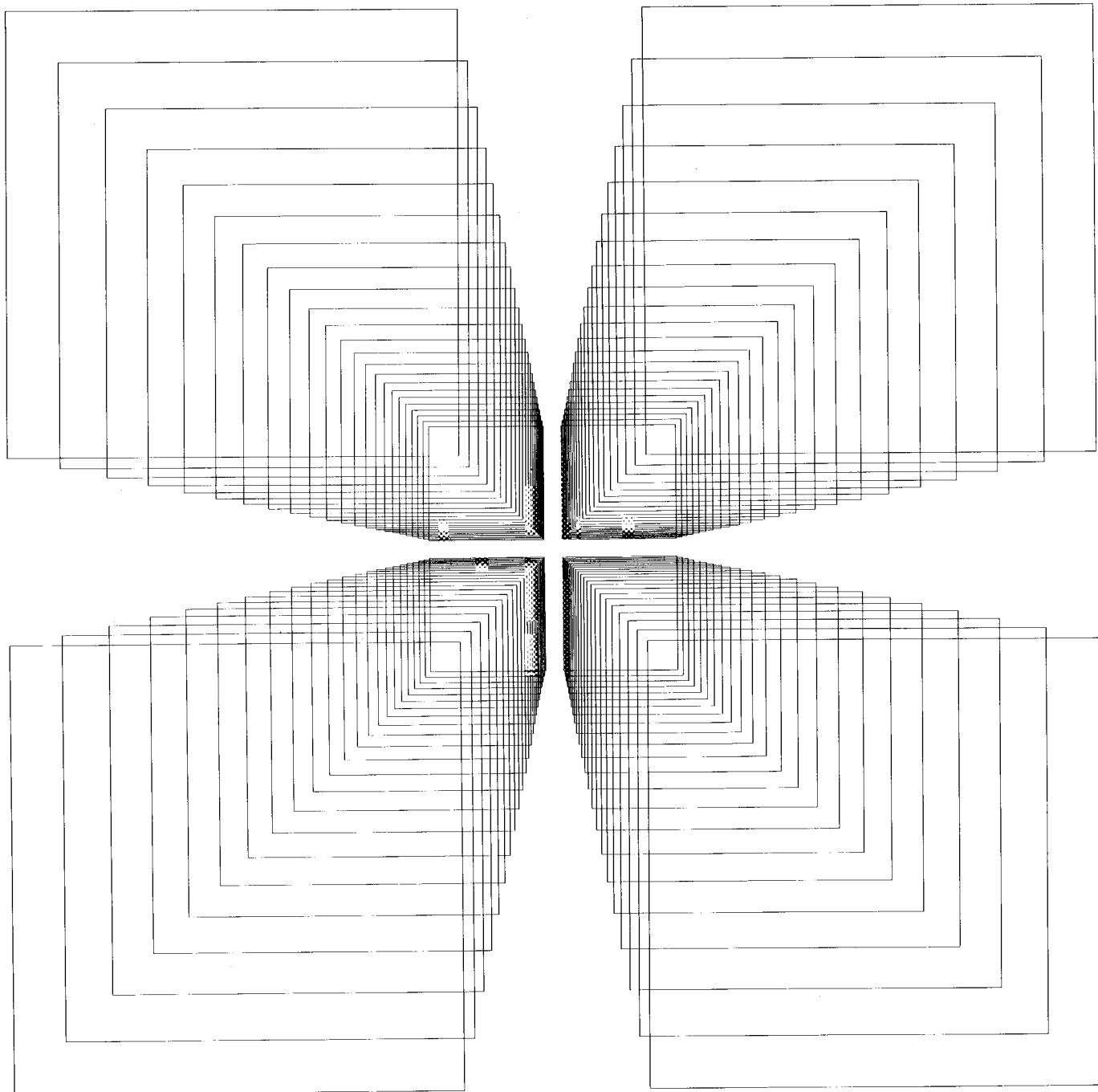


harman/kardon

430

twin powered receiver
owner's manual

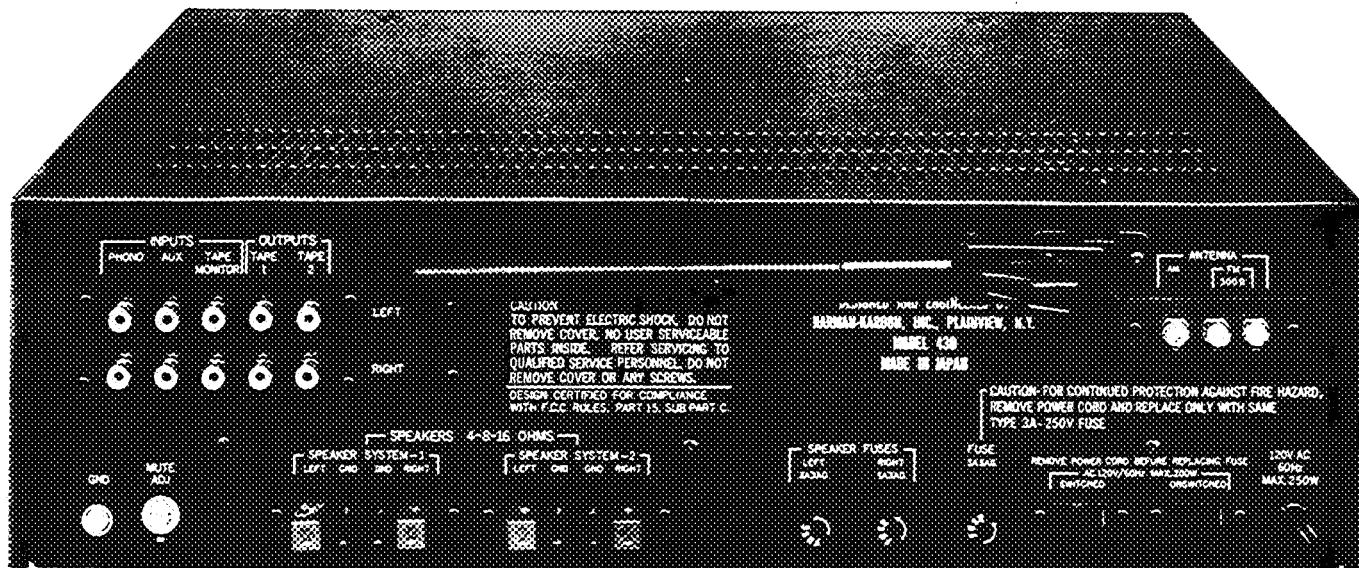


INTRODUCTION

The fact that you've invested in a component high fidelity system indicates you to have a more than average interest in music. The fact that your investment includes a Harman/Kardon receiver shows us your appreciation of uncompromised reproduction of the music you enjoy. Throughout the design and manufacture of this receiver, we have made every effort to assure it will meet all of your expectations. We are confident the 430 will do this *if* it is properly connected and its controls and features are clearly understood.

This manual will serve as a guide to the connection of the 430 and the expert use of all its controls. We understand your desire to have the 430 operating in the shortest possible time, so this manual has been organized to make the installation procedure rapid, simple, and accurate. We feel a comprehensive understanding of the various controls and features the 430 offers can best be obtained when you can hear their effects as we describe them, so this manual is organized to allow that.

Read each section of this manual completely *before* you begin to make the connections or control adjustments that section describes. You will make the right connections or adjustments the first time you attempt them and thus shorten the process of installation.



WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

On the rear panel of the 430 you will find numerous receptacles, all clearly and specifically marked with identifying legends. Each of these will be dealt with in turn. For the moment, leave the power cord of the 430 **unconnected**. Place the 430 on a shelf or table, or on the floor near where it will finally be placed when you've completed the connections. You should leave enough working space around it so you can make your connections easily and comfortably.

