maximum deflection
14		106MHz		106MHz		CT_1, CT_2, CT_3 of frontend	
15	Repeat STEPS 13 and 14 several times						

ALIGNMENT OF MPX SECTION

Position of Switch: SELECTOR ..... FM AUTO
MUTING..... OFF
VOLUME Control Setting: Fully Counterclockwise
Input Signal: Main (L + R) 40.5kHz Deviation (60%)
19kHz Pilot 7.5kHz Deviation (10%)

STEPS	Circuit to be adjusted	Input		Connect VTVM	Alignment	
		Connections	Signal		Adjust	Remarks
1	Set the VR1 (in MPX Unit) to minimum					
2	Separation	MPX SG to FM antenna terminal	L or R	AC VTVM OUTPUT Terminal (L or R)	L_1	Adjust for minimum deflection of the other channel
3					VR_1 L_1	
4	Repeat STEPS 2 and 3 several times					

ALIGNMENT OF AM SECTION

Position of Switch: SELECTOR . . . . . AM
Volume Control Setting: Fully Counterclockwise

STEPS	Input				Output Equipment Connections	Alignment	
	Equipment Connections	Frequency	Level	Dial Setting		Adjust	Remarks
1	Sweep Generator TP_1	455KHz	50dB	Point of no interference as near as 535KHz	Oscilloscope OUT terminal	T_3, T_4, T_5	Adjust for maximum sensitivity and symmetrical characteristics
2	Signal Generator Antenna through dummy	600KHz	70dB (400Hz 30%)	600KHz	AC V.T.V.M. OUT terminal	T_2	Adjust for maximum deflection
3		1400KHz		1400KHz		CT_3	
4	Repeat STEPS 2 and 3 several times						
5	Signal Generator Antenna terminal through dummy	600KHz	30dB	600KHz	AC V.T.V.M. OUT terminal	T_1, Ferrite Antenna (Adjusting core)	Adjust for maximum deflection
6		1400KHz		1400KHz		CT_1, CT_2	
7	Repeat STEPS 5 and 6 several times						

PIONEER

PARTS LAYOUT

Top View

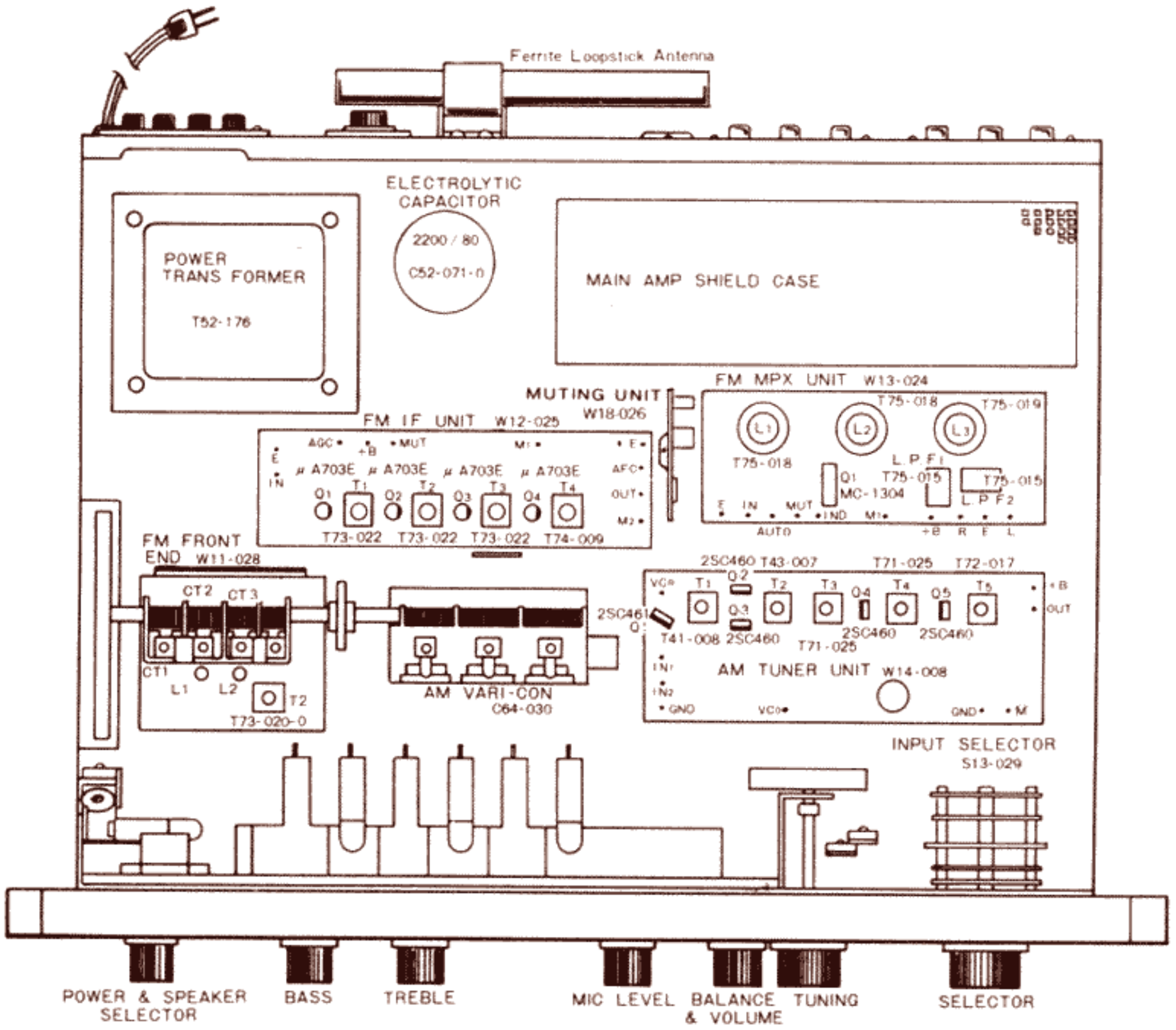


Fig. 17

Bottom View

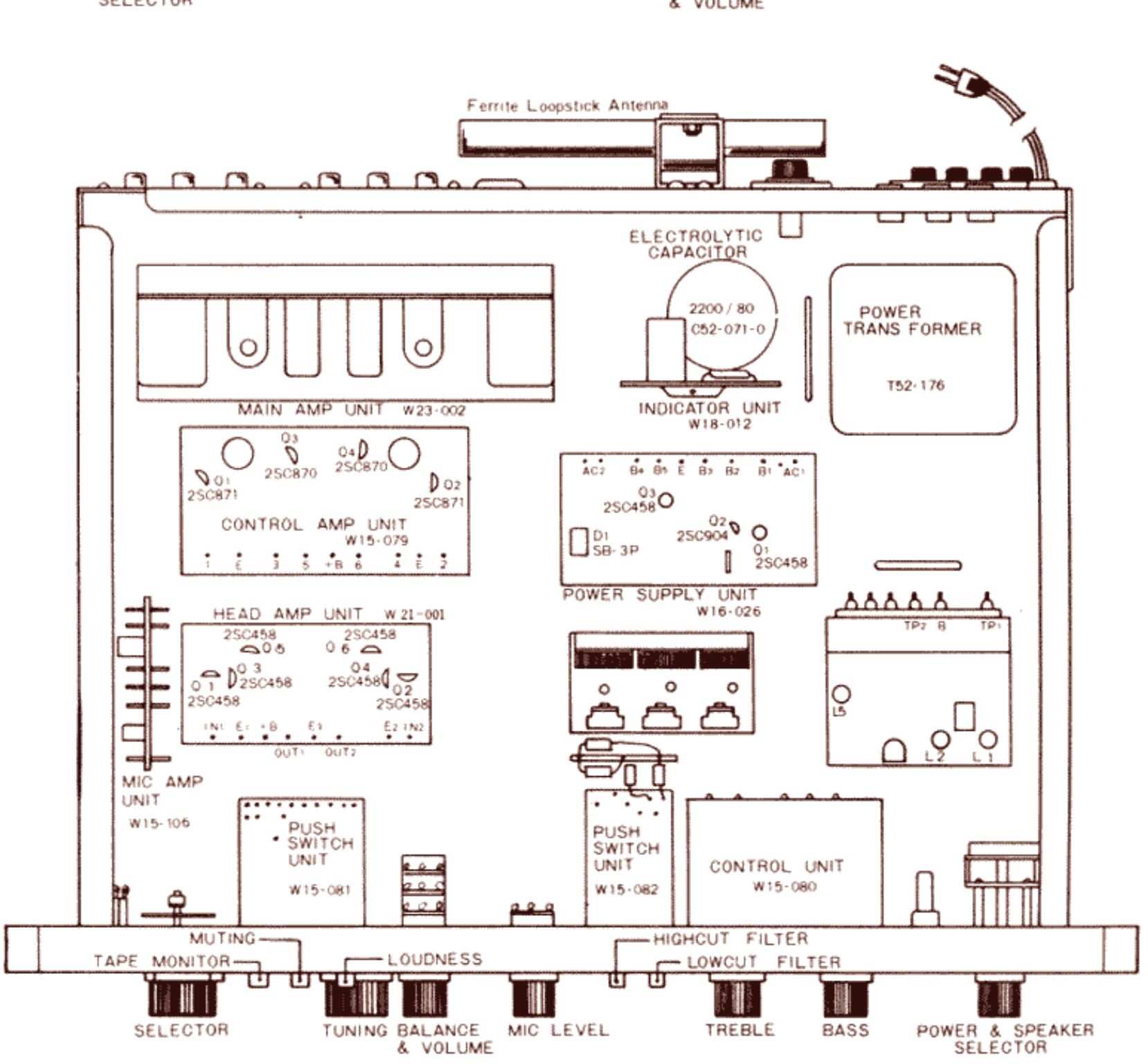


Fig. 18

PARTS LISTS

CAPACITORS

IN μF, 10% TOLERANCE UNLESS OTHERWISE NOTED
P:μμF

Symbol	Description				Part No.
C1	Ceramic	3P	±0.5P	50V	
C2	Electrolytic	220		3V	
C4	Electrolytic	2200		80V	C52-071-0
C5	Ceramic	0.01	+80% −20%	DC1.4KV	C43-003-0
C6	Ceramic	0.01	+80% −20%	DC1.4KV	C43-003-0
C7	Ceramic	0.01	+80% −20%	DC1.4KV	C43-003-0
C8	Mylar	0.0015		50V	
C9	Mylar	0.0015		50V	
	Variable capacitor for AM tuner Unit				C64-030-0

