OWNER'S MANUAL

DUET

STEREOPHONIC RECEIVER

harman kardon

INTRODUCTION

Congratulations. You have just purchased one of the finest stereophonic music systems available. Your receiver represents the successful culmination of many years of intensive research in solid-state technology — a product literally born of space-age development. Before you lies the magnificent sound of recorded music as you have never heard it before.

We know how anxious you are to install and listen to your new receiver. However, a few moments spent in reading this instruction booklet will pay vast dividends in the ultimate enjoyment of your music system.

Please retain this booklet for it contains valuable information.

INSTALLATION

1. POWER REQUIREMENTS

Connect the AC line cord into any outlet furnishing 117 volts, 50 or 60 cycle AC current. The voltage may vary between 105 and 125 volts. An auxiliary AC power outlet is provided on the rear panel of your receiver. Any accessory equipment (tape recorder, phonograph record player, etc.) may be connected to this receptacle and will be controlled by the ON-OFF switch on the front panel of your receiver.

2. MOUNTING ON A SHELF

You may wish to mount your new Harman-Kardon receiver on a free standing wall shelf or perhaps within a bookcase. Be certain when installing your receiver to provide adequate ventilation. Allow at least two inches of open space on all sides of the unit, and do not place any books or other objects on top of the receiver cabinet.

The rear panel surface of your receiver has been designed as a heat dissipating device for the output transistors. This area will become warm under normal use and should not be cause for concern.

MOUNTING INTO A CUSTOM EQUIPMENT CABINET

If you wish to mount your receiver into a custom cabinet installation, please follow the information provided on the custom mounting instructions in the rear of this manual. Detailed mechanical dimensions and all other pertinent information is provided with these instructions.

CONNECTING YOUR SPEAKERS FOR STEREO OPERATION

Speakers usually sound best if placed along the same wall and are spaced approximately 8 to 10 feet apart. It may be necessary to experiment with speaker placement until best results are obtained.

Use any type of wire to connect your speakers to your receiver. Lamp cord is excellent and may be easily dressed around the molding for an inconspicuous and neat installation. Do not drive staples or tacks through the center of the wire for this may short out the two sections and will decrease the overall volume or short out the speakers entirely. It is permissible to use approximately 50 feet of speaker connecting wire for each speaker without loss of volume.

1. Connect one length of lamp cord to the left speaker. (This is the speaker on your left as you face the speakers.)
2. Attach the other end of the lamp cord to the + and — terminals marked SPEAKER LEFT, located on the rear of the receiver.
3. Similarly connect another length of lamp cord to your right speaker.
4. Attach the other end of the lamp cord to the + and — terminals marked SPEAKER, RIGHT.

This completes your speaker connections. Your receiver is a solid state device which does not contain audio output transformers. It is therefore not necessary to match the impedance of your speakers to the receiver. Your unit will perform perfectly with any speaker which has an impedance of 4, 8 or 16 ohms.

CONNECTING THE FM ANTENNA

Due to the exceptionally high sensitivity of your receiver, the 48" wire supplied is sufficient for all but the most difficult locations. When using the antenna supplied connect one end of the 48" wire to the "RIGHT" FM antenna terminal as shown. Horizontal placement of the antenna will yield optimum reception. The antenna may be tacked to the back of the molding behind the equipment or to the shelf you use.

As FM signals are in the same broadcast frequency range as TV signals, they are affected by the same external conditions. Just as TV reception is improved, you can improve your FM reception with an external antenna. When using an external antenna connect both leads of the antenna wire to the two FM antenna terminal posts on the rear of your receiver.