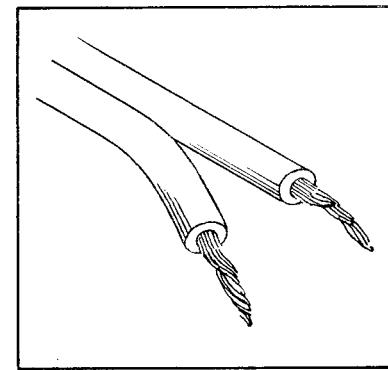
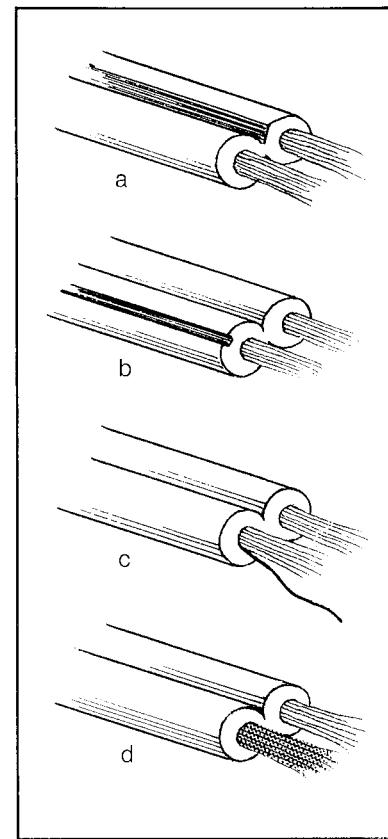
Although the 430 is a solid state device, its powerful amplifiers and even the dial scale illumination lamps will generate heat. The 430 is designed to operate efficiently over a wide range of ambient temperatures, but the heat it generates must be allowed to escape to prevent internal temperatures from rising too high. Adequate ventilation must be provided. If the 430 will operate on an open shelf, no special precautions need be taken. If a shelf will exist above the 430, allow at least 1" to 2" of free space above the receiver. If the 430 will operate in a 3 or 5-sided (bottom, back, top and sides) closed space, at least 2" to 4" of free space should be allowed above it and to either side. In custom-mounted cabinet installations, adequate air flow can be obtained by drilling a large cutout, or several small holes, in the surrounding cabinetry, both above and below the receiver (not in the 430 housing!!!). Open back custom installations require no special attention. Finally, free air flow through the bottom of the receiver must be allowed. **Never operate the 430 on a rug or cushion that could prevent air from entering the bottom of the receiver.**

Preparing for Connections:

Choosing the right wire for connecting your speakers to the receiver will assure the best performance. We recommend use of 18 gauge, stranded, two-conductor wire. This type of wire is often called lamp, or "zip", cord and is available at most high fidelity stores or any electrical supply store. 18 gauge wire is thick enough to allow lengths of up to 50 feet to be used without affecting the low frequency performance of your system. For longer runs, we suggest thicker 16 gauge wire. If the length of wire you need is relatively short, you may use thinner 20 gauge wire for your installation, although 18 gauge wire is preferred.