RESISTORS

IN OHM,10% TOLERANCE, ¼W UNLESS OTHERWIE NOTED k:kΩ, M:MΩ

Symbol	Description				Part No.
R1	Carbon film	150k			
R2	Carbon film	150k			
R3	Carbon film	100k			
R4	Carbon film	100k			
R5	Carbon film	1M			
R6	Carbon film	1M			
R7	Carbon film	68k			
R8	Carbon film	68k			
R9	Carbon film	470			
R10	Carbon film	470			
R11	Carbon film	150		3W	
R12	Carbon film	150		3W	
R13	Carbon film	6.8k			
R14	Carbon film	6.8k			
R16	Carbon film	470			
R17	Carbon film	68k			
R18	Carbon film	68k			
R19	Carbon film	12k			
R20	Carbon film	12k			
R21	Carbon film	220K			
R22	Carbon film	220K			
R23	Carbon film	100			
	Compound Part for REC. terminal				W52-004-0

COILS AND TRANSFORMERS

Symbol	Description	Part No.
	Power Transformer	T52-176-0
	AM Ferrite Loopstick Antenna	T42-024-A
L1	Heater Choke Coil	T24-026-0
L2	Choke Coil	T24-030-0

SWITCHES

Symbol	Description	Part No
S1	SELECTOR Switch	S13-029-0
S2	MODE Switch	S14-035-0
S3	SPEAKERS Switch	S11-029-A
S4	PRE & MAIN Switch	S41-022-A
	LINE VOLTAGE Selector	S11-018-0

POTENTIOMETERS

Symbol	Description	Part No.
VR1	500kΩ, dual, VOLUME, BALANCE	C88-009-0
VR3	30kΩ, MIC LEVEL	C81-013-0

MISCELLANEOUS

Symbol	Description	Part No.
	FM Front End	W11-028-C
	FM IF Unit	W12-025-A
	FM MPX Unit	W13-024-A
	AM Tuner Unit	W14-008-0
	Muting Unit	W18-026-0
	Indicator Unit	W18-012-0
	Head Amp Unit	W21-001-0
	Control Amp Unit	W15-079-0
	Control Unit	W15-080-0
	Push Switch Unit	W15-081-0
	Push Switch Unit	W15-082-A
	Main Amp Unit	W23-002-0
	Power Supply Unit	W16-026-A
	MIC Amp Unit	W15-106-0
	Front Panel Ass'y	M21-334-J
	Front Panel	M21-335-F
	Dial Pulley	M42-009-A
	Dial Pulley	M24-624-B
	Dial Pulley, for Tuning Capacitor	M42-027-A
	Joint	M16-043-0
	Foot	M61-017-0
	Wooden case	M52-119-C
	Dial Glass	A33-084-A
	Dial Pointer	A31-090-A
	Tuning Meter (Lower)	A91-009-D
	Tuning Meter (Upper)	A91-008-D
	Knob, Selector	A12-163-0
	Knob, Tuning	A12-165-0
	Knob, Bass(L), Treble(L), Volume	A12-168-B
	Knob, Bass(R), Treble(R), Balance	A13-016-C
	Pilot Lamp 8V, 0.3A	E22-017-0
	Pilot Lamp 8V, 0.25A	E22-021-0
	Pilot Lamp 8V, 0.15A	E22-002-0
	Fuse 3A	E21-006-0
	Fuse 1.5A	E21-012-0
	Socket for AC OUTLET	K82-007-B
	Connector 5P	K93-003-B
	Jack for Speaker	K73-003-B
	Jack for Headphone	K72-020-0
	Jack for Microphone	K72-021-B
	Pilot Lamp Socket	K42-003-A
	Fuse Holder	K91-005-A
	Short Pin Plug	K71-028-0
	Screw, to fix Wooden Case	B11-015-0
	Screw for GND Terminal	B11-012-A
	Plug for Speaker	K72-007-B
	Pin Plug	K72-015-0

FM FRONT END (W11-028)

CAPACITORS

Symbol	Description				Part No.
C1	Ceramic	0.001	+100% −0	25V	
C4	Ceramic	1000P			C47-005-A
C6	Ceramic	10P	±0.5P	50V	
C7	Ceramic	10P	±0.5P	50V	
C8	Ceramic	10P	±0.5P	50V	
C9	Ceramic	3P	±0.5P	50V	
C10	Ceramic	100P			C47-004-0
C11	Ceramic	1P			C43-002-0
C12	Ceramic	1000P			C47-005-A
C13	Ceramic	0.01	+100% −0	25V	
C14	Ceramic	1000P			C47-005-A
C15	Ceramic	5P	±0.5P	50V	
C16	Ceramic	12P	±0.5P	50V	
C17	Ceramic	7P	±0.5P	50V	
C18	Ceramic	1000P			C47-005-A
C19	Ceramic	1000P			C47-005-A
C20	Ceramic	1000P			C47-005-A
C21	Ceramic	10P			
C22	Ceramic	30P			
CV1	Vriable Capacitor for FM tuner unit (4-gang)				
CV2					
CV3					C64-036-B
CV4					
CT1					
CT2					
CT3					
CT4	Cylinder trimmer				C45-004-B

RESISTORS

Symbol	Description				Part No.
R1	Carbon film	100k		1/8W	
R2	Carbon film	1M		1/8W	
R3	Carbon film	220		1/8W	
R4	Carbon film	3.9k		1/8W	
R5	Carbon film	22k		1/8W	
R6	Carbon film	1k		1/8W	
R7	Carbon film	220		1/8W	
R8	Carbon film	8.2k		1/8W	
R9	Carbon film	2.2k		1/8W	
R10	Carbon film	1.5k		1/8W	
R11	Carbon film	22k		1/8W	
R12	Carbon film	22k		1/8W	
R13	Carbon film	3.3k		1/8W	

COILS AND TRANSFORMERS

Symbol	Description	Part No.
T1	FM Antenna Coil	T22-013-B
T2	FM IF Transformer	T73-020-0
L1	RF coil	T21-013-B
L2	RF coil	T23-026-D
L3	RF choke coil	T24-028-0
L4	RF choke coil	T24-028-0
L5	OSC Coil	T23-032-B

TRANSISTORS AND DIODE

Symbol	Description	Part No.
Q1	2SK22-Y FET	
Q2	2SC461 Ⓑ Transistor	
Q3	2SC461 Ⓐ	
D1	1S85 Variable Capacitance Diode	

FM IF UNIT (W12-025)

CAPACITORS

Symbol	Description				Part No.
C1	Ceramic	0.01	+100% −0	25V	
C2	Ceramic	0.01	+100% −0	25V	
C3	Ceramic	0.01	+100% −0	25V	
C4	Ceramic	0.01	+100% −0	25V	
C5	Ceramic	10P		50V	
C6	Mylar	0.1	±20%	50V	
C7	Ceramic	0.01	+100% −0	25V	
C8	Ceramic	0.01	+100% −0	25V	
C9	Ceramic	0.01	+100% −0	25V	
C10	Ceramic	0.01	+100% −0	25V	
C11	Electrolytic	1		50V	
C12	Ceramic	3P	±0.25P	50V	
C13	Ceramic	0.01	+100% −0	25V	
C14	Ceramic	100P		50V	
C15	Ceramic	0.01	+100% −0	25V	
C16	Ceramic	0.01	+100% −0	25V	
C17	Ceramic	0.01	+100% −0	25V	
C18	Electrolytic	4.7		16V	
C19	Ceramic	300P		50V	
C20	Electrolytic	1	±20%	25V	
C21	Electrolytic	4.7		16V	
C22	Ceramic	10P		50V	
C23	Ceramic	10P		50V	
C24	Ceramic	0.01		50V	

RESISTORS

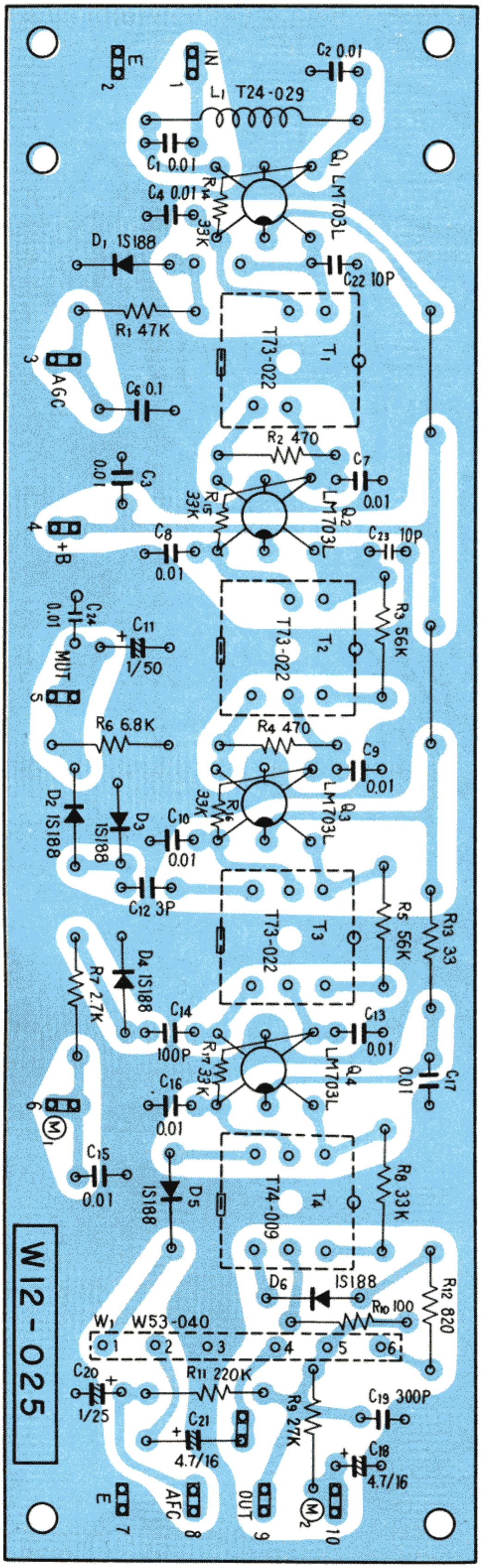
Symbol	Description				Part No.
R1	Carbon film	47k			
R2	Carbon film	470			
R3	Carbon film	56k			
R4	Carbon film	470			
R5	Carbon film	56k			
R6	Carbon film	6.8k			
R7	Carbon film	2.2k			
R8	Carbon film	33k			
R9	Carbon film	27k			
R10	Carbon film	100			
R11	Carbon film	220k			
R12	Carbon film	820			
R13	Carbon film	33			
R14	Carbon film	33k			
R15	Carbon film	33k			
R16	Carbon film	33k			
R17	Carbon film	33k			

