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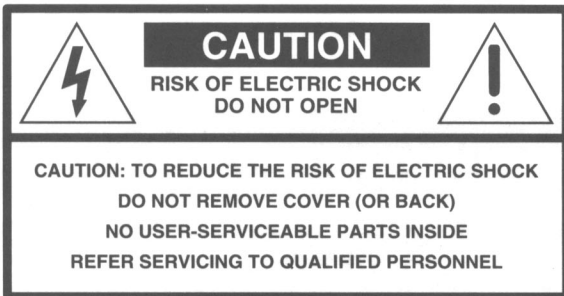
CARVER

TD-1770 3-Head Cassette Deck
with Remote Control,
Dolby B/C NR and Dolby HX Pro

Owner's Manual

CARVER

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The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Safety Instructions

1. Read Instructions—All the safety and operation instructions should be read before the Carver Component is operated.
2. Retain Instructions—The safety and operating instructions should be kept for future reference.
3. Heed Warnings—All warnings on the Component and in these operating instructions should be followed.
4. Follow Instructions—All operating and other instructions should be followed.
5. Water and Moisture—The Component should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. Ventilation—The Component should be situated so that its location or position does not interfere with its proper ventilation. For example, the Component should not be situated on a bed, sofa, rug, or similar surface that may block any ventilation openings; or placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through ventilation openings.
7. Heat—The Component should be situated away from heat sources such as radiators, or other devices which produce heat.
8. Power Sources—The Component should be connected to a power supply only of the type described in these operation instructions or as marked on the Component.
9. Power Cord Protection—Power-supply cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit the Component.

10. Cleaning—The Component should be cleaned only as recommended in this manual.

11. Non-use Periods—The power cord of the Component should be unplugged from the outlet when unused for a long period of time.

12. Object and Liquid Entry—Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the Component.

13. Damage Requiring Service—The Component should be serviced only by qualified service personnel when:

- A. The power-supply cord or the plug has been damaged; or
- B. Objects have fallen, or liquid has spilled into the Component; or
- C. The Component has been exposed to rain; or
- D. The Component does not appear to operate normally or exhibits a marked change in performance; or
- E. The Component has been dropped, or its cabinet damaged.

PORTABLE CART WARNING



Carts and stands—The Component should be used only with a cart or stand that is recommended by the manufacturer. A Component and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the Component and cart combination to overturn.

TD-1770

Can't Wait?

If you're super-impatient (and/or are expert at home audio installation), you can skip ahead to the "nitty gritty" information which begins as noted in the black bars to the right.

Otherwise, we suggest you read the entire manual carefully before proceeding. The TD-1770 offers a wide variety of special features that you should consider in advance.

Hook-Up instructions start on page 6

Operating instructions start on page 10

14. Servicing—The user should not attempt to service the Component beyond those means described in this operating manual. All other servicing should be referred to qualified service personnel.

15. To prevent electric shock, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, un prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans laisser aucune partie à découvert.

16. Grounding or Polarization—Precautions should be taken so that the grounding or polarization means of the Component is not defeated.

17. Internal/External Voltage Selectors—Internal or external line voltage selector switches, if any, should only be reset and re-equipped with a proper plug for alternate voltage by a qualified service technician. See an Authorized Carver Dealer for more information.

18. Attachment Plugs for Alternate Line Voltage (Dual voltage models only)— See your Authorized Carver Dealer for information on the attachment plug for alternate voltage use. This pertains to dual-voltage units only.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

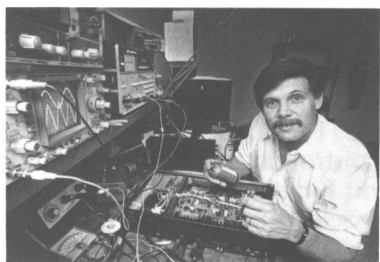
ATTENTION – Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.

WARNING – To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

A Message from Bob Carver

Congratulations on purchasing a Carver TD-1770 Stereo Cassette Tape Deck. We believe that its sophisticated engineering and meticulous craftsmanship will provide you with many years of listening enjoyment.

At the heart of the TD-1770 are a number of features designed not only to make this unit easy to use, but to provide the finest in cassette tape reproduction.



Among the many features are three heads, for the ultimate in recording and playback quality, plus the ability to monitor the source and the tape at the push of a button as the recording is in progress, and selectable Dolby B NR and C NR, for optimum noise reduction during recording and playback. In addition, the Dolby HX PRO circuit provides additional headroom for clear, crisp reproduction of high frequency musical information. This insures the maximum dynamic range and faithful reproduction of not only commercially produced cassettes but your own recordings as well.

There are a host of operator conveniences to make using the TD-1770 a pleasure. They include: AMS (Automatic Music Scan), to sample a new cassette for your favorite selections and QMS (Quick Music Search), to rapidly search for a specific selection on your tape. We've also added a number of features to make the recording process simple and quick, so you can make quality recordings the first time and every time.

