Pioneer *sound.vision.soul*

720-Disc DVD Library
DRM-7000
Operating Instructions

Manual Version 1.2

Released 26-February-2004

Pioneer Electronics (USA), Inc.

(For US/Canadian Models)

CAUTION

- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- The use of optical instruments with this product will increase eye hazard.

WARNING

This is a class A product. In a domestic environment this product may cause radio interference in which the user may be required to take adequate measures.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If the equipment is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment is a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

INFORMATION TO USER

Alteration or modifications carried out without appropriate authorization may invalidate the user's right to operate the equipment.

CAUTION (for US model)

This product satisfies FCC regulations when shielded cables and connectors are used to connect the unit to other equipment. To prevent electromagnetic interference with electric appliances such as radios and televisions, use shielded cables and connectors for connections.

CAUTION (for Canadian model)

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

The Generation of Acoustical Noise is Less Than 70 dB. (ISO 7779/DIN45635

Table of Contents

1.0   Features of the DRM-7000 Disc Changer

1.1   Flexible Unit Design

The Pioneer DRM-7000 Disc Changer is designed so that a various components may be installed together to meet a variety of needs.

The Pioneer DRM-7000 provides easily, accessed bays on both the front and the back of the unit as well as a hyper-magazine bay on the front. The bays support drives and/or 50-disc magazines and are fitted with access panels for the installation or removal of individual components.

While the front bays are designed exclusively for 50-disc magazines (up to a maximum of seven magazines), the rear bays allow for mixed components. The rear bays support up to sixteen drives or a maximum of eight 50-dsic magazines. By installing two drives per rear bay, the maximum storage is increased to 720 discs. Conversely, it is also possible to install only 370 discs (filling the front bay and the hyper-magazine bay) and sixteen drives to maximize the performance of the DRM-7000.

An alternative is to leave the bays unfilled immediately after installation and to add new drives and/or disc magazines as needed.

1.2   Types of Disc Magazines

Pioneer offers three different types of disc magazines to support a wide variety of applications.

- **20-Disc Hyper Magazine**
  A single 20-disc magazine (included at no cost with the purchase of a DRM-7000) may be installed and removed without opening an access panel. The lock, located on the exterior of the changer, is equipped with a memory system that records all user operations.

- **50-Disc Magazine (Locking)**
  This magazine is designed to maximize security. The locking mechanism prevents removing a disc from a magazine through commands to the Changer. The locking magazine is perfect for managing office media.

- **50-Disc Magazine**
  Fitted with a knob which releases the locking mechanism, this magazine makes it possible to exchange discs between different magazines with commands sent to the Changer.

1.3   Ease of Installation

In order to connect the Changer to an existing computer system or to build a new computer system, it is necessary for the HOST computer to be able to properly identify the Changer and the drives. All cables between the Changer and the HOST must be connected prior to selecting the settings. The Pioneer DRM-7000 was designed for easy drive and magazine installations but also with a wide range of features to make it easier to specify HOST settings. Once all cables have been connected and the settings specified, the HOST computer is able to control the Changer.

1.4 Security Features

To prevent erroneous or unauthorized use, operators must be able to enter the system administration mode from the Control Panel. In order to enter this mode, unlock the mechanism using the provided keys. This feature also guards against interference, conflicts and clashes occurring between operations performed from the Control Panel and commands issued by the HOST computer.

An alternative method is to issue a command from the HOST to disable the Control Panel. It is possible to restrict the types of operations that may be performed away from the HOST computer. If the HOST sends a particular series of commands, a person with the Changer's keys is still prevented from opening access panels, exchanging discs, or otherwise altering any internal settings on the Changer.

The software (which controls the Changer and manages the upper-level database) carefully monitors access privileges and disc locations within the Changer. As a further precaution, if the software on the HOST computer (or a server in a network environment) is not controlling the Changer when a disc's status is changed, access to the Changer and the installed drives is lost. Allowing discs to be removed or swapped freely also poses a security risk because of the potential for lost or damaged media. Although discs may still be added, exchanged or removed via the access panels or through the disc mail slots, Pioneer recommends that a System Administrator handle these security-sensitive activities.

1.5 Large LCD Message Display

The Control Panel is fitted with a large 2-line, 16-character LCD that displays operation instructions. It is possible to perform a wide variety of operations on the DRM-7000 using just five keys.

1.6 Expandability and Improvement

Pioneer will be releasing a disc turning or flipping unit for double-sided DVD discs, a network interface connection, a video decoder, a DVD-R drive and other optional components to be announced later. The DRM-7000 is designed so that these new components are easily installed and automatically recognized by the system.

1.7 Disc Changing Mechanism

The Pioneer DRM-7000 Changer uses the same disc changing mechanism as the DRM-1004 series. This mechanism has an excellent record of high access speeds and proven reliability.

2.0   Handling Precautions

2.1   Installation Site

Select an installation site with a flat, solid surface. Check the area for the following conditions:

- Avoid exposure to direct sunlight, spotlights or too near to a heater

- Beware of high humidity locations or sites exposed to large amounts of dust

- Avoid close proximity to a bathroom or a kitchen

- Maintain a distance from any large electrical apparatus (refrigerator, air conditioner. etc.)

- Stay away from uneven or unsteady surfaces (if a surface is not flat, first put down a hard plate or a similar support surface)

- Allow access to all sides of the unit for service and maintenance

- Do not places objects directly on top of the Changer

2.2   Unpacking and Handling

When handling the unit, be aware of the following factors:

- Avoid scratching, staining or leaving fingerprints on the signal surface or the recording surface of the discs

- Insert and process a single disc at a time when using a mail slot

- Issue the SCSI command, INITIALIZE ELEMENT STATUS, after unloading or loading a magazine

- The Changer manages the physical discs but not the content on the discs

- Use Pioneer-recommended discs when working with a DVD Writer (please note that data recorded on to these disc is not covered by the warranty)

- Avoid stacking units or placing heavy objects on top of the unit

- The Changer supports 12cm discs only (inserting 8cm or 5cm discs may cause disc detection errors and damaged discs)

2.3   Condensation

Water may form in the Changer if the environmental temperatures fluctuate beyond the suggested range. For example, increasing the room temperature abruptly may cause condensation. If condensation forms within the Changer, leave the Changer for one hour in the room or increase the room temperature gradually before attempting to use it.

2.4   Cleaning the Changer

To clean the panels and the cover, use a soft, dry cloth to wipe off dust and dirt. If the cabinet is heavily soiled, wipe off the dirt using a soft cloth soaked in a mild detergent that has been diluted several times. Then, wipe off the dampness with a fresh dry cloth. Avoid using

benzine, thinner, insecticide or other strong chemicals as these may dissolve or discolor the cabinet surface. Some commercially produced chemical polishing clothes may be acceptable but read all instructions and warnings first.

2.5 Managing Offline Media

The DRM-7000 provides the following features to manage of offline media.

- **Removable Disc Magazines**
  Disc magazines may be removed from the Changer without removing the discs inside thus making it possible to make more effective us of the space within the Changer. Remove and store the magazines containing infrequently used discs.

- **Unique Disc Magazine IDs for the DRM-7000**
  All disc magazines are assigned unique ID codes. The Changer reads this code as the magazine is inserted into a bay. Each disc is accessible as soon as the magazine is inserted into a bay. As long as the discs within the magazine match the database information for that magazine ID. If a magazine is inserted into another Changer, the new Changer recognizes the magazine if both Changers share the same database.

- **Easy Disc Magazine Tracking and Controlling**
  Once a magazine has been assigned an ID, removing or inserting new discs into that magazine disrupts the correspondence to the database. To avoid this problem, purchase the 50-disc magazines with the locking mechanism. The locking magazine prevents discs from being removed from a magazine while it is outside of the Changer. Also use hyper magazines which track and record removal and insertion of new discs.

- **Storage of Changer IDs**
  When a disc magazine has been inserted into a Changer not controlled by the database management software or into a Changer belonging to another system, it is possible for discs within that magazine to be rewritten or to be replaced with other discs within that Changer. Locking magazines do not prevent rewrites or disc exchanges when inserted into the Changer.

  To protect the data, disc magazines are designed to record the IDs of the Changers in which the magazines are used. As long as the list of Changer IDs is maintained within the database, it is possible for the database management software to check the magazine ID and the Changer ID list to determine whether that magazine has to be reinstalled.

  However, although the DRM-7000 Changer supports offline media, the actual media management may differ because of the selected database software and the Changer control software. Establish a set of management controls to handle the offline media.

  To use non-locking magazines, the management controls must be very strict as these magazines are usually unsuited for offline media management.

2.6 Deciding on System Configuration

Before installing the DRM-7000, decide which components are appropriate for your needs. To determine what additional equipment to purchase, first decide where drives will be installed (refer to the configuration guide at the end of this manual).

The SCSI board and SCSI cables supplied with the DRM-7000 are designed for use in the following system configuration:

- Two drives installed on separate cables
- Both drives are connected to the internal daisy-chain board using the cables provided (it is necessary to purchase another SCSI cable to connect the Changer to the HOST)

To install three or more drives or to use more than one SCSI bus (to increase data transfer rates), it is necessary to purchase additional SCSI boards and cables.

The following factors are key in selecting the appropriate components for your system.

- Types and numbers of drives and the bays to be used (installing nine or more drives requires installation of an additional power supply)
- Positions where SCSI boards will be installed (the Changer is equipped with an internal daisy-chain board and a drive board)
- SCSI ID to be assigned to each drive (a SCSI ID may not be assigned to two or more drives on the same bus)
- Cable layout between the various drives and the SCSI boards (refer to the **Installation** chapter, *Examples of SCSI Cable Connections*)
- Which drives will be terminated (which drive will be at the end of the SCSI chain thus has the termination switch turned ON)

The DRM-7000 is shipped with a single power supply which provides enough power for up to eight devices installed in the lower rear bays (bay 1 through bay 8). The maximum power supplied to the eight bays is 5V/12A or 12V/8A with no more than 5V/4A or 12V/4A over any single connector. Thus any device installed in these bays must be below that power level.

An additional power supply must be added in order to install up to eight devices in the upper rear bays (bay 9 through bay 16). The maximum power consumption for the upper bays is equal to that of the lower bays.

WARNING: Use Pioneer-approved add-on products only

2.7 Products Provided with the DRM-7000

The following components are included with the original shipment of the Pioneer DRM-7000 Changer.

- **20-Disc Hyper Magazine**
  A single 20-disc magazine (included at not cost with the purchase of a DRM-7000) may be installed and removed without opening an access panel. The lock, located on the exterior of the changer, is equipped with a memory system that records all user operations
- **SCSI Drive Cable (1)**
  cable compatible with the market standard
- **Power Cord (1-US/Canada & 1/Japan)**
  excess power cord may be discarded
- **Placement Fixtures (set)**
  Set includes 4 brackets
- **Chassis Keys (2)**

- **20-Disc Hyper Magazine Dust Cover**

- **Operating Instructions**

- **Warranty Information**

- **Service Network Sheet**

2.8   Add-On Products

The following components may be purchased separately for use with the Pioneer DRM-7000 Changer.

- **50-Disc Locking Magazine (DRM-AL751)**
  This magazine is designed to maximize security. The locking mechanism prevents removing a disc from a magazine through commands to the Changer. Use the Mail Slot to add or exchange discs in this magazine.

- **50-Disc Magazine (DRM-AF751)**
  Fitted with a knob which releases the locking mechanism, this magazine makes it possible to exchange discs between different magazines with commands sent to the Changer.

- **20-Disc Hyper Magazine (DRM-AH721)**
  A single 20-disc magazine may be installed and removed without opening an access panel. The lock, located on the exterior of the changer, is equipped with a memory system that records all user operations. Additional hyper magazines may be purchased in order to build an offline-library in 20-disc units.

- **DVD-R/RW Drive (DVD-R7322)**
  The internal DVD-R/RW and CD-R drive may be used to read or write DVD/CD discs.

