

KR-5150

SOLID STATE AM-FM STEREO RECEIVER



INSTRUCTION MANUAL

To the New KR-5150 Receiver Owner:

Because Kenwood Electronics, Inc., takes great pride in the long tradition of quality components the name Kenwood represents, your purchase of a Kenwood receiver places you in a distinguished family of connoisseurs of superb high-fidelity sound reproduction.

The purpose of this manual is to acquaint you with the operating features of your new receiver. You will notice that in every detail of planning, engineering, styling, operating convenience, and adaptability, we have sought to anticipate your needs and desires. We suggest that you read this manual carefully. Knowing how to set up your receiver to best advantage will enhance your listening pleasure right from the start. You will also become aware of the ease with which you can adjust your receiver to meet your special requirements.

Turn the pages and become acquainted with the exciting features of your new receiver - features that will remain new for endless hours of listening pleasure.

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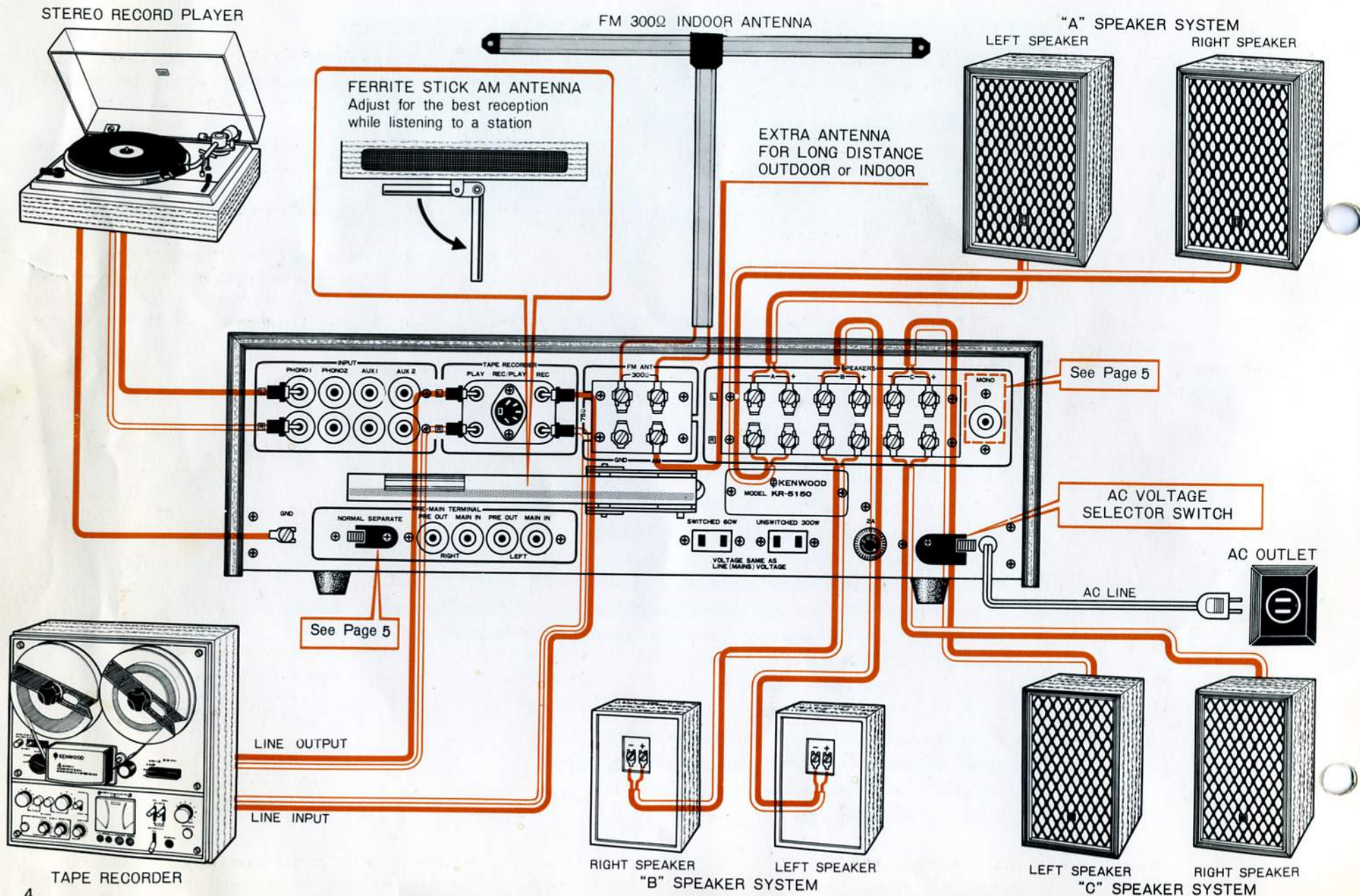
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SPECIAL KR-5150 FEATURES



1. 2-FET and 4-gang tuning condenser super-sensitive front-end.
2. 2-IC and mechanical filter IF stages for superior selectivity and low 2.0 dB capture ratio.
3. Inter-station muting circuit suppresses inter-station noise.
4. New FM/AM signal strength meter and FM zero-center tuning meter for perfect tuning.
5. FM stereo indicator light.
6. 2 pairs of magnetic phono input jacks for 2 sets of record players.
7. Step-type tone controls with BASS and TREBLE.
8. 3 pairs of stereo speaker output terminals for 3 sets of stereo speakers and front panel speaker selector switch (OFF, A, B, C, A+B, A+C).
9. Separate pre-amp output and main-amp input and center channel output.
10. Push-button controls regulate Loudness Control, Tape Monitor, Inter-station Muting, Low Filter and High Filter.
11. Power Transistor Protection Circuit.
12. Front panel stereo headphone jack.
13. 300-ohms and 75-ohms FM antenna terminals.
14. New "Luminous Dial" and Illuminated tuning pointer.
15. Light indicators for input selector switch.
16. 2 pairs of AUX INPUTS.

INTERCONNECTING DIAGRAM



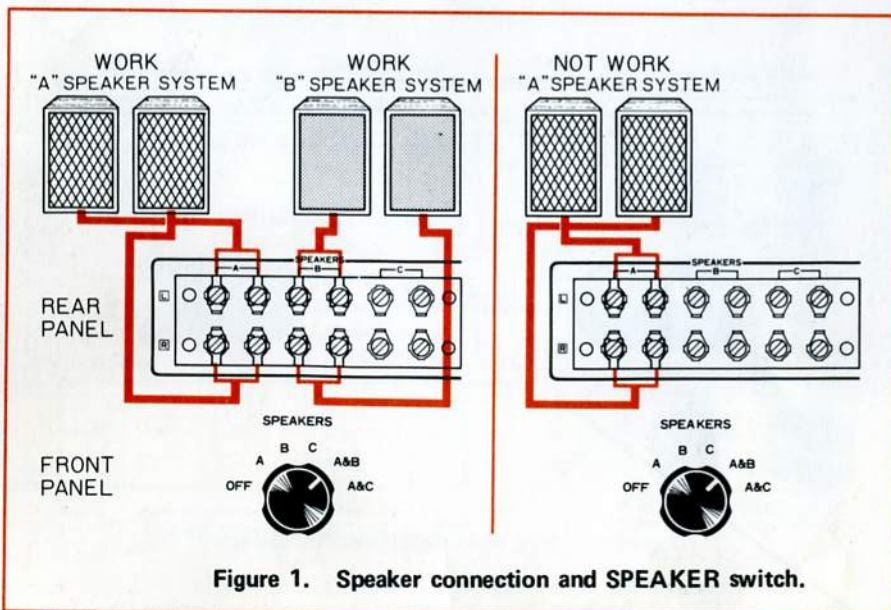
CONNECTIONS TO COMPONENT PARTS

SPEAKER CONNECTIONS

Special circuitry in the KR-5150 receiver makes it possible to hook up three sets of speakers (e.g., in different rooms). Any speakers with an impedance between 4 and 16 ohms can be used.