Once you're familiar with the TD-1770's controls, you'll find them easy to use. To get the best performance from your Stereo Cassette Tape Deck, you'll need to read all safety, installation and operating information that follows in this manual.

Again, let me thank you for choosing a Carver component. I am proud to present to you the TD-1770, incorporating the best in craftsmanship and design.

Bob Carver

Set-up

Carefully unpack your TD-1770 and keep the original carton and packing materials for moving, shipment, or long-term storage.

Upon opening the box, please check for any visible sign of damage that did not appear on the outside of the box. If you do encounter what appears to be concealed damage, please consult your Carver Dealer before proceeding to further unpack or install the unit.

Important Paperwork

Make sure to save your sales receipt. It is extremely important to establish the duration of your Limited Warranty, and for insurance purposes.

Next, make a note of the serial number which is located on the back of the TD-1770. Record it in the space provided below for convenient reference.

Model: TD-1770 _____

Serial Number: _____

Purchased at: _____

Date: _____

Finally, take a moment to fill out and return the Warranty Card that came with the TD-1770 and return it to Carver.

Placement

Since the TD-1770 is going to be directly connected to your receiver or preamplifier, it should naturally be located with the rest of your stereo equipment.

If you stack your cassette deck on top of an amplifier or tuner, it may be affected by hum. If this happens, change the installation location of the deck. A humming noise may also be generated if the cassette deck is placed near an electric fan or sewing machine.

Avoid installing the cassette deck in dusty or very humid conditions.

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Hook-Up

Hook-up

General tips

The following suggestions can help you avoid potential problems and general frustrated fussing-around later:

Component-to-component connections

- ✓ Make sure all components are OFF before making any connections.
- ✓ Use high quality interconnects. Cheap, worn or frayed patch cords will not only degrade the sound, but can be a source of hum and RF noise as well. Special higher-quality interconnects are available in many grades. They have more durable plugs which make better connections, won't short out or break as cheap patch cords may. Consult your Carver dealer for recommendations.
- ✓ Double-check that "left's go to left's and right's go to right's". It is general practice to use RED interconnect plugs for RIGHT channel connections and WHITE or BLACK interconnect plugs for LEFT connections. Whatever way you choose, remain consistent while hooking up all of your components.

Remote Control

Batteries

The TD-1770's wireless infrared remote requires two AAA batteries. Remove the battery compartment door on the back of the remote control by sliding it outward parallel to the surface of the remote. Insert the batteries supplied, making sure to match the positive (+) and negative (-) ends as indicated by the diagram inside the battery compartment.

Remote Operation

The remote control unit will work in a range of approximately 20 feet in front of and about 30 degrees to either side of the TD-1770. If the remote begins to occasionally not respond, 1) check its batteries; 2) make sure the infrared projection area on its tip is clean; 3) check that the tape deck's infrared remote sensor square is not dirty or blocked from direct line-of-sight contact with the remote.

Functions

1. Program functions. The numeric keypad provides for direct entry of QMS (Quick Music Search) Selections. This feature allows you to directly access a programmed spot on your tape cassette—or to program new selections without touching the tape deck itself.

2. Tape transport functions. The controls highlighted in red select Recording mode. At the top, RECORD MUTE, the one below for RECORDING. The controls at the right select various tape transport functions: ◀◀ Selects FAST REWIND. ▶▶ Selects FAST FORWARD. |◀ and ▶| allow you to skip forward to the next selection or backward to the previous selection. S/T allows you to monitor the source and the tape as a recording is in progress. || Selects PAUSE. ▶ Selects PLAY. ■ Selects STOP. MEMO sets Counter Memory. (<> is not an active function for this model.)

