

OWNER'S MANUAL

Receiver/Tape Deck
Model TDC33

Nocturne

harman kardon

Congratulations!

Once again, HARMAN-KARDON has taken a creative leap forward, providing engineering leadership in solid-state design. The new Nocturne TDC33 Stereo Receiver/Tape Deck combines superb styling and component-quality performance.

Your HARMAN-KARDON Receiver/Tape Deck represents the best in electronic circuitry, employing advanced integrated "micro-circuits" to assure maximum reliability and unsurpassed performance.

To insure a more perfect music system, we have carefully designed one of the finest tape recorders available. The 4 track Stereophonic 3 Head tape recorder incorporates many features and superior performance which is usually associated with professional-type tape recorders of considerably greater expense. It has been solidly constructed and housed in a die-cast frame to assure absolute alignment of all moving parts with precision accuracy.

WARRANTY POLICY

We urge you to 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 ninety (90) days for the tape recorder and for a period of two (2) years for the remainder of your Stereophonic control center, from the 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.

Each part has been carefully machined to exacting tolerance to provide performance specifications unprecedented in home recorder design.

The TDC33 is a complete stereophonic control center equipped with a preamplifier, powerful dual-channel amplifier, and a superb FM and FM stereo tuner combined to give crystal-clear reception of radio broadcasts. The new R.C.A. Mosfet transistor front end has been incorporated in your unit to provide undistorted FM reception over great distances without noise or fading.

The Nocturne TDC33 Receiver/Tape Deck, utilizing cool-operating output transistors, may be placed virtually anywhere without the need for special installation precautions.

We urge you to spend just a few moments to read this manual. We have outlined the proper installation instructions, simply and clearly, which, if followed, will assure you many rewarding years of listening pleasure.

2. After ninety (90) days, at our option, either replace or repair all defective parts of the tape recorder, charging for both parts and labor.

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

TAPE RECORDER

This recorder, which is an integral part of your music system, permits you to playback pre-recorded tapes and to record from records, FM, auxiliary equipment or microphones.

INSTALLATION PROCEDURE VENTILATION

The ultimate in solid state technology has been devoted to creating your Harman Kardon music system. Coupled with the latest in transistor engineering techniques are years of experience that Harman Kardon maintains as the leader in solid state.

Careful design enables the all transistor Model TDC33 Receiver/Tape Deck, to operate at a very low temperature. To maintain proper ventilation only (1) one inch of air space should be provided from the rear of the cabinet to the wall when installing your system.

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 (record player, AM tuner, TV set, etc.) may be connected to this receptacle and will be controlled by the ON/OFF switch on the front panel of your receiver.

FUSES

Your component system uses three fuses to protect its circuits. The main fuse labeled FUSE 1.5A-3AG is used to protect the entire system while the other two fuses labeled LEFT 2A-3AG and RIGHT 2A-3AG are used to protect the output power transistors. 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.

Line Fuse—1.5 Amp—3AG

LEFT Channel Fuse—2 Amp—3AG

RIGHT Channel Fuse—2 Amp—3AG

SPEAKER CONNECTIONS

We have provided two types of speaker connections—the screw type and the phono type—for your convenience in connecting any model speaker to your TDC33.

If your speakers have screw type terminals, use the screw-type terminal strips at the rear of your unit for connecting them to your music system.

If you have HARMAN-KARDON speakers, simply plug them into the R. C. A. phono plugs located on the rear panel of your unit. A speaker cable is supplied with each HARMAN-KARDON speaker with a phono plug connector at each end for this easy plug-in connection to your unit. (Please refer to the rear panel diagram indicating the location of these two types of speaker connections.)

SPEAKER SYSTEM SELECTOR SWITCHES

Your RECEIVER/TAPE DECK has been provided with 2 independent speaker selector switches.

If your receiver is connected with 1 set of speakers (1 system), the system 1 speaker selector switch must be in the "on" position. If you have 2 sets of speakers (2 systems), the system 1 and system 2 speaker selector switches must both be in the "on" position for both systems to operate.

Should you desire to listen to stereo-headphone alone, the speakers (either one or both systems can be turned off at your discretion.)

CONNECTING THE SPEAKERS FOR STEREO OPERATION (1 SYSTEM)

Your two speakers should be identical, if possible, to obtain optimum results. Experts agree that a perfectly matched system offers the best stereophonic reproduction. The speakers should be placed along the same wall approximately 8 to 10 feet apart depending upon room size and furniture placement. 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 receivers. Lamp cord "zip cord" is excellent and may be easily dressed around the molding for an inconspicuous and neat installation. Do not drive the 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. **CONNECT SPEAKERS WITH CARE. AVOID SHORTS—THIS SYSTEM HAS BEEN DESIGNED TO PREVENT DAMAGE FROM ACCIDENTAL SHORTING; HOWEVER, REPETITIVE SHORTING CAN DAMAGE TRANSISTORS.**

1. Connect one length of lamp cord to the left speaker. (This is the speaker on your left as you face the speakers.) Refer to Diagram A.
2. Attach the other end of the lamp cord to the terminals marked SYSTEM 1 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 terminals marked SYSTEM 1 RIGHT.
5. Your receiver is now connected for 1 system stereo operation and is operative when the speaker selector switch on the front panel is in the Speaker System 1 ON position.

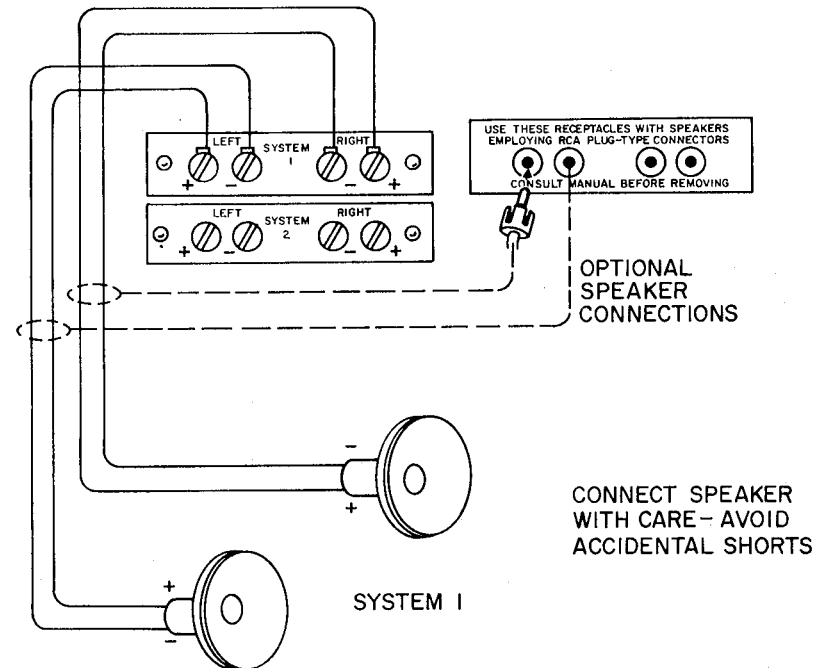


DIAGRAM A

CONNECTING THE SPEAKERS FOR STEREO OPERATION (2 SYSTEMS)

1. Connect all 4 speakers for your two system operation as shown in Diagram B.

2. You may now select either system 1, system 1 and 2, or system 2 by the use of the speaker selector switch located on the left side of the front panel of your Nocturne RECEIVER/TAPE DECK.