In connecting only one set of speakers, connect the right speaker to right speaker terminals and left speaker to left speaker terminals of "A" terminals. Should plus or minus of either right or left channel be reversely connected, sounds from the center section will be affected by a lack of separation. To connect a second set of speakers, connect right speaker to right speaker terminals and left speaker to left speaker terminals of "B" terminals. In the same manner, a third set of speakers can be connected to "C" terminals.

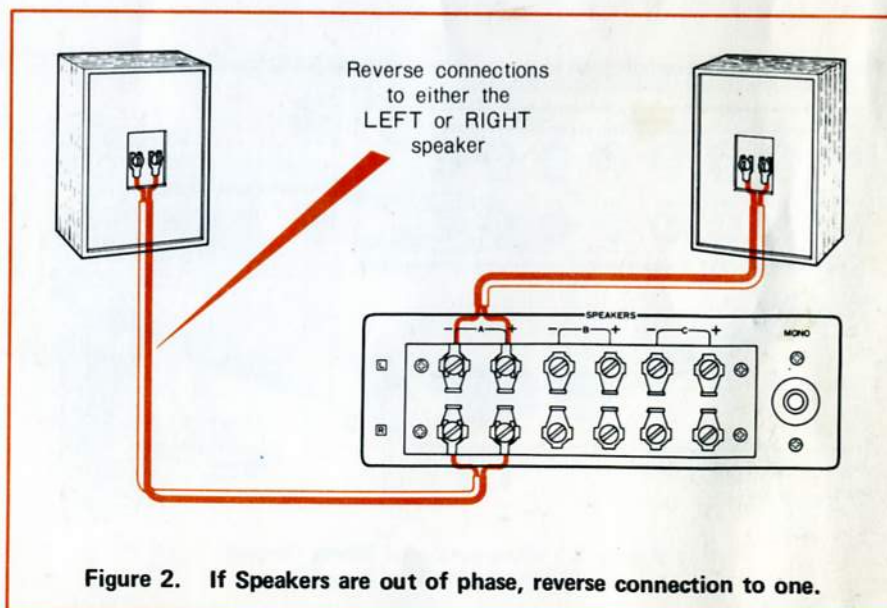
"A · B SPEAKERS" position of the SPEAKER selector switch will not work unless both A speakers system and B speakers system are connected. Likewise "A · C SPEAKERS" position of the SPEAKER selector switch will not work unless both A speakers system and C speakers system are connected.



PHASING OF THE SPEAKERS

Correct phasing is important in a stereophonic system. If the speakers are out of phase, they will work in opposition of each other and there will be a noticeable loss in low frequencies. Use the following procedure to make adjustments:

1. Set the SELECTOR switch to PHONO 1 (or PHONO 2/MIC), MODE switch to MIX and set VOLUME for desired listening level.
2. Play a monophonic record containing heavy bass passages.
3. After your speakers are connected, listen to the intensity of the bass tone. Then reverse the lead connections of the speakers and listen to the sound again. (See Figure 2). The position of the lead connections where the bass intensity was the greatest is the proper one and the speakers will then be permanently in phase.



CONNECTIONS TO COMPONENT PARTS

MONO OUTPUT

If the speakers are placed too wide apart stereo sound may be weak midway between them, and it may be necessary to use a center speaker.

This MONO OUTPUT jack may be used to connect a monaural amplifier to push this center speaker.

Speaker from this jack functions regardless of the SPEAKER selector switch.

The output voltage of this jack is about 1 V (at rated output and 56 ohms output impedance), which is the mixed monaural signal of left and right channels. Connect this to the AUX input jack of the monaural amplifier to drive the extra speaker. (See Figure 3).

It may also be used for 3-D stereo purposes.

PRE-AMPLIFIER OUTPUTS AND MAIN AMPLIFIER INPUTS

Stereo pre-amplifier outputs and stereo main amplifier inputs are incorporated in this unit. A simple setting of the slide switch will change the receiver's Function from "NORMAL" to "SEPARATE" as required.

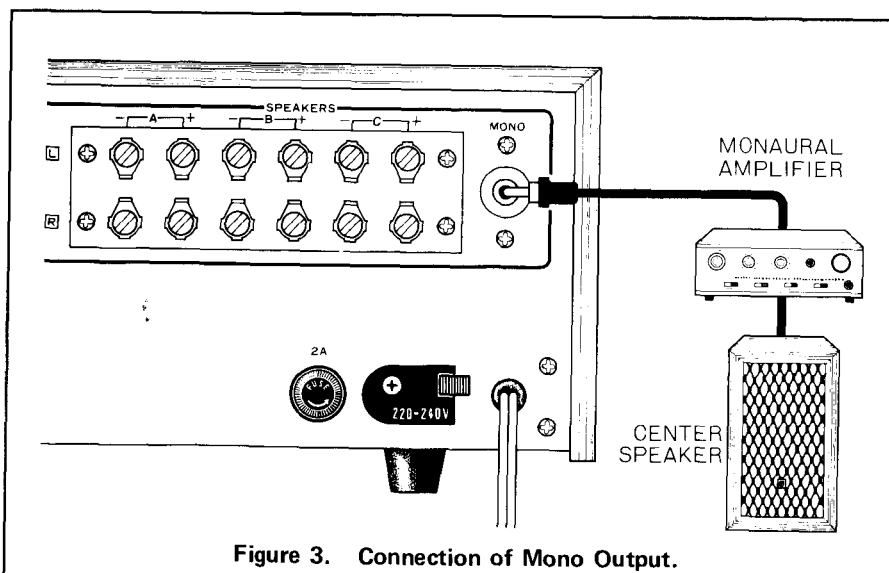


Figure 3. Connection of Mono Output.

This switch has been preset for normal receiver use and its position should not change. In this position the input jacks and output jacks can also be used to connect a second tape deck or as a pre-amplifier output for another basic amplifier.

If the receiver is to be used as a pre-amplifier or main amplifier only, or as a multi-channel system, the switch should be reset as follows:

1. Remove the black plate which holds the slide switch in place in its preset position "NORMAL".
2. Reset switch to the "SEPARATE" position for pre-amplifier or main amplifier only function.
3. Affix plate to hold switch in new position.

Figure 4 shows the PRE-MAIN SEPARATE switch set for "SEPARATE". Figure 5 shows how to make connections for multi-channel system.

