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Nakamichi TD-700/TD-500

Mobile Tuner/Cassette Deck

Owner's Manual

Congratulations!
You have chosen an outstanding component for true mobile high fidelity. The TD-700/TD-500 is a high-performance tuner/cassette deck which incorporates all of Nakamichi's technological know-how.
Azimuth misalignment tends to degrade sound quality especially in car cassette decks. The TD-700/TD-500 solves this problem elegantly, thanks to a built-in Azimuth Fine Tuning control. Together with the superior 0.8-micron gap playback head, this ensures perfect frequency response over an extremely wide range. A unique magnetic clutch principle is used for the reel drive mechanism, for stable tape travel under all conditions. Many other outstanding features include motor-driven eject and loading, Auto Repeat function, station memories for AM and FM reception, etc.
In order to take full advantage of this unit's advanced features and performance, please read this manual in its entirety and retain it for future reference.
Thank you.

Nakamichi Corporation.

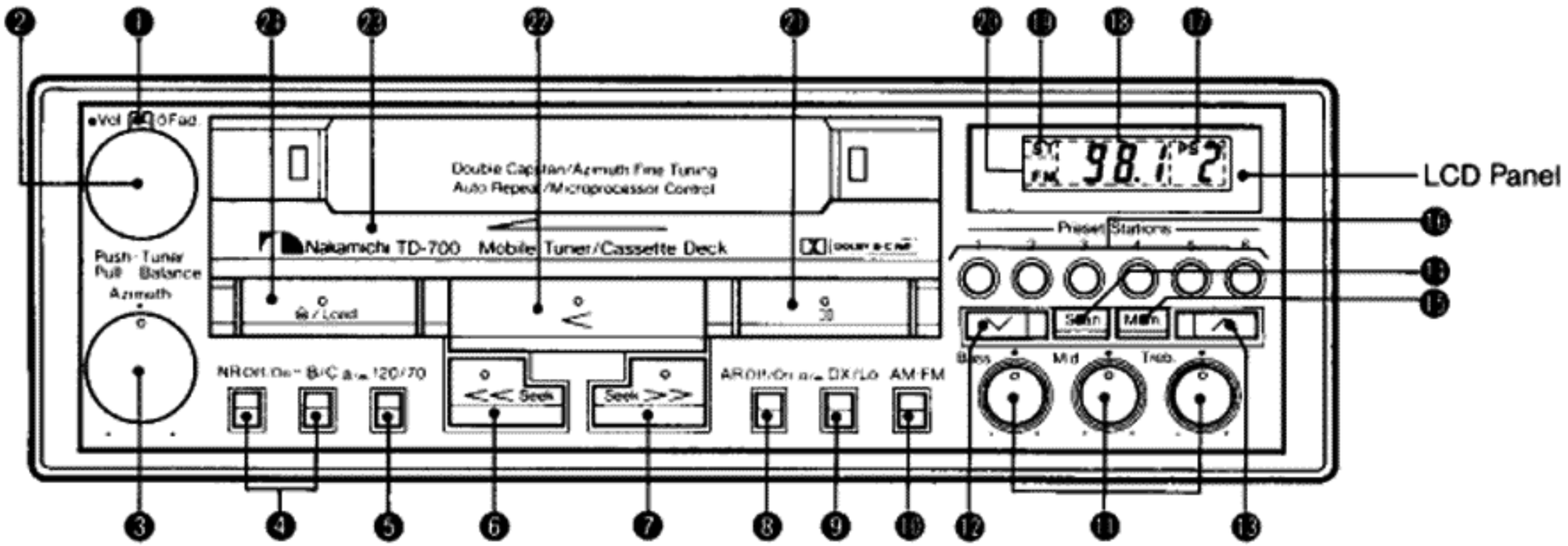
WARNING
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Please record the Model Number and Serial Number in the space provided below and retain these numbers.
Model Number and Serial Number are located on the rear panel of the unit.
Model Number: TD-700/TD-500
Serial Number: _____

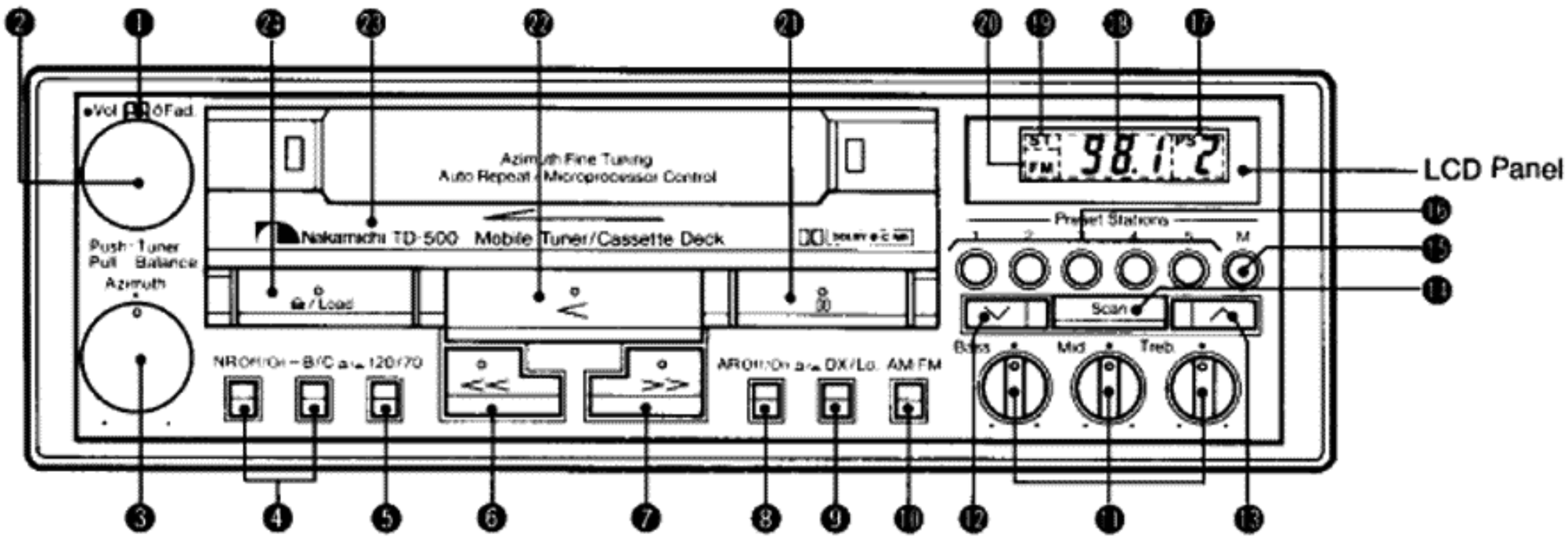
CONTENTS

Controls and Functions

TD-700



TD-500



(1) Fader Knob
This control serves to adjust the front/rear balance in a four-speaker setup.

