

7133 SSA Disk Subsystem

GA33-3259-01

Operator Guide

7133 SSA Disk Subsystem

GA33-3259-01

Operator Guide

Second Edition (September 1996)

The following paragraph does not apply to any country where such provisions are inconsistent with local law: THIS PUBLICATION IS PRINTED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

This publication could contain technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication.

It is possible that this publication may contain reference to, or information about, products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that such products, programming, or services will be offered in your country. Any reference to a licensed program in this publication is not intended to state or imply that you can use only the licensed program indicated. You can use any functionally equivalent program instead.

© **Copyright International Business Machines Corporation 1995, 1996. All rights reserved.**

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication, or disclosure is subject to restrictions set forth in the GSA ADP Schedule Contract.

Contents

Communications Statements	v
Federal Communications Commission (FCC) Statement	v
VCCI Statement	v
International Electrotechnical Commission (IEC) Statement	vi
Avis de conformité aux normes de l'Industrie Canada	vi
Industry Canada Compliance Statement	vi
United Kingdom Telecommunications Requirements	vi
EC Council Directive	vi
Radio Protection for Germany	vi
Safety Notices	vii
Definitions of Safety Notices	vii
Installing, Relocating, or Servicing	vii
Acoustic Noise Declaration	vii
About This Book	ix
Who Should Use This Book	ix
What This Book Contains	ix
If You Need More Information	ix
Numbering Convention	ix
Chapter 1. Using the Subsystems	1-1
Rack-Mounted Unit Configurations	1-1
Deskside Unit Configurations	1-2
Controls and Lights	1-3
Subsystem Controls	1-3
Disk Drive Module Lights	1-5
Identifying Adapters, Subsystems, and Disk Drive Modules	1-8
Identifying a Subsystem or Disk Drive Module	1-9
Security	1-12
Disk Drive Module Locks	1-12
Deskside Unit Cover Locks	1-13
Ordering Cover-Lock Keys	1-13
External Connectors	1-15
Chapter 2. Adding Features	2-1
Adding Disk Drive Modules	2-1
Before Adding a Disk Drive Module	2-2
To Add a Disk Drive Module	2-3
Adding a Fan-and-Power-Supply Assembly	2-8
Before Adding a Fan-and-Power-Supply Assembly	2-9
To Add a Fan-and-Power-Supply Assembly	2-9
Chapter 3. Moving a Model 500 or 600 Deskside Unit Safely	3-1

Chapter 4. Dealing with Problems	4-1
Starting to Deal with Problems	4-1
Changing Disk Drive Modules	4-1
Before Changing a Disk Drive Module	4-2
To Change a Disk Drive Module	4-3
Changing Fan-and-Power-Supply Assemblies	4-9
Before Changing a Fan-and-Power-Supply Assembly	4-9
To Change a Fan-and-Power-Supply Assembly	4-10
Reporting Problems	4-15
Index	X-1

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 (part numbers 07H9163, 07H8985, 32H1465, 88G6404, 32H1466, or 88G6406, or their equivalents) 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.

電波障害自主規制 届出装置の記述

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。
従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。
取扱説明書に従って正しい取り扱いをしてください。

VCCI Statement

The following is a summary of the VCCI Japanese statement in the box above.

This equipment is Type 1 Data Processing Equipment and is intended for use in commercial and industrial areas. When used in a residential area, or areas of proximity, radio and TV reception may be subject to radio interference. VCCI-1.

International Electrotechnical Commission (IEC) Statement

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

Avis de conformité aux normes de l'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Industry Canada Compliance Statement

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

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.

EC Council Directive

This product is in conformity with the requirements of the following EC directives:

- Council Directive 73/23/EEC on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.
- Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Neither the provider or 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.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communications devices.

Properly shielded and grounded cables and connectors (part numbers 07H9163, 07H8985, 88G6403, 88G6404, 31H7962, or 88G6406, or their equivalents) must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Such cables and connectors are available from the provider or manufacturer. Neither the provider or manufacturer can accept responsibility for any interference caused by using other than recommended cables and connectors.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov. das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

Safety Notices

For a translation of DANGER and CAUTION safety notices, see the *Safety Information* manual, SA23-2652.

Definitions of Safety Notices

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

Danger notices appear on pages 1-15 and 3-1.

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

A *Caution* notice appears on page 3-2.

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

Installing, Relocating, or Servicing

Before connecting or removing any cables to or from the system, be sure to go through the steps in the installation guide for the rack-mounted or deskside unit.

Acoustic Noise Declaration

The equivalent continuous A-weighted sound pressure level at the bystander's position measured for a 7133 Model 010 or 020 does not exceed 48 dB(A). This level has been measured for a 7133 Model 010 in the following situation:

- The 7133 Model 010 had 16 disk drive modules installed.
- The 7133 was installed in a 7202 Rack with the bottom of the 7133 subsystem 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 500 or 600 does not exceed 48 dB(A). This level has been measured for a 7133 Model 500 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

Who Should Use This Book

This book is for people operating a system that has one or more 7133 SSA Disk Subsystems connected to it.

What This Book Contains

This book describes the 7133 SSA Disk Subsystems 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, and how to move a 7133 Model 500 or 600 deskside unit safely.

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 More Information

The *Problem Solving Guide and Reference*, SC23-2204, is the first book you should use if you have a problem with your system.

Other books that you may need are:

- *Site and Hardware Planning Information*, SA38-0508
- *SSA Adapters: User's Guide and Maintenance Information*, SA33-3272
- *7133 Models 010 and 020 SSA Disk Subsystem: Installation Guide*, GA33-3260
- *7133 Models 500 and 600 SSA Disk Subsystem: Installation Guide*, GA33-3263
- *Safety Information*, SA23-2652
- The operator guide for your system.

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 chapter describes the 7133 Serial Storage Architecture (SSA) Disk Subsystems, their controls, and how to use them.

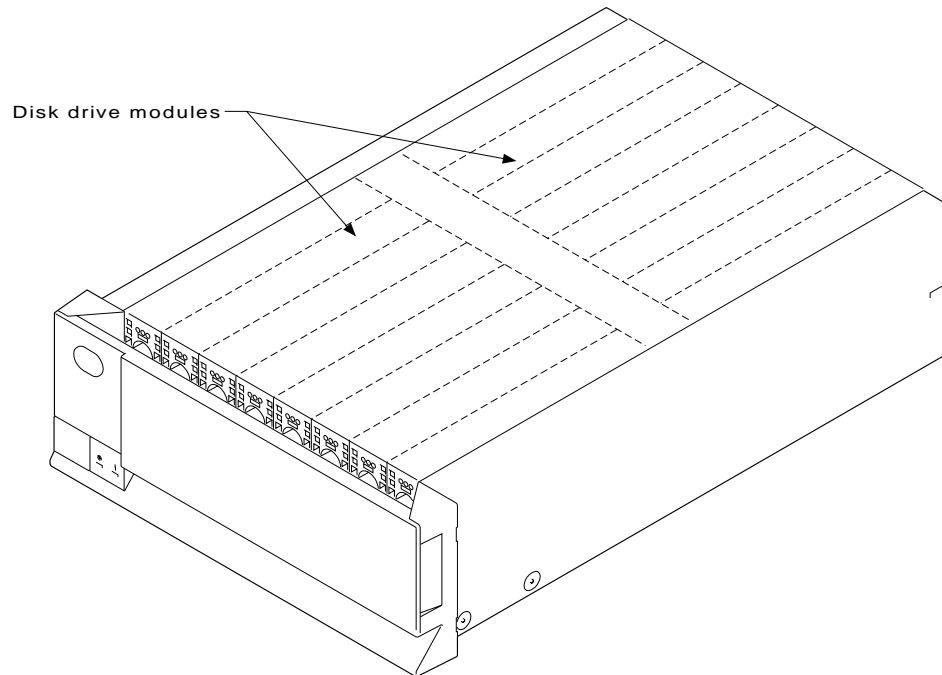
Rack-Mounted Unit Configurations

7133 Models 010 and 020 SSA Disk Subsystems are rack-mounted SSA disk storage subsystems that can be attached to reduced instruction-set computing (RISC) systems. Up to 16 SSA disk drive modules, in groups of up to four, can be installed in a Model 010 or 020 subsystem.

Each group of disk drives in a 7133 subsystem 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 Models 010 and 020: Installation Guide*.

With a 7133 Model 010 or 020, an SSA Fibre-Optic Extender feature can be installed. This allows the 7133 unit to be connected by fiber optic cables to host systems or other SSA units up to 2.4 km (7874 feet) away.

A fully configured 7133 Model 010 or 020 SSA Disk Subsystem looks like this:



The whole of later-type front covers hinge downward to give access to the disk drive modules installed at the front of 7133 units. Early covers have a movable panel that hinges downward.

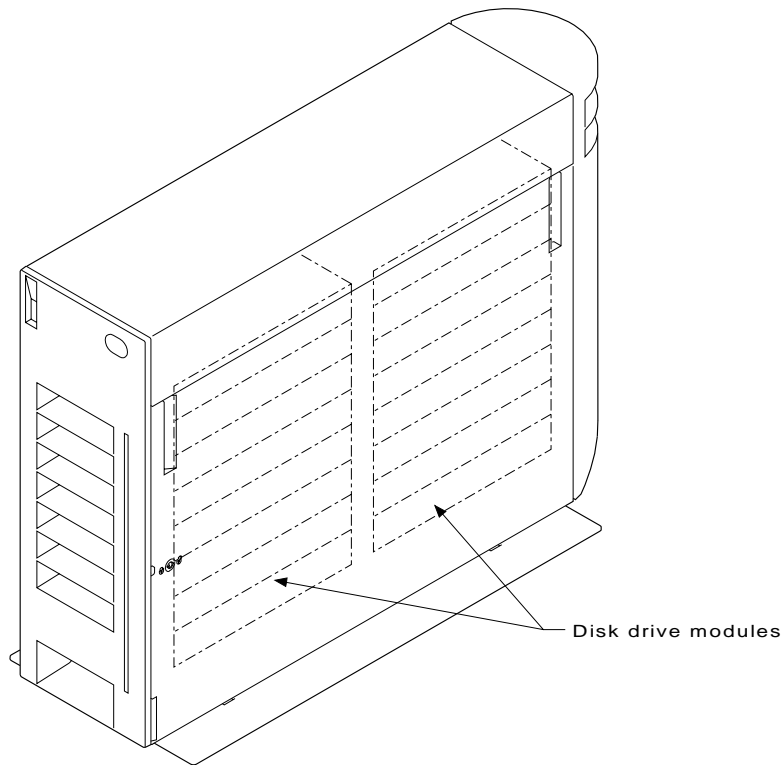
Deskside Unit Configurations

7133 Models 500 and 600 SSA Disk Subsystems are deskside SSA disk storage subsystems that can be attached to reduced instruction-set computing (RISC) systems. Up to 16 SSA disk drive modules, in groups of up to four, can be installed in a Model 500 or 600 subsystem.

Each group of disk drives in a 7133 subsystem 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 Models 500 and 600: Installation Guide*.

With a 7133 Model 500 or 600, an SSA Fibre-Optic Extender feature can be installed. This allows the 7133 unit to be connected by fiber optic cables to host systems or other subsystem units up to 2.4 km (7874 feet) away.

A fully configured 7133 Model 500 or 600 SSA Disk Subsystem 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.

Controls and Lights

This section describes the Power switch and lights on a 7133 subsystem.

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

- For a Model 010 or 020, when you turn power on and off to the rack containing the subsystem
- 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.

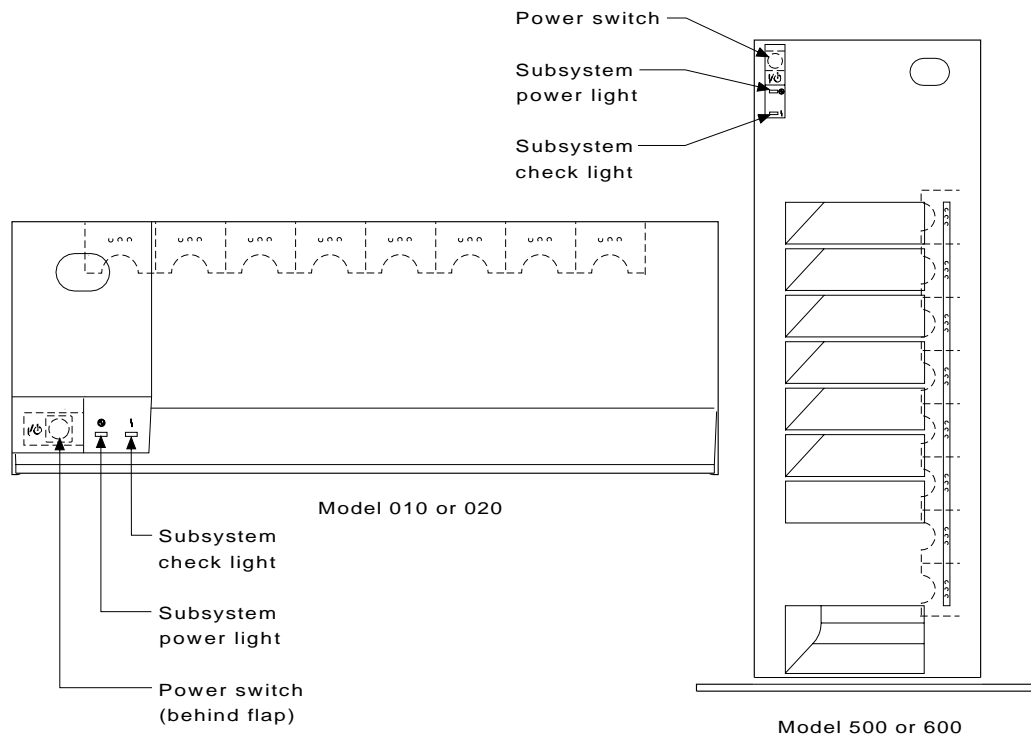
During normal operations, you do not need to check the lights on 7133 subsystems.

Subsystem Controls

Each 7133 unit has the subsystem Power switch and subsystem lights at the front.

On a Model 010 or 020, the Power switch is behind a flap on the front cover. To reach the switch:

- On a Model 010, hinge the flap upward,
- On a Model 020, hinge the flap to the right.



Power switch | /

The Power switch controls electrical power from the power-supply units within the 7133 subsystem to the disk drives and other components. To connect this internal electrical power, press the Power switch and, on a Model 010 or a Model 500 only, hold it pressed for at least two seconds. To remove this power, press the switch again and, on a Model 010 or a Model 500 only, hold it pressed for at least two seconds.

When you have pressed this switch to remove the internal power and the subsystem power light is off, mainline electrical power can still be present within the 7133 subsystem. To remove electrical power completely from the subsystem, disconnect the mainline electrical supply.

Attention: Pressing this switch when the subsystem power light is on can cause a system fault unless you first make the disk drives within the 7133 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 subsystem is connected to more than one adapter, make the disk drives unavailable to the system or systems for each of the paths to the subsystem.

Subsystem Power light

The Subsystem Power light, which is green, comes on when the power-supply units within the 7133 subsystem are supplying power to the rest of the subsystem.