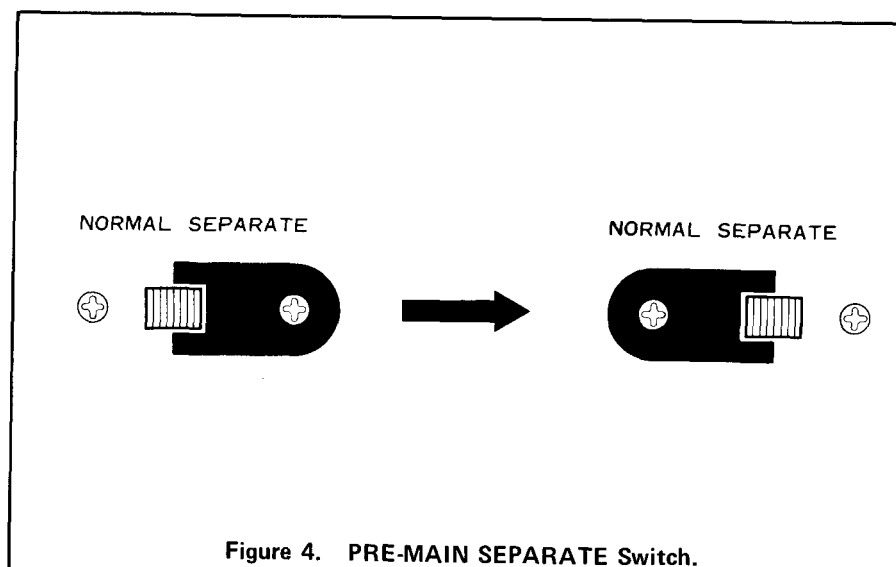


Figure 4. PRE-MAIN SEPARATE Switch.

CONNECTIONS TO COMPONENT PARTS

STEREO RECORD PLAYERS

The two lines of shielded cord from your stereo record player should be terminated with RCA type phono plugs. Cords should not exceed ten feet in length. (An excess will create a loss in high frequency range).

Two pairs of stereo phono inputs have been incorporated in this unit so that two sets of stereo record players can be hooked up. When operating PHONO 1 (or PHONO 2/MIC), switch the SELECTOR switch to PHONO 1 (or PHONO 2/MIC).

AUX

Auxiliary inputs can be used for a second tuner, tape recopying, etc. (See Figure 11, page 14)

STEREO HEADPHONE JACK

Enjoy the wonderful sounds of stereo without disturbing others or monitor the playback of tapes as you record them with your stereo headphones. Plug the headphone into the STEREO PHONES JACK and turn the SPEAKER selector switch to OFF position.

MICROPHONE

Be sure to use a low impedance microphone only, such as a dynamic microphone. For stereo, set the SELECTOR switch to PHONO 2/MIC and insert one microphone to right jack and the other to left jack, but in case of monaural you can use either input jack, left or right and set the MODE switch to MIX.

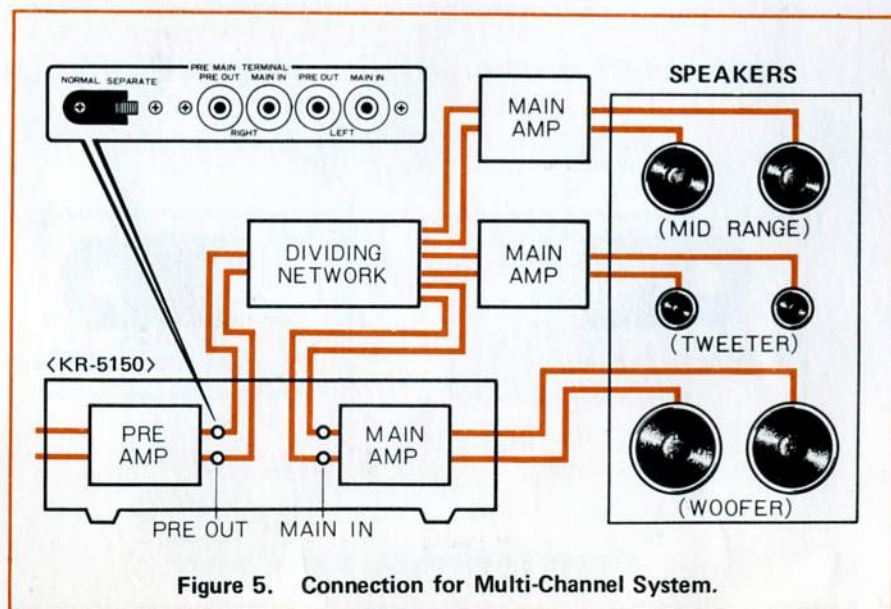


Figure 5. Connection for Multi-Channel System.

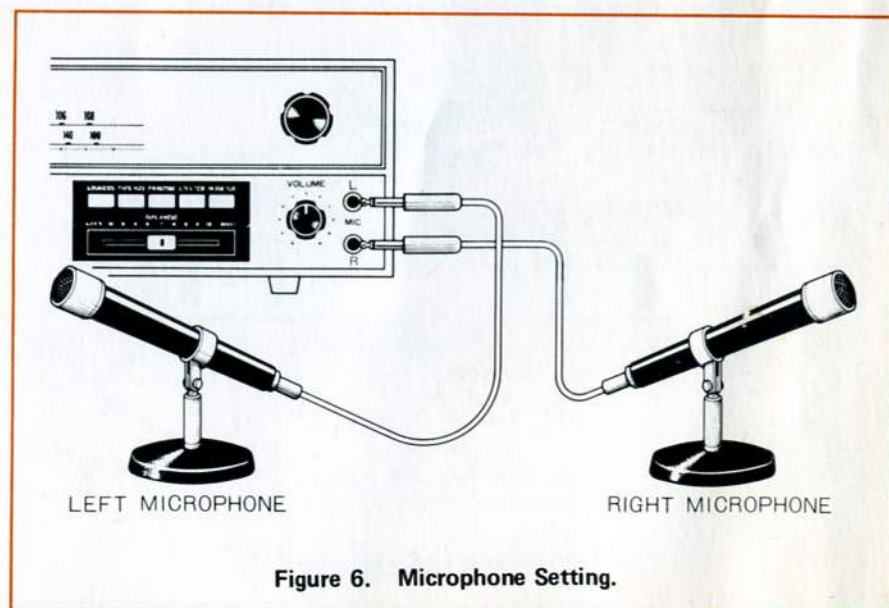


Figure 6. Microphone Setting.

ELECTRICAL CONNECTIONS

POWER

Plug the AC line cord into an outlet furnishing 220 to 240 volts AC, 50 – 60 Hz.

AC OUTLETS

The AC outlets on the rear of the receiver may be used to supply power to other components, such as a record player, tape recorder, etc.

1. Switched outlets (60 watts)

This is switched with the power switch on the receiver.

IMPORTANT! Do not connect any electrical equipment with a power consumption of more than 60 watts.

2. unswitched outlet (300 watts)

This is not connected to the power switch on the receiver.

IMPORTANT! Do not connect any electrical equipment with a power consumption of more than 300 watts. (See Figure 7).

SWITCHED 60W



UNSWITCHED 300W



Figure 7. AC Outlets.

AC VOLTAGE SELECTION

This unit is pre-set to be used at 220/240 volts AC. In countries with 110/120 volts AC, set the AC voltage selector switch from 220/240 volts to 110/120 volts as follows:

1. Turn the power switch to "OFF".
2. Remove the black plate which is affixed to the AC voltage selector switch on the rear panel.
3. Set the slide switch to the left.
4. Attach the black plate to opposite side screw.

Figure 8 illustrates the AC voltage selector switch set for 110/120 volts AC.



110-120V ◀ ▶ 220-240V



110-120V ◀ ▶ 220-240V

Figure 8. AC Voltage Selector Switch.