(2) Volume Control Knob (Also Tuner On/Off Knob and Balance Control)
- Turning this knob clockwise raises the listening level.
- By pushing this knob, the tuner section is switched on for reception of FM/AM broadcasts. Pushing the knob once more switches the tuner off.
- By pulling the knob out until it locks and turning it, the left/right balance can be adjusted.

(3) Azimuth Fine Tuning Control
This knob is used for azimuth adjustment. (→p. 10)

(4) Dolby NR Switches
For playback of tapes recorded with Dolby noise reduction, set the left switch to "On" and select either the Dolby B-type NR or Dolby C-type NR with the right switch. When either switch is pressed, the white marking disappears, denoting the "On" condition (left switch) and "Dolby C-type NR" (right switch).

(5) Equalizer Switch
Serves to select the correct playback equalization for the tape in use. To play normal-type tapes, set the switch to "120 μs" (white marking visible). To play chrome-type or metal-type tapes, set the switch to "70 μs" (white marking not visible).

(6) Fast-Forward Button (<<)
Serves to fast-wind the tape. This knob is also used for the Program Seek function (TD-700 only, →p. 11). During operation, the indicator lights (flashes during Program Seek).

(7) Rewind Button (>>)
Serves to fast-wind the tape. This knob is also used for the Program Seek function (TD-700 only, →p. 11). During operation, the indicator lights (flashes during Program Seek).

(8) Auto Repeat Switch
This switch is used for repeated playback of a cassette side. By pressing the switch (white marking disappears), the Auto Repeat function is set to "On".

(9) Reception Sensitivity Selector
The tuner sensitivity during FM/AM reception can be selected with this switch. In ordinary operation, it should be set to "DX" (white marking visible). (→p.12)

(10) Band Selector
By pressing this switch, either the FM or the AM band is selected for reception. The respective band is displayed by the FM/AM indicator on the LCD panel.

(11) Tone Control Knobs
These knobs serve to adjust the desired tonal balance. By turning a knob clockwise, the respective band is emphasized, and by turning a knob counterclockwise, it is attenuated. To make an adjustment with the TD-700, press the knob to release it, so that it protrudes from the front panel. After adjustment is completed, push the knob back in again.
- **Bass Control**
  From the center clickstop position, adjustment is possible within the range of ±18 dB (at 20 Hz).
- **Midrange Control**
  From the center clickstop position, adjustment is possible within the range of ±10 dB (at 200 Hz).
- **Treble Control**
  From the center clickstop position, adjustment is possible within the range of ±12 dB (at 20 kHz).

(12) Manual Tuning Button—Down (∨)
This button is used for manual selection of FM/AM reception frequency (→p.12) and for clock adjustment (→p. 13).

(13) Manual Tuning Button—Up (∧)
This button is used for manual selection of FM/AM reception frequency (→p.12) and for clock adjustment (→p.13).

(14) Scan Button
When this button is pressed, the tuner automatically performs a scan of available broadcast stations. (→p.12)

(15) Memory Button
This button is used to store an FM/AM broadcast station in the memory. (→p.13)

(16) Preset Station Buttons
In conjunction with the Memory button, FM/AM broadcast stations can be stored in these buttons for instant recall. (→p.13)

(17) Preset Station Indicator
Displays the station number when a broadcast station is memorized or called up.

(18) Frequency/Time Indicator
Displays the broadcast frequency being received or the clock time. (→p.13)

(19) Stereo Indicator
When an FM stereo broadcast is being received, the "ST" indication comes on.

(20) FM/AM Indicator
Displays the selected frequency band.

(21) Pause Button (▯▯)
Serves to momentarily interrupt tape travel. During operation, the indicator lights up.

(22) Tape Play Button (<)
This button is used to start tape playback. During operation, the indicator lights up.

(23) Cleaning Flap
This flap can be removed, to permit access to the head, capstan(s) and pressure roller(s) for easy cleaning. (→p.14)

(24) Eject/Load Button (⏏/Load)
This button is used to initiate eject or loading of a cassette. During operation, the indicator lights up.

Precautions

1. This unit is designed for use in cars with negative ground systems only.
2. Do not use C-120 cassettes (playing time one hour per side) with this unit, as such cassettes contain very thin tape which breaks or snarls easily.
3. Inserting a cassette with large tape slack may result in damage to the unit or the tape. You should take up any slack in the tape before inserting a cassette.
4. If a casssette label or sticker peels off after a cassette is inserted, the eject operation may be impaired. Make sure that all stickers etc. are firmly glued on before using a cassette.
5. Do not store cassettes in locations subject to high temperature or humidity. Always put the cassettes back into their cases, to prevent dust accumulation, tape slackening, etc.
6. When a closed car is parked in the sun, the temperature inside the car will reach very high levels. If a car is parked outdoors in winter, it may cool down considerably. In such cases, use the unit only after the interior temperature of the car has returned to normal.
7. If the fuse is blown, check all connections and then replace it with a new fuse of the identical type. If the fuse blows again, contact your dealer for servicing.
8. For reasons of traffic safety, you should keep the listening volume while driving to a level which will not mask outside noises.

Installation

Be sure to remove the negative (−) terminal from your car battery before making any system connections, as an accidental short-circuit could have very dangerous consequences.