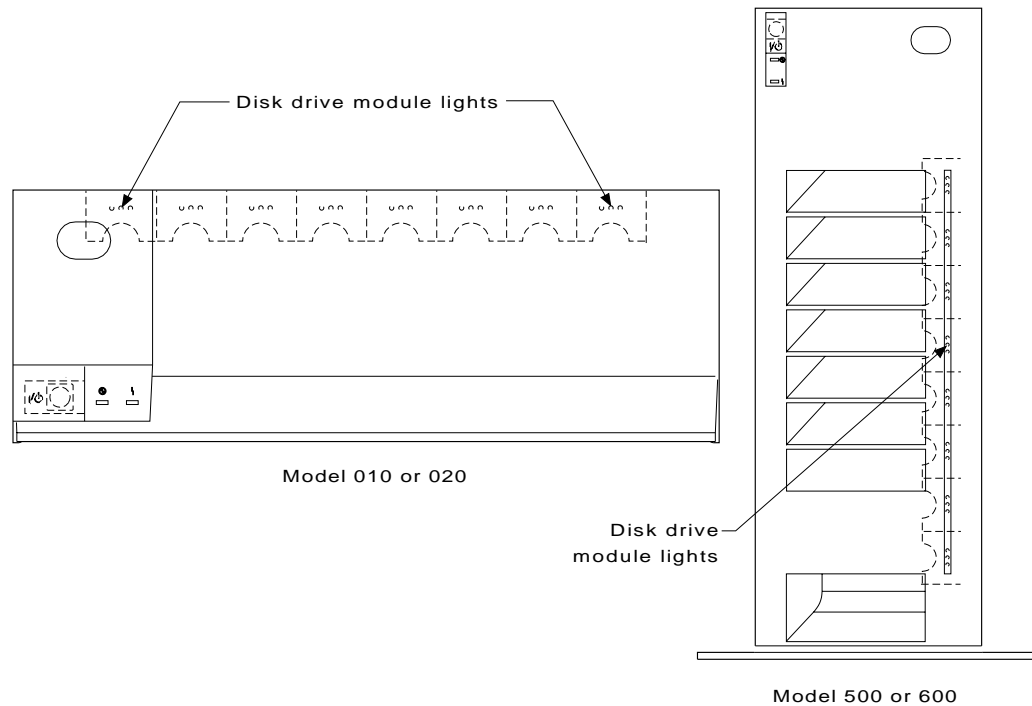
Subsystem Check light

The Subsystem Check light, which is amber, comes on:

- Continuously, if a failure occurs within the 7133 subsystem. The subsystem might be able to continue operating satisfactorily even when the failure of a single part has been detected.
- Continuously, when a disk drive within the subsystem is in service mode (see step 7 on page 1-11).
- Flashing, when a disk drive within the subsystem has been selected with the identify option (see “Identifying a Subsystem or Disk Drive Module” on page 1-9).

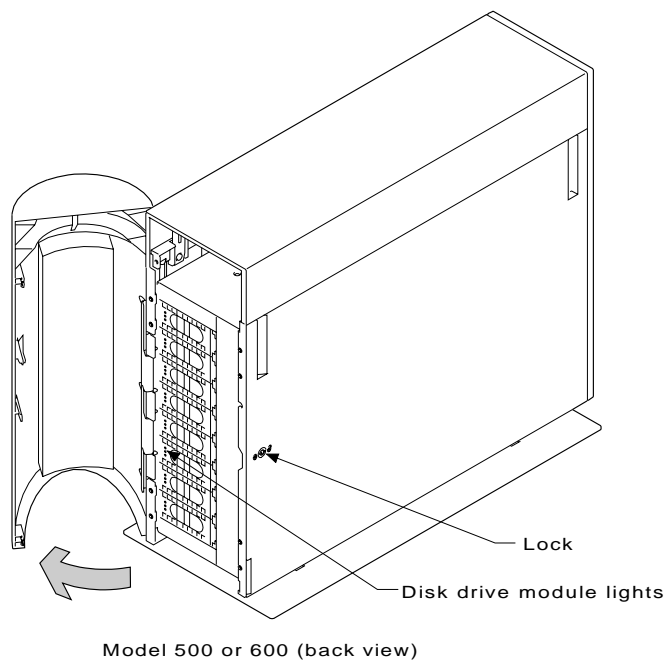
Disk Drive Module Lights

You can see the lights on disk drive modules installed in the front part of a 7133 unit through a transparent part of the cover.

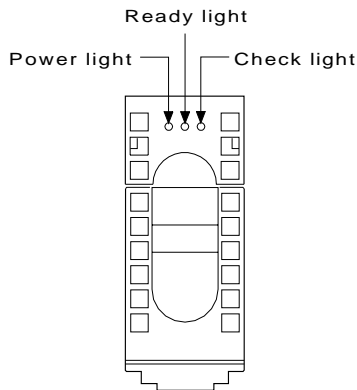


To see the lights on disk drive modules installed at the back of a 7133:

- | • For a Model 010 or 020, open the back door of the rack containing the 7133.
- | • For a Model 500 or 600, 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 hinging it to the left.



Each disk drive module has three lights.



Power light

The Power light, which is green, comes on when the required power supplies are present in the disk drive module.

Ready light

The Ready light, which is green, comes on and remains on when both SSA connections to the disk drive module are good and the disk drive is ready to accept commands from the host system.

The light flashes slowly when only one SSA connection is good.

The light flickers when the disk drive is executing a command.

Check light

The Check light, which is amber, comes on and remains on:

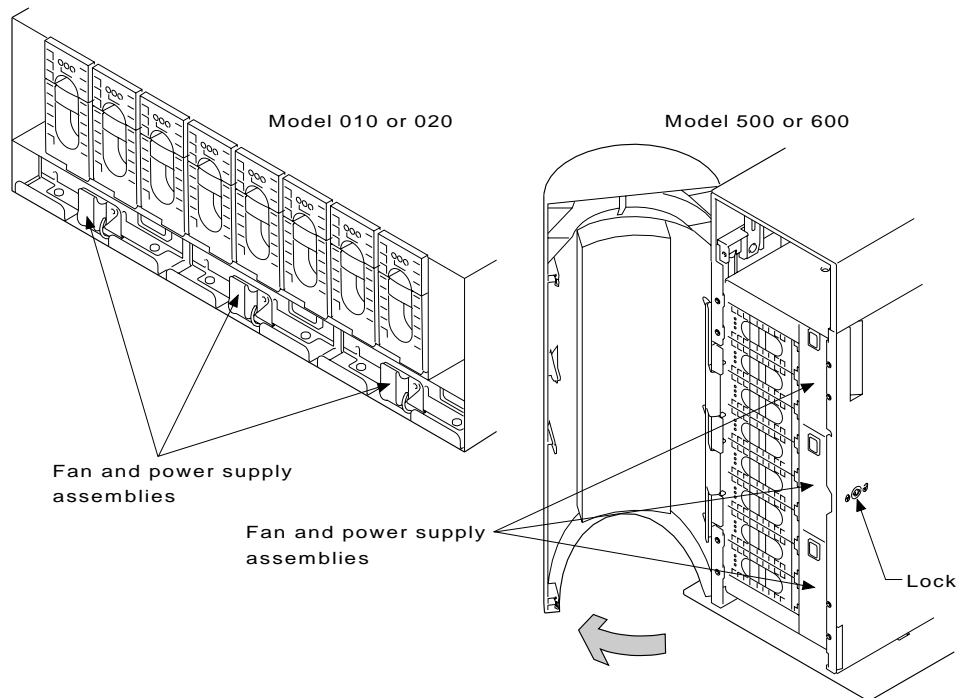
- If a failure in the disk drive module is detected
- While the automatic self-tests are running
- To indicate *service mode*; that is, use of the disk drive by the system programs has ended and repair actions can be performed.

The light flashes to show that the disk drive has been selected with the Identify option from the Set Service Mode service aid. "Identifying a Subsystem or Disk Drive Module" on page 1-9 describes how to use this aid.

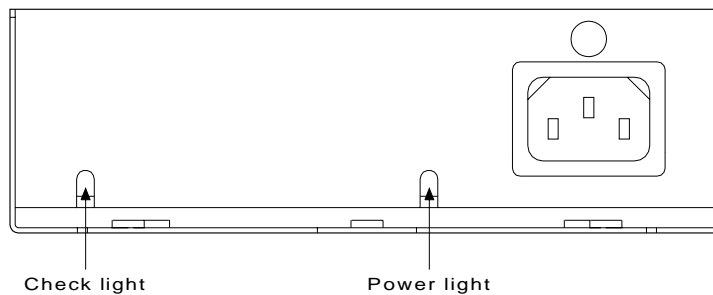
Fan-and-Power-Supply Assembly Lights

Fan-and-power-supply assemblies are installed in the back of 7133 units. To see their lights:

- For a Model 010 or 020, open the back door of the rack containing the 7133.
- For a Model 500 or 600, 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 hinging it to the left.



There are up to three fan-and-power-supply assemblies in a 7133 unit. These assemblies have the following lights:



Power light

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

Check light

The Check light, which is amber, comes on and remains on if the power-supply unit fails.

This light flashes if the fan within the assembly fails.

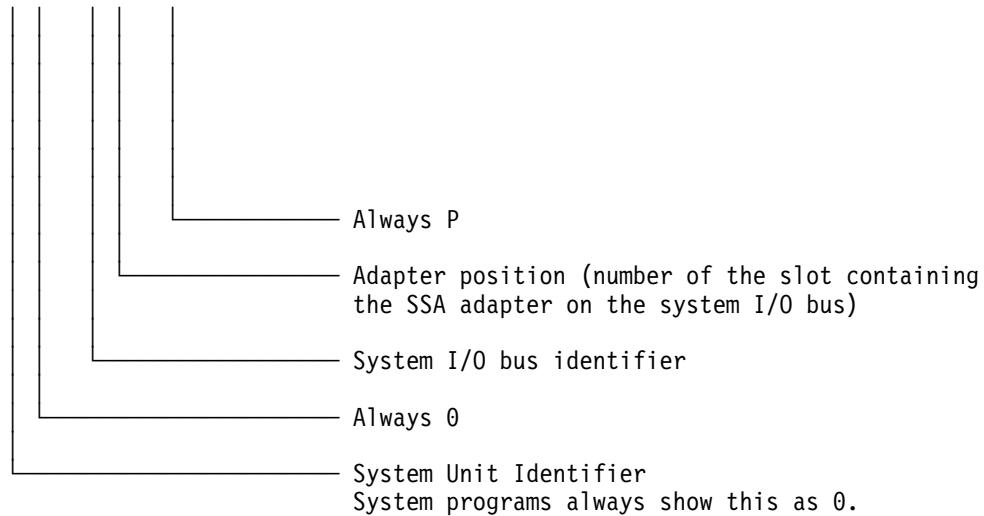
Identifying Adapters, Subsystems, and Disk Drive Modules

You can identify an SSA adapter by the location code contained in system messages that refer to a subsystem attached to that adapter.

To identify a subsystem or disk drive module, use the service aid utility provided with the system.

Location Code Format for 7133 Subsystems

A B - C D - E



Characters A through D identify the SSA adapter that the subsystem is attached to. To identify a disk drive within a subsystem, use the Set Service Mode service aid described under “Identifying a Subsystem or Disk Drive Module” on page 1-9.

See “Location Codes” in the operator guide for your system for general information about location codes.

Identifying a Subsystem or Disk Drive Module

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      Enter
```

5. This displays the Set Service Mode menu:

```

SET SERVICE MODE                                     802381

Move cursor onto selection, then press Enter.

<TOP>

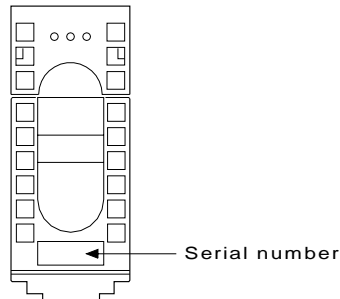
pdisk0  1234567  00-04-P      2 GB SSA Physical Disk
pdisk1  1234568  00-04-P      2 GB SSA Physical Disk
pdisk2  1234569  00-04-P      2 GB SSA Physical Disk
> pdisk3  1234560  00-04-P      2 GB SSA Physical Disk
pdisk4  1234561  00-04-P      2 GB SSA Physical Disk
pdisk5  1234562  00-04-P      2 GB SSA Physical Disk
pdisk6  1234563  00-04-P      2 GB SSA Physical Disk
pdisk7  1234564  00-04-P      2 GB SSA Physical Disk

<BOTTOM>

F3=CANCEL          F10=EXIT          Enter
  
```

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

- 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:



- 00-40-P** The software location code of the disk drive.
- 2 GB SSA ...** A 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
> pdisk3 1234560 00-04-P0-00 2 GB SSA Physical Disk
Move cursor onto selection, then press Enter.
> Set/Reset Service Mode
+ Set/Reset Identify

F3=CANCEL F10=EXIT Enter
```

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 4-3.

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.

Security

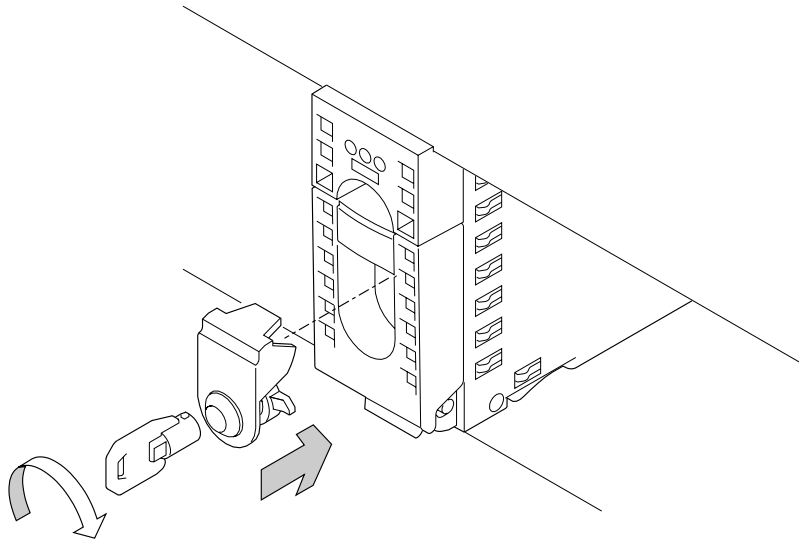
To protect your subsystem from unauthorized access, locks are provided on the covers of desktop units and are available as accessories to secure individual disk drive modules.