IMPORTANT: Only FOUR speakers (two stereo systems) may be connected to this unit.

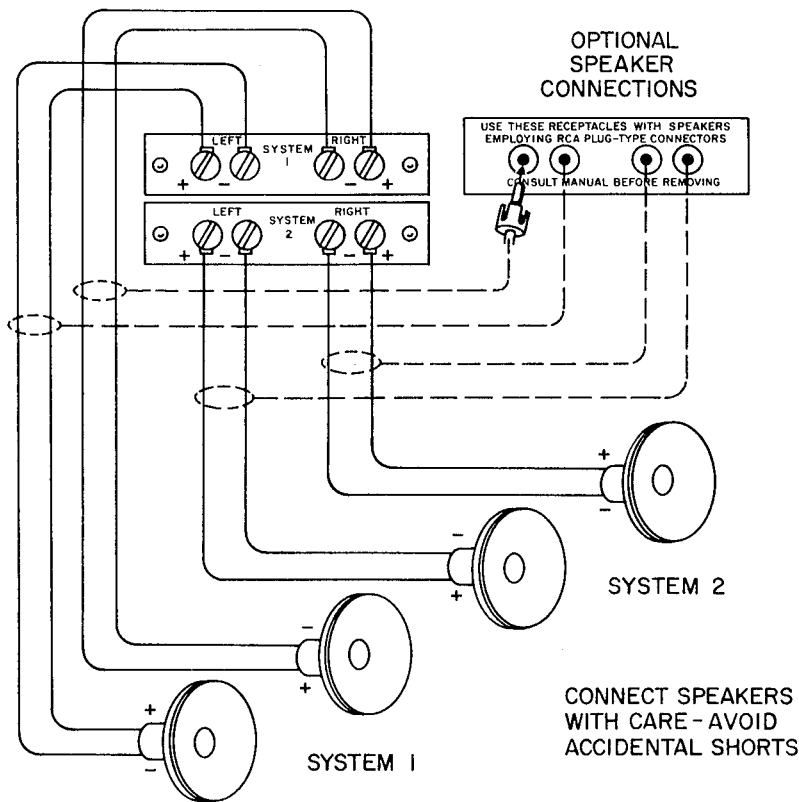


DIAGRAM B

CONNECTING THE SPEAKERS FOR MONOPHONIC OPERATION (1 SYSTEM)

If your TDC33 is to be used monophonically and stereo is to be added at a later date, it is essential that both speaker output terminals are terminated into a proper load to prevent damage to the output stage of the receiver. Refer to Diagram C for proper installation of the loading resistor.

At no time should the output terminals be paralleled for monophonic operation!

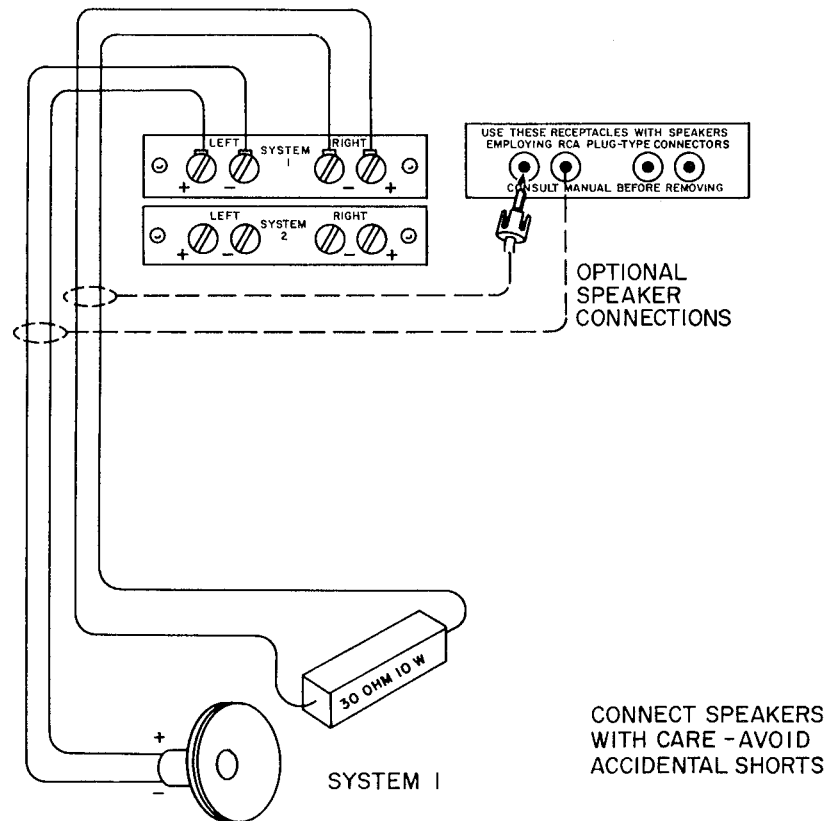


DIAGRAM C

THIS IS THE ONLY CORRECT METHOD FOR CONNECTING ONE SPEAKER TO YOUR COMPONENT SYSTEM

CONNECTING THE SPEAKERS FOR MONOPHONIC OPERATION (2 SYSTEMS)

If your TDC33 is to be used monophonically and stereo is to be added at a later date, it is essential that both speaker output terminals are terminated into a proper load to prevent damage to the output stage of the receiver. Refer to Diagram D for proper installation of the loading resistors.

At no time should the output terminals be paralleled for monophonic operation!

