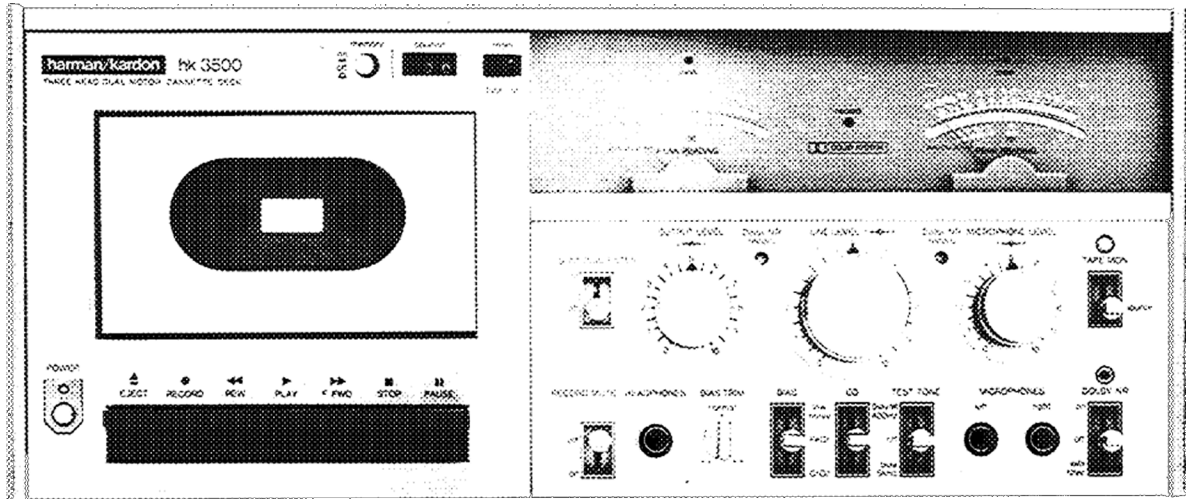
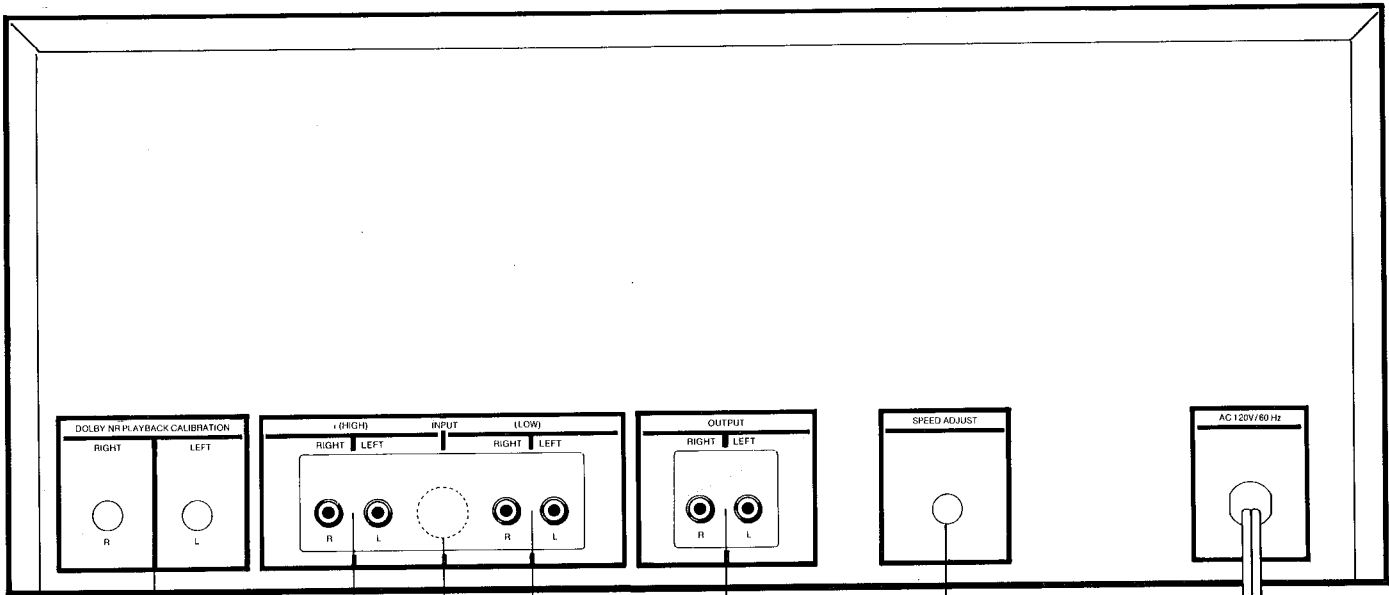