Disk Drive Module Locks

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

To lock a disk drive module into a unit:

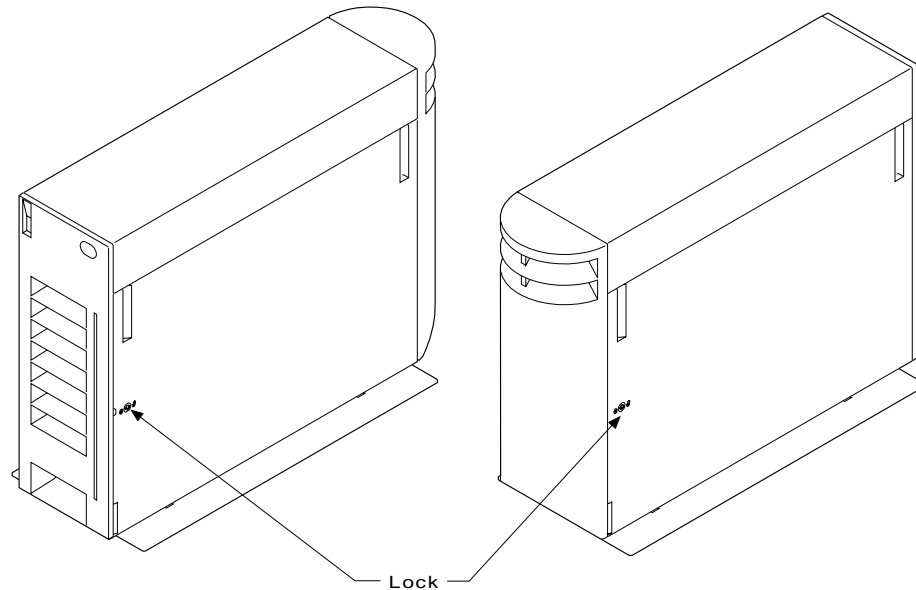
1. Put the lock into the space in the handle of the disk drive module.
2. Put the end of the key into the lock.
3. Turn the key half a turn clockwise.



Three keys, that fit all 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 Models 500 and 600, 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.

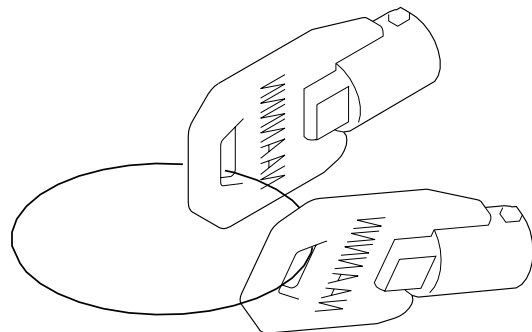


Ordering Cover-Lock Keys

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 page 1-14, 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

Name _____

Address _____

City _____

State _____ Zip _____

Mail this form to:

Camlock Systems inc.
5623 West 125th Street
Alsip
Illinois 60658
U.S.A.

or:

Camlock Systems
3, Park View
Compton Industrial Estate
EASTBOURNE
Sussex
United Kingdom
BN23 6QE

Note: No orders will be processed without this form.

External Connectors

If you open the back cover of a Model 500 or 600 (if necessary, using the key provided to unlock the cover), you can reach the connectors for the signal cables to the system unit.

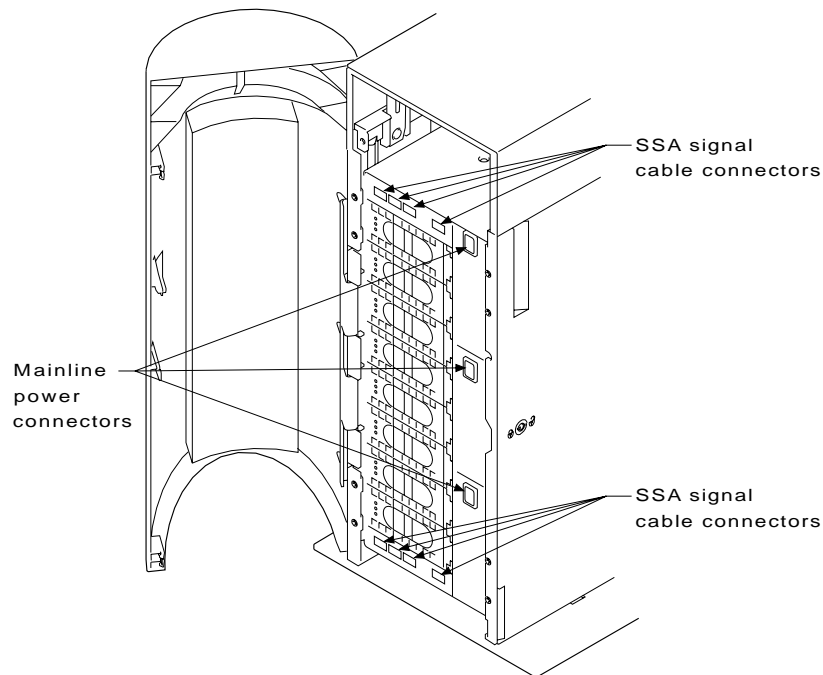
Note: For a translation of the following notices, see the *Safety Information* manual, SA23-2652.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communication lines.



Chapter 2. Adding Features

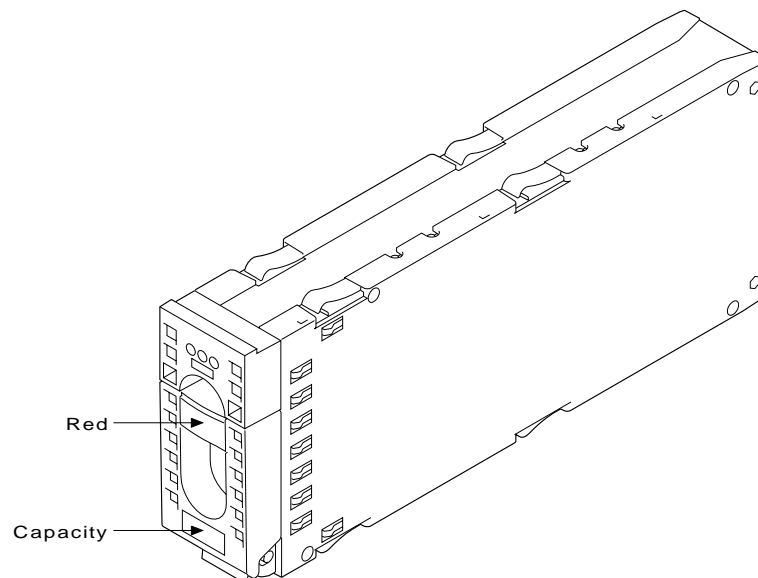
This chapter describes how to add certain optional features to a 7133 SSA Disk Subsystem that is already installed as part of your system.

Adding Disk Drive Modules

In some circumstances, you can add one or more disk drive modules to a 7133 SSA Disk Subsystem.

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 **red** panel 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:



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.
- If you are adding a disk drive module at the back of a 7133 unit for the first time, there must be three fan-and-power-supply assemblies installed in the unit, rather than two fan-and-power-supply assemblies and a dummy fan-and-power-supply assembly. “Adding a Fan-and-Power-Supply Assembly” on page 2-8 describes how to add the third fan-and-power-supply assembly.

You do not need to remove power from the subsystem 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

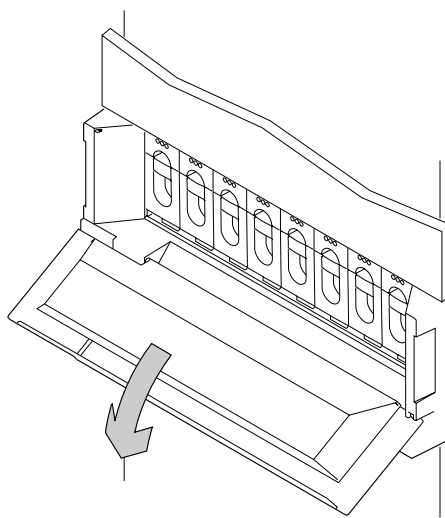
1 If you are adding the first disk drive module to be installed at the back of a 7133 Model 010 or Model 500 unit – **Stop**. Check that there are three fan-and-power-supply assemblies installed in the 7133 unit (see step 2 on page 2-9). If there are only two fan-and-power-supply assemblies and a dummy fan-and-power-supply assembly installed, exchange the dummy fan-and-power-supply assembly for a third fan-and-power-supply assembly before installing the disk drive module. “Adding a Fan-and-Power-Supply Assembly” on page 2-8 describes how to do this. 7133 Model 020 and Model 600 units always have three fan-and-power-supply assemblies installed.

2 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.

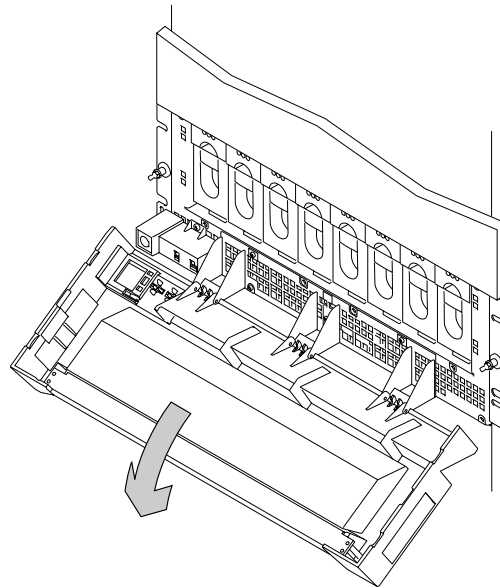
You can identify the disk drive modules that will be next to the new disk drive module by using the Set Service Mode service aid. (“Identifying a Subsystem or Disk Drive Module” on page 1-9 describes how to use this aid.) You cannot use the Set Service Mode service aid to identify the dummy disk drive module itself because dummy disk drive modules do not have lights or serial-number labels.

3 Open the front cover of the unit by:

- For units with early covers, gripping the movable part of the cover at the sides and hinging it downward.
- For units with later covers, gripping the cover at the sides and hinging the whole front cover downward.



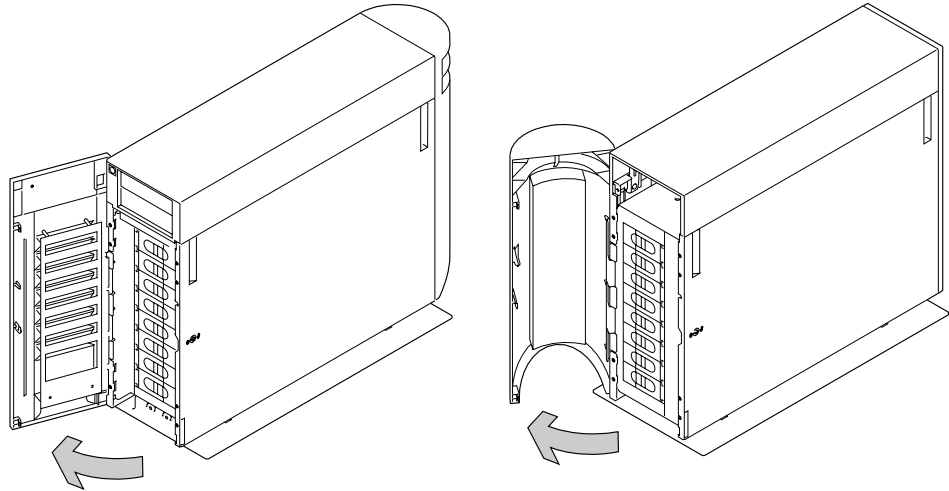
Early Covers



Later Covers

If the slot for the new disk drive module is in a deskside unit, open the front or back cover of the unit by:

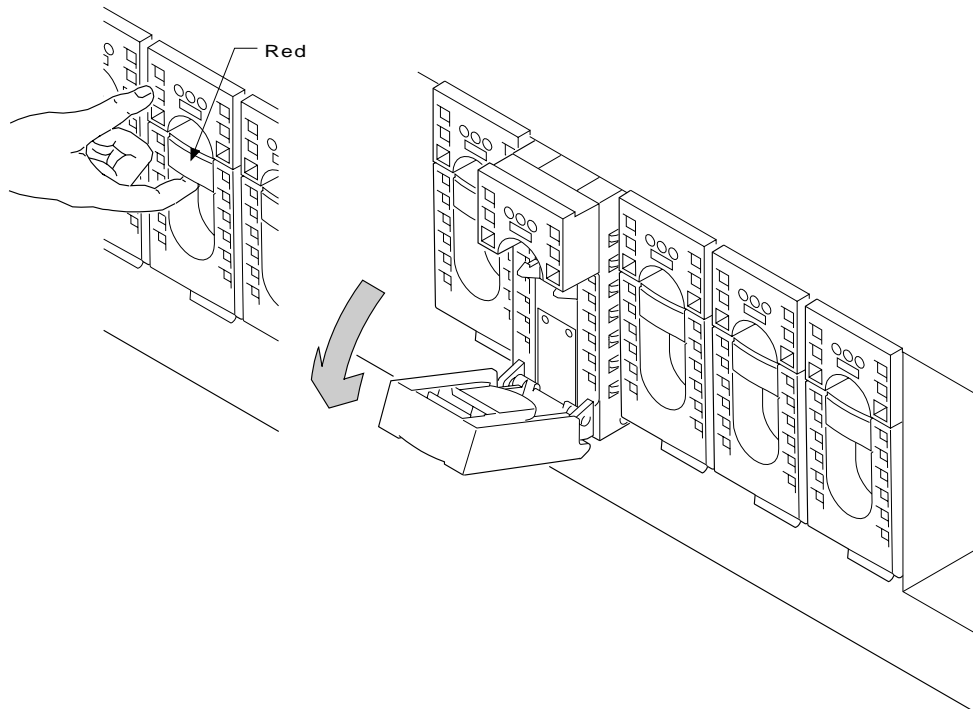
- a. If necessary, unlocking the cover using the key provided.
- b. Gripping the right-hand edge of the cover and hinging it to the left.



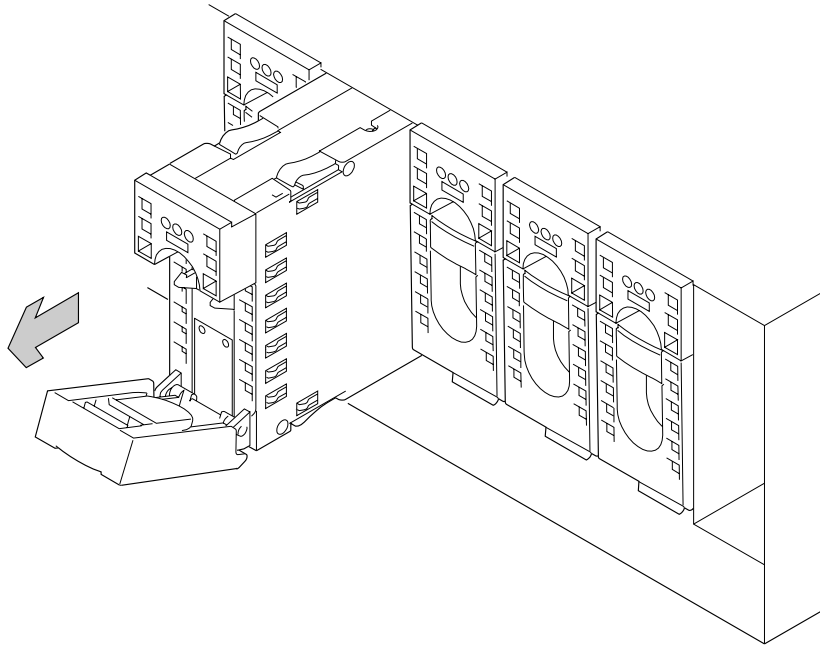
The illustrations in the following instructions show a rack-mounted unit. The steps for adding a disk drive module to a deskside unit are the same, but the parts are turned through 90 degrees.