- **DVD-ROM Drive (DVD-D7563)**
  The internal DVR drive may be used to read DVD and CD discs.

- **Disc Flip Unit (DRM-UF701)**
  The disc-turning unit is designed for use of double-sided DVD discs within the Changer.

- **Power Supply (DRM-PW701)**
  The add-on power supply works in conjunction with the upper bays (bay 9 through bay 16).

- **Multi-Drive Connector (DRM-SN721)**
  The DRM-SN721 is an internal daisy-chain board with a cable to connect two internal drives. The board may be used to connect two or four additional drives in a daisy-chain.

- **Single-Drive Connector (DRM-SN711)**
  The DRM-SN711 is a board used to connect a drive directly to the HOST computer system or when a series of drives are daisy-chained outside of the Changer.

- **Cable for Two Drives (DRM-SC721)**
  The two-drive SCSI cable is used to create a two-drive SCSI chain. When used in conjunction with the internal daisy-chain board, it is possible to connect up to four internal drives.

- **Cable for Four Drives (DRM-SC741)**
  The four-drive SCSI cable is used to create a four-drive SCSI chain. When used in

conjunction with the internal daisy-chain board, it is possible to connect up to six internal drives.

2.9   Discs

The types of discs compatible with the Pioneer DRM-7000 vary depending upon the types of installed drives. Refer to the User's Guides provide with the drives. Some standard handling practices are listed below.

- Use CDs marked with the following symbols

- Avoid touching the signal surface of the disc

- Hold the disc by placing your fingers on the edge of the disc or pinched between the edge and the center hold on the disc

- Do not attach additional paper or stickers to the label

- Inspect discs for cracks or warping and discard any defective discs

- Do not use a disc that carries an electrostatic charge

- Do not use the following disc types which may damage the unit:
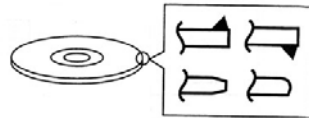
< Discs with a molded flash (projecting fin)

< Discs with rounded or tapered edges

3.0 Names and Functions of Individual Parts

FRONT

FRONT ACCESS PANEL

<Control panel>
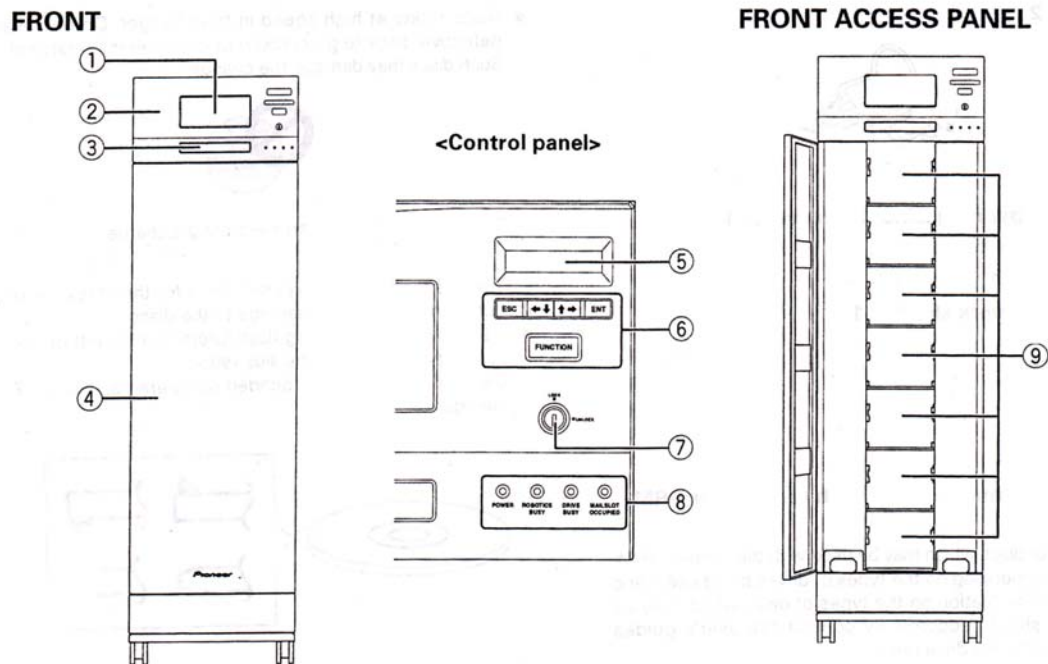
① **20-disc disc magazine (hyper magazine)**
② **Control panel**
③ **Mail slot**
④ **Front access panel**
⑤ **LCD message display**
⑥ **Control key switch**
This switch is used to change the messages displayed on the LCD message display and to select settings. Note that a lock release key is needed in order to be able to use this switch.

Escape key (ESC):
The escape key is used to return one level above from the message currently being displayed (i.e., to return to the previous display) or to halt operations.

←↓:
These keys are used to decrement displayed values or to move the display cursor down or to the left.

↑→:
These keys are used to increment displayed values or to move the display cursor up or to the right.

Enter key (ENT):
The enter key is used to return one level above from the message currently being displayed or to initiate a specified operation.

Function key:
The function key must be pressed in order to place the changer into system administration mode.

⑦ **Lock/Unlock key switch**
Inserting a key into this switch and rotating it 90 degrees causes the locking mechanism to be released, thus making it possible to operate the changer from the control panel.

⑧ **Control indicators**
POWER:
This indicator lights up whenever the power is on.
ROBOTICS BUSY:
This indicator lights up whenever a disc is being changed.
DRIVE BUSY:
This indicator lights up whenever a disc is being inserted into a drive.
MAIL SLOT OCCUPIED:
This indicator lights up whenever a disc is currently inserted into the mail slot.

⑨ **Magazine bays**
These bays (M1-M7) are used for holding disc magazines.

REAR
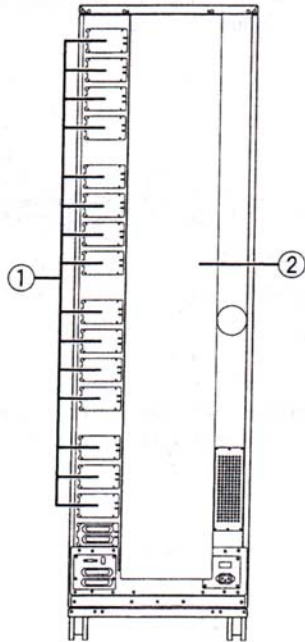
REAR ACCESS PANEL
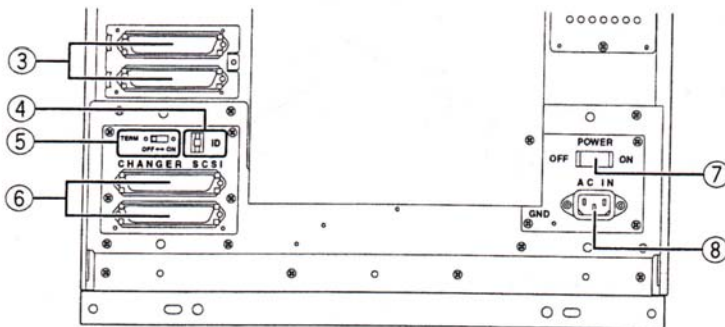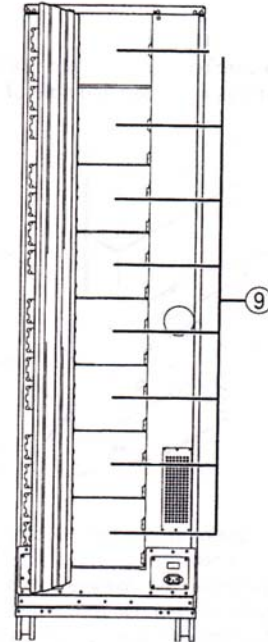
① **Rear plate**
This plate is used to connect the connector boards.
② **Rear access panel**
③ **SCSI drive port**
④ **SCSI ID switches (ID)**
These switches are used to specify the changer SCSI ID. Pressing the upper switch causes the displayed SCSI ID to be decremented, and pressing the lower switch conversely causes displayed SCSI ID to be incremented. Note that SCSI ID is set to '6' at the time of shipment.
⑤ **SCSI termination switch (TERM)**
This switch is used to set SCSI termination. This switch must be set on when the changer in question is the last device on the SCSI bus. Note that this switch is set off at the time of shipment.

⑥ **Changer SCSI port (CHANGER SCSI)**
⑦ **Power switch (POWER)**
This switch is used to turn the power to the changer on and off.
⑧ **Power socket (AC IN)**
This power socket is used to connect the changer's power cord. (Note that you should always be sure to use only the power cord provided with your changer.)
⑨ **Rear bay**
These bays (M8-M15) are used for holding disc magazines. The rear bay also contains an additional 16 bays (bays 1-16) for use in installing optional add-on devices.

4.0   Installation

4.1   Positioning the Changer

The instructions below lead through the physical installation of the DRM-7000.

1.   Attach the placement fixtures
     To stabilize the Changer further, attach the placement fixtures at the corners of the unit
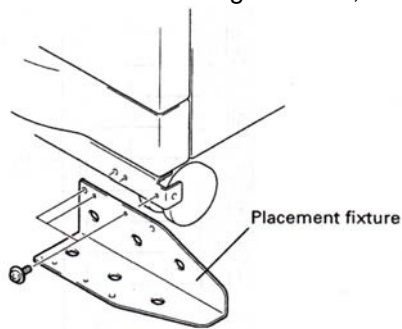
Placement fixture

- Always be sure to attach the placement fixtures first

- Verify that the placement fixtures are protecting the ports and cables on the back of the unit

  Please note that any damage caused to the rear ports or cables as a result of failing to install the fixtures, voids the warranty for that damage.

2.   Select the installation location for the Changer

50cm
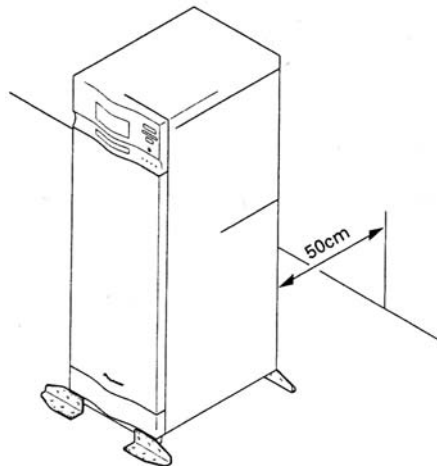
- The back of the Changer should be at least 50 centimeters (approximately 20 inches) from the wall

- The back access panel must be able to fully open in order to add or remove individual disc magazines or drives

3. Lock all four legs/wheels into place
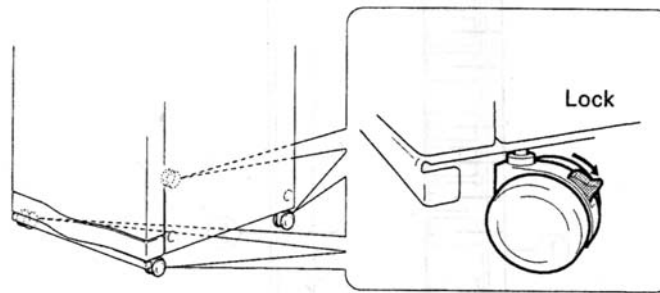
4. Connect the power cord to the Changer
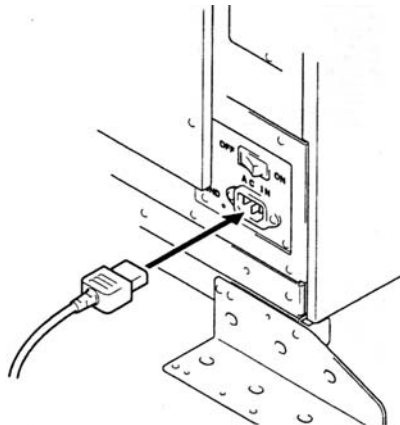
- Insert the power cord into the rear of the changer before inserting the plug into the wall socket

  Caution: Always be sure to use only a power cord designed for use in that country.