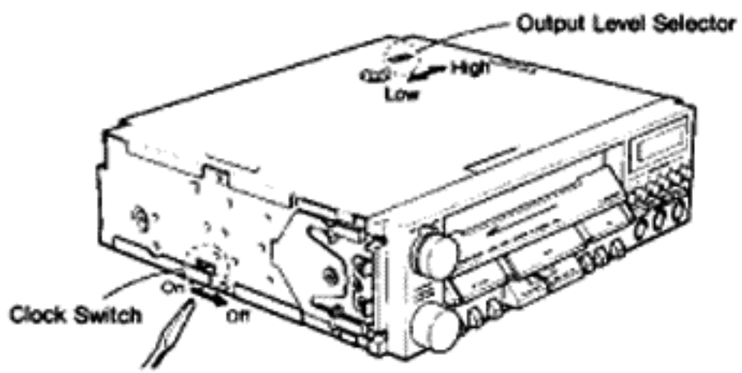
Before installation

(1) The output level of this unit can be set to High or Low by means of a selector switch on the top panel of the unit. Choose the position most suited to the input sensitivity of your power amplifier. Before shipping, the switch is set to High. If a Nakamichi Mobile Power Amplifier is used with this unit, there is no need to change the switch position.

(2) The Clock Switch on the left side of the unit (as seen from the front) is set to "On" before shipping. This activates the clock feature for display of actual time on the LCD panel. If this feature is not desired, set the Clock Switch to "Off".

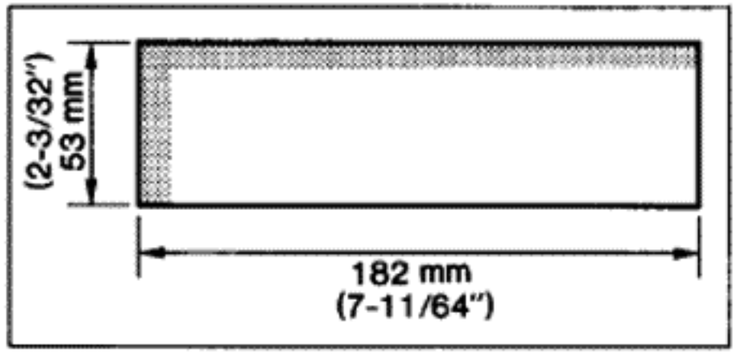
Before starting the installation, check whether the supplied auxiliary parts are complete.

	Qty
4P Connector	1
Mounting Sleeve	1
Spacer (thick, thin, 1 each)	2
Metal Stay	1
Sheet Metal Screw	1
Spring Washer	2
Washer	2
Nut	1
Trim Panel Rim	1
U-Shaped Grip	2
Spare Fuses (500-mA fuse: 1, 10-A fuse: 1)	2
Ground Cable	1
Flat Cross-Recess Screw	8
Cleaning Pen	1



Dashboard Installation

The dimensions of this unit correspond to the DIN standard. If the dashboard of the car provides a DIN-sized mounting slot, installation can be carried out very easily, using the supplied mounting sleeve. If the mounting slot of the car is smaller than DIN size, it must be enlarged to the dimensions shown below.

