S*x*300 Storage Array

Installation Guide

Order Number: EK–SX300–IG. B01

This manual provides the steps to install S*x*7*x* and RA9*x* storage enclosures and magazine tape subsystems in the S*x*300 storage array cabinet.

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Preface

This guide provides the steps to install S*x*7*x*, RA9*x* storage enclosures and magazine tape subsystems in the S*x*300 storage array cabinet. The guide is intended for Digital Multivendor Customer Services and for personnel qualified to service the S*x*300 storage array.

The information in this guide is organized as follows:

- **Chapter 1** contains a description of and specifications for the S*x*300 storage array subsystem and S*x*7*x* storage enclosure.

- **Chapter 2** contains instructions for the storage cabinet and the storage elements such as SF72.

- **Chapter 3** contains general information about the Installation process.

- **Chapter 4** describes how to install one or two storage arrays in a single-host and a dual-host configuration.

- **Chapter 5** describes how to install SF7*x* storage enclosures in an S*x*300 storage array cabinet.

- **Chapter 6** describes how to install up to four magazine tape subsystems in an S*x*300 storage array cabinet.

- **Chapter 7** describes how to add SDI storage elements to the S*x*300 storage array.

- **Chapter 8** contains instructions for troubleshooting the installed S*x*300 storage arrays, and the SF72 storage enclosure and magazine tape subsystem upgrades.

- **Appendix A** contains cabling diagrams for the S*x*300 storage array variations (DSSI) in both the single-host and dual-host configurations.

- **Appendix B** describes how to install the S*x*72–UK upgrade kit while the host system and the disk ISEs in the S*x*72–HK storage enclosure are off-line.

- **Appendix C** describes how to convert an S*x*300 storage array, S*x*72 storage enclosure, or magazine tape subsystem.

- **Appendix D** describes how to install the S*x*300 cabinet.

Related Documents

Table 1 lists the related documentation that supplements this guide.

Table 1   Related Documentation

Document Title	Order Number
KFMSA Module Installation and User Manual	EK–KFMSA–IM
RA90/RA92 Disk Drive User Guide	EK–0RA90–UG
RF31/72 Integrated Storage Element User Guide	EK–RF72D–UG
RA7x Disk Drive Service Manual	EK–ORA7X–SM
SA7x Enclosure Service Manual	EK–OSA7X–SM
SA7x Enclosure User Guide	EK–OSA7X–UG
SF72 Storage Enclosure Owners Manual	EK–SF72S–OM
TF857 Magazine Tape Subsystem Service Manual	EK–TF857–UG

Documentation Conventions

The following conventions are used in this manual:

boldface type	Boldface type indicates the first instance of terms being defined in text, in the glossary, or both.
italic type	Italic type indicates emphasis and complete manual titles. In the glossary, italic type is also used to indicate cross-references.

1
General Information

1.1 Product Descriptions

The DECArray300™ cabinet system is a storage array product with one to six storage elements.

The DECArray300 cabinet system accommodates up to six RA90/RA92 ™ disk drives, or up to 24 5 1/4-inch disk drives or up to four tape drives in mixed configurations. The I/O panel S*x*300 supports standard disk interface (SDI™) and DSSI™ interfaces. There are three I/O panels S*x*300 supplied with the cabinet:

- Two I/O panels for SDI with each 24 slots.

- One SDI/DSSI I/O panel with 12 DSSI and 8 SDI slots. The 12 DSSI slots S*x*300 support a maximum of 24 DSSI drives, dual hosting.

You can mount two I/O panels per cabinet. These are possible combinations:

- Two SDI I/O panels to S*x*300 support maximum 24 SDI drives dual porting (48 SDI connections).

- One SDI I/O panel with 24 SDI connections and DSSI panel with 12 DSSI connections and 8 SDI connections. This results in a total of 32 SDI connections. 32 SDI connections S*x*300 support maximum of 16 SDI disk or tape drives dual porting. With the combination of the DSSI and SDI I/O panel, it is possible to mix SDI and DSSI storage elements in one cabinet.