harman/kardon hk3500 Owner's Manual





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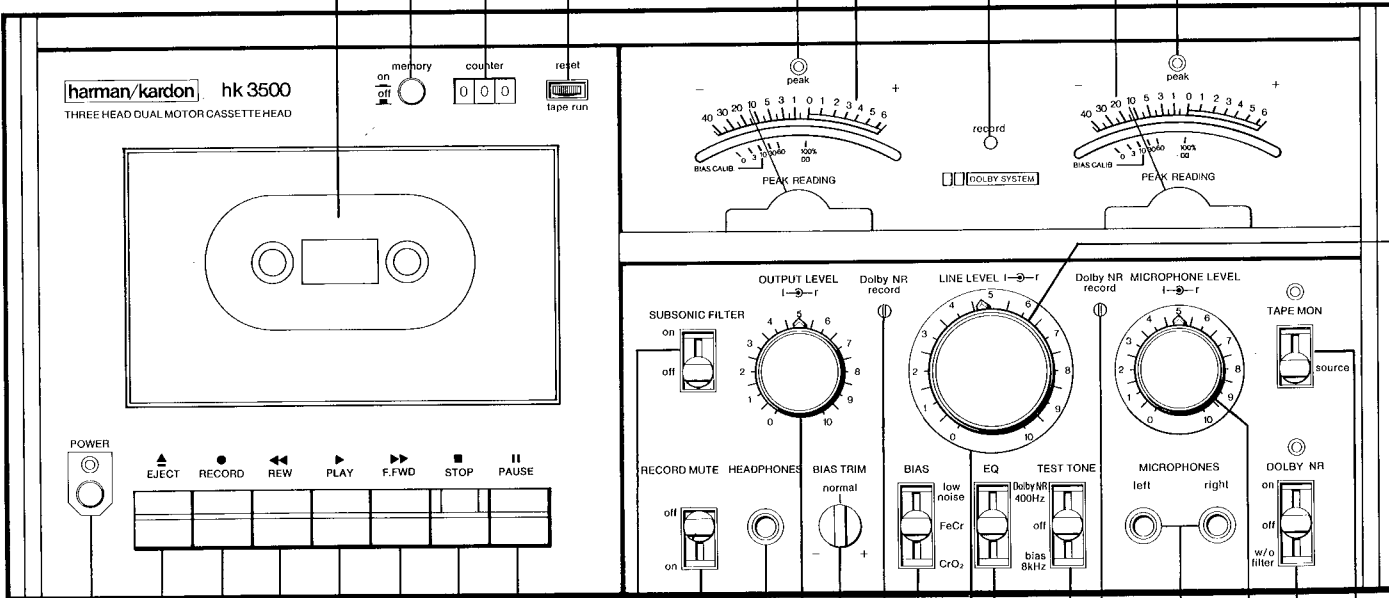
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CONNECTIONS

Use the patch cords included with your Harman Kardon cassette deck to connect it to your preamplifier, amplifier, or receiver. Connect the left and right INPUT (HIGH) jacks (1) of the deck to the left and right RECORD OUT or TAPE OUT jacks of the preamplifier. Connect the OUTPUT jacks (2) of the deck to the TAPE IN, TAPE MON, or AUX jacks of your preamplifier.

If, later on, you are getting insufficient gain from your preamplifier to achieve proper recording levels (as indicated by the meters of the hk3500), move the input cables to the INPUT (LOW) jacks (3) of the cassette deck.