TRANSFORMERS AND COIL

Symbol	Description	Part No.
T1	FM IF Transformer	T73-022-0
T2	FM IF	T73-022-0
T3	FM IF	T73-022-0
T4	FM IF	T74-009-0
L1	RF Choke Coil	T24-029-0

ICs AND DIODES

Symbol	Description	Part No.
Q1	LM703L IC	
Q2	LM703L IC	
Q3	LM703L IC	
Q4	LM703L IC	
D1	1S188 or FM-1 Diode	
D2	1S188 or FM-1	
D3	1S188 or FM-1	
D4	1S188 or FM-1	
D5	1S188 or FM-1	
D6	1S188 or FM-1	



OTHER

Symbol	Description	Part No.
W1	Compound Part for FM Detect	W53-040-O

MPX UNIT(W13-024)

CAPACITORS

Symbol	Description				Part No.
C1	Styrol	0.0022		50V	C15-007-0
C2	Electrolytic	1		50V	
C3	Mylar	0.047	±20%	50V	
C4	Styrol	0.01	±5%		C15-010-0
C5	Styrol	0.01	±5%		C15-010-0
C6	Electrolytic	2.2		35V	
C7	Styrol	0.0033	±5%		C15-011-0
C8	Mylar	0.0022		50V	
C9	Mylar	0.0022		50V	
C10	Electrolytic	22		25V	
C11	Styrol	0.0015		50V	
C12	Styrol	0.0015		50V	
C13	Electrolytic	0.47		50V	
C14	Electrolytic	0.47		50V	

RESISTORS

Symbol	Description		Part No.
R1	Carbon film	15k	
R2	Carbon film	15k	
R3	Carbon film	12k	
R4	Carbon film	2.2k	
R5	Carbon film	4.7k	
R6	Carbon film	3.3k	
R7	Carbon film	10k	
R8	Carbon film	10k	
R9	Carbon film	15k	
R10	Carbon film	15k	
R11	Carbon film	120	
R12	Carbon film	1k	

COILS

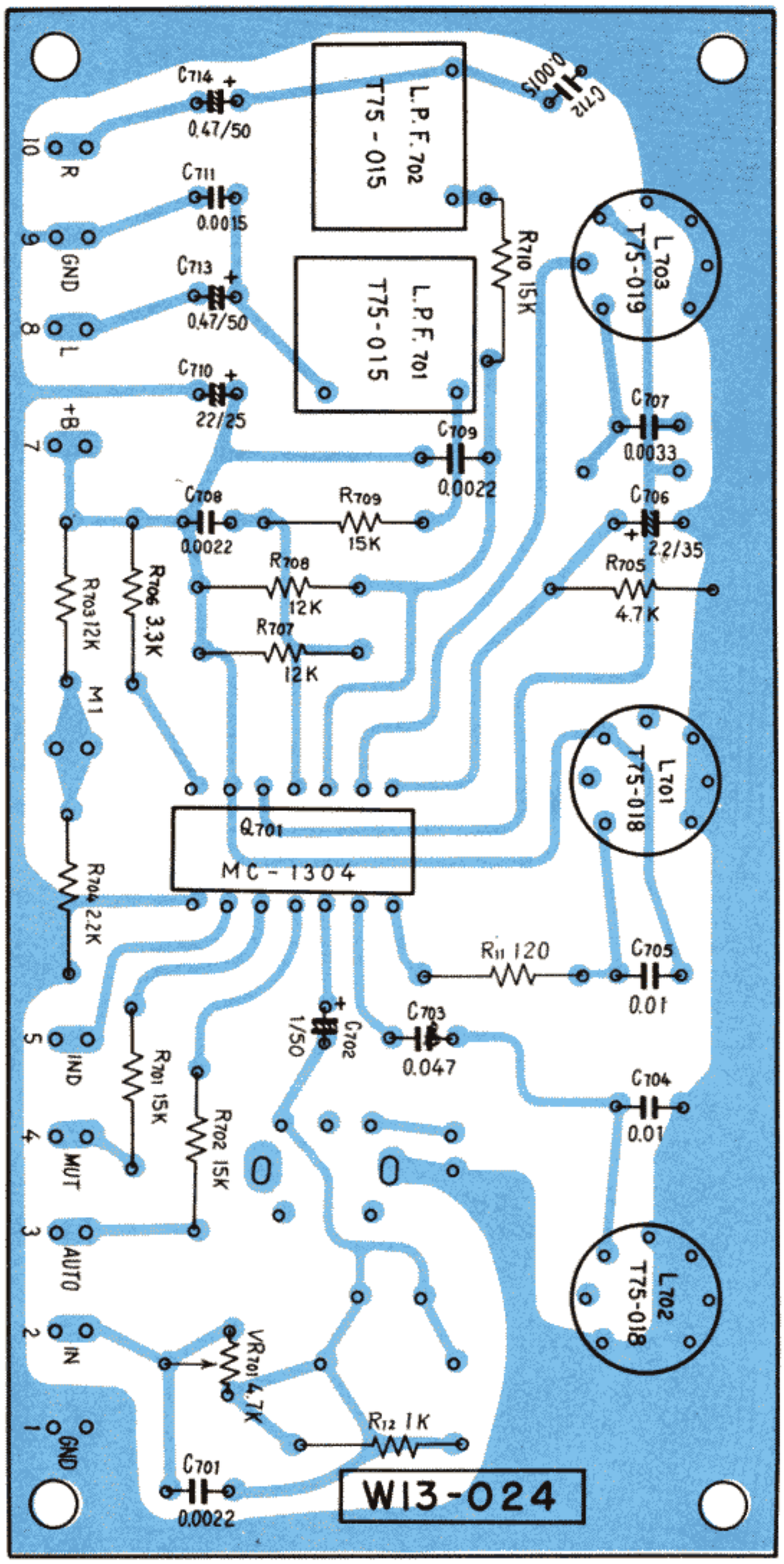
Symbol	Description	Part No.
L1	19kHz Coil	T75-018-A
L2	19kHz Coil	T75-018-A
L3	38kHz Coil	T75-019-A
LPF1	38kHz Filter Coil	T75-015-0
LPF2	38kHz Filter Coil	T75-015-0

IC

Symbol	Description	Part No.
Q1	MPX-IC	MC1304L

POTENTIOMETER

Symbol	Description	Part No.
VR1	4.7kΩ Semifixed	C92-051-0



MUTING UNIT (W18-026)

CAPACITORS

Symbol	Description				Part No.
C1	Electrolytic	4.7		16V	
C2	Electrolytic	2.2		35V	
C3	Mylar	0.0056		50V	

RESISTORS

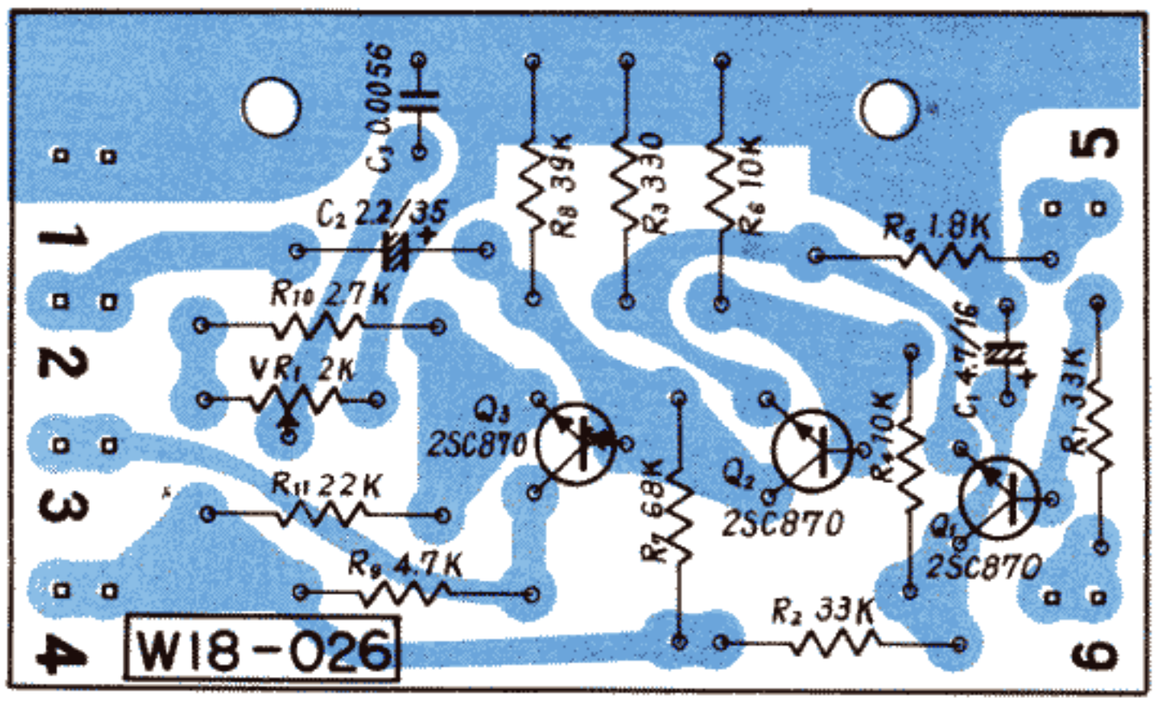
Symbol	Description				Part No.
R1	Carbon film	33k			
R2	Carbon film	33k			
R3	Carbon film	330			
R4	Carbon film	10k			
R5	Carbon film	1.8k			
R6	Carbon film	10k			
R7	Carbon film	68k			
R8	Carbon film	39k			
R9	Carbon film	4.7k			
R10	Carbon film	2.7k			
R11	Carbon film	22k			