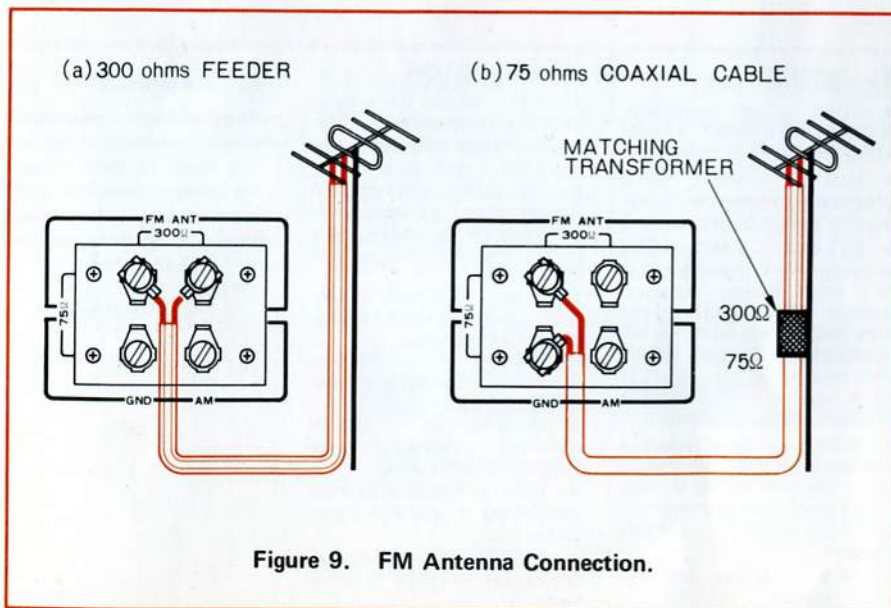
ANTENNA CONNECTIONS

FM ANTENNA

Three terminals are provided for connection to a 300 ohm or 75 ohm FM antenna as shown in Figure 9.

For good FM stereo reception, always use the best antenna possible. In areas close to the transmitter, a simple indoor dipole antenna may suffice. It should be remembered, however, that the pickup of reflections (similar to "ghosts" on TV) will result in poor stereo reception. These reflections must therefore be reduced to a minimum, either by careful orientation of the indoor antenna or, if this will not eliminate them, by using a more directional outdoor type antenna.

In areas a greater distance from the transmitter, the use of an outdoor antenna is highly recommended. These are available in various types. For reception of stations scattered in many directions, a non-directional type may be required. If the desired stations lie mostly in one direction, a high-directional type of antenna will offer better results. When using a directional antenna, always orient it for the best reception of the desired station. The correct position will be indicated by maximum deflection of the tuning meter on your receiver.

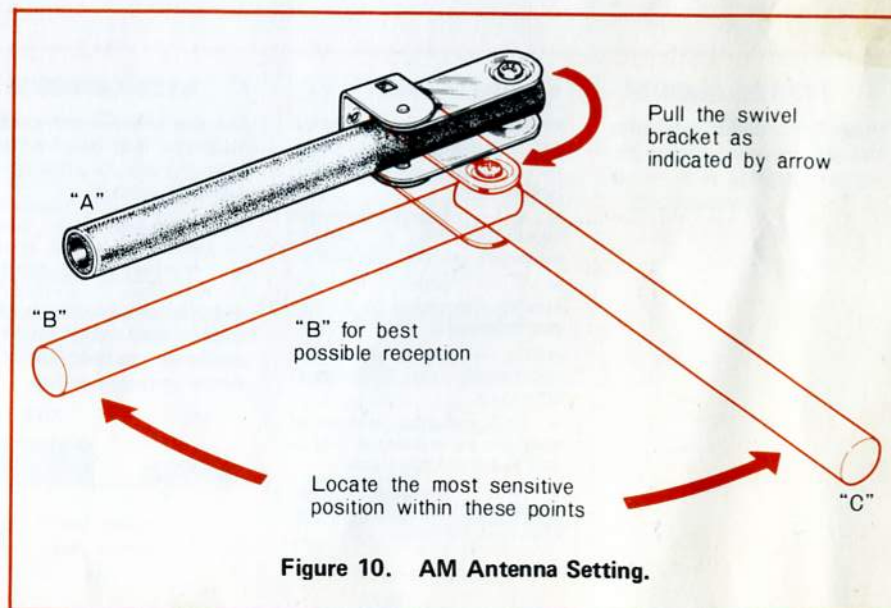


AM ANTENNA

The ferrite stick antenna built into your KR-5150 assures good reception of all local AM stations. However, in fringe areas, high noise areas or where you are surrounded by steel buildings which interfere with normal reception, a regular antenna lead should be connected to the AM terminal.

NOTE: The ferrite stick antenna is mounted on a swivel bracket. To obtain the best AM reception set the ferrite stick antenna as follows:

1. Position "A" in Figure 10 shows the ferrite stick as it is packed for shipping. In this position it will not give you the best AM reception possible.
2. Pull the swivel bracket as indicated by arrow in position "B"
3. The ferrite stick antenna is directional so that you may not obtain the best signal possible when it is parallel to the receiver. You may adjust the antenna to the angle that gives you the best AM signal.
4. AC line cords, speaker cable or similar cords lying near the antenna may affect reception considerably. Make sure that they are kept far away as possible from the antenna.



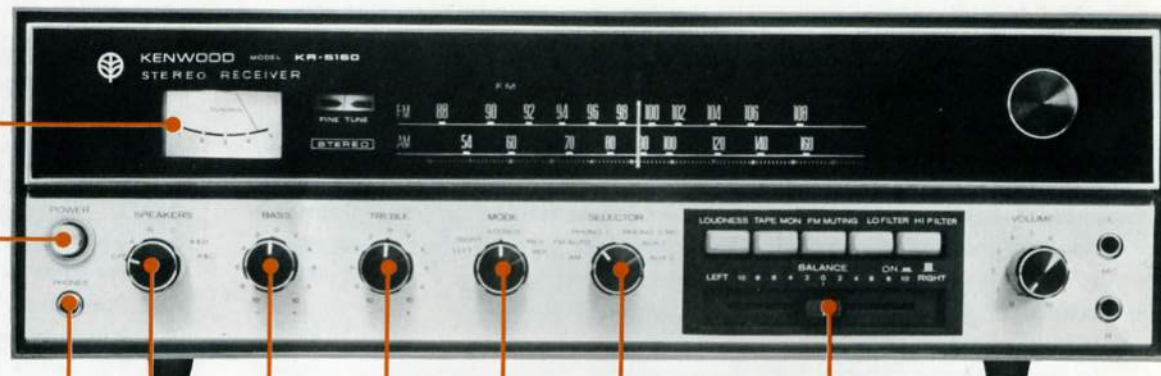
CONTROLS AND THEIR FUNCTIONS

1 TUNING METER

Maximum reception of any broadcast is indicated by the largest swing of the tuning meter for that station.

2 POWER

This is power ON-OFF switch. The power ON-OFF switch is of the push-push type construction. That is, depressing the button turns on the set and depressing the button again turns off the set.



3 STEREO PHONES

Plug the headphones into this jack.

4 SPEAKERS

- OFF — Silence all speaker systems for complete privacy when listening with headphones.
- A — Selects speakers connected to A output terminals on the rear panel.
- B — Selects speakers system connected to B output terminals.
- C — Selects speakers connected to C output terminals.
- A+B — Selects two set of speakers connected to the A and B output terminals.
- A+C — Selects two set of speakers connected to A and C output terminals.

5 BASS CONTROL

Turning clockwise increases bass tone and counterclockwise decreases it while center setting is at Flat.

6 TREBLE CONTROL

Turning clockwise increases treble tone and counterclockwise decreases it while center setting is at Flat.

7 MODE

- LEFT — Left input program reproduction is provided through both speakers.
- RIGHT — Right input program reproduction is provided through both speakers.
- STEREO — This provides stereophonic reproduction of any stereo program source. This position will also provide monophonic reproduction through both channels when the SELECTOR switch is in the FM AUTO or AM position.
- REV — This reverses positions of the two speakers. The left signal is now heard from the right speaker, and right signal from the left speaker.
- MIX — Mixes left and right channel.