Lamp cord usually provides a "code" which is a means of identifying the conductors. On some brands the insulation surrounding one of the conductors has a rib, sharp corner (see "a"), or indentations molded along its length (see "b"); on others a thin, colored thread is molded inside the insulator along with one conductor (see "c"). In still other brands, the two conductors are different colors (see "d"). Such wire will be very useful in "phasing" your speaker systems.

Cut two lengths of wire of approximately equal size. Both should be long enough to comfortably reach the speaker that will be at the greatest distance from the 430. Separate the conductors at each end of the wire segments a distance of about 2-3", then carefully remove about one-half inch of insulation from each free end. Twist the strands of each conductor so they are smooth and tight without any loose strands.



Connecting Speakers to the 430:

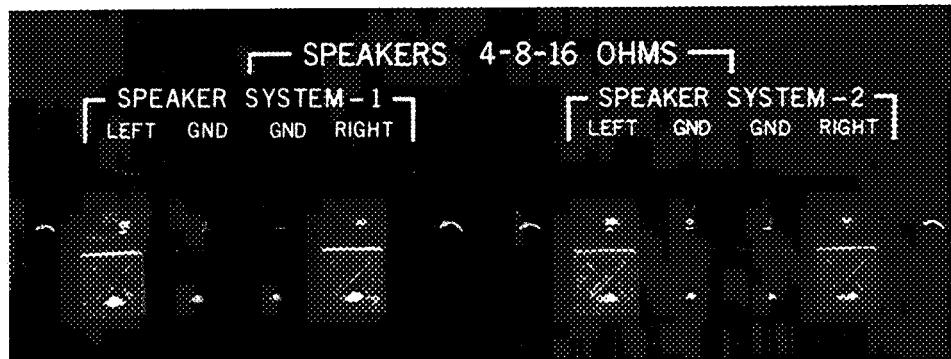
Find the row of four connectors on the back panel of the 430 marked SPEAKER SYSTEM 1. Starting with either Left or Right pair of connectors, push firmly in on the plastic head of each connector, revealing an opening. Insert each of the bare conductors at the end of one of the lengths of wire you've prepared into the opening. Release the connector. Each of the two conductors should be locked firmly in place in its own connector. Take the other end of this wire and connect the bare conductors to the two terminals on one of your speakers. Now (*this is important*) note to which connector (red or black) on the 430, and to which speaker terminal, the coded side of the wire is connected. Connect the other speaker to the other two connectors under SPEAKER SYSTEM 1, being sure the coded side of this wire is connected to both the 430 and the speaker in the same way as the first wire. The left channel connection should be made to the speaker placed at the left side of your listening area. The right channel connection should be made to the speaker placed at the right side of your listening area. Be certain [**this is very important**] all these connections are tight and that **all** the strands of the wires are firmly seated in the connectors of the 430 and under the terminals of your speaker systems. Any loose strands of wire could touch other terminals and cause short circuits, which might cause the speaker fuse to blow.

If you have been careful to follow these directions, your speakers will be properly "phased." We will describe how to check this by ear when the other connections are completed and your system is operating.

Note: Two equal lengths of wire are suggested, even if one speaker will be quite close to the 430, to prevent any imbalance in the system. Later, when you put the components in your system into their final positions, you can neatly coil any excess wire and place it inconspicuously.

If, now or later, you wish to connect a second pair of speakers, you may use the SPEAKER SYSTEM 2 connectors of the 430 following the procedure outlined above. You may do this **only if each speaker has a rated impedance of 8 ohms or higher.*** If either pair of speakers have rated impedances of 4 ohms, you should not connect them without special advice from your high fidelity dealer. **SERIOUS DAMAGE TO THE 430 CAN RESULT FROM SUCH USE.**

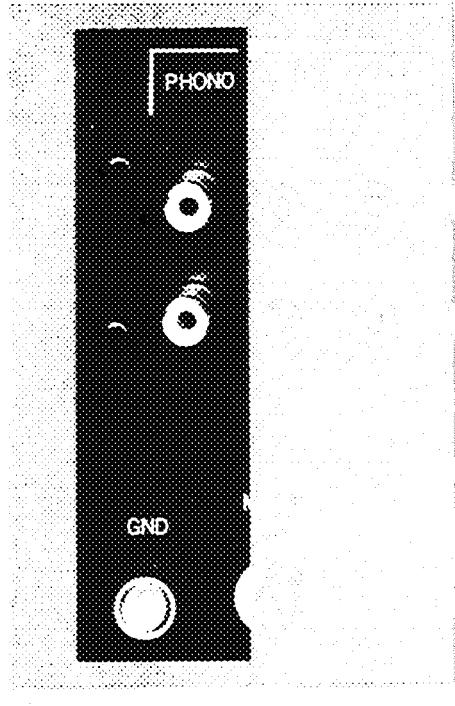
*Note: All stereophonic solid state amplifiers can normally accommodate only **one** pair of 4 ohm speakers. This means that if you have connected a pair of 4 ohm speakers to SPEAKER SYSTEM 1, no additional speakers of any kind may be connected to either SPEAKER SYSTEM 1 or SPEAKER SYSTEM 2 without consulting with your dealer, Harman/Kardon, or the manufacturer of your speakers.