TRANSISTORS

Symbol	Description	Part No.
Q1	2SC870	
Q2	2SC870	
Q3	2SC870	

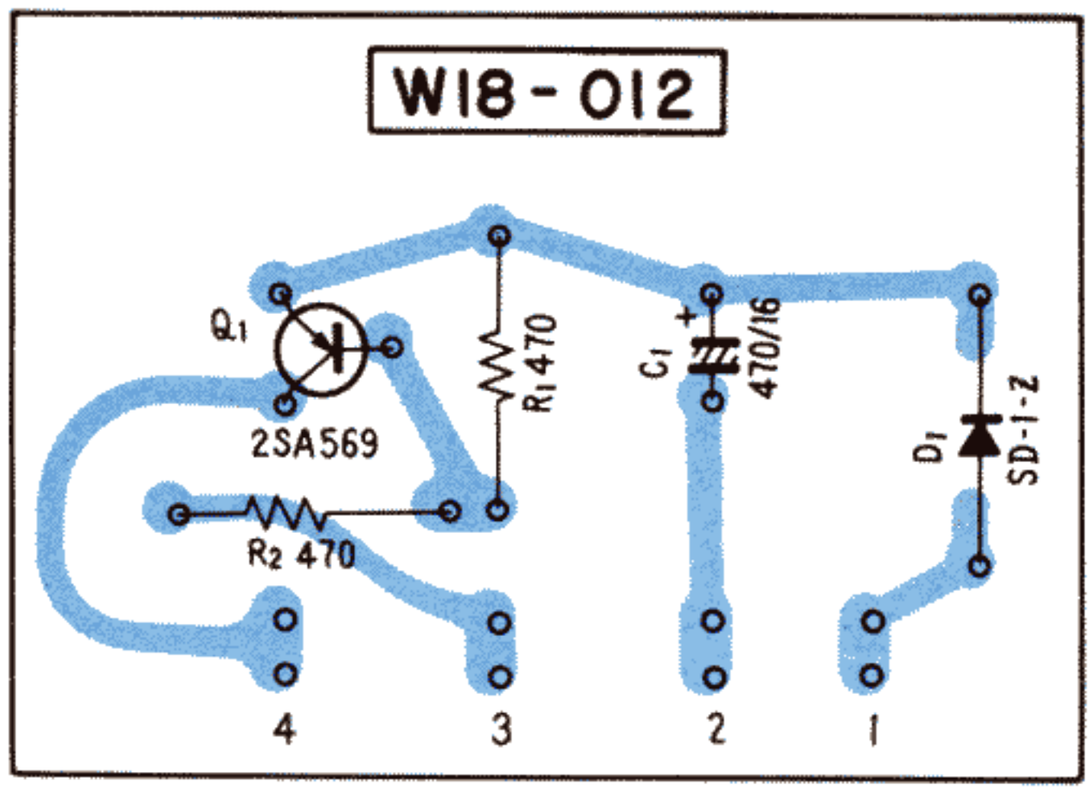
POTENTIOMETER

Symbol	Description	Part No.
VR1	2kΩ Semi fixed, Muting level control	C92-057-0

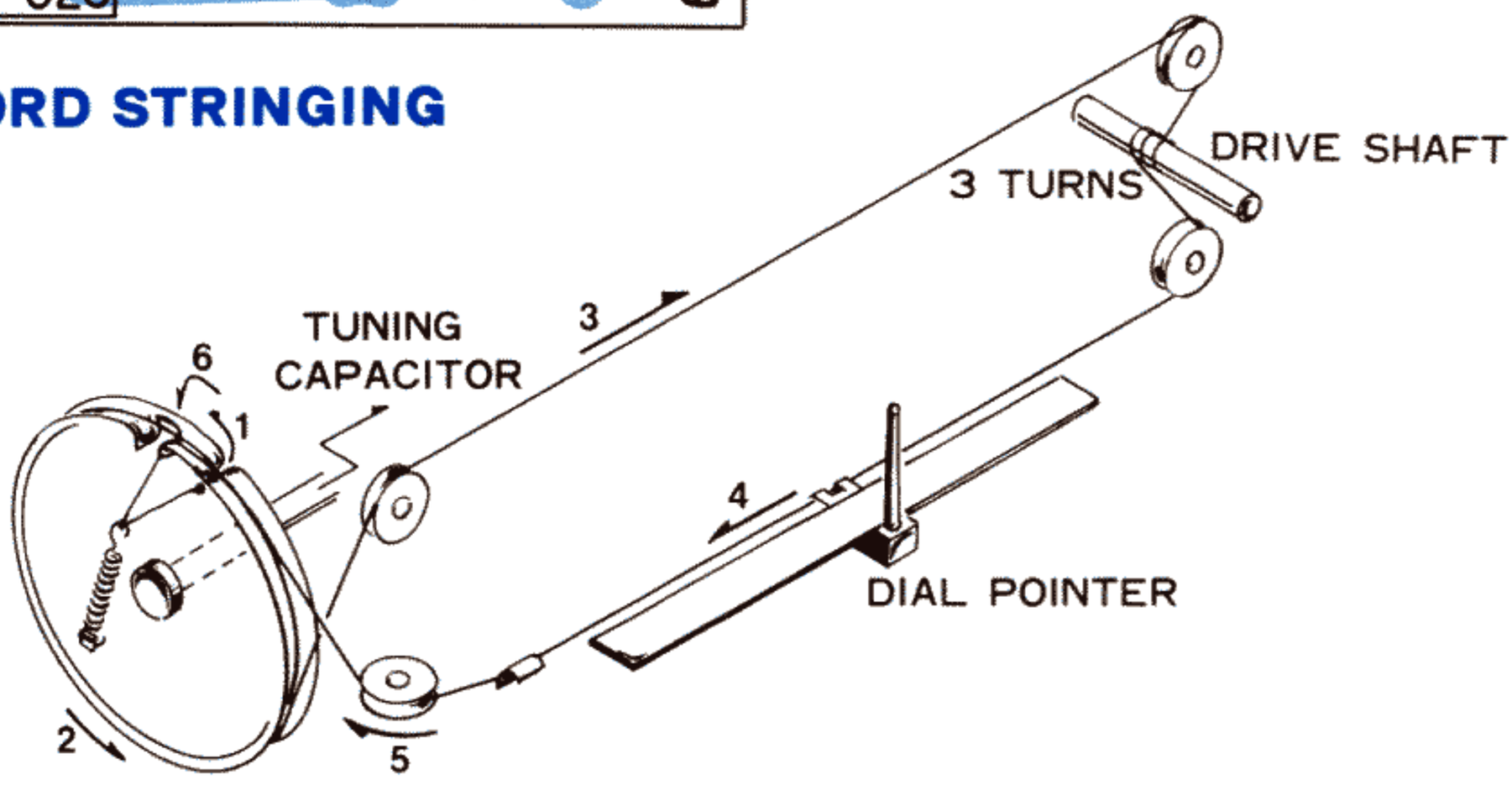


INDICATOR UNIT (W18-012)

Symbol	Description				Part No.
	CAPACITOR				
C1	Electrolytic	470		16V	
	RESISTORS				
R1	Carbon film	470			
R2	Carbon film	470			
	TRANSISTOR				
Q1	2SA569-G				
	DIODE				
D1	SD-1Z				



DIAL CORD STRINGING



AM TUNER UNIT (W14-008)

CAPACITORS

Symbol	Description				Part No.
C1	Ceramic	0.04	+100% −0	25V	
C2	Ceramic	0.04	+100% −0	25V	
C3	Ceramic	0.04	+100% −0	25V	
C4	Ceramic	0.04	+100% −0	25V	
C5	Ceramic	0.04	+100% −0	25V	
C7	Mylar	0.01	±20%	50V	
C8	Styrol	410P		50V	
C9	Ceramic	0.04	+100% −0	25V	
C10	Ceramic	0.04	+100% −0	25V	
C11	Ceramic	0.04	+100% −0	25V	
C12	Ceramic	0.04	+100% −0	25V	
C13	Ceramic	0.04	+100% −0	25V	
C14	Electrolytic	10		10V	
C15	Ceramic	0.04	+100% −0	25V	
C16	Electrolytic	10		16V	
C17	Ceramic	0.04	+100% −0	25V	
C18	Ceramic	0.04	+100% −0	25V	
C19	Ceramic	3P		50V	
C20	Ceramic	47P		50V	
C21	Ceramic	0.04	+100% −0	25V	
C22	Electrolytic	220		16V	
C23	Ceramic	0.04	+100% −0	25V	
C24	Mylar	0.004	±20%	50V	
C25	Mylar	0.002	±20%	50V	

RESISTORS

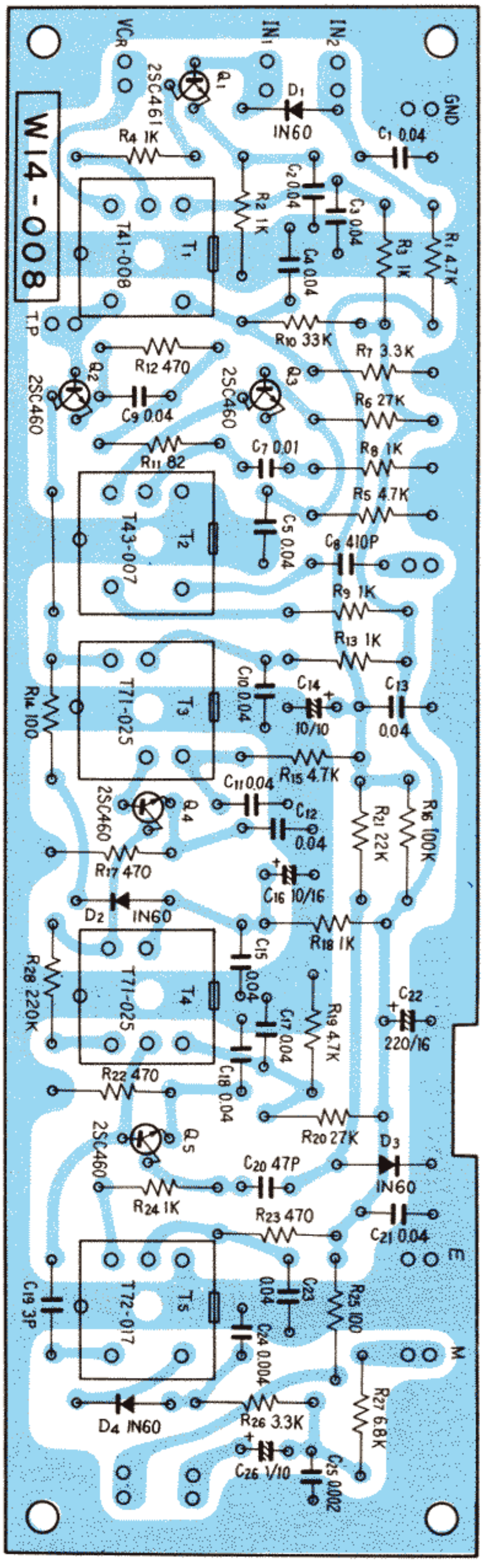
Symbol	Description				Part No.
R1	Carbon film	4.7k			
R2	Carbon film	1k			
R3	Carbon film	1k			
R4	Carbon film	1k			
R5	Carbon film	4.7k			
R6	Carbon film	22k			
R7	Carbon film	3.3k			
R8	Carbon film	1k			
R9	Carbon film	1k			
R10	Carbon film	33k			
R11	Carbon film	82			
R12	Carbon film	470			
R13	Carbon film	1k			
R14	Carbon film	100			
R15	Carbon film	4.7k			
R16	Carbon film	100k			
R17	Carbon film	470			
R18	Carbon film	1k			
R19	Carbon film	4.7k			
R20	Carbon film	27k			
R21	Carbon film	22k			
R22	Carbon film	470			
R23	Carbon film	470			
R24	Carbon film	1k			
R25	Carbon film	100			
R26	Carbon film	3.3k			
R27	Carbon film	6.8k			
R28	Carbon film	220k			