4.2   Before Using the Changer for the First Time

To prepare the Changer for standard operation, follow the steps listed below.

1. Turn ON the power to the Changer
   When the power is first turned on, the front and rear access panels automatically open
   - Leave both access panel doors open

   - If the power must be turned off for any reason, wait at least 10 seconds before turning the power back on

2. Loosen the shipping screws
   With the front access panel open, loosen the two screws located in the base
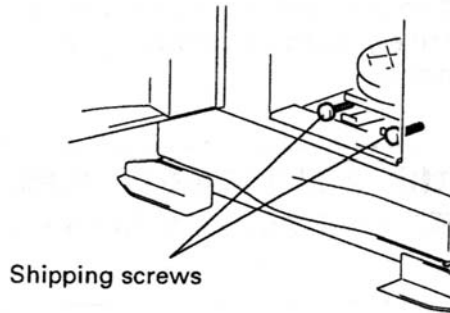
- Screws are permanent to avoid becoming lost but must be loosened to operate the Changer

- Tighten these screws before moving or transporting the Changer

- Closing the front and/or rear access panels cause the Changer to return to the initial default position thus leave access panels open to continue with the installation process

3. Install the drive units
   No tools are required to install a drive. While drives may be installed in any of the rear bays (bay 1 through bay 8), the connector board shipped with the Changer is configured for drives to be installed into bay 1 and bay 2.
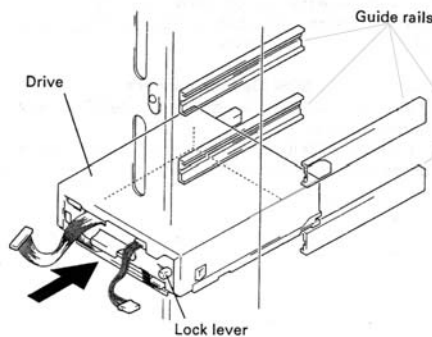
- Specify the SCSI IDs and set the termination switches on the back of the drives before installing the units

- Verify that the drives are mounted on the guide rails

- Listen for the clicking sound as the drive is pushed into the bay

- Push the drive in until the lock lever on the drive shifts to the locked position

4. Connect the power cord from the Changer to the drive.
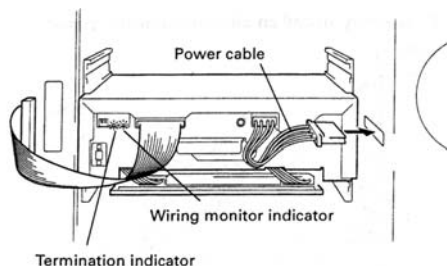
- Verify that the wiring monitor indicator on the rear of the drive lights as orange

- Check that the termination indicator is green if the Termination Switch is ON

5.   Connect the Changer Interface cable to the drive.
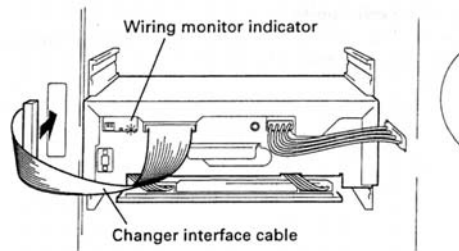
- Confirm that the interface cable is connected to the correct bay

Caution: Connecting the interface cable to an incorrect bay port results in damage to the discs.
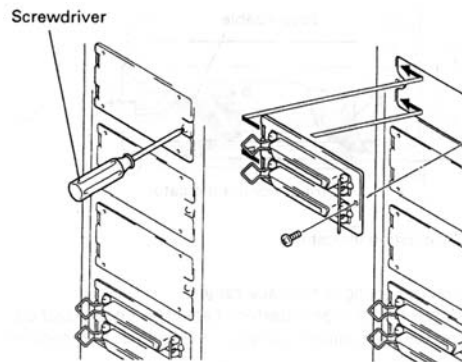
- Install an add-on connector board if necessary

4.3   *Changing the SCSI ID on a DRM-7000*

To alter the Changer's SCSI ID, power the system OFF then press the SCSI ID switches located on the back of the unit in the lower left area. Pressing the switches causes the ID to change and the following message to appear on the LCD display.

(Inquiry)   ID = 6 (0)
Revision   *.***

In this example, the Changer's SCSI ID changes from <u>SCSI ID 6</u> to <u>SCSI ID 0</u>.

Powering the system back ON resets the SCSI bus to the host computer. The new SCSI ID for the DRM-7000 is maintained until the SCSI ID switches on the back of the unit are altered.

4.4   *Reading SCSI Drive IDs from the DRM-7000*

If all drives have been assigned separate SCSI IDs, a buzzer sounds once. If the same SCSI ID has been assigned to two or more drives, the buzzer sounds three times. Installing multiple

SCSI buses allows duplicate SCSI IDs as long as the duplicates are assigned to separate buses.

Even if none of the drives installed within the changer has been assigned the same SCSI ID, it is necessary to assign a different SCSI ID to any drives which share the same ID with other devices such as hard drives on the same bus.

4.5   Connecting SCSI Cables

Confirm that all drives have been installed, before connecting the SCSI cables. Check that all conditions listed below are met below attaching the cables.

- The total combined length of all SCSI cables must be less then six meters, including the internal cables.

- Installing seven or more drives, or when creating separate daisy chains for fewer than seven drives, requires a separate multi-drive connector panel.

- Turn OFF the power to the Changer and to the host computer before connecting the SCSI cables.

- After connecting the cables, turn the Changer ON before turning the computer ON.

- The Changer is unable to recognize faulty SCSI connections or SCSI ID assignment mistakes.

- Reboot the DRM-7000 after installation new or replacement drives to ensure the system recognizes all existing drives.

Examples of SCSI cable connections:

Daisy-chain two internal readers and a recorder then connect to the Changer

Daisy-chain four internal readerse and a recorder then connect to the Changer – requires a cable for two drives
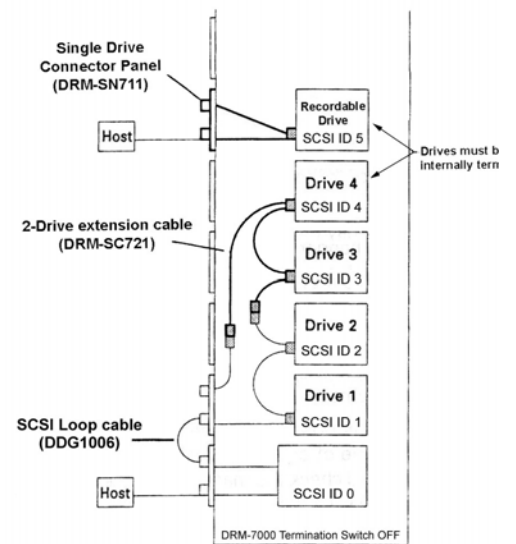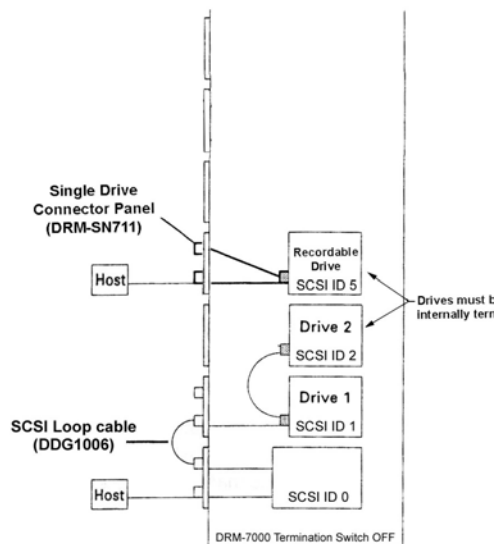
Daisy-chain six internal readers and a recorder then connect the Changer – requires a cable for four drives
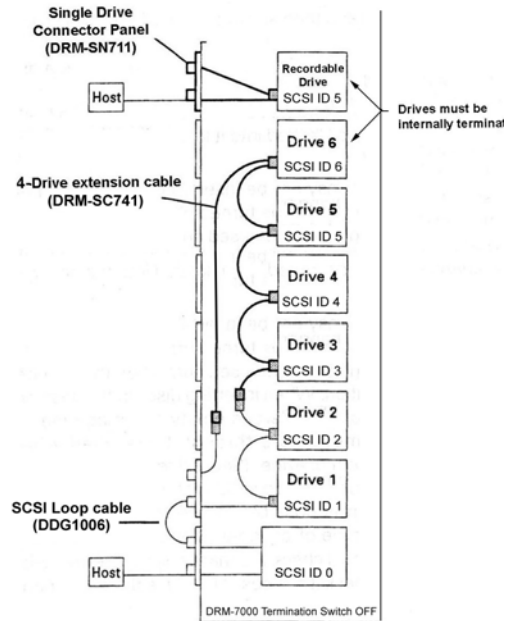
Connect two readers and two recorders then connect the Changer – requires three separate SCSI controller cards
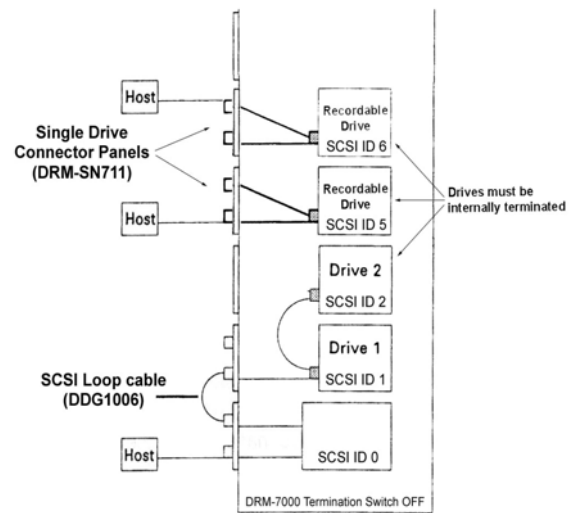
4.6 Inserting Disc Magazines

Please review the insertion methods listed below.

- Insert discs into a standard 50-disc magazine then insert the magazine into the Changer.

- Insert discs into a standard 20-disc hyper-magazine then insert the magazine into the Changer.

- Use the control panel to specify which slot will receive a disc then select the specified disc number from the mail slot (refer to page 32 for mail slot details). Verify that the Changer is ready for operation and that there is an empty slot within a magazine.

- Issue a command from the host computer to accept a disc from the mail slot (refer to page 32 for mail slot details). Verify that the Changer is ready for operation and that there is an empty slot within a magazine. Also check that your Changer controller software supports this activity.

- Issue a command from the host computer to accept a hyper-magazine with discs. Verify that the Changer is ready for operation and that the bay is empty before inserting the magazine. Also check that your Changer controller software supports this activity.

  Note: Hyper-magazines may not be removed from or added to the Changer while the unit is turned OFF.

4.6.1 Inserting Discs Using a 50-Disc Magazine

Follow the directions below to insert discs in to a magazine then add the magazine to the Changer.

1. Turn the magazine's release knob (vertical position) to unlock the slots.

2. Insert discs horizontally with the labels facing up.

3. Turn the release knob to the horizontal position locking the discs into the slots.

Lock release   Lock

Label
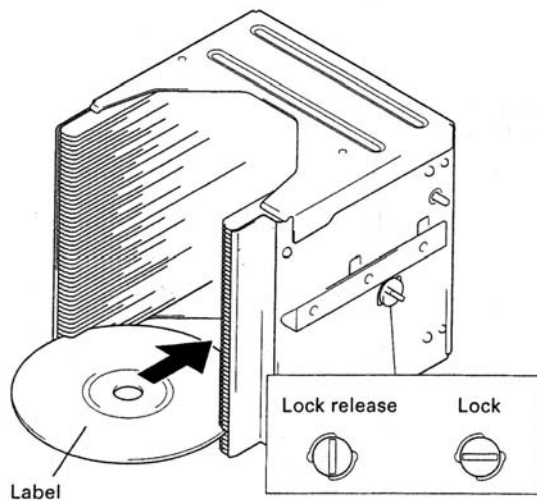
Note: Turning the magazine upside-down with the locking mechanism disengaged may result in damage to the discs.

