7133 Models D40 and T40
Serial Disk Systems

Operator Guide

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Contents

Communications Statements

The following statements apply to this product. The statements for other products intended for use with this product appear in their accompanying manuals.

Federal Communications Commission (FCC) Statement

Note: 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 and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. Operation of this equipment in 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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Neither the provider nor the manufacturer is responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Japanese Voluntary Control Council for Interference (VCCI) Statement

This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). In a domestic environment, this product might cause radio interference, in which event the user might be required to take adequate measures.

Korean Government Ministry of Communication (MOC) Statement

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find that this device is not suitable for your use, you can exchange it for one that is approved for non-business purposes.

New Zealand Compliance Statement

This is a Class A product. In a domestic environment this product might cause radio interference, in which event the user might be required to take adequate measures

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with (IEC) Standard 950.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Industry Canada Compliance Statement

This Class A digital apparatus complies with IECS-003.

United Kingdom Telecommunications Requirements

This apparatus is manufactured to the International Safety Standard EN60950 and as such is approved in the U.K. under approval number NS/G/1234/J/100003 for indirect connection to public telecommunications systems in the United Kingdom.

European Union (EU) Statement

This product is in conformity with the protection requirements of EU council directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Neither the provider nor the manufacturer can accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards not supplied by the manufacturer.

Radio Protection for Germany

Zulassungsbescheinigung laut Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30, August 1995.

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG das EG–Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Deutschland.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2):

Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.

EN55022 Klasse A Geräte bedürfen folgender Hinweise:

Nach dem EMVG: "Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministeriums für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind." (Auszug aus dem EMVG, Para.3, Abs.4). Dieses

Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Nach der EN 55022: "Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Massnahmen durchzuführen und dafür aufzukommen."

Anmerkung: Um die Einhaltung des EMVG sicherzustellen, sind die Geräte wie in den Handbüchern angegeben zu installieren und zu betreiben.

Taiwan Class A Compliance Statement

警告使用者:
這是甲類的資訊產品，在居住的環境中使用
時，可能會造成射頻干擾，在這種情況下，
使用者會被要求採取某些適當的對策。

Safety Notices

For a translation of DANGER and CAUTION safety notices, see the *7133 Translated Safety Information* manual, SA33-3274.

Definitions of Safety Notices

A *danger* notice indicates the presence of a hazard that has the potential of causing death or serious injury.

A *Danger* notice appears on page 63

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury.

Caution notices appear on pages 51,58, and 61.

An *attention* notice indicates an action that could cause damage to a program, device, system, or data.

Installing, Relocating, or Servicing

Contact qualified service personnel.

Acoustic Noise Declaration

The equivalent continuous A-weighted sound pressure level at the bystander's position measured for a 7133 Model D40 does not exceed 45 dB(A). This level has been measured for a 7133 Model D40 in the following situation:

- The 7133 Model D40 had 16 disk drive modules installed.
- The 7133 was installed in a 7202 Rack with the bottom of the 7133 system at EIA position 17.
- The rest of the rack was fully populated with units to which power was not connected.

The equivalent continuous A-weighted sound pressure level at the bystander's position measured for a 7133 Model T40 does not exceed 51 dB(A). This level has been measured for a 7133 Model T40 with 16 disk drive modules installed.

These levels were measured using a procedure in accordance with ISO standard DIS7779, *Measurement of Airborne Noise Emitted by Computer and Business Equipment*. The equipment was installed and operated as described in Appendix C.8 of that standard.

About This Book

This preface introduces the book.

The latest copies of this book can be found on the SSA World Wide Web page. You are advised to check on that page for any updates to this book. The URL for that page is:

http://www.hursley.ibm.com/ssa/

Who Should Use This Book

This book is for people operating a system that has one or more 7133 Model D40 or T40 Serial Disk Systems connected to it. These systems are Serial Storage Architecture (SSA) disk subsystems.

What This Book Contains

This book describes the 7133 Models D40 and T40 Serial Disk Systems and shows the positions of the controls. It explains the function of each of the lights.

This book describes how to add certain features, such as additional disk drive modules, to a 7133 unit.

This book describes how to replace certain failed components, such as disk drive modules, and what to report if you need to call your service representative for assistance.

If you need the same type of information for a 7133 Model 010, 020, 500, or 600 subsystem, refer the *7133 Serial Disk System: Operator Guide*, GA33-3259.

If You Need More Information

Other books that you may need are:
- *7133 Model D40 Serial Disk System: Installation Guide*, GA33-3279
- *7133 Model T40 Serial Disk System: Installation Guide*, GA33-3280
- *7133 Translated Safety Information*, SA33-3274
- The *Operator Guide* for your system
- The *User's Guide* for your using-system SSA attachment (for example, your SSA adapter)
- The *Site and Hardware Planning Information* for your system
- The *Problem Solving Guide and Reference* for your system.

Web Support Pages

When performing SSA device or subsystem planning, installation, upgrades, or preventive maintenance, please refer to the following web support pages. These pages should also be reviewed in preparation for system hardware or operating system upgrades if SSA devices are included in the configuration. These web pages provide access to the latest SSA publications and support code for the using system, SSA adapters and SSA subsystems.

http://www.hursley.ibm.com/ssa/ - Contains links to SSA publications and other SSA web pages, including the ones below.

http://www.hursley.ibm.com/ssa/rs6k/ - Contains lists of the latest SSA support code and provides download capability for the RS/6000 and AIX environments.

http://www.hursley.ibm.com/ssa/pcserver/ - Contains lists of the latest SSA support code and provides code download capability for PC Server environments.

Numbering Convention

In this book:

KB means 1 000 bytes.

MB means 1 000 000 bytes.

GB means 1 000 000 000 bytes.

Chapter 1. Using the Subsystems

This section describes the 7133 Models D40 and T40 Serial Disk Systems, their controls, and how to use them. These systems are Serial Storage Architecture (SSA) disk subsystems.

For similar information about the 7133 Models 010, 020, 500, and 600 SSA Disk Subsystems, refer to the *7133 SSA Disk Subsystem: Operator Guide*, GA33-3259.

Rack-Mounted Unit Configurations

7133 Model D40 is a rack-mounted SSA disk storage unit that can be attached to any computer that provides support for SSA. Up to 16 SSA disk drive modules, in groups of up to four, can be installed in a Model D40 unit.

Each group of disk drives in a 7133 unit is connected in a loop that must also contain an SSA adapter. An SSA loop can also contain other groups of disk drives and additional SSA adapters. The rules for connecting SSA loops and details of simple configurations are described in the *7133 Model D40: Installation Guide*.

With a 7133 Model D40, an Advanced SSA Optical Extender (Pair) feature can be installed. This allows the 7133 unit to be connected by fibre optic cables to host systems or other SSA units up to 10 km (32800 feet) away.

A fully configured 7133 Model D40 looks like this:
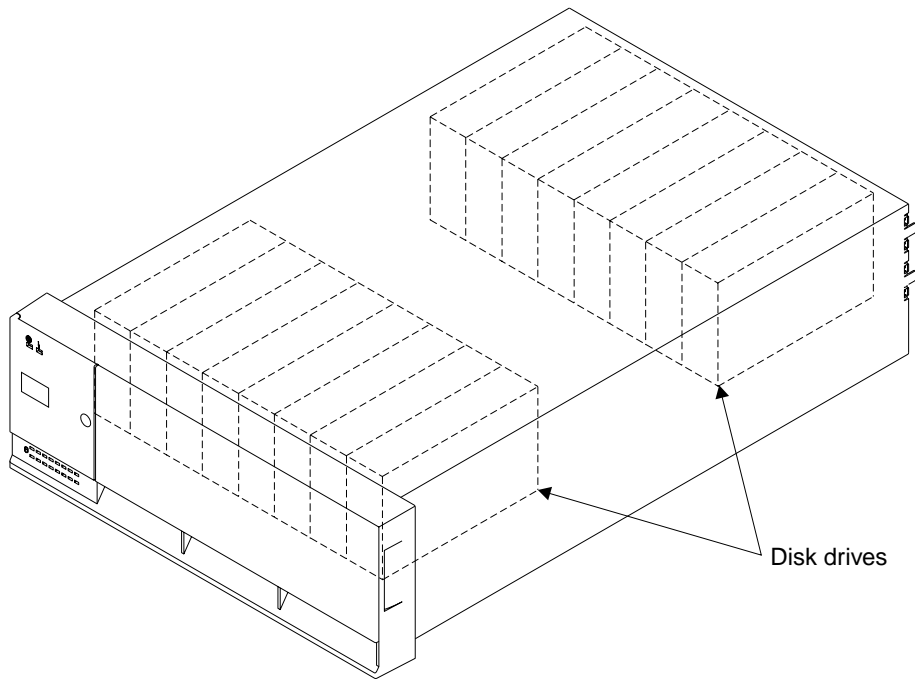
Disk drives

The whole of the front cover hinges downward to give access to the disk drive modules installed at the front of 7133 units.

If your operating system implements the function, it can configure a 7133 Model D40, in addition to the disk drives within it, as a device.

Deskside Unit Configurations

7133 Model T40 is a deskside SSA disk storage unit that can be attached to any computer that provides support for SSA. Up to 16 SSA disk drive modules, in groups of up to four, can be installed in a Model T40 unit.

Each group of disk drives in a 7133 unit is connected in a loop that must also contain an SSA adapter. An SSA loop can also contain other groups of disk drives and additional SSA adapters. The rules for connecting SSA loops and details of simple configurations are described in the *7133 Model T40: Installation Guide*.

With a 7133 Model T40, an Advanced SSA Optical Extender (Pair) feature can be installed. This allows the 7133 unit to be connected by fibre optic cables to host systems or other System units up to 10 km (32800 feet) away.

A fully configured 7133 Model T40 looks like this:
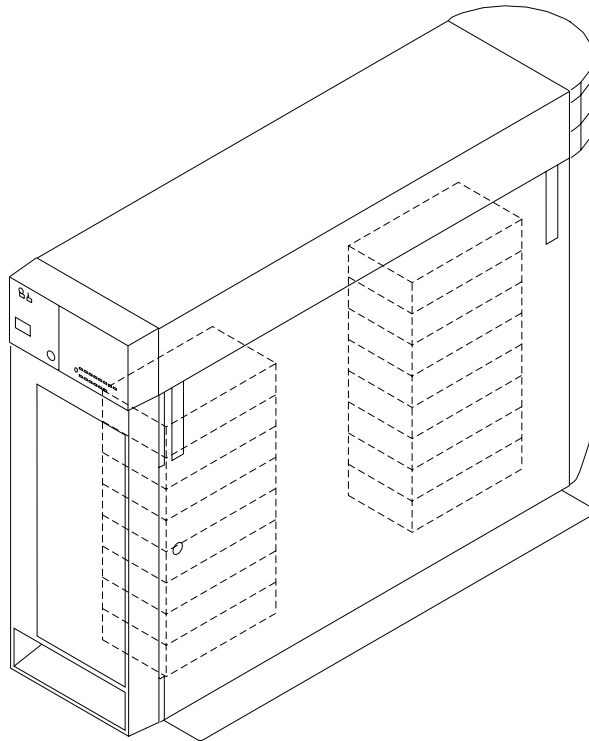
The front and back covers hinge to the left to give access to the disk drive modules installed behind them. Locks are provided on the covers to prevent unauthorized access to the disk drive modules and system connections.

If your operating system implements the function, it can configure a 7133 Model T40, in addition to the disk drives within it, as a device.

Controls and Lights

This section describes the Power switch and lights on a 7133 Model D40 or T40 unit.

If you leave the 7133 Power switch set to on, power within a 7133 unit is turned on and off automatically:

- For a Model D40, when you turn power on and off to the rack containing the unit
- For any 7133 model, if it has the Remote Power On Control feature installed, when you turn power on and off to your system unit.

During normal operations, you do not need to check the lights on 7133 units.

Subsystem Controls

You can see the 7133 Subsystem lights at the front of each 7133 unit. The subsystem Power switch and other controls are behind a flap on the front cover. To reach these, push the latch button and hinge the flap to the left.

Latch button
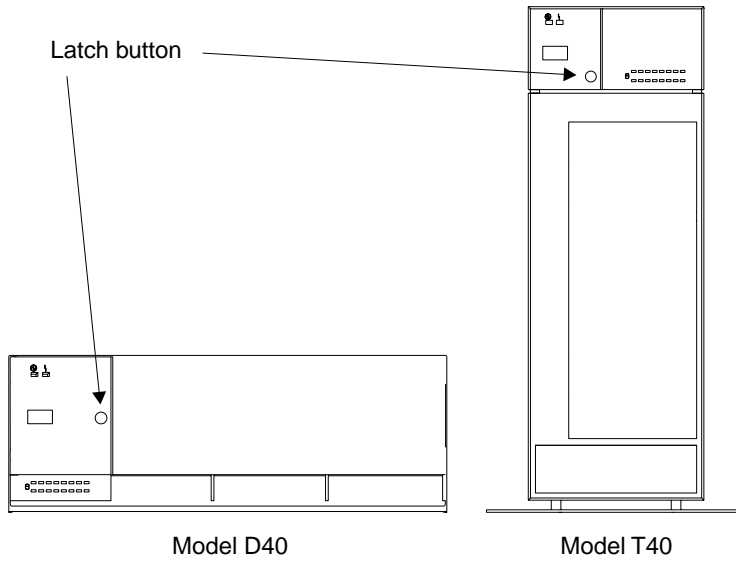
Model D40   Model T40

With the flap open, you can see all the controls:

ID display Power light Check light Power/Standby Switch

ID push buttons

Serial Number

Disk drive status lights

Model D40

Power light Check light Power switch Disk drive status lights

ID display

ID push buttons

Serial Number
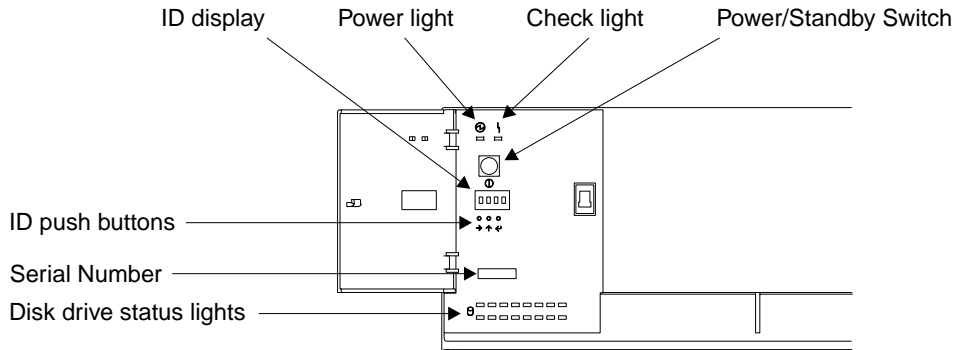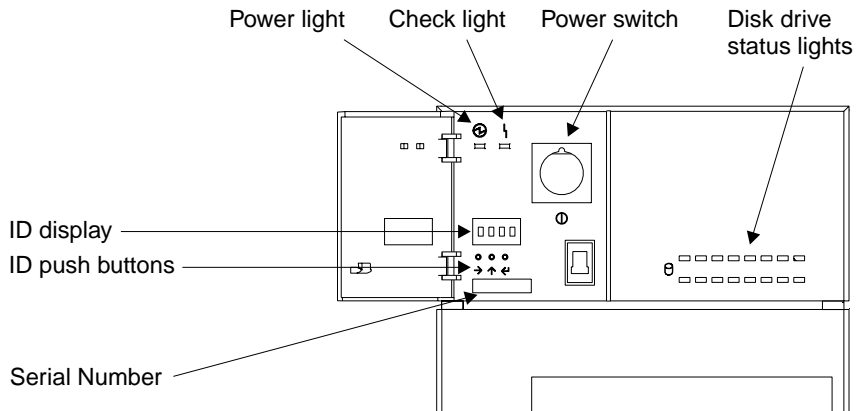
Model T40

Power switch

> In the 7133 Model D40, the Power switch, labeled Power/Standby, controls
> electrical power from the power-supply units within the 7133 unit to the disk
> drives and other components. To connect this internal electrical power, press
> the Power switch. To remove this power, press the switch again. (When you
> have pressed this switch to remove the internal power and the Power light is
> flashing, mainline electrical power can still be present within the 7133
> rack-mounted unit. To remove electrical power completely from the unit,
> disconnect the mainline electrical supply.)

> In the 7133 Model T40, the Power switch controls the main electrical power
> into the 7133 unit. To connect main electrical power, press the Power switch.
> To remove this power, press the switch again.

Attention: Pressing these switches when the Power light is on can cause a system fault unless you first make the disk drives within the 7133 unit unavailable to the operating system. To do this:

1. Use the system-management task menus of the operating system to make the disk drives unavailable to the system.
2. If the 7133 unit is connected to more than one adapter, make the disk drives unavailable to the system or systems for each of the paths to the system.

Power light

The Power light, which is green, comes on permanently when the power-supply units within the 7133 subsystem are supplying power to the rest of the subsystem. When the subsystem is in standby mode, this light will be flashing. In standby mode, the power-supply units do not supply power to the drives. This mode is set by the power/standby switch on the Model D40 or remotely on either model if the remote power option is installed.

Check light

The Check light, which is amber, comes on if a failure occurs within the 7133 unit. The unit might be able to continue operating satisfactorily even when the failure of a single part has been detected. The light can be set flashing by an SSA service aid to identify the failing 7133.

ID display

The ID display is a four-character display that can be set by the three ID push buttons.

This display normally shows the ID of the 7133 unit. If a failure occurs within the 7133 unit, an error ID for the failure is shown, alternating with the ID of the 7133 unit; "Identifying 7133 Units" on page 14 describes these how to set the 7133 IDs, the *7133 Models D40 and T40 Serial Disk Systems: Service Guide*, GY33–0192–02, describes the error IDs.

ID push buttons

You can use these push buttons to set the ID of the 7133 unit that is shown in the ID display. Use a ball-point pen or similar instrument to press these push buttons.

- The left button steps through the four character positions, one position at a time, to select the character position that you want to set.
- The center button steps through the available characters, one character at a time, to select a character.
- The right button stores the selected ID.

If no push button is pressed within 10 seconds, the display resets to its last valid setting.

Disk Drive Status lights

These 16 green lights show the status of the disk drives that are installed in the 7133 unit. The upper row of lights relate to the disk drives that are installed at the front of the unit, 1 through 8, from left to right. The lower row represents the disk drives that are installed at the back of the unit, 9 through 16, from right to left.

Each status light shows the following conditions:

Permanently on

Both SSA links to the disk drive are active, and the disk drive is ready to accept commands from the using system.

Off   Both SSA links to the disk drive are inactive because of one of the following conditions:

- The disk drive modules, dummy disk drive modules, or SSA adapters that should be connected to each side of this module are missing or not connected.
- The disk drive modules or dummy disk drive modules that are connected to each side of this module are inactive.
- An SSA adapter in the same SSA loop as this module is inactive.
- A power-on self-test (POST) is running on this disk drive.

Slow flash (two seconds on, two seconds off)

Only one of the SSA links to this disk drive module is active.

Fast flash (five times per second)

This disk drive module is active with a command in progress.

Disk Drive Module Lights

To see the lights on disk drive modules installed in the front part of a 7133 Model D40 or T40 unit:

- For a Model D40, open the front cover by pivoting it downward
- For a Model T40, open the front cover by:
  1. If necessary, unlocking the cover using the key provided
  2. Gripping the front cover on the right and pivoting it to the left.
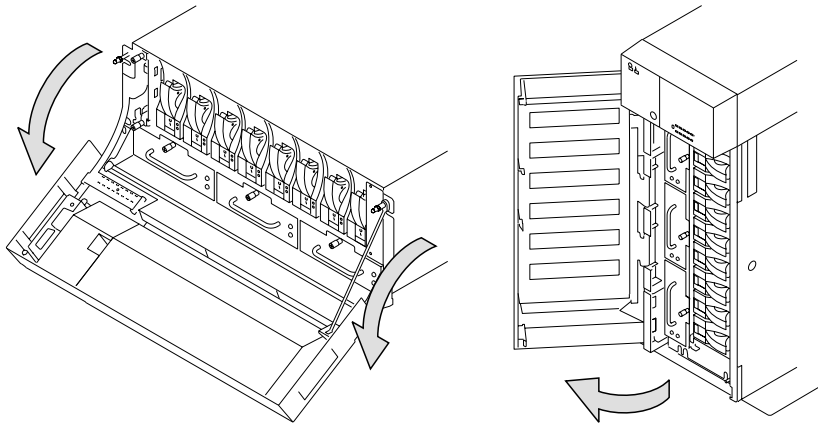
To see the lights on disk drive modules installed at the back of a 7133 Model D40 or T40:

- For a Model D40, open the back door of the rack containing the 7133.
- For a Model T40, open the back cover of the 7133 by:
  1. If necessary, unlocking the cover using the key provided
  2. Gripping the back cover on the right and pivoting it to the left.