TRANSFORMERS AND COILS

Symbol	Description	Part No.
T1	RF Coil	T41-008-0
T2	OSC Coil	T43-007-0
T3	IF Transformer	T71-025-0
T4	IF Transformer	T71-025-0
T5	IF Transformer	T72-017-0

TRANSISTORS AND DIODES

Symbol	Description	Part No.
Q1	2SC461-A Transistor	
Q2	2SC460-A	
Q3	2SC460-A	
Q4	2SC460-A	
Q5	2SC460-A	
D1	1N60 Diode	
D2	1N60	
D3	1N60	
D4	1N60	



HEAD AMP UNIT (W21-001)

CAPACITORS

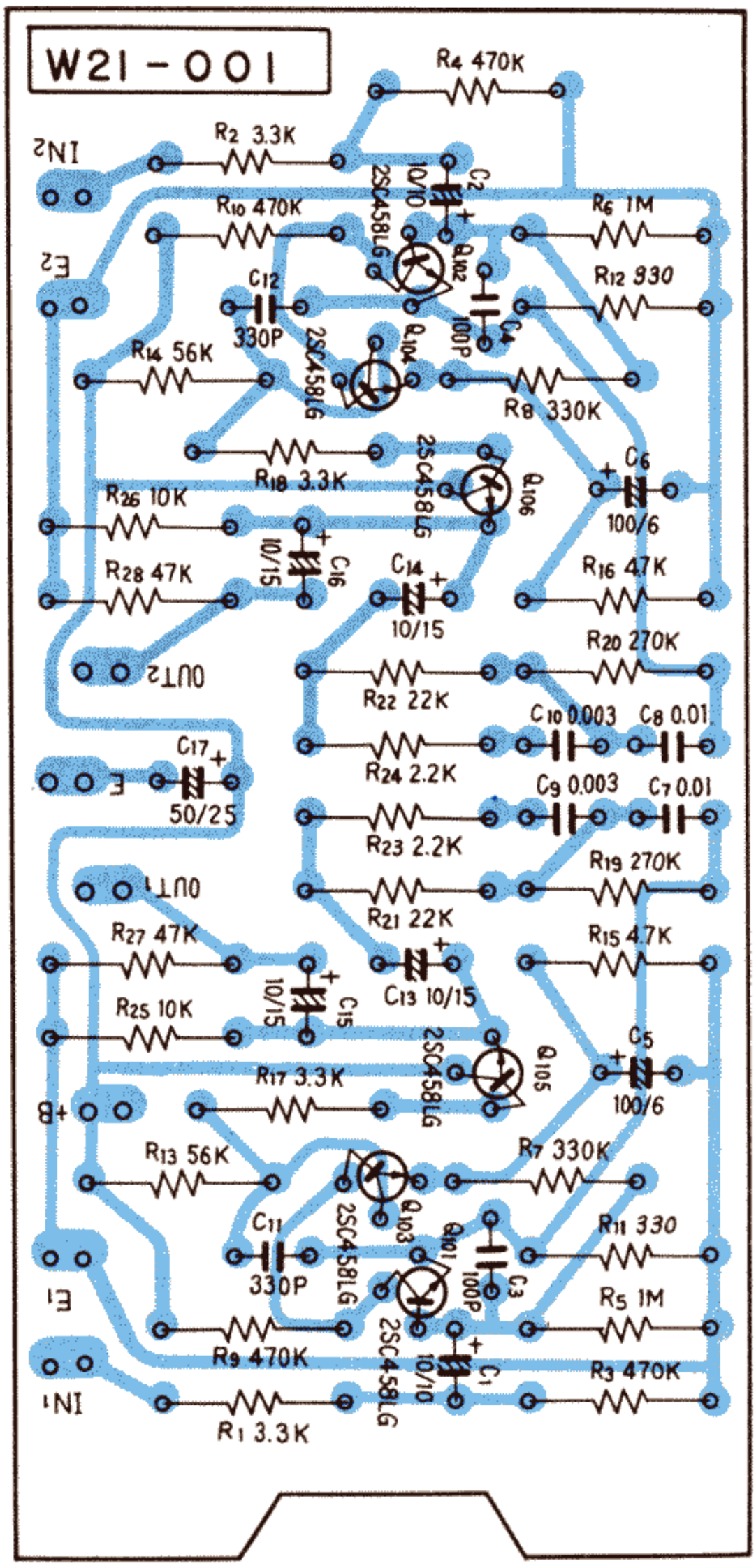
Symbol	Description				Part No.
C1	Electrolytic	10		10V	
C2	Electrolytic	10		10V	
C3	Ceramic	100P		50V	
C4	Ceramic	100P		50V	
C5	Electrolytic	100		6V	
C6	Electrolytic	100		6V	
C7	Mylar	0.01		50V	
C8	Mylar	0.01		50V	
C9	Mylar	0.003		50V	
C10	Mylar	0.003		50V	
C11	Ceramic	330P		50V	
C12	Ceramic	330P		50V	
C13	Electrolytic	10		15V	
C14	Electrolytic	10		15V	
C15	Electrolytic	10		15V	
C16	Electrolytic	10		15V	
C17	Electrolytic	50		25V	

RESISTORS

Symbol	Description				Part No.
R1	Carbon film	3.3k			
R2	Carbon film	3.3k			
R3	Carbon film	470k			
R4	Carbon film	470k			
R5	Carbon film	1M			
R6	Carbon film	1M			
R7	Carbon film	330k			
R8	Carbon film	330k			
R9	Carbon film	470k			
R10	Carbon film	470k			
R11	Carbon film	330			
R12	Carbon film	330			
R13	Carbon film	56k			
R14	Carbon film	56k			
R15	Carbon film	4.7k			
R16	Carbon film	4.7k			
R17	Carbon film	3.3k			
R18	Carbon film	3.3k			
R19	Carbon film	270k			
R20	Carbon film	270k			
R21	Carbon film	22 k			
R22	Carbon film	22 k			
R23	Carbon film	2.2k			
R24	Carbon film	2.2k			
R25	Carbon film	10k			
R26	Carbon film	10k			
R27	Carbon film	47k			
R28	Carbon film	47k			

TRANSISTORS

Symbol	Description	Part No.
Q1	2SC458LG C or B	
Q2	2SC458LG	
Q3	2SC458LG	
Q4	2SC458LG	
Q5	2SC458LG	
Q6	2SC458LG	



CONTROL AMP UNIT (15-079)

CAPACITORS

Symbol	Description				Part No.
C1	Electrolytic	0.47		25V	
C2	Electrolytic	0.47		25V	
C3	Ceramic	10P		50V	
C4	Ceramic	10P		50V	
C5	Electrolytic	0.22		25V	
C6	Electrolytic	0.22		25V	
C7	Electrolytic	100		35V	
C8	Electrolytic	100		35V	
C9	Electrolytic	1		16V	
C10	Electrolytic	1		16V	
C11	Mylar	0.0047		50V	
C12	Mylar	0.0047		50V	
C13	Mylar	0.0047		50V	
C14	Mylar	0.0047		50V	
C15	Electrolytic	33		6.3V	
C16	Electrolytic	33		6.3V	
C17	Electrolytic	50		25V	
C18	Electrolytic	50		25V	

RESISTORS

Note: LN·····Low Noise

Symbol	Description				Part No.
R1	Carbon film (LN)	1k			
R2	Carbon film (LN)	1k			
R3	Carbon film (LN)	330k			
R4	Carbon film (LN)	330k			
R5	Carbon film (LN)	33k			
R6	Carbon film (LN)	33k			
R7	Carbon film (LN)	8.2k			
R8	Carbon film (LN)	8.2k			
R9	Carbon film (LN)	1k			
R10	Carbon film (LN)	1k			
R11	Carbon film (LN)	1k			
R12	Carbon film (LN)	1k			
R13	Carbon film	2.2k			
R14	Carbon film	2.2k			
R15	Carbon film	6.8k			
R16	Carbon film	6.8k			
R17	Carbon film	6.8k			
R18	Carbon film	6.8k			
R19	Carbon film (LN)	1k			
R20	Carbon film (LN)	1k			
R21	Carbon film	1.8k			
R22	Carbon film	1.8k			
R23	Carbon film (LN)	330k			
R24	Carbon film (LN)	330k			
R25	Carbon film	47k			
R26	Carbon film	47k			
R27	Carbon film (LN)	8.2k			
R28	Carbon film (LN)	8.2k			
R29	Carbon film	1.5k			
R30	Carbon film	1.5k			
R31	Carbon film	330			
R32	Carbon film	330			

TRANSISTORS

Symbol	Description	Part No.
Q1	2SC871-BL	
Q2	2SC871-BL	
Q3	2SC870-GR	
Q4	2SC870-GR	