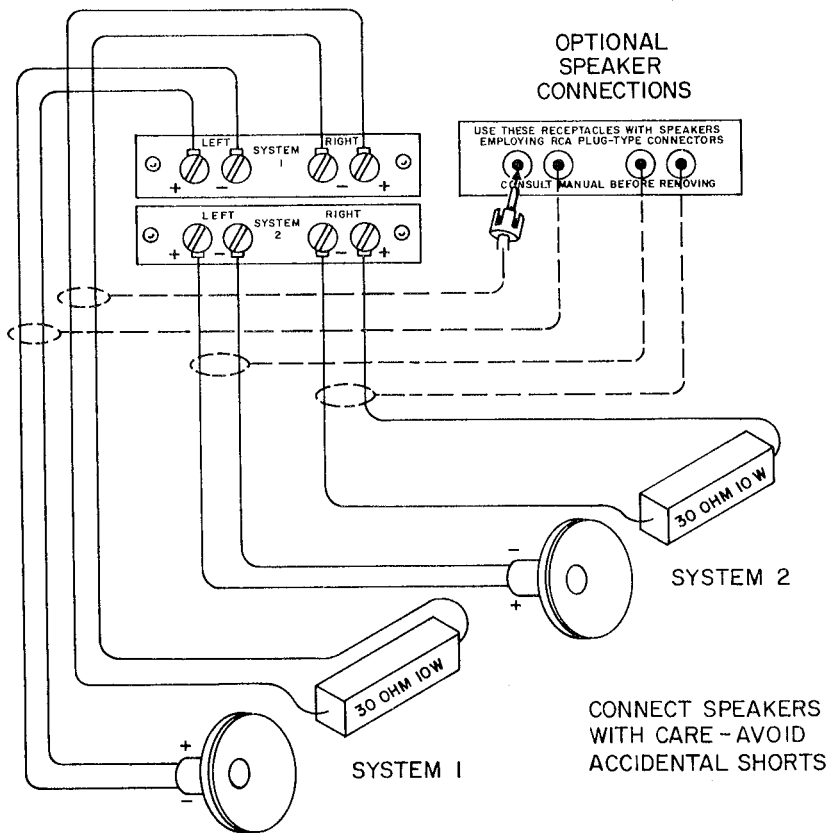


DIAGRAM D

THIS IS THE ONLY CORRECT METHOD FOR CONNECTING TWO SPEAKERS MONOPHONICALLY TO YOUR COMPONENT SYSTEM

CONNECTING THE SPEAKER FOR STEREOPHONIC OPERATION (SYSTEM 1) AND MONOPHONIC OPERATION (SYSTEM 2)

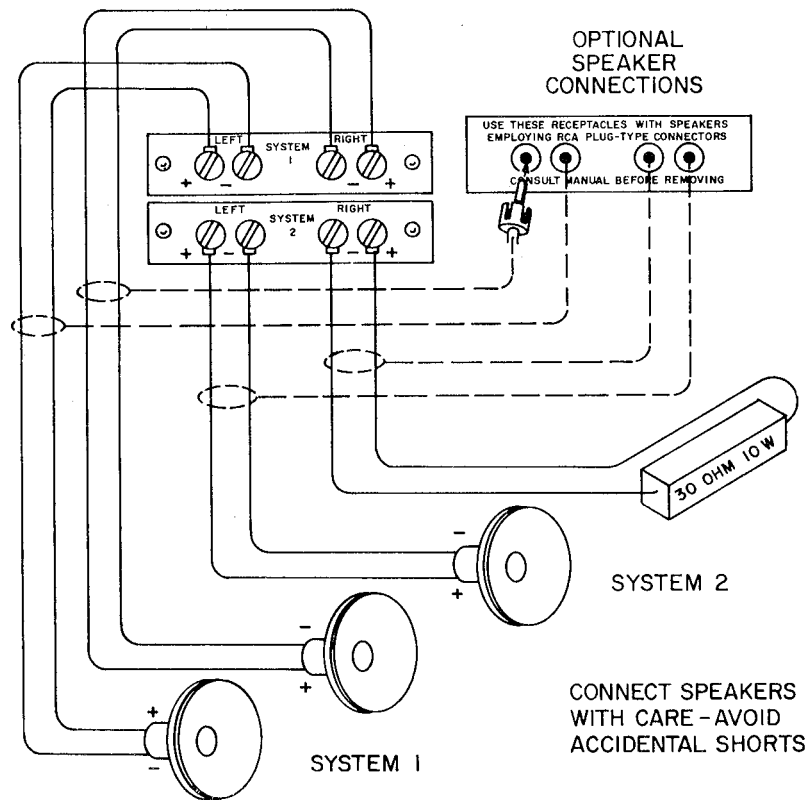
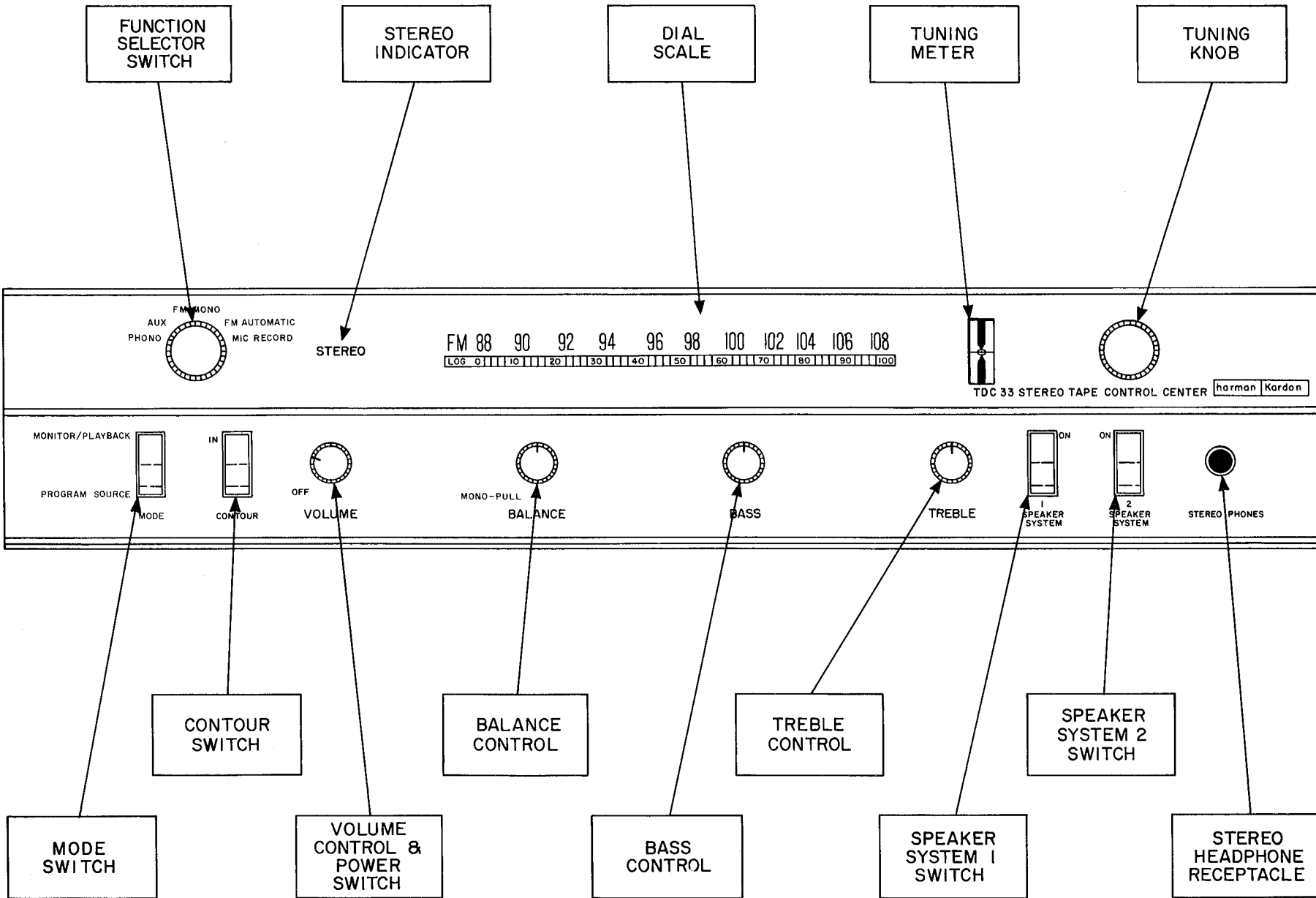