TURNTABLES OR AUTOMATIC CHANGERS

All record playing units provide two or three cables (aside from the power cord) for connection to the 430. These are the left and right channel signal cables and the ground connection (some turntables combine the ground connection with one of the signal cables). The two signal cables are usually identified as "left channel" and "right channel" by the use of a color code or tabs, or the channel identifications are molded into the insulators around the pin-type RCA connectors. Determine which of the cables is left and which right and insert them into the two corresponding receptacles on the rear panel of the 430 marked PHONO. Press them in as far as they will go so they are seated snugly.

If a separate ground wire is provided, connect its lug or stripped end under the knurled nut marked GND on the rear panel of the 430. The phonograph signal connections are now complete.



Note: The 430 is designed to operate with a high quality MAGNETIC cartridge. If you purchased your 430 and turntable separately, be sure the turntable is equipped with a cartridge of this type.

Insert the AC power cord of your turntable into the AC receptacle marked UNSWITCHED on the rear of the 430. This receptacle is "live" so long as the 430 itself is connected to a live AC outlet, *regardless* of whether the 430 is itself operating. Your turntable or automatic changer should be connected to this receptacle.

FM ANTENNA CONNECTIONS

A "T"-shaped, folded dipole antenna is provided with the 430 for FM reception. However, FM performance of the 430 will be greatly enhanced if it is connected to an outdoor antenna system. Many apartment buildings in urban areas provide a master antenna system for television reception which can often be used successfully for FM purposes. In some suburban and rural areas, cable television systems exist that can also be used successfully for FM reception. In fact, television antennas on private houses are often good for FM reception.

Two types of wire, 300 ohm and 75 ohm, are used as lead-in for outdoor antenna systems. Both types can be connected to the 430. Find the three-connector terminal strip on the rear panel of the 430 marked ANTENNA.

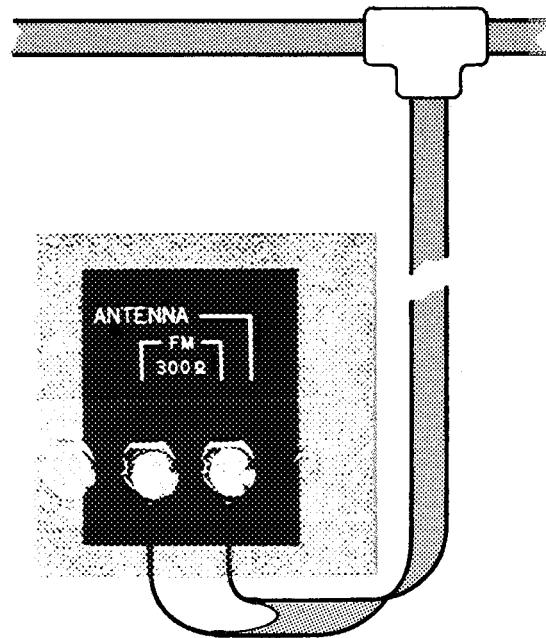
If your lead-in is 300 ohm, it will be a very flat wire with a conductor at each edge. Carefully cut about 1 1/2" of the insulation material from the center of the lead-in without damaging either conductor. Strip off about 3/4" of insulation from each conductor and connect one of them to each of the terminals on the three-connector ANTENNA strip under the bracket labeled 300 Ω . (The term "ohm" and the symbol " Ω " have equivalent meaning.)

If your lead-in is 75 ohm, you must use a matching transformer. The lead-in wire will be a single round wire with a termination consisting of a metal connector with a short length of bare, solid, copper-colored wire protruding from its center. This connector is intended to be joined to a 75 Ω to 300 Ω matching transformer. These transformers are inexpensive and available at many television or electronic parts supply stores. Once they are joined to the lead-in they provide two 300 ohm conductors that are connected to the 430 as described above. If your 75 Ω lead-in has a bare end, the appropriate connector must be attached to it so that you can use a matching transformer.

Where there is only one lead-in and it must supply signal for both a television receiver and the 430, a "signal splitter" or "2-set coupler" can be used. Consult your high fidelity or television dealer for information on such devices.

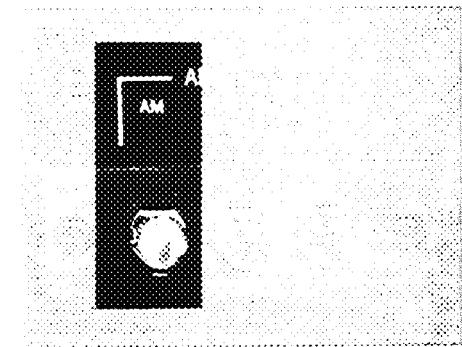
If no outdoor antenna is available to you, connect the lugs of the dipole antenna to the 300 Ω terminals.

The dipole antenna will perform best if its arms are carefully extended in a straight line horizontally, and the entire antenna fixed to a wall or tacked to the back of a shelf. Dipoles are most sensitive on the axis perpendicular to the plane of the two arms so antenna position is important for optimum reception.



AM ANTENNA CONNECTIONS

A ferrite loopstick AM antenna is provided on the rear of the 430 which will yield good reception in many areas. It can be oriented to improve reception of distant stations. The third terminal of the ANTENNA strip is a connection for a "long wire" AM antenna. AM reception over extremely long distances can be obtained with a well-designed long wire antenna. Many high fidelity dealers, especially those who have experience with amateur and shortwave radio, can help you with a long wire AM antenna system.