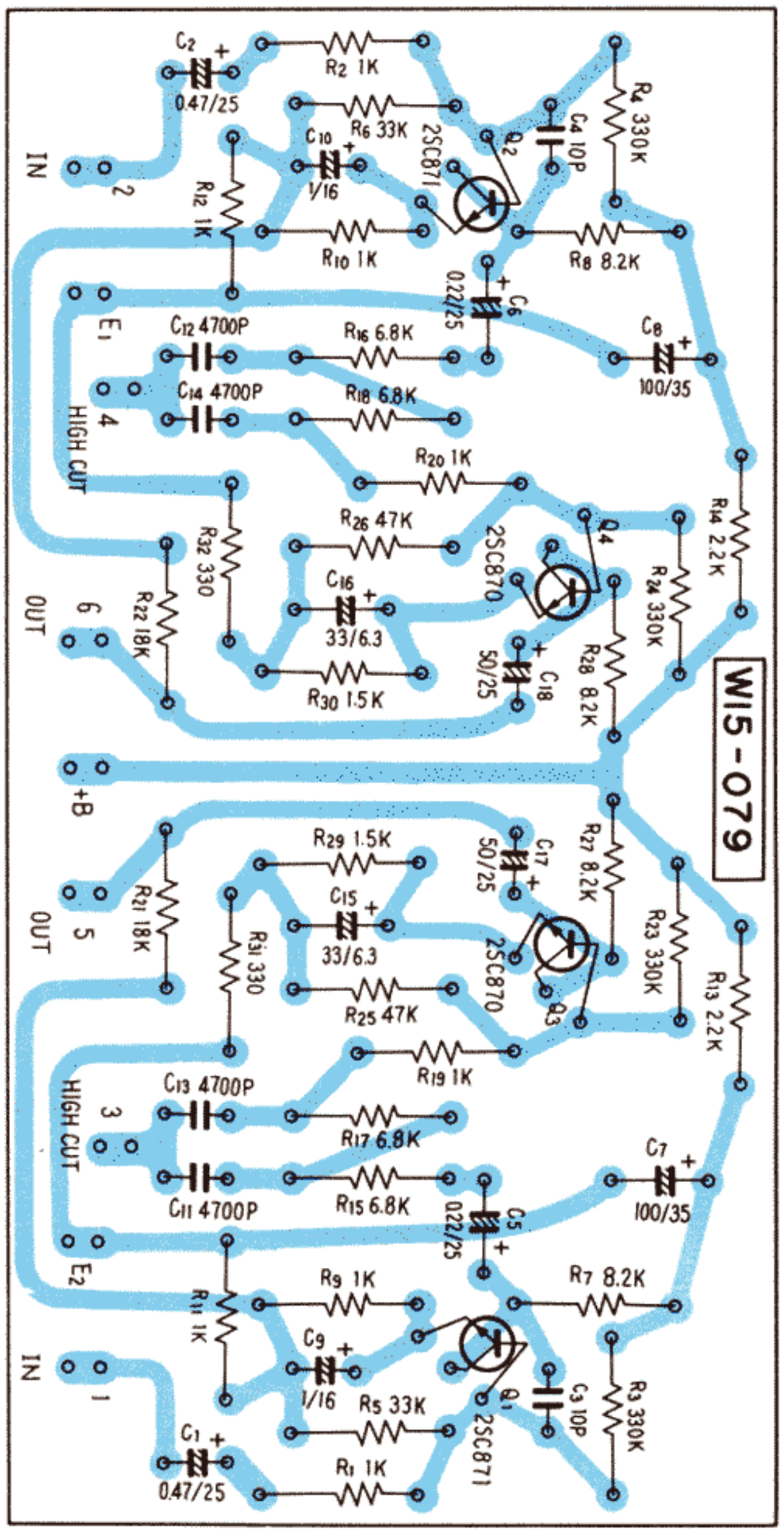
CONTROL UNIT (W15-080)

CAPACITORS

Symbol	Description				Part No.
C1	Electrolytic	3.3		25V	
C2	Electrolytic	3.3		25V	
C3	Mylar	0.0022		50V	
C4	Mylar	0.0022		50V	
C5	Mylar	0.01		50V	
C6	Mylar	0.01		50V	
C7	Mylar	0.033		50V	
C8	Mylar	0.033		50V	
C9	Mylar	0.1		50V	
C10	Mylar	0.1		50V	

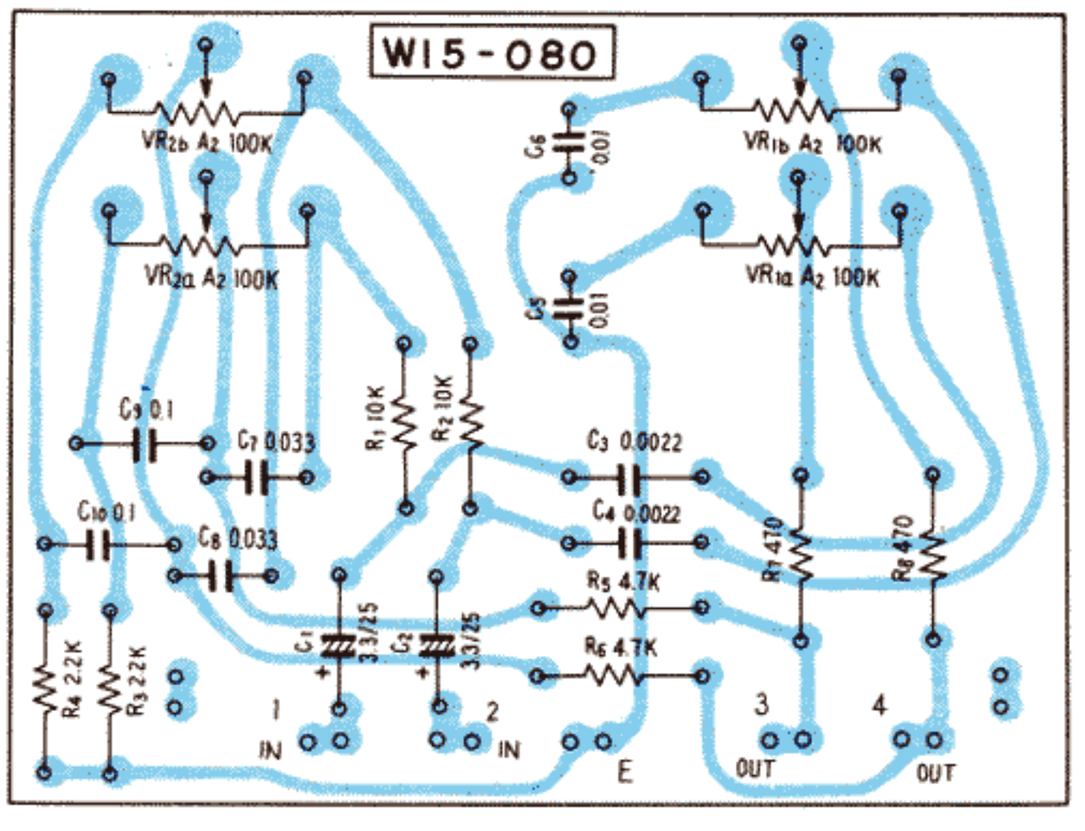
RESISTORS

Symbol	Description				Part No.
R1	Carbon film	10k			
R2	Carbon film	10k			
R3	Carbon film	2.2k			
R4	Carbon film	2.2k			
R5	Carbon film	4.7k			
R6	Carbon film	4.7k			
R7	Carbon film	470			
R8	Carbon film	470			



POTENTIOMETERS

Symbol	Description	Part No.
VR1	100kΩ, dual (BASS Control)	C87-024-0
VR2	100kΩ, dual (TREBLE Control)	C87-024-0



PUSH SWITCH UNIT(A) (W15-081)

CAPACITORS

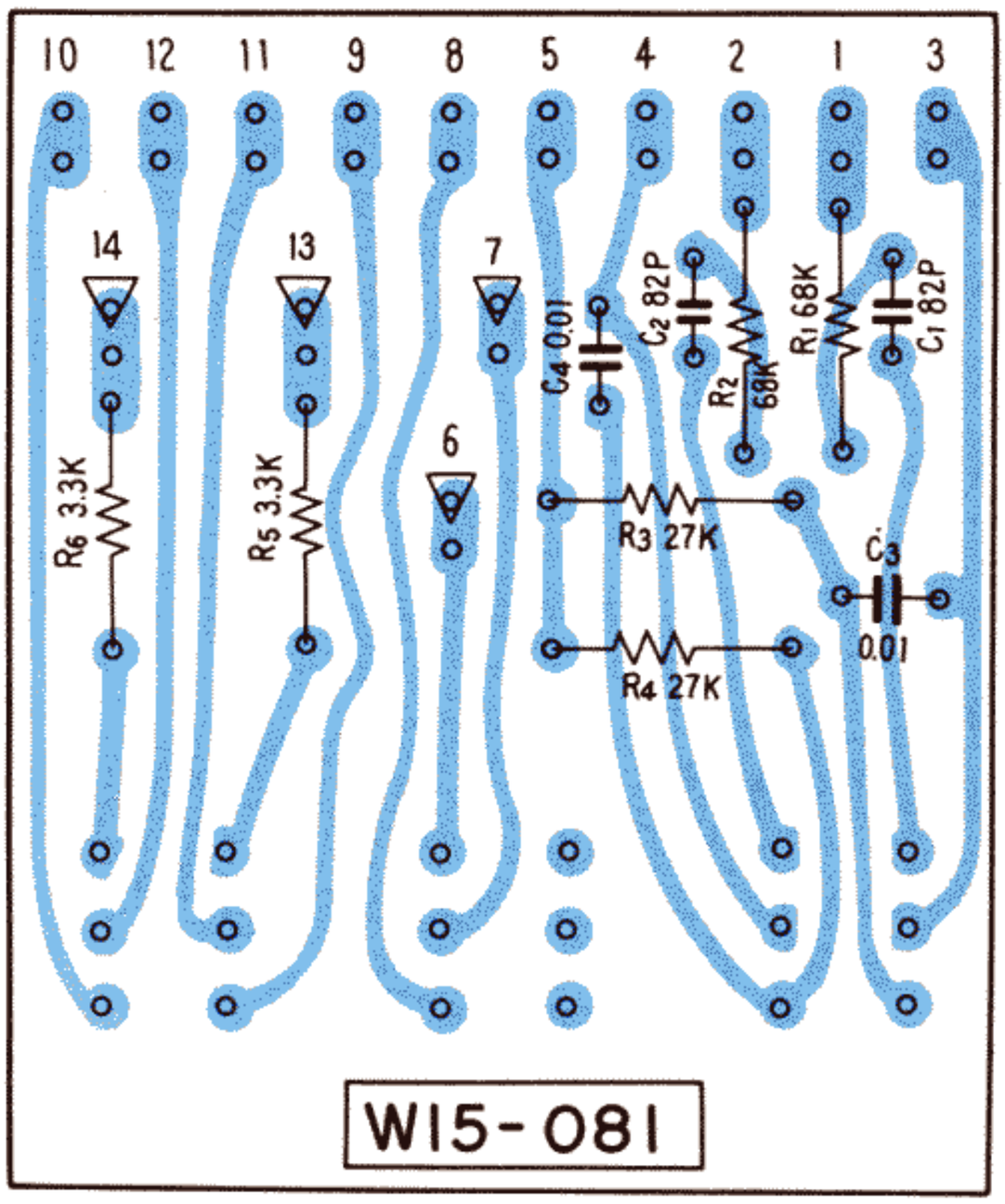
Symbol	Description				Part No.
C1	Caramic	82P		50V	
C2	Ceramic	82P		50V	
C3	Mylar	0.01		50V	
C4	Mylar	0.01		50V	