Lock
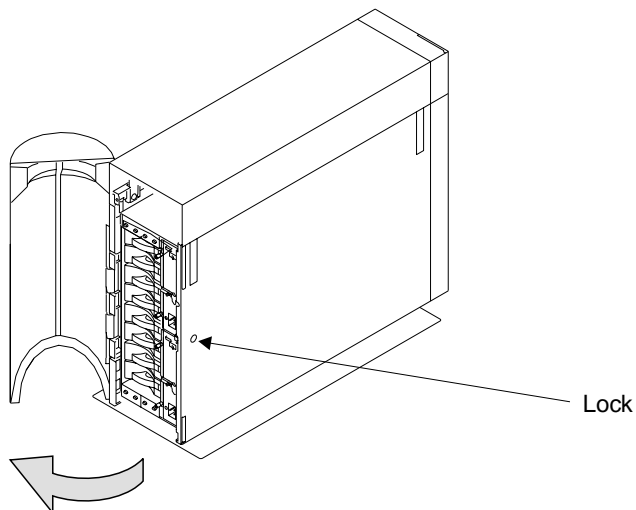
Each disk drive module has two lights.

Ready Light
Check Light
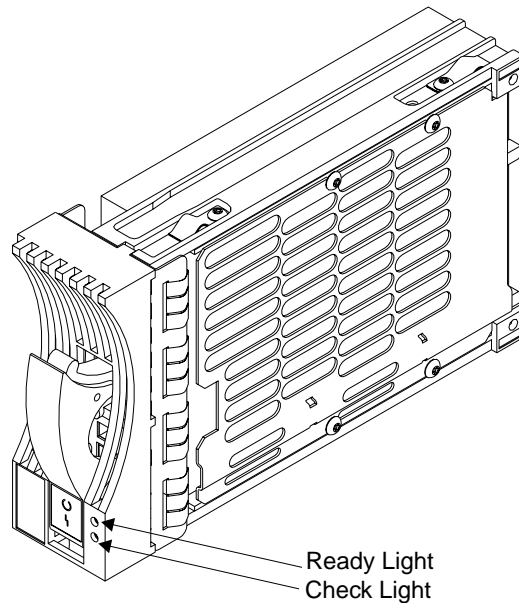
Ready light
The Ready light, which is green, shows the following conditions:

Permanently on
Both SSA links to the disk drive are active, and the disk drive is ready to accept commands from the using system.

Off Both SSA links to the disk drive are inactive because of one of the following conditions:

- The disk drive modules, dummy disk drive modules, or SSA adapters that should be connected to each side of this module are missing or not connected.
- The disk drive modules or dummy disk drive modules that are connected to each side of this module are inactive.
- An SSA adapter in the same SSA loop as this module is inactive.
- A power-on self-test (POST) is running on this disk drive.

The Ready lights on the disk drive modules within a 7133 are repeated on the front cover of the 7133, as the Disk Drive Status lights.

Slow flash (two seconds on, two seconds off)
Only one of the SSA links to this disk drive module is active.

Fast flash (five times per second)
This disk drive module is active with a command in progress.

The status light for this disk drive, at the front cover of the 7133 unit, shows the same conditions as this light.

Check light
> The Check light, which is amber, shows the following conditions:

> **Off** Normal operating condition

> **Permanently On**
>> One of the following conditions exists:
>> - An unrecoverable error that prevents the normal operation of the SSA links to the disk drive has been detected.
>> - Neither SSA link to the disk drive is active.
>> - The power-on self-tests (POSTs) are running or have failed. The light comes on as soon as the disk drive is switched on, and goes off when the POSTs are completed successfully. If the light remains on for longer than one minute after the disk drive is switched on, the POSTs have failed.
>> - The disk drive is in service mode, and can be removed from the 7133 unit.

> **Flashing**
>> The Check light has been set by an SSA service aid to identify the position of this disk drive module.

Fan Assembly Lights

Three fan assemblies are installed in the front of 7133 Models D40 and T40 units. To see their lights:

- For a Model D40, open the cover of the 7133 by pivoting it downward.
- For a Model T40, open the front cover of the 7133 by:
  1. If necessary, unlocking the cover using the key provided.
 2. Gripping the front cover on the right and pivoting it to the left.

Fan assemblies
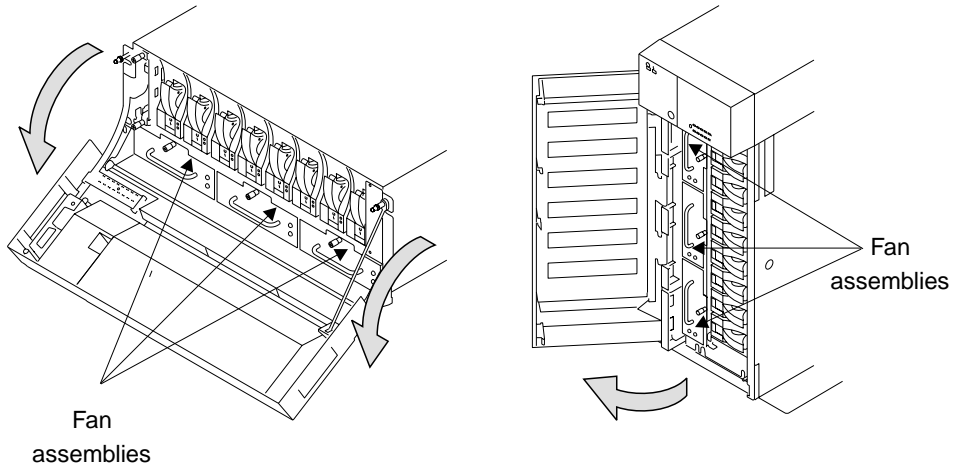
Fan assemblies

The fan assemblies have the following lights:

Power light
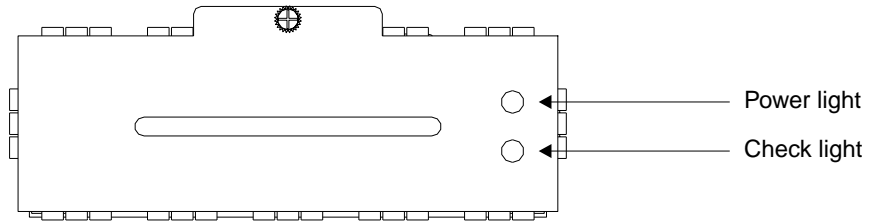
Check light

Power light

The Power light, which is green, comes on when the power supply is connected to the fan assembly.

Check light

The Check light, which is amber, comes on and remains on if the fan assembly fails.

Power-Supply Assembly Lights and Switch

Two power-supply assemblies are installed in the back of 7133 Models D40 and T40 units. To see the power-supply assemblies:

- For a Model D40, open the back door of the rack containing the 7133.
- For a Model T40, open the back cover of the 7133 by:
  1. If necessary, unlocking the cover using the key provided
  2. Gripping the back cover on the right and pivoting it to the left.

Supply Assemblies   Supply Assemblies
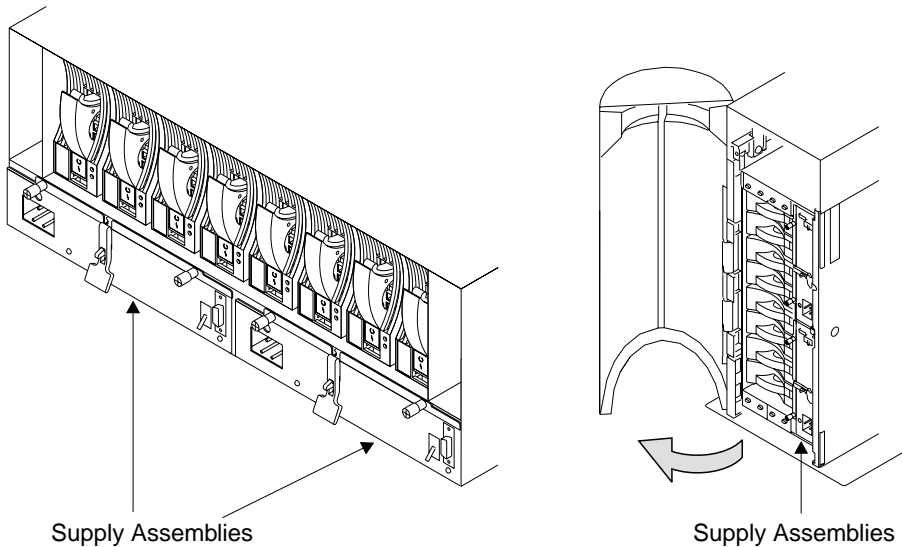
The power-supply assemblies have the following lights and switch:

PWR/FAULT RESET
CHK/PWR-GOOD
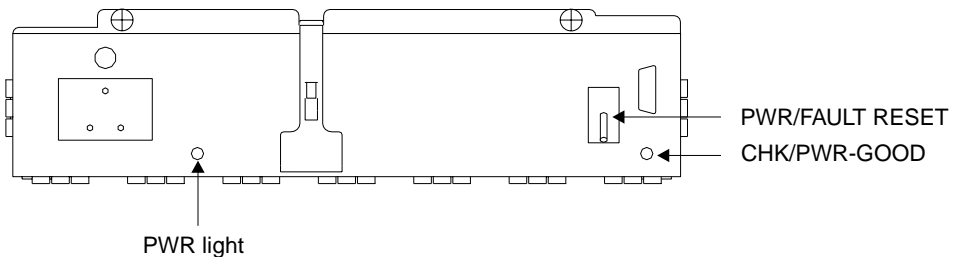
PWR light

PWR light
> The Power light, which is green, comes on when the mainline power supply is connected to the power-supply assembly.

CHK/PWR-Good light
> This light can show one of two colors:
> - Green, when electrical power is connected from the power-supply assembly to the disk drives and other components in the 7133 unit.

- Amber, when the power-supply unit fails.

PWR/FAULT RESET switch

The PWR/FAULT RESET switch connects electrical power from the power-supply assembly to the disk drives and other components in the 7133 unit.

Identifying 7133 Units

During normal operations, the four-character ID display at the front of the 7133 Model D40 or T40 unit shows the ID of the unit. ("Subsystem Controls" on page 4 shows the position of the ID display.) You can set these IDs by using the three ID push buttons. The four-character alphanumeric display may show the location and ID of the 7133. For example, on a rack-mounted Model D40, you can use two digits to show the ID of the rack, and two digits to show the ID of the 7133, while on a Model T40, you can use all four digits to show the ID of the 7133. You can set the ID display to represent whatever you require. The resulting ID must, however, be unique.

Identifying Disk Drive Modules

You can use an SSA service aid to make the Check light on a particular disk drive module flash. The status light for that disk drive, at the front of the 7133 unit, also flashes. The appendix for your system, later in this manual, describes how to do this.

You can identify a disk drive module by the serial number that appears on a label on the front of the module:

Serial Number
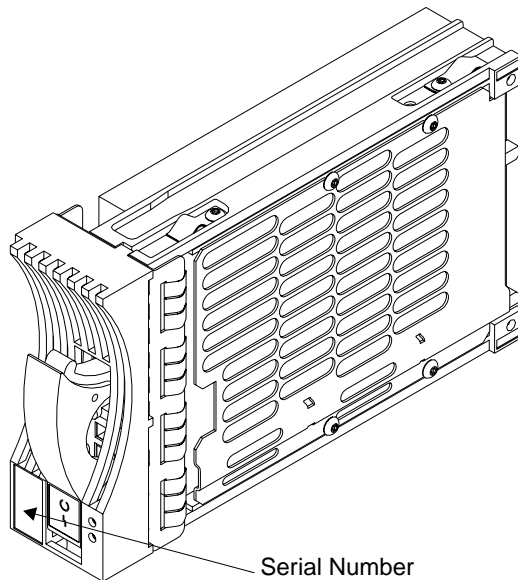
Security

To protect your disk drives from unauthorized access, locks are provided on the covers of deskside units and are available as accessories to secure individual disk drive modules.

Disk Drive Module Locks

Disk drive module locks prevent the unauthorized removal of disk drive modules from either rack-mounted units or deskside units. You need one lock for each disk drive module that you want to secure.

Note: The disk drive module locks for use in 7133 Models D40 and T40 units are different from the locks for use in 7133 Models 010, 02, 500, and 600 units.

To lock a disk drive module into a 7133 Model D40 or T40 unit:

1. Put the end of the lock into the hole at the bottom of the front of the disk drive module.
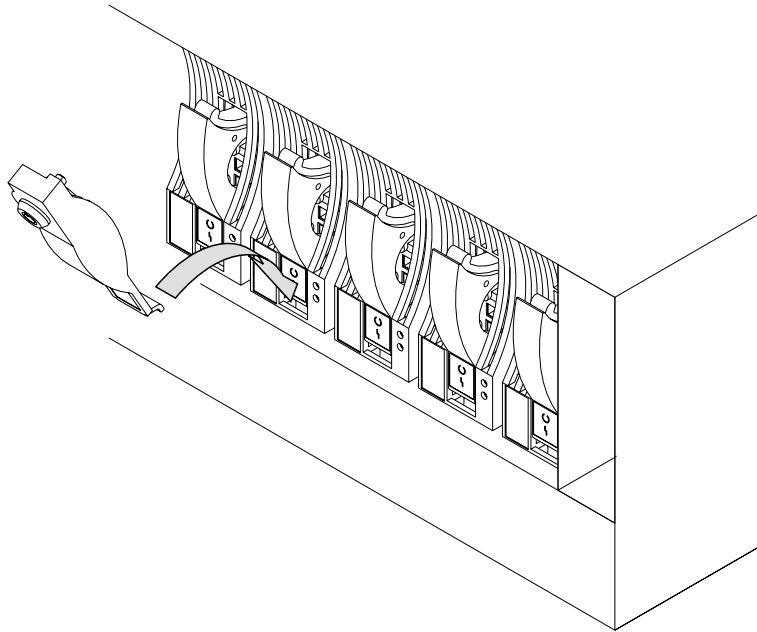
2. Push the lock up to the front of the disk drive module.
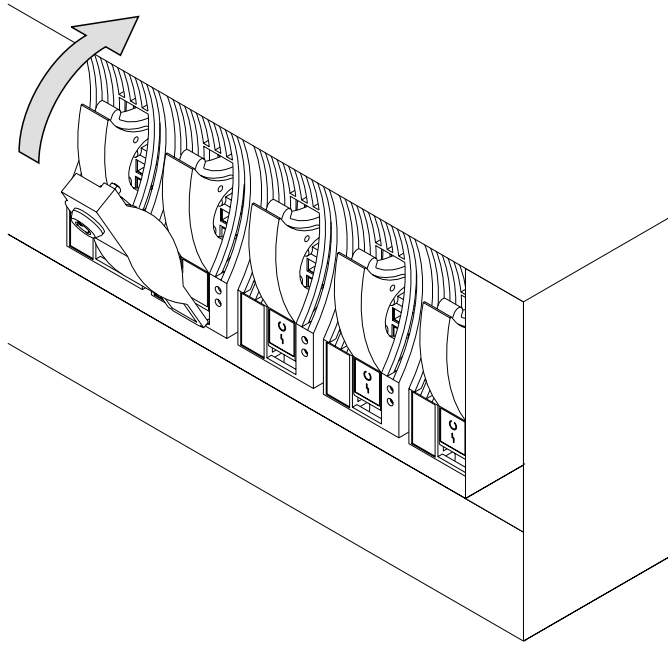
3. Put the key into the lock and turn the key clockwise half a turn.
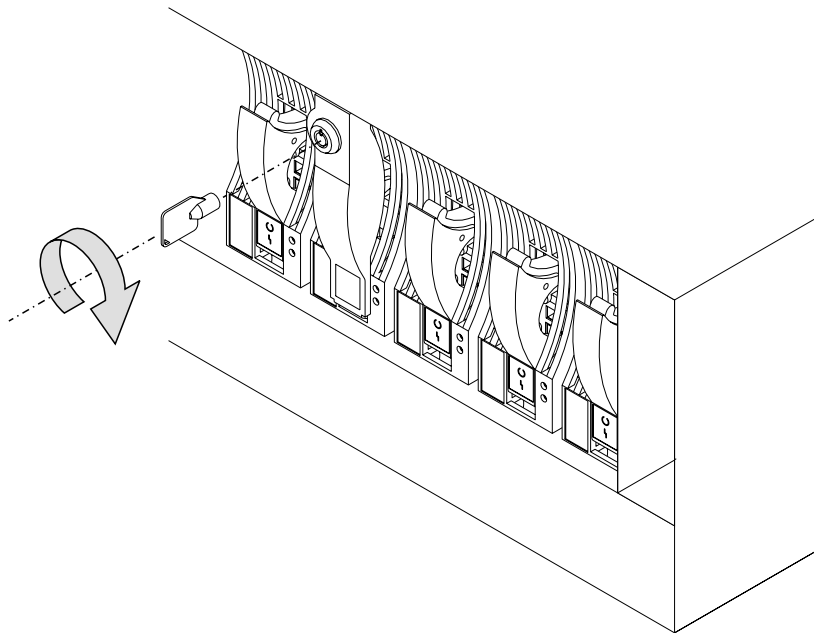
Three keys, that fit all Models D40 and T40 locks, are supplied with the first lock that you order. Keep at least one of these keys in a secure area.

Deskside Unit Cover Locks

On the 7133 Model T40, locks on the front and back covers provide physical security for the drives and the connections to the system unit. You do not need to remove these covers during normal operations. The two locks use the same key. If you lock the covers, neither of them can be opened for servicing without the use of the key. You do not need to lock the covers for them to stay closed.
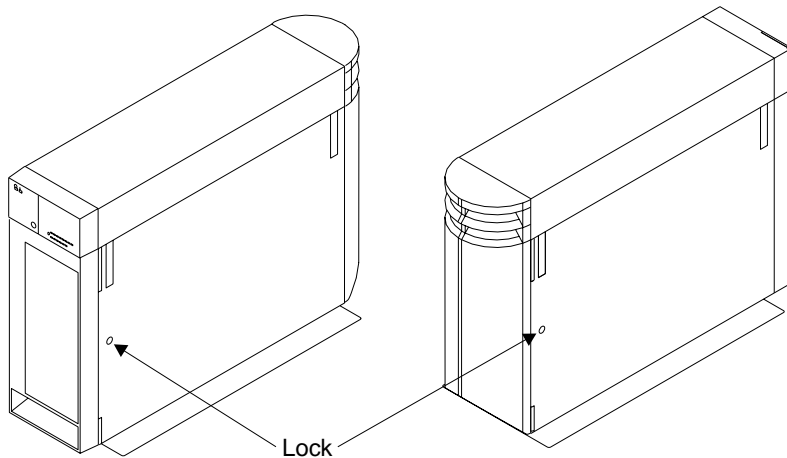
Lock

Ordering Cover-Lock Keys

For protection against unauthorized key duplication, the cover locks are high-security locks. Keys for these locks are a factory-restricted series and duplicate keys are *not* available through normal commercial channels. The serial number of the lock is stamped on each key; make a note of this number. The additional key supplied and your note of its number should be stored in separate secure areas.

Make a copy of the official order form on the following page, fill in the details, and send it to the address printed on the form. As a security precaution, the manufacturer will not honor orders that are not on the official order form.

If a lock becomes faulty, contact your sales representative for a replacement.
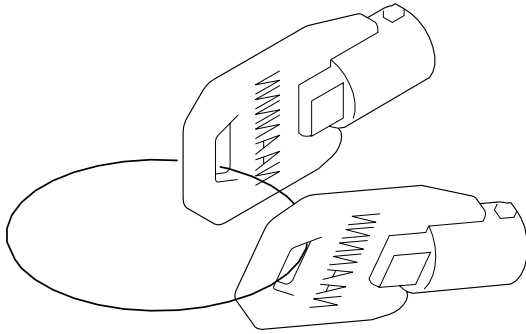
Key Reorder Form

This form represents an authorized order for additional keys.

The cost per key is $2.50 U.S. Or £2.00 (two pounds sterling).

Please show the quantity required and enclose a check or money order for the correct amount:

Number of keys required _____

Serial number of lock _____

Please type or print your return address:

Address _____

City _____

State _____ **Zip** _____

Mail this form to: **Or:**
                                                Camlock Systems
Camlock Systems Inc.   **3, Park View**
5623 West 125th Street   **Compton Industrial Estate**
Alsip   **EASTBOURNE**
Illinois 60658   **Sussex**
U.S.A.   **United Kingdom**
                                                BN23 6QE

Note: No orders will be processed without this form.