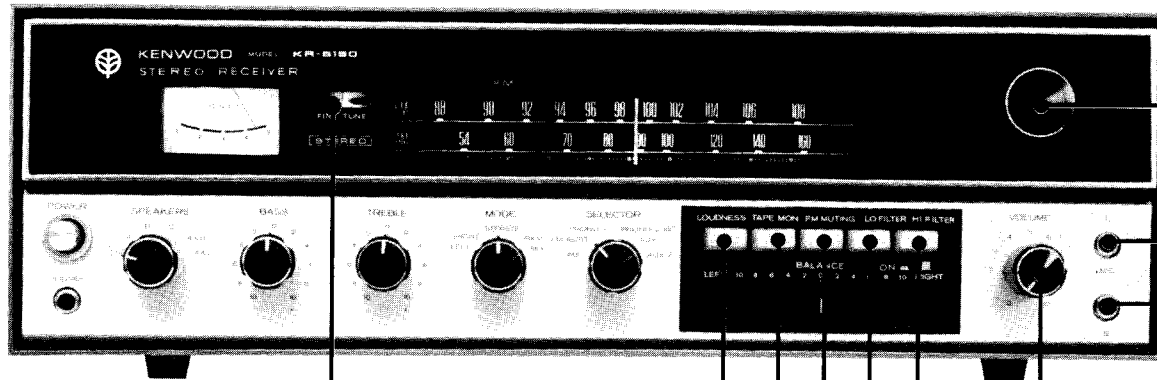
8 SELECTOR

- AM — Selects the output of the AM tuner section for reproduction through the amplifier.
- FM AUTO — Selects FM Broadcasting stations automatically with the help of a built-in high-standard switching system. When an FM Stereo broadcast is tuned in the STEREO indication lights up.
- PHONO 1 — Selects sources connected to PHONO 1 input jacks.
- PHONO 2 — Selects sources connected to PHONO 2 input jacks.
- AUX 1 — Selects sources connected to AUX 1 input jacks.
- AUX 2 — Selects sources connected to AUX 2 input jacks.

9 BALANCE

This control provides a simple means of adjusting the levels of both channels for proper balance during stereophonic reproduction.

CONTROLS AND THEIR FUNCTIONS



17 TUNING

Use the tuning knob to select the AM and FM station desired. Adjust further by tuning for maximum deflection of the TUNING meter while listening to the Speaker output.

18 MICROPHONE

These are microphone jacks. When using the microphone, turn the SELECTOR Switch to PHONO 2/MIC Position. In this case, PHONO 2 sources automatically cut off by inserting the microphone into these jacks.

10 FINE TUNE

This meter is used for precise tuning to center of the FM channel.

Turn the tuning knob until meter pointer is between the two black lines on the meter. Center tuning provides maximum separation and minimum distortion.

11 LOUDNESS

This switch provides the frequency response change (bass and treble boost) if required by individual at low listening levels and permits the VOLUME control to function as a compensated loudness control.



ON: Press button in.
OFF: Press button to release.

12 TAPE MONITOR

For playback of tapes or for monitoring of the recording. (See page 14).



TAPE PLAY: Press button in.
SOURCE: Press button to release.

13 FM MUTING

This switch silences the strong interstation noise encountered on the FM band, but this switch may also eliminate the signal of a weak and distant station along with the interstation noise.

Therefore, in weak and distant station reception, it is better to leave this switch in OFF position.



ON: Press button in.
OFF: Press button to release.

14 LOW FILTER

This switch insert a low frequency filter into the circuit and reduces rumble from a noisy turntable or changer with minimum effect on program material. (-7 dB at 100 Hz).

15 HIGH FILTER

This switch inserts a filter into the circuit and reduces the high-frequency noise. (-10 dB at 10,000 Hz).



ON: Press button in.
OFF: Press button to release.

16 VOLUME

The single control designated VOLUME adjusts the relative level of both channels simultaneously.

OPERATING INSTRUCTIONS

CONTROL OPERATION		INPUT TERMINALS	SPEAKERS SELECTOR SWITCH	SELECTOR INPUT SWITCH	MODE SELECTOR SWITCH	BASS & TREBLE CONTROL	TAPE MONITOR SWITCH	FM MUTING SWITCH	BALANCE CONTROL
AM		AM ANTENNA	SPEAKERS or PHONES	AM	STEREO or MIX	"O" POSITION	SOURCE	OFF	TO BE BALANCED
FM	MONO	FM ANTENNA	SPEAKERS or PHONES	FM AUTO	STEREO or MIX	"O" POSITION	SOURCE	OFF	TO BE BALANCED
	STEREO				* STEREO				
RECORD PLAYER		PHONO 1	SPEAKERS or PHONES	PHONO 1	STEREO or MIX	"O" POSITION	SOURCE	OFF	TO BE BALANCED
		PHONO 2	SPEAKERS or PHONES	PHONO 2/MIC	STEREO or MIX	"O" POSITION	SOURCE	OFF	TO BE BALANCED
MICROPHONE		MIC	SPEAKERS or PHONES	PHONO 2/MIC	STEREO or MIX	"O" POSITION	SOURCE	OFF	TO BE BALANCED
TAPE RECORDER (From Line output)		AUX 1	SPEAKERS or PHONES	AUX 1	STEREO or MIX	"O" POSITION	SOURCE	OFF	TO BE BALANCED
		AUX 2	SPEAKERS or PHONES	AUX 2	STEREO or MIX	"O" POSITION	SOURCE	OFF	TO BE BALANCED
		TAPE PLAY	SPEAKERS or PHONES	ANY POSITION	STEREO or MIX	"O" POSITION	TAPE PLAY	OFF	TO BE BALANCED

NOTES: This chart shows the most usual operation. BASS and TREBLE control, LOUDNESS switch, FM MUTING switch (only for FM operation), LOW and HIGH FILTER switch, can be set according to your listening desire.

* : FM STEREO broadcasting is AUTOMATICALLY selected. The words "STEREO" will automatically illuminate to show that a stereo broadcast is tuned in.