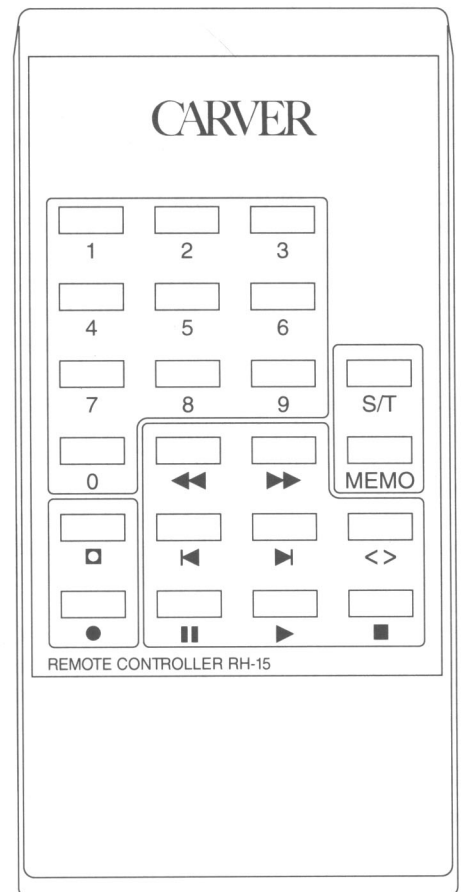


Figure 1—Remote Control

Rear Panel

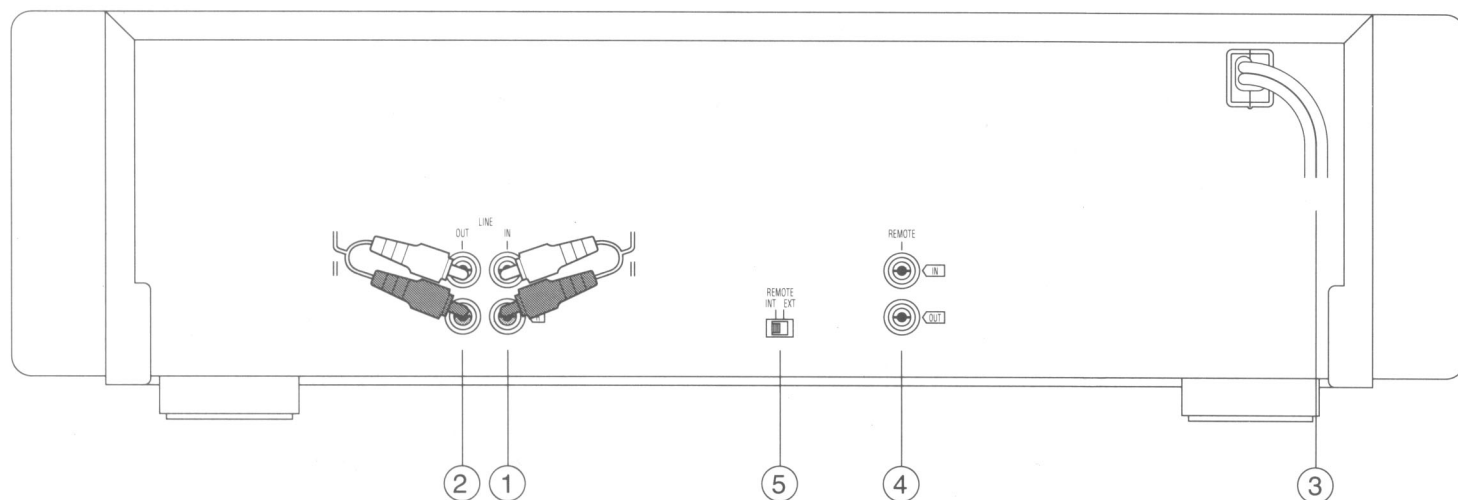


Figure 2—TD-1770 Rear Panel

NOTE: Be sure all power to the unit (and the system) is off before making connections.

1. LINE IN Jacks. These are the jacks that feed in the sound from the sound source (tuner, integrated amplifier, receiver, or preamplifier, etc.) which you want to record. Use stereo RCA cables to connect them to the TAPE REC (or LINE OUT) jacks on the sound source which you want to record.
2. LINE OUT Jacks. These are the jacks through which the playback sound is conducted. Use stereo RCA cables to connect them to the TAPE PLAY (or LINE IN, AUX IN) jacks on the amplifier or receiver.

3. AC Line Cord. Connect the line cord to a 120 VAC wall outlet or to a convenience outlet on your amplifier.
4. REMOTE IN/OUT Jacks. These jacks will interface with future Carver components, to allow a single master infrared remote to control all components interconnected with these jacks.
5. REMOTE INT/EXT Switch. This switches the remote control function between the internal Remote Sensor, or the External Remote In/Out Jacks.