On some versions of the deck, a 5-pin DIN jack (4) provides interconnection with your preamplifier.

Connect the power line cord (5) of the hk3500 to an AC convenience outlet on your preamplifier or to an AC wall outlet.

Connect headphones (low-impedance), if desired, to the HEADPHONES jack (6) on the front panel.

Playback

Switch your preamplifier to the appropriate playback mode. Turn on the cassette deck. The red light-emitting diode (LED) above the POWER switch (7) will glow. If the cassette is Dolby-encoded, set the DOLBY switch (8) to ON. Set the EQ switch (9) for proper equalization of the type of tape: LOW NOISE (normal tape), FeCr (ferrichrome tape), or CrO₂ (chrome or chrome-equivalent tape). Press the EJECT lever (10) to open the cassette well door (11). Insert the cassette with the desired side facing you and the exposed portion of the tape facing down. Push the cassette well door closed until it latches. Set the MONITOR switch (12) to TAPE MON.

Press the PLAY lever (13) and the tape will start. You can observe the reel hubs through the window in the cassette well door. The TAPE RUN indicator lamp in the counter RESET button (14) will glow to confirm tape motion. Adjust the volume with the OUTPUT LEVEL control (15). To stop the tape momentarily, press the PAUSE lever (16). To continue playback, press the PAUSE lever a second time and release.

If you press the RESET button (14) for a reading on the TAPE COUNTER (17) of 000 at a given point on the tape (for example, at the beginning of a selection), you can use the MEMORY switch (18) to return to that place. By placing the MEMORY switch in, the tape will stop

automatically from the rewind mode when the counter reaches 000.

To advance the tape rapidly, press the FAST FORWARD lever (19). To go back to an earlier portion of the tape, press the REWIND lever (20). To stop the tape, press the STOP lever (21). Press the EJECT lever (10) to remove the cassette.

Recording

Turn on the cassette deck. Set the BIAS (22) and EQ (9) switches for the type of tape: LOW NOISE (normal tape), FeCr (ferrichrome tape), or CrO₂ (chrome and chrome-equivalent tape). Press the EJECT lever (10) and load a cassette as before.

When recording from warped records, or from turntables subject to rumble or tonearm resonance, set the SUBSONIC filter switch (23) to ON. The subsonic filter affects the record mode only.

For the lowest noise level in your recordings, regardless of the tape used, set the DOLBY switch (8) to W/O FILTER (the LED above the switch will glow). The DOLBY switch should be used in this position while recording from phonograph, tape, or microphones, as well as from stereo FM broadcasts on most high-quality tuners and receivers.

With some tuners or receivers there might be noise on the recording that is not apparent in the original broadcast. This is usually caused by residual subcarrier signals in the tuner interacting with the bias signal of the cassette deck. In such a case, set the DOLBY switch to ON. This will automatically engage a filter to eliminate the noise.

If you are recording with Dolby Noise Reduction, remember to make a note of that fact on the cassette label.

Set the TAPE MON switch (12) to SOURCE. If possible, use samples of the loudest material to be recorded and adjust the LINE LEVEL controls (24). (For your convenience, the left and right controls are concentrically mounted; you can turn both together, or each individually, as the situation requires.) Set the controls so that the meters (25) occasionally peak past 0dB. As an additional guide, two PEAK LEDs (26) will glow to indicate

transient peaks, some of which may be too brief for the meters to follow. Do not let the meters move past 0dB for extended periods, as this will result in distorted recordings. Insufficient record levels, however, will result in unnecessarily noisy recordings. With practice, it is easy to set record levels for low-distortion, low-noise recordings. To help you remember a setting, a moveable indicator ring (27) is provided on the LINE LEVEL controls.

To record, hold the RECORD lever (28) down and press the PLAY lever (13). The RECORD LED (29) will glow to confirm that the deck is recording. The TAPE RUN indicator lamp in the counter RESET button (14) will glow to indicate tape motion. To halt tape travel while remaining in the record mode, press the PAUSE lever (16). The RECORD LED will flash to indicate that the deck is in the record/pause mode. To resume recording, press the PAUSE lever a second time and release.