RESISTORS

Symbol	Description				Part No.
R1	Carbon film	68k			
R2	Carbon film	68k			
R3	Carbon film	27k			
R4	Carbon film	27k			
R5	Carbon film	3.3k			
R6	Carbon film	3.3k			

SWITCHES

Symbol	Description	Part No.
S1	LOUDNESS Switch	S31-023-0
S2	FM MUTING Switch	S31-023-0
S3	TAPE MONITOR Switch	S31-023-0
	Knob for Push Switch	A19-079-0

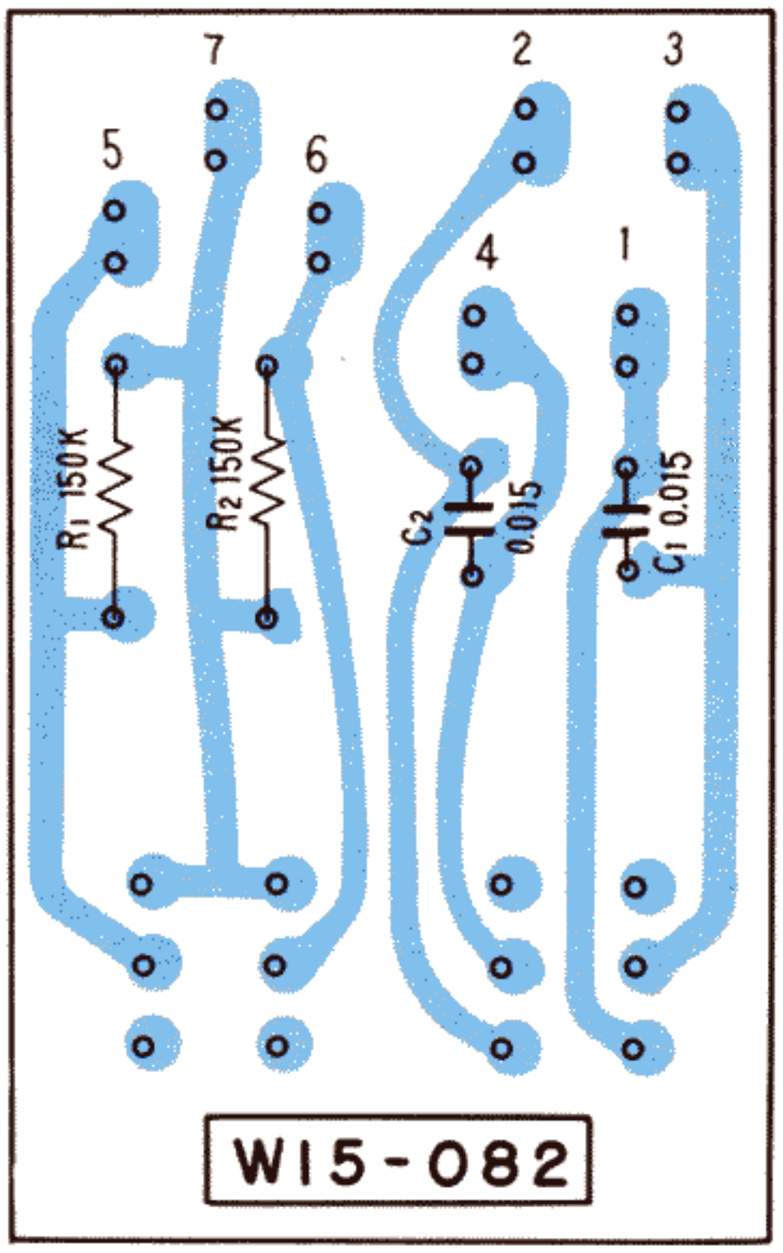


RESISTORS

Symbol	Description				Part No.
R1	Carbon film	150k			
R2	Carbon film	150k			

SWITCHES

Symbol	Description	Part No.
S1	LOW CUT FILTER Switch	S31-023-0
S2	HIGH CUT FILTER Switch	S31-023-0
	Knob for Push Switch	A19-079-0



MAIN AMP UNIT (W23-002)

CAPACITORS

Symbol	Description				Part No.
C1	Electrolytic	10		6.3V	
C2	Electrolytic	10		6.3V	
C3	Electrolytic	100		50V	
C4	Electrolytic	100		50V	
C5	Electrolytic	3.3		25V	
C6	Electrolytic	3.3		25V	
C7	Electrolytic	100		50V	
C8	Electrolytic	100		50V	
C9	Ceramic	100P		50V	
C10	Ceramic	100P		50V	
C11	Electrolytic	100		3V	
C12	Electrolytic	100		3V	
C13	Electrolytic	1000		50V	C52-072-0
C14	Electrolytic	1000		50V	C52-072-0
C15	Ceramic	47P		50V	
C16	Ceramic	47P		50V	
C17	Mylar	0.022		50V	
C18	Mylar	0.022		50V	
C19	Ceramic	100P		50V	
C20	Ceramic	100P		50V	

PUSH SWITCH UNIT(B) (W15-082)

CAPACITORS

Symbol	Description				Part No.
C1	Mylar	0.015		50V	
C2	Mylar	0.015		50V	

RESISTORS

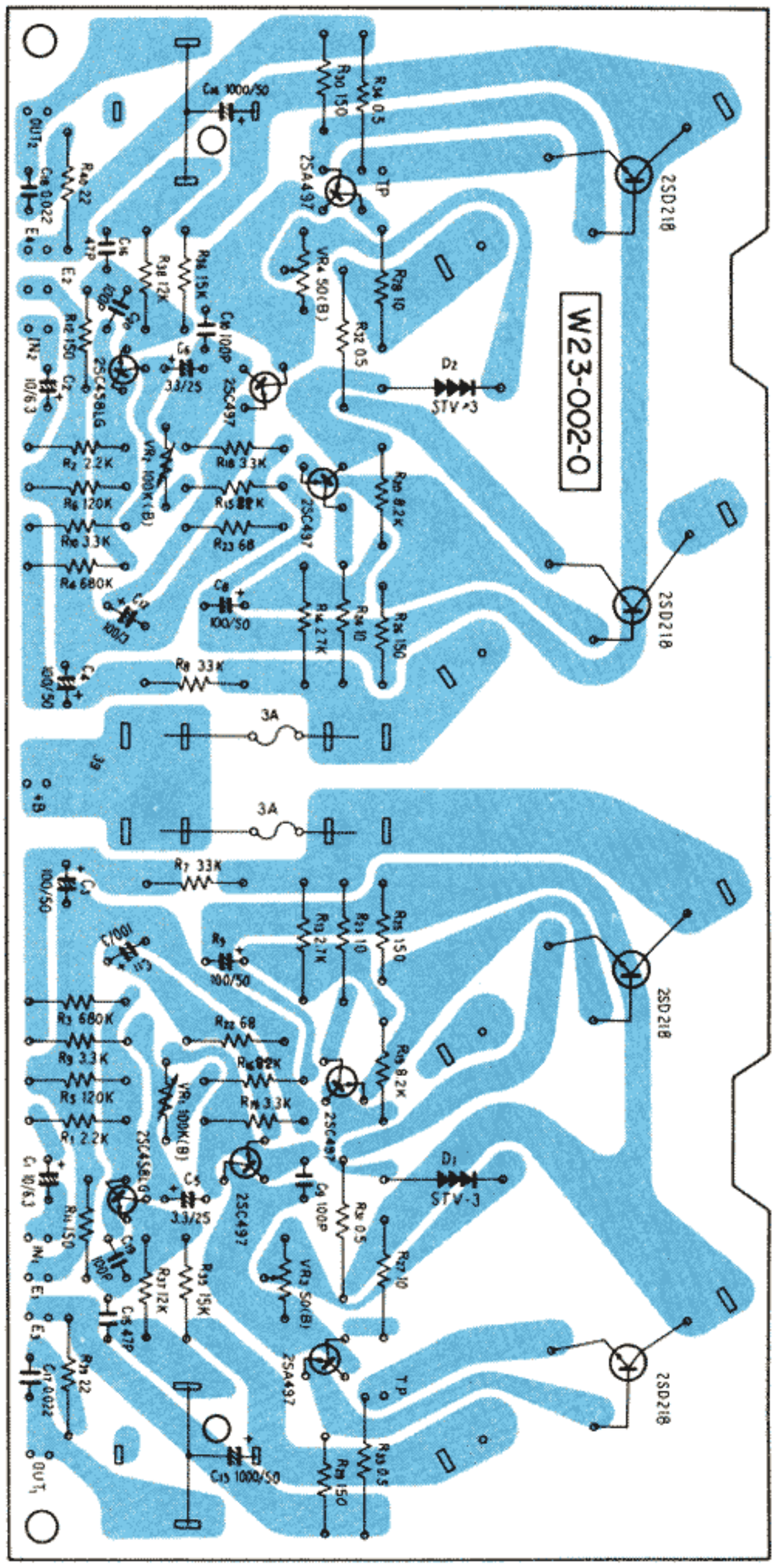
Symbol	Description				Part No.
R1	Carbon film	2.2k			
R2	Carbon film	2.2k			
R3	Carbon film	680k			
R4	Carbon film	680k			
R5	Carbon film	120k			
R6	Carbon film	120k			
R7	Carbon film	33k			
R8	Carbon film	33k			
R9	Carbon film	3.3k			
R10	Carbon film	3.3k			
R11	Carbon film	150			
R12	Carbon film	150			
R13	Carbon film	2.7k			
R14	Carbon film	2.7k			
R15	Carbon film	82k			
R16	Carbon film	82k			
R17	Carbon film	3.3k			
R18	Carbon film	3.3k			
R19	Carbon film	8.2k			
R20	Carbon film	8.2k			
R21	Carbon film	68			
R22	Carbon film	68			
R23	Carbon film	10			
R24	Carbon film	10			
R25	Carbon film	150			
R26	Carbon film	150			
R27	Carbon film	10			
R28	Carbon film	10			
R29	Carbon film	150			
R30	Carbon film	150			
R31	Wire Wound	0.5		5W	
R32	Wire Wound	0.5		5W	
R33	Wire Wound	0.5		5W	
R34	Wire Wound	0.5		5W	
R35	Carbon film	15k			
R36	Carbon film	15k			
R37	Carbon film	12k			
R38	Carbon film	12k			
R39	Carbon film	22		½W	
R40	Carbon film	22		½W	