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Front Panel

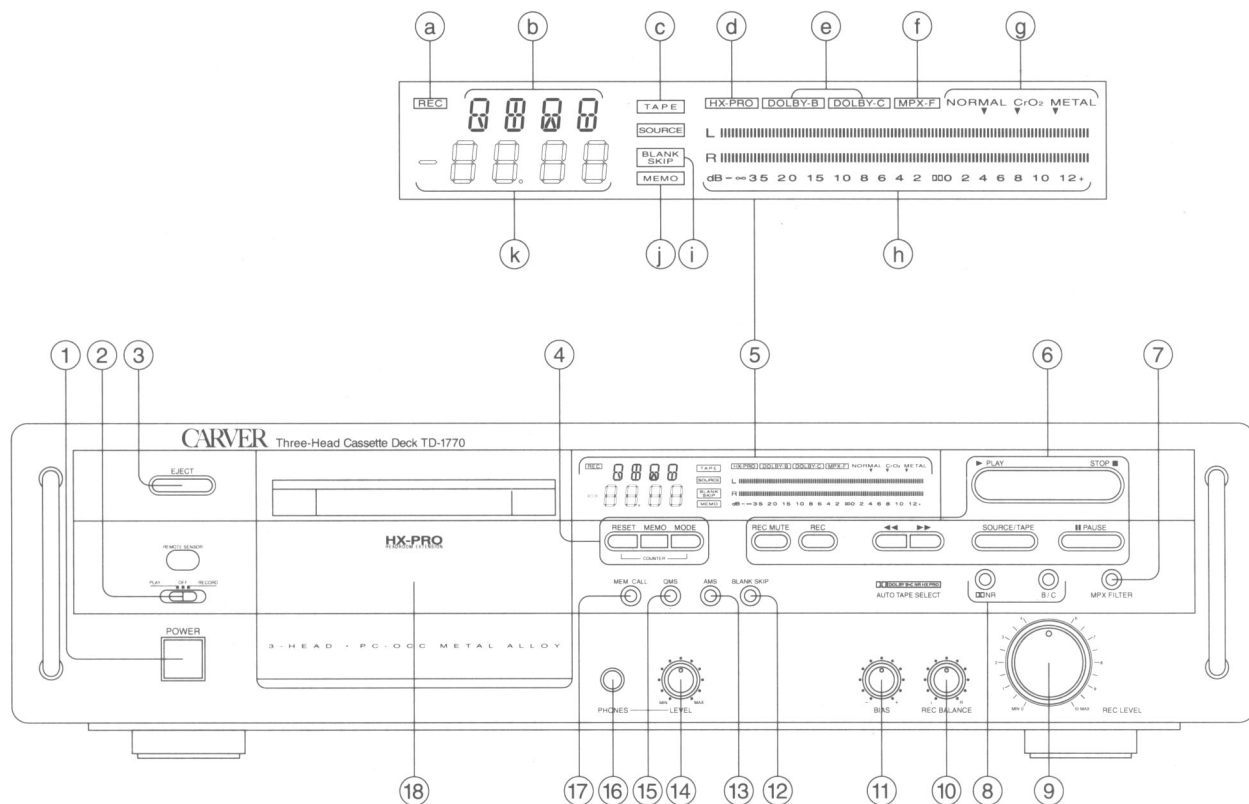


Figure 3—TD-1770 Front Panel

Controls and Indicators

The following is a brief description of the functions of each TD-1770 front panel button and control. Refer to Figure 3 above for the location of each item.

1. **POWER Button.** For switching the unit on and off.
2. **TIMER Switch.**
 PLAY: Using a commercially available audio timer, this function permits timer activated playback.
 RECORD: By using a commercially available audio timer, this function allows you to carry out unattended recording.
 OFF: When the audio timer is not in use, set to this position.
3. **EJECT Button.** For opening the cassette holder.
REMOTE SENSOR. Receives signals from remote control unit.
4. **COUNTER OPERATIONS Buttons.**

MEMO: This button is used to store the current tape location in memory. See MEMORY BUTTON in the operating instructions (page 11).

RESET: Press this button to reset the counter display to 0000 or playing time to 00:00.

MODE: To select the counter or time display, press this button. Each time this button is pressed, the display will switch back and forth between counter and time mode.

5. **DISPLAY.**

(a) **REC(ORD) INDICATOR:** Lights while the deck is in the Rec(ord) mode.

(b) **RECORD LEVEL/OPERATIONAL MODE DISPLAY:** Displays the peak level from 0 to +12 dB (decibels) in 1dB steps. When the level is over +12 dB, the display doesn't show the level, but shows only +dB. This display section also shows the various modes of operation according to the button settings:

STOP, PLAY, FF (Fast Forward), REW (Fast Rewind), PAUS (Pause), RECP (Record Pause), RECM (Record Mute), AMS (Auto Music Scan play) or P-01 to P-15 (Quick Music Search operation).

(c) TAPE and SOURCE lights. Indicates whether the Tape or the Source is being monitored, depending on the TAPE/SOURCE setting (6).

(d) HX-PRO INDICATOR: Lights when the POWER button (1) is pressed on.

(e) DOLBY-B/DOLBY-C INDICATOR: Lights according to the way you set the DOLBY NR (Noise Reduction) buttons (8).

(f) MPX-F INDICATOR. Lights when the MPX filter is switched on (7).

(g) TAPE TYPE INDICATORS: With the built-in automatic tape selector, the recording bias, equalization and optimum recording level, and also the playback equalization are all automatically set according to the type of cassette loaded.

NORMAL: For normal ferric oxide tapes, also called Type 1.

CrO₂: For chromium dioxide or other tapes requiring 70 μs equalization. It's also called Type II or high BIAS.

METAL: For metal tapes, also called Type IV. The METAL indicator is also lit when no cassette tape is loaded.

(h) PEAK LEVEL METERS: The left and right peak level displays accurately follow the strength of music signals. Set the REC(ord) LEVEL control (9) so that the peak level meters don't travel past the optimum recording level. Occasional flashes are acceptable, but if the signal is allowed to light the peak level display constantly, your recording may be distorted.

(i) BLANK SKIP INDICATOR: Lights when the BLANK SKIP button (12) is pressed on.

(j) MEMO INDICATOR: Lights when the MEMO button (4) is pressed on.

(k) COUNTER/TIME DISPLAY: Displays either the tape counter reading or tape running time, according to the counter MODE (4) setting.