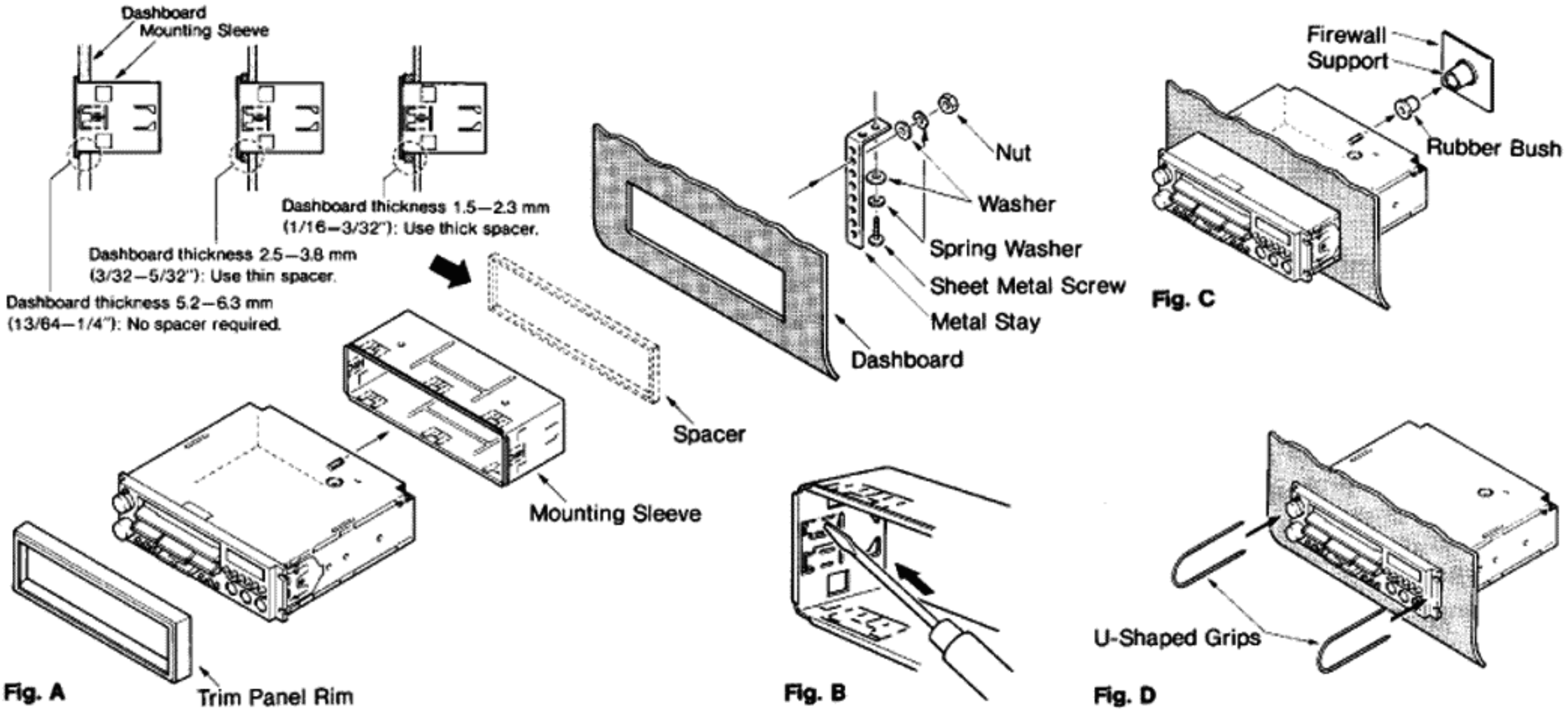


(1) Insert the supplied mounting sleeve into the mounting slot. Before insertion, the supplied thin spacer should be attached to the mounting sleeve if dashboard thickness is between 2.5—3.8 mm (3/32—5/32"). If dashboard thickness is between 1.5—2.3 mm (1/16—3/32"), use the thick spacer. If dashboard thickness is between 5.2—6.3 mm (13/64—1/4"), no spacer is required. (Refer to **Fig. A**)

(2) Bend the flanges of the mounting sleeve with a screwdriver to fasten it. (**Fig. B**)

(3) Make sure that the mounting sleeve is securely fixed, then install the main unit.

(4) Remove the rubber bush at the rear of the



unit and use the supplied metal stay to fasten the rear section of the main unit to the car (**Fig. A**). If a suitable support is provided inside the mounting slot, the rubber bush can be used instead of the metal stay (**Fig. C**).

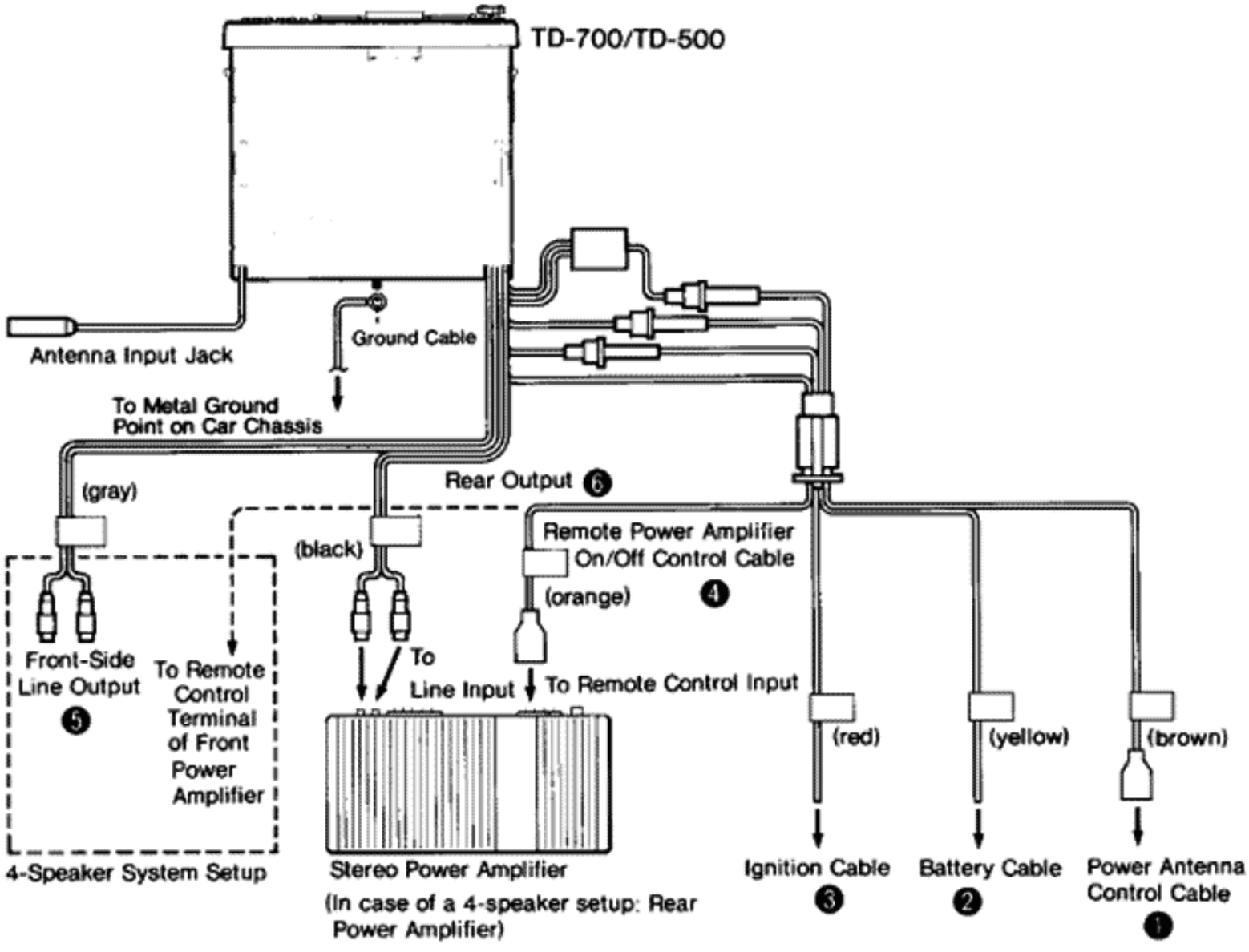
(5) After the unit is securely fixed, attach the supplied trim panel rim.

(6) To remove the unit, remove the trim panel rim and the metal stay if it was used for rear support of the unit. Then insert the supplied two U-shaped grips into the grooves on the left and right of the unit and pull it out (**Fig. D**), taking care not to damage the wiring on the rear.

Side-Support Installation

If the unit is to be mounted in a side-supported installation, use the supplied flat cross-recess screws for the left and right fastening holes. If other screws are used, it is imperative that **the screws do not protrude more than 3 mm into the unit!** Otherwise the unit may be damaged.

Connections



(1) Power Antenna Control Cable (brown) [Power Antenna Control (+)] (Max. 500 mA)

If your car is equipped with a power antenna designed to operate in conjunction with the car radio, connect this cable to the power antenna. The antenna will then automatically be raised when this unit's tuner section is switched On, and it will retract when the tuner is switched Off. Connect only power antennas with a control voltage of 12V and maximum rated consumption of 500 mA to this cable.