See Table 1–1 for a listing of available cabinets with their model numbers.

1.1 Product Descriptions

Table 1–1   DECArray300 Cabinet System Variations

P/N	S*x*300 Storage Elements	Voltage	Capacity (GB)
SA300–CD™	with 1 SA72	220/240	4
SA300–HD	with 3 SA72	220/240	12
SA301–CD	with 1 SA71	220/240	2.8
SA301–HD	with 3 SA71	220/240	8.4
SF300–CD	with 1 SF72	220/240	4
SF300–HD	with 3 SF72	220/240	12
SF300–TD	with 1 TF857	220/240	18.2
SA300–XD	empty cabinet	220/240	
SA300–CA	with 1 SA72	110/120	4
SA300–HA	with 3 SA72	110/120	12
SA300–CA	with 1 SA71	110/120	2.8
SA300–HA	with 3 SA71	110/120	8.4
SF300–CA	with 1 SF72	110/120	4
SF300–HA	with 3 SF72	110/120	12
SF300–TE	with 1 TF857	110/120	18.2
SA300–XA	empty cabinet	110/120	

All 220/240 Vac versions are approved by TUEV Product Service.

1.1.1   S*x*300 Add-On Storage Elements

See Table 1–2 for a list of the storage elements that can be added as capacity needs increase.

Table 1–2   Qualified Add-On Storage Elements

Storage Elements	Examples
RA9*x*	RA90/RA92
S*x*7*x*	SA70/SA71/SA72/SF72/SF73/SF74
T*x*8*xx*	TF857

1.1.2 S*x*300 Storage Elements Capacity and Average Seek Time

The S*x*300 storage elements utilizes Winchester disk technology or tape drives. See Table 1–3 for a list of formatted capacity and average seek times.

Table 1–3 S*x*300 Disk or Tape Drive Formatted Capacity and Average Seek Times

Storage Elements	Formatted Capacity	Average Seek Time	Bus
RA90	1.216 gigabytes	18.5 milliseconds	SDI
RA92	1.506 gigabytes	16.0 milliseconds	SDI
RA70	0.280 gigabytes each drive	19.5 milliseconds	SDI
RA71	0.700 gigabytes each drive	12.5 milliseconds	SDI
RA72	1.00 gigabytes each drive	12.5 milliseconds	SDI
RF72	1.00 gigabytes each drive	13.3 milliseconds	DSSI
RF73	2.00 gigabytes each drive	13.3 milliseconds	DSSI
TF857	18.2 gigabytes	Tape Loader System for unattended back-up.	DSSI

_____ **Note** _____

The S*x*7*x* storage element contains one to four 5 1/4-inch R*x*7*x* disk drives.

_____

1.1 Product Descriptions

Table 1–4 S*x*300 ADD On Storage Elements

P/N	Capacity	Installation KIT required	Cable Kit Required
RA90–NA	1 GB	CK–SA300–L2	None
RA92–NA	1.6 GB	CK–SA300–L2	None
SA70–JK	1.2 GB	CK–SA300–L1	None
SA71–CK	0.7 GB	CK–SA300–L1	None
SA71–JK	2.8 GB	CK–SA300–L1	None
SA72–CK	1.0 GB	CK–SA300–L1	None
SA72–JK	4.0 GB	CK–SA300–L1	None
SF72–HK	2.0 GB	None	CK–SF200–LM
SF72–JK	4.0 GB	None	CK–SF200–LM
TF857–AA	18 GB	None	CK–SF200–LM
TF857–AB	18 GB	None	CK–SF200–LM

—— Connecting the SF300 Cabinet to VAX4000™ Systems ——

By adding DSSI storage enclosures to a cabinet, which is connected to
a VAX4000, you will require the cable kit CK–SF200–LP instead of the
above mentioned kit.