4. Insert the magazine onto the guide rails within the DRM-7000.
   * Hold the handle of the magazine while resting the unit on the guide rails.
   * Elevate the magazine until it is perpendicular to the Changer.
   * Press the magazine firmly into the Changer.
   * Confirm that the lock pin is aligned to the groove on the side of the Changer.
   * Fold the magazine handle to the left to lock it in place.

Lock pin

Guide rails
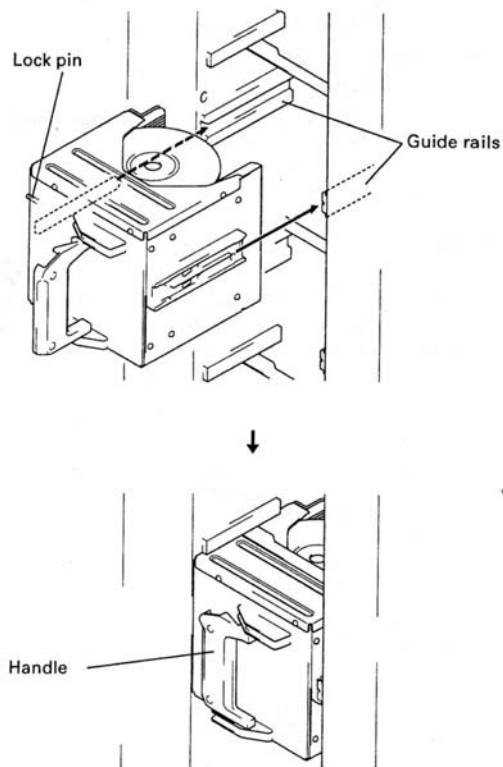
Handle

5. Remove the magazine by flipping the handle out and pulling the unit towards you. Support the magazine so that it remains level as it slides off of the rails.

4.6.2   Inserting Discs Using a 20-Disc Hyper-Magazine

Follow the directions below to insert discs in to a hyper-magazine then add the magazine to the Changer.

1. Turn the magazine's release knob (vertical position) to unlock the slots.

2. Insert discs horizontally with the labels facing up.

3. Turn the release knob to the horizontal position locking the discs into the slots.
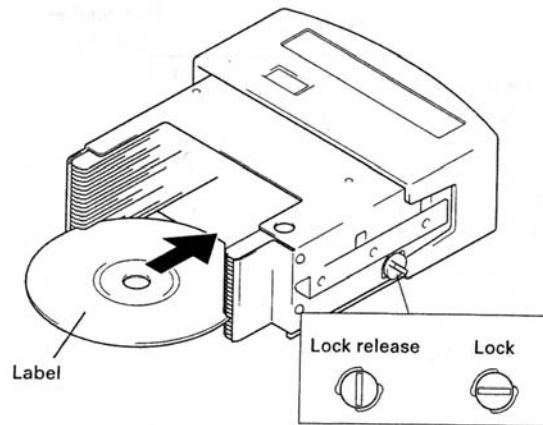
Note: Turning the magazine upside-down with the locking mechanism disengaged may result in damage to the discs.

4. Insert the hyper-magazine into the top bay above the front access door.
   * Once the magazine is inserted approximately half way into this bay,
     the changer automatically pulls the unit forward until it is locked in place.
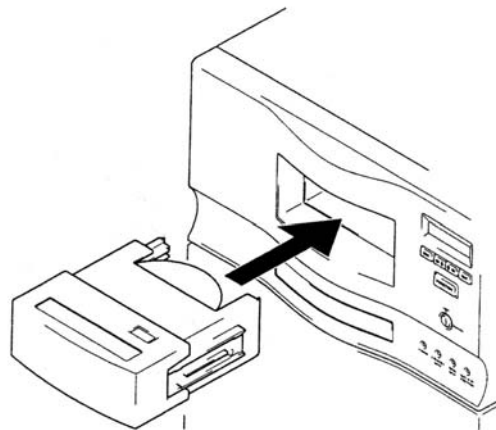
The Changer automatically reads the magazine ID and lists the information on the LCD display a few seconds after a successful magazine insertion.

M1	Locked – type
ID =	* * * * * * * * * * * *

A similar message appears when a magazine is removed from the Changer.

M1	Locked – type
	out

If these messages appear repeatedly in rapid succession, the magazine is improperly inserted into the bay. Remove the magazine and remount the unit into the appropriate Changer bay.

4.7 Magazine Slot Assignments

Each possible slot in the Changer bays is assigned a unique serial number. These numbers remain the same if the bay holds a magazine or a drive. Changing magazines does not change the slot serial number. The following chart identifies each bay and the corresponding slot serial numbers assigned to that bay.

Disc Storage Location		Slot Number (Disc Number)		Disc Storage Location		Slot Number (Disc Number)	
Hyper Magazine Hyper	Slot 20 to Slot 1	# 770 to # 751	Hyp-20 to Hyp-01	Magazine Bay 15 M15	Slot 50 to Slot 1	# 750 to # 701	M15 – 50 to M15 – 01
Magazine Bay 7 M7	Slot 50 to Slot 1	# 350 to # 301	M7 – 50 to M7 – 01	Magazine Bay 14 M14	Slot 50 to Slot 1	# 700 to # 651	M14 – 50 to M14 – 01
Magazine Bay 6 M6	Slot 50 to Slot 1	# 300 to # 251	M6 – 50 to M6 – 01	Magazine Bay 13 M13	Slot 50 to Slot 1	# 650 to # 601	M13 – 50 to M13 – 01
Magazine Bay 5 M5	Slot 50 to Slot 1	# 250 to # 201	M5 – 50 to M5 – 01	Magazine Bay 12 M12	Slot 50 to Slot 1	# 600 to # 551	M12 – 50 to M12 – 01
Magazine Bay 4 M4	Slot 50 to Slot 1	# 200 to # 151	M4 – 50 to M4 – 01	Magazine Bay 11 M11	Slot 50 to Slot 1	# 550 to # 501	M11 – 50 to M11 – 01
Magazine Bay 3 M3	Slot 50 to Slot 1	# 150 to # 101	M3 – 50 to M3 – 01	Magazine Bay 10 M10	Slot 50 to Slot 1	# 500 to # 451	M10 – 50 to M10 – 01
Magazine Bay 2 M2	Slot 50 to Slot 1	# 100 to # 051	M2 – 50 to M2 – 01	Magazine Bay 9 M9	Slot 50 to Slot 1	# 450 to # 401	M9 – 50 to M9 – 01
Magazine Bay 1 M1	Slot 50 to Slot 1	# 050 to # 001	M1 – 50 to M1 – 01	Magazine Bay 8 M8	Slot 50 to Slot 1	# 400 to # 351	M8 – 50 to M8 – 01

Note: Although slot numbers range up to 770, it may not be possible to insert a total of 770 discs simultaneously.

4.8 Closing Changer Access Doors

Before closing the access doors, verify that all components are mounted correctly and that all cables are firmly in place. Closing the access doors begins the initialization of the DRM-7000.

Once the initialization is complete, the following message appears in the LCD display:

Robotics	**ready**
Drive1	**no disc**

The first line of the message refers to the status of the disc changer mechanism. The second line indicates the disc number and registers any loaded discs. Drive numbers are assigned in sequence from the lowest to the highest number.

> *Note: If the number of drives registered exceeds the maximum number of drives allowed for installation, open the rear access door and check the drive power cables and the interface connections. See the section entitled, System Administration mode: Access Panel Submodes, for additional information.*

5.0   Operation

The DRM-7000 supports two modes, User and System Administrator. Separating the operations into two modes prevents interference, conflicts, or clashes from occurring between commands issued from the host computer and commands entered at the Changer's Control Panel.

5.1   User Mode

Upon installation, the Changer enters the User Mode. This mode allows the Changer's controller software or database management software on the host computer to run the unit. When operating in the User Mode, the Changer flashes a series of messages shown below.

```
Robotics          ready
Drive1          no disc
```
↓
```
Robotics          ready
Drive2          no disc
```
↓
```
Robotics           busy
Drive1          no disc
```
↓
```
Robotics          ready
Drive2         has #205
```
↓
●
●
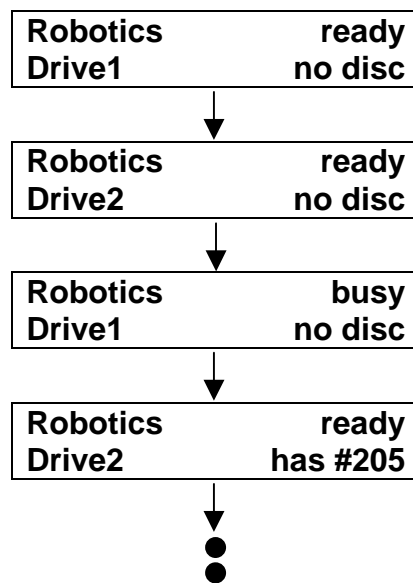
When in the User Mode, the Changer responds to commands issued from the host computer.

5.2   System Administrator Mode

Issuing commands from the Changer's Control Panel is restricted to System Administrators with the panel keys. To switch the System Administrator Mode, follow the steps below.

1.   Insert the key into the key switch located on the control panel.

2.   Rotate the key 90 degrees to the unlocked position.
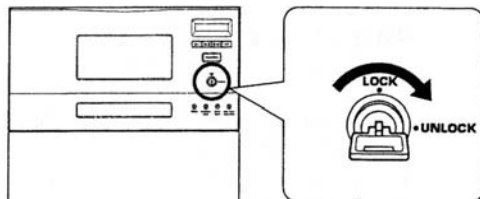
3.   Press the **Function** button to enter the System Administrator Mode.

When operating in the System Administrator Mode, the Changer shows the following message in the LCD display.

```
(Inquiry)            ID = 5
        Revision   1.00
```

The System Administrator Mode is divided into four Information submodes and four Operation submodes.

Information Submodes

- Inquiry Submode

- Config Submode

- Option Submode

- Info Submode

Operation Submodes

- Mail slot Submode

- Hyper Submode

- Probe Submode

- Door Submode

The System Administrator mode setting screens are displayed in the sequence shown below.
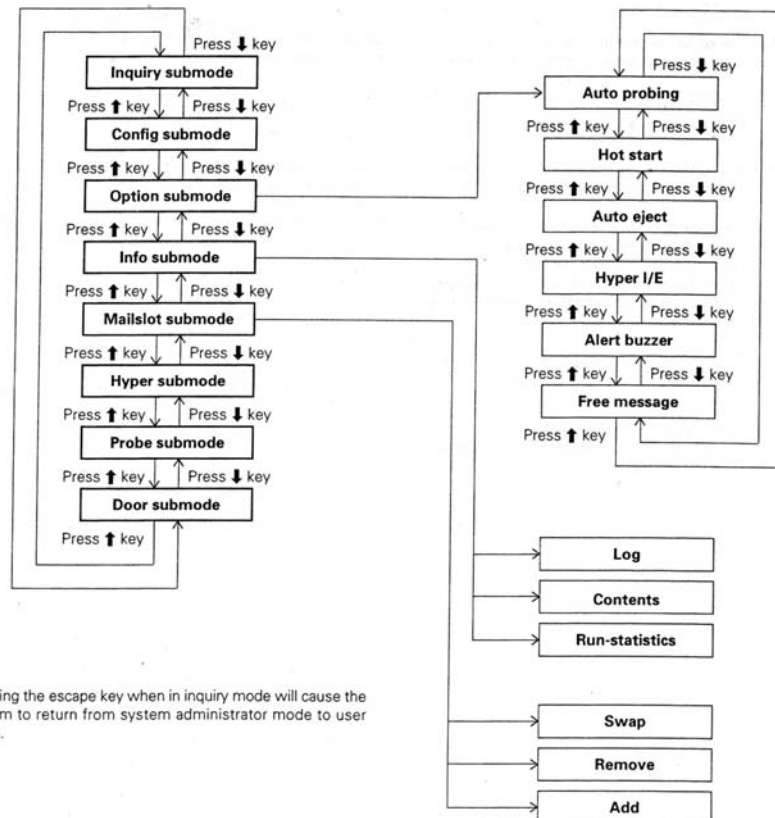
Pressing the escape key when in inquiry mode will cause the system to return from system administrator mode to user mode.