6. OPERATION BUTTONS.

▶ PLAY/STOP ■ BUTTON: To start playback or recording, press the left side of the button. PLAY appears in the display window. To STOP, press the right side of the button. The STOP button will clear all mode settings and stop the tape deck.

CAUTION:

- A. Operate the main buttons only after completely closing the cassette compartment.
- B. If any of the above functions does not work, turn the POWER switch OFF and then turn it ON again.

(II) (PAUSE) BUTTON: Pressing this button will stop recording or playback temporarily. Press the PAUSE button again to continue recording or playback. PAUS or RECP appears in the display window.

◀◀(REWIND) BUTTON: Press to rewind a tape. REW appears in the display window.

▶▶(FAST FORWARD) BUTTON: Press to fast forward a tape. FF appears in the display window.

REC(ORD) BUTTON: Press this button to set the TD-1770 in the Record-Pause mode.

RECP appears in the display window. Please see "RECORDING," page 10, for more information.

REC(ORD) MUTE BUTTON: Use it to make a silent recording. Please see "MUTE RECORDING," page 11, for more information.

SOURCE/TAPE BUTTON: When adjusting the recording level, press this button so that the SOURCE indicator lights. When adjusting the recording level, the sound you are recording can be monitored. You can monitor the sound from the tape as you are making a recording with the switch in the TAPE position (TAPE indicator lit). During playback, this switch is automatically set to the TAPE position to allow listening to the recorded sound.

7. **MPX FILTER BUTTON:** To record FM broadcasts with Dolby NR, press this switch. The MPX-F indicator (f) will light. The multiplex filter will cut high frequencies above 16 kHz, to prevent possible interference between the FM multiplex pilot tone and the Dolby Noise Reduction system. When recording from FM, we suggest you leave the MPX filter on. Switch it off when you record other sources, to preserve high frequency response.
8. **DOLBY NR (NOISE REDUCTION) B/C BUTTONS:** The Dolby Noise Reduction system is turned on or off with the DOLBY NR button. The B/C button selects Dolby B NR or Dolby C NR. The DOLBY B or DOLBY C indicator shows which Dolby system is switched on. See DOLBY NOISE REDUCTION, pages 12 and 13, for more information.
9. **REC(ORD) LEVEL CONTROL:** For adjusting the recording level. See RECORDING, page 10, for more information.
10. **REC(ORD) BALANCE CONTROL:** Used to balance the right and left channels of the recorded sound.
11. **BIAS CONTROL:** See page 11.
12. **BLANK SKIP CONTROL:** When this button is pressed during playback, the tape will automatically advance to the beginning of the next selection when there is an unrecorded section of at least 10 seconds.

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Operation

- 13. AMS (AUTO MUSIC SCAN) BUTTON:** When this button is pressed, the beginning of each selection will be played back for about 10 seconds, one after the other. When the desired selection is found, press the ► (PLAY) button (6). The TD-1770 will enter the normal play mode. When the Auto Music Scan function is active, AMS is displayed.
- 14. PHONE LEVEL CONTROL:** This control is used to adjust the volume level of the headphones plugged in the PHONES jack (16).
- 15. QMS (QUICK MUSIC SEARCH) BUTTON:** This feature allows you to go directly to a particular selection without having to listen to the beginning of each selection, as with AMS. See "QMS SEARCH SYSTEM" on page 11.
- 16. PHONES JACK:** For connecting stereo headphones.
- 17. MEMORY CALL BUTTON:** The peak recording level is automatically stored in memory on the TD-1770. The peak level of the last recording can be recalled and the peak level flashes for about 5 seconds by pressing this button. This will help you match recording levels for the best quality recording. Note that pressing the MEM. CALL button will clear the memory of all peak levels up to that point—and will only retain the maximum peak level which occurs from that point on.
- 18. CASSETTE HOLDER.**

Operation

A SWITCHING ON AND OFF

- Switching on: Press POWER button (1); several indicators will now light up. If no indicators light up:
 - The cassette deck is not switched on properly,
 - The plug is not in the outlet,
 - The AC (Alternating Current) outlet is dead.
- Switching off: Press POWER button (1) once again.

B RECORDING

1. Hook up the TD-1770 as described under HOOK UP (page 6) and turn on the power by pressing the POWER button (1).
2. Press the EJECT button (3); the cassette holder (18) opens.
3. Insert a cassette that is not protected against recording in the cassette holder (18). (**Note:**

Check whether the little tab in the rear of the cassette is still in place, or if not, covered over by tape.) Make sure the open side faces downwards and the full reel is on your left. Close the cassette door by GENTLY pushing it.