Chapter 2. Adding Disk Drive Modules

This chapter describes how to add disk drive modules to a 7133 Model D40 or T40 that is already installed as part of your system.

You can do this only if:

1. You are authorized by your organization to do this.
2. You have the correct disk drive module. Only disk drive modules that have a **blue** trigger behind the handle on the front can be installed in 7133 Model D40 or T40 units. The storage capacity of a disk drive module is shown on the label at the front of the module:

Blue

Capacity
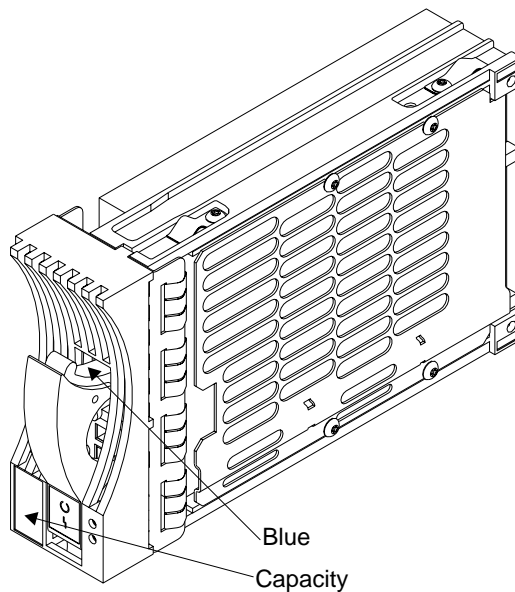
Note: Disk drive modules that can be installed in 7133 Model 010, 020, 500, or 600 units cannot be installed in 7133 Model D40 or T40 units.

Attention:

- Do not remove two disk drive modules from the subsystem at the same time.
- Disk drive modules are fragile. Handle them with care. Keep them well away from strong magnetic fields.

You do not need to remove power from the 7133 unit when adding a disk drive module.

After you have added a disk drive module to a 7133 unit, you must add it into your system software configuration by using the system programs.

Before Adding a Disk Drive Module

1. Identify the slot for the new disk drive module using the configuration planning information for your system. There should be a dummy disk drive module in the slot.

   You can identify the disk drive modules that will be next to the new disk drive module by using the Identify function in the SSA service aids. (The appendix for your system, later in this manual, describes how to use this aid.) You cannot use the Identify function to identify the dummy disk drive module itself because dummy disk drive modules do not have lights or serial-number labels.

   Important: Before you attempt to remove a dummy disk drive module, ensure that the SSA loop that contains the dummy is complete. Failure to do this may result in loss of access to other disk drives.

2. Open the front cover of the unit by gripping the cover at the sides and pivoting the whole front cover downward.
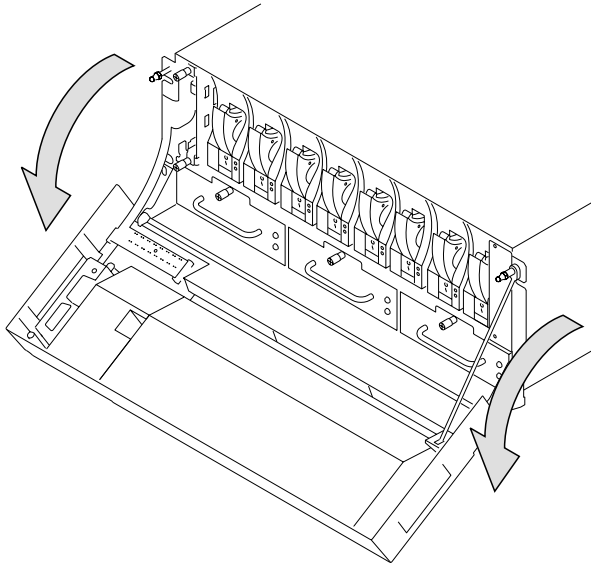
   If the slot for the new disk drive module is in a deskside unit, open the front or back cover of the unit by:

   a. If necessary, unlocking the cover using the key provided.

b. Gripping the right-hand edge of the cover and pivoting it to the left.
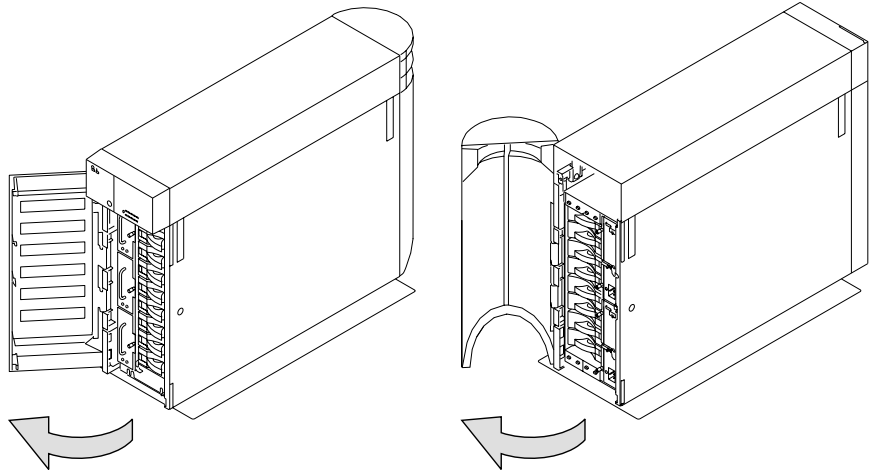
The illustrations in the following instructions show a rack-mounted unit. The steps for adding a disk drive module to a deskside unit are the same, but the parts are turned through 90 degrees.

To Add a Disk Drive Module

1. Push downward on the blue trigger and pull outward the handle of the dummy disk drive module. This action moves the module partly out of the slot.
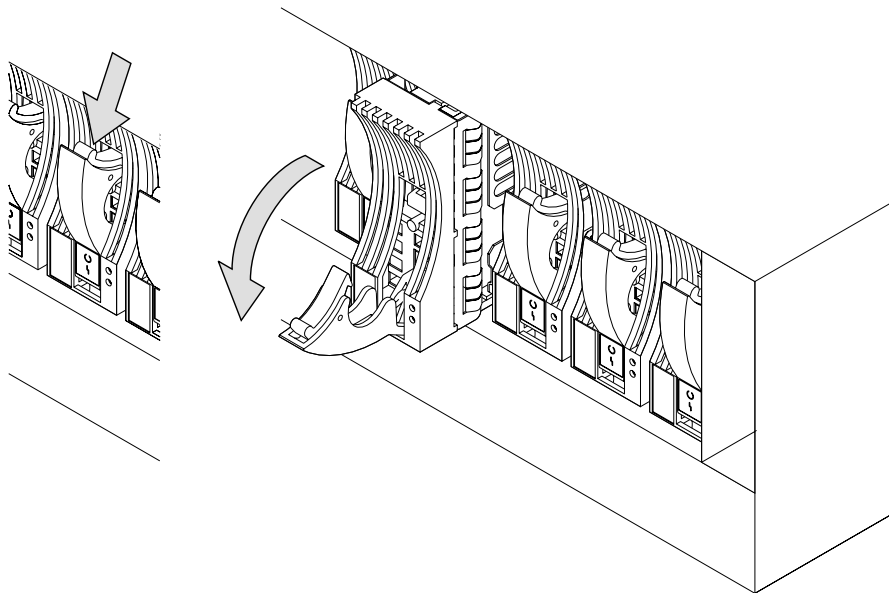
2. Pull the dummy module out of the 7133 unit.
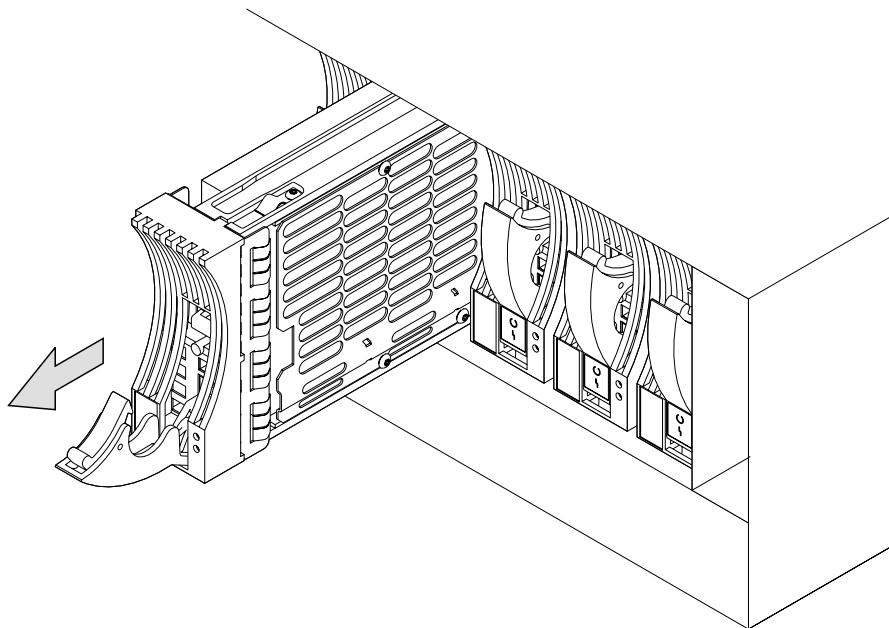
Attention: The fans may increase in speed. Do not leave the slot empty for more than 30 minutes; if you do, the 7133 unit and the disk drive modules within it might overheat and be damaged.

3. With one hand supporting the new module, engage it in the groove and push it into the slot from which you have just removed the dummy module.

   The module stops before it is completely into the slot.
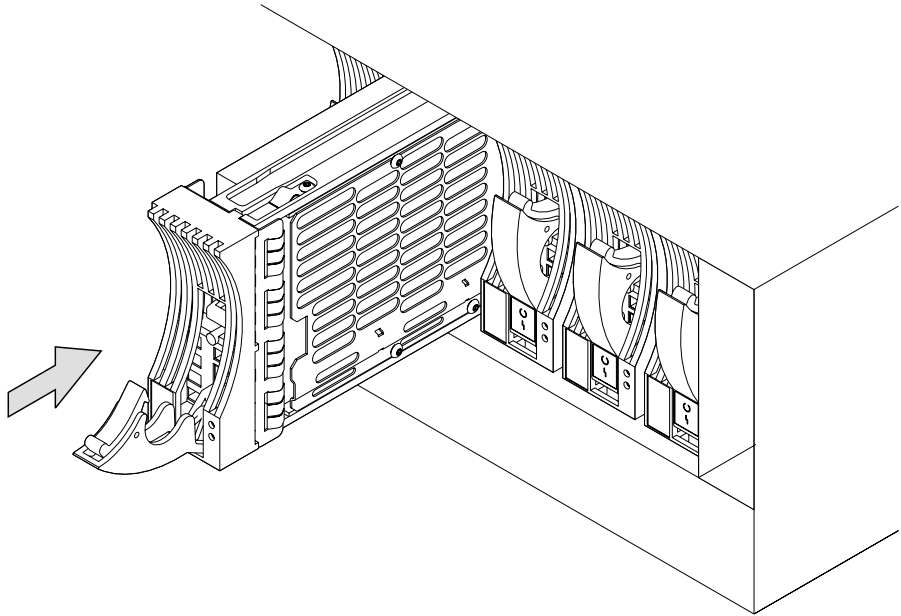
4. Close the handle of the module until it shuts with a click. This action pulls the module completely into the slot.
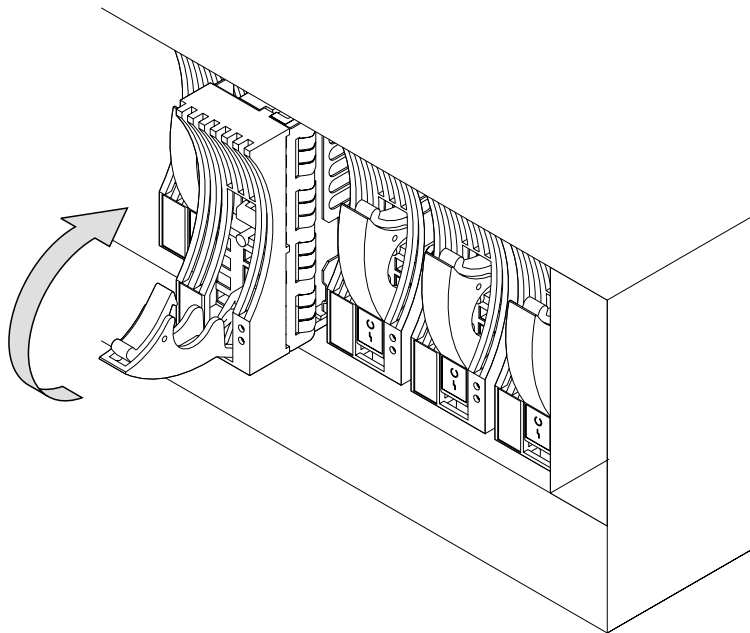
5. Push on the front of the module to ensure that the module is fully home.
   Attention: The fans may decrease in speed.

6. Ensure that the Check light comes on immediately and that it goes out after approximately 2 seconds. (If this does not happen, after checking that the new module is properly installed, check the SSA error log for information about the fault.)

Ready
light

Check
light
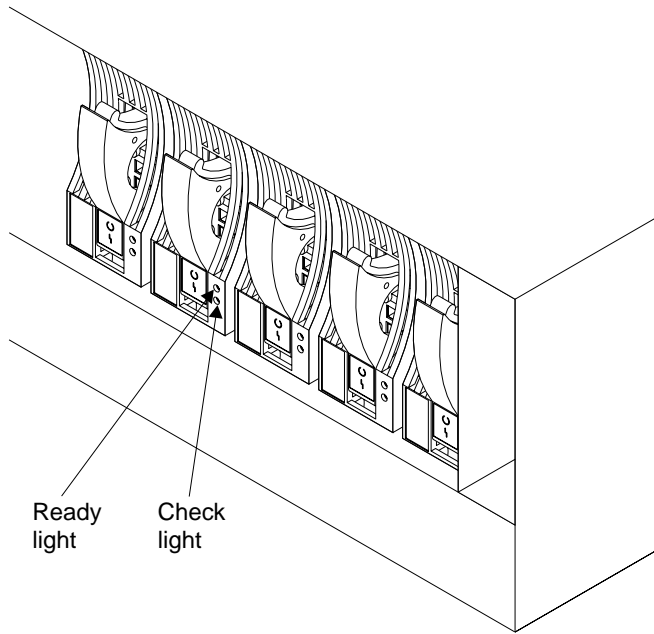
7. If you do not want to lock the new disk drive module into the unit, using the lock and key that you can order as a feature of the unit, go to step 8 on page 31. To use the lock:

   a. Put the end of the lock into the hole at the bottom of the front of the disk drive module.
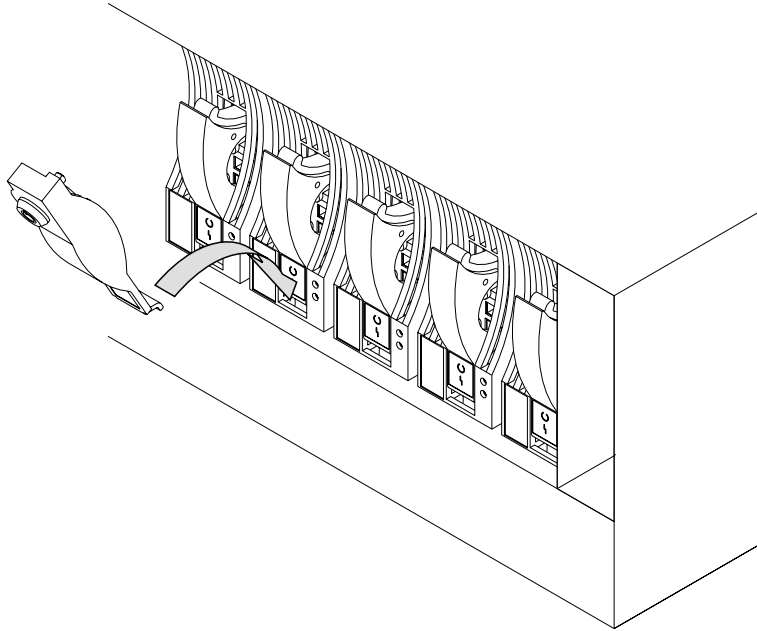
b. Push the lock up to the front of the disk drive module.
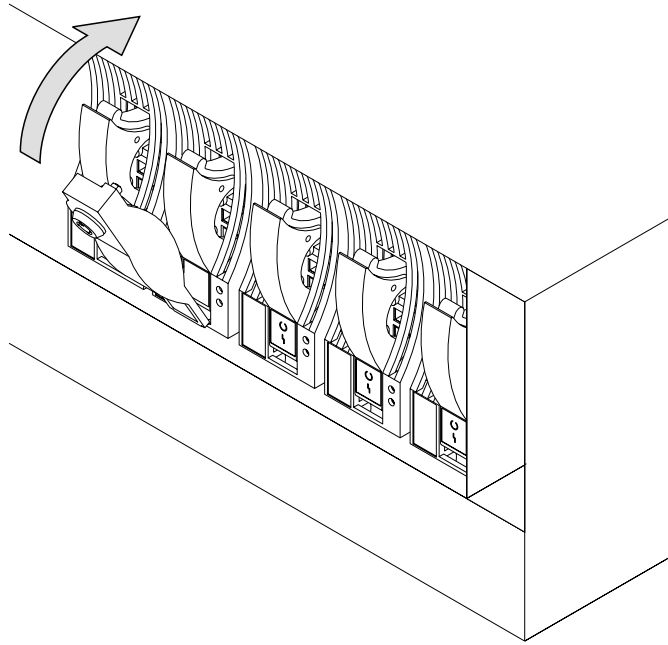
c. Put the key into the lock and turn the key clockwise half a turn.
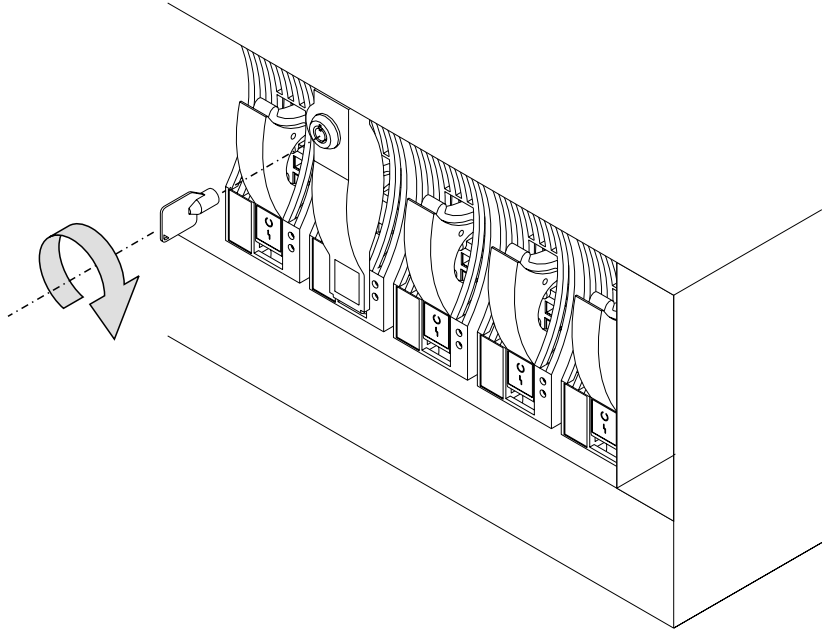
8. If you have just added a disk drive module at the front of a rack-mounted unit, close the front cover.
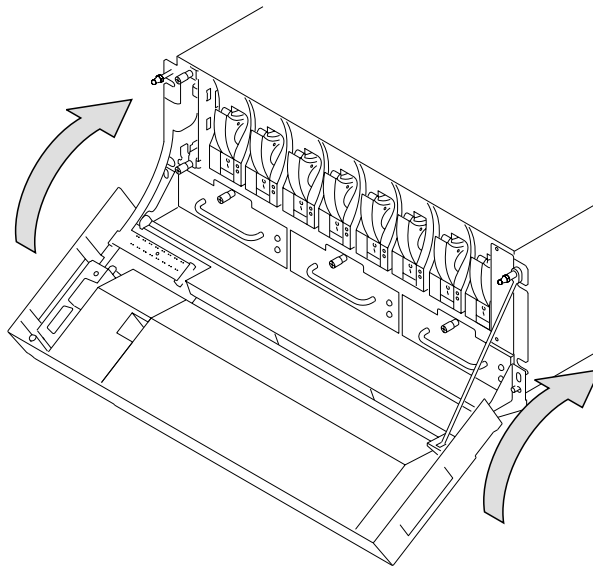
9. If you have just added a disk drive module to a deskside unit, close the cover and, if required, lock it with the key provided.
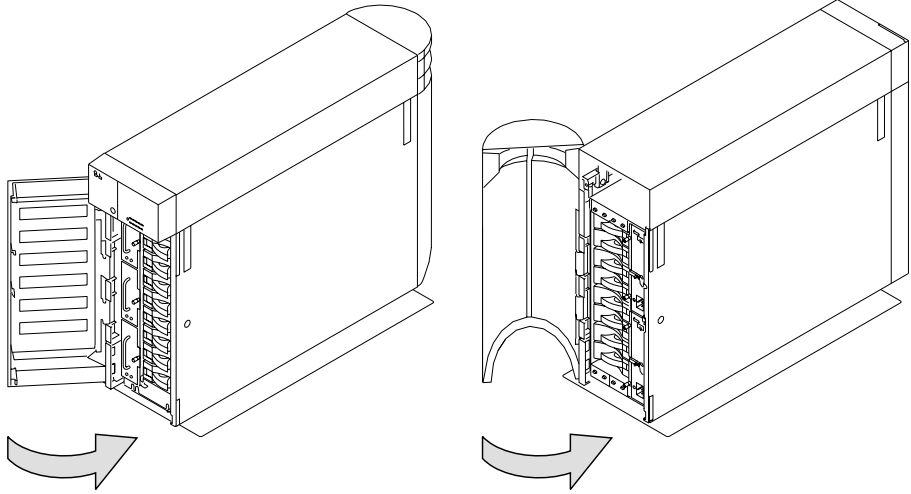
10. Add the new disk drive module into your system software configuration, using the system programs.