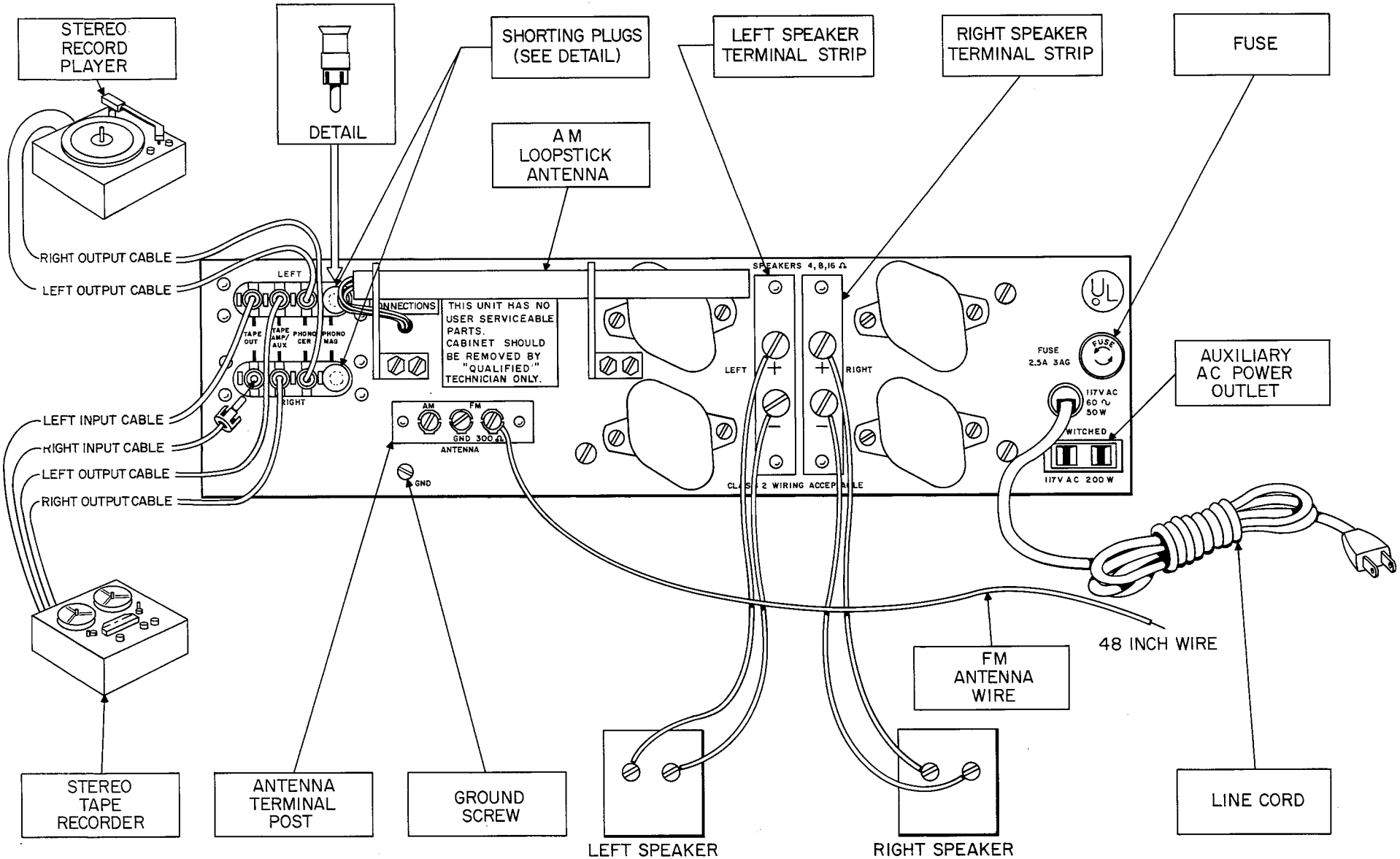
CONNECTING THE AM ANTENNA

The AM loopstick fastened on the rear of your receiver comprises all the antenna usually required for normal signal areas. In more remote locations an additional outdoor antenna may be required. This should consist of a single wire, as long as is reasonably practical. It must be kept away from large metal objects, power lines or electrical machinery to insure reception without extraneous noise. Attach this length of wire to the AM terminal of the ANTENNA TERMINAL STRIP.