4. If required, switch on the Dolby B/C NR system. —When recording an FM broadcast with Dolby NR (Noise Reduction), press the MPX (Multiplex) FILTER button (7).
5. Set your preamplifier/receiver to the sound source you want to record from. Set the SOURCE/TAPE button to SOURCE to monitor the incoming signal.
6. Press the REC(ORD) button (6) to set the TD-1770 in the REC(ORD) Pause mode.
7. Allow the source to play. While it's playing, carefully adjust the recording level with the REC(ORD) LEVEL control (9) so that the PEAK LEVEL METERS (5h) light up during passages with an average level of up to 0 dB (decibels). An excess of up to +3 dB is normal during peaks. (But try not to let it go above that, because you'll just get a distorted recording!)
8. Differences between the left and right channel can be corrected by adjusting the REC(ORD) BALANCE control (10). If the PEAK LEVEL METERS (5h) do not light up or do not light up properly:
 - Check that the required sound source is properly connected.
 - Check that your preamplifier/receiver is set correctly.
 - Check that a sound source other than the one you are using is functioning properly.

For example: If you're not getting any sound from your CD player, try the tuner.
9. Start recording by pressing the ► (PLAY) or II (PAUSE) button (6).
10. Check the recording level at intervals. Adjust it gradually if required. Moving it too rapidly will cause the recording to seem to fade in and out.
11. The SOURCE/TAPE switch (6) will allow you to compare your recording to the source, so you can be sure your recording is of the highest quality.
12. The TD-1770 will stop automatically when the end of the cassette is reached. Press the ■ (STOP) button (6) to stop recording before then.

C QUICK REWIND

When the ◀◀ (REWIND) button (6) is pressed without pressing the ■ (STOP) button (6) during recording, the tape returns to the position where the recording was started. The TD-1770 will enter the STOP mode.

D MUTE RECORDING

By pressing the REC(ORD) MUTE button (6) during recording, a silent recording begins and continues for about 4 seconds. The deck then stops in the REC(ORD) Pause mode. Undesired passages (announcements, etc.) can be eliminated automatically.

E VARIABLE BIAS CONTROL

Usually, this control can be set at the center position, because it has been adjusted to provide the optimum bias at that setting. But the value of the bias providing the flattest frequency response may vary slightly depending on the type and brand of tape. The bias characteristics are generally flat with metal tapes. As a result, the BIAS control allows adjustment only with Normal (Type I) or CrO₂ (Type II) tapes. The bias remains the same with metal tapes regardless of the setting of the control knob.

Set this control so that the optimum amount of bias is obtained. This will result in a flat frequency response for the brand of tape you are using.

Adjusting the bias setting is easy. First record music with good high frequency content, or the interstation noise of an FM radio. Use the SOURCE/TAPE button to compare the recording with the original. Make gradual adjustments to the bias control until the recorded sound is as close as possible to the original. You might want to note this setting with a piece of tape, in case the control is moved accidentally.

Note: The BIAS control (11) has no effect during playback.

F PLAYBACK

1. Connect the TD-1770 as described under HOOK-UP (page 6) and turn ON the power by pressing the POWER button (1).
2. Press the EJECT button (3). The cassette holder (18) opens.
3. Insert a recorded cassette in the cassette holder. Make sure the open side faces downwards and the full reel is on the left. Close the cassette door.
4. For playback of a Dolby recording, select the correct Dolby mode (B or C).
5. Set the preamplifier/receiver to CASS, TAPE, TAPE 1 or TAPE 2, depending on the preamplifier inputs used.
6. Now press the ► (PLAY) button (6). PLAY appears in the display window and play begins.
7. Set the volume and balance on the preamplifier/receiver. The volume of the headphones connected to PHONES jack (16) can be adjusted with the PHONE LEVEL control (14).
8. You can interrupt the playback temporarily

by pressing the || (PAUSE) button (6). PAUS appears in the display window.

In order to continue playback, press the ► PLAY or || PAUSE button (6) once again.

9. Press the ■ (STOP) button (6) to stop. STOP appears in the display window.

G MEMORY BUTTON

The MEMO button (4) works both for recording and for playback.

Press the MEMO button (4) and the tape position at that moment is stored in memory. MEMO will appear in the display window. When the tape is rewound, it stops at the same place.

The memory function can be used to rewind to the beginning of a musical passage. If the MEMO button (4) is repeatedly pressed, only the most recently input tape position is stored in memory. It only works for one position! And if the ◀◀ (REWIND) button is pressed again, the cassette is rewound to the beginning of the tape.

Note: Ejecting the cassette automatically erases the MEMO position.

H AMS (Auto Music Scan) SEARCH SYSTEM

Pressing the AMS button will cause the TD-1770 to go into FF (FAST FORWARD) operation and a P-01 to appear in the display. When it reaches the beginning of the next track, it will play about 10 seconds of the beginning of the track and then fast forward to the next track. It does this by sensing 4 seconds or more of silence between tracks.

To cancel AMS, press PLAY or STOP.