TRANSISTORS AND DIODES

Symbol	Description	Part No.
Q1	2SC458LG Transistor	
Q2	2SC458LG	
Q3	2SC497	
Q4	2SC497	
Q5	2SC497	
Q6	2SC497	
Q7	2SA497	
Q8	2SA497	
Q9	2SD218	
Q10	2SD218	
Q11	2SD218	
Q12	2SD218	
D1	STV-3 Diode	
D2	STV-3	

POTENTIOMETERS

Symbol	Description	Part No.
VR1	100kΩ, Semifixed	C92-042-0
VR2	100kΩ, Semifixed	C92-042-0
VR3	50Ω, Semifixed	C92-043-0
VR4	50Ω, Semifixed	C92-043-0



POWER SUPPLY UNIT (W16-026)

CAPACITORS

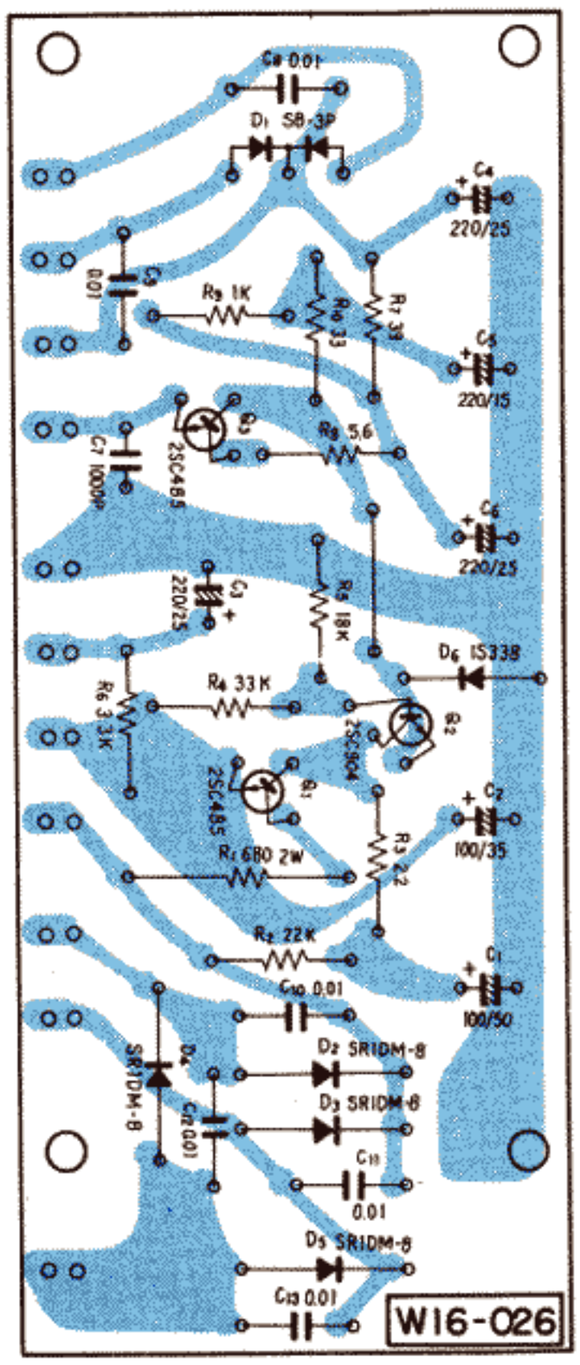
Symbol	Description				Part No.
C1	Electrolytic	100		50V	
C2	Electrolytic	100		35V	
C3	Electrolytic	220		25V	
C4	Electrolytic	220		25V	
C5	Electrolytic	220		15V	
C6	Electrolytic	220		25V	
C7	Mylar	0.001		50V	
C8~C13	Ceramic	0.01	+100% −0	500V	

RESISTORS

Symbol	Description				Part No.
R1	Carbon film	680		2W	
R2	Carbon film	22k			
R3	Carbon film	2.2			
R4	Carbon film	33k			
R5	Carbon film	18k			
R6	Carbon film	3.3k			
R7	Carbon film	39			
R8	Carbon film	5.6			
R9	Carbon film	1k			
R10	Carbon film	33			

TRANSISTORS AND DIODES

Symbol	Description	Part No.
Q1	2SC485 Transistor	
Q2	2SC905	
Q3	2SC485	
D1	SB-3P Diode	
D2~D5	SRIDM-8 Diode	
D6	1S338Q Zener Diode	



MIC AMP UNIT (W15-106)

CAPACITORS

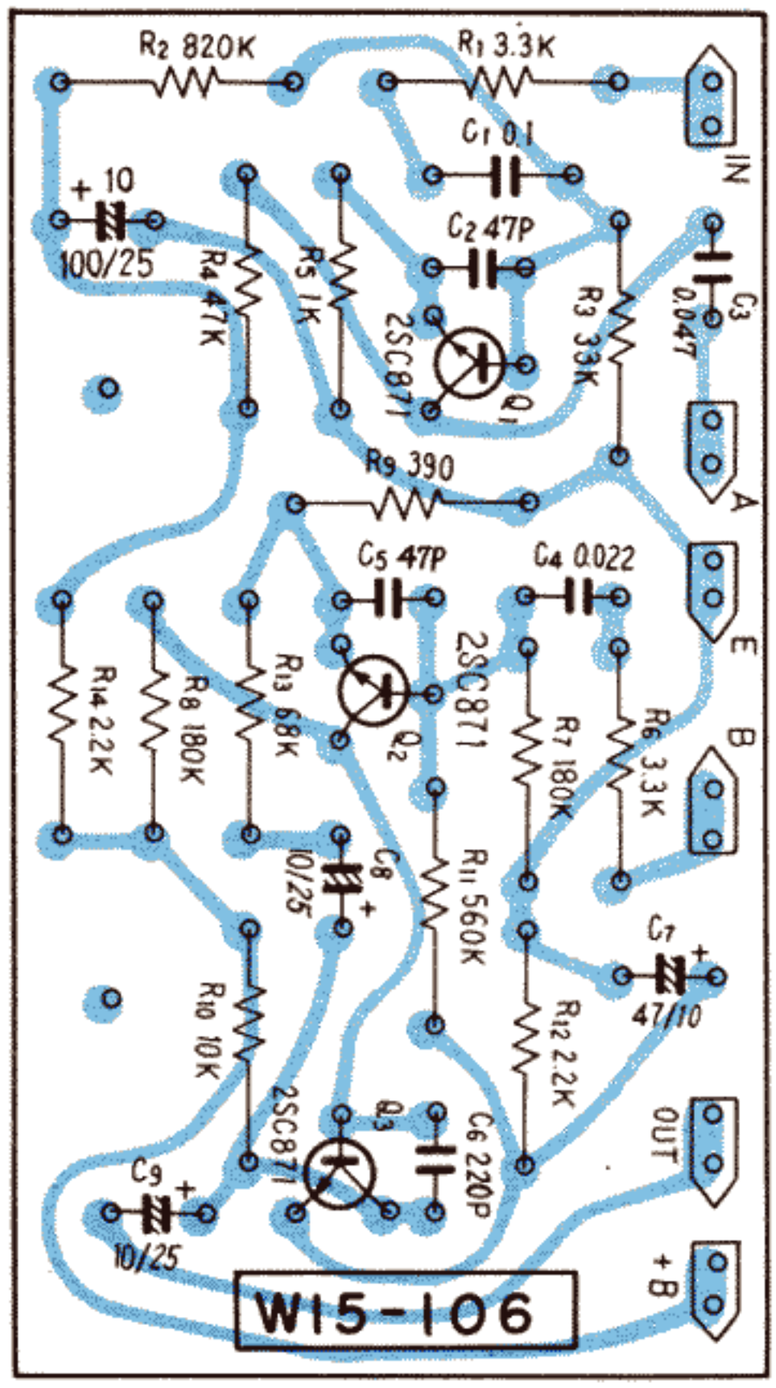
Symbol	Description				Part No.
C1	Mylar	0.1		50V	
C2	Ceramic	47P		50V	
C3	Mylar	0.015		50V	
C4	Mylar	0.022		50V	
C5	Ceramic	47P		50V	
C6	Ceramic	220P		50V	
C7	Electrolytic	47		10V	
C8	Electrolytic	10		25V	
C9	Electrolytic	10		25V	
C10	Electrolytic	100		25V	

RESISTORS

Symbol	Description				Part No.
R1	Carbon film	3.3k			
R2	Carbon film	820k			
R3	Carbon film	33k			
R4	Carbon film	47k			
R5	Carbon film	1k			
R6	Carbon film	3.3k			
R7	Carbon film	180k			
R8	Carbon film	180k			
R9	Carbon film	390			
R10	Carbon film	10k			
R11	Carbon film	560k			
R12	Carbon film	390			
R13	Carbon film	68k			
R14	Carbon film	2.2k			

TRANSISTORS

Symbol	Description	Part No.
Q1	2SC871	
Q2	2SC871	
Q3	2SC871	



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