DIAGRAM E

FRONT PANEL TDC33



REAR PANEL TDC33

LEFT SPEAKER

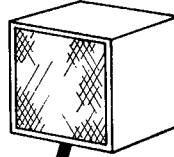
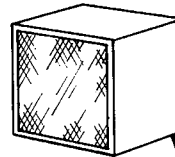
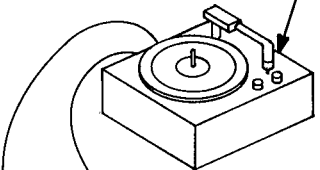
RIGHT SPEAKER

STEREO RECORD PLAYER

FM ANTENNA WIRE

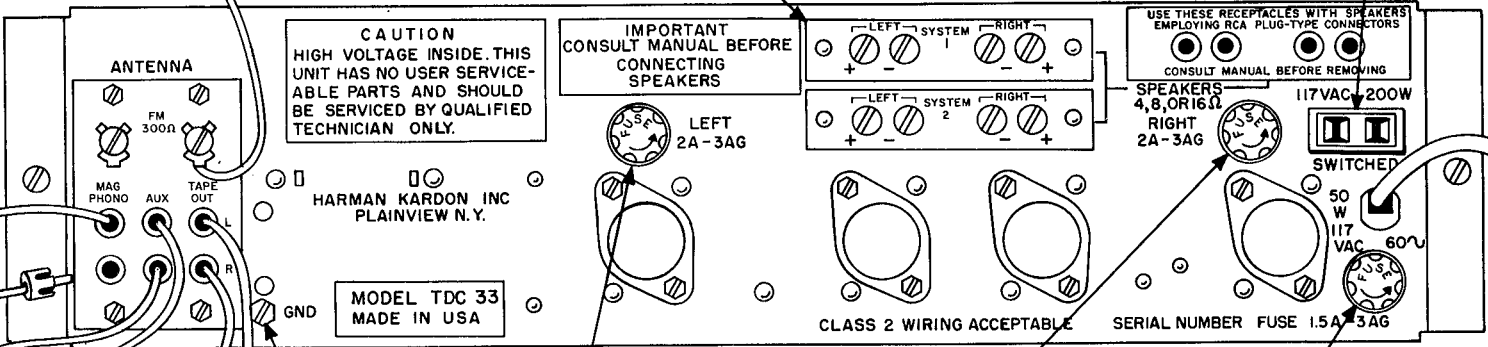
SPEAKER TERMINAL STRIPS

AUXILIARY AC POWER OUTLET



FOR ATTACHING SPEAKERS REFER TO THE PORTION OF YOUR OWNERS MANUAL "SPEAKER CONNECTIONS"

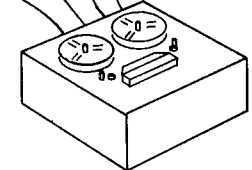
RIGHT INPUT CABLE
LEFT INPUT CABLE



RIGHT OUTPUT CABLE
LEFT OUTPUT CABLE
RIGHT INPUT CABLE
LEFT INPUT CABLE

LEFT CHANNEL SPEAKER FUSE

RIGHT CHANNEL SPEAKER FUSE



2ND STEREO TAPE RECORDER

GROUND SCREW

LINE FUSE

LINE CORD

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 "Speaker System Selector Switches".

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. The balanced antenna input is designed to accept a 300 Ω antenna, indoor or outdoor type. When using the antenna supplied connect one end of the 48" wire to either of the FM antenna terminals. 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.

In more remote locations, an outside Yagi, folded di-pole or omni-directional antenna is recommended. For the greatest gain, an 8 to 14 element Yagi designed for the FM band is suggested. A Yagi however, is very directional and it may be desirable to use an antenna rotor if a full 360° coverage is required. For reception in the suburbs, an outside folded di-pole or omni-directional di-pole is recommended.

CONNECTING A 2ND STEREO TAPE RECORDER

Connect the two tape recorder output cables to the LEFT and RIGHT AUX input receptacles on the rear of your receiver. With the Function Switch in the 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.

CONNECTING A STEREO RECORD PLAYER — (MAGNETIC PICKUP)

Connect both leads from your record player to the CHAN A and CHAN B PHONO input receptacles on the rear of the receiver chassis. If your record player has a special ground wire emerging with the two input leads, connect this ground wire to the ground terminal on the rear of the receiver.

CONNECTING A MONOPHONIC RECORD PLAYER — (MAGNETIC PICKUP)

Connect the single lead from your monophonic record player to either the A or B PHONO input receptacles on the rear of the receiver chassis.

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.

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.

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.

BASS AND TREBLE 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.

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 Contour switch compensates for this effect; thereby eliminating high listening levels as a requisite for full enjoyment of reproduced music.