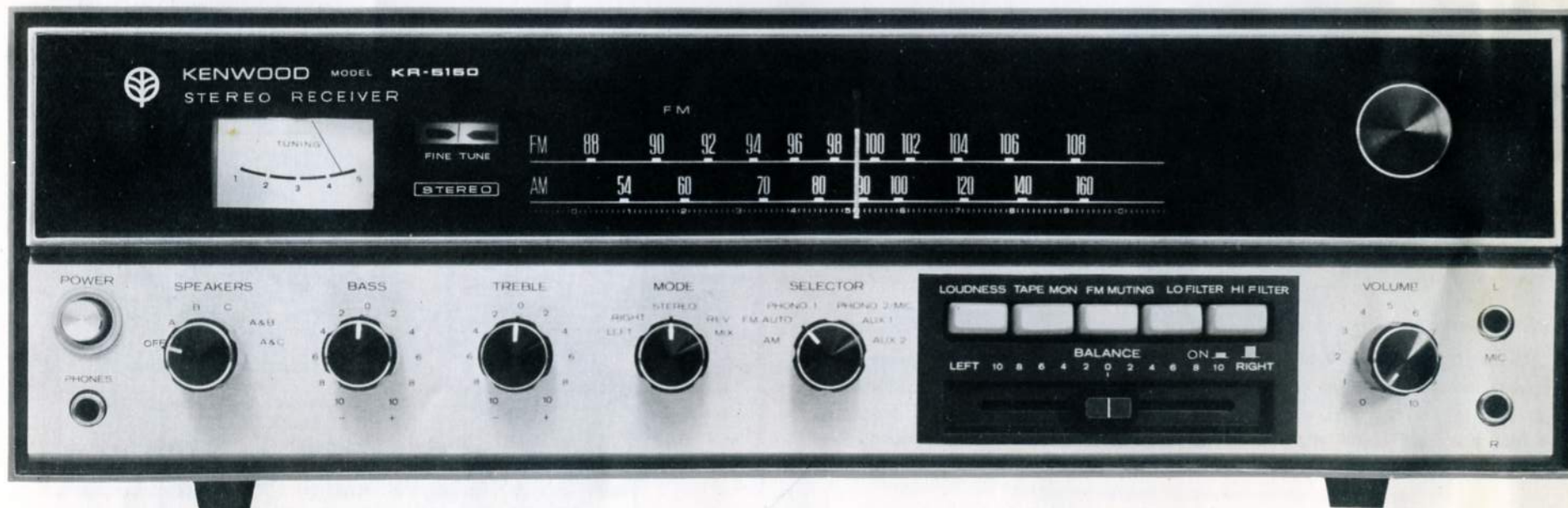
AM-FM-PHONO OPERATIONS

RECEPTION OF AM-FM BROADCASTS

1. Push the POWER switch for power on. The dial will illuminate.
2. Set the SELECTOR switch to AM for AM reception, or to FM AUTO for FM reception. The dial pointer will light up.
3. Set MODE selector to STEREO and TAPE MONITOR switch to SOURCE.
4. Tune in the desired station by turning the TUNING knob.
It will be perfectly tuned-in when the TUNING METER indicates maximum deflection.
5. When a FM STEREO station is tuned in, the STEREO indicator on the dial face will automatically light up to indicate this.
6. Adjust VOLUME to desired level while listening to the broadcast.
7. Adjust the balance of the left and right channels.
8. Use the BASS, TREBLE, LOUDNESS and FILTERS to suit your listening pleasure as explained previously.

PHONO OPERATION

1. Push the POWER switch for power on. The dial will illuminate.
2. For reproducing the turntable outputs fed to the PHONO 1 input jack, set the SELECTOR switch to PHONO 1 position, and for reproducing the turntable outputs fed to the PHONO 2 input jacks, set the SELECTOR switch to PHONO 2/MIC position.
3. Set MODE selector to STEREO and TAPE MONITOR switch to SOURCE.
4. Adjust the volume and tone quality as instructed in "RECEPTION OF AM-FM BROADCASTS".



TAPE RECORDER CONNECTIONS & OPERATIONS

PIN JACK

You may tape FM MONAURAL, FM STEREO, and RECORDS by connecting the output jack of TAPE REC to the input jack of the tape recorder. Play back your recordings by simply connecting the output of your tape recorder to the TAPE PLAY jack.

R.P. CONNECTOR (DIN CONNECTOR)

Normally for most recording and playback, separate cables must be connected to their respective input jacks on the receiver; however, if you tape recorder is equipped with R & P (Record and Playback) 5-Pins connector type patch cord, special jack (connector) is provided on the KR-5150 enabling both recording and playback with this single cable.

PLAYBACK

1. Push the POWER switch for power on.
2. The SELECTOR switch can be at any position.
3. Push the TAPE MONITOR switch to TAPE PLAY.
4. Start the Tape Recorder.
5. Adjust the volume and tone quality as instructed in "RECEPTION OF AM-FM BROADCASTS".

TAPE MONITORING

The KR-5150 incorporates a Tape Monitoring circuitry enabling you to monitor while you record.

For Two-head Tape Recorders

Ordinary two-head type tape recorders are not equipped with a separate playback monitor amplifier to enable tape recording and simultaneous monitoring. Therefore, when recording, set the TAPE MONITOR switch to SOURCE position, and feed the signal to be recorded through the KR-5150. And, for playback of the recorded tape through the KR-5150 speaker system, set to TAPE PLAY position.

For Three-head Tape Recorders

Three-head type tape recorders have separate recording and playback heads, and their respective separate amplifiers. This enables simultaneous playback

monitoring of the recording. For operating the KR-5150 in conjunction with three-head type recorders, set the TAPE MONITOR switch to TAPE PLAY position. This enables monitoring the recording and fully controlling level, acoustic balance, microphone position, etc.

TAPE RECOPYING

To make a copy of a recorded tape on to another tape, follow the connecting instruction as shown in Figure 11.

1. Push the POWER switch for power on.
2. Set the SELECTOR switch to AUX position.
3. Push the TAPE MONITOR switch to TAPE PLAY.
4. Operate your equipments simultaneously.

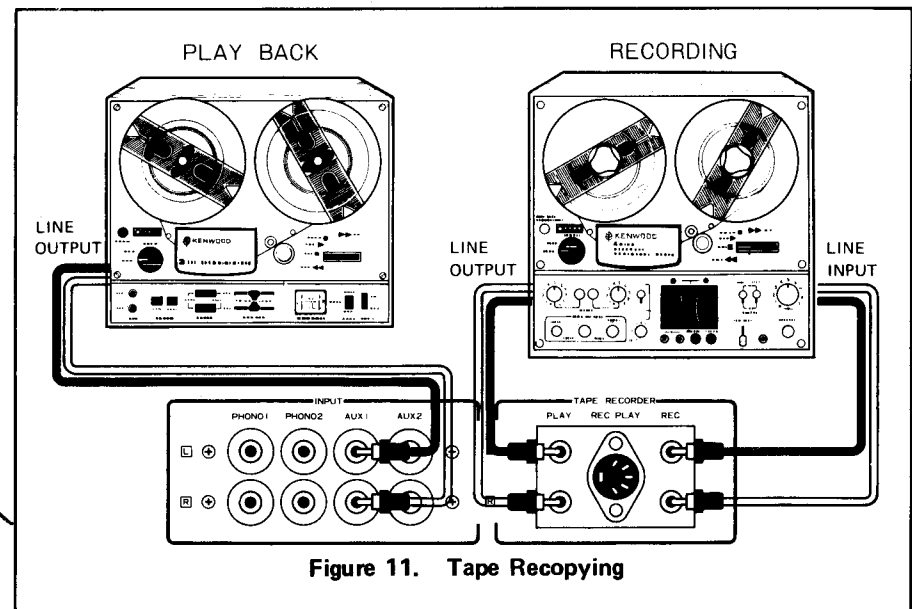


Figure 11. Tape Recopying

SUPPLEMENTARY INFORMATION

PROTECTION CIRCUIT

The newly developed protection circuit is completely effective and prevents damage which may be caused by short circuits at the speaker outputs or the electrical overloading point. When a short circuit occurs this protection circuit will function automatically to protect the output power transistors. The program sound will be heard off and on intermittently about every one second. In this case, there is no fear of damaging the output power transistors. Just switch off the supply line and check the connections.

FUSE

A shield 2A fuse is used. Rotate the fuse holder counterclockwise for replacing. When the fuse has blown out, check carefully the reason for the blow-out and then replace the fuse. When something is wrong with the supply circuit, the fuse will blow again. Do not, in any case, use copper wire in place of the specified shield fuse.