CONNECTING A STEREO TAPE RECORDER

Connect the two tape recorder output cables to the LEFT and RIGHT TAPE AMP/AUX input receptacles on the rear of your receiver. With the Function Switch in the TAPE AMP/AUX position you will now be able to play your stereo tapes.

In order to make a recording, connect the inputs of your tape recorder to the TAPE OUT receptacles on the rear of the receiver. This will allow you to make a stereophonic recording while simultaneously listening to the program material through your speaker system.


STEREO RECORD PLAYER
DETAIL
SHORTING PLUGS (SEE DETAIL)
LEFT SPEAKER TERMINAL STRIP
RIGHT SPEAKER TERMINAL STRIP
FUSE
A M LOOPSTICK ANTENNA
AUXILIARY AC POWER OUTLET
RIGHT OUTPUT CABLE
LEFT OUTPUT CABLE
LEFT INPUT CABLE
RIGHT INPUT CABLE
LEFT OUTPUT CABLE
RIGHT OUTPUT CABLE
LEFT
RIGHT
TAPE OUT
TAPE AMP/ AUX
PHONO CER
PHONO MAG
THIS UNIT HAS NO USER SERVICEABLE PARTS. CABINET SHOULD BE REMOVED BY "QUALIFIED" TECHNICIAN ONLY.
SPEAKERS 4, 8, 16 Ω
LEFT
RIGHT
FUSE 2.5A 3AG
117V AC 60 Hz 50W
SWITCHED
117V AC 200W
AM
FM
GND 300 Ω
ANTENNA
GND
48 INCH WIRE
FM ANTENNA WIRE
STEREO TAPE RECORDER
ANTENNA TERMINAL POST
GROUND SCREW
LEFT SPEAKER
RIGHT SPEAKER
LINE CORD

CONNECTING A STEREO RECORD PLAYER

Your receiver has been provided with the appropriate input receptacles to perform with either a magnetic or ceramic phonograph cartridge.

If your record player is equipped with a ceramic cartridge, connect both input cables from your Record Player to the LEFT and RIGHT PHONO CERAMIC input receptacles on the rear of your receiver. Note that there are two shorting plugs inserted into the phono mag. input receptacles on the rear of your receiver. When using the ceramic input receptacles, THESE SHORTING PLUGS MUST BE LEFT IN PLACE as they provide for the proper equalization of your ceramic cartridge.

If your record player is equipped with a magnetic cartridge, REMOVE BOTH SHORTING PLUGS from the phono mag. input receptacles and connect both input cables from your record player to these input receptacles.

If you cannot determine which is the left or right cable, play an orchestral selection and listen for the placement of instruments. If the violin section appears to be on your left, your connection is correct. If it appears to be on your right, reverse the two input cables. If your record player has a special ground wire emerging with the two input leads, connect this wire to the GROUND SCREW on the rear of the receiver.

OPERATION PROCEDURE

Every control on this receiver serves a specific useful function and is important for the proper operation of your stereo system.

We recommend that you read the following section carefully so you may take full advantage of the performance capabilities of your receiver.

VOLUME CONTROL AND POWER SWITCH

The Volume Control is used to adjust the volume level of any program material fed into the stereo system. The control varies both channels simultaneously therefore eliminating the necessity of balancing your system each time you change the volume level.

In the full counter-clockwise position your receiver is OFF. In order to turn your receiver ON, turn the control clockwise until a click is heard and then adjust the volume level of the program you wish to hear.

FUNCTION SELECTOR SWITCH

The Function Selector Switch selects the desired type of program source to be heard thru your system.