Chapter 3. Moving a 7133 Model D40 or T40 Safely

Attention: Damage as a result of improper handling may void your equipment warranty. Contact your service representative to obtain packing materials or assistance to prepare your 7133 unit for moving.

You should not try to move a 7133 Model D40 rack-mounted unit yourself. Always contact a trained service representative to do this for you.

If you want your system or deskside unit moved, contact a trained service representative.

Chapter 4. Dealing with Problems

This chapter describes what to do if you have a problem with a 7133 Model D40 or T40, how to change a faulty disk drive module, fan assembly, or power-supply assembly, and what information to provide when you report a problem with a 7133 Model D40 or T40 or a device installed in it.

Starting to Deal with Problems

How to start dealing with SSA problems depends on the system to which your 7133 unit is attached. "Appendix A. Operating with RISC Systems" on page 71 describes what to do if you are using RISC based systems. "Appendix B. Operating with PC Servers" on page 85 describes what to do if you are using PC Servers.

Additional problem indications

If the 7133 check light is on, look at the four character display. This may be displaying an Error ID alternating with the 7133 ID. The Error ID may be one of the following:

SLOT   The 7133 controller has detected one or more unpopulated drive positions. All positions must be populated with either a disk drive or a dummy disk drive module. If any slot is unpopulated, correct the situation. If all positions are populated, report the problem to your service organization.

FAN1, FAN2, or FAN3
The 7133 controller has detected a defective fan. Replace the defective fan (see "Changing Fan Assemblies" on page 49 for how to do this) or report the problem to your service organization.

PSU1 or PSU2
The 7133 controller has detected a defective power supply unit. Replace the defective power supply unit (see "Changing Power-Supply Assemblies" on page 56 for how to do this) or report the problem to your service organization.

COLD, COOL, WARM, HOT
The 7133 controller has detected an ambient temperature problem. Take actions to correct this condition. If you consider that the detection report is wrong, report the problem to your service organization.

Any other error ID or no error ID
Report the problem to your service organization.

Changing Disk Drive Modules

In some circumstances, you can change a faulty disk drive module without the assistance of a service representative. You can do this only if:

- You are authorized by your organization to do this.
- You have the correct disk drive module. Only disk drive modules that have a **blue** trigger behind the handle on the front can be installed in 7133 units. The storage capacity of a disk drive module is shown on the label at the front of the module:

Blue

Capacity
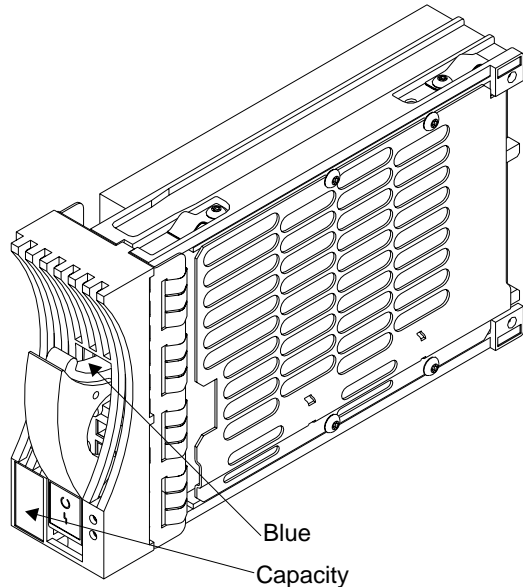
Note: Disk drive modules that can be installed in 7133 Model 010, 020, 500, or 600 units cannot be installed in 7133 Model D40 or T40 units.

Attention:

- Do not remove two disk drive modules from the subsystem at the same time.
- Disk drive modules are fragile. Handle them with care. Keep them well away from strong magnetic fields.

You do not need to remove power from the 7133 unit when changing a disk drive module.

After you have changed a disk drive module in an SSA Disk Subsystem, you must restore it into your system using the system programs.

Before Changing a Disk Drive Module

1. Check the error log; the appendix in this book for your operating system describes how to do this.

2. The error log contains records; each record includes a Service Request Number (SRN).

   If the SRN is in the following list, it means that a disk drive module has a fault that can be corrected by exchanging the disk drive module for a new one:

   ```
   Any SRN whose first character is '1'
   80203
   D0100
   D0300
   ```

   If the SRN is not in the list, do not change the disk drive module; call your service representative and report the problem.

   If the SRN is in the list, continue at the next step.

3. Find the failing disk drive module by using:

   a. The location code supplied in the error log. You can find details of the location code format in the appendix of this book that applies to your operating system.

   b. The Identify function in the SSA service aids (the appendix in this book for your operating system describes how to do this).

   This service-aid function also describes the storage capacity of the failing disk drive module. Always replace a disk drive module with one of the same capacity.

4. **Important.** Put the failing disk drive module into service mode. (the appendix in this book for your operating system describes how to do this).

5. Check the lights on this disk drive module. ("Disk Drive Module Lights" on page 7 describes where these are and how to see them.)

   If the check light is not on, you cannot change the disk drive module; call your service representative and report the problem.

   If the check light is on, change the disk drive module using the procedure in the following section.

To Change a Disk Drive Module

1. If the failing disk drive module is at the front of a Model D40 rack-mounted unit, open the front cover of the unit by gripping the cover at the sides and pivoting the whole front cover downward.
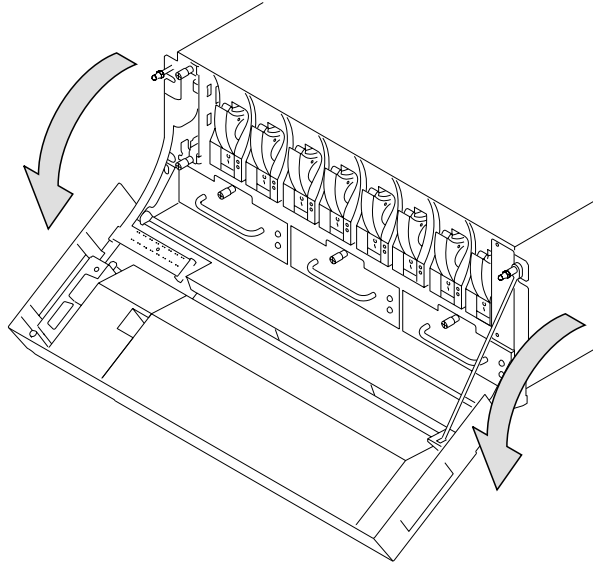
2. If the failing disk drive module is in a deskside unit, open the front or back cover of the unit by:

   a. If necessary, unlocking the cover, using the key provided.

   b. Gripping the cover at the right and pivoting it to the left.
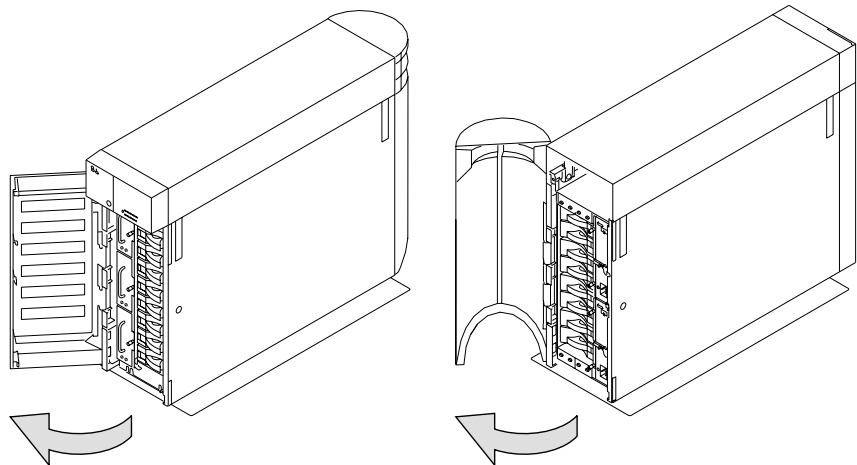
The illustrations in the following instructions show a rack-mounted unit. The steps for changing a disk drive module in a deskside unit are the same, but the parts are turned through 90 degrees.

3. If the disk drive module is not locked in the 7133 unit, go to step 4 on page 41. Otherwise, to remove the lock:

   a. Put the key into the lock and turn the key counterclockwise half a turn.
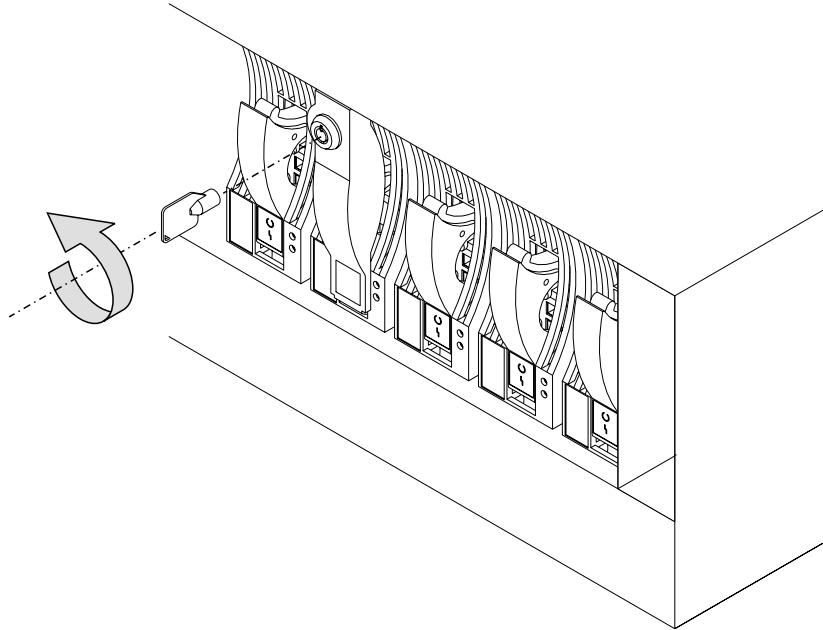
b. Pull the lock down from the front of the disk drive module.
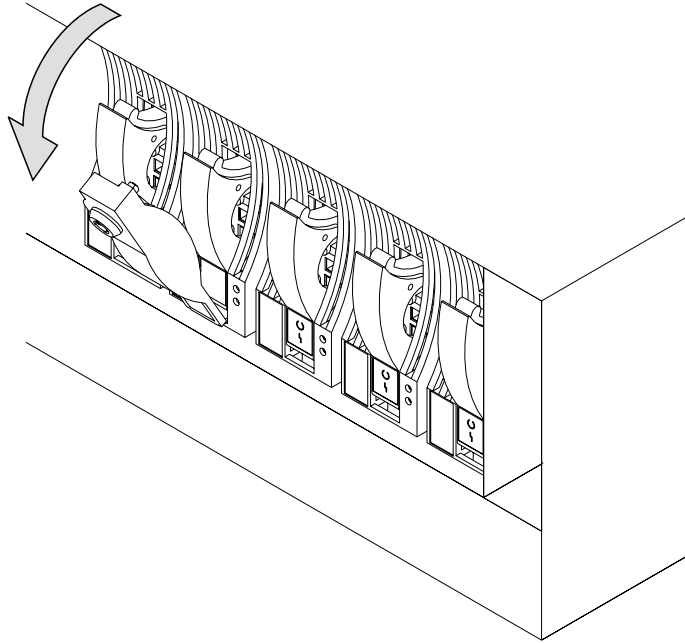
c. Lift the lock from the hole at the bottom of the front of the disk drive module.
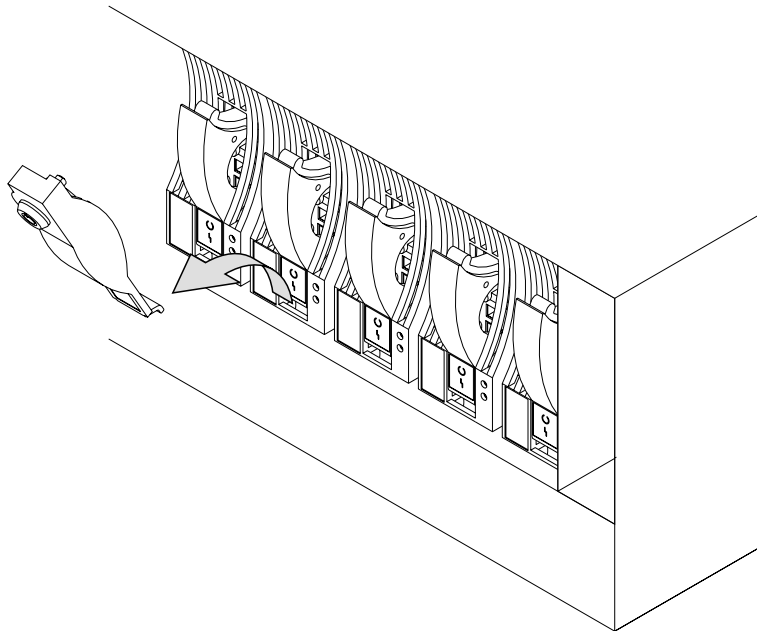
4. Press downward on the blue trigger and pull outward the handle of the failing disk drive module. This action moves the module partly out of the slot.
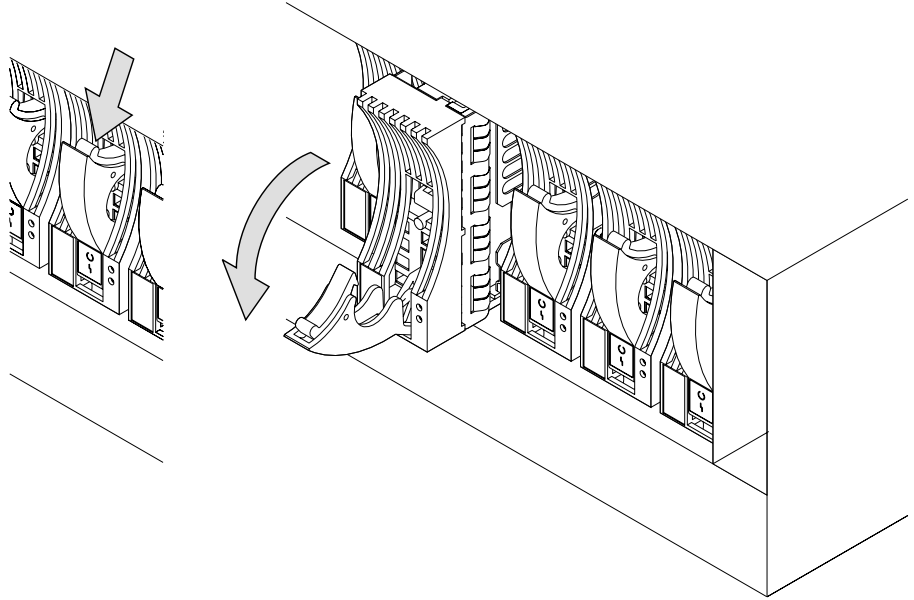
5. Carefully pull the module out of the 7133 unit. Support the module with your other hand as you take it from the unit.
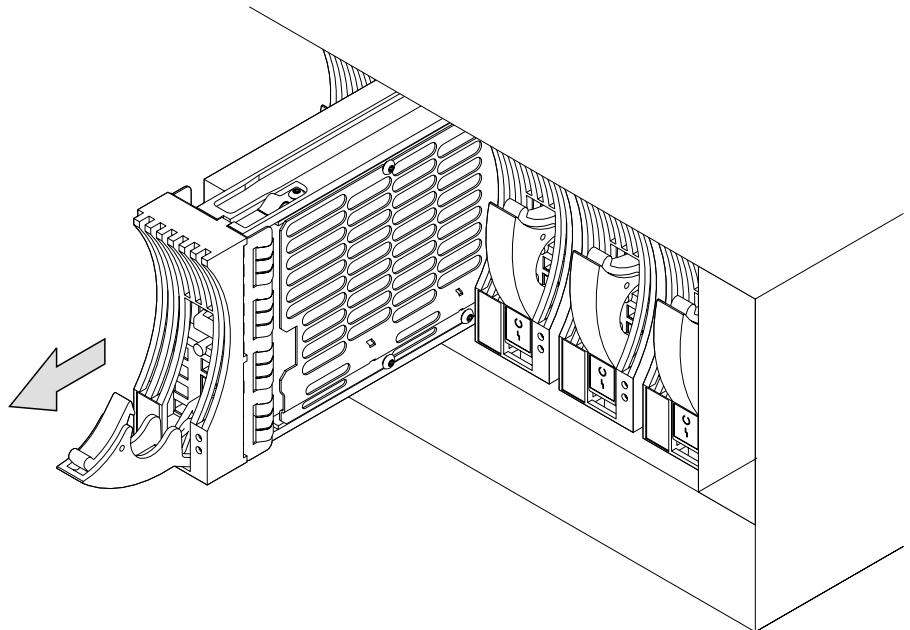
Attention: The fan speed may increase. Do not leave the slot empty for more than 30 minutes; if you do, the 7133 unit and the disk drive modules within it might overheat and be damaged.

6. With one hand supporting the new module, engage it in the groove and push it into the slot from which you have just removed the failing module.

The module stops before it is completely into the slot.
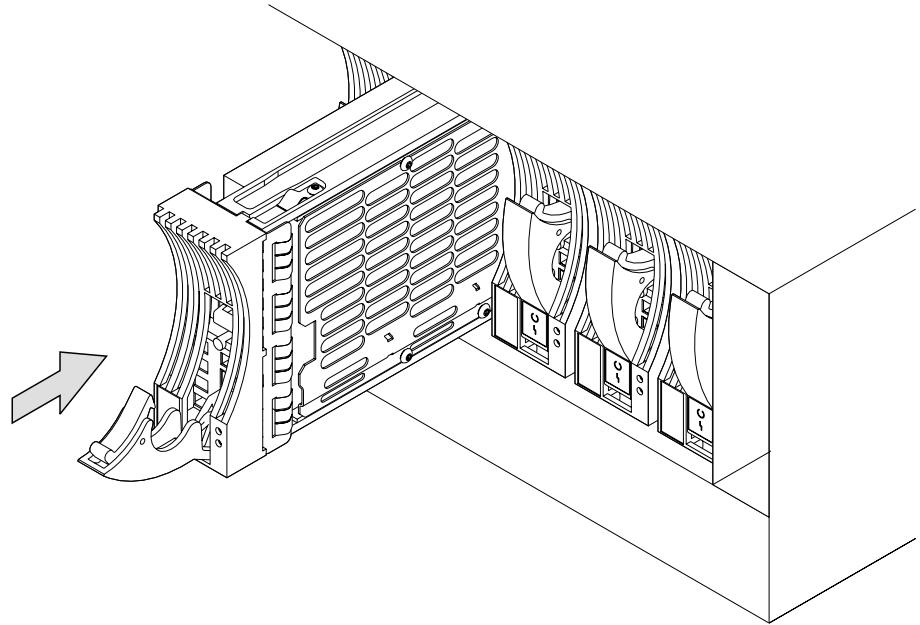
7. Close the handle of the module until it shuts with a click. This action pulls the module completely into the unit. The fans may decrease their speed.
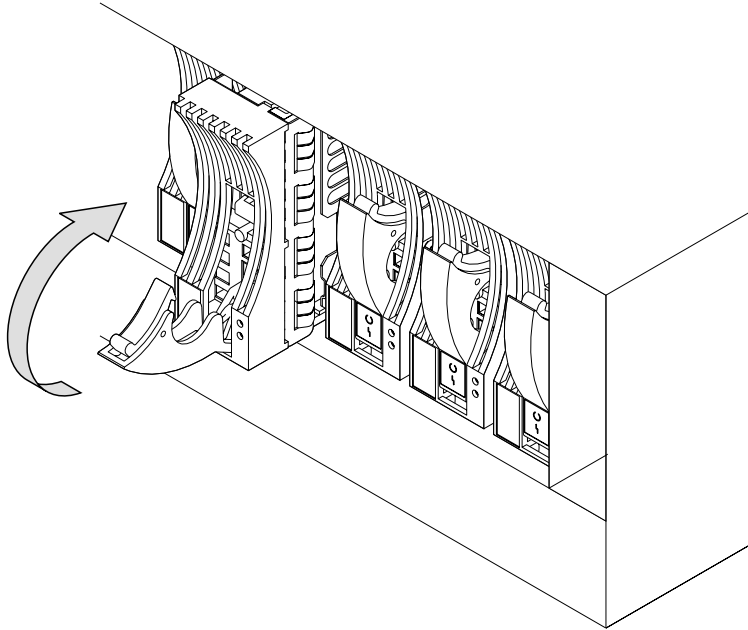
8. Push on the front of the module to ensure that the module is fully home.