STEREO-MONO SWITCH

The STEREO-MONO switch is physically located as a "PUSH-PULL" function on the "BALANCE" control.

When the switch is in the "IN" position the receiver is operating stereophonically. When the switch is pulled to the "OUT" position the receiver is operating monophonically. This position may be used when listening to monophonic records, or when it is desired to reproduce a stereo program, such as an FM stereo broadcast, monophonically.

SPEAKER SELECTOR SWITCH

Refer to paragraph on speaker connections.

MODE SWITCH

Program-Source: This is the normal listening position for all program material; eg: phono, Aux, FM Mono, FM Automatic.

Monitor/Playback: a) This is the normal listening position for playing pre-recorded tapes.

b) This position is also used to monitor your tapes while in the process of recording. If you are making a recording from Phono, Aux or FM you will hear the program material an instant "after" it has been recorded. Should you wish to listen to the program material "before" it is recorded you must place the mode switch in the "Program/Source" position.

FUNCTION SELECTOR SWITCH

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

1. **PHONO:** Selects your record player for stereophonic operation.
2. **AUX:** Selects any program source such as an AM tuner, the output of your television set, a 2nd tape recorder or any other high level equipment connected to the AUX receptacles on the rear of your receiver.
3. **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.
4. **FM AUTOMATIC:** This is the normal listening position for all monophonic or stereophonic FM broadcasts. In this position the stereo indicator and automatic switching circuit built into your receiver are operative. For further details see the paragraphs on "Stereo Indicator" and "Selecting Monophonic or Stereo FM Broadcasts".
5. **MIC RECORD:** Selects the Tape Recorder when you wish to make a recording using microphones only.

Note: When playing pre-recorded tapes the Function Switch has been bypassed and may be in any position. See paragraph on "Mode Switch."

TUNING METER

Your Nocturne Receiver incorporates a D'Arsonval movement tuning meter for precise and accurate tuning.

For FM Tuning: The meter is designed to operate on a null or "zero" center principle. Therefore, the meter pointer should always be at the dead center position of your meter dial for optimum listening performance. To accomplish this, rotate your tuning knob slowly, in one direction towards the station of your choice. As you tune through the station you will notice the pointer swinging from the left or right past the zero center. THE CORRECT POINT for minimum distortion and optimum FM reception is when the pointer is resting at the "zero" center position.

TUNING

The tuning knob, located directly to the right of the dial glass is used to select the desired station when your selector switch is in the FM mono or FM automatic positions.

SELECTING MONOPHONIC OR FM STEREO BROADCASTS

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

STEREO INDICATOR

A stereo indicator is located directly behind the FM dial glass and operates in conjunction with the FM AUTOMATIC position of the Function Selector switch. The indicator visually shows 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 AUTOMATIC position.
2. Tune to the station of your choice using your tuning meter for precise and accurate tuning. Your stereo indicator will now show if you are tuned to a stereo program. If the indicator is OFF, the program you are listening to is being broadcast monophonically.

DIAL SCALE

The Dial Scale on your TDC33 is marked with two (2) scales, an FM frequency scale (88-108 MC), 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 50 on the logging scale. Make a note of this setting. For future tuning to WQXR simply set the pointer to 50 on the logging scale.

TAPE RECORDER OPERATION PROCEDURE

Every control on this stereo tape recorder serves a specific function and is important to the operation of your stereo music system. PLEASE READ the following section carefully to assure full advantage of the performance capabilities of your tape recorder.

SUPPLY REEL SPINDLE: To record or play back, place the full reel of recording tape on this spindle. Additional information on the supply reel spindle is contained in paragraph "Threading the Tape".

TAKE-UP REEL SPINDLE: See Paragraph "Threading the Tape".

TAPE SPEED SELECTOR: This is the lever you will use to select the speed you require for playback or recording, namely, 7½, 3¾ or 1⅞ IPS (inches per second). For quality music recording, it is recommended that 7½ IPS speed be used. For voice recording, a slower speed may be selected, such as 3¾ or 1⅞ IPS.

NOTE: Before changing from one tape speed to another, be sure that the power for the recorder is "ON" and the tape "function switch" is in the STOP position to eliminate excessive wear to the drive mechanism.

TAPE COUNTER: The three-digit tape counter is connected to the supply hub. It indicates the amount of tape expended when recording or playing back. This counter is provided as a guide when winding or re-winding to a pre-determined point on the tape. Push the "Tape Counter Reset" button to return the counter back to its zero or start position.

RECORD LEVEL METERS: These meters are used to visually monitor the recording level of the program material and **MUST** be used in conjunction with the **LEFT** and **RIGHT** "record level controls" to maintain a proper level when making recordings. Further information on the use of level meters is contained in paragraph on "Record Procedure".

MICROPHONE INPUT JACKS: There are two (2) microphone input jacks to permit making either stereophonic or monophonic recordings. To record stereophonically, use both the **LEFT** and **RIGHT** "microphone input jacks". To record monophonically, place one microphone in **EITHER** the **LEFT** or the **RIGHT** microphone input jacks. Additional data on recording may be found under paragraph entitled "Record Procedure."

RECORD LEVEL CONTROLS: The **Left** and **Right** "record level" controls are used to adjust the incoming program information to the proper recording level which is indicated by the appropriate **Left** and **Right** **VU** meters. To increase the recording levels, rotate these controls in a **CLOCKWISE** direction.

For added convenience, a power **ON-OFF** switch has been incorporated as an integral part of the **Left** channel "Record Level Control". To turn the power on, merely rotate the control in a clockwise direction until a "click" is heard. Simultaneously, the **TAPE ON** indicator light will go on. To turn the power off, rotate the control in a full counterclockwise direction.

NOTE: When the tape recorder is not in use, it is recommended that the "function selector" on the recorder be placed in the "**STOP**" position.

MONITOR VOLUME CONTROLS: Located directly under each record level control is a large knob. To use the unique monitoring feature that has been designed into your **TDC33** receiver/tape deck rotate these controls to their full clockwise position.

RECORD PUSH BUTTONS: The two (2) orange-colored push buttons located on the lower left portion of the head cover are used to activate the record mechanism and **MUST** be used simultaneously with the "function selector" switch to start the tape in motion for recording.

FUNCTION SELECTOR: The function selector, located on the bottom right-hand corner of your recorder is used to select all forward and reverse motion (**Fast Forward**, **Pause**, **Run**, **Stop**, and **Rewind**) of the tape.

FAST FORWARD — This position advances the tape forward. The forward motion can be stopped by turning the Function Selector to the "**PAUSE**" or "**STOP**" position.