Information submodes enable a System Administrator to check a Changer's current settings or read the stored data. The System Administrator may also view a variety of Changer information without interfering with the control of the Changer from the host computer.

Operation submodes allow movement to the disc changing or magazine ejection mechanisms, disc replacement, and slot availability checks. Operation Submodes cause the Changer to ignore commands issued from the host computer.

5.2.1   Inquiry Submode

The Inquiry Submode displays general information about the DRM-7000 system. Issuing a SCSI INQUIRY command from the host computer provides the same information about the Changer. The data includes SCSI IDs and the unit's serial number.

The first screen shows the Changer's SCSI ID number.

```
(Inquiry)           ID = 5
           Revision  *.***
```

Pressing the **Enter** button causes the unit's model name and serial number to appear on the LCD display.

```
DRM-7000
           Serial = ********
```

Pressing the **Escape** button causes the display to return to the previous message.

To alter the Changer's SCSI ID, refer to the earlier section in this manual entitled, Changing the SCSI ID for a DRM-7000.

5.2.2   Config Submode

The Config Submode provides component installation checks. The components include all magazines and devices in both front and rear bays.

```
(Config)
     Setup browser
```

Pressing the **Enter** button reveals the SELECT BAY screen. Use the up and down arrows to select the appropriate bay.

```
   Magazine – bay or
   Rear (drive) – bay?
```

Example of Rear Bay selection:

Press the **Enter** button again to reveal the component currently inserted in the rear drive bay #1.

```
Bay # 1     =    Drive 1
  DVDROM  DVD-D7361
```

To change the selected bay, use the up and down arrow buttons.
Example:

▼ arrow button

| Bay # 5 & # 6 |
| flip unit |

▼ arrow button

| Bay # 9 |
| no component |

▼ arrow button

| Bay # 15 & # 16 |
| ID = *********** |

If the bay holds a drive, press **Enter** to display the SCSI ID, the termination switch setting and the device ID of the drive.

| scsi ID = 1   TermOFF |
| dev – ID = ******** |

If a disc is inserted in the drive, press **Enter** to display the disc number.

| Disc   in   Drive 1 |
| is   # ***   (M** – **) |

*Note: Pressing the **Escape** button causes the screen to return to the previous view. Each time this button is pressed, the display backs up by one screen.*

To view drive information, press the **Escape** button to return to BAY SELECTION and choose the appropriate rear bay.

Example of Hyper Magazine Bay selection:

Press the **Enter** button to reveal the hyper magazine ID.

| Hyper magazine |
| ID = *********** |

If the hyper magazine bay is empty, the following message appears on the display:

| Hyper magazine |
| removed |

Hyper magazines include a memory system that keeps a record of each time the release locking mechanism unlocks the magazine. Pressing the **Enter** button while a hyper magazine is installed causes these records to appear on the LCD display.

If the locking record log is empty, the following message appears:

> **Locked – state**

When there are records in the memory, the following message appears:

> **Uncertain – state**

Example of Magazine Bay selection:

Press the up arrow button while the hyper magazine information displays to show Magazine #1.

> **M1 (front – bottom)**
> **ID =** ************

Each time the up arrow button is pushed, the next sequential magazine appears on the LCD display.

↑ arrow button

> **M2**
> **ID =** ************

If the magazine bay is empty, the following message appears on the LCD display.

> **M7 (rear – bottom)**
> **removed**

With rear bays, there may be times when a bay is occupied with a drive instead of a magazine. The following message appears when this is the situation.

> **M8 (rear – bottom)**
> **not available**

When a magazine is shown on the display, press the **Enter** button to reveal the type of magazine installed in that bay.

> **Normal – type**

Pressing the up arrow button while magazine bay #15 is selected, returns the display to the hyper magazine information.

5.2.3   Option Submode

Many controller and data management software packages provide additional tools and operations to the System Administrator. To work with these features, select an operation from the Option Submode commands.

> **(Option)**
> **User's choice**

The optional operations are as follows when scanning using the right arrow button:

- Auto Probing – default set to OFF at time of shipment

- Inquiry Change – default set to OFF at time of shipment

- Free Message – default set to Off at time of shipment

- Alert Buzzer – default set to ON at time of shipment

- Hyper I/E – default set to ON at time of shipment

- Auto Eject – default set to ON at time of shipment

- Hot Start – default set to OFF at time of shipment

5.2.3.1 Auto Probing

When standard 50-disc and hyper magazines have discs added while outside of the DRM-7000, the system requires a slot check before accessing the new discs. An Auto Probe command checks all magazine slots in sequence to determine whether each slot is *empty* or *full*. The Controller software usually performs this check. However, if the software fails to support this activity or the Changer is disconnected from a host computer, use the Auto Probing function.

Commands from the host computer are ignored during an Auto Probe issued through the controller program.

Even after switching Auto Probing from OFF to ON, the feature is unavailable until an access door is opened then closed or until the unit is reset.

Auto probing?

Press the **Enter** button

↓

A u t o   p r o b i n g   i s **set to ON / OFF**

Press the **left arrow** button

↓

A u t o   p r o b i n g   i s **set to ON / OFF**

Press the **Enter** button

↓

A u t o   p r o b i n g **is activated**
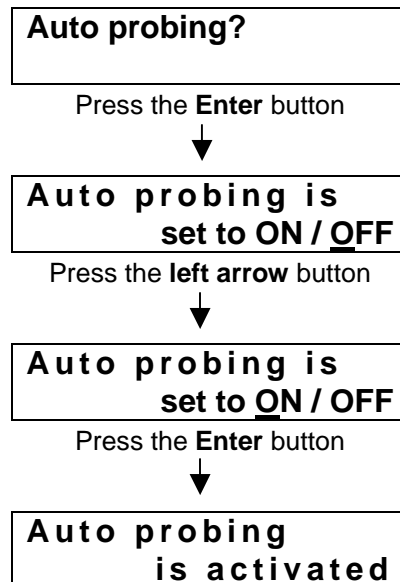
When the Auto Probing function is set to OFF, the following message appears:

```
Auto probing
      is prohibited
```

To temporarily turn Auto Probe OFF, turn the key switch to the unlocked position and press the **Escape** button.

Note: It takes approximately two minutes to probe a 50-disc magazine.

5.2.3.2 Image Change

5.2.3.3 Free Message

Setting the Free Message mode ON allows messages from the host computer to over-write messages shown in the LCD window. It is also possible to display other information such as the name of the Changer Controller program and warning messages regarding discs being rewritten.

For example, when the host computer issues commands to add or remove discs, prompting directions appear on the LCD display. If using the mail slot to insert or remove a disc (with the Auto Eject submode turned OFF), the following message appears:

```
Press ENT-key
 to open mail slot
```

While this information from the host computer displays in the LCD display, no other messages can appear unless the Free Message mode is ON.

To turn OFF the Free Message function, follow the steps below.

```
Free message?
```

Press the **Enter** button
↓

```
Free message is
      set to ON / OFF
```

Press the **left arrow** button
↓

```
Free message is
      set to ON / OFF
```

Press the **Enter** button
↓

```
Free message
      is activated
```

When Free Message is set to OFF, the following message appears:

```
Free message
     is prohibited
```

If the host computer is not sending commands while the Free Message mode is ON, messages from the Changer appear on the LCD display.

5.2.3.4 *Alert Buzzer*

The DRM-7000 provides a buzzer on the control panel to indicate status and errors. The buzzer sounds at the following times:

- When the rear door is opened
  Since it is difficult to monitor progress using the LCD display while working at the back of the Changer, the buzzer indicates that work is continuing without errors.

- If a disabled button on the Changer's Control Panel is pressed
  Because the buzzer sounds when the operator attempts to input a command, the buzzer cannot be turned OFF.

- When an error occurs with the Changer
  The buzzer continues to sound until a button is pressed on the control panel.

To turn off the Alert Buzzer function, follow the steps below.

```
Alert buzzer?
```

Press the **Enter** button

↓

```
Alert buzzer is
     set to ON / OFF
```

Press the **right arrow** button

↓

```
Alert buzzer is
     set to ON / OFF
```

Press the **Enter** button

↓

```
Alert buzzer
     is prohibited
```

When the Alert Buzzer function is set to ON, the following message appears:

```
Alert buzzer
        Is activated
```

5.2.3.5 *Hyper I/E*

While hyper magazines are designed as 20-disc magazines, they may also be used as high-capacity mail slots. Although slots and mail slots are usually defined differently, turning ON the Hyper I/E mode allows hyper magazines to respond like mail slots.

The SCSI subsystems are divided into four types:

- Media Changing System (i.e. robotic system)

- Storage System (i.e. slots)

- Import/Export system (i.e. mail slots)

- Data Transfer System (i.e. drives)

To turn OFF the Hyper I/E function, follow the steps below.

```
Hyper I/E?
```

Press the **Enter** button

↓

```
Hyper I/E is
        set to ON / OFF
```

Press the **left arrow** button

↓

```
Hyper I/E is
        set to ON / OFF
```

Press the **Enter** button

↓

```
Hyper I/E
        is activated
```

When the Hyper I/E function is set to OFF, the following message appears:

```
Hyper I/E
        is prohibited
```

Since hyper magazines retain their attributes as storage elements while the Hyper I/E mode is set to ON, the control software may treat a hyper magazine as an import/export component.

If the controller software does not support multiple import/export elements, set the Hyper I/E mode to OFF.

5.2.3.6 Auto Eject

Changers installed within a network are often located in a different room or possibly another building. If a disc or a hyper magazine is ejected while an attendant is away from the Changer, it is possible for unauthorized personnel to remove the media from the mail slot or the magazine from the hyper bay.

To maintain security, the Auto Eject command can be turned OFF thus sealing a disc or a hyper magazine within the DRM-7000 Chassis.

To turn off the Auto Eject function, follow the steps below.

Auto eject?

Press the **Enter** button
↓

Auto eject is set to <u>ON</u> / OFF

Press the **right arrow** button
↓

Auto eject is set to ON / <u>OFF</u>

Press the **Enter** button
↓

Auto eject is prohibited
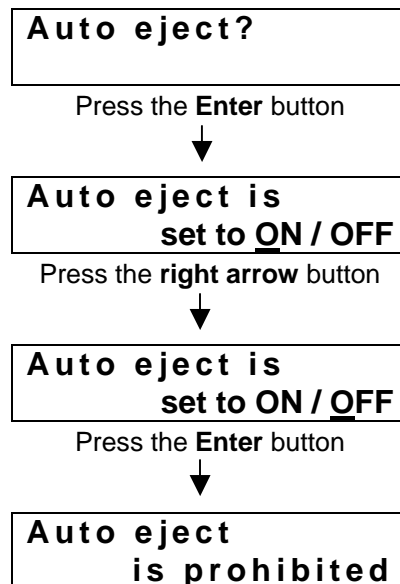
When the Auto Eject function is set to ON, the following message appears:

Auto eject is activated

If the Auto Eject command is set to OFF when the host computer issues an Eject Disc command, the media is moved to the mail slot tray but the tray remains closed. The following message appears on the LCD display.

Press ENT-key to open mail slot

On the Changer, turn the Administrator key to the unlocked position. Press the **Enter** button to open the mail slot tray.