- If antenna movement is opposite to the tuner's On/Off condition, the operation must be reversed, using a relay.

(2) Battery Cable (yellow) [BATTERY (+)] (Fuse 500 mA)

To be wired to the 'clock' circuit on the car's fuse block or another terminal which is constantly connected to the car battery's positive (+) terminal. Serves as back-up power supply for this unit's memory circuit.

(3) Ignition Cable (red) [IGNITION (+)] (Fuse 10 A)

To be connected to the ignition circuit on the car's fuse block (which is switched On and Off by the car's ignition key).

Connect the Ignition Cable after having established the Battery Cable connection.

(4) Remote Power Amplifier On/Off Control Cable (orange) [Power Amp. On/Off control (+)] (Fuse 500 mA)

When this cable is connected to the remote control input terminal of the jointly used power amplifier, the amplifier will automatically switch On when this unit is turned on for radio reception or tape playback.

- This cable is designed only as a power supply for remote switching of the power amplifier. Do not use it as the main power supply for the power amplifier.
- After radio reception or tape playback with this unit is terminated, the power amplifier will automatically switch Off.

(5) Front Output (gray) [FRONT; white plug: left channel, red plug: right channel]

(6) Rear Output (black) [REAR; white plug: left channel, red plug: right channel]

These are line-level outputs for connection to the line input terminals of the power amplifier. For a 4-speaker setup, connect the front output to the front-side power amplifier and the rear output to the rear-side power amplifier.

Ground Connection

If a metal section of the main unit or the metal stay has solid direct contact with the car's chassis, there is no need for a separate ground connection. Otherwise, use **the supplied ground cable** to establish a secure ground connection to a metal point on the car's chassis. Fix the smaller lug of the ground cable to the TD-700/TD-500, using the screw fastened to the rear of the unit.

Precautions Before Operation

1. This unit is designed to become "On" when the ignition circuit (controlled by the ignition key of the car) is switched on. A protective muting circuit is active for about 2 seconds after power was supplied. During the muting interval, tape or tuner operation can be carried out, but there is no output signal.
2. When a cassette is inserted, a special circuit designed to take up any tape slack becomes active for about 2 seconds, and the Fast-Forward, Pause, and Rewind indicators light up in turn. If a tape operation button is pressed during this interval, the respective operation will be carried out after tape slack take-up is completed.
3. The internal temperature of this unit may rise considerably during normal operation, but this has no adverse effect on cassette tapes.

Operation

Tape Playback

(1) Set the Equalizer switch to the required position for the tape in use (70 μs or 120 μs).
(2) Set the Dolby NR switches to the position corresponding to the system used for recording. For playback of a tape recorded without Dolby NR, set the left switch to "Off".
(3) Insert the cassette with the desired side up into the cassette slot and give it a slight push. The cassette is then drawn in automatically.
(4) Playback starts automatically.
(5) Turn the Volume Control knob clockwise to adjust the listening level and adjust the Azimuth Fine Tuning control. (→next paragraph)
(6) By pressing the Pause button during playback, tape travel is interrupted and the tuner signal can be heard without ejecting the cassette.
(7) When the Auto Repeat switch is set to "Off" and the tape end is reached during playback or fast-forward, the tape transport is shut off and the cassette is automatically ejected (Auto Eject).

- When the Fast-Forward or Rewind button is pressed during the loading process, the respective operation is carried out after loading is completed.
- If the ignition circuit is switched off during tape playback, power to the unit is cut off and the pause mode is entered ("Key-Off Pause"). When the ignition circuit is switched on again in this position, power to the unit is applied and tape playback automatically continues.
- This unit permits direct switchover from playback to rewind, rewind to fast-forward etc. without the need to press the Pause button.
- If you want to listen once more to a cassette which has just been auto-ejected, cause the cassette to be loaded again immediately and press the Rewind button. The tape will be rewound to the start of the side and playback will be re-initiated. If you want to listen to a cassette side which has been fully wound up (i.e. you want to rewind the cassette and listen to it from the beginning), press the Rewind button immediately after loading the cassette.

Azimuth Fine Tuning

A cassette deck for automotive use necessarily plays back tapes which were recorded on a different machine, such as on a home cassette deck or commercially recorded cassettes. Therefore the azimuth angle (perpendicularity of the magnetic head vs. the tape) of recording and playback deck do not match exactly,

which leads to a degradation of high-frequency response.
The azimuth fine tuning control of this deck permits fine adjustment of azimuth angle by ear while actually playing a tape. Thanks to this unique feature, any recorded tape can be played back with optimum fidelity.

How to Use the Azimuth Fine Tuning Control

(1) First set the azimuth control knob to the center (standard) position. This represents the standard azimuth angle which was adjusted at the factory with the use of a standard test tape.
(2) Play back your cassette.
(3) By turning the control knob, the azimuth angle of the playback head is varied slightly. (Each clickstop of the control represents a change of approx. 2.9 minutes of arc. The azimuth adjustment range encompasses 15 clickstops each in the clockwise and counterclockwise direction from the center.)
(4) While listening to the playback sound, adjust the control to a position which yields the best high-frequency response (brightest sound quality). To facilitate the adjustment, it may be advisable to boost the upper frequency range with the Treble Control of the deck.
(5) When changing the cassette, adjust the azimuth control as required.

Practical Advice (Determination of Optimum Azimuth Point)

When almost all tapes to be played are recorded on the same cassette deck, the required azimuth position will be approximately identical. In this case, it is useful to determine the optimum azimuth point and remember or mark that setting, so that the control can easily be reset to that point if the setting was changed for occasional playback of a tape with different requirements.

Procedure to Determine the Optimum Azimuth Point

(1) Choose several tapes which were recorded on the usual cassette deck and which contain a distinct amount of high-frequency energy (such as for example percussion instruments etc.).
(2) Play back these tapes and perform azimuth fine tuning as described in the preceding paragraph.
(3) The average point of the settings thus determined is the optimum azimuth point for this cassette deck. This point may be marked for example with a color sticker or the like.
(4) When tapes recorded on that cassette deck are to be played back, set the control to the optimum azimuth point. If necessary, perform further fine adjustment.