9. Ensure that the Check light comes on immediately. If the module is not in Service Mode, the Check light should go off after approximately 2 seconds. (If this does not happen, check that the new module is properly installed, then check the SSA error log for information about the new fault.)

If the module is in Service Mode, the light will stay on. Cancel the Service Mode and the light should go out. See the appendix for your operating system for information about the Service Mode. If the light stays on, check that the new module is properly installed, then check the SSA error log for information about the new fault.

If the Ready light comes on and remains on or flashes quickly (five times per second), the drive has been installed properly, proceed to the next step.

If the ready light does not come on or flashes slowly (2 seconds on and 2 seconds off), check the SSA error log for information about the new fault.

Ready light   Check light
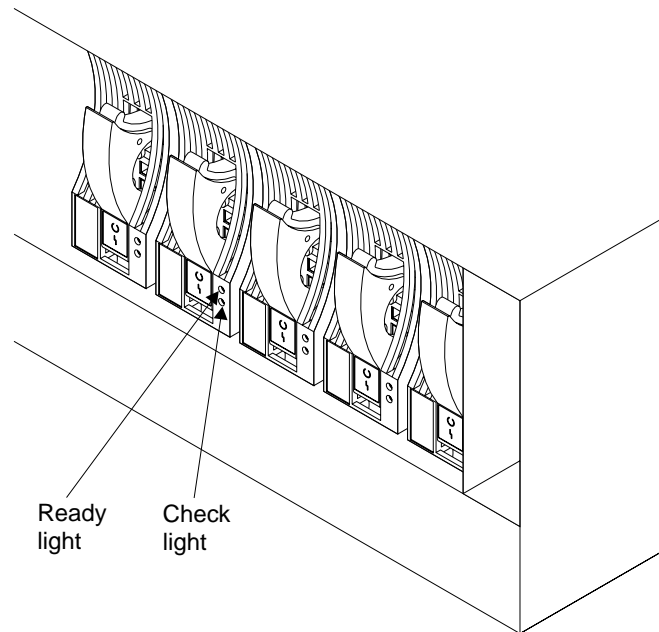
10. If you do not want to lock the new disk drive module into the unit, using the lock and key that you can order as a feature of the unit, go to step 11 on page 48. To use the lock:

a. Put the end of the lock into the hole at the bottom of the front of the disk drive module.
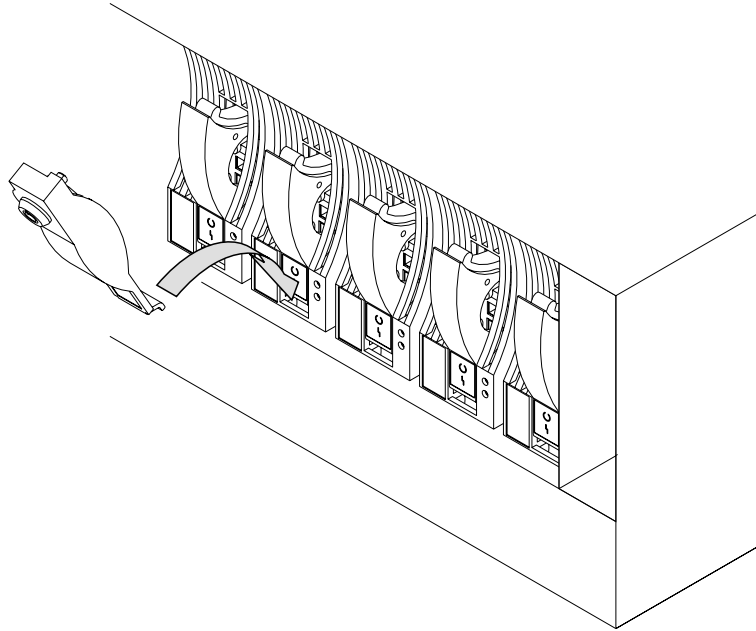
b. Push the lock up to the front of the disk drive module.
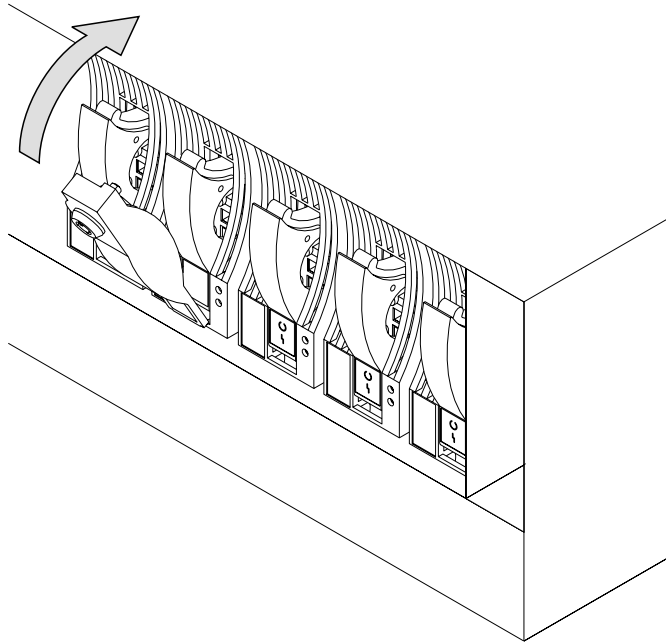
c. Put the key into the lock and turn the key clockwise half a turn.
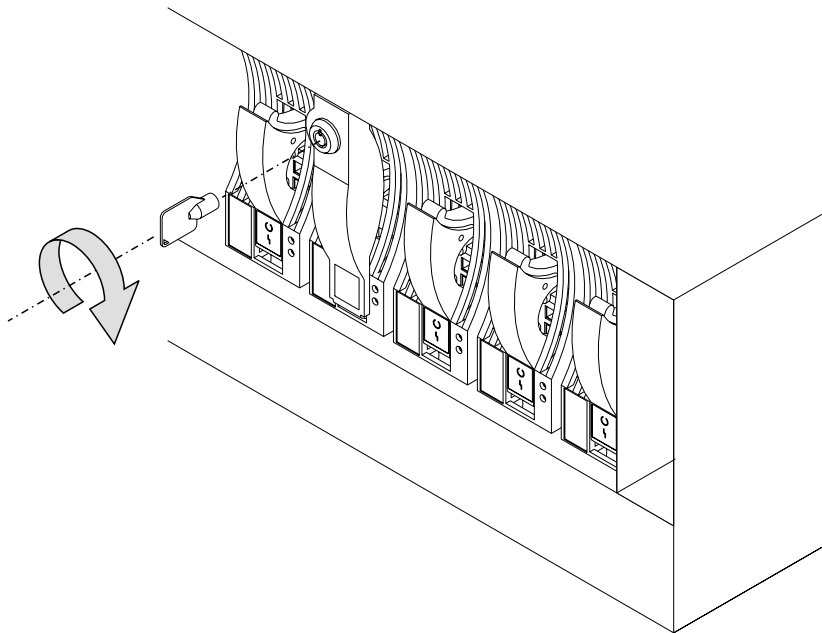
11. If you have just changed a disk drive module at the front of a rack-mounted unit, close the front cover.
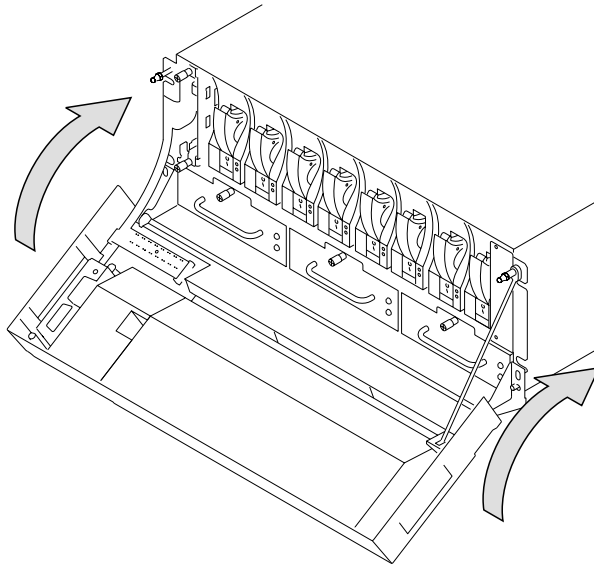
12. If you have just changed a disk drive module in a deskside unit, close the cover and, if required, lock it with the key provided.
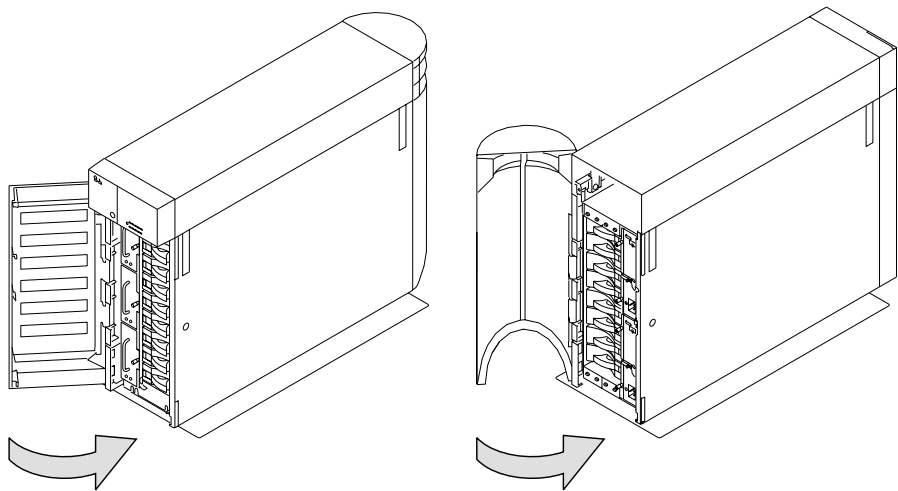
13. Restore the disk drive module into your system using the system programs.

Changing Fan Assemblies

In some circumstances, you can change a faulty fan assembly without the assistance of a service representative. You can do this only if:

- You are authorized by your organization to do this.
- You have a correct spare fan assembly.

> **Note:** Fan-and-power-supply assemblies that can be installed in 7133 Model 010, 020, 500, or 600 units cannot be installed in 7133 Model D40 or T40 units.

Attention: Do not remove two fan assemblies from the subsystem at the same time.

You do not need to remove power from the 7133 unit when changing a fan assembly.

Before Changing a Fan Assembly

1. Perform the actions described in "Starting to Deal with Problems" on page 35.
2. If you have run diagnostics and obtained a Service Reference Number (SRN) and it is in the following list, it means that a fan assembly has a fault that can be corrected by exchanging the fan assembly for a new one:

SRN	Component	Fan position
80231	FAN1	Left (Top in a T40)
80232	FAN2	Middle
80233	FAN3	Right (Bottom in a T40)

If the SRN is not in the list, do not change the fan assembly: call your service representative and report the problem.

3. Check the lights on this fan assembly. ("Power-Supply Assembly Lights and Switch" on page 12 describes these lights and how to see them.)

   If the check light is not on, you cannot change the fan assembly; call your service representative and report the problem.

   If the check light is on, change the fan assembly using the procedure in the following section.

To Change a Fan Assembly

The illustrations in the following instructions show a rack-mounted unit. The steps for changing a fan assembly in a deskside unit are the same, but the parts are turned through 90 degrees.

1. Loosen the captive bolt on the failing fan assembly by turning the thumbscrew counterclockwise.
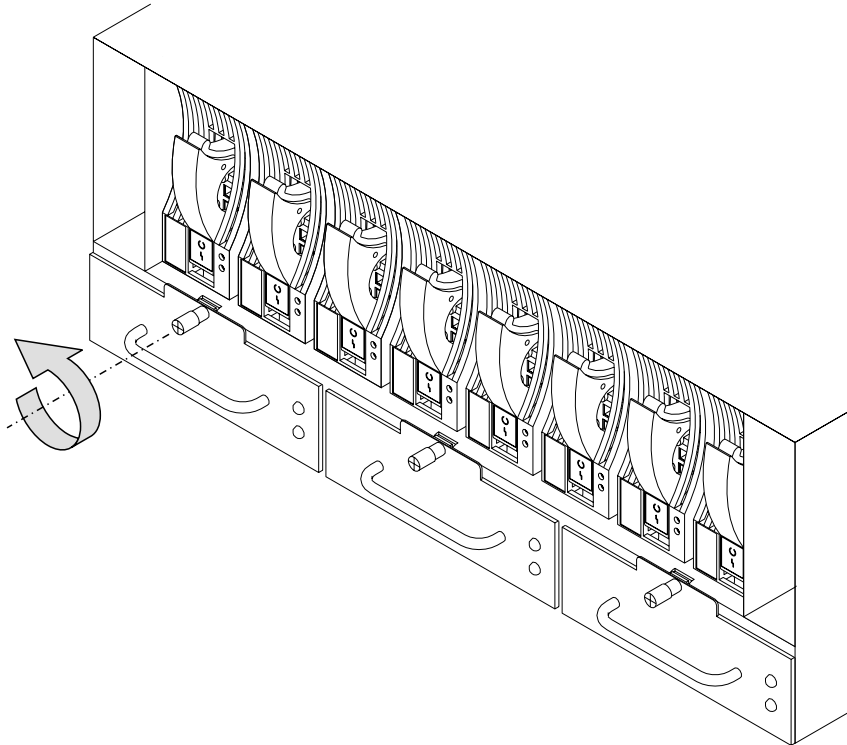
2. Pull the fan assembly from the unit.
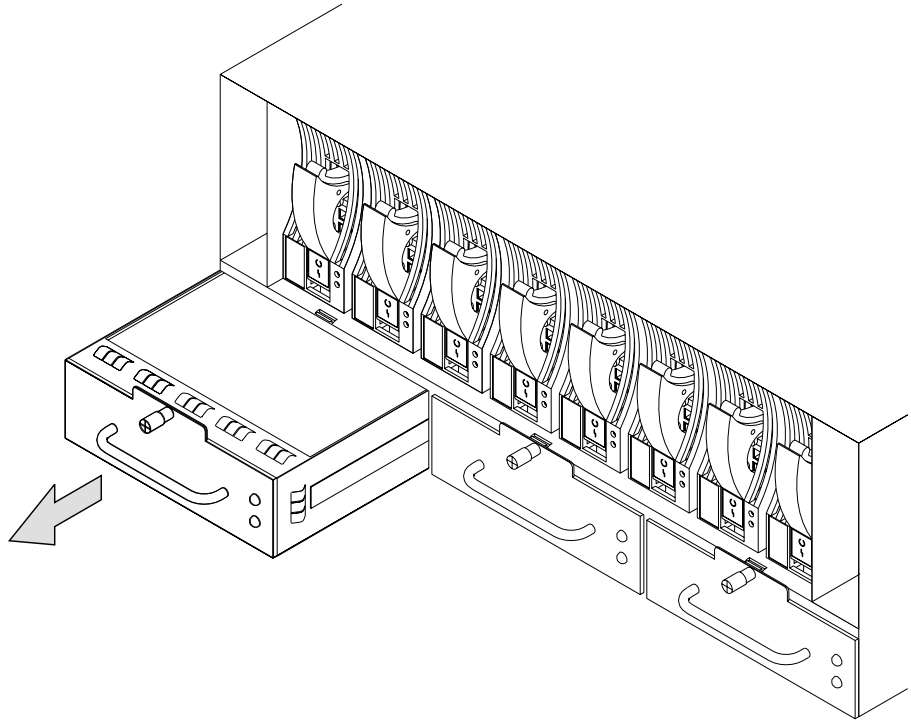
Attention: Do not leave the space empty for more than 30 minutes; if you do, the 7133 unit and the disk drive modules within it might overheat and be damaged.

Caution: Do not insert hands or tools into the empty fan opening.

3. Push the replacement fan assembly fully into the unit.
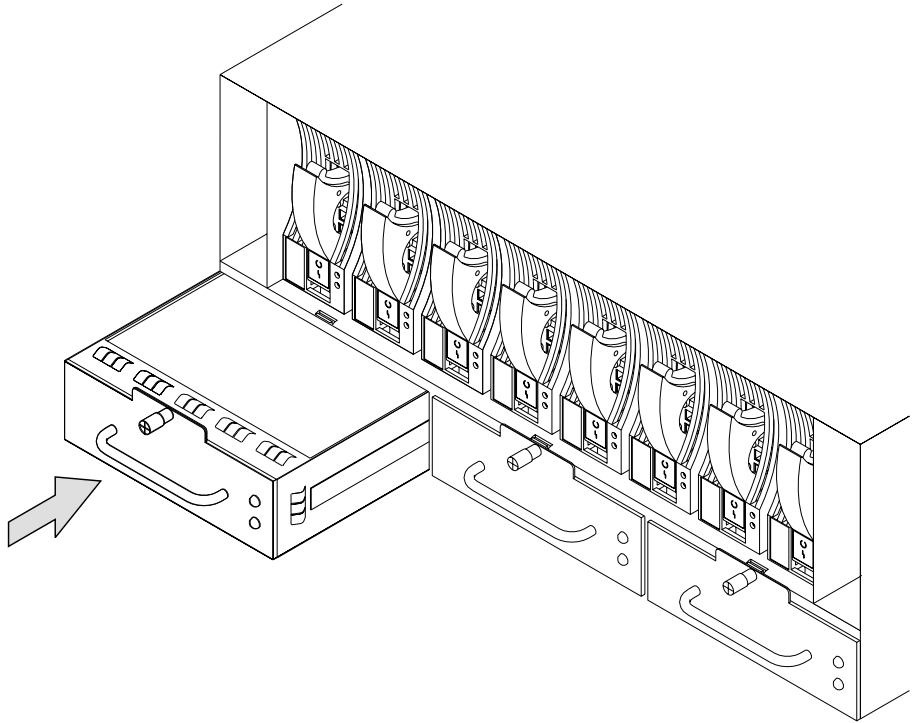
4. Tighten the captive bolt by turning the thumbscrew clockwise.
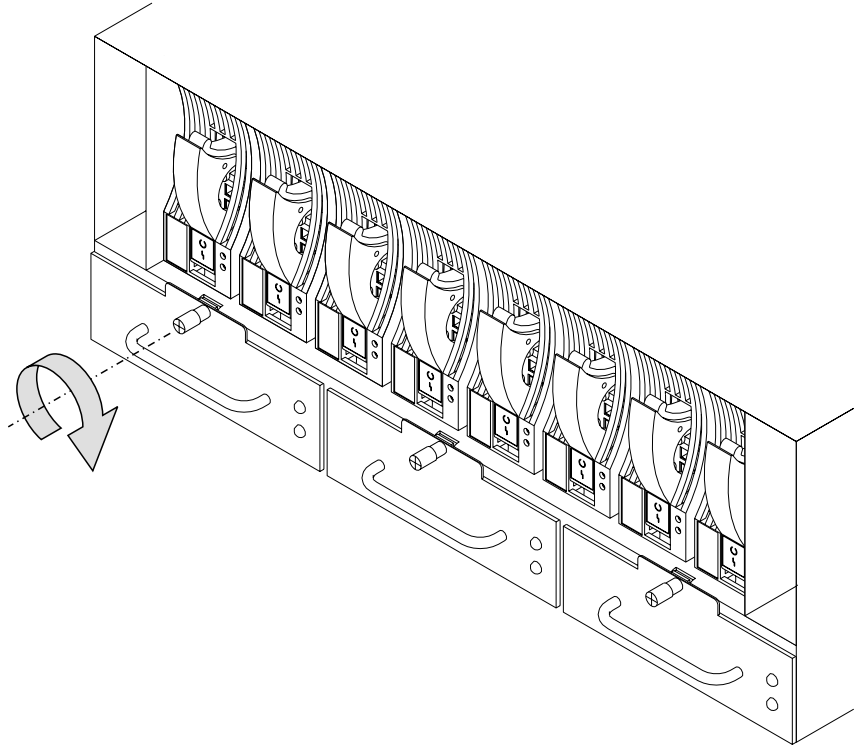
5. Check that the green Power light comes on within 5 seconds. (If it does not, check that the new fan assembly is properly installed. If correctly installed, report the problem to your service organization.)
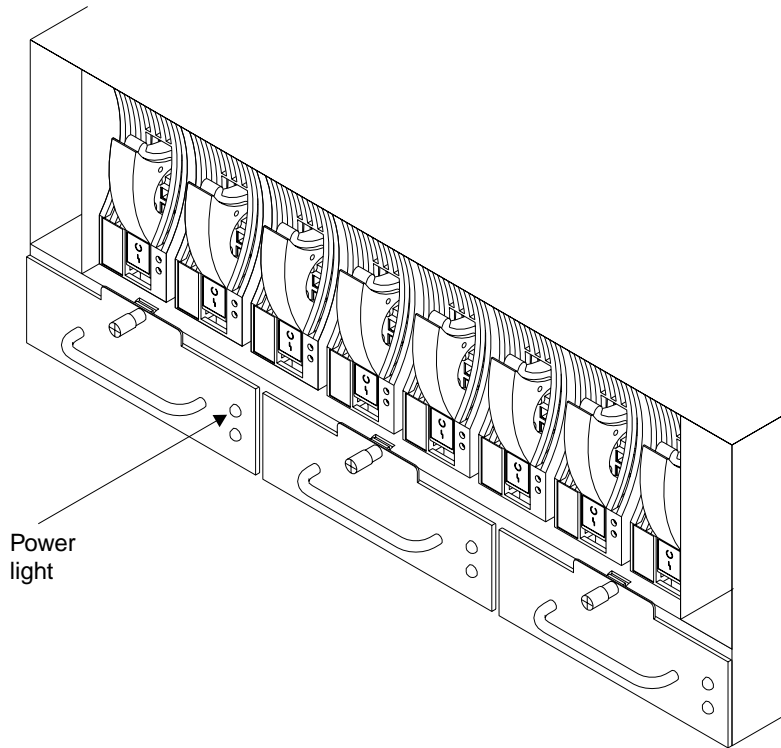
Power
light