WARNING: DO NOT MISTAKE THE FERRITE LOOPSTICK AM ANTENNA FOR A HANDLE. ITS BRACKET CANNOT SUPPORT THE WEIGHT OF THE 430. THE 430 SHOULD NEVER BE LIFTED, PULLED, OR PUSHED BY GRIPPING THE AM ANTENNA.

CONNECTING TAPE EQUIPMENT

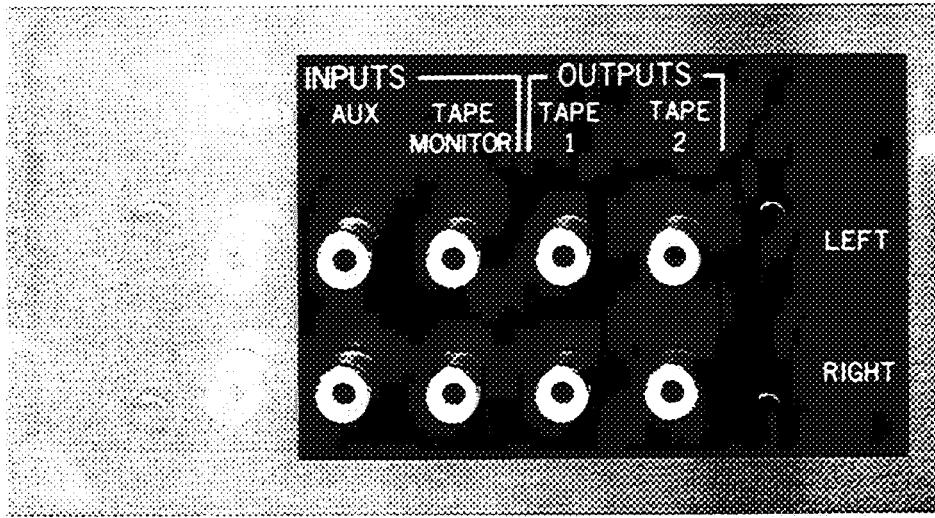
The 430 provides facilities for both the recording and playback of tape programs to and from open-reel, cassette, or eight-track cartridge equipment. Using the signal cables provided with your tape deck or recorder, recordings can be made by connecting the left and right channel TAPE 1 receptacles (under the bracket labeled OUTPUTS) on the rear panel of the 430 to the corresponding *input* receptacles of your tape equipment. The 430 provides outputs for two tape recorders.

If your open-reel or cassette equipment offers true off-tape monitoring facilities, the left and right channel *output* receptacles of your tape equipment should be connected to the corresponding TAPE MONITOR receptacles under the bracket labeled INPUTS. Most cassette recorders and many open-reel units do not offer true tape monitor capability. However, the outputs of these machines may still be connected to the TAPE MONITOR receptacles of the 430. Tape equipment capable of playback *only*, can be connected to either the TAPE MONITOR or AUX receptacles of the 430. The choice here will be affected by your desire or need to reserve the AUX inputs of the 430 for use as explained below.

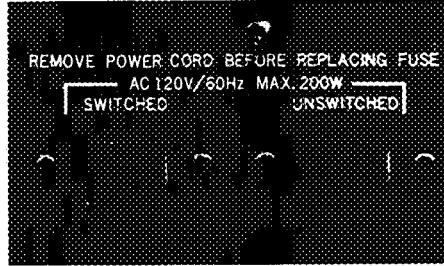
OTHER EQUIPMENT

A pair of auxiliary inputs is available at the rear of the 430 for the connection of any "high level" output equipment. A special tuner for long wave, marine, aircraft, or citizen's bands, etc. may be connected — or you may choose to connect a second tape recorder or the output of the audio section of a television receiver. Any number of choices is available. Consult your dealer for information as to what equipment is compatible with the parameters of the AUX inputs of the 430. If you have not used the SWITCHED AC OUTLET for a tape recorder, you can use it for accessory equipment.

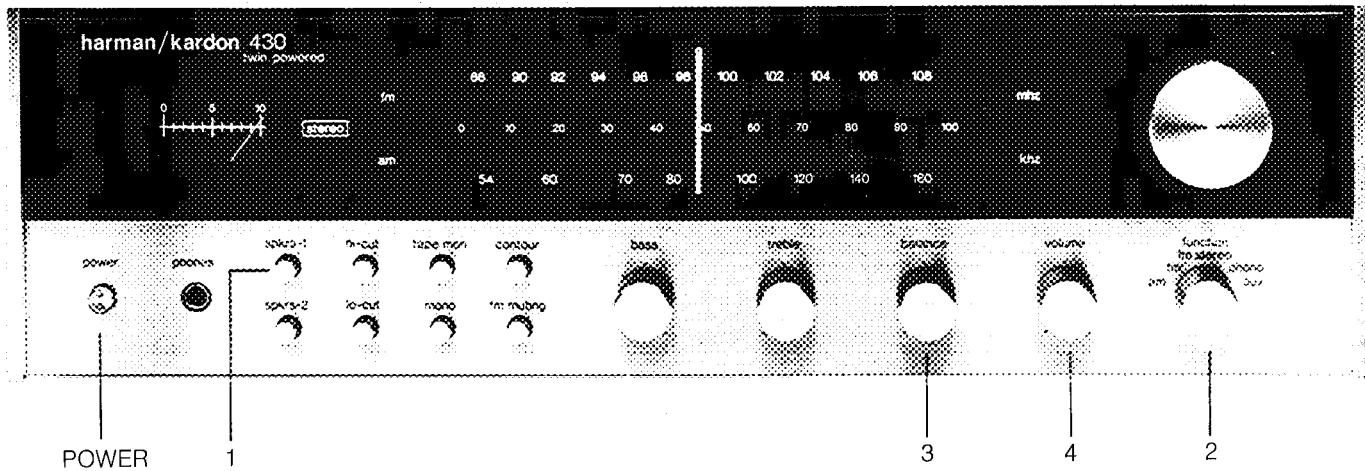
The connections to the rear panel of the 430 are now complete. Insert its AC power cord into a convenient wall outlet and place the 430 in its final position in your listening room.