Similarly, a command from the host computer to eject a hyper magazine while Auto Eject is set to OFF results in the following message.

```
Press ENT-key
    to eject hyper
```

Use the Administrator key to Unlock the Changer and remove the hyper magazine.

5.2.3.7 Hot Start

If discs are left in the drives when the power to the Changer is turned OFF then ON, the discs are automatically returned to their original slots. This operation fails to activate after a SCSI reset.

Before selecting the Hot Start function, choose the disc or discs that must remain in the drives. Activate the Hot Start command to retain frequently used discs in the drives upon powering ON the DRM-7000.

```
Hot start?
```

Press the **Enter** button

↓

```
Hot start is
    set to ON / OFF
```

Press the **left arrow** button

↓

```
Hot start is
    set to ON / OFF
```

Press the **Enter** button

↓

```
Hot start
    is activated
```
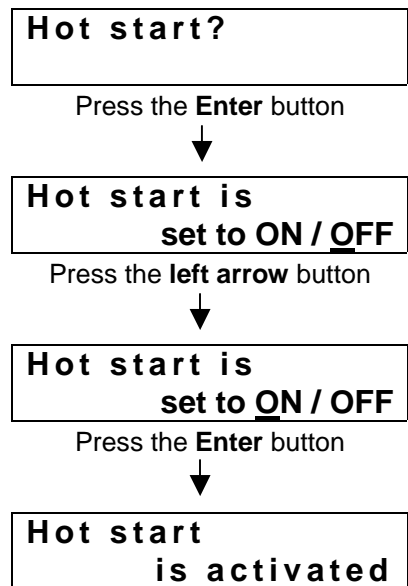
When the Hot Start function is set to OFF, the following message appears:

```
Hot start
    is prohibited
```

Note: Unless the controller software allows discs to remain in the drives when powering up the system, a Hot Start is unavailable.

5.2.4 Info Submode

The DRM-7000 stores data needed for daily maintenance in non-volitile memory. The Info Submode provides access to this information.

| **(Info)** |
| **Data browser** |

Press the **Enter** button while this message is on the LCD display in order to select the type of data to retrieve. The following message appears:

| **Log, Contents or** |
| **Run-statistics?** |

Move the cursor to the type of data required then press the **Enter** button.

5.2.4.1 Log Data

When requesting log data, it is possible to display an error log or an import log.

| **E̲rror – log or** |
| **Import – log?** |

Use the arrow buttons to high-light either Error Log or Import Log then press **Enter** to select the log.

ERROR LOG
An error log retains the code with a brief description of the problem. The Changer stores up to a maximum of 32 errors in a log with the most recent error displayed first. To view the error description, place the cursor over an error code then press the **Enter** button.

See below for an example of an error.

| **1̲:E89   2:E83** |
| **3:EE9   4:E99** |

Press the **Enter** button

↓

| **1:Timeover on** |
| **Elevation** |

IMPORT LOG
An import log provides a sequential list of all newly filled slots when adding or exchanging discs through the mail slot.

Discs within a magazine are displayed as a single unit.

| **Imported are** |
| **#098 , #121 , #122 ,** |

Press the **Up** arrow button

↓

```
#123 , #221 , #258 ,
 M15 (#701 - #750),
```
Press the **Up** arrow button

↓

```
Hyper (#751 - #770) ,
end of list
```

5.2.4.2 Contents

Request a Content log to review the number of filled and vacant slots within the combined magazines.

```
Full slots    : 588
Empty slots   :  12
```
Press Up or Down arrow button

↓

```
Uncertain     :  70
Total slots   : 670
```

The label, *Uncertain*, indicates that the Changer is unable to determine if a disc is in a slot.

5.2.4.3 Run-Statistics

The Run-Statistics command displays the length of time or the number or times an operation has been performed.

```
Work-time sum or
Number of moves?
```

Move the cursor to either *Work Time Sum* or *Number of Moves* and press the **Enter** button to see the data log.

Work-Time Sum

Select *PowerON time* to show the total length of time that power has been ON for the DRM-7000.

```
PowerOn-time or
Drive work-time?
```
Press the **Enter** button

↓

```
Total PowerOn is
 ******hours**min
```

Select *Drive Work Time* to reveal the total time each drive has been in opration.

```
┌──────────────────────┐
│ PowerOn-time or      │
│ Drive work-time?     │
└──────────────────────┘
```

Press the **Enter** button

↓

```
┌──────────────────────┐
│ Drive 1   works      │
│ ******hours**min     │
└──────────────────────┘
```

Press the **Up** arrow button

↓

```
┌──────────────────────┐
│ Drive 2   works      │
│ ******hours**min     │
└──────────────────────┘
```

Press the **Up** arrow button

↓

```
┌──────────────────────┐
│ Drive 3   works      │
│ ******hours**min     │
└──────────────────────┘
```
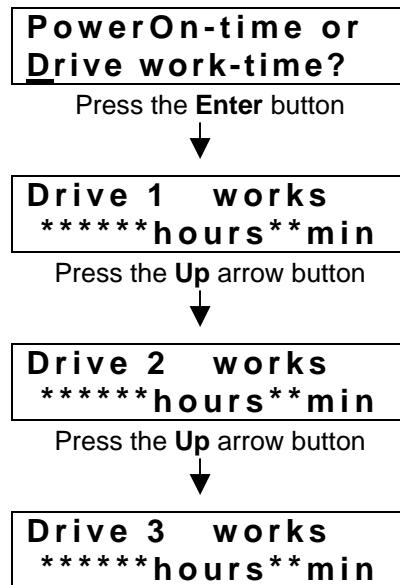
The total length of time is maintained for each unique drive device ID. Thus, if a device is moved to another bay, the correct data appears in the LCD display.

Number of Moves

Use the Up and Down arrow buttons to scroll between the following four operations.

- *Elevation Done*: indicates the number of times the elevation mechanism has raised/lowered
  This log is primarily a service and maintenance reference tool.

- *Load/Unload Drive*: indicates the number of times the loading mechanism has loaded or unloaded a disc (loading and unloading a specific disc in a specific slot counts as two operations)
  This log is primarily a service and maintenance reference tool.

- *Mail Slot Driven*: indicates the number of times the mail slot is used to insert or remove a disc
  An open-and-close operation counts as a single use.

- *Hyper Driven*: indicates the number of times the hyper magazine is inserted or ejected
  An insert-and-eject operation counts as a single use.

```
┌─────────────────────────┐
│ Elevation done          │
│        ****** times     │
└─────────────────────────┘
```

Press **Down** or **Up** arrow button

↓   ↑

```
┌─────────────────────────┐
│ Load/Unload done        │
│        ****** times     │
└─────────────────────────┘
```

Press **Down** or **Up** arrow button

↓   ↑

```
┌─────────────────────────┐
│ Mail slot driven        │
│        ****** times     │
└─────────────────────────┘
```

Press **Down** or **Up** arrow button

↓   ↑

```
┌─────────────────────────┐
│ Hyper driven            │
│        ****** times     │
└─────────────────────────┘
```
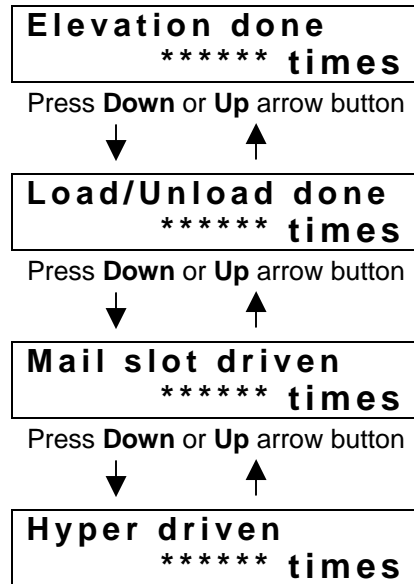
5.2.5   Mail Slot Submode

Use the Mail slot submode to control disc movement (exchange, eject or add) through the Changer's control panel.

Although the host computer usually controls disc insertion or removal, a system administrator may access any disc using this submode command. However, the administrator must record which slots are changed and update the database if necessary. Access the Import Log submode to view the changes.

```
┌─────────────────────────┐
│ (Mail slot)             │
│    Import & Export      │
└─────────────────────────┘
```

Press the **Enter** button to call up the *Swap, Remove or Add some discs* menu. If the action needs to be other then the default setting of Swap, arrow to the appropriate command. Press the **Enter** button to make the selection.

```
┌─────────────────────────┐
│ Swap, Remove or         │
│   Add some discs?       │
└─────────────────────────┘
```

5.2.5.1 Swap

After selecting the Swap option, use the up and down arrow buttons to specify the slot number for swapping discs. Press the **Enter** button to select the slot.

```
┌─────────────────────────┐
│ SlotNo.?        #***    │
│              M** - **    │
└─────────────────────────┘
```

This command ignores slots that are empty but includes slots which may hold discs (unknown). Each time the up or down arrow button is pushed, the slots appear in sequence.

```
┌─────────────────────────┐
│ Removing #***           │
│     as the old disc     │
└─────────────────────────┘
```

If there is a disc in the specified slot, the disc is carried to the mail slot. The mail slot tray opens and the following message appears on the LCD display.

```
Replace disc
& press ENT-key
```

If the specified slot is empty, the mail slot tray opens and the following message appears on the LCD display.

```
Place a new disc
& press ENT-key
```

Place a disc on the mail slot tray and press the **Enter** button. The following message appears on the LCD display:

```
The new disc is
    moving to #***
```

When the slot holds the replacement disc, the LCD display changes to the initial Swap message showing the next swappable slot.

To exit the mode, press the **Enter** button again.

5.2.5.2 Remove

After selecting the Remove option, use the up and down arrow buttons to specify the slot number. Press the **Enter** button to select the slot.

```
DiscNo.?       #***
            M** - **
```

A slot must contain a disc in order to use this command. It the slot is empty or is unknown to hold a disc when the Enter button is pressed, the message on the LCD display remains unchanged.

The disc in the specified slot is carried to the mail slot. The mail slot tray opens and the following message appears on the LCD display.

```
Remove the disc
& press ENT-key
```

Remove the disc from the open tray and press the **Enter** button again to close the tray. After the disc is removed, the LCD display changes to the initial Remove message listing the next appropriate slot.

To exit the mode, press the **Enter** button again.

5.2.5.3 Add

After selecting the Add option, use the up and down arrow buttons to specify the slot number. Press the **Enter** button to select the slot.

```
SlotNo.?       #***
            M** - **
```

The slot must be empty in order to use this command. It the slot contains a disc or is unknown to hold a disc when the Enter button is pressed, the message on the LCD display remains unchanged.

If the specified slot is empty, the mail slot tray opens and the following message appears on the LCD display.

```
Place a new disc
& press ENT-key
```

Place a disc on the mail slot tray and press the **Enter** button. The following message appears on the LCD display:

```
The new disc is
    moving to #***
```

When the slot contains the new disc, the LCD display changes to the initial Add message showing the next available slot.

To exit the mode, press the **Enter** button again.

Note: If you are unable to insert a new disc using the Add mode, add the disc in the Swap mode instead.

5.2.6   Hyper Submode

Use the Hyper submode to eject hyper magazines through the Changer's control panel. The **Enter** button acts as an eject button when the DRM-7000 is in this mode.

```
(Hyper)
        Eject & Inject
```

Pressing the Enter button causes the Changer to check the drives for discs registered to a hyper magazine. If any hyper magazine discs are in a drive, the following message appears on the LCD display.

```
Host must return
all hyper's disc
```

The host computer has the authority to return discs to the magazine slots. The system must be in User mode when the host computer issues the command.

Once any/all discs are returned to the hyper magazine, the following message appears on the LCD display.

```
Press ENT-key
          to eject
```

Pressing the **Enter** button causes the system to eject the hyper magazine.

```
Hyper – magazine
      is unloading
```

⬇

```
Hyper – magazine
      Is ejected
```

To exit this mode without inserting a hyper magazine, press the **Escape** key three times to return to the User mode.