Auto Repeat Function

When the Auto Repeat switch is set to On, the following operating sequence is repeated when the tape end is reached during playback or fast-forward: Automatic rewind to the beginning of the side → Playback from the start → Rewind when the tape end is reached → Playback from the start ....
The same sequence is also activated when the tape is rewound to the beginning.

Program Seek Function (TD-700 only)

This feature detects blank spaces (recording level below −30 dB) of more than 4 seconds between selections on a tape and permits automatic playback start at the beginning of a desired selection. Up to 10 selections can be skipped in the forward direction, and up to 9 selections in rewind.

(1) Program Seek in Fast-Forward

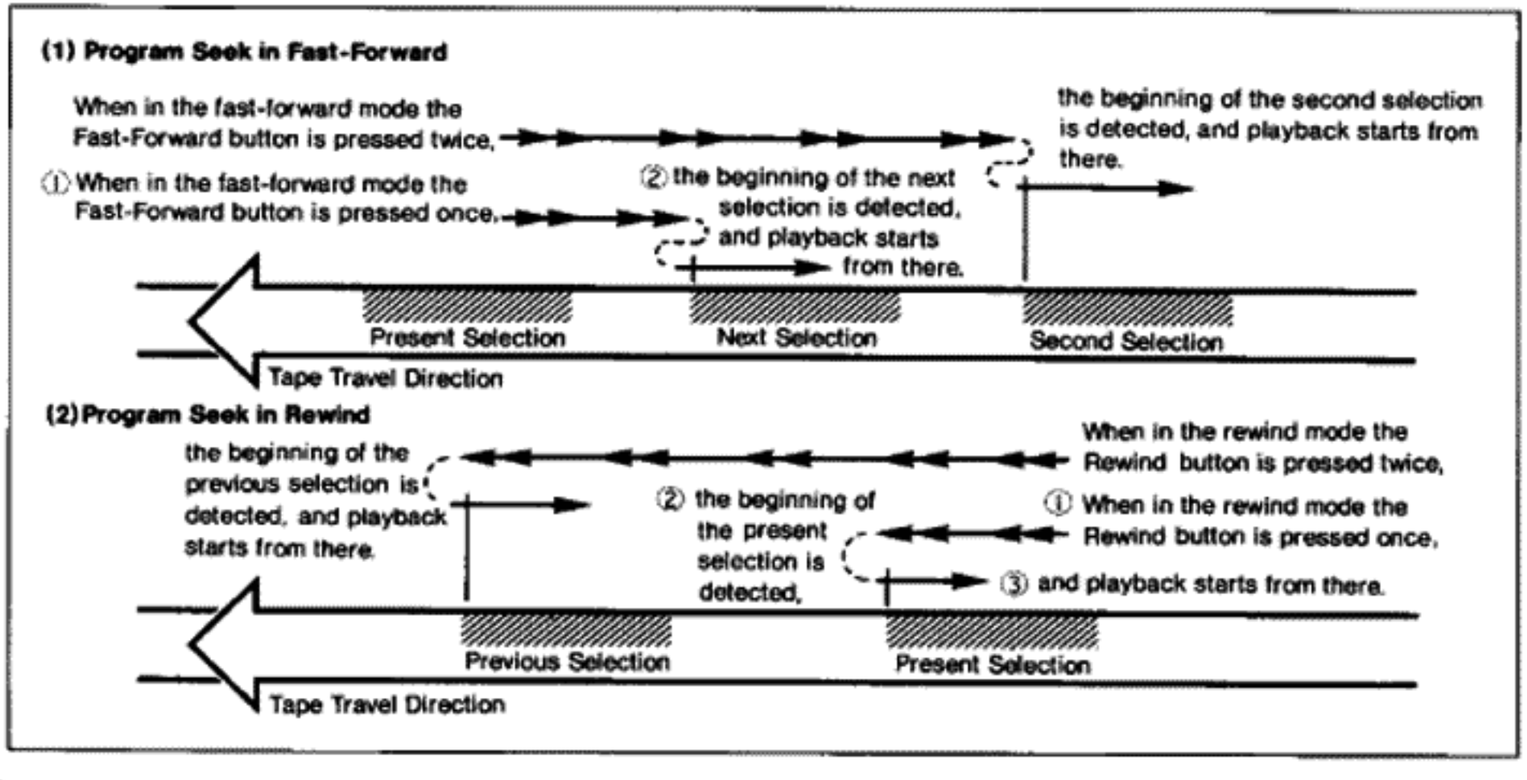
The Fast-Forward button is used for this function. If for example the Fast-Forward button is pressed once more after the unit was set to fast-forward, the following operating sequence is performed: detection of the start of the next selection→rewind for a small interval→playback from the beginning of the selection.
To start playback from the beginning of the second selection, press the Fast-Forward

button twice. During Program Seek, the indicator of the Fast-Forward button flashes. While the last selection before the specified one is being passed by, the blinking speed increases.

(2) Program Seek in Rewind

The Rewind button is used for this function. If for example the Rewind button is pressed once more after the unit was set to rewind, the following operating sequence is performed: detection of the start of the present selection—playback from the beginning of this selection.
To start playback from the beginning of the previous selection, press the Rewind button twice. During Program Seek, the indicator of the Rewind button flashes. While the last selection before the specified one is being passed by, the blinking speed increases.

- If the Program Seek function is activated at a point between two selections and there are more than 4 seconds until the beginning of the next selection, this blank is detected and playback starts from there.
- If the section between two selections contains record scratch noise etc. or the blank is less than 4 seconds long, the start of a selection may not be located correctly.



FM/AM Broadcast Reception

(1) Press the Volume Control knob to switch the tuner on. Select the FM or AM band with the Band Selector.
(2) Tuning Operation

Auto Tuning (Scan)

When the Scan button is pushed, the tuner automatically searches the frequency band towards higher frequencies for the next available broadcast station. When a station is found, it is heard for 5 seconds, while the frequency indicator flashes. Then the scan operation continues. When you have found a station you want to listen to, press the Scan button once more while the frequency indicator is flashing. The tuner will then lock onto this station.