I QMS (Quick Music Search) SEARCH SYSTEM

Making a QMS (Quick Music Search) Selection

1. Connect the cassette deck as described in HOOK UP (page 6).
2. Press the (EJECT) button (3). The cassette holder will open.
3. Insert a recorded cassette in the cassette holder.
4. Say, for example, that you want to hear the 10th track on the cassette.
5. Press the QMS button (15) 10 times. P-10 will appear in the display (5). Or press buttons 1 and 0 on the remote control.
Note: The highest number you can select is 15.
6. Now press the ►► (FAST FORWARD) or ◀◀ (REWIND) (6) buttons, depending on the position of the desired segment of the tape. The deck will then fast forward or

TD-1770

rewind to the beginning of the desired segment, and switch to the PLAY mode.

Recording silent passages for the QMS (Quick Music Search) program

Silent passages can be inserted automatically between the recordings by pressing the REC(ORD) MUTE button (6) after each number is recorded. There will then be a silent passage of four seconds, after which the deck will stop in the REC(ORD) Pause mode.

J RECORDING/PLAYBACK WITH TIMER

The TIMER switch (2) makes it possible to set the cassette deck up in advance for recording or playback, so you can switch it ON or OFF with a timer. When using a programmable timer or any other time switch device which can be used to turn the power of the TD-1770 on or off, you can make a recording (or play a cassette) during your absence.

1. Connect the power cord of the TD-1770 to the outlet designed for this purpose on the timer. Switch ON the timer and the TD-1770.
2. Make all the adjustments for recording during your absence, such as recording level.
3. Turn the power OFF with the timer, and set the timer so that it will be switched ON again at the required time.
4. The POWER switch on the TD-1770 (and of the tuner, if you're using one!) must remain ON!
5. Set the TIMER switch (2) on the TD-1770 to the required position: RECORD for recording, or PLAY for playback.

The operation of the TD-1770 will be stopped automatically, either through the automatic stop feature of the Cassette Deck itself, or through the timer unit—whichever operates first.

6. When you return home, just switch off the TIMER switch (2) before you start the TD-1770 again.

General Information

A COMPACT CASSETTES

- Leader tape is attached at both ends of a cassette tape, so no recording will be made at the beginning of the tape for 6 to 7 seconds!
- You can prevent accidentally erasing a tape by breaking the small tab at the top left-hand corner on the back of the cassette. You can then no longer record on this tape. This protection can be removed by attaching a small piece of adhesive tape over the tab opening.

- Music cassettes are prerecorded cassettes, which are already protected against being erased.
- Store your cassettes after use in the box provided. Keep the cassettes at room temperature. Don't place them in the sun, or too close to magnets (that includes your magnetic screwdriver!), and transformers of recorders, radios, TVs and speakers.

B TYPES OF TAPE

The quality of sound recording on a cassette is largely determined by the type of tape used. So it is preferable to use a tape with very good specifications and test results.

Chromium dioxide and metal tapes generally give better results than iron oxide tapes.

As soon as a cassette is inserted in the cassette holder, the bias and the equalization for the type of tape are switched on automatically.

In some metal cassettes, the metal detection holes are not provided. With these cassettes, the metal indicator does not light up and the recorded sound may be distorted.

C RECORDING LEVEL AND MONITORING

- The level at which the sound is recorded will determine the sound quality for playback. The recording level should be set before starting a recording. But if this is not possible, then it can be done during the recording (but make changes slowly—please!).
- During recording, any previous recording on that section of the tape is erased automatically. If you wish to erase without recording, then set the REC(ORD) LEVEL control (9) to 0 and run the tape in the RECORD mode.
- In order to check what is being recorded on the tape, you can monitor during recording using headphones connected to the PHONES jack (16) or with a Carver preamplifier/receiver connected to the LINE OUT jacks.
- Use the SOURCE/TAPE switch to compare the original with the tape playback.

D DOLBY NOISE REDUCTION

The Carver TD-1770 is equipped with both the Dolby B and the Dolby C Noise Reduction system.

The Dolby NR system is designed to reduce tape hiss. Dolby C NR is about 3 times as effective in reducing noise in the high frequencies as Dolby B NR. It doesn't affect tonal quality, and it broadens the dynamic range considerably.

Precautions for Using Dolby NR

- For playback, set the DOLBY NR switch to the same position (B or C) used for recording. Most prerecorded cassettes are recorded using Dolby B NR.
- Mark "Dolby B NR" or "Dolby C NR" on tapes recorded with Dolby NR so that you know which setting to use during playback.
- When recording on a tape which is to be used in a car stereo or a tape player *without* the Dolby NR system, set the Dolby NR switch to OFF.

E DOLBY HX PRO

The Carver TD-1770 features Dolby HX Pro circuitry, a servo control system that addresses the problem of recording from sources with heavy high-frequency output, without deteriorating the quality of the high frequencies.

By carefully monitoring the total amount of effective bias during recording, Dolby HX Pro instantaneously compensates for any excess bias by reducing the deck's bias signal level accordingly. This helps prevent high frequency tape saturation, and means clean, crisp reproduction of all your recorded cassettes.