PAUSE — This position stops the advance of the tape in either the **RECORD** or **PLAYBACK** mode **WITHOUT** resetting any of the other functions. To resume operation, merely rotate the "function selector" to the **RUN** position.

RUN — Use this position to advance the tape at a normal rate of speed for playback or recording. When recording, it is necessary to employ this position in conjunction with the "Record Push Buttons", described above.

STOP — This position is used to stop the tape.

REWIND — This position is used to rewind the tape. To stop at any given point or after the tape is completely rewound, move the "function selector" to **STOP**.

NOTE: When changing from **Rewind (REW)** to **RUN** (or vice versa), it is required that you bring the tape to a **COMPLETE STOP**.

When changing from the **Fast Forward (F. FWD)** to the **RUN** positions, you must bring the tape to a complete stop in the **PAUSE** position.

ALWAYS keep the selector in the **STOP** position when the recorder is not in use.

TAPE ON INDICATOR: The **TAPE ON** indicator, when illuminated, indicates that the Tape Recorder is **ON** and ready for operation.

AUTOMATIC SHUT-OFF SWITCH: This switch is controlled by a wire lever located under the head cover. In **STOP** position, the shut-off lever recedes into a slot to facilitate easy tape threading. After tape is threaded and the mechanism is placed in either **RUN**, **FAST FORWARD** or **REWIND** mode (**FWD**, **F. FWD**, **REW**), the shut-off lever contacts the tape and is held in this position.

If the tape either runs out or breaks, the lever will automatically fall forward and activate a micro switch which stops tape motion.

HEAD-COVERS: Protects heads. When cleaning the heads, remove these covers by pulling up.

THREADING THE TAPE

First make sure that the function selector switch is in the **STOP** position. Then observe the following:

1. Place an empty reel on the "**TAKE UP REEL SPINDLE**". Rotate the reel slightly until the slot of the reel engages the spindle.
2. Place a full reel of tape on the "**SUPPLY REEL SPINDLE**". Rotate the reel slightly until the slot of the reel engages the spindle.
3. Unwind approximately 1 ½ feet of tape from the full reel, keeping it taut. The shiny surface of the tape should be facing you.
4. Bring the tape from the left to the right, through the tape path of the **HEAD COVER** and up to the **TAKEUP REEL**.
5. Insert the end of the tape into the slot on the empty take-up reel.
6. Holding the tape in the slot with your finger, turn the takeup reel counterclockwise about two turns until the tape is held firmly in place. The tape is now ready for playing or recording.

RECORDING PROCEDURE

4-Track Stereophonic Recording:

- 1) Carefully thread the tape onto the recorder, as outlined in the preceding paragraph "Threading the Tape".
 - 2) Turn the power "ON" for both the tape recorder and your integrated receiver.
 - 3) Place the "function selector" switch for the integrated receiver in the mode appropriate to the material you wish to record. (Example: PHONO, AUX, FM).
 4. Select the tape speed desired by moving the "Tape Speed Selector" lever appropriately.
 5. Return the "Tape Counter" to zero by depressing the "Tape Counter Reset Button".
 6. Depress and hold down BOTH "record buttons" while simultaneously turning the "Tape Function Selector" to the Run position. The "record buttons" will interlock in the DOWN position and the tape will start moving from the left (supply) reel to the right (take up) reel.
 7. Turn the recorder "Function Selector" to the PAUSE position the moment the tape begins to move forward to hold the tape in position while setting the controls for the record function.
 8. Rotate the left and right channel "level controls" in a clockwise direction until their meter pointers deflect to the boundary of the red area. If you find the VU meter pointer well into the red area, the recording level is set too high and your recording will be distorted.
- NOTE: The "record buttons" will be kept interlocked while the "function selector" is in RUN or PAUSE position. When the selector is turned to STOP or FAST FORWARD position, the record buttons will be automatically released.
9. After the proper recording levels have been set on both channels, return the "Function Selector" to the RUN position. The recorder will now begin the recording process. To monitor the program information the second after it has been recorded, refer to the paragraph MODE SWITCH.
 10. If, in process of recording, you want to interrupt the recording to cut out unwanted program material, move the "function selector" to the PAUSE position. To resume recording, place the "function selector" to the RUN position.
 11. When you have completed your recording, move the recorder "function selector" to the STOP position.

PLAYING TAPES

4-TRACK STEREOGRAPHIC PLAYBACK

1. Take a 4-track pre-recorded tape with side 1 of the tape (tracks 1 and 3) facing up, and place it on the SUPPLY REEL spindle (left side).
 2. Place an empty reel on the TAKEUP spindle (right side).
 3. Thread the tape onto the recorder.
 4. Turn the power ON for the tape recorder AND the integrated receiver.
 5. Place the MODE SWITCH of your integrated receiver in the MONITOR/PLAYBACK position.
- NOTE: Rotate the LEFT and RIGHT MONITOR VOLUME CONTROLS clockwise to the TAPE POSITION.