- The frequency changes in 200-kHz steps for FM and 10-kHz steps for AM.
- In ordinary operation, the Reception Sensitivity selector should be set to "DX". Use the "Lo" position for areas with high field strength (in close proximity to strong stations).

Manual Tuning

By pressing one of the Manual Tuning buttons, also while scan tuning is being performed, the unit changes to manual tuning operation. With each push of the Up or Down button, the reception frequency increases or decreases by 200 kHz for FM or 10 kHz for AM. By keeping a button depressed, the

frequency changes continuously with the same step width.
(3) When an FM stereo broadcast is received, the "ST" indicator comes on.
(4) Turn the Volume Control knob clockwise to adjust the listening level.
(5) To switch the tuner off, press the Volume Control knob (Tuner On/Off switch) once more.

- If tape playback is started during FM/AM broadcast reception, the tuner output is interrupted and the tape operation is given priority. During tape functions other than playback (such as fast-wind etc.), the tuner output can be heard.

Using the Preset Station Buttons

The TD-700 has a capacity for presetting a total of 12 broadcast stations (6 each for FM and AM), and the TD-500 for 10 broadcast stations (5 each for FM and AM).
(1) Extend the car antenna fully and adjust the tuner to receive the desired broadcast station.
(2) Decide which of the Preset Station buttons 1—6 (TD-700) or 1—5 (TD-500) you want to program the station into.
(3) Press the Memory button. The Preset Station indicator (PS) flashes for five seconds. While the indicator is flashing, press the desired Preset Station button. The number of this button is displayed and the station is stored in the memory.
(4) To receive a memorized station, switch the tuner on, select the FM or AM band, and press the respective Preset Station button.
(5) To change the memory content of a Preset Station button, simply perform the above described steps (1)—(3) for the new station.

Frequency/Time Indication

This unit incorporates a quartz clock for display of actual time in 12-hour notation on the LCD panel, while it is not being used for reception frequency indication. Depending on the position of the Clock Switch on the side of the unit (→p. 6), the frequency/time display section of the LCD panel functions as follows:
(1) Clock Switch Set to "Off":
No time indication. Reception frequency is indicated while the tuner is switched on.
(2) Clock Switch Set to "On":
Depending on the operating condition of the unit, reception frequency or actual time is displayed.

Adjusting the Clock

If the built-in quartz clock is to be used, it must be set to the correct time as follows. First set the minutes and then the hours.
1. **Setting the Minutes**
While the Memory button is kept depressed, each push of the Manual Tuning (Up) button advances the time indication by one

■ **Frequency/Time Indication Pattern**

	Ignition Circuit "Off"	Ignition Circuit "On"			
		Tuner Switch "Off"	Tuner Switch "On"		
			Cassette Operation "Off"	Cassette Playback	Cassette Operation Other Than Playback
Clock Switch "Off"	● —	● —	○ TUNER	○ TUNER	○ TUNER
Clock Switch "On"	● CLOCK	○ CLOCK	○ TUNER	○ CLOCK	○ TUNER

— ····· No indication CLOCK ····· Time indication TUNER ···· Reception frequency indication
● ····· Illumination of LCD panel off ○ ····· Illumination of LCD panel on

minute. By keeping the Manual Tuning (Up) button depressed, the minutes are advanced continuously. Each time the minute indication changes, the seconds are reset to zero and the clock starts moving from there.

2. **Setting the Hours**
   While the Memory button is kept depressed, each push of the Manual Tuning (Down) button advances the hour indication by one hour. By keeping the Manual Tuning (Down) button depressed, the hours are advanced continuously. Time display of this clock is in 12-hour notation, and there is no a.m. or p.m. indication.

Maintenance

It is very important to regularity clean the surfaces of the head as well as the capstan(s), pressure roller(s) and all other parts which come in contact with the tape. Tiny particles shedded from the tape onto these parts, as well as dust accmulations etc. become the cause of drop-outs, and severely degrade frequency response and wow-and-flutter characteristics. About every 10 hours of use, the parts shown in white in **Fig. a** should be thoroughly cleaned. With some low-quality tapes, head contamination is especially servere. Avoid the use of such tapes whenever possible.

Cleaning Procedure

Remove the cleaning flap as shown in **Fig. b** and press the Eject/Load button to set the unit to the tape playback mode. Then push the tape slot cover in to lock. In this condition, clean the head, tape guide, and revolving pressure roller(s) with the supplied cleaning pen. Next, set the unit to the pause mode by pressing the Eject/Load and Pause buttons simultaneously, and clean the capstan(s). If the tip of the cleaning pen has become dry, moisten it with a small amount of isopropyl alcohol or absolute alcohol. After cleaning is completed, reattach the cleaning flap by reversing the procedure of **Fig. b**. The unit automatically enters the eject mode and the tape slot cover reverts to its original position, ready for insertion of a cassette tape.

- Be careful not to apply too much force in cleaning as the respective parts are critically aligned. Take special care not to damage the tape guide.
- Do not use too much cleaning fluid (alcohol) and give the cleaned surfaces some time to dry off completely before playing a tape.
- If you are using cotton-tipped sticks, be careful that the cotton tip does not get caught between the pressure roller(s) and the capstan(s). Also make sure that no cotton strands are left on the cleaned parts.

Cleaning the Faceplate

This unit should be cleaned only by wiping it with a soft, dry cloth. Never use alcohol, solvents, ammonia or abrasive cleaning agents.

Lubrication

All important moving parts of this deck are fitted with long-life, oil-less bearings. Periodic lubrication is therefore not necessary.