1. PHONO MONO: Selects your record player for monophonic operation.
2. PHONO STEREO: Selects your record player for stereophonic operation.
3. TAPE AMP/AUX: Selects any program source such as a tape recorder, the output of your television set, or any other high level equipment connected to the tape amp/aux receptacles on the rear of your receiver.
4. FM MONO: Selects the FM section of your receiver. In this position you can listen to stereophonic broadcasts monophonically while monophonic broadcasts will appear unchanged.
5. FM STEREO: This is the normal listening position for all monophonic or stereophonic FM broadcasts. In this position the stereo indicator light and automatic switching circuit built into your receiver are operative. For further details see the paragraphs on "Stereo Indicator Light" and "Selecting Monophonic or Stereo FM Broadcasts".
6. AM: This position selects the AM section of your receiver for AM reception.

BALANCE CONTROL

The balance control is used to adjust the sound level of each channel with relation to each other.

The nature of stereophonic reproduction is such that it requires two identical channels to obtain the optimum stereo effect. As there may be slight differences between the location of the two speakers, tape heads, cartridges, etc., the balance control is provided to permit re-balancing of the overall system even in extreme cases where unbalance exists.

It should be noted that the Balance Control may be set anywhere within its range of adjustment to attain system balance.

BASS AND TREBLE TONE CONTROLS

The BASS and TREBLE tone controls on your receiver provide the full range of tonal adjustment necessary for stereo high fidelity listening. The tone control range is considerable and can adequately adjust the low and high frequencies in accordance with your listening preference, speaker characteristics and room acoustics.

TUNING METER

Your receiver incorporates a D'arsonval movement tuning meter for precise tuning of your receiver.

Proper tuning is indicated by maximum deflection (higher number) of the needle. Stronger stations show greater needle movement.

TUNING

The tuning knob, located directly to the right of the dial glass is used to select the desired FM or AM station depending on the position of your function selector switch.

LOUDNESS/CONTOUR SWITCH

One of the limitations of human hearing is its tendency to lose sensitivity to the very low pitched sounds as the program sound level is reduced. It is this characteristic (known as the Fletcher-Munson effect) which causes one to play music programs at high listening levels in order to experience the full rich tone available from fine modern recordings.

The Loudness/Contour switch compensates for this effect; thereby eliminating high listening levels as a requisite for full enjoyment of reproduced music. For warm, full-bodied reproduction at low listening levels, throw the Loudness/Contour switch "IN". At high levels, the contour switch has no effect.

SPEAKER SWITCH

The speaker switch is used to disconnect your speakers from your receiver while you are listening to the stereo headphones. To defeat the speakers, throw the switch to the "OFF" position.

TAPE MONITOR SWITCH

If your tape recorder has a special monitoring head, throwing this switch to the "ON" position will enable you to listen to your tapes immediately after they are recorded. When not in use the switch must be in the "OUT" position.

STEREO HEADPHONE RECEPTACLE

The stereo headphone receptacle located on the front panel will accept any headphone with any impedance rating. The headphone receptacle is "on" at all times. If you wish to listen to the headphones alone, see the paragraph on "SPEAKER SWITCH".

STEREO INDICATOR LIGHT

A stereo indicator light is located directly behind the FM dial glass and operates in conjunction with the FM Stereo position of the Function switch. The light visually indicates the reproduction of FM stereo through your receiver.

To tune for FM stereo proceed as follows:

1. Place the function selector switch in the FM STEREO position.
2. Tune carefully to the desired station, using your tuning meter for maximum deflection. Your stereo indicator light will now glow if you are tuned to a stereo program. If the light is OFF, the program you are listening to is being broadcast monophonically.

SELECTING MONOPHONIC OR FM STEREO BROADCASTS

Under normal use for all FM broadcasts the function Selector Switch should be placed in the FM STEREO position.

Your receiver is equipped with a stereo sensing circuit which can automatically determine if your unit is receiving monophonic or stereophonic broadcasts, and then automatically adjust the mode of operation.

If the station is transmitting stereo, your receiver will automatically switch in the multiplex section and you will hear the broadcast in full stereo. Should the station conclude broadcasting in stereo, your receiver will automatically switch back to monophonic reception.

Should you receive a weak stereo signal whose quality has been degraded by noise or poor signal conditions, and you wish to listen to this stereo broadcast, monophonically, place the function selector switch in the FM MONO position.