—— Shipping Configurations—Single Host ——

The shipping configurations of the S*x*300 cabinet for DSSI use are
cabled for single host connections. In order to update the cabinet from
single host to dual hosting, additional cable kits are required.

Figure 1–1   H9643 Cabinet, Front View

DRIVE 6

DRIVE 5

DRIVE 4

DRIVE 3

DRIVE 2

DRIVE 1
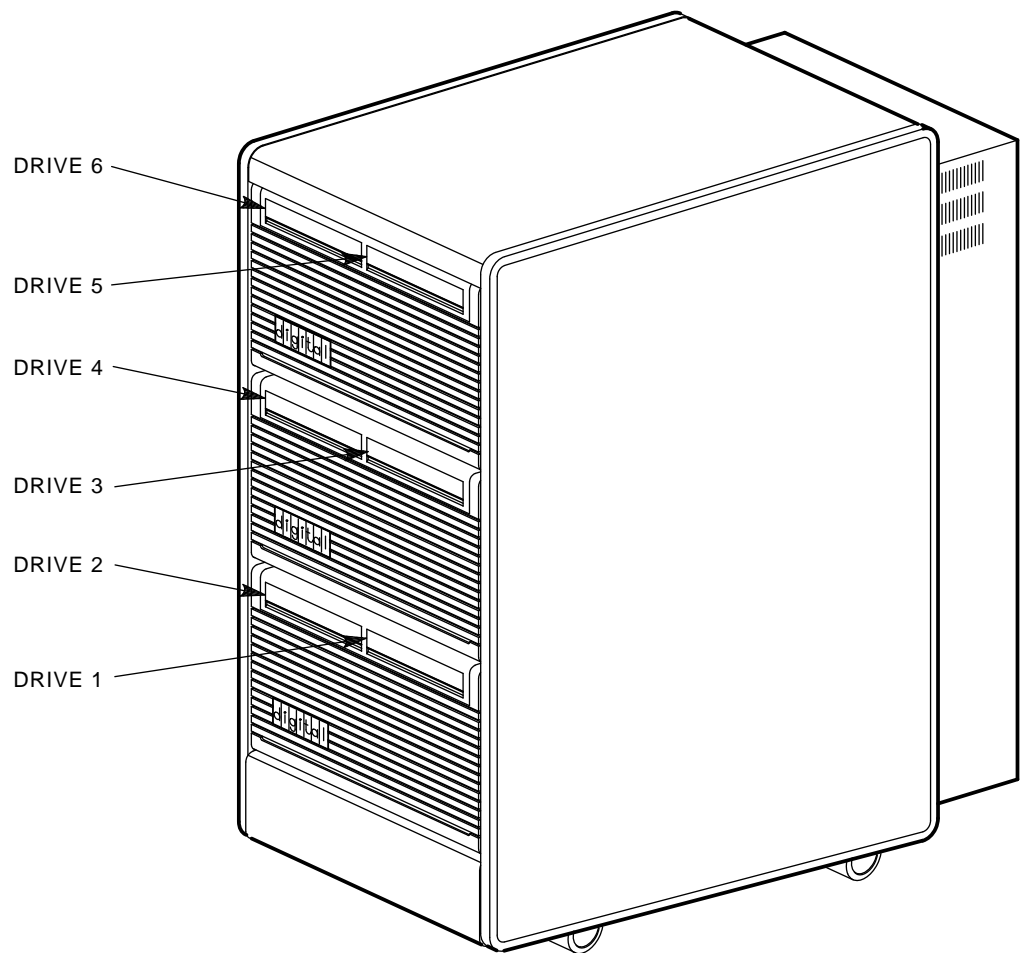
CXO-2725A

1.1 Product Descriptions

Figure 1–2 H9643 Cabinet Parts

TOP
COVER

END
PANEL

POWER
CONTROLLER

COMPONENT
LEVELS

END
PANEL

KICK
PLATE
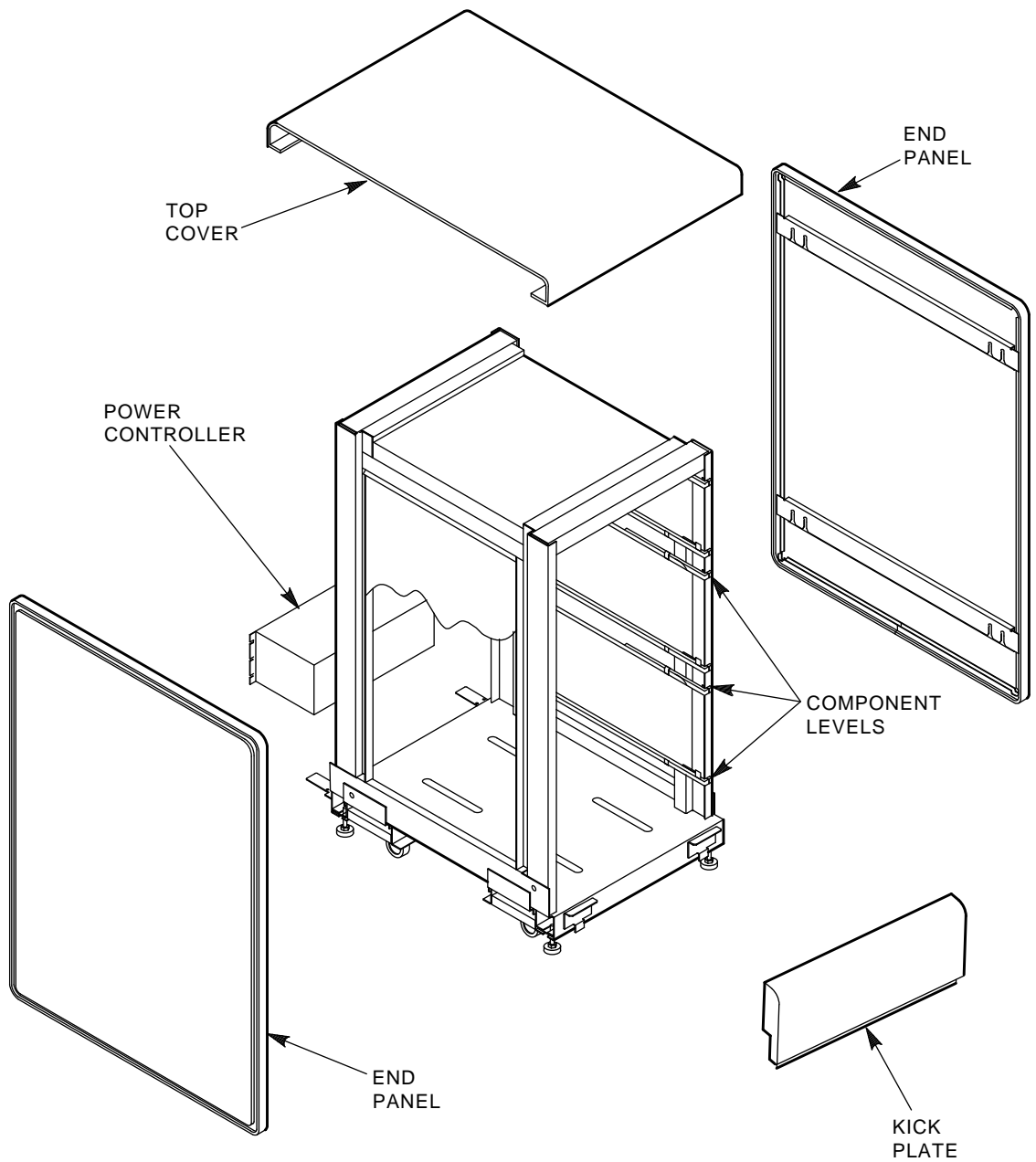
KBO-2745A

1.2 DECArray300 Specifications

See Table 1–5 for a list of physical specifications of the DECArray300 cabinet system.