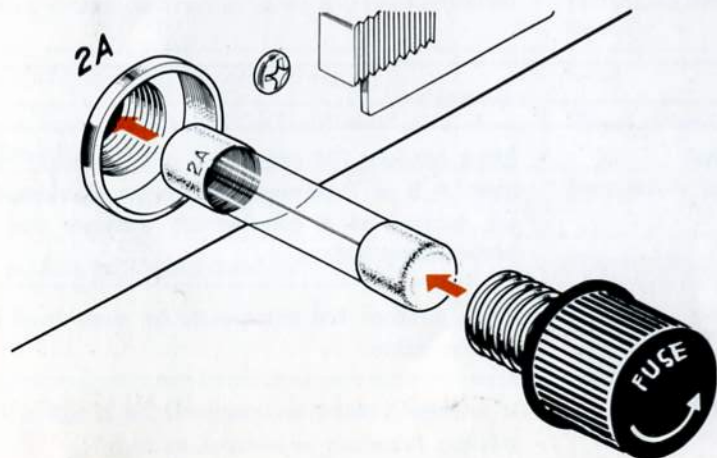


Figure 12. Replace a Fuse.

ACOUSTIC FEEDBACK

Sometimes an undesirable sound (howling) caused by acoustic feedback may be encountered. This is generally caused by poor placement of the turntable and speaker enclosures which may be too close to each other. The turntable should be located a reasonable distance away from the speakers, or a soft, thick cushion such as foam rubber should be inserted underneath it. This will help to prevent vibration of the turntable, which is usually the main cause for any acoustic feedback that may be encountered.

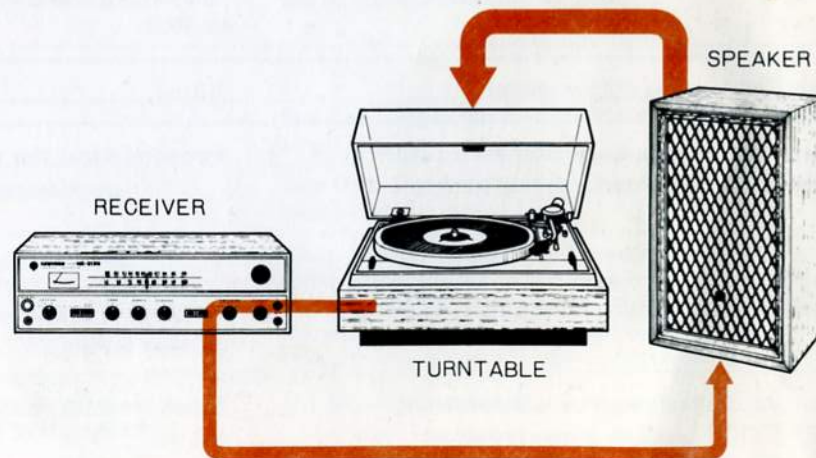


Figure 13. Acoustic Feedback.

TROUBLE SHOOTING

In initially installing this receiver, improper connections may result in one of the following indications of trouble. Their possible causes and corrective measures are listed below to facilitate installation.

INDICATIONS

Occurs Only During AM Reception	Cause	Correction
Continuous low frequency buzz. Most noticeable at night on weak signal stations.	Interference from electrical appliances or atmospheric.	Erecting a 10 meter outdoor antenna and securing good ground conditions should reduce interference considerably. Complete elimination is difficult.
Continuous high frequency whine which increases at night.	TV interference. 10 kHz beat interference from adjacent AM station.	Turn TV off. (Neighboring TV set may also be cause.) Impossible to eliminate from receiver side. This is one disadvantage of the AM broadcast system. Use High Filter to cut off high frequency interference.
Intermittent buzzing or sharp crackling noise.	Lightning interference. Interference from fluorescent lamps.	Occurs when lamps are switching on and cannot be helped.
	AC Plug Connection. Usually unavoidable in certain areas.	Try reversing AC plug connections. Occurs only on certain stations due to high voltage line or AC supply and cannot be helped.
Interference from amateur stations.	Called BCI, this interference results from neighboring amateur stations. (Also occurs on FM)	Consult interfering station operator or authorities concerned.
Occurs Only During FM Reception	Cause	Correction
Continuous hiss or buzzing interference with broadcast. Becomes louder during stereo.	Incoming signal too weak at ANT terminal.	Erect outdoor FM antenna if only indoor T-type is used. A 5 or 7 element antenna is necessary if you are located at a considerable distance from the broadcasting station.
Occasional sharp buzzing or crackling noise.	Automobile ignition noise. More noticeable on weak signals.	Erect outdoor FM antenna as far away from roads as practicable.
Weak right channel response when listening to LEFT SIDE test FM Stereo broadcast.	Called crosstalk, a very slight response is normal.	If leakage is less than one tenth, it is not a sign of trouble. It cannot be reduced to zero.
FM Automatic Circuit fails to respond to stereo broadcast.	Incoming signal is exceptionally weak.	Erect a special FM outdoor antenna.

TROUBLE SHOOTING

INDICATIONS

During AM, FM or Record Playback	Cause	Correction
No pilot lamp indication, no sound although AC is switched ON.	Poor AC plug connection. Blown fuse.	Check plug contact. Replace fuse. If it blows again, trouble must be corrected.
No sound from LEFT and RIGHT.	SPEAKER switched to A-B SPEAKERS position. Speaker cords disconnected. SPEAKER switched to OFF. Volume Control at 0 (extreme left) TAPE MON switch at TAPE PLAY position. PRE-MAIN SEPARATE switch at SEPARATE position.	Both A-B groups of speakers are required in this case for response from both sides. Check connections from amp output to speakers. SPEAKERS should be switched to OFF, only when using stereo headphones. Set to appropriate volume level. Always set to SOURCE except when using tape recorders. Always set to NORMAL except when using together with multi-channel or 3-D systems.
Sound only from one side.	Poor speaker cord connections. BALANCE control set to one extreme or other.	Check amp output and speakers connections. Adjust BALANCE control.
Noise when AC is switched ON or when volume is adjusted immediately after.	Insufficient circuit warmup.	Allow 5 - 6 second interval after switching AC ON, before manipulating volume control.
Unbalance results when volume is lowered.	LEFT RIGHT resistor values unbalanced.	Adjust BALANCE control.
Intermittent speaker response at 3 second intervals.	Protection Circuit indication of short circuit in the output.	Check speaker cord connections.
Difference in volume level of radio and phono.	Difference in received signal and phono output levels.	Set to appropriate volume level.
During Phono Record Playbacks Only	Cause	Correction
No sound from LEFT and RIGHT, or sound only from one side.	Player output disconnected.	See that player output cord is firmly plugged into amp input.
Loud hum drowns out sound.	Poor player output cord prong connections.	See that player output cord is firmly plugged into amp input.
Sound audible but background hum occurs.	Player output cord picking up hum from AC cord. Player not grounded.	Keep player output cord away from AC cords. Choose cord paths which keep hum at a minimum. Twist LEFT RIGHT player output cords together. Reverse player AC plug connections. Connect player ground wire to GND terminal.
Sound audible but continuous background buzz interferes.	TV signal picked up by Player output cord. Frequently occurs near TV transmitting antenna.	Route player cord so that hum is minimized.
Howling noise occurs when volume is raised or bass response is increased.	Speaker vibrations induce feedback in pickup.	Increase distance between player and speakers. Choose speaker locations carefully. Remember, loose flooring induces howling.