To Add a Disk Drive Module

- 1** Press upward behind the red panel and pull 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.

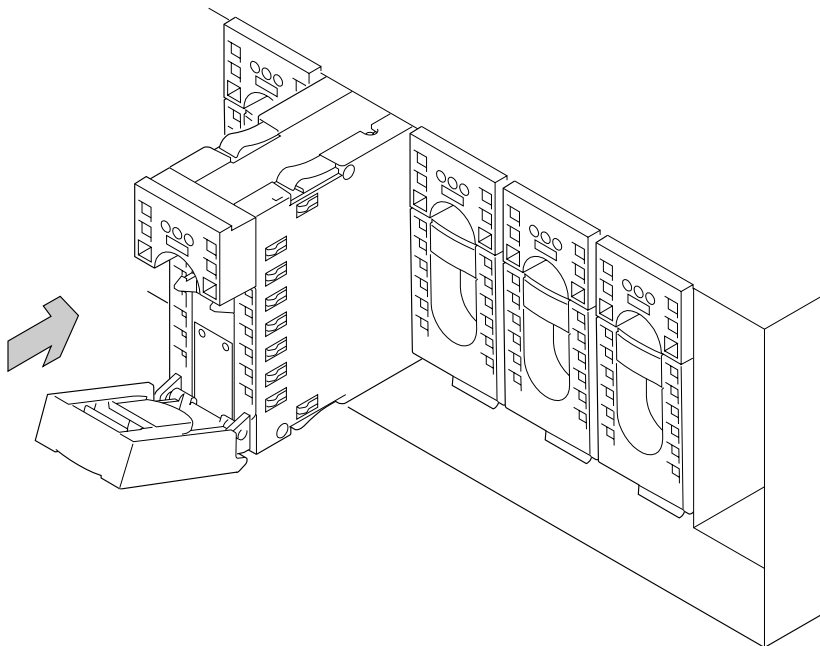


Attention

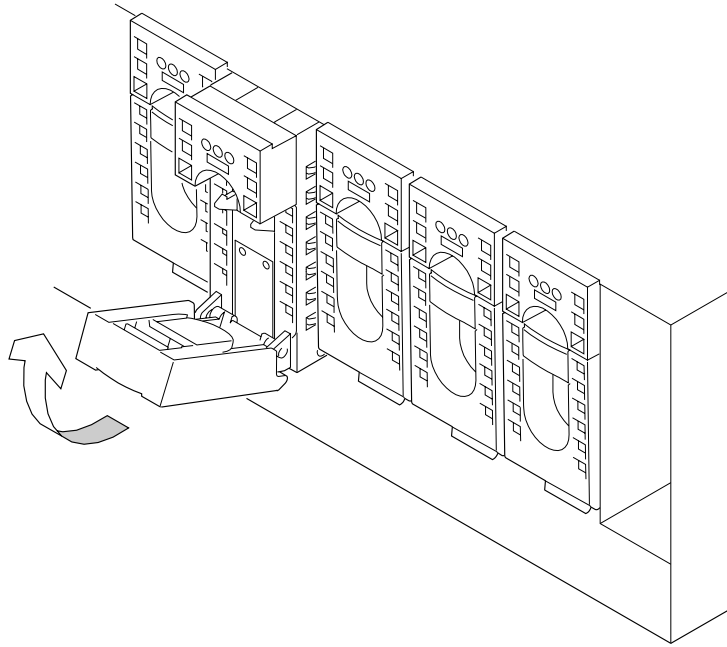
Do not leave the slot empty for more than 30 minutes; if you do, the 7133 unit and the disk drive modules within it might overheat and be damaged.

- 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.

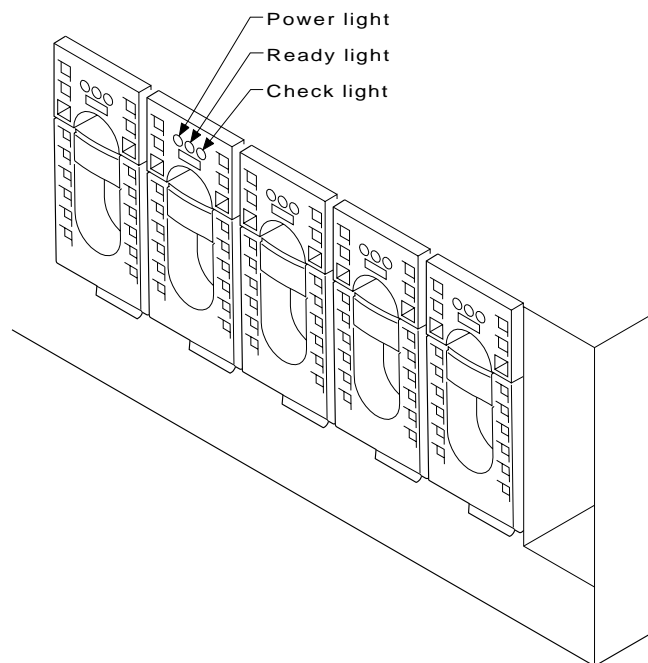
The module stops before it is completely into the slot.



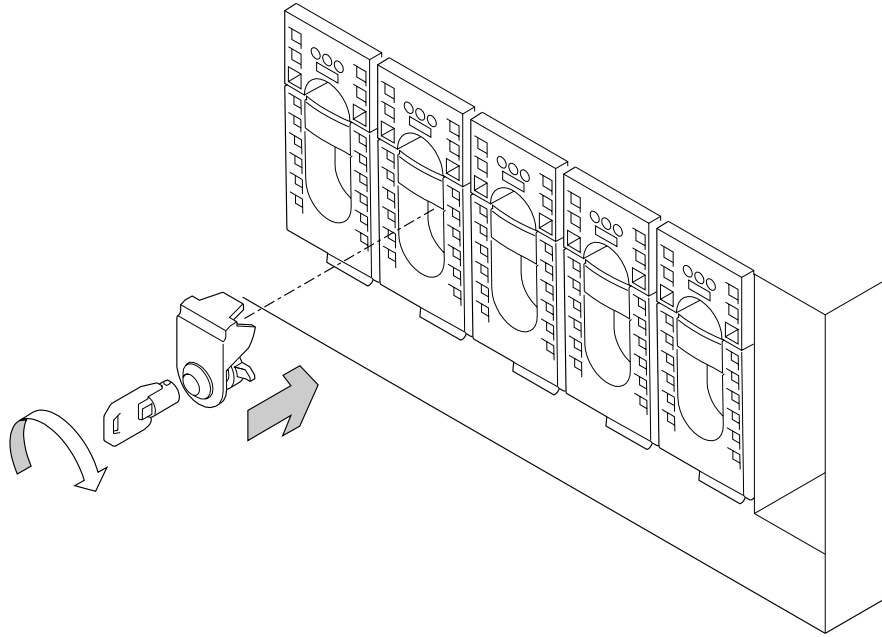
- 4** Close the handle of the module until it shuts with a click. This action pulls the module completely into the slot.



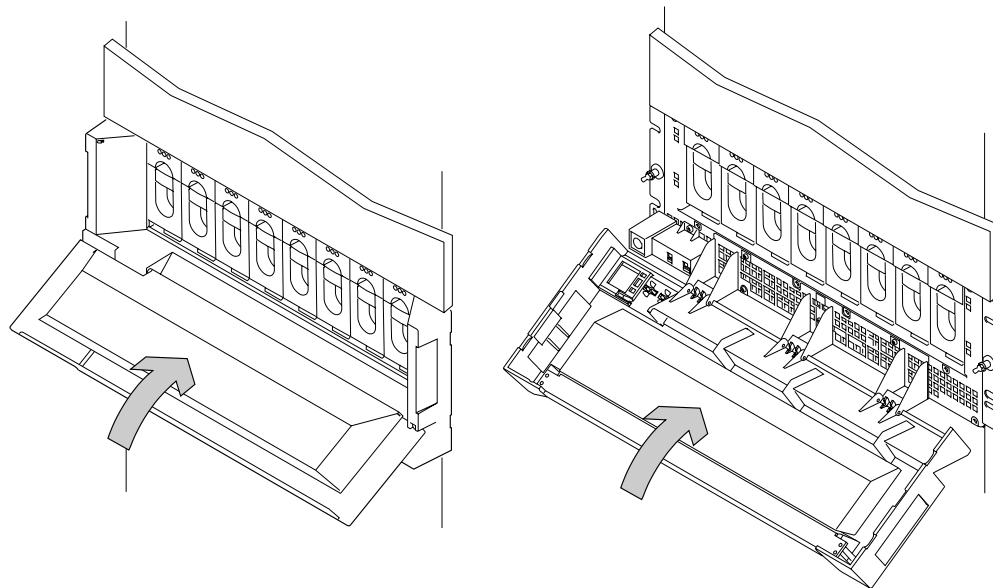
- 5** Push on the front of the module to ensure that the module is fully home.
- 6** Check that all three lights come on immediately and the check light goes out after approximately 2 seconds. (If this does not happen, after checking that the new module is properly installed, restart the diagnostic programs to analyze the new fault.)



- 7** If required, lock the new disk drive module into the unit, using the lock and key that you can order as a feature of the unit.



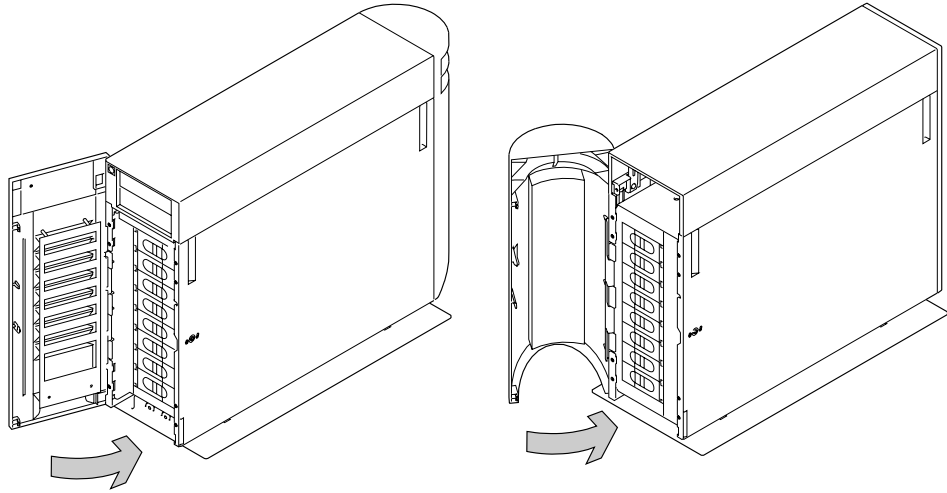
- 8** If you have just added a disk drive module at the front of a rack-mounted unit, close the front cover.



Early Covers

Later Covers

- 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.



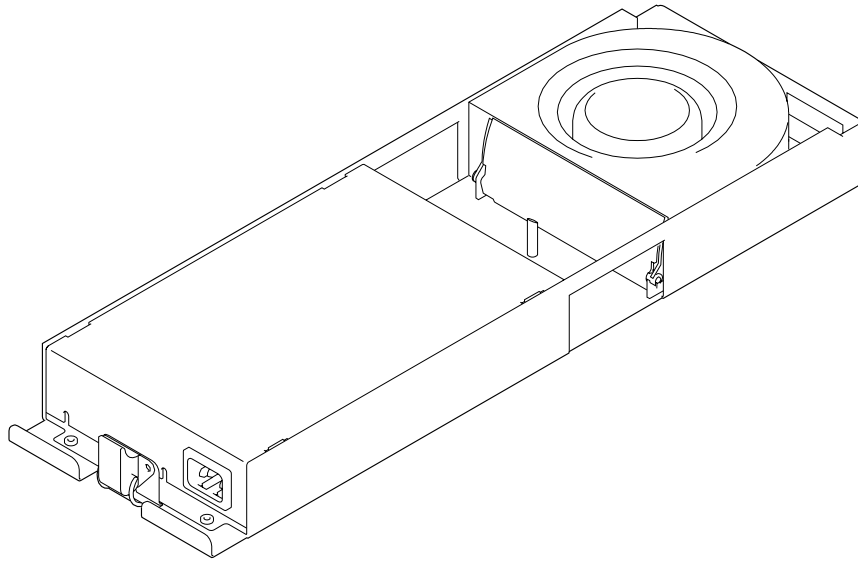
- 10** Add the new disk drive module into your system software configuration, using the system programs.

Adding a Fan-and-Power-Supply Assembly

If your 7133 Model 010 or Model 500 SSA Disk Subsystem has only two fan-and-power-supply assemblies installed, you must add a third fan-and-power-supply assembly before installing disk drive modules at the back of a 7133 unit. If your 7133 unit has disk drive modules installed only at the front, you can add a third fan-and-power-supply assembly to provide increased protection against the chance of losing access to your disk drive modules should a fan-and-power-supply assembly become faulty. 7133 Model 020 and Model 600 units always have three fan-and-power-supply assemblies installed.

You can only add a fan-and-power-supply assembly if:

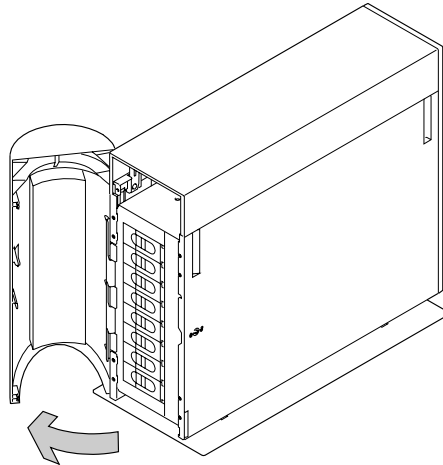
- You are authorized by your organization to do this.
- You have the correct fan-and-power-supply assembly.



You do not need to remove power from the subsystem when adding a fan-and-power-supply assembly.

Before Adding a Fan-and-Power-Supply Assembly

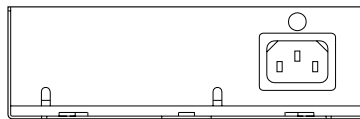
- 1 If you are going to add a fan-and-power-supply assembly to a deskside unit, open the back cover of the unit by:
 - a. If necessary, unlocking the cover using the key provided.
 - b. Gripping the right-hand edge of the cover and hinging it to the left.



- 2 Identify the space for the new fan-and-power-supply assembly:

- The left-hand (bottom) position contains either a fan-and-power-supply assembly or a dummy fan-and-power-supply assembly.

A fan-and-power-supply assembly has a socket for the mainline power plug; a dummy fan-and-power-supply assembly has two spaces for holding spare power plugs. The following instructions describe how to replace a dummy fan-and-power-supply assembly in this position with a fan-and-power-supply assembly.