Table 1–5   DECArray300 Cabinet System Physical Specifications

Characteristic	Specification
Height*	106.68 centimeters
Width*	54.61 centimeters
Depth*	91.44 centimeters
Weight—unpacked (empty cab)	148.00 kilograms
Weight—unpacked (RA9x)	34.00 kilograms
Weight—unpacked (Sx7x)	40.00 kilograms (34 kg with 2 disks)
Weight—unpacked (TF8xx)	25.00 kilograms
Shipping cube (All variations)	106.68 x 76.2 x 168.91 centimeters (41.6 inches front-to-back x 29.7 inches wide x 25.9 inches high)

Calculate weight of the Sx300 storage array by adding the weight of the empty cabinet and the storage elements accordingly.

_____ **Note** _____

*The height, width and depth measurements are the same for all variations because all storage elements are housed in an DECArray300 cabinet system with these dimensions.

_____

See Table 1–6 for a list of system electrical specifications for the DECArray300 cabinet system.

1.2 DECArray300 Specifications

Table 1–6   DECArray300 Cabinet System Electrical Specifications

Voltage	120 Vac	240 Vac
Voltage range nominal	100–120 Vac	220–240 Vac
Input Voltage functional range	86–132 Vac	174–264 Vac
Inrush Current	235 A	150 A
AC–Plug type	NEMA L5–30P	P/N 12–14379–03
Power Controller	874	887–D
Circuit Breaker	30 A	16 A
Rated Current:	24 A	12 A
Typical Current:		
Tx8xx	1.73 A	0.9 A
Sx7x	2.22 A	1.5 A
Rx9x	3.6 A	1.8 A
Power Factor	0.6	0.6

Typical current at nominal voltage. In order to calculate the typical current of the Sx300 storage array, add the typical current of the storage elements. The maximum current of the storage array can be up to 20 percent higher compared with the nominal current.

The ride-through time is > 20 ms. That means that a voltage drop below the minimum functional voltage range up to 20 ms will not have any impact on the functionality of the array.

_____ **Note** _____

A time lag fuse for the main voltage must be used to avoid the inrush current blowing the fuse.

_____

Table 1–7 and 1–8 list the recommended environmental operating ranges and recommended environmental limits for the DECArray300 cabinet system.

1.2 DECArray300 Specifications

Table 1–7   Cabinet System Environmental Operating Range

Characteristic	Specification
Agency compliance	UL, CSA, and TUEV*
Temperature	+10°C to +40°C (+50°F to +104°F). Derate 1.8°C for each 1000 meters altitude (1.0°F for each 1000 feet altitude)
Humidity	10% to 85% @ maximum wet bulb temperature of +32°C (+90°F) and minimum dew point of +2°C (+36°F)

_____ **Note** _____

*TUEV approval is only granted for the 220/240 Vac version storage cabinets produced in Digital's Kaufbeuren Manufacturing Plant (for Europe).

_____

Table 1–8   Cabinet System Recommended Environmental Conditions

Operating environment	Specification
Temperature	18°C to 24°C (64.4°F to 75.2°F) with an average rate of change of 3°C/hour maximum and a step change of 3°C or less
Relative humidity	40% to 60% (noncondensing) with a step change of 10% or less (noncondensing)
Altitude	Up to 2400 meters (8000 feet)
Air quality (maximum particle count)	Not to exceed 500,000 particles per cubic foot of air at a size of 0.5 micron or larger
Air volume (at inlet)	50 cubic feet per minute (0.026 cubic meters per second)

1.3 Acoustic Noise Values

Product: SF300 (H9643 with 6xSF72, each with 4xRF72)

See Table 1–9 and Table 1–10 for a list of average product noise emission data for the DECArray300 cabinet system.