If you are recording from FM, you may wish to eliminate portions of the program, such as commercial messages. You can do this by simply activating the PAUSE lever (16). However, to avoid an abrupt transition between the recorded portions of the program, as the desired section of the program comes to an end, first press and hold the RECORD MUTE switch (30) in its ON position. This prevents the program from being recorded onto the tape while allowing the tape to remain in motion. Then, after a suitable interval, press the PAUSE lever to stop the tape. Release the RECORD MUTE switch. As soon as the unwanted portion of the program ends, release the PAUSE lever to continue recording. The desired portions of the recorded program will then be separated on the tape by the interval of silence that you have determined.

Live Recording

The front panel MICROPHONES jacks (31) accept low-impedance microphones for live recording. Live recording levels are governed by the MICROPHONE LEVEL controls (32). (Like the LINE LEVEL controls, these are concentrically mounted for left and right channels.) For conventional live recording, leave the LINE LEVEL controls (24) set to zero and adjust input levels with the MICROPHONE LEVEL controls only. The hk3500 can also record simultaneously from microphones and line inputs, so that you can record your own accompaniment to records, broadcasts, or a second tape deck. For

microphone/line mixing, adjust both the MICROPHONE LEVEL and LINE LEVEL controls for proper balance and record levels.

With only one microphone connected to a MICROPHONE jack, the incoming signal is fed to both channels, so that you can make a monophonic recording with one microphone.

Record Tabs

Each blank cassette housing features record tabs. To preserve a recording from accidental erasure, break off the appropriate record tab with a small screwdriver. The tab for each cassette side is found on the top left side of the cassette with the exposed side facing down and the appropriate side facing you. To re-record over a cassette where the tabs have been removed, cover the appropriate tab-hole with a piece of adhesive tape.

Dolby Record Calibration

Optimum performance of the Dolby Noise Reduction system is obtained when record and playback levels are perfectly calibrated. Because of difference in tape formulations, you should adjust the DOLBY RECORD controls (33) each time you record on a different type of tape. If you stay with one tape formulation, readjustment should not be necessary (adjustment is never necessary for playback).

To set the DOLBY RECORD controls, use the following procedure:

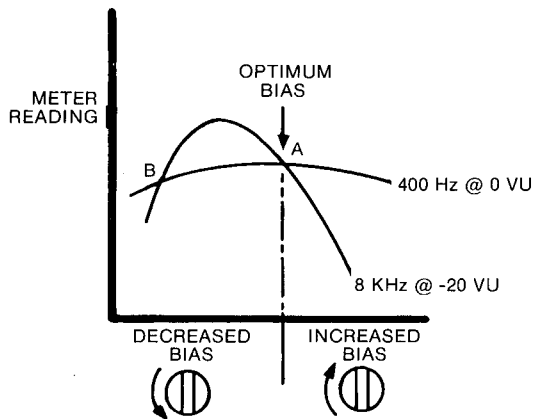
- 1 Insert a blank cassette as before. Select the appropriate BIAS (22) and EQ (9) switch positions. Set the MONITOR switch (12) to TAPE.
- 2 Hold the RECORD lever (28) down and press the PLAY lever (13) to set the deck into the record mode.
- 3 Hold the TEST TONE switch (34) in the DOLBY, 400 Hz position.
- 4 Note the level of the meters. Use a screwdriver to turn the DOLBY RECORD controls (33) until the meters read within 1 dB of 0dB, the Dolby level indicated by the Double-D symbol. Turn clockwise to raise the meter reading, counterclockwise to lower it.
- 5 When both meters read within 1 dB of the Dolby level, release the TEST TONE switch and press the STOP lever (21). DOLBY RECORD calibration is complete.

Bias Trim

Recording bias affects high frequencies, output level and the distortion level of your recordings. Optimum recording requires the proper amount of bias current for each tape formulation. The BIAS switch (22) sets the overall bias level. The BIAS TRIM control (35) provides fine adjustment for optimum performance. You should adjust the BIAS TRIM control each time you record with a different type of tape.