Fan-and power-supply assembly



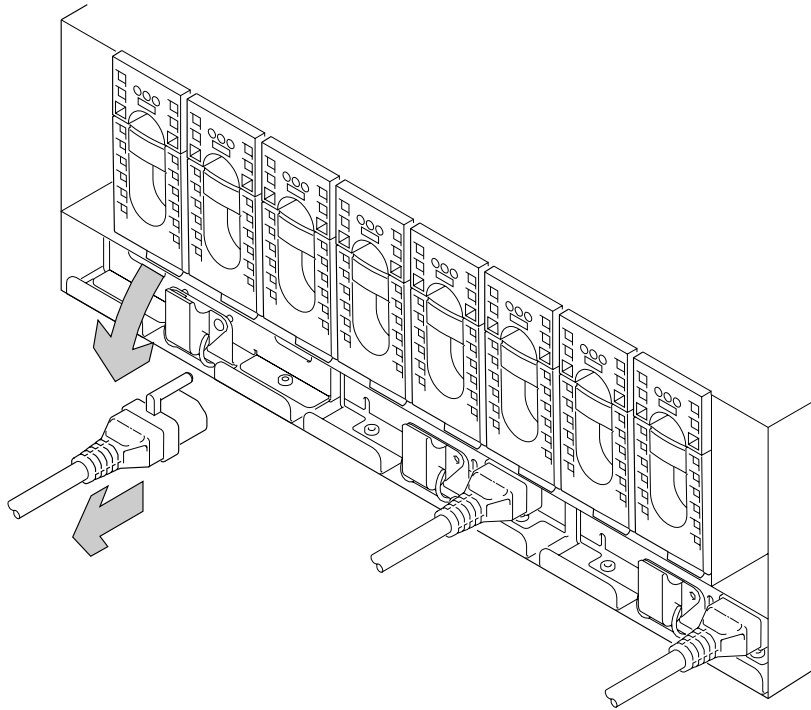
Dummy fan-and power-supply assembly

- There are always fan-and-power-supply assemblies in the right-hand (top) and middle positions.

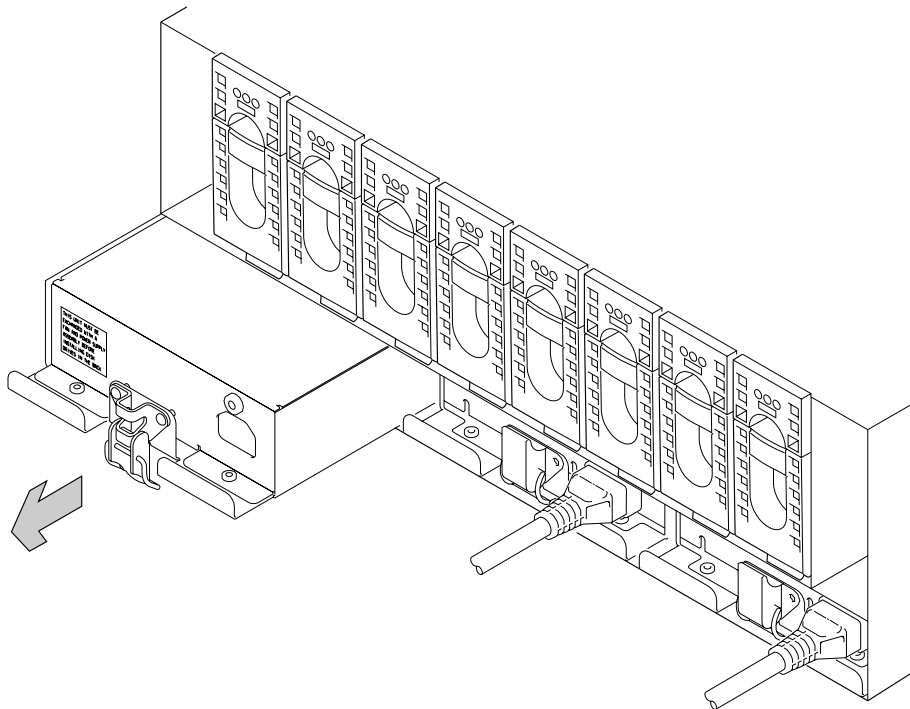
To Add a Fan-and-Power-Supply Assembly

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

- 1 Remove the unused power plug from the space in the front of the dummy fan-and-power-supply assembly. Unclip the dummy fan-and-power-supply assembly.



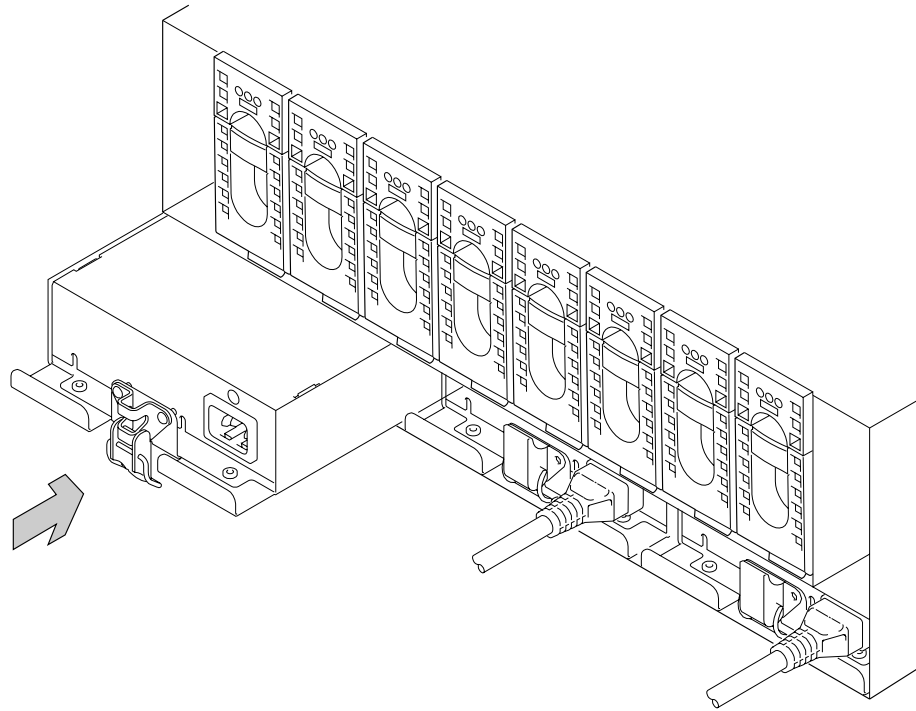
- 2 Pull the dummy fan-and-power-supply assembly from the unit and discard it.



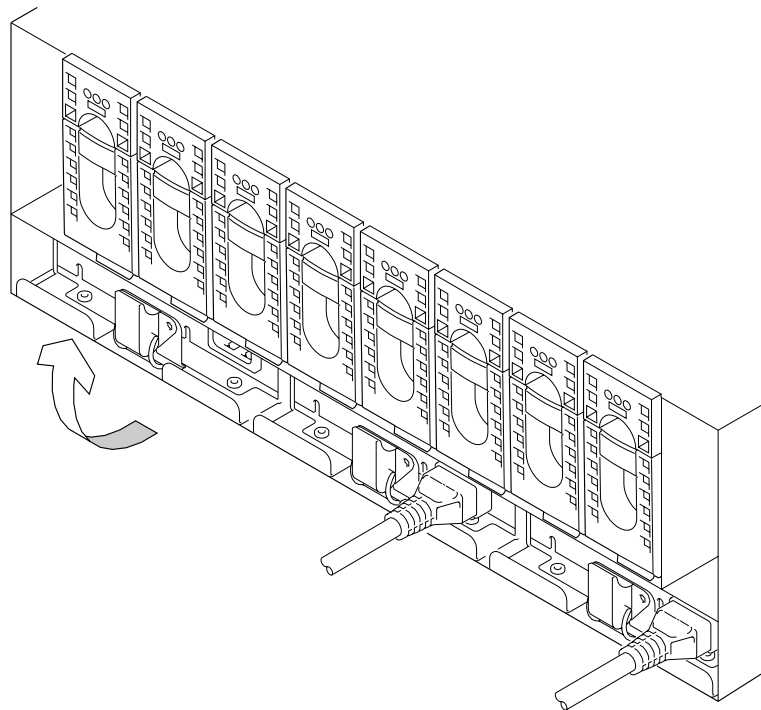
Attention

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.

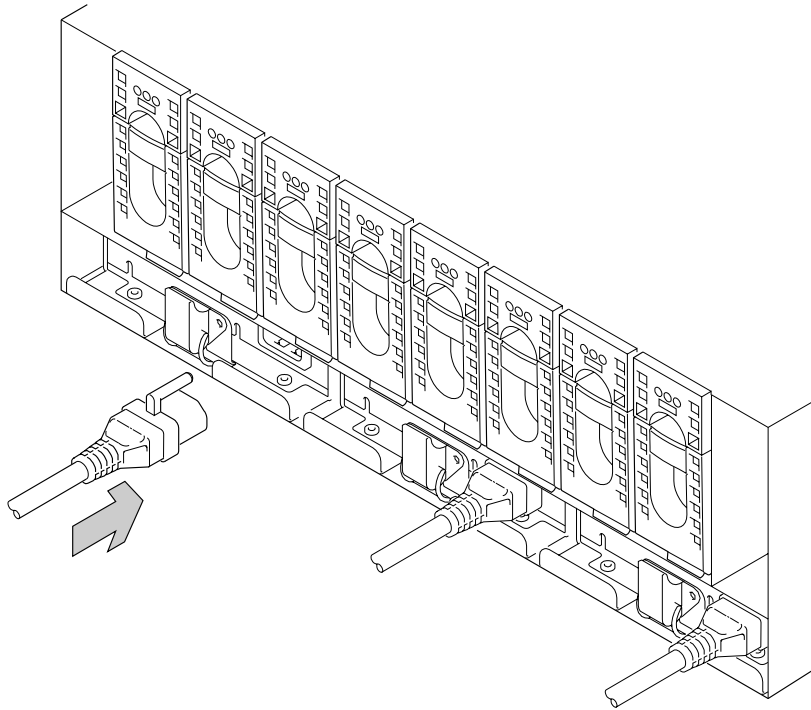
- 3** Push the new fan-and-power-supply assembly fully into the unit.



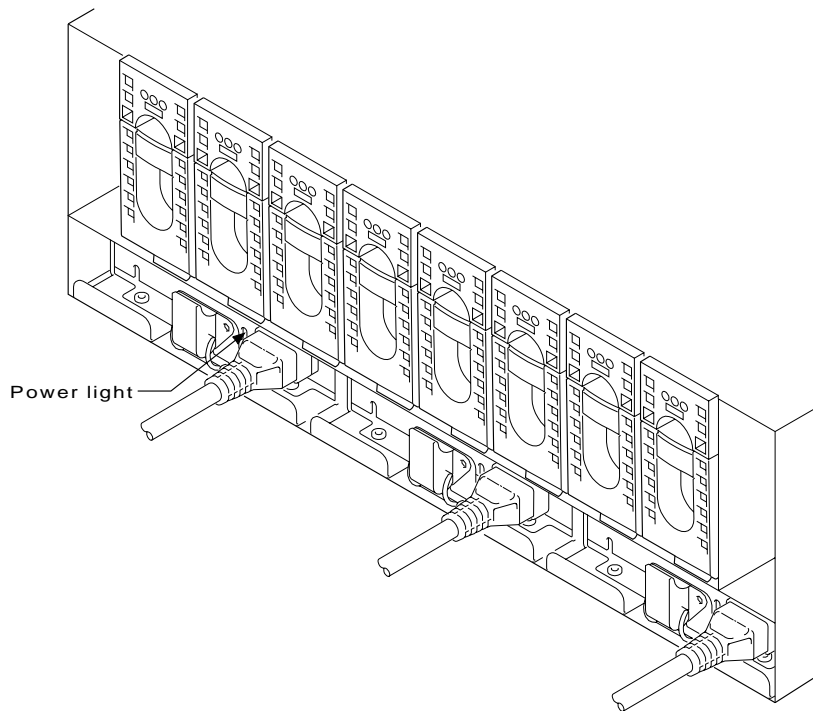
- 4** Fasten the clip that holds the fan-and-power-supply assembly in the unit.



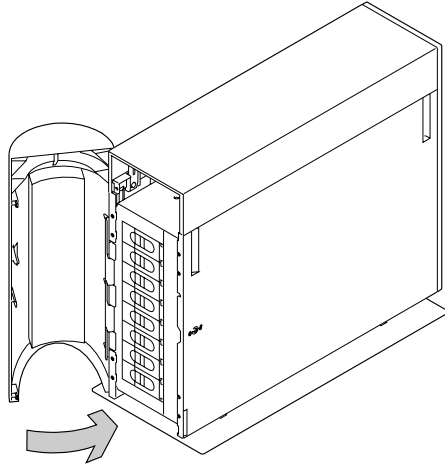
- 5** Plug the unused plug of the main power cable into the new fan-and-power-supply assembly.



- 6** Check that the green Power light comes on within 5 seconds. (If it does not, after checking that the new fan-and-power-supply assembly is properly installed, go to the system diagnostic programs to analyze the new fault.)



- 7** If you have just added a fan-and-power-supply assembly to a deskside unit, close the back cover and, if required, lock it with the key provided.



Chapter 3. Moving a Model 500 or 600 Deskside Unit 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 unit for moving.

You should not try to move a 7133 Model 010 or 020 rack-mounted unit yourself. Always contact a trained service representative to do this for you.

If you want your system or deskside unit moved, you should contact a trained service representative. However, if you decide to move a Model 500 or 600 unit yourself, you should take the following precautions.

Note: For a translation of the following notices, see the *Safety Information* manual, SA23-2652.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

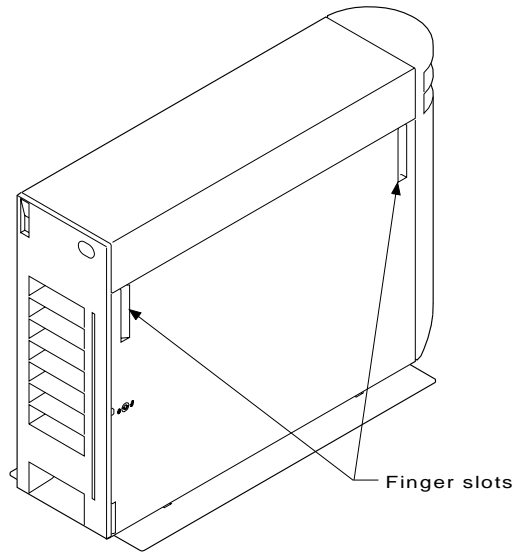
During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communication lines.

Attention: Ensure that the system is not using any of the devices within the 7133 before you begin to move it, otherwise data loss can occur.

To move a 7133 Model 500 or 600 deskside unit:

1. Turn power off from the 7133.
2. Unplug the 7133 from the mainline power outlet.
3. Ensure that all of the cables connected to the back of the 7133 are properly labeled at both ends before you unplug them.
4. Unplug the SSA cables from the SSA adapter in the system unit.

5. Pull or push the 7133 to its new location. When pulling, use the finger slots.



CAUTION:

A 7133 Model 500 or 600 weighs 58.5 kg (129 lb) empty, and approximately 72.5 kg (160 lb) with 16 disk drives installed. Do not attempt to lift the 7133.