6. If you have just changed a fan assembly in a rack-mounted unit, close the front cover.
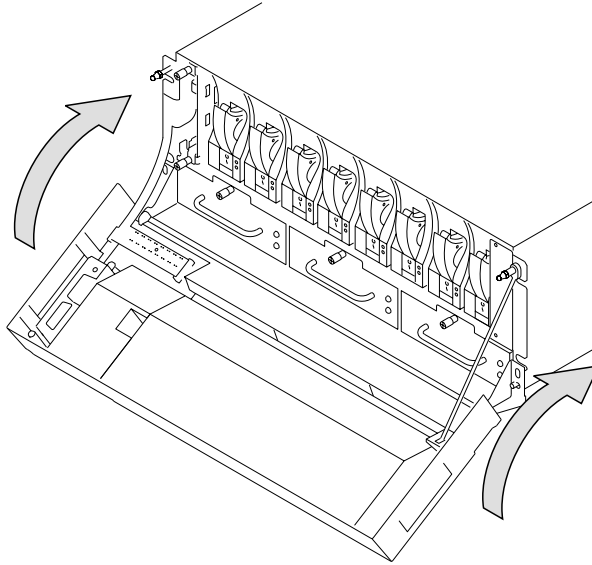
7. If you have just changed a fan assembly in a deskside unit, close the front cover and, if required, lock it with the key provided.
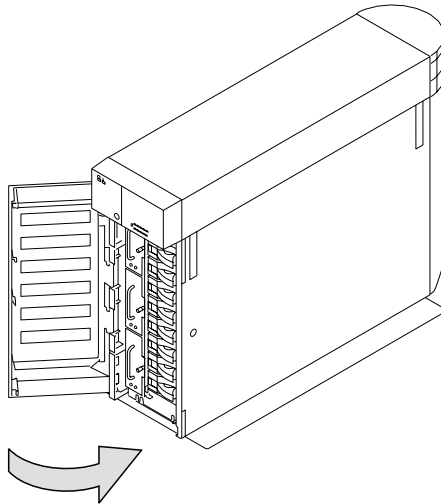
Changing Power-Supply Assemblies

In some circumstances, you can change a faulty power-supply assembly without the assistance of a service representative. You can do this only if:

- You are authorized by your organization to do this.
- You have a correct spare power-supply assembly.

> **Note:** Fan-and-power-supply assemblies that can be installed in 7133 Model 010, 020, 500, or 600 units cannot be installed in 7133 Model D40 or T40 units.

> **Note:** The mainline power connector for the –48V has a different connector. If you need to change a –48V power-supply assembly, follow the instructions in this section.
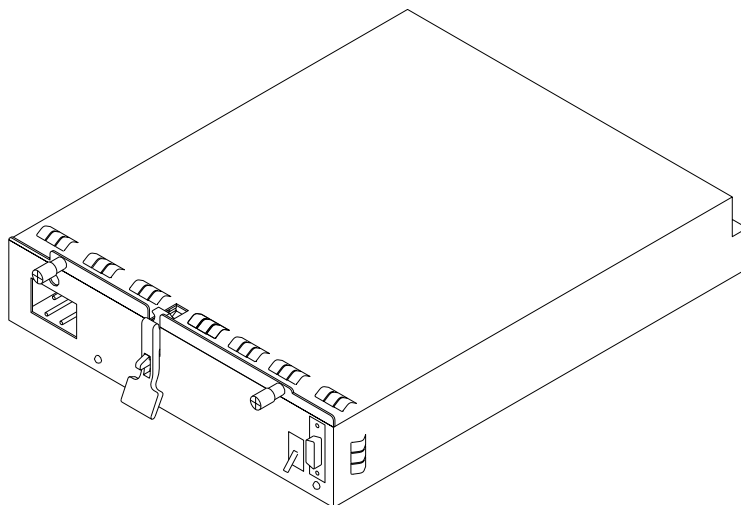
You do not need to remove power from the 7133 unit when changing a power-supply assembly.

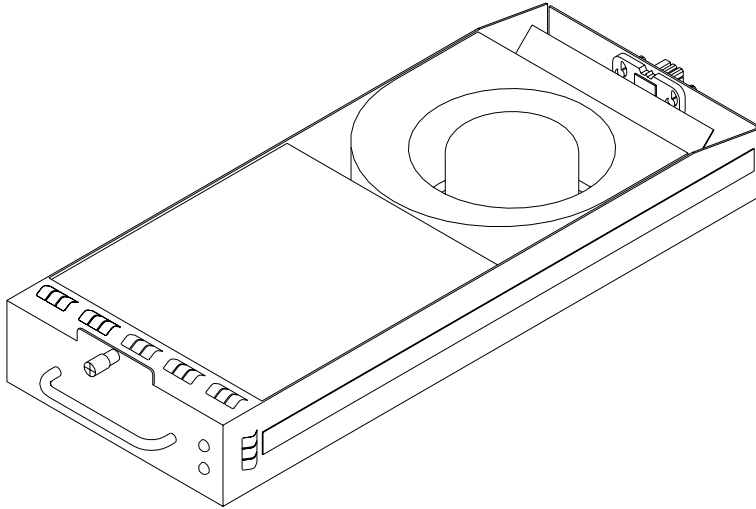## Before Changing a Power-Supply Assembly

1. Perform the actions described in "Starting to Deal with Problems" on page 35.
2. If you have run diagnostics and obtained a Service Reference Number (SRN) and it is in the following list, it means that a power supply assembly has a fault that can be corrected by exchanging it for a new one:

SRN	Component	Fan position
80221	PSU1	Left (Bottom in a T40)
80233	PSU2	Right (Top in a T40)

If the SRN is not in the list, do not change the power supply assembly: call your service representative and report the problem.

3. Check the lights on this power-supply assembly. ("Power-Supply Assembly Lights and Switch" on page 12 describes these lights and how to see them.)

If the Check/Power-Good light is not showing amber, you cannot change the power-supply assembly; call your service representative and report the problem.

If the Check/Power-Good light is showing amber, change the power-supply assembly using the procedure in the following section.

To Change a Power-Supply Assembly

The illustrations in the following instructions show a rack-mounted unit. The steps for changing a power-supply assembly in a deskside unit are the same, but the parts are turned through 90 degrees.

1. Set the Power switch on the power-supply assembly to Off, by moving it downward.

   Note: On early power supply assemblies, pull the switch outward and then move it downward.
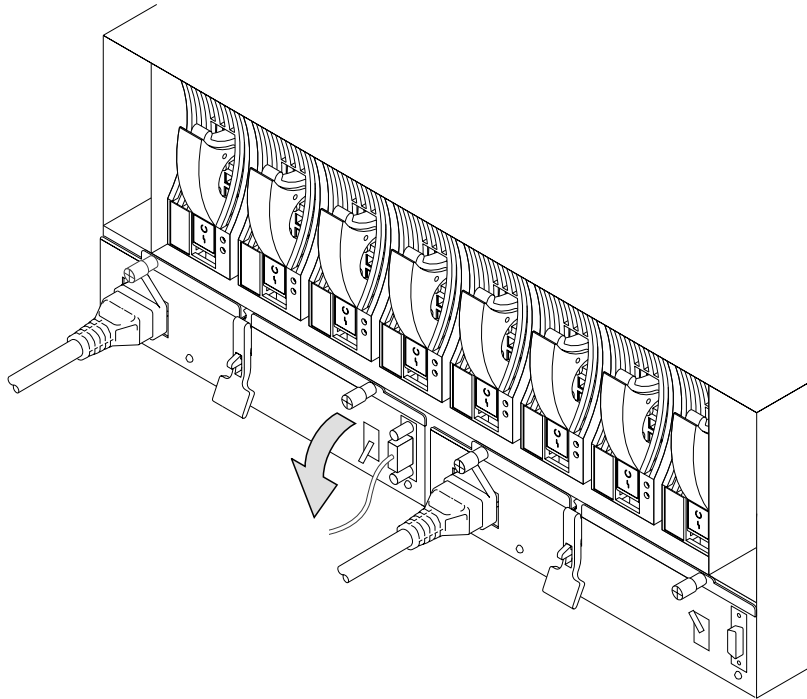
2. Unplug the mainline power cable from the failing power-supply assembly. Also, if you are changing the left-hand power-supply assembly, unplug the remote power control cable, if present, from the power-supply assembly.
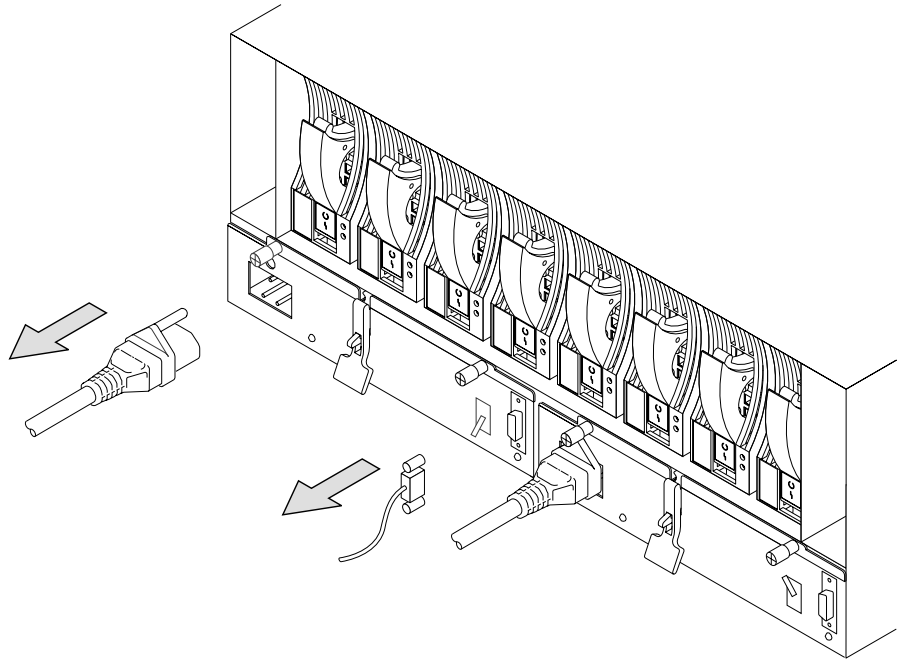
Caution: Ensure that the mainline power cable has been removed from the failing power supply assembly before continuing.

3. Loosen the two captive screws by turning the thumbscrews counterclockwise until the screws hang freely.
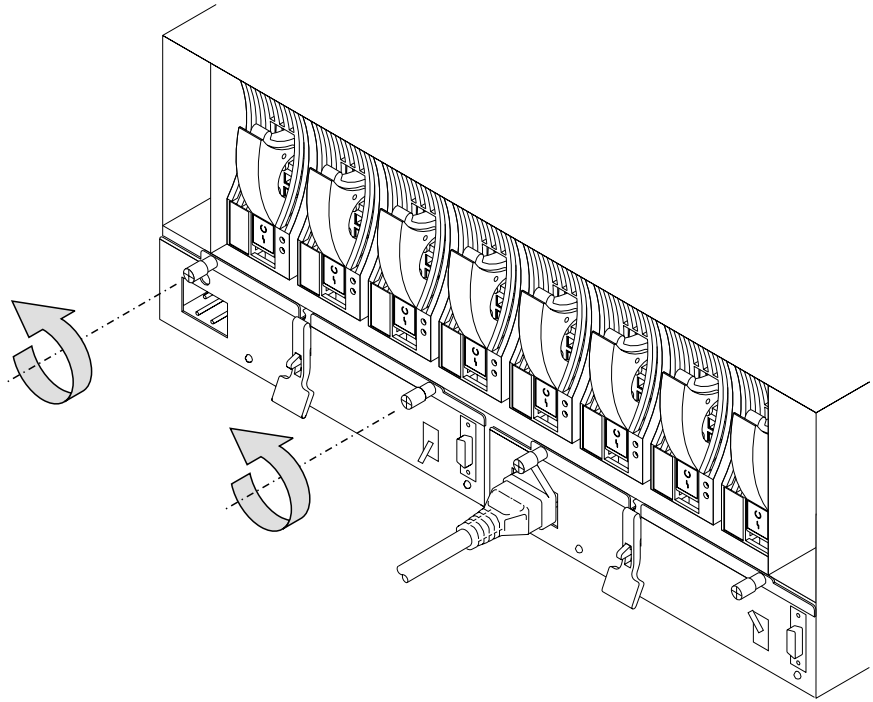
4. Press the catch and lift the lever on the power-supply assembly. This action moves the power-supply assembly partly out of the 7133 unit.
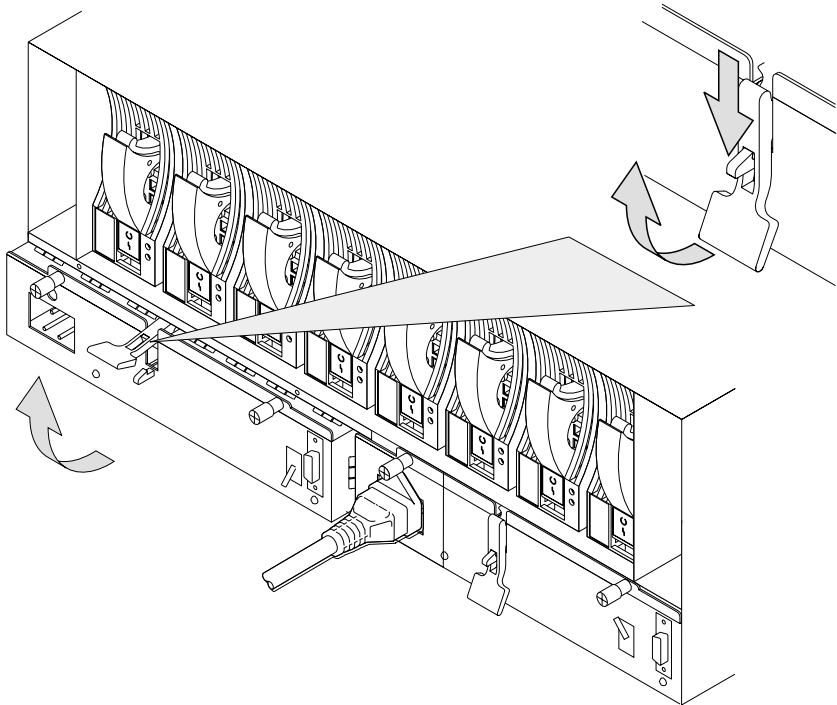
5. Pull the power-supply assembly from the unit. The fan speed may increase.
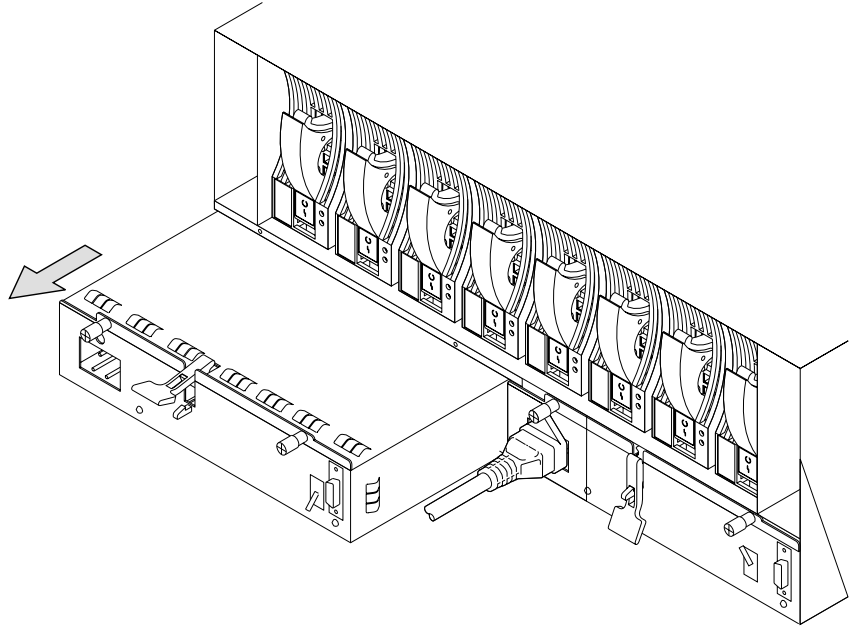
Attention: Do not leave the space empty for more than 30 minutes; if you do, the 7133 unit and the disk drive modules within it might overheat and be damaged.

Caution: Do not insert hands or tools into the empty power supply opening.

6. Push the replacement power-supply assembly fully into the unit.
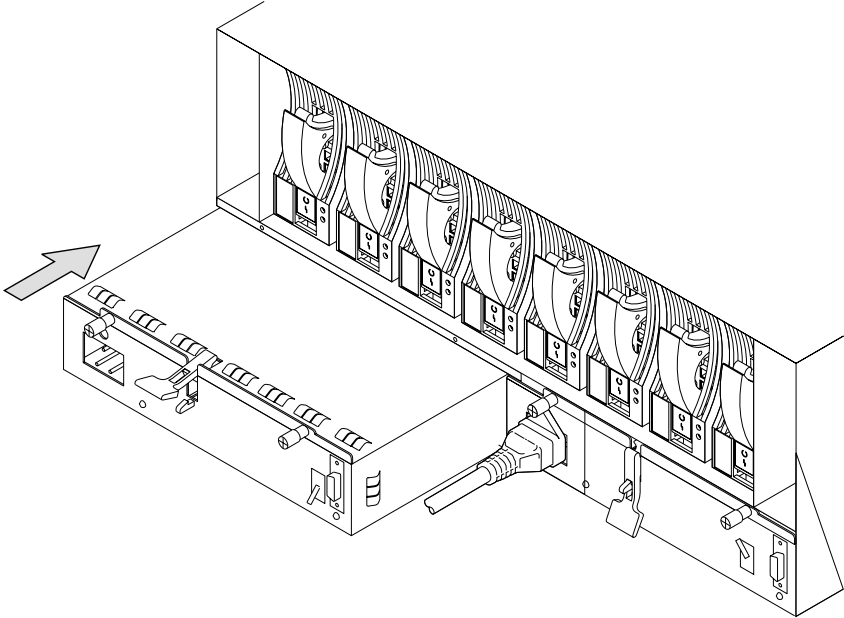
7. Push down the lever on the power-supply assembly. This action pulls the power-supply assembly completely into the 7133 unit.