Bias calibration involves adjusting the deck so that the VU meters read at -20dB for the playback of the 8kHz bias tone. However, with some tape formulations, it is possible to reach two points at which the VU meters will indicate -20dB. See Fig. 1, points A and B. Only point A is the bias set correctly. Point B, indicates inadequate bias.

FIG 1

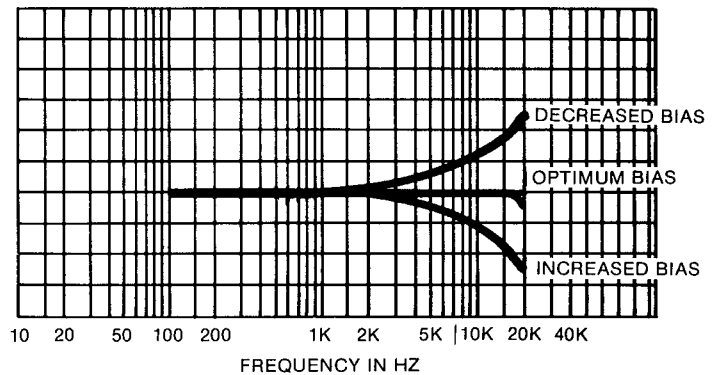


The following test procedure assures that the bias level will be at point A, yielding optimum results.

- 1 Insert a blank cassette. Select the appropriate BIAS (22) and EQ (9) switch positions. Set the MONITOR switch (12) to TAPE and the BIAS TRIM control (35) at the center detent position.
- 2 Hold the RECORD lever (28) down and press the PLAY lever (13) to place the deck into the record mode.
- 3 Hold the TEST TONE switch (34) in the DOLBY, 400Hz position.
- 4 Note the level of the meters (25). Use a screwdriver to turn the DOLBY RECORD controls (33) until the meters read within ± 1 dB of 0dB, the Dolby level. Turn clockwise to raise the meter reading, counterclockwise to lower it.

- 5 When both meters read at the Dolby level, release the TEST TONE switch.
- 6 Hold the TEST TONE switch (34) in the BIAS, 8kHz position.
- 7 Turn the BIAS TRIM (35) control to the extreme clockwise position. Note the level on the meters (25).
- 8 Turn the BIAS TRIM control slowly counterclockwise. The meters will now give increased readings for the 8kHz tone. When the meters read within ± 3 dB of the -20dB BIAS CALIBRATION mark, stop turning the BIAS TRIM control.
- 9 Repeat Steps 3-5.

FIG 2



INFLUENCE OF BIAS TRIM ON FREQUENCY RESPONSE

- 10 Hold the TEST TONE switch in the 8kHz position again. Carefully turn the BIAS TRIM control until the meters reach the -20dB mark. Turn *counterclockwise* to raise the reading, *clockwise* to lower it. Decreased bias (counterclockwise) means high frequencies are recorded at levels higher than mid-frequencies. Increased bias (clockwise) means that high frequencies are recorded at levels lower than mid-frequencies. See Fig. 2.

Speed Adjustment

The SPEED ADJUST control (36) alters the tape speed. The control has a center detent at the standard speed of $1\frac{7}{8}$ inches per second (4.76 cm/sec.). You can raise or lower the tape speed to 'tune' cassette playback to a musical instrument. Remember to return the SPEED ADJUST control to the center detented position for standard tape speed before recording or playing back subsequent tapes.

Dolby Playback Calibration

The DOLBY PLAYBACK CAL controls (37) are set at the factory for proper operation. In most cases, best results will be obtained with the standard settings.

It may be necessary on occasion to readjust the Dolby playback settings. Readjustment requires a precision Dolby calibration cassette, on which a test tone has been recorded exactly at the standard Dolby level. To make adjustments, play the Dolby calibration cassette. Use a screwdriver to turn the DOLBY PLAYBACK CAL controls (37) until both VU meters read within ± 1 dB of 0dB, the Dolby level indicated by the Double-D symbol.