The remaining SWITCHED AC OUTLET on the rear of the 430 may be used to provide power for your tape deck or recorder. This outlet is "live" only when the 430 is itself operating. If you wish, the power switch of your tape equipment may be left in the "on" position — power to it would then be controlled by the POWER SWITCH of the 430. If you use this outlet, be sure the recorder's drive system is disengaged before you switch the 430 off.



OPERATING THE 430



Familiarize yourself with the front panel controls. There are six knobs and nine pushbuttons controlling all the features of the receiver. Each of the controls performs a different function, but instead of discussing each control separately, we will illustrate how they work together to control the reproduction of sound through the 430. Find the VOLUME control and turn it down (counterclockwise). Push the POWER switch to turn the 430 on.

Playing Records with the 430

Three basic controls are used to play back disc recordings through the 430: FUNCTION, VOLUME, and BALANCE. Make the following adjustments to these controls and the SPEAKERS switch after activating your turntable or record changer:

- [1] SPEAKERS 1 — On (Push "in")
- [2] FUNCTION — "Phono" position
- [3] BALANCE — Neutral position (12 o'clock)
- [4] VOLUME — Advance (clockwise) to comfortable loudness level.

You should now hear sound from the disc through your system. To increase or decrease the loudness of the playback, the VOLUME control may be advanced (clockwise) or turned down (counterclockwise). The BALANCE control if turned counterclockwise will shift the loudness to the left speaker by attenuating (reducing the loudness of) the right speaker. When turned in the other direction, it has the opposite effect. The SPEAKER 1 pushbutton connects or defeats the loudspeakers connected to SPEAKER SYSTEM 1. [If you have speakers connected to SPEAKER SYSTEM 2, they are controlled by the SPEAKERS 2 pushbutton on the front panel].

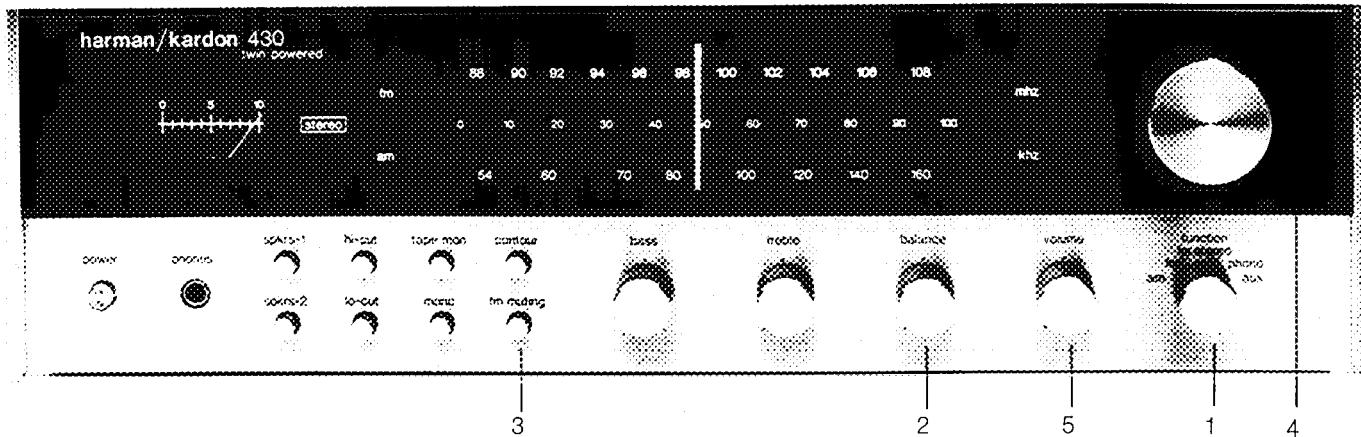
Now that you're listening to sound you can check the phasing of your speakers. While playing a stereo disc, depress the MONO pushbutton switch and position yourself midway between the left and right speaker systems, facing them. The source of sound should now appear to be coming from a point directly ahead of you, centered between the two speakers. If the sound has no clear-cut, centered image, you did not connect the speaker systems correctly. **Push the POWER switch off.** Recheck your connections both at the rear of the 430 and at the terminals of both loudspeakers. If you are using two dissimilar loudspeakers, it is possible that their internal connections have reverse polarity, causing them to be out of phase. Reverse the connections made at the speaker or the receiver (*NOT BOTH*) for one channel *ONLY*. The system should now be in phase. Push the MONO switch to return it to stereo position.

The phasing test can be done with any program material, but disc recordings are the recommended method. Stereo material is suggested to make the effect more obvious.

If, at average listening levels, you hear an objectionable (i.e. easily audible) amount of hum, try disconnecting the ground wire from the turntable to the 430. Some turntable/cartridge combinations actually produce less hum this way. Another source of hum is inadequate seating of the phono signal cables in the receptacles of the 430. Check this thoroughly.