6. Because removing the power cable is the means of disconnecting mainline power from the 7133 unit, in the location you are moving to, ensure that the power outlet is located near the equipment and is easily accessible. Check the power outlet for correct wiring, voltage, and grounding before attaching the 7133 unit or the system unit.
7. Connect the SSA cables to the SSA adapters in the system unit and to the 7133 unit.
8. Plug the 7133 power cable into the mainline power outlet.

Chapter 4. Dealing with Problems

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

Starting to Deal with Problems

The *Problem Solving Guide and Reference*, SC23-2204, is the first book you should use when you have a problem with your system. It contains the procedure for deciding whether the problem is hardware or software related.

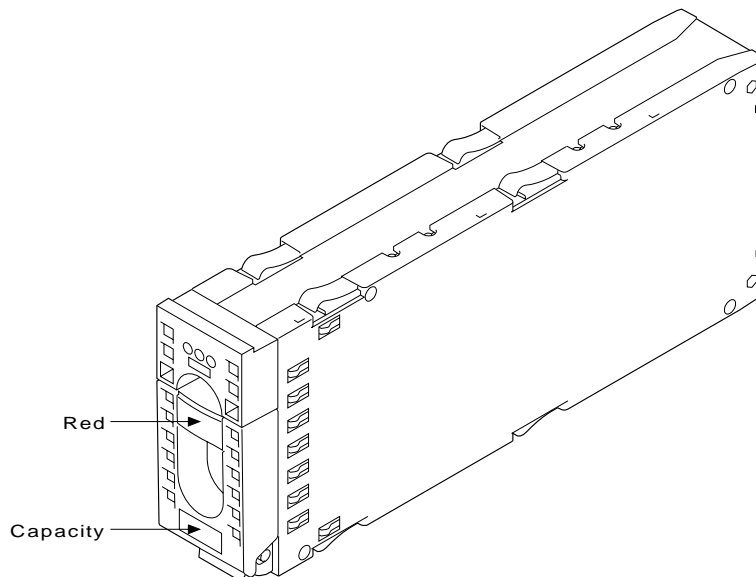
If you have a problem with a 7133 SSA Disk Subsystem, see the operator guide for your system for a description of what to do.

For some problems, your system diagnostics tell you to check the lights on the subsystem to discover which part, if any, has a fault, and “Controls and Lights” on page 1-3 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 4-15 describes other information you should report.)

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 **red** panel 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:



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 subsystem when changing a disk drive module.

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

Before Changing a Disk Drive Module

- 1** Check the Service Request Number (SRN) given by the system diagnostic programs.

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'

60210

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.

- 2** Find the failing disk drive module by using:

a. The location code supplied by the system diagnostic programs through the service aids.

b. The Set Service Mode service aid ("Identifying a Subsystem or Disk Drive Module" on page 1-9 describes how to use this aid).

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

- 3** Put the failing disk drive module into service mode; step 7 on page 1-11 describes how to do this.

- 4** Check the lights on this disk drive module. ("Disk Drive Module Lights" on page 1-5 describes where these are and how to see them.)

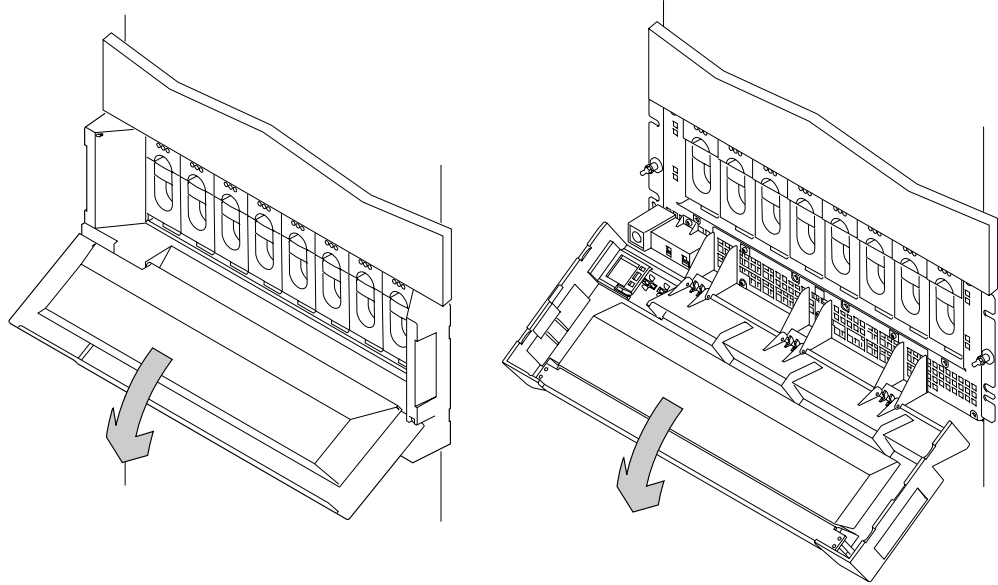
If the check light is not on, you cannot change the disk drive module; call your service representative and report the problem.

If the check light is on, change the disk drive module using the procedure starting on page 4-3.

To Change a Disk Drive Module

1 If the failing disk drive module is at the front of a Model 010 or 020 rack-mounted unit, open the front cover of the unit by:

- For units with early covers, gripping the movable part of the cover at the sides and hinging it downward
- For units with later covers, gripping the cover at the sides and hinging the whole front cover downward.

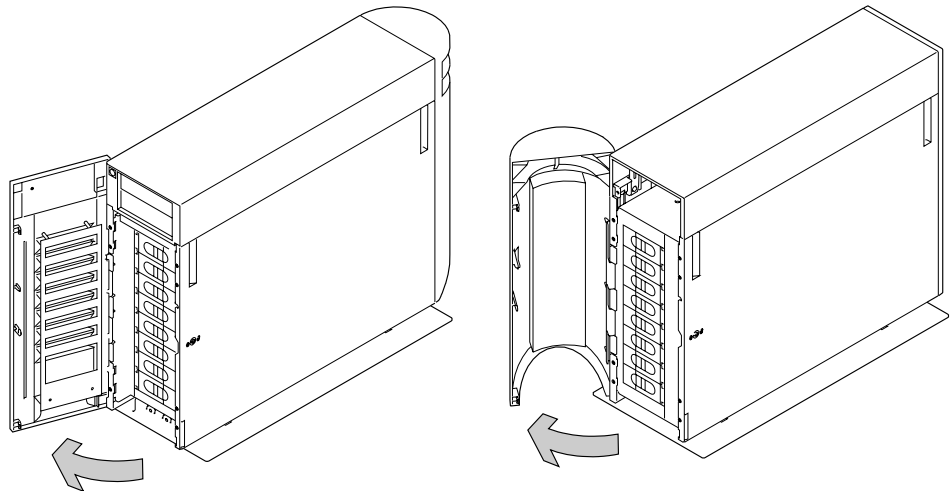


Early Covers

Later Covers

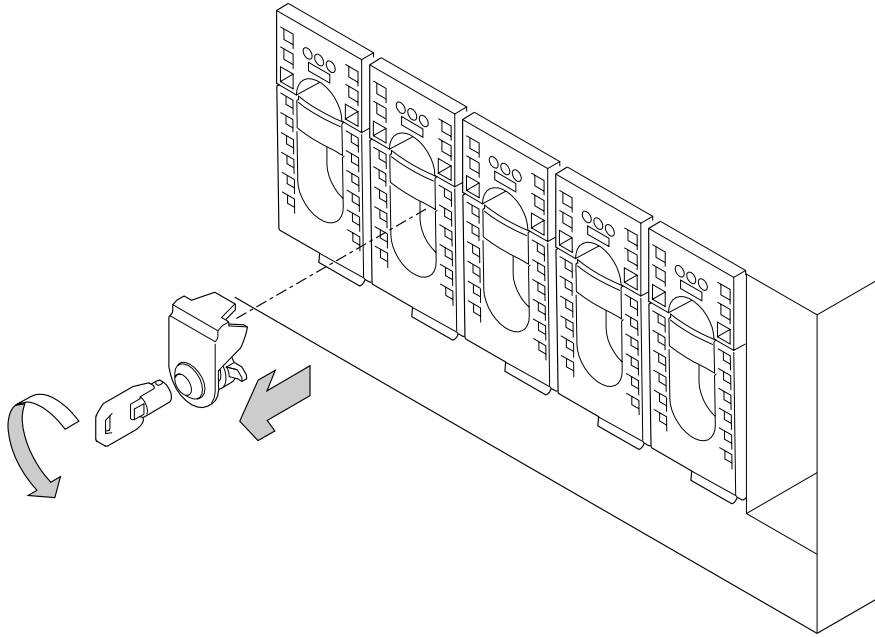
2 If the failing disk drive module is in a deskside unit, open the front or back cover of the unit by:

- a. If necessary, unlocking the cover, using the key provided
- b. Gripping the cover at the right and hinging it to the left.

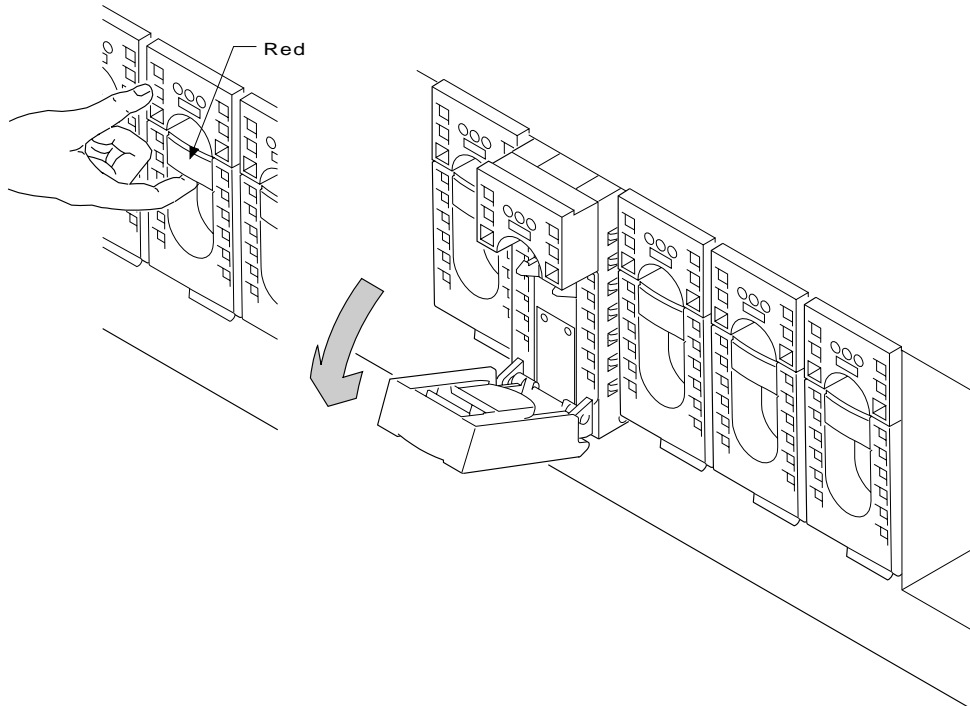


The illustrations in the following instructions show a rack-mounted unit. The steps for changing a disk drive module in a deskside unit are the same, but the parts are turned through 90 degrees.

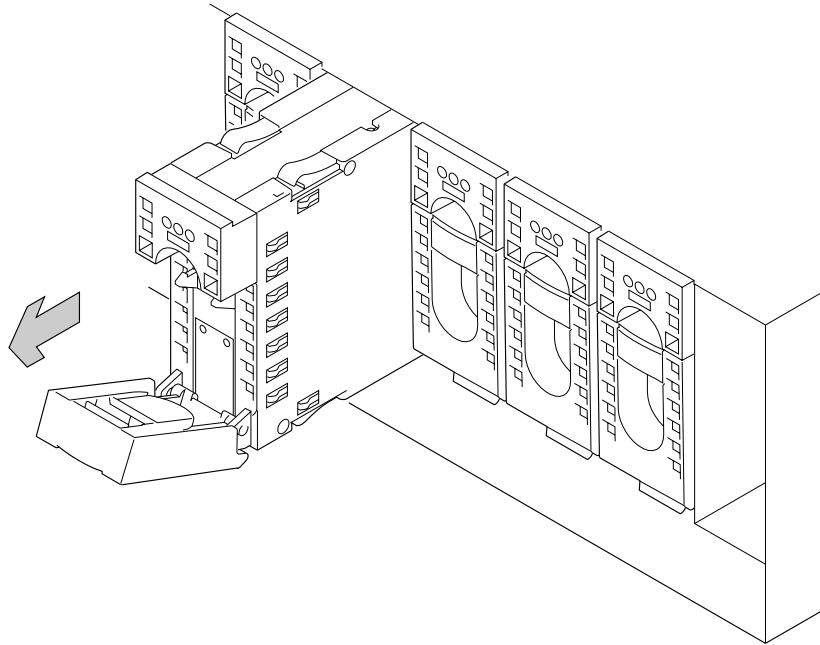
- 3** If necessary, unlock the failing disk drive module, using the key provided with the lock. Remove the lock.



- 4** Press upward behind the red panel and pull 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.

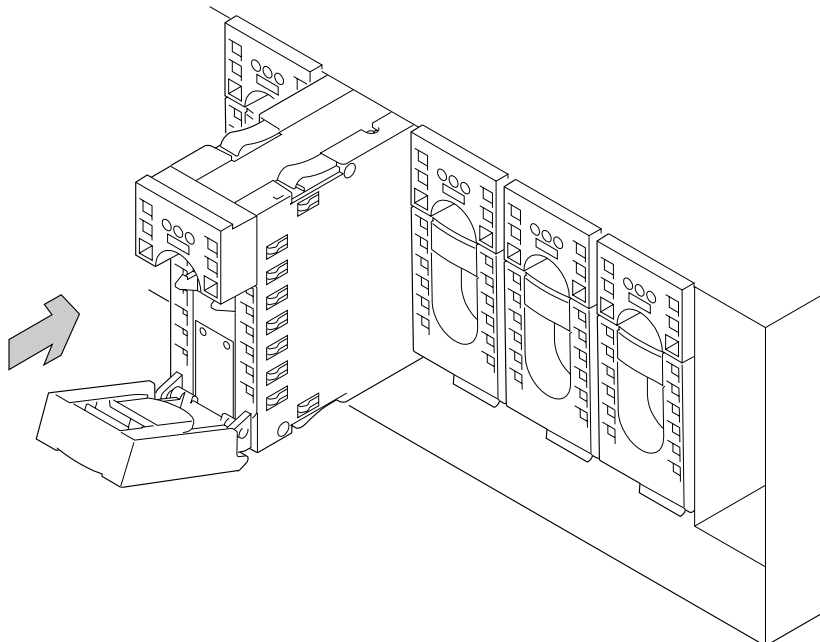


Attention

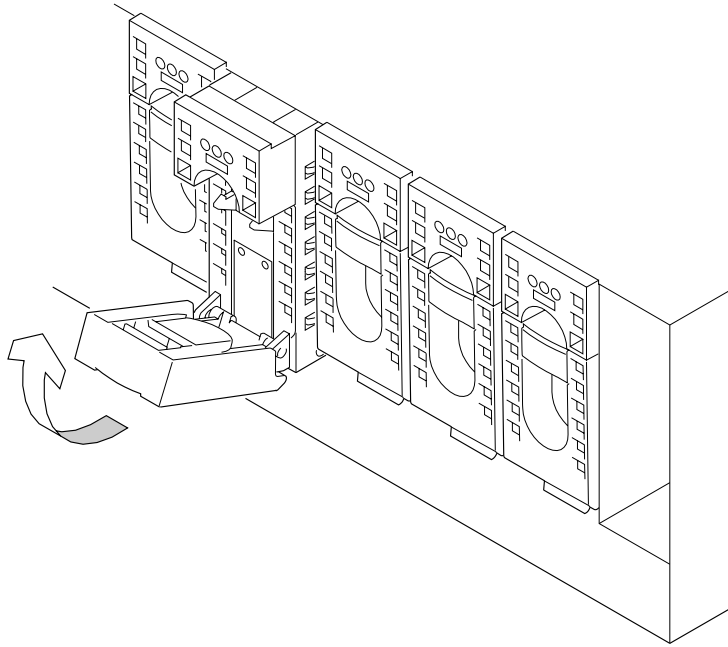
Do not leave the slot empty for more than 30 minutes; if you do, the 7133 unit and the disk drive modules within it might overheat and be damaged.