DANGER

> **Do not plug the power supply cord into the power supply unit until the unit is completely installed and its retaining screws have been tightened.**
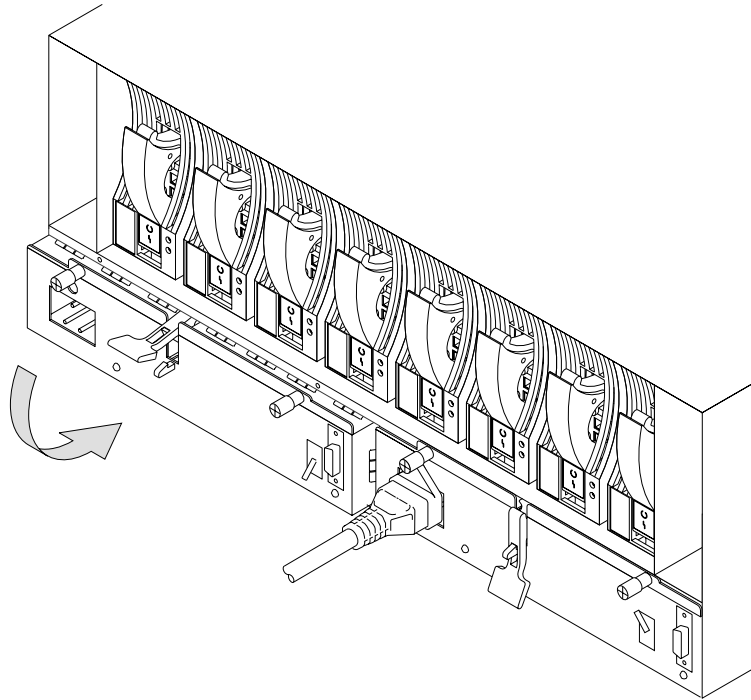
8. Tighten the two captive bolts by turning the thumbscrews clockwise.
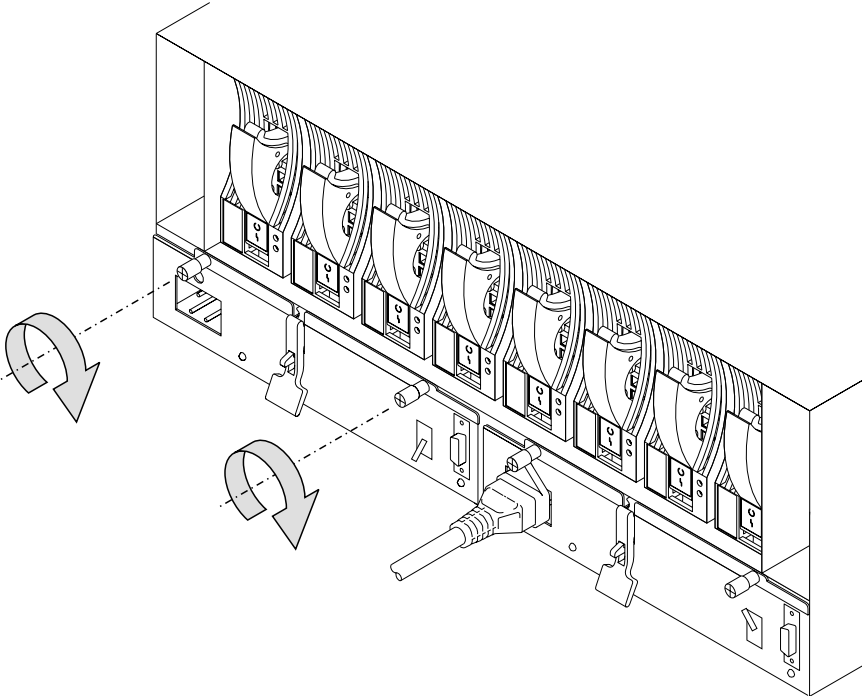
9. Replug the mainline power cable into the new power-supply assembly. Also, if you have just changed the left-hand power-supply assembly, replug the remote power control cable, if present, into the power-supply assembly.
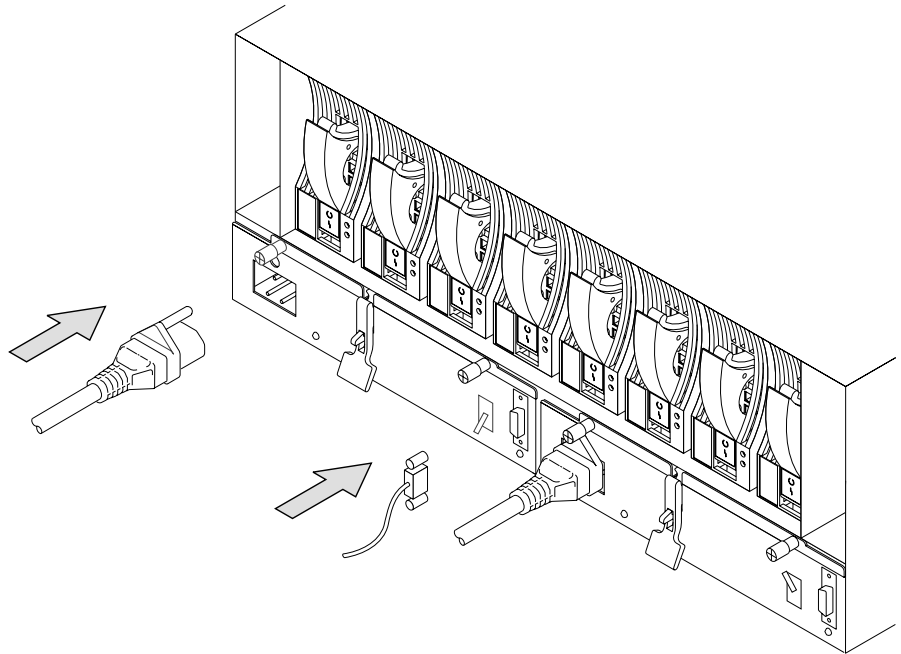
10. Check that the green Power light comes on immediately. (If it does not, check that the new power-supply assembly is properly installed and that you are connected to the mainline power supply. If these are correct, report the problem to your service organization.)

Power light

Check/Power-Good light
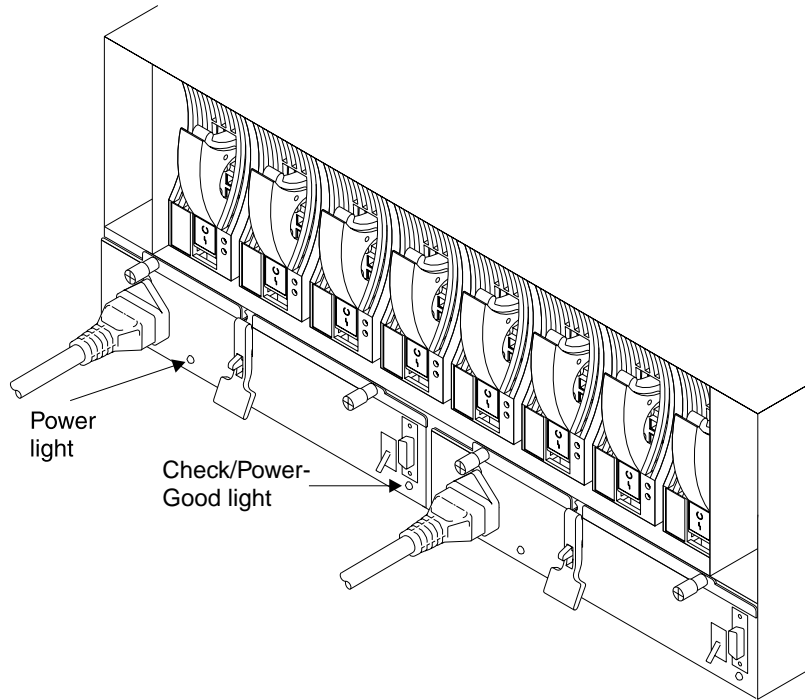
11. Set the Power switch on the new power-supply assembly to On, by moving it upward. Check that the Check/Power-Good light shows green within 5 seconds. (If it does not, check that the new power-supply assembly is properly installed. If it is, report the problem to your service organization.) The fan speeds may also decrease.

Note: On early power supply assemblies, pull the switch outward and then move it upward.
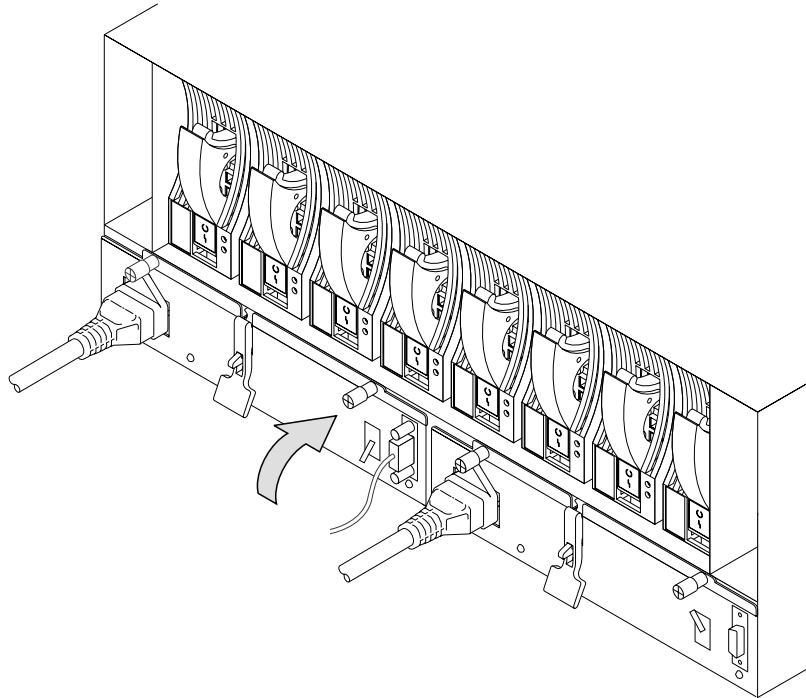
12. If you have just changed a power-supply assembly in a deskside unit, close the back cover and, if required, lock it with the key provided.
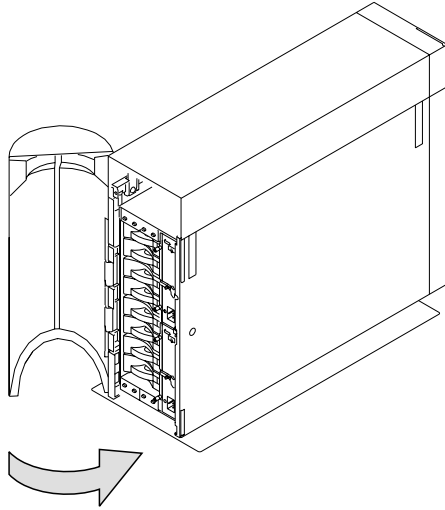
Reporting Problems

When you report a problem with a 7133 Serial Disk system, or with a device mounted in a SSA Disk Subsystem, it is important that you report the following information, in addition to the error information (the SRN) given to you by your operating system:

The machine type number   7133
The machine model number   xxx
The machine serial number   xx-xxxxx

To see the machine serial number of a 7133 unit, open the flap on the front cover. To do this, push the latch button and hinge the flap to the left.

Latch button
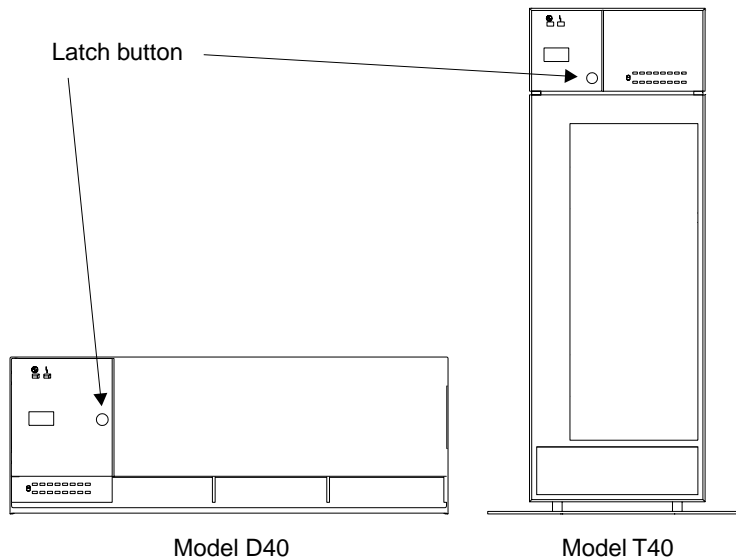
Model D40   Model T40

With the flap open, you can see the serial number label:

ID display   Power light   Check light   Power/Standby Switch

ID push buttons

Serial Number

Disk drive status lights

Model D40

Power light   Check light   Power switch   Disk drive status lights

ID display

ID push buttons

Serial Number
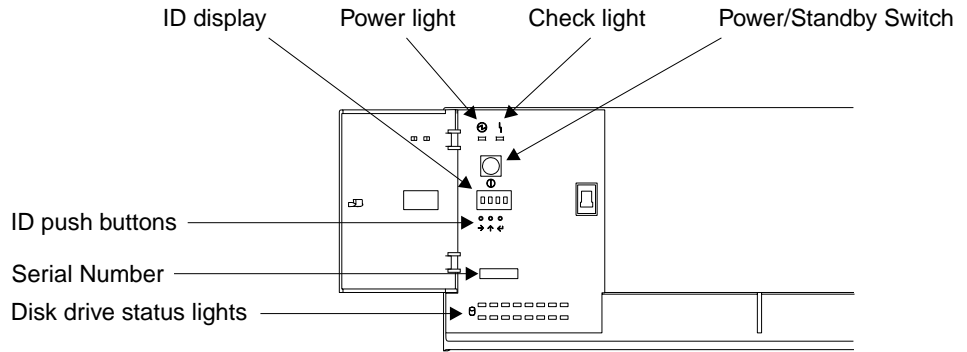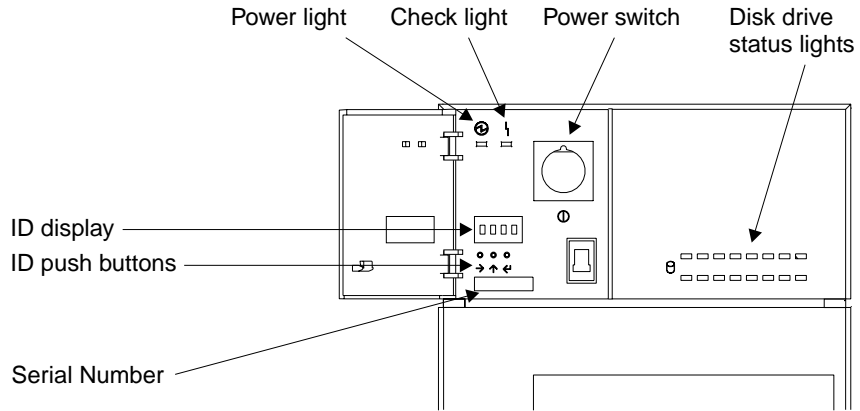
Model T40

Appendix A. Operating with RISC Systems

This appendix describes how to use those SSA service aids that you need when operating RISC systems to which 7133 Model D40 or T40 subsystems are attached.

Related Publications

- *7014 Model S00 Rack: Installation and Service Guide,* SA38-0550
- *7015 Model R00 Rack: Installation and Service Guide,* SA23-2744
- *SSA Adapters: User's Guide and Maintenance Information,* SA33-3272
- *Advanced SerialRAID Adapter: User's Guide and Maintenance Information,* SA33-3285

Are You Using the Correct Book? *Do not use this book if you are operating a 7133 Model 010, 020, 500, or 600 SSA Disk Subsystem.* For those models, use the *7133 SSA Disk Subsystem: Operator Guide,* GA33-3259–01.

Web Support Pages

When performing SSA device or subsystem planning, installation, upgrades, or preventive maintenance, please refer to the following web support pages. These pages should also be reviewed in preparation for system hardware or operating system upgrades if SSA devices are included in the configuration. These web pages provide access to the latest SSA publications and support code for the using system, SSA adapters and SSA subsystems.

http://www.hursley.ibm.com/ssa/ - Contains links to SSA publications and other SSA web pages, including the ones below.

http://www.hursley.ibm.com/ssa/rs6k/ - Contains lists of the latest SSA support code and provides download capability for the RS/6000 and AIX environments.

http://www.hursley.ibm.com/ssa/pcserver/ - Contains lists of the latest SSA support code and provides code download capability for PC Server environments.

Starting SSA Service Aids

How to start the SSA Service Aids, and more information about the service aids, is described in the manual supplied with your SSA adapter.

Identifying 7133 Models D40 and T40 Units and Disk Drive Modules

You can identify a 7133 Model D40 or T40 unit and the disk drive modules installed in it either by the location code contained in system messages that refer to that unit, or by using the SSA service aids.

Location Code Format for 7133 systems

```
A B  -  C D  -  E F G H  -  I J
```

Disk drive module number
1 through 16 (decimal)

Enclosure ID
(the four characters that appear in
the display at the front of the 7133 unit)

Adapter position
(number of the slot, 1 through 8,
containing the SSA adapter)

System I/0 Bus identifier

Expansion adapter position

Expansion drawer
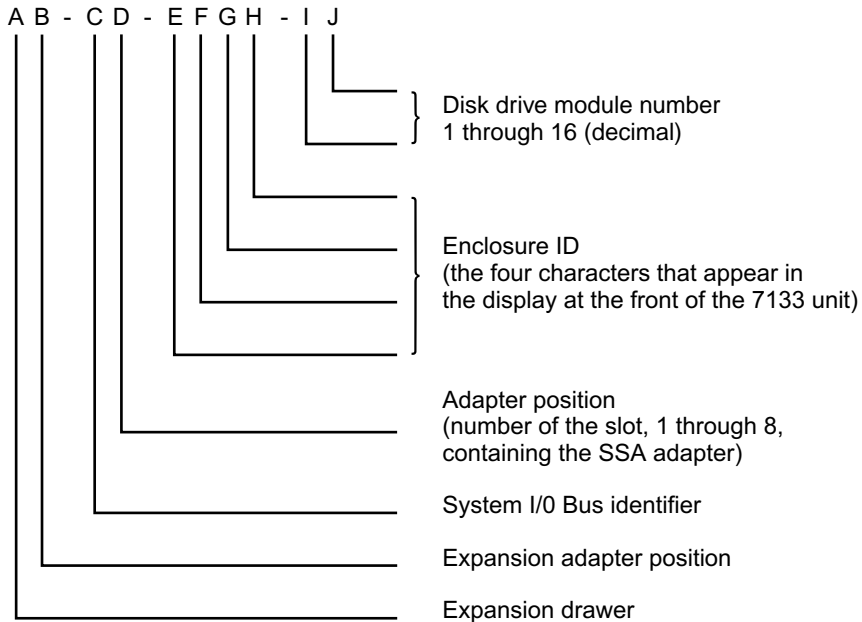
See "Location Codes" in the operator guide for your system for general information about location codes.

Pdisks, Hdisks, and Disk Drive Module Identification

The *physical* disk drives (**pdisks**) in an SSA subsystem can be configured as logical units (LUNs). A LUN is also known as an **hdisk**, and can consist of one or more physical disk drives. An hdisk in an SSA subsystem might, therefore, consist of one pdisk or several pdisks.

The configuration software also allocates an identification (hdisk and pdisk number) to each disk drive module during the configuration of the SSA loop. The disk drive modules do not have fixed physical addresses.

The numeric identifiers of pdisks, hdisks, and the disk drive module slots of a 7133 are not related to each other. For example, pdisk1 is not necessarily installed in slot 1 of the 7133.

The system software recognizes the disk drive module by a machine-readable number that is written on the electronics card of the disk drive module. This number is shown also on the label at the front of a disk drive module. The service aids show the number as the last eight digits of the IEEE 16-digit SSA unique identifier (UID).

Service actions are always related to physical disk drives. For this reason, errors that occur on SSA disk drives are always logged against the physical disk drive (pdisk).

If a disk drive that has been formatted on a machine of a particular type (for example, a Personal System/2) is later installed into a using system that is of a different type (for example, an RS/6000), that disk drive is configured only as a pdisk during the configuration of the using system.

Identifying a subsystem or Disk Drive Module and Using Service Mode

Subsystems are identified by the disk drive modules contained in them.