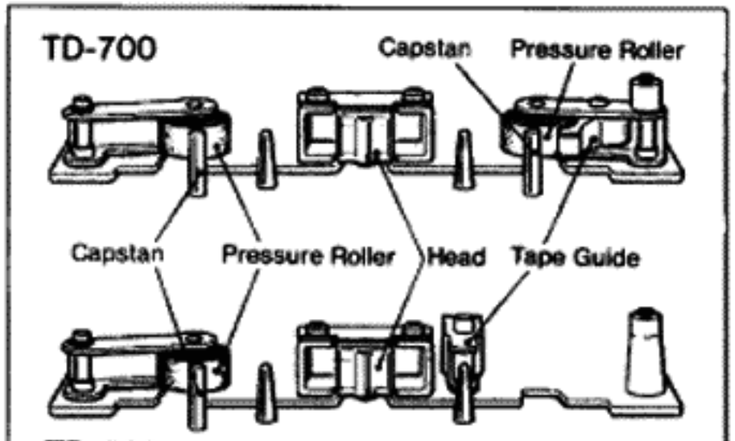
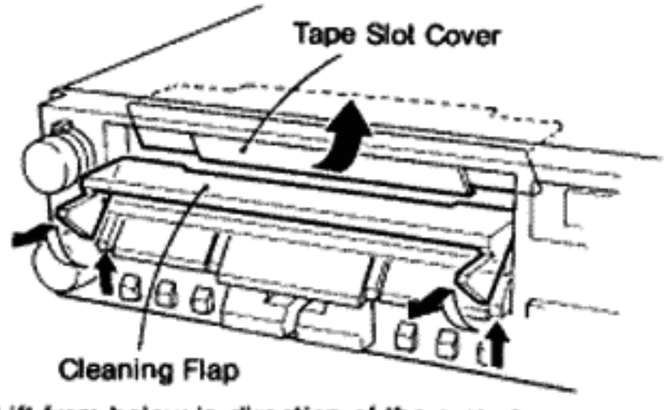


Fig. a

Removal of Cleaning Flap



Lift from below in direction of the arrows to level the flap, then pull it out horizontally. **Fig. b**

Troubleshooting

Condition	Probable Cause	Remedy
Tape does not run or playback is not at normal speed.	1. Tape is not gripped between pressure roller(s) and capstan(s).	1. Remove the cassette, take up any tape slack, and re-insert the cassette.
Cassette cannot be removed.	2. Label or sticker of cassette has come off and is caught inside the unit.	2. Remove the cleaning flap, push the tape slot cover in, and press the Eject/Load button.
Uneven sound levels, drop-outs during tape playback.	3. Head and/or capstan(s), pressure roller(s) etc. are dirty. 4. Faulty cassette.	3. Clean these parts. 4. Use a high-quality cassette.
Distorted tape playback sound.	5. Head dirty. 6. Equalizer switch not set correctly.	5. Clean head. 6. Select correct position for tape in use.
Cannot playback.	7. Improper connections. 8. Head dirty.	7. Check all connections. 8. Clean head.
Dull high frequencies.	9. Head dirty. 10. Dolby NR switch and/or Equalizer switch not set correctly. 11. Azimuth control Fine Tuning not set correctly.	9. Clean head. 10. Select correct positions. 11. Adjust control correctly while playing a tape.
No radio reception possible.	12. Antenna not properly connected.	12. Connected antenna properly to antenna jack.
High noise level during AM reception.	13. Unit installed too close to power amplifier or other interference sources.	13. Change the location of the power amplifier etc.
Ignition noise heard during broadcast reception.	14. The fastening screw of the ground cable has become loose. 15. The ground point on the car is not suitable.	14. Tighten the screw. 15. Choose a different ground point.
Controls cannot be operated at all (or malfunction occurs).	16. Car battery voltage has fallen to a low level. 17. A run-down battery was reactivated with booster cables, etc.	16. 17. Set the car's ignition to "Off" and charge the battery.

Specifications

• Cassette Deck Section

Tape Speed	1-7/8 ips (4.8 cm/sec)
Wow and Flutter	TD-700: Less than 0.05% WTD RMS Less than ±0.1% WTD Peak TD-500: Less than 0.07% WTD RMS Less than ±0.14% WTD Peak
Frequency Response	20—21,000 Hz ±3 dB (Nakamichi Test Tape)
Signal-to-Noise Ratio	**Dolby C-Type NR On** <70 μs, ZX Tape> Better than 70 dB (400 Hz, 3% THD, IHF A-WTD RMS) **Dolby B-Type NR On** <70 μs, ZX Tape> Better than 64 dB (400 Hz, 3% THD, IHF A-WTD RMS)
Channel Separation	Better than 34 dB (1 kHz, 0 dB)
Crosstalk	Better than 60 dB (1 kHz, 0 dB)
Winding Time (Fast Forward/Fast Reverse)	Approx. 75 sec (with C-60 cassette)

• Tuner Section

—FM—

Frequency Range	87.5—107.9 MHz
Sensitivity	18 dBf (IHF)
50 dB Quieting Sensitivity	20 dBf (Mono)
Total Harmonic Distortion	0.15% (Mono 1 kHz) Input 65 dBf 0.3% (Stereo 1 kHz) Input 65 dBf
S/N Ratio	65 dB (Mono)
Frequency Response	30—15,000 Hz ± 3dB
Alternate Channel Selectivity	65 dB (±400 kHz)
Capture Ratio	2 dB
Image Rejection at 98 MHz	55 dB
IF Rejection at 98 MHz	80 dB
Stereo Separation	35 dB (1 kHz) at 65 dBf
Antenna Terminals	75 ohms (unbalanced)

—AM—

Frequency Range	530—1620 kHz
Sensitivity	33dBμ

• Preamplifier Section

Frequency Response	10—50,000 Hz ±1 dB
Output Level/Impedance	0.35 V (Low) or 1.1 V (High)/1 kohms
Total Harmonic Distortion	Less than 0.005%
Tone Control	
Bass	20 Hz ±18 dB
Mid	200 Hz ±10 dB
Treble	20 kHz ±12 dB

Dimensions	178(W) × 50(H) × 165(D) mm 7(W) × 2(H) × 6-1/2(D) inches
Approximate Weight	TD-700: 1.9 kg/4 lb 3 oz TD-500: 1.8 kg/3 lb 15 oz
Power Source	14.4 V DC negative ground (10.8—15.6 V allowable)
Power Consumption	6.5 A Maximum

- Specifications and appearance design are subject to change for further improvement without notice.
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Tone Control Characteristics