To replace a hyper magazine, eject the current hyper magazine according to the preceding instructions then partially insert the new hyper magazine. The changer automatically senses and draws in the magazine. Never force a magazine into a bay. The following message appears on the LCD display when a hyper magazine is inserted properly.

```
Hyper – magazine
        is loading
```

When a hyper magazine is loaded, a unique ID and a log of the magazine's locking mechanism usage appears on the LCD display.

If the usage log is empty, the following message appears:

```
Locked – state
   ID # ***********
```

If the usage log includes data, the following message appears:

```
Uncertain – state
   ID # ***********
```

The magazine is automatically ejected if the Changer is unable to read the ID. Reinsert the magazine to attempt to read the ID again.

5.2.7 Probe Submode

The Probe submode checks for discs within slots when a magazine is loaded while outside of the Changer. Usually the controller software performs this task but if the changer is not connected to a host computer, this submode issues a check for discs within a magazine's slots. Use the Probe submode if the controller program fails to offer this option.

```
(Probe)
  Slot initialization
```

Press the **Enter** button to scroll in sequence through the bays containing magazines.

```
Initialize
      slots of M1?
```

Press the **Up Arrow** or **Down Arrow** button to scroll to a magazine then press the **Enter** button to select the magazine. The DRM-7000 automatically scans the magazine slots in sequence for discs.

```
M1 – 01      · · · · · ·
              ↓
```

```
┌─────────────────────────┐
│ M1 – 01          full   │
│ M1 – 02        . . . . . . │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ M1 – 02         empty   │
│ M1 – 03        . . . . . . │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ M1 – 50          full   │
│ Continue?    Yes / No   │
└─────────────────────────┘
```
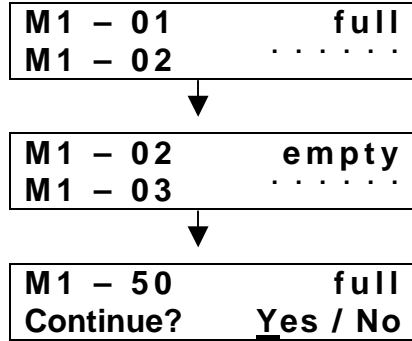
When all slots within a magazine are checked for discs, you have the option to continue checking magazines for discs. Press the **Enter** button to confirm your selection.

Once a magazine is probed and it remains within the DRM-7000, the disc and slot information is logged. There is no need to perform the check again as long as the magazine is in the changer or is locked while outside of the changer.

5.2.8   Door Submode

The Door submode opens the access panels or doors to swap 50-disc magazines, to swap drives, or to add discs. To open an access panel, all discs must be returned to the appropriate magazine slots or to the mail slots. The submode appears as follows.

```
┌─────────────────────────┐
│ (Door)                  │
│      Open & Rebuild     │
└─────────────────────────┘
```

Press the **Enter** button to confirm that all drives are empty. If any discs remain in a drive, the following message appears on the LCD display.

```
┌─────────────────────────┐
│ Host must return        │
│    every disc first     │
└─────────────────────────┘
```

Press the Escape button to return to the User mode and issue the Return All Discs command from the host computer before issuing the Door submode again.

After all drives are confirmed as empty, press the **Up Arrow** or **Down Arrow** button to select the access door to open.

```
┌─────────────────────────┐
│ Front, Rear             │
│         or Both?        │
└─────────────────────────┘
```

Press the **Enter** button to open the selected panel(s).

```
┌─────────────────────────┐
│ Front-door    :Open     │
│ Rear-door     :Close    │
└─────────────────────────┘
```

The system automatically returns to User mode when an access door is opened. To use a different submode, press the **Function** button to re-enter the System Administrator mode.

6.0   Optional/Additional Components

6.1   Adding Drives

Any drive designed for use in the DRM-7000 may be easily added to this system. The power supply shipped with the unit is capable of supporting up to eight additional components. Install the devices in to the lower rear bays (bay 1 through bay 8). To add drives or other components to the remaining rear bays (bays 9 thought bay 16), install an additional power supply.

> Touch a separate metallic surface to discharge static electricity before handling a power supply or another component.   Avoid any contact between your body and the power supply connections when installing into the Changer.
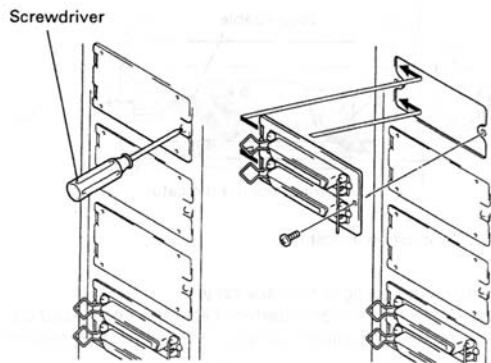
- Install an add-on connector board if necessary

1. Install the drive unit(s)
No tools are required to install a drive. While drives may be installed in any of the rear bays (bay 1 through bay 8), the connector board shipped with the Changer is configured for drives to be installed into bay 1 and bay 2.
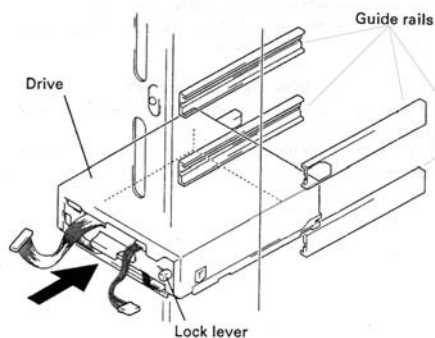
- Specify the SCSI IDs and set the termination switches on the back of the drives before installing the units

- Verify that the drives are mounted on the guide rails

- Listen for the clicking sound as the drive is pushed into the bay

- Push the drive in until the lock lever on the drive shifts to the locked position

2. Connect the power cord from the Changer to the drive.
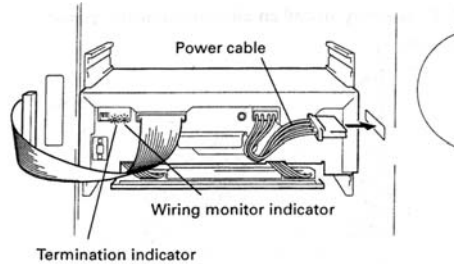
- Verify that the wiring monitor indicator on the rear of the drive lights as orange

- Check that the termination indicator is **green** if the Termination Switch is ON

3. Connect the Changer Interface cable to the drive.
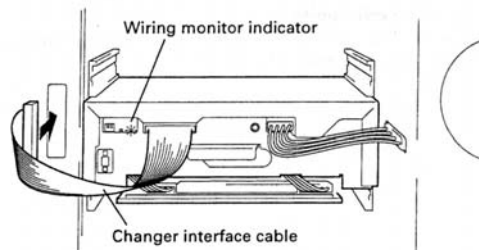
- Confirm that the interface cable is connected to the correct bay

  Caution: Connecting the interface cable to an incorrect bay port results in damage to the discs.

4. Allow the DRM-7000 to read the SCSI IDs on the drive(s).
   If all drives have individual SCSI IDs, a buzzer sounds once. If there are duplicate IDs assigned to separate drives then the buzzer sounds three times. Each device on a SCSI bus requires a unique SCSI ID.

5. Connect the SCSI interface cable.
   Any drives disconnected during an earlier step, should be reconnected at this time.

6. Enter the Config submode from the System Administrator mode.
   Verify that the DRM-7000 recognizes all drives before proceeding. Check the wiring monitor indicator on the back of each drive if necessary.

   For example: the following messages appear when three DVD-ROM drives and a CD-ROM drive are added to the rear bays beginning from bay #1.

   ```
   Bay # 1 =   Drive1
   DVDROM   DVD-D7563
   ```
   Press the **Up** arrow button
   ↓
   ```
   Bay # 2 =   Drive2
   DVDROM   DVD-D7563
   ```
   Press the **Up** arrow button
   ↓

```
Bay # 3 =     Drive3
DVDROM    DVD-D7563
```

Press the **Up** arrow button

↓

```
Bay # 4 =     Drive4
DVD-R       DVD-R7322
```

Press the **Up** arrow button

↓

```
Bay # 5 & # 6
      no component
```
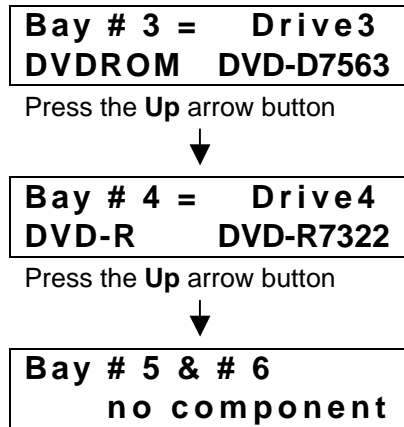
If a wiring monitor indicator on the back of the drive remains off, the cables may need to be reseated. Disconnect the cables in the following order:

1 – SCSI Interface cable

2 – Changer Interface cable

3 – Power cable

Reverse the order to re-connect the drive thus beginning with the power cable.

7. Press the Enter button to move up one level to reveal all drive settings.

The following drive identification appears on the LCD display:

- SCSI ID

- Termination switch setting

- Device ID

For example, if four drives are daisy-chained and the last unit in the chain has termination ON, the messages appear as follows:

```
Bay # 1 =     Drive1
DVDROM    DVD-D7563
```

Press the **Enter** button

↓

```
scsi ID = 1      TermOFF
   dev – ID = 00071033
```

Press **Enter** then the **Up** arrow

↓

```
Bay # 2 =     Drive2
DVDROM    DVD-D7563
```

Press the **Enter** button

↓

```
┌─────────────────────────────┐
│ scsi ID = 2      TermOFF    │
│   dev – ID = 00150360       │
└─────────────────────────────┘
```
Press **Enter** then the **Up** arrow
↓
```
┌─────────────────────────────┐
│ Bay # 3 =      Drive 3      │
│ DVDROM    DVD-D7563         │
└─────────────────────────────┘
```
Press the **Enter** button
↓
```
┌─────────────────────────────┐
│ scsi ID = 3      TermOFF    │
│   dev – ID = 00000408       │
└─────────────────────────────┘
```
Press **Enter** then the **Up** arrow
↓
```
┌─────────────────────────────┐
│ Bay # 4 =      Drive 4      │
│ DVD-R        DVD-R7322      │
└─────────────────────────────┘
```
Press the **Enter** button
↓
```
┌─────────────────────────────┐
│ scsi ID = 4      TermON     │
│   dev – ID = 00126B0E       │
└─────────────────────────────┘
```

If a drive's SCSI ID or Termination setting fail to match the displayed information, it is possible that a cable is cross-connected to the wrong port. Follow the steps below to reconnect the cables properly.

Disconnect the cables in the following order:

     1 – SCSI Interface cable

     2 – Changer Interface cable

     3 – Power cable

Reverse the order to properly re-connect the drive beginning with the power cable.

If the Changer is unable to read the drive, the host computer fails to automatically configure the system.

8.   Press the **Escape** button to return to User mode and to close the rear access panel.
```
┌─────────────────────────────┐
│ scsi ID = 4      TermON     │
│   dev – ID = 00126B0E       │
└─────────────────────────────┘
```
Press the **Escape** button
↓
```
┌─────────────────────────────┐
│ Bay # 4 =      Drive 4      │
│ DVD-R        DVD-R7322      │
└─────────────────────────────┘
```
Press the **Escape** button

```
              ↓
┌─────────────────────────┐
│ Magazine – bay or       │
│ Rear (drive) – bay?     │
└─────────────────────────┘
```
Press the **Escape** button
```
              ↓
┌─────────────────────────┐
│ (Config)                │
│    Setup browser        │
└─────────────────────────┘
```
Press the **Escape** button
```
              ↓
┌─────────────────────────┐
│ (Inquiry)      ID = 5   │
│    Revision *.***       │
└─────────────────────────┘
```
Press the **Escape** button
```
              ↓
┌─────────────────────────┐
│ Front-door   :Close     │
│ Rear-door    :Open      │
└─────────────────────────┘
```
Close the rear access panel
```
              ↓
┌─────────────────────────┐
│ Initializing            │
│                         │
└─────────────────────────┘
```
Initialization complete
```
              ↓
┌─────────────────────────┐
│ Robotics        ready   │
│ Drive1        no disc   │
└─────────────────────────┘
```

For additional instructions from this point forward, refer to your Controller software documentation.