To identify a disk drive module:

1. Start the system diagnostic programs.
2. From the Function Selection menu, select **Service Aids**.
3. This displays the Service Aids menu.
   From this menu, select **SSA Service Aids**.
4. This displays the SSA Service Aids menu; select **Set Service Mode**.

```
SSA SERVICE AIDS                                                  802380

Move cursor onto selection, then press Enter.


          Set Service Mode
          Link Verification
          Configuration Verification
          Format Disk
          Certify Disk











   F3=CANCEL          F10=EXIT
```

5. This displays the Set Service Mode menu:

```
┌─────────────────────────────────────────────────────────────────────────┐
│                                                                           │
│  SET SERVICE MODE                                               802381    │
│                                                                           │
│  Move cursor onto selection, then press Enter.                            │
│                                                                           │
│   <TOP>                                                                   │
│                                                                           │
│    systemname:pdisk0          1234567   2 GB SSA C Physical Disk Drive    │
│    systemname:pdisk1          1234568   2 GB SSA C Physical Disk Drive    │
│    systemname:pdisk2          1234567   2 GB SSA C Physical Disk Drive    │
│  > systemname:pdisk3          1234560   2 GB SSA C Physical Disk Drive    │
│    systemname:pdisk4          1234561   2 GB SSA C Physical Disk Drive    │
│    systemname:pdisk5          1234562   2 GB SSA C Physical Disk Drive    │
│    systemname:pdisk6          1234563   2 GB SSA C Physical Disk Drive    │
│    systemname:pdisk7          1234564   2 GB SSA C Physical Disk Drive    │
│                                                                           │
│                                                                           │
│                                                                           │
│                                                                           │
│                                                                           │
│   <BOTTOM>                                                                │
│                                                                           │
│   F3=CANCEL          F10=EXIT                                             │
│                                                                           │
└─────────────────────────────────────────────────────────────────────────┘
```

On this screen, the fields in the first row, for example, are:

systemname
> Name of the using system that the disk drives are connected to.

pdisk0 The name by which the system programs refer to the disk drive.

1234567

The serial number of the disk drive module; this number appears on the front of the module:

Serial Number
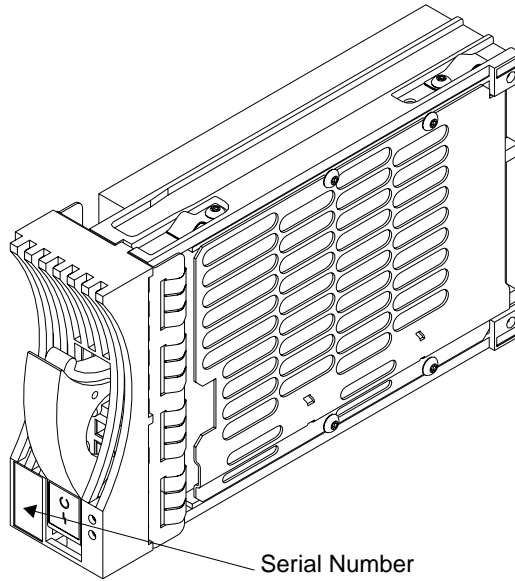
2 GB SSA ...

A variable description of the disk drive.

Select the disk drive you want to identify.

6. The Set Service Mode menu is displayed:

```
┌─────────────────────────────────────────────────────────────────────────────┐
│ SET SERVICE MODE                                                      802382  │
│                                                                               │
│ > systemname:pdisk3  1234560            2 GB SSA Physical Disk                 │
│                                                                               │
│ Move cursor onto selection, then press Enter.                                 │
│                                                                               │
│ + Set/Reset Identify.                                                         │
│     Select this option to set or reset the Identify indicator                 │
│     on the disk drive                                                         │
│ > Set/Reset Service Mode.                                                      │
│     Select this option to set or rest Service Mode                            │
│     on the disk drive.                                                        │
│     ENSURE THAT NO OTHER HOST SYSTEM IS USING THIS DISK DRIVE                  │
│     BEFORE SELECTING THIS OPTION                                              │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
│  F3=CANCEL          F10=EXIT                                                   │
│                                                                               │
└─────────────────────────────────────────────────────────────────────────────┘
```

Select **Set/Reset Identify**.

The check light on the disk drive module that you have selected (and the Subsystem Check light at the front of the 7133 unit) flashes.

Check that the serial number on the disk drive module matches the one that you selected.

You can select and identify more than one disk drive at a time.

7. If you are going to change the disk drive module:

   a. If the disk drive is a member of an array, and you are not using the disk as an rhdisk, remove the disk from the array using the array configuration utility. (The *SSA Adapters: User's Guide* describes how to do this.)

   b. Select **Set/Reset Service Mode** in this menu. (For some severe errors, this might cause an error message to appear; ignore this message.) The Check light on the disk drive module (and the Subsystem Check light at the front of the 7133 unit) should now be on and remain on. The disk drive is in service mode.

   You can now change the disk drive module, using the steps described in "To Change a Disk Drive Module" on page 38.

   If the Check light is not on, you cannot change the disk drive module; call your service representative and report the problem.

   Only one disk drive can be in service mode at a time.

When you have finished using the service aid, select **Set/Reset Identify** or **Set/Reset Service Mode** again. This turns off the Check light on the disk drive module and, if the disk drive was in service mode, releases the disk drive for use by the system programs.

Problem Determination

If you have a problem with a 7133, see the operator guide for your system for a description of what to do.

For some problems, your system diagnostics tell you to check the lights on the system to discover which part, if any, has a fault. "Controls and Lights" on page 3 of this book shows the position of the lights. The diagnostic programs tell you what to report to your service representative. ("Reporting Problems" on page 69 describes other information you should report.)

Checking the SSA Error Log

In RISC systems, when you start the diagnostic programs they automatically check the SSA error log and present messages about any new problems that have been recorded there. Your using system manuals describe how to start the diagnostic programs.

Service Aids

This section shows the screens for the service aids that are available when the 7133 is attached to a RISC system.

Physical Link Configuration

```
01|PHYSICAL LINK CONFIGURATION                                        xxxxx
02|
03|SSA Link Configuration for:
04|  severn:ssa0              00-05     SSA Network RAID Adapter
05|
06|  Link       Port       Device             Location      Port      Link
07|
08|                        severn:ssa0        00-05         A1
09|                        pdisk9             00-05-P
10|                        pdisk10            00-05-P
11|                        pdisk11            00-05-P                  20-C
12|  20-C        ||         pdisk12            R1E1-01                  40-I
13|  40-I                   pdisk13            R1E1-02                  40-I
14|  40-I                   pdisk14            R1E1-03                  40-I
15|  40-I                   pdisk15            R1E1-04        >>        40-I
16|  40-I        >>         pdisk16            R1E1-05                  40-I
17|  40-I                   pdisk17            R1E1-06                  40-I
18|  40-I                   pdisk18            R1E1-07        ||||      40-0
19|  40-0        A1         trent2:****                      A2        40-C
   ????????????????????????????????????????????????????????????????????????
   NONE         0000       ****               FRED-09                  40-I
   40-I                    pdisk30            FRED-10        >>>>      40-I
   40-I        >>>>        pdisk19            FRED-13                  40-I
   40-I                    pdisk20            FRED-14
   40-I                    pdisk21            FRED-15        ||        40-C
   40-C         A2         severn:ssa0        00-05

                           severn:ssa0        00-05         B1
   40-C         ||         pdisk22            R1E1-09                  40-I
   40-I                    pdisk23            R1E1-10                  40-I
   40-I                    pdisk24            R1E1-11                  40-I
   40-I        >>          pdisk25            R1E1-12        ||        40-C
   40-C         B2         severn:ssa0        00-05
23|
24|  F3=Cancel       F10=Exit
25|
```

Lines 7 through 22 are selectable and scrollable.

Keys to Use
- Press Enter to display the legend as a popup menu.
- Press the Cancel key to return to the Adapter Selection menu.
- Press the Exit key to return to the Service Aid Selection menu.

Legend for Screen Symbols

****   Unknown disk drive or adapter.

|| Inline mode.

|||| Forced Inline mode.

>>   Automatic mode.

>>>>   Forced Bypass mode.

OOOO   Forced Open mode.

NONE   No connection.

20-C 20 MB per second copper cable.

40-C 40 MB per second copper cable.

40-I 40 MB per second internal link.

40-O 40 MB per second optical link.

??????
Break in the SSA loop.

Enclosure Configuration

```
01│ENCLOSURE CONFIGURATION                                          XXXXXX
02│
03│SSA Enclosure Configuration for:
04│  R1E1     Enclosure 1      SSA Enclosure
05│
06│  Conn    Port    Link    Device                   Location     Exchanged
07│
08│  20-C     1       ||     BYPASS
09│                          severn:pdisk01              01             X
10│                          severn:pdisk02              02
11│                          severn:pdisk03              03
12│                          severn:pdisk04              04
13│           4       >>     BYPASS
14│           5       >>     BYPASS
15│                          severn:pdisk05              05
16│                          severn:pdisk06              06
17│                          DDDD                        07
18│                          severn:pdisk07              08             X
19│  40-C     8       ||     BYPASS
20│           9      0000    BYPASS
  │                          DDDD                        09
  │                          DDDD                        10
  │                          DDDD                        11
  │                          ----                        12
  │          12      0000    BYPASS
  │  40-O    13      ||||    BYPASS
  │                          SSA Disk                    13
  │                          SSA Disk                    14
  │                          ---                         15
  │                          SSA Disk                    16
  │  40-O    16      ||||    BYPASS
23│
24│  F3=Cancel      F10=Exit
25│
```

Lines 7 through 22 are selectable and scrollable.

Keys to Use
- Press Enter to display the legend as a popup menu.
- Press the Cancel key to return to the Enclosure Selection (configuration) menu.
- Press the Exit key to return to the Service Aid Selection menu.

Legend for Screen Symbols

X   "Exchanged" flag. When set this flag indicates that the FRU has been removed
and reinstalled or exchanged for a new FRU since the flag was last reset.

– – – – No disk drive module.

DDDD Dummy disk drive module.

BYPASS
SSA node bypass card.

|| Inline state.

|||| Forced Inline state.

>> Bypass state.

>>>> Forced Bypass state.

OOOO Forced Open state.

20-C 20 MB per second copper cable.

40-C 40 MB per second copper cable.

40-I 40 MB per second internal link.

40-O 40 MB per second optical link.

SSA Disk
Unconfigured disk drive.

Enclosure Environment

```
01│ENCLOSURE ENVIRONMENT                                              XXXXXX
02│
03│SSA Enclosure Environment for:
04│  R1E1     Enclosure 1      SSA Enclosure
05│
06│ Enclosure Element                       Status
07│
08│ Power Unit 1                            Good
09│ Power Unit 2                            Fault (exchanged)
10│
11│ Fan Unit 1                              Good
12│ Fan Unit 2                              Good
13│ Fan Unit 3                              Fault
14│
15│ Operator Panel                          Not Present
16│
17│ Remote Power Off Module (RPO)           Good
18│
19│ Ambient Temperature (degrees Celsius)   35
20│
21│ Controller                              Fault
22│
23│
24│ F3=Cancel      F10=Exit
25│
```

Note: In this screen the word "exchanged" indicates that the FRU has been removed
and reinstalled or exchanged for a new FRU since the Exchange flag was last
reset.

Keys to Use

- Press Enter to return.
- Press the Cancel key to return to the Enclosure Selection (environment) menu.
- Press the Exit key to return to the Service Aid Selection menu.

Enclosure Settings

```
2 01 ENCLOSURE SETTINGS
3 02
4 03 Move cursor onto selection, then press <Enter>

5 04
6 05   ID DISPLAY
7 06   BYPASS MODES
8 07   TEMPERATURES WARNING
9 08   COMPONENT EXCHANGED FLAGS
0 09   DRIVE EXCHANGED FLAGS
1 10
2 11
3 12
4 13
5 14
6 15
7 16
8 17
9 18
0 19
1 20
2 21
3 22
4 23
5 24   F3=Cancel        F10=Exit
6 25
```

Lines 6 through 22 are selectable.

Keys to Use

- Press Enter to go to the selected menu.
- Press the Cancel key to return to the Enclosure Selection (settings) menu.
- Press the Exit key to return to the Service Aid Selection menu.

Command Line Tools

ssaencl Command

Purpose
To allow the monitoring and changing of the status for SSA SES disk enclosures (subsystems).

Syntax
To display enclosure component settings:

```
ssencl -l name [-s] [-v] [-i] [-b [card]*] [-t [threshold]*]
                [-a] [-f [fan]*] [-d [drive_bay]*] [-p [PSU]*]
                [-o] [-c]
```

To modify enclosure component settings:

```
ssencl -l name [[-I ID] [-U]] [-B [mode | card=mode*] [-S [d [drive_bay]*] | [b [card]*] | [p
```

For help, type: ssaencl -? or ssaencl -h

Description
The **ssaencl** command can be used to observe the existing settings of an SSA SES disk enclosure (subsystem), or to modify the settings of that enclosure. The command can be used only to observe **or** modify settings; it cannot be used to observe **and** modify settings at the same time.

When the command displays enclosure settings, it displays them in tables that the user can read easily. If the -s flag is specified, however, the command displays the settings in colon-separated format, as used by commands such as the SMIT commands.

Flags

-l name
> Specifies the name of an SSA SES enclosure or pdisk. If a pdisk name is used, that pdisk must be in an SSA SES enclosure.

-s Displays output in colon-separated format.

-v Displays also VPD information.

-i Displays the enclosure identifier (as shown in the operator panel, if present).

-b [card]
> Displays the status of the bypass cards. If no parameters are given, the status for all the bypass cards is displayed. Valid values for the **[card]** parameter are: 1, 4, 5, 8, 9, 12, 13, 16.

-t [threshold]
> Displays all the temperature thresholds, or only the specified temperature thresholds. The valid values for the **[threshold]** parameter are:

> lowarn   The low-temperature warning threshold.

	locrit	The low-temperature critical threshold.
	hiwarn	The high-temperature warning threshold.
	hicrit	The high-temperature critical threshold.

-a   Displays the ambient temperature of the enclosure and temperature threshold statuses.

-f [fan]   Displays the status of all the fans, or of only the specified fans. Valid values for the **[fan]** parameter are: 1, 2, 3, and so on.

-d [drive_bay]
Displays the status of all the disk drive bays (slots), or of only the specified disk drive bays. Valid values for the **[drive_bay]** parameter are: 1, 2, 3, and so on.

-p [PSU]
Displays the status of all the power supply assemblies, or of only the specified power supply assemblies. Valid values for the **[PSU]** parameter are 1, 2.

-o   Displays the status of the operator panel.

-c   Displays the status of the controller card.

-I ID[-U]
Modifies the enclosure ID. The ID must be a four-character alphanumeric string. The optional -U flag causes the object data manager (ODM) to be updated to show the change.

-B mode
Modifies all bypass cards to the given mode.

-B card=mode
Modifies the specified bypass cards to be in the given modes. The valid values for the **mode** parameter are:

- Automatic
- Bypass
- Inline
- Open

Valid values for the **card** parameter are 1, 2, 3, 4, and so on.

-S   Resets the "exchanged" flag of the selected FRU.

-T threshold=value
Modifies the specified temperature thresholds to the given values. The valid values for the **[threshold]** parameter are:

lowarn   The low-temperature warning threshold.

hiwarn   The high-temperature warning threshold.

The **value** parameter is a temperature in degrees C.

Examples

- To display the status of all bypass cards on enclosure0, give the command:

  ```
  ssaencl -l enclosure0 -b
  ```

- To display the status and VPD of the controller card in enclosure0, give the command:

  ```
  ssaencl -l enclosure0 -c -v
  ```

- To modify the ID for enclosure0 to R2D2, give the command:

  ```
  ssaencl -l enclosure0 -I R2D2
  ```

- To display the contents of disk bay (slot) 8 in enclosure0, give the command:

  ```
  ssaencl -l enclosure0 -d 8
  ```

Appendix B. Operating with PC Servers

This appendix describes how to use those SSA service aids that you need when operating PC servers to which 7133 Model D40 or T40 subsystems are attached.

Related Publications

- *IBM PC Servers: IBM Advanced SerialRAID/X Adapter: Installation and User's Guide and Maintenance Information*, SA33-3288
- *IBM Netfinity Rack: Planning and Installation Guide*, S24L-8055

Are You Using the Correct Book? *Do not use this book if you are operating a 7133 Model 010, 020, 500, or 600 SSA Disk Subsystem.* For those models, use the *IBM 7133 SSA Disk Subsystem for PC Servers: Operator Guide,* GA33–3259–01.

Web Support Pages

When performing SSA device or subsystem planning, installation, upgrades, or preventive maintenance, please refer to the following web support pages. These pages should also be reviewed in preparation for system hardware or operating system upgrades if SSA devices are included in the configuration. These web pages provide access to the latest SSA publications and support code for the using system, SSA adapters and SSA subsystems.

http://www.hursley.ibm.com/ssa/ - Contains links to SSA publications and other SSA web pages, including the ones below.

http://www.hursley.ibm.com/ssa/rs6k/ - Contains lists of the latest SSA support code and provides download capability for the RS/6000 and AIX environments.

http://www.hursley.ibm.com/ssa/pcserver/ - Contains lists of the latest SSA support code and provides code download capability for PC Server environments.

Service Aids

All service aids for PC servers are provided by the Remote Systems Management (RSM) configurator, which is supplied with the SSA adapter

The *Installation and User's Guide* for your SSA adapter describes how to start the SSA service aids.

The RSM configurator is a Web Browser utility. It contains online help, and gives access, locally and remotely, to the following subsystem functions:

- Configuration facilities that allow you to:
  - Configure SSA disk drive modules to the using (host) system (see the user and service information for your SSA adapter).

- Configure, create, and delete SSA RAID arrays (see the user and service information for your SSA adapter).
- Error log analysis (see the user and service information for your SSA adapter).
- Service functions

The service functions that the RSM provides for a selected adapter are:
- Display a Logical View of the SSA network
- Display a Physical View of the SSA network
- View a selected 7133 Model D40 or T40 enclosure
- Check all microcode levels

The Enclosure View provides the following enclosure functions:
- Display:
  - ID (name) of the enclosure
  - FRUs that are installed
  - VPD of each FRU
  - Status of each FRU:
    - Fault bit
    - Exchange or Swap bit
    - Connection type (for example, bypass cards)
  - Ambient temperatures
  - Warning-temperature settings
  - Physical position of each disk drive module
  - Mode and state of each bypass card
- Modify:
  - ID (name) of the enclosure
  - Warning-temperature settings
  - Mode of each bypass card

Identifying 7133 Models D40 and T40 Units and Disk Drive Modules

You can identify a 7133 Model D40 or T40 unit and disk drive modules installed in it either by the location code contained in system messages that refer to that unit, or by using the SSA service aids.

Location Code Format for 7133 systems

The format of this code is NNNN — XX where NNNN is the enclosure ID, the four characters that appear in the display at the front of the 7133 operator panel, and XX is the disk drive slot number and has a value of 1 to 16.

Identifying a subsystem or Disk Drive Module Using Service Mode

To identify a disk drive module:

1. Start the **SSA Remote Systems Management Function**.
2. Select the **SSA Disk View** for the module you want to identify.

   - Use the **Flash On** button to cause the check light on the disk drive module and the check light of the D40 or T40 unit to flash or **Identify**. You can use the disk drive serial number that is on the label on the front of the module to further check the identification of the module.
   - Use the **Flash Off** button to cancel the **Identify** function.

   Note that a system can be identified by selecting a disk drive in that system with the SSA Remote Systems Management **Identify** function.

3. Select **Physical View**
4. Select **Disk Drive**
5. In **SSA Disk View** for the module that you place in **Service Mode**.

   Note: Only disk drives that are 'Free' can be put into **Service Mode**

6. Using the **Service Mode** button issues a **Stop Unit command** to the selected disk drive and place it in service mode. This causes the selected disk drive's check light to turn on and the status lights on the adjacent SSA devices to flash.
7. Select the **Physical View** and use the **Reset** button to remove the **Service Mode** on the selected device.

   Note: Only a disk drive that is in a complete loop or that is at the end of a string can be put into **Service Mode**.

Problem Determination

If you have a problem with a 7133 SSA Disk Subsystem, refer to the *Installation and User's Guide* for your SSA adapter. That book describes how to deal with basic problems.

Checking the SSA Error Log

To check the SSA error log:

1. Start the **Remote Systems Management** function.
2. Select the **SSA Adapter List.**
3. Click on the **Event Logger** button.
4. Click on the **Analyze** button.

This will cause the SSA Error Log to be analyzed and the results will be displayed. Use the **Help** function to assist you to understand the displayed results.

Command Line Tools

Not applicable to PC servers.

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Numerics

Part Number: 34L3838

Printed in the U.S.A.

34L3838