SPECIFICATIONS

FM TUNER SECTION

Antenna Impedance:	300 ohms balanced & 75 ohms unbalanced
Usable Sensitivity (IHF):	1.7 μ V
Harmonic Distortion:	Mono: Less than 0.5%
(at 400 Hz, 100% Mod.)	Stereo: Less than 0.8%
Signal-to-Noise Ratio:	Better than 65 dB
Capture Ratio (IHF):	2.0 dB
Selectivity (Alt. Channel) (IHF):	Better than 55 dB
Image Rejection:	Better than 70 dB
IF Rejection:	Better than 100 dB
Stereo Separation:	Better than 35 dB at 1,000 Hz
	Better than 25 dB at 10,000 Hz
Sub Carrier Suppression:	Better than 45 dB
Muting Level:	10 μ V
Switching Level:	10 μ V
Front-end:	2 FETs, 4-gang tuning condenser
IF Stage:	2 ICs, mechanical filter

AM TUNER SECTION

Antenna:	Built-in ferrite bar antenna
	External antenna terminals
Usable Sensitivity, (IHF):	15 μ V
Selectivity, (IHF):	Better than 25 dB
Image Rejection:	Better than 70 dB
IF Rejection:	Better than 70 dB
Front-end	3-gang

AMPLIFIER SECTION

Power Output:	180 watts $\pm$ 1 dB both channels at 4 ohms
	130 watts $\pm$ 1 dB both channels at 8 ohms
Dynamic Power Output, (IHF):	150 watts both channels at 4 ohms
	110 watts both channels at 8 ohms
Continuous Power Output	
Each Channel Driven:	50/50 watts at 4 ohms
	40/40 watts at 8 ohms
Both Channels Driven:	39/39 watts at 4 ohms
	33/33 watts at 8 ohms
Mono Output:	1V at rated output
Harmonic Distortion:	Less than 0.5% at rated output
	Less than 0.1% at -3 dB rated output
Intermodulation Distortion:	Less than 0.5% at rated output
	Less than 0.2% at -3 dB rated output

Frequency Response:

High Level (AUX) Input:

Power Bandwidth, (IHF):

Input Sensitivity,
(for rated output)

Recording Output:

(below rated input)

Hum & Noise:

(below rated output)

Damping Factor:

Speaker Impedance:

Bass Control:

Treble Control:

Low Filter:

High Filter:

Loudness Control:
(at -30 dB)

GENERAL

Switches: Speakers
Selector

Mode

Others

AC, Outlets:

Semiconductors:

Power Voltage:

Power Consumption:

Dimensions:

Weight:

20 Hz to 40,000 Hz $\pm$ 1.5 dB

17 Hz to 30,000 Hz

PHONO 1: 2.5 mV 50k ohms

PHONO 2: 2.5 mV 50k ohms

MIC: 1.8 mV 100k ohms

AUX/TAPE PLAY: 150 mV 100k ohms

MAIN INPUT: 100 mV 100k ohms

Pin Jack: 150 mV

DIN Connector: 30 mV

PHONO 1: 65 dB

PHONO 2: 65 dB

MIC: 58 dB

AUX/TAPE PLAY: 75 dB

50 at 8 ohms

Accepts 4 to 16 ohms

$\pm$ 10 dB at 100 Hz

$\pm$ 10 dB at 10,000 Hz

-7 dB at 100 Hz

-10 dB at 10,000 Hz

+10 dB at 100 Hz, +5 dB at 10,000 Hz

A, B, C, A & B, A & C, OFF

AM, FM AUTO, PHONO 1

PHONO 2/MIC, AUX 1, AUX 2

LEFT, RIGHT, STEREO, REV. MIX

TAPE MONITOR, LOW & HIGH FILTER

FM MUTING, LOUDNESS

1 switched & 1 unswitched

2 ICs, 2 FETs, 36 Transistors, 33 Diodes

110/120V AC, 50/60 Hz

200 watts at full power

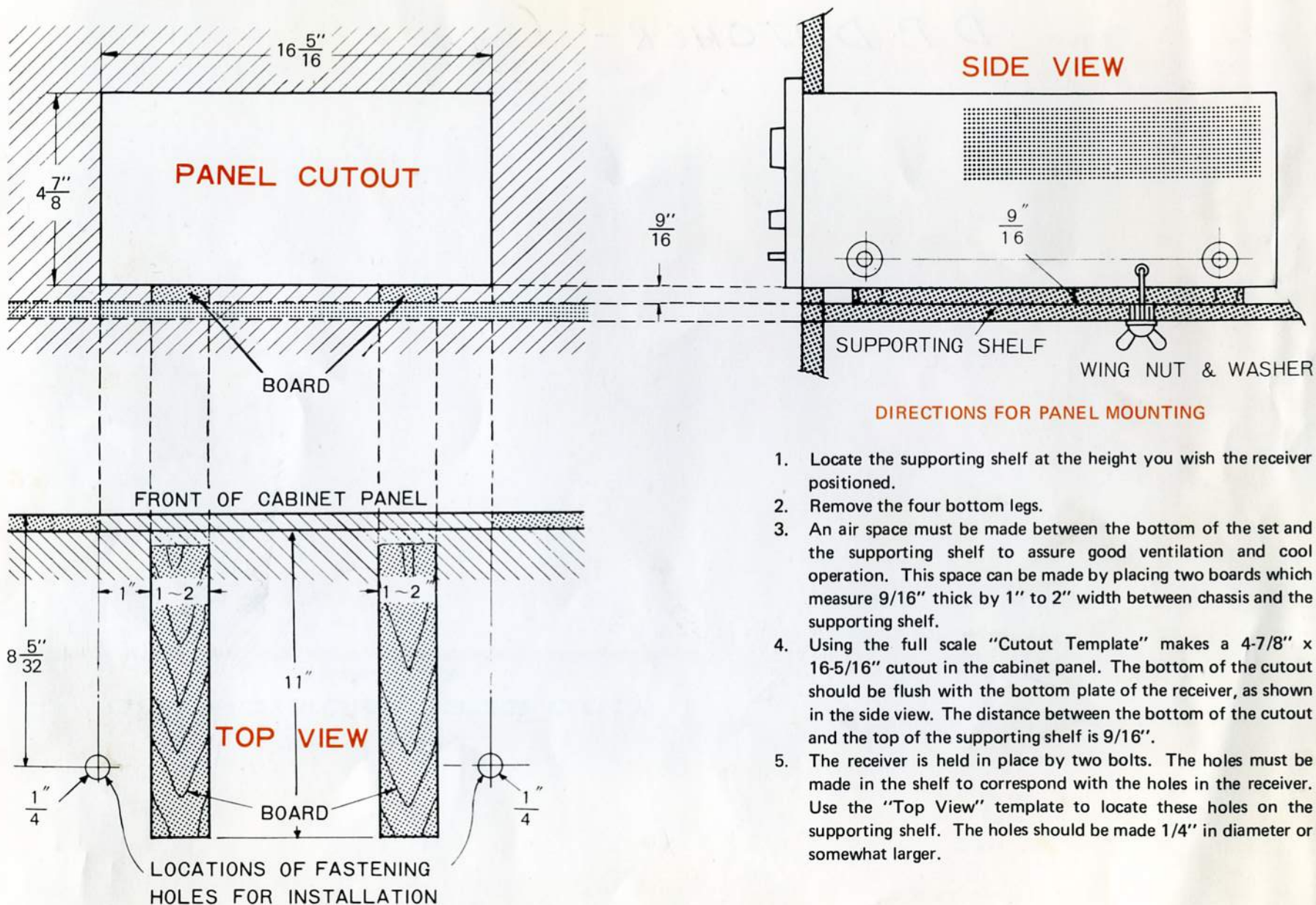
40 watts at no signal

16-3/4" W, 5-1/2" H, 12-3/8" D

21 lbs

MOUNTING TEMPLATE

NOTE: If your receiver is made of walnut cabinet, the cabinet must be removed before mounting.



KR-5150 Serial No. 310140

Owner D P DUTCHER -



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