Note: Restart the host computer to recognize new and exchanged devices.

6.2   Exchanging Drives

The procedure to exchange drives is similar to adding drives described in the previous section. However, use the drive exchange command to eliminate possible bay and ID assignment errors.

Note: It is best to duplicate the existing drive's SCSI ID and termination switch settings to the new drive.

1. Enter the System Administrator.

2. Enter the Door submode to open the rear access panel.
   The following message appears on the LCD display:
   ```
   ┌─────────────────────────┐
   │ Front-door   :Close     │
   │ Rear-door    :Open      │
   └─────────────────────────┘
   ```

3. Return to the System Administrator mode.

4. Enter the Config submode to select the rear bay.

> **(Config)**
> **Setup browser**

Press the **Enter** button

↓

> **Magazine-bay or**
> **Rear (drive) – bay?**

Select **Rear** and press **Enter**

↓

> **Bay # 1 =   Drive1**
> **DVDROM   DVD-D7563**

5. Scroll (Up and Down arrow buttons) to select the drive/bay for replacement.

Note: If the drive to be replaced has crashed, information might be missing from the following display:

> **Bay # 3 =   Drive3**
> **DVDROM   DVD-D7563**

6. Check the wiring monitor indicator on the back of the drive (orange) is flashing at ½ second intervals.

7. Disconnect the drive cables in the following order:
   1 – SCSI Interface cable
   2 – Changer Interface cable
   3 – Power cable

8. Remove the drive.
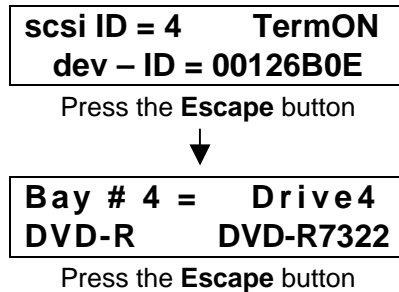   *It may be necessary to disconnect other drive cables before continuing.*

9. Match the drive SCSI ID and termination switch settings.

10. Attach the drive cables in the reverse order of Step 7 above.
    1 –Power cable
    2 – Changer Interface cable
    3 – SCSI Interface cable

    Note: Re-connect any other drive cables disconnected during Step 8 above.

11. Verify that the system recognizes the drive.

> **Bay # 3 =   Drive3**
> **DVDROM   DVD-D7563**

Press the **Enter** button

↓

> **scsi ID = 3   TermOFF**
> **dev – ID = **********

Note: If the replacement drive fails to be recognized, re-check the cable connections on all drives.

12. Press the **Escape** button to return to the User mode and close the rear access panel.

```
┌─────────────────────────┐
│ scsi ID = 3      TermOFF │
│  dev − ID = ********     │
└─────────────────────────┘
```
Press the **Escape** button
↓
```
┌─────────────────────────┐
│ Bay # 3 =      Drive3    │
│ DVDROM    DVD-D7563      │
└─────────────────────────┘
```
Press the **Escape** button
↓
```
┌─────────────────────────┐
│ Magazine-bay or          │
│ Rear (drive) − bay?      │
└─────────────────────────┘
```
Press the **Escape** button
↓
```
┌─────────────────────────┐
│ (Config)                 │
│   Setup browser          │
└─────────────────────────┘
```
Press the **Enter** button
↓
```
┌─────────────────────────┐
│ (Inquiry)       ID = 5   │
│    Revision *.***        │
└─────────────────────────┘
```
Press the **Escape** button
↓
```
┌─────────────────────────┐
│ Front-door   :Close      │
│ Rear-door    :Open       │
└─────────────────────────┘
```
Close the rear access panel
↓
```
┌─────────────────────────┐
│ Initializing             │
│                          │
└─────────────────────────┘
```
Initialization complete
↓
```
┌─────────────────────────┐
│ Robotics        ready    │
│ Drive1        no disc    │
└─────────────────────────┘
```

Note: These steps may differ depending upon the Changer Control software. Review the procedure within the Control program manual.

7.0   Troubleshooting

Often setup mistakes and simple errors are misinterpreted as hardware failures. The following chart provides solutions to common errors or problems. If the error remains after taking the appropriate steps, repeat the actions. If it continues to fail, contact an authorized service representative for assistance.

Problem Description	Message Display	Possible Cause	Recommended Action
Buzzer sounds when inserting a disc magazine	M** Disc Not Correct	At least one disc is improperly placed in a magazine slot	Remove the magazine and check for any protruding discs
Buzzer sounds when inserting a hyper magazine	Hyper magazine Disc Not Correct	At least one disc is improperly placed in a hyper magazine slot	Remove the hyper magazine and check for any protruding discs
Buzzer sounds when power is first turned ON and initialization begins	E83 Disc Not Correct	A foreign object is detected within the changer	Open the access door and check for anything blocking the optical sensor
		One or more discs are protruding from a magazine	Remove the discs and restart
Buzzer sounds and system refuses to enter the System Administrator mode when the FUNCTION button is pressed	*No Error Message*	The key switch is set to the locked position	Turn the lock-release key to the UNLOCK position
Unable to enter Mailslot or Door submode even though it is possible to enter Inquiry or Config submode	*No Error Message*	The robotics were busy when the key was pressed	Try again after making sure that the ROBOTICS BUSY indicator is OFF
		Switch-over to these maintenance submodes is prohibited from the host PC	Check with the System Administrator for prohibitions
In Mailslot submode (swap or add), tray opens again just after it is closed	Place a new disc & Press ENT-key	Mailslot is closed without placing a disc on the tray	Press the ESC button to halt the *swap disc* or *add disc* operation
In Mailslot submode (remove, tray opens again just after it s closed	Place a new disc & Press ENT-key	Mailslot is closed without removing the disc from the tray	Remove the disc from the tray
Discs within drive are not returned even after the power is cycled OFF and back ON, also the panels fail to open in the Door submode	*No Error Message*	The Hot Start function has been turned ON	Turn Hot Start OFF and turn the power OFF then back ON (when the discs are returned, enter the Door submode and open the door)
Access door refused to open although it is in Door submode	*No Error Message*	The access door is physically blocked in some way	Clear the area around the access door and try to open the door again
Access door selection screen fails to appear when trying to open the access door in Door submode	Host must return every disc first	There are discs remaining in the drives	Return to User submode, issue a REZERO command from the host computer to return all discs from the drives and repeat the command when all discs have returned to their slots
Hyper magazine fails to eject in the Hyper submode	Host must return all Hyper's discs	One or more discs from the hyper magazine remain in the drives	Return to User submode, issue a REZERO command from the host computer to return all discs from the drives and repeat the command when all discs have returned to their slots

Problem Description	Message Display	Possible Cause	Recommended Action
The host computer fails to recognize a drive although the Config submode lists the drive(s)	*No Error Message*	SCSI cable is disconnected	Make sure that the SCSI cables are connected properly
		SCSI ID or termination settings are incorrect or missing	Verify that all devices have unique IDs and that drives are terminated properly
		Total length of the SCSI cables is too long	Re-configure the SCSI chain so that the total length of all cables is less
		Operator has forgotten to reboot the host computer	Reboot the host computer
The host computer fails to recognize a drive but the Config submode lists the SCSI ID is 7	scsiID=7 TermOFF dev-ID=	The power cable for that drive is disconnected	Open the rear access panel and check the power cable connection
		Drives have been inserted in rear bays #9 through #16 without adding an additional power supply	The power from the standard-equipment power supply supports functioning drives in bay #1 through #8. Re-install the drive in one of these bays or add a power supply.
Unable to properly read a disc from a drive	*No Error Message*	The disc is upside-down	Flip the disc right-side-up
		The disc is soiled or scratched	Wipe the disc and check for damage
An error code appears on the LCD display and the background flashes while the buzzer sounds	E89, E99, etc.	A mechanical error has occurred which has locked up the system	In System Administrator mode, open the access door and make changes to clear the error
The LCD display fails to appear when the power is turned ON and pressing buttons has no effect	*No Error Message*	SCSI termination switch on the Changer is set to OFF or	Turn OFF the changer then set the SCSI termination switch to ON before powering up the unit
		SCSI cable is improperly connected	Turn OFF the power and reseat the cable connection before powering up the unit.

8.0   Specifications

General specifications

Description .... 700 disc changer
Power supply .... AC 100V-240V, 50/60 Hz
Power consumption .... Maximum of 5.5A (500 W)
Weight of main unit (including placement fixtures) ... 91.7 kg
External dimensions (including placement fixtures)
.... 760 x 795 x 1520 mm (W x D x H)
Operating requirements .... +5°C to +35°C
Humidity .... 5% to 85% (with no condensation)
Storage requirements .... −40°C to +60°C

Functional specifications

Maximum number of discs .... 720 (12-cm discs)
Maximum number of disc magazines
50-disc magazines 14
20-disc hyper magazine 1
Maximum number of drives 16

Items included

20-disc hyper magazine 1
Changer/drive SCSI cable 1
Power cord (for use in Canada and USA) 1
Power cord (for use in Japan) 1
Placement fixtures .... 1 set
Screw for use in attaching placement fixtures 12
Lock release key 2
Operations Instructions 1
Warranty 1
Service network sheet 1
20-disc hyper magazine dust cover 1
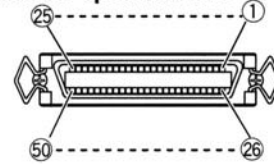
- *The external design of this product or any of the above specifications may be changed at any time without prior notification.*

Maintenance

Pioneer recommends regular maintenance on the unit. Please contact a Pioneer Service Center or your dealer for additional information.

SCSI connector specifications

1) Pin layout of SCSI connectors

Signal name	Pin No.		Signal name
GROUND	1	26	-DB(0)
GROUND	2	27	-DB(1)
GROUND	3	28	-DB(2)
GROUND	4	29	-DB(3)
GROUND	5	30	-DB(4)
GROUND	6	31	-DB(5)
GROUND	7	32	-DB(6)
GROUND	8	33	-DB(7)
GROUND	9	34	-DB(P)
GROUND	10	35	GROUND
GROUND	11	36	GROUND
NC	12	37	NC
NC	13	38	TERMPWR
NC	14	39	NC
GROUND	15	40	GROUND
GROUND	16	41	-ATN
GROUND	17	42	GROUND
GROUND	18	43	-BSY
GROUND	19	44	-ACK
GROUND	20	45	-RST
GROUND	21	46	-MSG
GROUND	22	47	-SEL
GROUND	23	48	-C/D
GROUND	24	49	-REQ
GROUND	25	50	-I/O

NOTES:

- *Pin No. 12 to 14, 37 and 39 are not grounded.*
- *The connectors are of the shielded type.*
- *For details on the control commands, refer to the separate specifications manual.*

2) Electrical specifications of SCSI

Output characteristics	The signals driven by SCSI equipment present the following output characteristics. True (LOW): VOL = 0.0 to 0.4 V DC IOL = 48 mA (0.5 V DC) max. False (HIGH): VOH = 2.5 to 5.25 V DC
Input characteristics	The signals driven by SCSI equipment present the following input characteristics. True (LOW): VOL = 0.0 to 0.4 V DC IOL = -0.4 mA (0.4 V DC) max. False (HIGH): VOH = 2.0 to 5.25 V DC

NOTES:

- *As the SCSI interface is single-ended, terminate both ends of the cable.*
- *The maximum recommended length of a SCSI cable is 20 feet (6 meters) including internal wiring.*

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