If you do not get sound at this point, check the control positions given above. Also, be sure the TAPE MONITOR switch is in the "out" position. Leave the volume control at the 9 o'clock position while you are adjusting the other controls. If you still get no sound, check the back panel connections for PHONO, then check the turntable itself. **Note: Whenever you check connections at the back panel, always push the POWER switch off.**

RECEIVING FM BROADCASTS



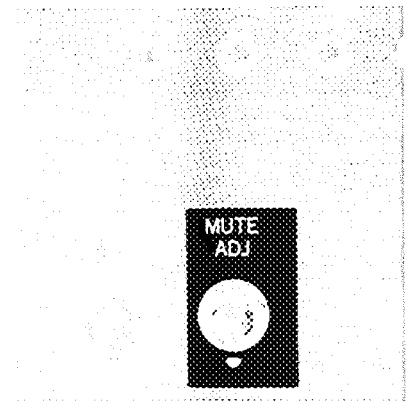
Five basic controls are used to receive FM broadcasts through the 430: FUNCTION, VOLUME, BALANCE, TUNING, and FM MUTING. Make the following adjustments to these controls after activating the SPEAKERS 1 switch:

- [1] FUNCTION — FM Stereo
- [2] BALANCE — Neutral
- [3] FM MUTING — Out
- [4] TUNING — Use this control to move the dial pointer to the extreme end of the dial scale.
- [5] VOLUME — Advance until hiss is audible

You should now hear a mild hissing or rushing sound — this is atmospheric noise picked up by the tuner section. Depress the FM MUTING button and the noise disappears — it has been muted. Turn the TUNING knob in either direction until a broadcast signal is received. The signal strength tuning meter should have deflected and should now be registering the relative strength of the FM signal you are receiving. If the broadcast is in stereo, the red STEREO beacon is lit — the beacon does not illuminate when an FM station is broadcasting monophonically. If you have a stereo station tuned, turn the FUNCTION switch to FM. The 430 is now receiving the stereo broadcast monophonically. This feature is useful for weak stereo stations where reception is accompanied by a large amount of noise. The program can be received monophonically without the noise. Very weak monophonic stations may be received if FM MUTING is defeated, but tuning from station to station is no longer noise-free.

Muting Adjustment

There is a control on the rear panel labeled MUTING ADJ. It controls the signal threshold at which muting action takes place when the FM MUTING button is activated. The control has been set at our factory to accommodate the majority of FM reception conditions. If you wish to readjust this control, depress the FM MUTING button and tune away from any station. Turn the MUTING ADJ control until the interstation noise (hiss) disappears.



The dial scale of the 430 is calibrated for FM broadcast station frequencies from 88 to 108 mHz. Each FM station in your area has an assigned frequency that falls within these limits. You can use the illuminated dial pointer and scale of the 430 to find any station in your area if you know the assigned frequency. Similarly, AM stations in your area have assigned frequencies ranging from about 550 kHz to 1600 kHz. These, too, can be found with the illuminated pointer and dial scale. For convenience, a third logging scale with arbitrary values from 0-100 is provided so you can simplify the task of memorizing the various assigned frequency values of the FM and AM stations in your area. With the logging scale, all you need remember is that if your favorite FM station is at 80 on the logging scale, select FM, tune to 80, and listen.

These two examples give you a working familiarity with the primary controls of the 430.

OTHER CONTROLS

By far the most frequently used controls are the FUNCTION, VOLUME, and POWER controls, but each of the controls we haven't yet mentioned has a specific purpose and value. Listen to their effect as we describe them.

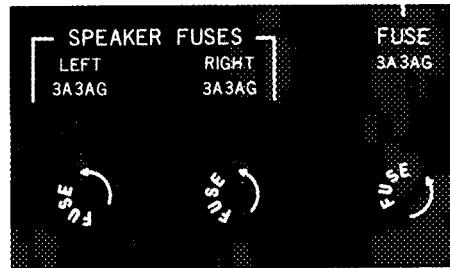
TREBLE Raises (clockwise) or lowers (counterclockwise) high frequency content in program material on both channels simultaneously. Neutral position is 12 o'clock.

BASS Same effect as TREBLE control, except works on low frequencies.

CONTOUR Works in conjunction with VOLUME control to increase bass energy at low volume settings. Progressively less effect as volume level is increased. The CONTOUR control has no effect at VOLUME control settings beyond 12 o'clock.

TAPE MONITOR Admits program from any "high level" source (usually tape recorder) connected to TAPE MONITOR receptacles. It *does not* affect signal appearing at the TAPE OUTPUT receptacles. Thus, the use of the TAPE MONITOR switch does not disturb the recording process of whatever source the FUNCTION switch is set to. (Note: If the rear panel TAPE MONITOR inputs are unoccupied and the TAPE MONITOR switch is depressed, no sound will be heard regardless of the position of the FUNCTION switch. The same will be true if the equipment connected to the TAPE MONITOR inputs is off). TAPE MONITOR also allows for connection of signal processing devices.

FUSES



MONO Changes any program from stereophonic to monophonic format. Also processes any source connected to a single input receptacle (such as television sound) through *both* channels.

HI CUT A filter to reduce high frequency content of any program material. Tape hiss, record scratches and other problems found in program material can be effectively reduced with this control.

LO CUT A filter to reduce low frequency content of any program material. Rumble from your turntable (if present) or other low frequency problems can be effectively reduced with this control.