- 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.

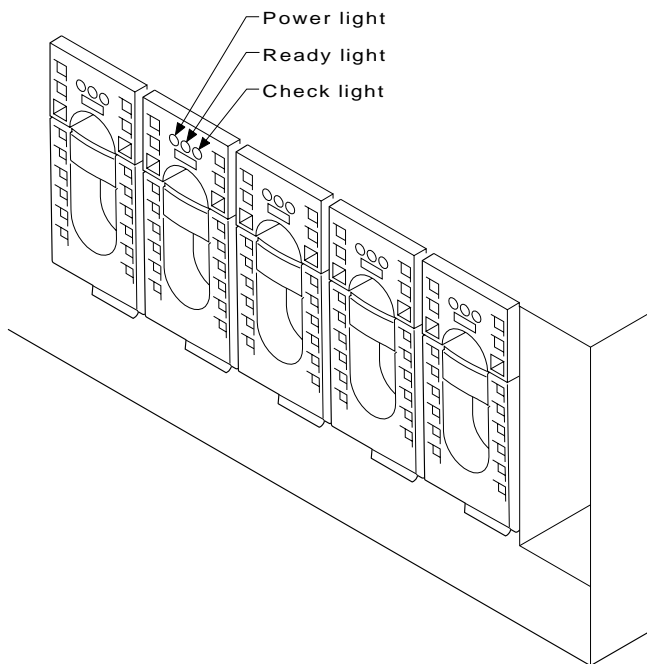
The module stops before it is completely into the slot.



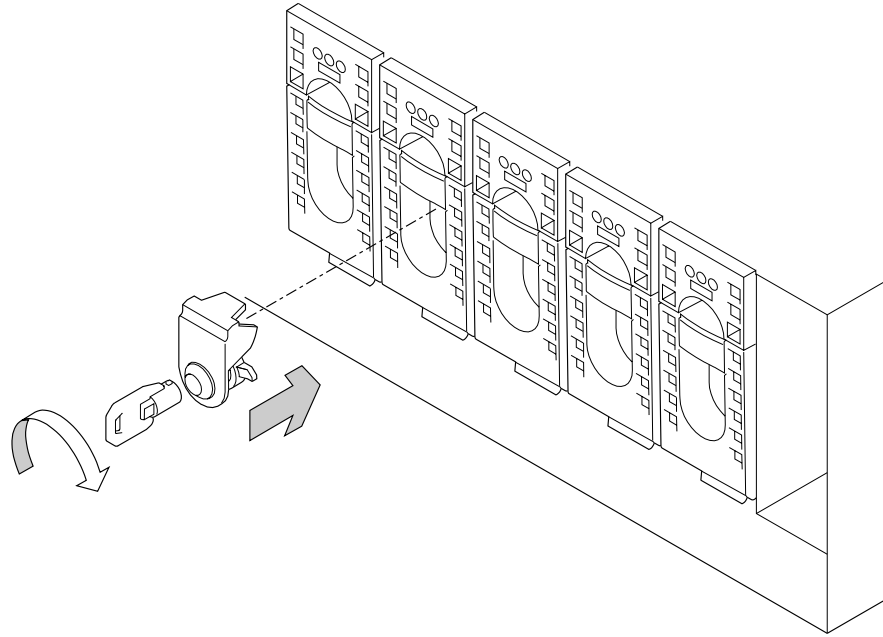
- 7** Close the handle of the module until it shuts with a click. This action pulls the module completely into the unit.



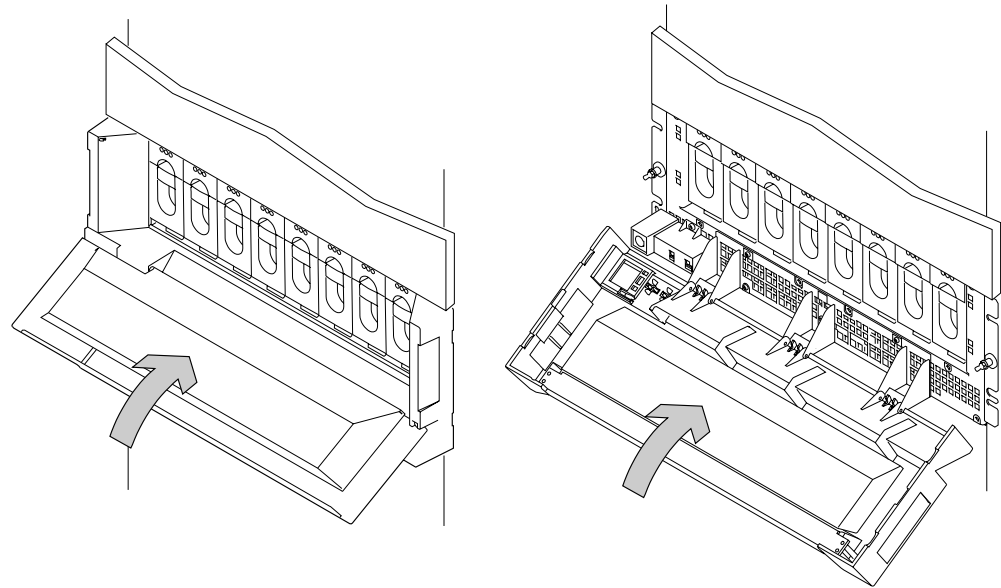
- 8** Push on the front of the module to ensure that the module is fully home.
- 9** Check that all three lights come on immediately and that the check light goes out after approximately 2 seconds. (If this does not happen, check that the new module is properly installed, then restart the diagnostic programs to analyze the new fault.)



- 10** If required, lock the disk drive module into the unit, using the key and lock that you can order as an feature of the unit.



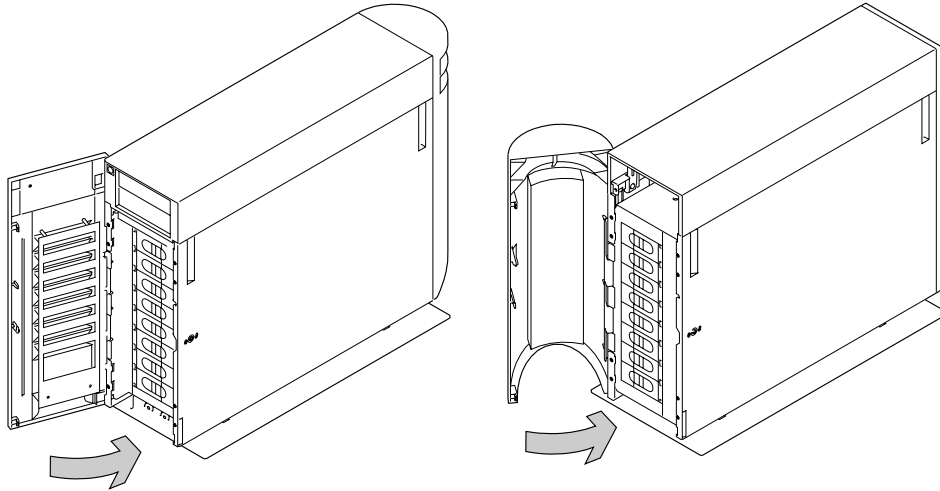
- 11** If you have just changed a disk drive module at the front of a rack-mounted unit, close the front cover.



Early Covers

Later Covers

- 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.

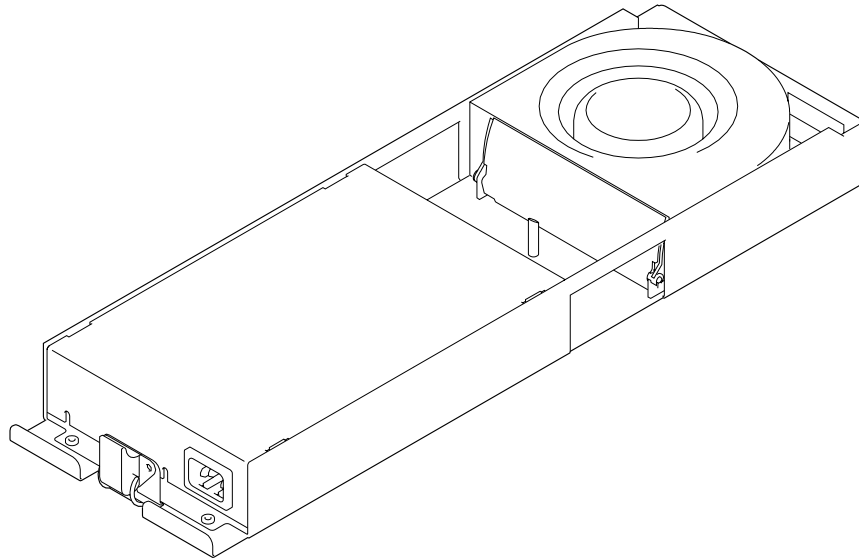


- 13** Restore the disk drive module into your system using the system programs.

Changing Fan-and-Power-Supply Assemblies

In some circumstances, you can change a faulty fan-and-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 the correct spare fan-and-power-supply assembly.



Attention

- Do not remove two fan-and-power-supply assemblies from the subsystem at the same time.

You do not need to remove power from the subsystem when changing a fan-and-power-supply assembly.

Before Changing a Fan-and-Power-Supply Assembly

- 1** Identify the failing fan-and-power-supply assembly.
- 2** Check the lights on this fan-and-power-supply assembly. (“Fan-and-Power-Supply Assembly Lights” on page 1-7 describes these lights and how to see them.)

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

If the check light is on, continue at the next step.

- 3 Check the Service Request Number (SRN) given by the system diagnostic programs.

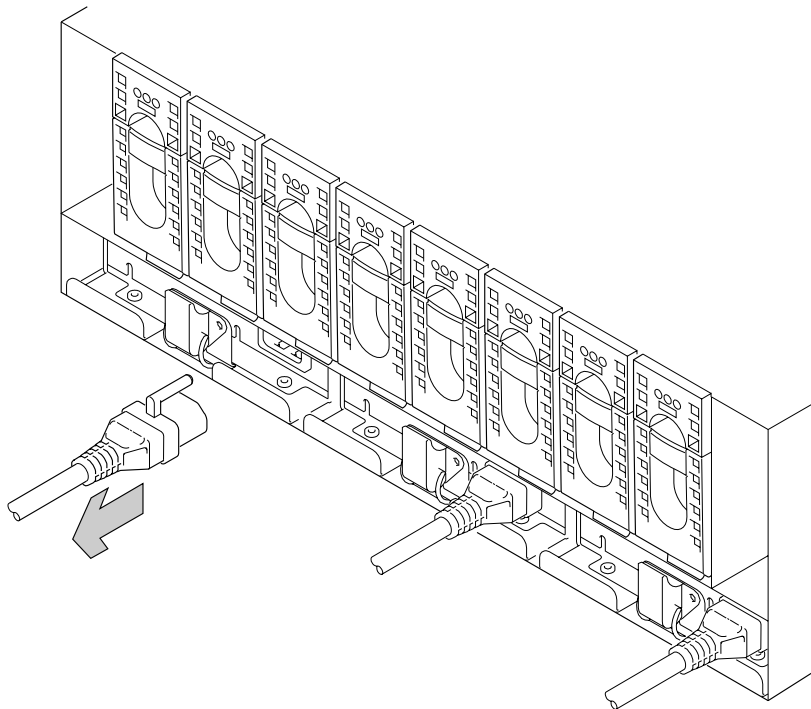
If the SRN is **60220** it means that a fan-and-power-supply assembly has a fault that can be corrected by exchanging the fan-and-power-supply assembly for a new one.

If the SRN is not 60220, do not change a fan-and-power-supply assembly; call your service representative and report the problem.

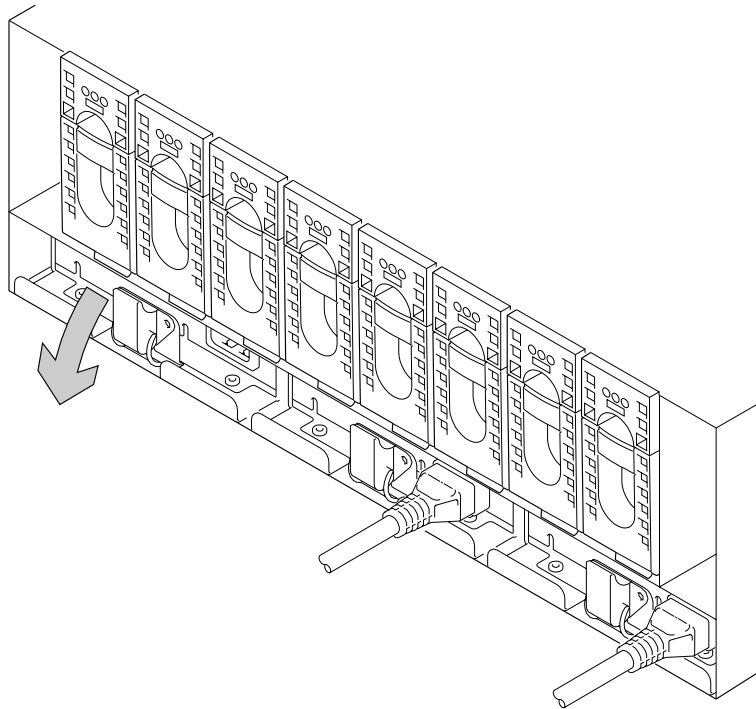
To Change a Fan-and-Power-Supply Assembly

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

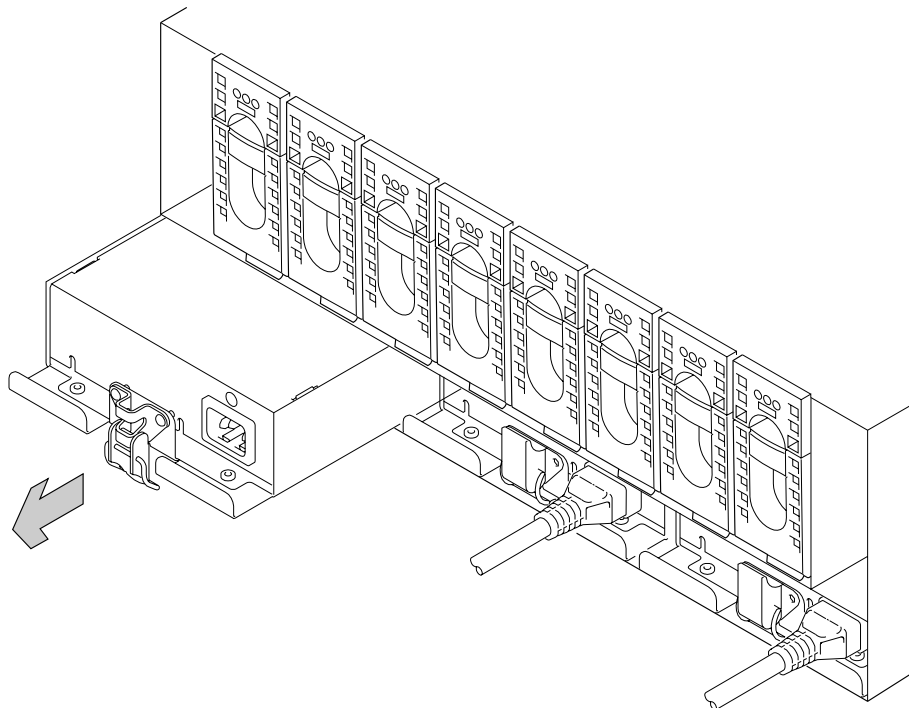
- 1 Unplug the mainline power cable from the failing fan-and-power-supply assembly.