DIAL SCALE

The Dial Scale on your receiver is marked with three scales, an FM frequency scale (88-108 MC), an AM frequency scale (55-160KC) and a logging scale (0-100).

Since most FM stations operate on frequencies which are not whole numbers (such as 96MC as compared to 96.3) ideally each megacycle division on the frequency scale should be divided into 10 parts to enable the user to pinpoint the location of the station. This would require a dial scale which would be longer than the front panel.

The logging scale which is divided into 100 equal parts provides a means of finding your favorite station, once you have noted its position on the logging scale. For example, in New York City, WQXR operates on 96.3 MC. After locating this station through the use of the frequency scale (between 96 and 98 MC), you find that the pointer may fall on 46 on the logging scale. Make a note of this setting and when you next want to tune to WQXR, all that is necessary is to set the pointer to 46 on the logging scale.

EQUALIZATION

In order to achieve good reproduction of the wide range of frequencies in music and to make necessary adjustments for the limitations of the recording technique, record manufacturers have found it necessary to modify the actual frequency response of the music while it is being recorded. Thus, to avoid overcutting and consequent distortion, a measured and deliberate reduction is effected in low frequency response by selecting a "turnover frequency" and by recording attenuated response below that point. To assure optimum signal to noise at the high frequency end when the record is played at home, the highs are deliberately exaggerated during the recording process. A measured and deliberate boost is effected above a certain frequency. This combination of deliberate exaggeration at the low and high ends of the frequency response can be expressed in a recording curve. When the record is played a mirror image of that curve should be available so that the ideal "flat" response may be achieved.

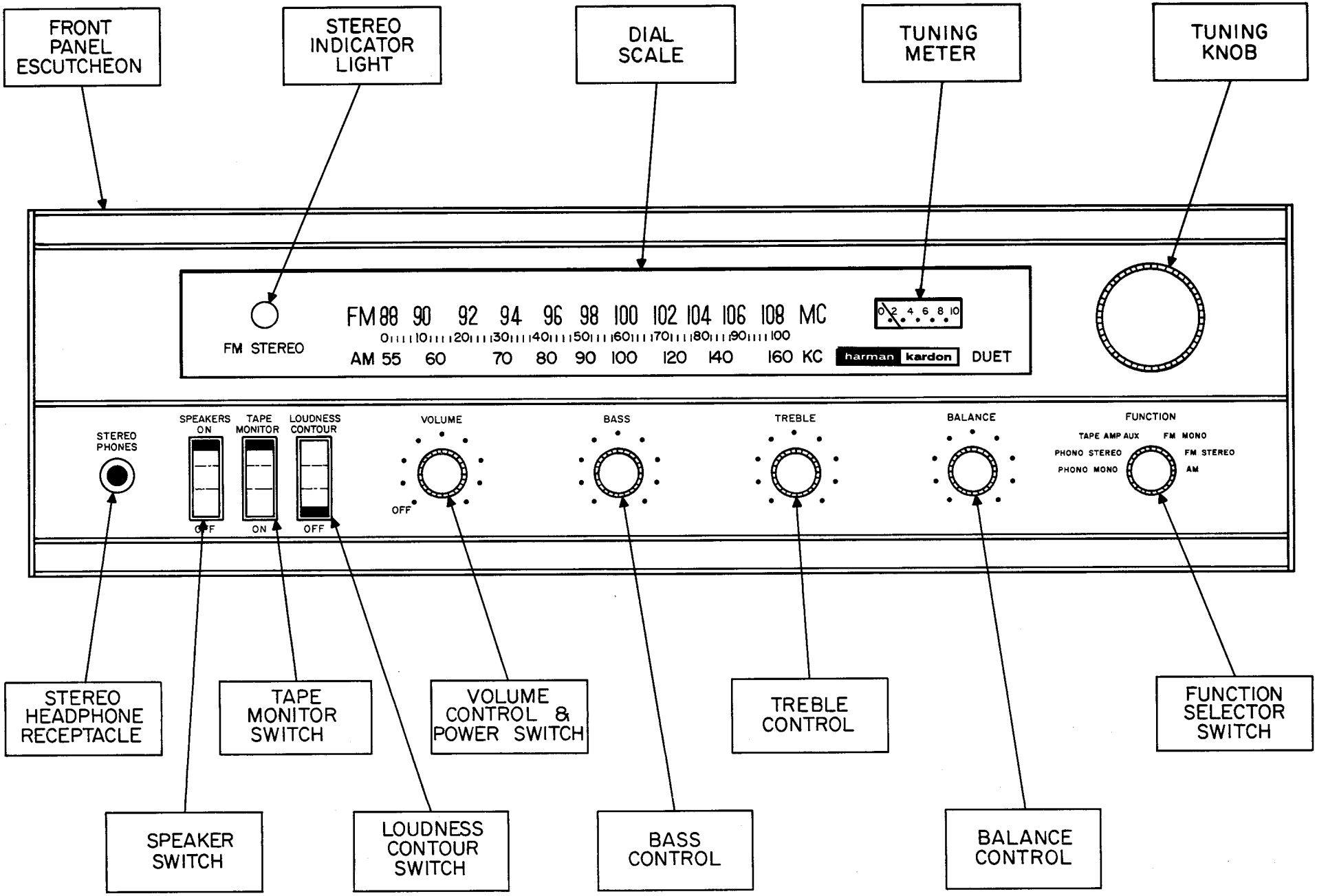
The PHONO positions of the Function Selector automatically select the proper equalization that is required.