A precise Dolby calibration cassette, Harman Kardon part $\alpha 00935520A$, is available through the Harman Kardon Customer Service Department or your Harman Kardon dealer. Consult the order form enclosed with this manual for details.

Demagnetizing

Residual magnetism can build up on the write/read head, the capstan, and the tape guides. You should demagnetize them after every 20 to 30 hours of use. To demagnetize, first remove all tapes from the general area and switch the cassette deck off. Gain access to the transport by opening the cassette well door.

Most demagnetizers can be used without removal of the cassette well door. However, if necessary, you can gain further access to the transport mechanism as follows:

- 1 Turn the cassette deck POWER switch (7) off.
- 2 Press the EJECT lever (10).
- 3 On the inside of the black door frame, note 4 clear plastic clips holding the silver door (11) to the frame.
- 4 Remove the silver door by
 - (A) bracing the top edge of the black door frame with both thumbs and
 - (B) using both index fingers under the bottom of the silver door to CAREFULLY slide the silver door up toward you so that the 4 plastic clips slide up and off their notches.
- 5 Return the black door frame to its closed position.
- 6 Press the PLAY lever (13), raising the silver-colored read/write head to its highest position.

Activate the demagnetizer at a distance of about 4 feet (1.2 meters) from the cassette deck. Slowly approach the cassette deck with the demagnetizer. Move the demagnetizer tip slowly back and forth just above the read/write head (in silver housing) for 3 to 5 seconds. Do not touch the head with the demagnetizer tip unless the tip is covered with a protective vinyl or rubber. Slowly move the tip to the tape guides and then to the capstan (silver shaft, at right), repeating the 3 to 5 seconds of motion for each part. You need not demagnetize the erase head. Slowly draw the demagnetizer back to a distance of about 4 feet (1.2 meters) from the cassette deck. Deactivate the demagnetizer.

If you have removed the cassette well door,

- 1 Press the STOP lever (21).
- 2 Press the EJECT lever (10).
- 3 Replace the door by
 - (A) placing its 4 plastic clips (open ends facing down) through the holes in the black door frame and
 - (B) CAREFULLY sliding the clips down over their notches.

Head and Transport Cleaning

Tape oxide sheddings will accumulate on the heads, tape guides, capstan, and pressure roller. Gain access to the transport as described above (for demagnetizing). Clean all metal parts of the transport with a cotton swab dipped in denatured alcohol. Because denatured alcohol will harden the pressure roller, it should be cleaned with aromatic hydrocarbon instead. Thoroughly clean all surfaces that come into contact with the tape. If the cotton swab is particularly darkened with oxide sheddings after cleaning, you should clean the deck more frequently.

Maintaining the Appearance

Clean the metal parts of the front panel with mild, diluted detergent applied with a soft cloth or cotton swab. Never use a strong abrasive cleaner.

Remove dust or smudges from the acrylic window with diluted glass cleaner applied with a soft cloth. Do not use a strong solvent-type cleaner or ammonia.

The hk3500 is a high-quality precision instrument. If the instructions in this manual are followed thoughtfully, the cassette deck should provide many years of musical pleasure.



Dear Customer:

The Dolby playback calibration controls of your Harman Kardon cassette deck have been set at the factory for proper operation. In most cases, best results will be obtained with the standard settings.

However, if your listening room is very hot or very cold, or if you want the ability to confirm the control settings, you may wish to readjust the Dolby playback calibration controls yourself. Readjustment requires a precision Dolby calibration cassette, on which a test tone has been recorded exactly at the standard Dolby level. Such a Dolby calibration cassette, Harman Kardon part #00935520A, is available from our Customer Service Department.

To obtain a test tape for yourself, please detach the coupon below and send it to us, together with a check for \$10.00. This will cover shipping and handling, as well as the cost of the tape itself.

Thank you.

Harman Kardon
55 Ames Court
Plainview, New York 11803
Attn: Parts Department

Please forward _____ Dolby Playback Calibration Tape(s) @ \$10.00 each.
Enclosed is my check for \$_____. New York residents add applicable sales tax.

Please ship to:

name _____
address _____
city _____ state _____
zip code _____