6. Adjust the LOUDNESS CONTROL for your integrated receiver to the desired listening level.

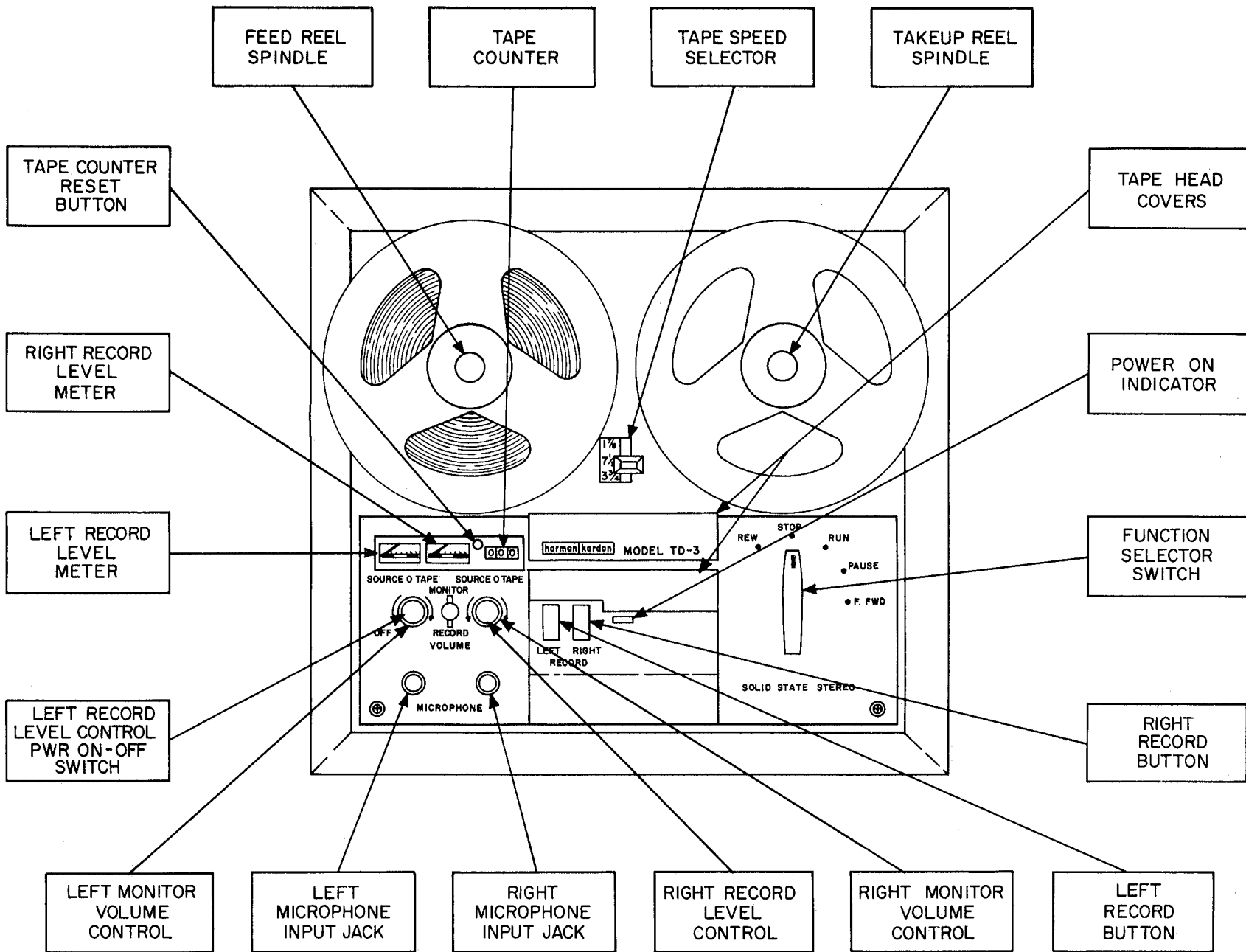
7. After the tape has been played, reverse and invert the reels to play the other side of the tape.

4-Track Monaural Recording:

To record monaural program information from your integrated receiver, please follow the steps outlined below:

1. Thread the tape onto the recorder.
 2. Select the desired tape speed and reset the "tape counter" to zero.
 3. Switch the "Function Selector switch" for your integrated receiver to the desired monaural program material that you wish to record.
- Example: PHONO AUX, FM.
4. Depress and hold down the *Left* channel "record button" and, simultaneously, turn the tape "Function Selector" through the RUN position to the PAUSE position.
 5. While the tape is held in place, adjust the "Left Record Level control" observing the corresponding "Level Meter" to attain the proper recording level, as explained in Step #8 covering "4-Track Stereophonic Recording".
 6. When the proper recording level has been set, move the "selector switch" to the RUN position to put your tape in motion.
 7. When you have completed recording the entire portion of the tape and the feed reel (left side) is now empty, place the "Function Selector" in the STOP position. DO NOT REWIND THE TAPE.
 8. Remove the empty reel from the "feed reel" spindle.
 9. Take the full reel of tape from the "takeup reel" spindle (right side). Turn it over and place it on the "feed reel" spindle (left side).
 10. Now take the empty reel and place it on the "takeup reel" spindle (right side).
 11. Thread the tape onto the recorder.
 12. Depress and hold down the *LEFT* channel "record button" while simultaneously turning the "function selector" to the RUN position to continue your recording.
- NOTE: It is not necessary to reset the "Record Level control" if you are continuing to record the same program material.
13. To record on the remaining two (2) tracks, simply repeat steps 7 through 11 above.
 14. Depress and hold down the *RIGHT* channel "record button" while simultaneously turning the "tape function selector" through the RUN position to the PAUSE position.
 15. Repeat Step #5, using the "RIGHT Record Level control" to set the proper recording level.
 16. When the proper recording level has been set, move the "Selector Switch" to the RUN position to put your tape in motion.
 17. When you have completed recording the entire portion of the tape and the feed reel is empty, place the "Function Selector" in the STOP position. DO NOT REWIND THE TAPE.
 18. Reverse and invert the reels as explained in steps 8, 9, and 10.
 19. Thread the tape onto the recorder to record the last remaining track for 4-track monaural recording, observing the steps outlined above.

TAPE RECORDER



4-TRACK MONAURAL PLAYBACK

The following playback procedure is recommended for a 4-track monophonic tape whose sequence of recording is: Track 1, Track 4, Track 3, and Track 2:

1. Place a 4-track monophonic pre-recorded tape on the FEED REEL spindle (left) and thread the tape.
2. Select the desired tape speed.
3. Turn the power on for the recorder.
4. Rotate the "LEFT monitor volume control" clockwise to permit the playback of Tracks 1 and 4.
5. Place the MODE SWITCH of your integrated receiver in the MONITOR/PLAYBACK position.
- 6) As this is a monophonic tape recording only one channel of your integrated receiver will be operative when the Balance control is in the Stereo (in) position. For full monophonic operation (both speakers operating), pull the Balance Control to the Mono (out) position.
7. Move the tape "function selector" to the RUN position to advance your tape for monophonic playback (Track 1).
8. DO NOT rewind the tape since side Track 4 can be played merely reversing and inverting the reels and repeating steps 3 through 8 above.
9. When the end of the tape has been reached, DO NOT rewind but REVERSE and INVERT the reels to playback Track 3.
10. Thread the tape onto your recorder.
11. Rotate the "RIGHT monitor volume control" clockwise to about a 3 o'clock position.
12. Move the tape "function switch" to the RUN position. You will now hear Track 3 of your tape.
13. When the end of the tape has been reached, DO NOT REWIND the tape.
14. REVERSE and INVERT the reels to play Track 2.

NOTE: The following shows the monaural track position and track sequence:

	Track Position	Mono Track Sequence	Stereo Track
Tape Width	1 (L)	1	Side I
	2 (R)	4	Side II
	3 (R)	3	Side I
	4 (L)	2	Side II

ERASING TAPE: When the recorder is set in the record mode, the Erase Head will erase the track (or tracks) of the tape for the corresponding tracks of the recording head. Therefore, when you start a new recording, any previous recordings will be automatically erased as the tape passes the erase head.