Dolby HX Pro functions only during the recording process. There is no switch to turn it on or off. It remains in operation on all your recordings. Rest assured, your recordings can be played back on any other cassette deck, while retaining the benefits of Dolby HX Pro.

Technical Information and Specifications**Track Format**

4 tracks, 2 channels

Power Supply

120V, 60 Hz

Power consumption

22 W

Frequency response (3 dB limits—no Dolby)

Metal tape: 40-19,000 Hz

CrO₂ tape: 40-18,000 Hz

Normal tape: 40-17,000 Hz

Signal-to-noise ratio

73 dB (Metal tape, DOLBY C NR ON, peak level)

Wow and flutter

0.07% (WRMS)

Tape speed

4.8 cm/sec. (1-7/8 ips)

Recording system

AC bias (frequency 105 kHz)

Erase system

AC erase

Motor

DC servomotor x 2

Playback and Record heads

2 PC-OCC coil metal alloy heads

Erase head

Double-gap ferrite head

Inputs

REC/LINE IN maximum input sensitivity: 50 mV (over 50k ohm, peak level)

Outputs

PLAY/LINE OUT standard output level: 500 mV (0VU, suitable load impedance: over 47k ohm)

Phones

150 mV, impedance 60 ohms


Dimensions

19.0" W x 5.25" H x 12.25" D (483mm x 133mm x 311mm) including handles and feet. Weight 11.7 lbs. (5.3 Kg)

Accessories

Connection cord x 2. Handheld Infrared Remote Control

Carver constantly strives to incorporate new methods, materials, and technologies in order to further improve the quality of our products. Thus all specifications are subject to change without notice.

Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen. "DOLBY", the double-D symbol  and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Cleaning

You'll want to wipe off the TD-1770's front panel and chassis from time-to-time with a soft, dry cloth. If you have something stubborn to remove, use a mild dish soap or detergent sparingly applied to a soft cloth; don't use alcohol, ammonia, or other strong solvents.

During use, the heads, capstan and pinch roller pick up small particles of dust from the tape. If these particles are permitted to accumulate, they can have a detrimental effect on both recording and playback performance. We recommend that the parts be kept clean at all times.

A cotton-tipped stick moistened in good quality denatured alcohol or commercially available head cleaning fluid is best for this purpose. Generally, the heads and pinch roller should be cleaned at least once for every 50 hours of use, or twice a month.

Note: Be sure to use denatured alcohol, not rubbing alcohol. Rubbing alcohol contains water, which may harm the heads.

The heads should be demagnetized at least once a month, to avoid the loss of high frequencies. See your Carver dealer about buying a demagnetizing unit.

TD-1770

Troubleshooting

If you're having trouble or suspect a problem, first of all: DON'T PANIC! Sit back, take a deep breath, and try some simple troubleshooting. More likely than not, the problem lies elsewhere in the system—not with the TD-1770.

No sound.

1. TD-1770 power is off. If the TD-1770 is plugged into a preamp or integrated amp convenience outlet, make sure the outlet works.
2. Line cord is either disconnected or loosely connected.

No sound (power OK and on).

1. Check to see that PLAY is engaged and the tape is moving. (Tape Counter is advancing.) The level meters will indicate whether or not the tape has program material on it.
2. Check and thoroughly inspect the signal cables that run between the TD-1770 and the rest of your stereo system. Make sure the connectors are firmly seated, and that no undue strain is being placed on the cable itself. If you can't locate the problem, turn off the power, then try swapping the signal cable with a working cable from another part of your system.
3. Be sure to check that the preamplifier's/receiver's/integrated amplifier's controls are set correctly. Tape Monitor 1 or 2 must be pushed in if the TD-1770 is connected to these inputs.

Hum and noise.

1. Defective signal cables.
2. Improper fit between the signal cable plug and sockets.
3. Signal cables have been routed too closely to AC cables, power transformers, motors or TV sets.
4. The cassette deck may be oriented in such a way that it is picking up induced hum from internal AC wall wiring. Move the TD-1770 a little bit and see if that helps.

5. The TD-1770 may be located on top of an amplifier or tuner. Change the location of the deck.

Less-than-perfect sound.

1. Heads need to be cleaned or demagnetized.
2. Tape is defective.
3. Bias and level have not been adjusted properly. Review the adjustment procedures (pages 9 and 10).
4. Dolby Noise Reduction system is not set to the same position (B or C) used when the tape was recorded.

Service Assistance

We suggest you read the LIMITED WARRANTY completely to fully understand what your service coverage constitutes and its duration.

If your TD-1770 should require service, we suggest you first contact the Dealer from whom you purchased it. Should the dealer be unable to take care of your needs, you may contact the CARVER Service Department by writing CARVER CORPORATION, P.O. Box 1237, Lynnwood, WA 98046. Please include a daytime phone number so we may contact you. We will then direct you to the nearest in our national network of Authorized Warranty Service Centers, or give you detailed instructions on how to return the product to us for prompt action.

We wish you many hours of musical enjoyment. If you should have questions or comments, please write to us at the above address.

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