2 Unclip the failing fan-and-power-supply assembly.



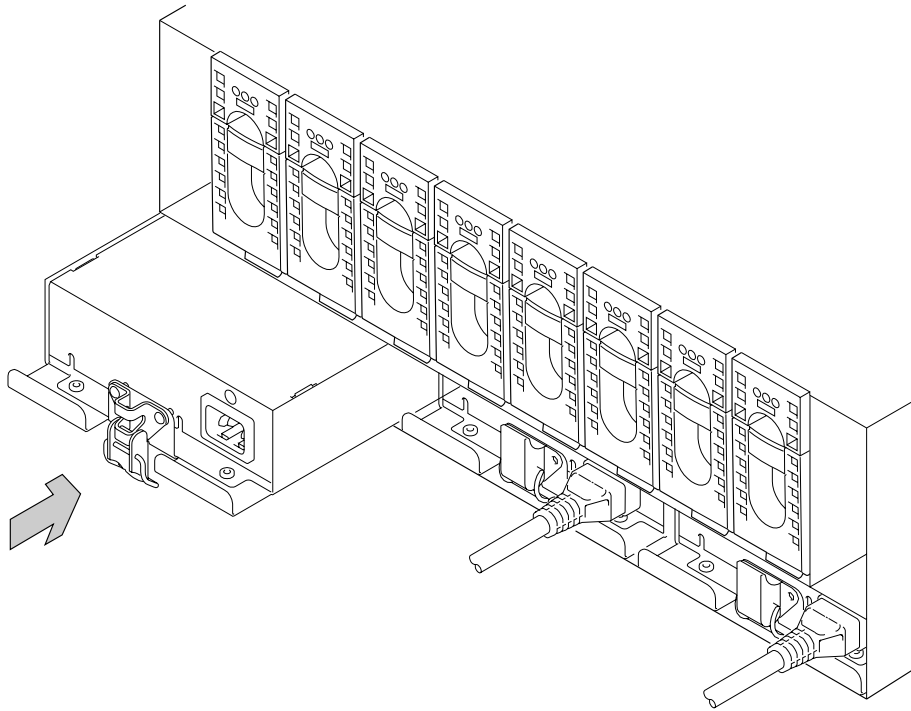
3 Pull the fan-and-power-supply assembly from the unit.



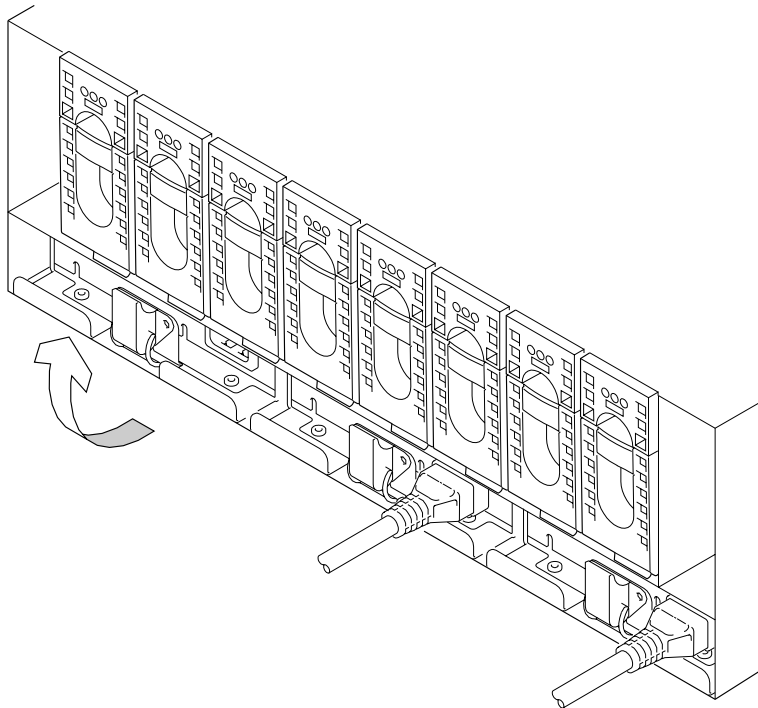
Attention

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.

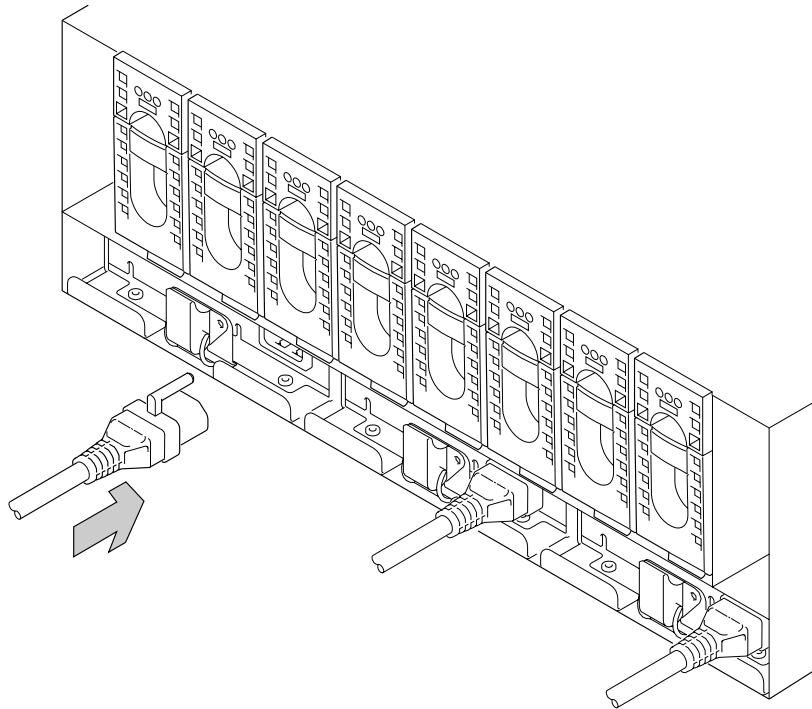
4 Push the replacement fan-and-power-supply assembly fully into the unit.



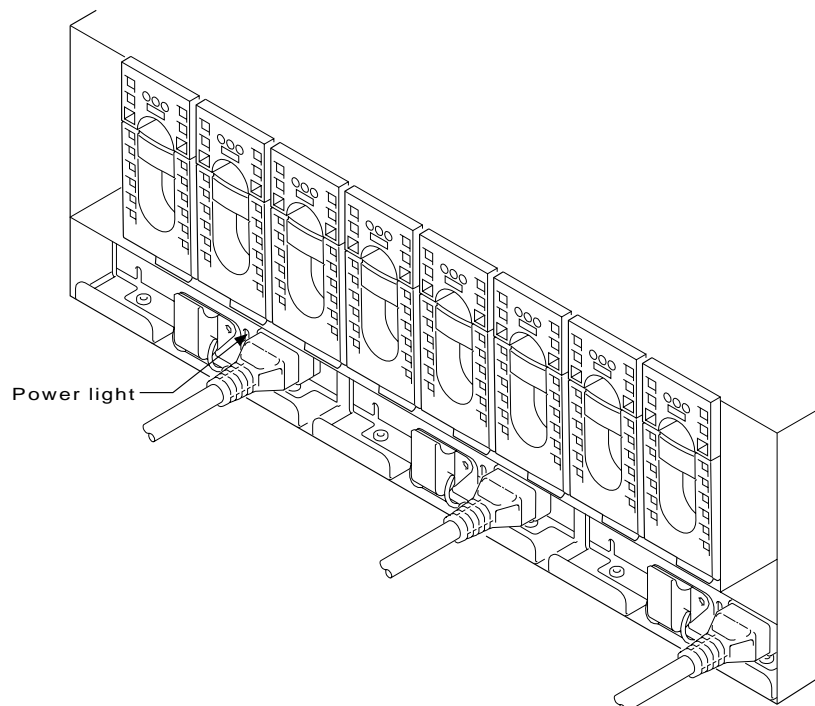
5 Fasten the clip that holds the fan-and-power-supply assembly in the unit.



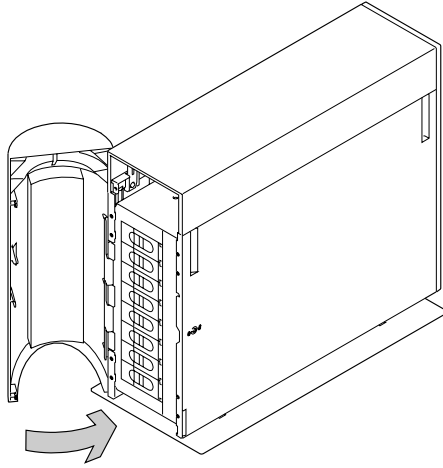
- 6** Replug the mainline power cable into the new fan-and-power-supply assembly.



- 7** Check that the green Power light comes on within 5 seconds. (If it does not, check that the new fan-and-power-supply assembly is properly installed, then restart the diagnostic programs to analyze the new fault.)



- 8** If you have just changed a fan-and-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 SSA Disk Subsystem, 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 number7133

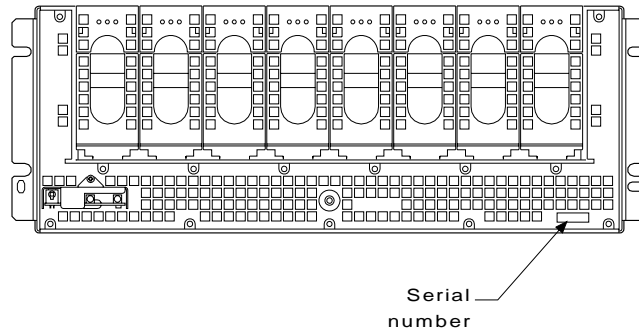
The machine model numberxxx

The machine serial numberxx-xxxxx

To see the machine serial number of a Model 010 or 020 rack-mounted unit, open the front cover of the unit by:

- For units with early covers, gripping the movable part of the cover at the sides and hinging it downward.
- For units with later covers, gripping the cover at the sides and hinging the whole front cover downward.

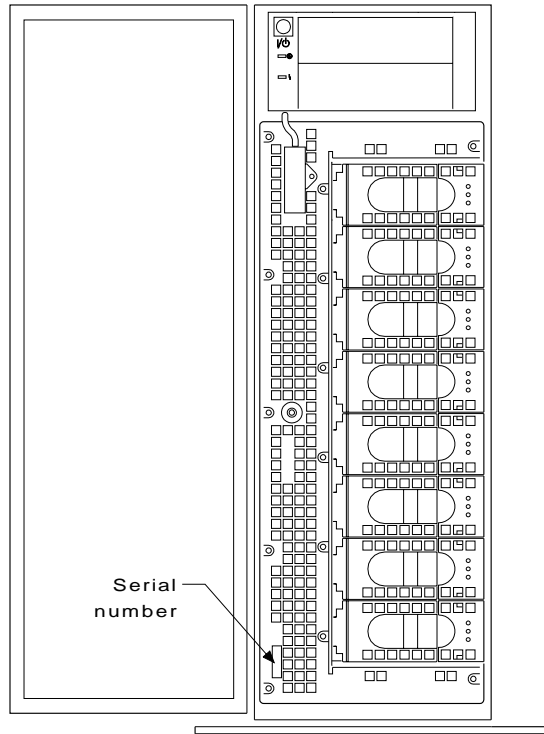
The serial number is stamped on the metal plate behind the cover:



To see the machine serial number of a Model 500 or 600 deskside unit, open its front cover by:

1. If necessary, unlocking the cover using the key provided
2. Gripping the cover at the right and hinging it to the left.

The serial number is stamped on the metal plate behind the cover:



Index

A

addresses 1-8

C

check light
 disk drive module 1-6
 fan-and-power-supply assembly 1-7
 subsystem 1-4
configuration unit
 See dummy fan-and-power-supply assembly
configurations, deskside 1-2
configurations, rack-mounted 1-1
connectors, external 1-15
controls
 disk drive module 1-5
 subsystem 1-3
cover locks 1-13

D

device address 1-8
disk drive module lights 1-5
disk drive modules
 adding 2-1
 changing 4-1
 identifying 1-9
 locks 1-12
dummy fan-and-power-supply assembly 2-9

F

fan-and-power-supply assemblies
 adding 2-8
 changing 4-9
features, adding 2-1

I

identifying disk drive modules 1-9

K

keys, reordering 1-13

L

lights
 disk drive module 1-5
 subsystem 1-3
 subsystem check 1-4
 subsystem power 1-4

location codes 1-8
locks
 deskside unit covers 1-13
 disk drive modules 1-12

M

model number, machine 4-15

N

numbers, machine 4-15

P

power light
 disk drive module 1-6
 fan-and-power-supply assembly 1-7
power light, subsystem 1-4
power switch 1-4
problems
 dealing with 4-1
 reporting 4-15

R

ready light, disk drive module 1-6

S

security 1-12
serial number, machine 4-15
Set Service Mode service aid 1-9
subsystem
 address 1-8
 configuration 1-1, 1-2
 controls 1-3
 ID 1-8
 identifying 1-9, 4-15
 power control 1-3
 turning power on and off 1-3
subsystem lights 1-3
switch, power 1-4

T

turning power on and off 1-3
type number, machine 4-15

Part Number: 32H5751

Printed in U.S.A