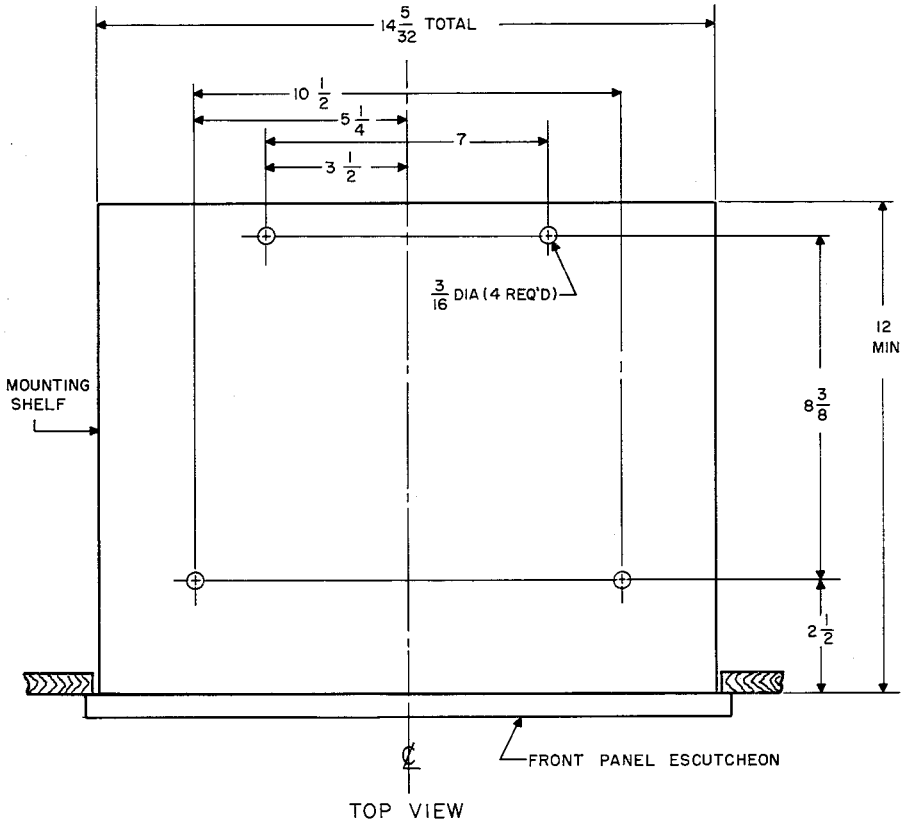
FUSES

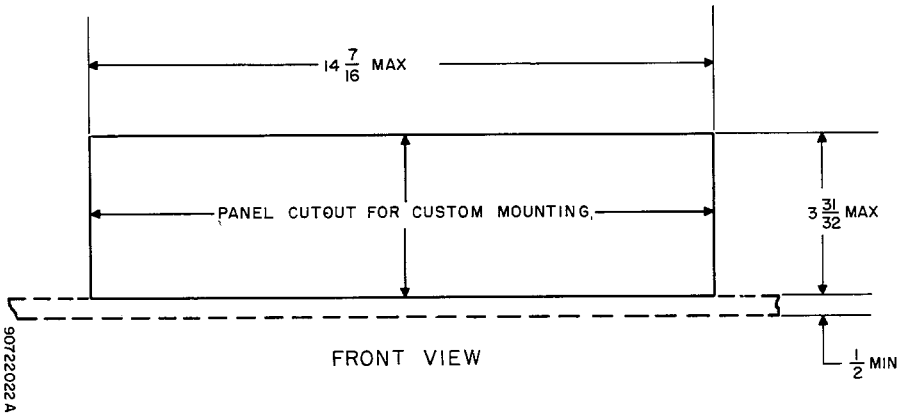
Your receiver is protected by a 2½ amp-3AG fuse. In the event of fuse failure replace ONLY with the same type used. Replacing with a fuse of a higher rating will not protect the instrument and may result in severe damage.

SERVICE

If this instrument should not perform properly during the first two (2) years after date of purchase, contact the factory for instructions. The factory has many authorized warranty service stations in the United States. To aid us in selecting a service station convenient to you, it would be helpful if you would indicate what major city is closest to your home. Please write our Customer Service Department, Harman-Kardon, Incorporated, Plainview, New York 11803. Be sure to include the model and serial number of the unit. A brief description of your other components is often of help in answering your questions. DO NOT return this instrument to Harman-Kardon without first receiving authorization.


FRONT PANEL ESCUTCHEON
STEREO INDICATOR LIGHT
DIAL SCALE
TUNING METER
TUNING KNOB
FM STEREO
FM 88 90 92 94 96 98 100 102 104 106 108 MC
0 10 20 30 40 50 60 70 80 90 100
AM 55 60 70 80 90 100 120 140 160 KC
harman kardon
DUET
0 2 4 6 8 10