In order to erase a tape without adding a new recording, simply place the recorder in the RECORD MODE and turn the LEFT and RIGHT RECORD LEVEL CONTROLS to their COUNTERCLOCKWISE position.

A faster method of tape erasure is provided by an accessory device, available from your dealer, known as BULK ERASER.

SOUND ON SOUND RECORDING

This is a method by which you can record for Monaural playback, a composite of the Left and Right channel program material on 1 track of the recording tape. This procedure is commonly called "Dubbing" or Sound on Sound recording.

1. Set the tape counter to zero and follow the steps 1 through 6, as outlined for 4-track monaural recording.
2. When you have completed the recording, rewind the tape back to the beginning.
3. Connect a microphone to the RIGHT microphone input of your tape recorder and place the function selector switch for your receiver in the MIC RECORD position.
4. Move the MODE switch for your receiver into the MONITOR/PLAYBACK position
5. Push and hold down the RIGHT channel "record button" and simultaneously move the "function selector" to the PAUSE position.
6. Using the microphone as the second signal source, set the RIGHT channel "Record Level Control" to the proper level, using your corresponding "Level Meter" as a guide.
7. Place the "Function Selector" for your recorder in the RUN position. You will now be playing back and hearing from your LEFT channel speaker, the previously recorded or (base) material. At the same time, you may use the microphone to "dub in" on the Right channel.

NOTE: While following the above procedure, a portion of the sound or base material coming out of your LEFT channel speaker is picked up by your microphone and re-recorded together with your voice on the RIGHT channel this is called "Sound on Sound".

8. When you have completed this recording rewind the tape back to the original starting position.

9. To playback your "Sound on Sound" recording, Rotate the "Function Selector" of the recorder, to the RUN position.

10. Rotate the BALANCE control for the RECEIVER fully clockwise to select the RIGHT channel only for operation. For full Monophonic operation (both speakers operating), PULL the Balance control to the Mono (out) position.

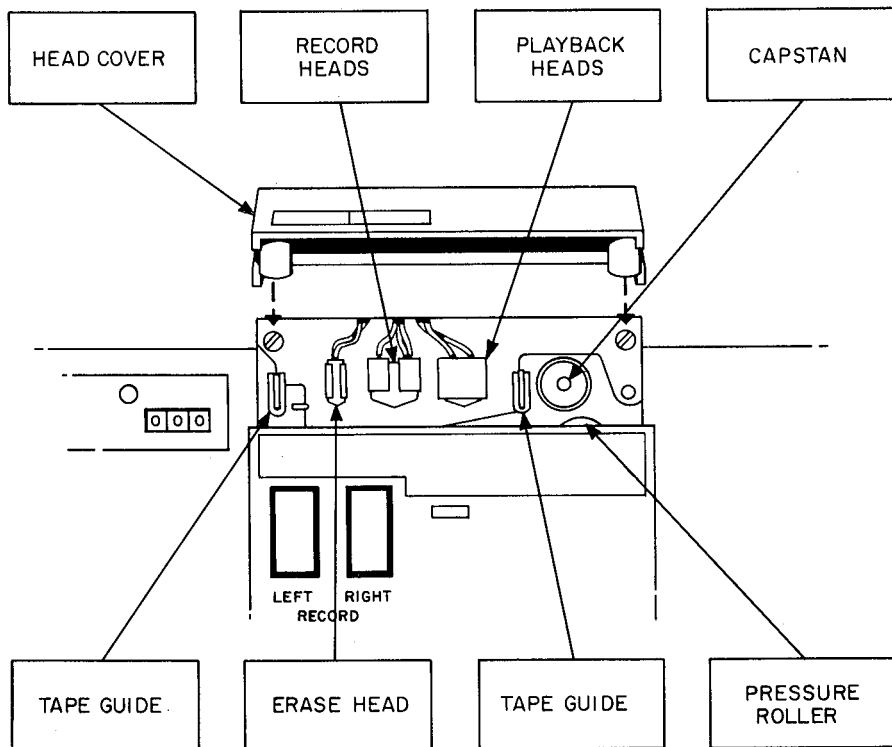
MAINTENANCE

Your tape recorder has been designed to require a minimum of maintenance. After a period of use, however, tape oxide and dust particles will inevitably form on the Record, Playback, and Erase Heads, the Capstan and the Pressure Roller. To remove these particles, merely take a cotton-tipped stick that has been moistened with methyl alcohol (common household rubbing alcohol) and lightly wipe these areas.

CAUTION: Commercial tape head cleaners may react unfavorably with the encapsulating compounds used in the Record/Playback and Erase heads. **NEVER CLEAN THE HEADS WITH A SHARP METAL OBJECT. DO NOT USE A BRUSH WITH A METAL BAND AROUND THE BRISTLES.**

DEMAGNETIZING HEADS:

Through continuous use, the varying magnetic fields of the tape will gradually build up residual magnetism on the gap of the head. Excessive residual magnetism on the head will produce noise while the tape is being played. Therefore, it is advisable to demagnetize the heads from time to time for which we recommend periodic use of Head Demagnetizer.



IMPORTANT

Your Harman-Kardon Tape Recorder is a precision instrument, capable of professional performance. Only name brand tapes of standard or premium quality should be used. We strongly recommend that the tapes be no thinner than 1 mil in the interest of temperature stability, long term storage life, print through and proper recording level, and bias characteristics. It is pertinent to note that professional recording studios use 1.5 mil tape for all master recordings; however, 1 mil tape will provide excellent results for home use.

HUM AND NOISE

In any high fidelity installation, hum may be caused by the interconnection of auxiliary equipment, as a result of the cables and different grounds. If hum is experienced with your receiver, disconnect everything but the speakers from the receiver. If hum persists, reverse the AC line cord. Plug in the auxiliary equipment and if hum appears, reverse the auxiliary equipment power plugs. When using a record player it may be necessary to connect a single lead from the record player chassis to the ground post on the rear of the receiver chassis. **CAUTION:** Hum may be also induced by defective connecting cables or by running these cables too close to a strong AC field.

SERVICE POLICY

Harman-Kardon has established a special consumer division to answer all questions pertinent to the installation and operation of your unit. Please feel free to write us at any time and we will endeavor to offer prompt and complete advice.

If your problem cannot be resolved through our combined efforts we may wish to refer you to one of our authorized warranty stations. The unit must be shipped via Railway Express, Prepaid to the station designated, accompanied by a brief note describing the exact nature of the difficulty. *Under no circumstances should the set be shipped directly to the factory without prior authorization!*

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.