PHONES Receptacle for headphones for private listening. Does *not* automatically defeat speaker systems. Headphones can be used whether your speakers are "on" or "off".

FUNCTION Selects program for playback through system. Same signal appears at TAPE OUT.

Three fuses are provided to protect the 430. Two of these are the speaker fuses and are labeled as such. They work to protect the amplifier circuitry from external short circuits or other conditions which would cause excessive current to be drawn through the amplifiers. If one of your speakers stops reproducing sound, first check the connections for that speaker, then check the speaker fuse for that channel. Replace the fuse after correcting any short circuit conditions (wire strands touching the wrong terminals are the usual cause).

The remaining fuse protects the entire receiver from excessive currents through the AC power line. Should this fuse blow:

THE REPLACEMENT FUSES MUST BE OF PRECISELY THE SAME TYPE AS THAT SPECIFIED ON THE REAR PANEL. USING ANY OTHER FUSES WILL NOT PROTECT THE 430: SERIOUS DAMAGE TO ITS CIRCUITRY MAY RESULT.

CLEANING THE DIAL GLASS

Dust or smudges can be removed from the dial glass with a diluted liquid glass cleaner and a soft cloth or damp paper towel. DO NOT use a strong solvent-type cleaner or ammonia as these may remove the lettering on the face panel or cloud the dial glass.

LIMITED 2 YEAR WARRANTY AND SERVICE POLICY

We warrant this product to be free from defects in material and workmanship under normal use and service, and in accordance with the conditions set forth below. Should a defect occur within the period specified, provided that the unit is returned to either Harman/Kardon Plainview or an authorized Harman/Kardon warranty station, transportation prepaid, and which our examination shall disclose to our satisfaction to be defective, we will, for a period of **two (2) years** from the date of purchase, either repair or replace and install any defective parts of this product free of charge.

This warranty is not applicable to any product which shall have been repaired or altered in any way so as to, in our judgment, affect its stability or reliability; or to any product that has been subject to neglect, misuse, abuse, or accident; or which has had its serial number altered, effaced or removed. Neither shall this warranty apply to any product which has been connected other than in accordance with instructions furnished by us.

Exceptions:

This warranty does not include any obligation as to the repair or replacement of any wooden enclosure or other similar accessory due to damage incurred after initial delivery, nor to any responsibility for transportation charges incurred in the shipment of the defective product to or from Harman/Kardon Plainview or any of its authorized warranty stations.

The duration of implied warranties is 2 years. Our obligation under any warranty, express or implied, is limited to repair or replacement of any unit found to be defective. Under no circumstances shall we be liable for incidental or consequential damages.

To obtain service under the terms of the warranty policy, it is necessary for you to retain your **ORIGINAL BILL OF SALE**. Any card or other registration device does not constitute proof of purchase nor will it be regarded as such. In the event your equipment requires service during the two-year warranty period, only presentation of your **ORIGINAL BILL OF SALE** to either an authorized warranty station or the factory itself will insure your rights under the warranty policy described above.

We have a Customer Relations Department equipped to handle any questions you may have regarding the installation or operation of your unit. Feel free to correspond with us at any time. We will make every effort to give you prompt and complete advice on any inquiry.

If any problem cannot be resolved through correspondence with the factory, we may wish to refer you to an authorized warranty station in your area if we feel this is best in your situation. Similarly, we may prefer to authorize the return of your unit to the factory in Plainview, New York. Should this possibility arise, a Service Return Authorization form, and packing and shipping instructions will be mailed to you. This material will identify your unit as belonging to you during its processing through our Service Department and allow us to return it to you in the shortest possible time. This authorization form **must accompany** your unit when it is returned to us.

UNDER NO CIRCUMSTANCES SHOULD YOU SHIP A UNIT TO US WITHOUT PRIOR AUTHORIZATION.

You risk major delays in the processing of your unit and the possibility of loss of your equipment.

430 SPECIFICATIONS

AMPLIFIER SECTION

Power Output: 25 WATTS MIN. RMS PER CHANNEL, BOTH CHANNELS DRIVEN INTO 8 OHMS FROM 20Hz TO 20kHz, WITH LESS THAN 0.3% THD.

Power Bandwidth: From 10Hz to 40kHz at less than 0.3% THD into 8 ohms, both channels driven simultaneously at 12.5 watts per channel.

Frequency Bandwidth: From 4Hz to beyond 140kHz.

Frequency Response: 20Hz to 20kHz \pm 0.5dB.

Square Wave Rise Time: Less than 3 microseconds.

Square Wave Tilt: Less than 5% at 20Hz.

Total Harmonic Distortion: Less than 0.3% from 250 milliwatts to 25 watts RMS, both channels driven simultaneously into 8 ohms from 20Hz to 20kHz.

Intermodulation Distortion: Less than 0.15% at rated power output.

System Hum and Noise: Better than 65dB below rated output (unweighted).

Damping Factor: 40

TUNER SECTION

Capture Ratio: 2.5dB

Image Rejection: 60dB

Spurious Response Rejection: 50dB

Alternate Channel Selectivity: 60dB

T.H.D.: 0.6% Mono
0.7% Stereo

Dimensions: 17" W x 14½" D x 5½" H
(43.2 cm. W x 36.8 cm. D x 14.0 cm. H)

Weight: 24 pounds (10.9 kg)

TYPICAL TUNER PERFORMANCE