STEREO PHONES
SPEAKERS ON
TAPE MONITOR
LOUDNESS CONTOUR
OFF
ON
OFF
VOLUME
OFF
BASS
TREBLE
BALANCE
FUNCTION
TAPE AMP AUX
PHONO STEREO
PHONO MONO
FM MONO
FM STEREO
AM
STEREO HEADPHONE RECEPTACLE
SPEAKER SWITCH
TAPE MONITOR SWITCH
LOUDNESS CONTOUR SWITCH
VOLUME CONTROL & POWER SWITCH
BASS CONTROL
TREBLE CONTROL
BALANCE CONTROL
FUNCTION SELECTOR SWITCH





VENTILATION:

Leave the back of the cabinet open. If this is not possible, provide several large holes or slots as low down and as high up in the cabinet back as possible. As an alternate, holes may be provided in the sides, bottom or top of the cabinet. Remember that really effective ventilation requires provision for cool air to enter at the bottom and hot air to leave at the top. A minimum clearance of two (2) inches should be allowed on each side and in the rear, between the chassis and the cabinet, and three (3) inches are required above it.

Isolate any accessories which might interfere with ventilation or be affected by heat. For example, do not drape plastic or rubber covered interconnecting cable over the equipment.

In some cases, it might be advisable to provide insulation (such as sheet asbestos) between the equipment and any other heat sensitive or heat producing device.

INSTALLATION:

1. Locate and drill (4) 3/16" diameter holes on mounting shelf.
2. Position and cut out front panel opening. (Bottom of opening should be flush with top of mounting shelf.)
3. Remove (4) rubber feet from unit. (Rubber feet and screws are no longer used for cabinet installation).
4. Install unit from front through panel cutout opening.
5. Fasten unit to mounting shelf. If ½" thick mounting shelf was used fasten with (4) #6 x ¾" long self-tapping screws and washers. If ¾" shelf was used fasten with (4) #6 x 1" long self-taping screws and washers.

TECHNICAL SPECIFICATIONS

AUDIO SECTION:

EIA POWER (1 CHANNEL
@ 1KC @ 4 OHMS ..... 25 WATTS

HARMONIC DISTORTION
1KC @ 10W @ 8 OHMS ..... LESS THAN 1%

IM DISTORTION
10W @ 8 OHMS ..... LESS THAN 3%

FREQUENCY RESPONSE
10W @ 8 OHMS ..... 15 CPS to 20 KC ± 1 db

SENSITIVITY
1KC, 10W @ 8 OHMS
PHONO MAG. ..... 2.5 MV
PHONO CER. ..... 35 MV
TAPE AMP/AUX ..... 200 MV

TONE CONTROL
BASS BOOST ..... 12 db ± 2 db
BASS CUT ..... 12 db ± 2 db
TREBLE BOOST ..... 12 db ± 2 db
TREBLE CUT ..... 12 db ± 2 db

HUM AND NOISE
AMPLIFIER, VOLUME CONTROL
IN MINIMUM POSITION ..... 70 db
TAPE AMP/AUX INPUT ..... 70 db
PHONO INPUT (10MV REFERENCE) ..... 60 db

FM TUNER SECTION
USABLE SENSITIVITY
(IHFM STANDARD) (MONOPHONIC) ..... 5.0 UV

LIMITER SATURATION
(MONOPHONIC) ..... 15 UV
IMAGE REJECTION ..... 45 db
HARMONIC DISTORTION
MODULATION ±75KC, 400 CPS 1%

STEREO SEPARATION ..... 30 db

AM TUNER SECTION:
AM SENSITIVITY ..... 50 MICROVOLTS/METER
IMAGE REJECTION ..... 45 db
IF REJECTION ..... 50 db
IF BAND WIDTH
2X ..... 5.3 KC ± 1 KC
20X ..... 12 KC ± 1 KC

WARRANTY POLICY

Please fill in your warranty card and mail it to the factory without delay to protect your rights under warranty. The Harman-Kardon warranty is not valid unless we have your card on file.

WARRANTY

We warrant each unit to be free from defects in material and workmanship under normal use and service, and in accordance with the conditions herein below set forth, for a period of two (2) years from date of delivery to the original purchaser.

Should a defect occur within the said two (2) years, and provided that the unit is returned to us with transportation prepaid and which our examination shall disclose to our satisfaction to have been thus defective, we will:

1. During the first ninety (90) days from date of sale at our option, either replace or repair and install any defective parts, free of charge.

2. After ninety (90) days and for the balance of the two (2) years, at our option, either replace or repair all defective parts charging only for labor.

This warranty is not applicable to any instrument which shall have been repaired or altered in any way so as in our judgement to affect its stability or reliability nor which has been subject to neglect, misuse, abuse, negligence or accident nor which has had the serial number altered, effaced or removed. Neither shall this warranty apply to any instrument which has been connected otherwise than in accordance with instructions furnished by us.

This warranty is expressly in lieu of all other warranties, expressed or implied, and of all other obligations or liability on our part, and we neither assume nor authorize any representative or other person to assume for us any other liability in connection with the sale of this instrument.

STATION LOG BOOK

DATE	FREQUENCY	STATION	CITY & STATE	TYPE OF MUSIC	HOURS OF STEREO TRANSMISSION