Table 1–9   S*x*300 Average Product Noise Emission Data

Average Acoustic Noise per ISO 7779	Idle	Op1	Op2
LNPE, bels:	6.8	6.9	7.1
LPA at the front bystander position, dB:	57	58	61
Average LPA at 4 bystander position, dB:	54	55	58

Product: SA300 (H9643 with 6xSA72, each with 4xRA72)

Table 1–10   S*x*300 Average Product Noise Emission Data

Average Acoustic Noise per ISO 7779	Idle	Op1	Op2
LNPE, bels:	6.8	6.9	7.1
LPA at the front bystander position, dB:	57	58	61
Average LPA at 4 bystander position, dB:	54	55	58

- LNPE = Noise power emission level (A-weighted sound power level) measured in bels re 1 pw. (**Note:** 1 bel = 10 dB.)

- LPA = A-weighted sound pressure level measured in dB (re 20 uPa) at a bystander position: 1.0 meter from an edge (front, side or rear) of the unit and 1.5 meter above the floor.

- Op1 = Drives operating per ISO 7779 (1 drive seeking, others idling).

- Op2 = Drives operating per proposed ISO 7779 (all drives seeking at 19 seeks per second).

1.4 EMC/EMI

See Table 1–11 for emissions. The cabinet meets the requirements of the following standards and agencies.

Table 1–11 Certification and Immunity

Radiated/Conducted Emission	Class A Device FCC/VCCI/FTZ
USA	FCC Class A
Germany	VDE Certificate, DBP Document
Japan	VCCI Grant
New Zealand	RFS Certificate of Compliance
Electrostatical Discharge	IEC 801–2 Level 4
Electrical Fast Transients	IEC 801–4 Level 4
Surge Immunity	IEC 801–5 Level 5
Susceptibility	IEC 801–3 <10V/m

_____ **Note** _____

The equipment meets the requirements of the NAMUR Arbeitskreis AK 05 EMV.

_____ **DSSI Signal Integrity** _____

A ground cable is supplied with the S*x*300 cabinet. It is mounted at the rear inside of the cabinet. Connect this ground cable to the host system for DSSI applications. This connection is to assure that the ground voltage levels between host and storage enclosures will be equal. It is required to assure optimum signal integrity.

1.5 S*x*300 Storage Array Site Preparation

The S*x*300 storage array is intended for installation in a Class A computer room environment that meets the conditions specified in Table 1–7.

Before installing the S*x*300 storage array, make sure the following conditions are met:

- The S*x*300 storage array requires 1-phase ac power. The phase draws up to 12 amperes (230 Vac) or up to 24 amperes (120 Vac) in a fully configured array.

- Adequate space is provided around the storage array for access to front and rear, for accessing cables at the rear of the storage array, and for adequate airflow.

- The installation site floor can safely bear the weight of the storage array. A fully configured storage array weighs up to 330 kilograms.

- The correct NEMA plug or IEC plug is available. See Figure 3–11.

- The following is only valid for DSSI:

  - The system's configuration sheet has been correctly filled out and is up-to-date. Blank system configuration sheets can be found in Figure 1–3, Figure 1–4, and Figure 1–5.

  - An adequate number of KFMSA modules exist in the extended memory interconnect (XMI™) backplane of the VAX system to support all the disk integrated storage elements (ISEs) in the S*x*300 storage array. Refer to the KFMSA Module Installation and User Manual (EK–KFMSA–IM) for more details.

1.5 S*x*300 Storage Array Site Preparation

Figure 1–3   Single-Host System Configuration Sheet

KFMSA/Single–System Configuration Sheet

[for VAX 6000 and 9000 systems]

| KFMSA XMI Node # _____ |
| Bus _____   Bus _____ |
| DSSI ID #_____   DSSI ID #_____ |

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____
System ID _____

Color Code _____   Color Code _____

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1.5 S*x*300 Storage Array Site Preparation

Figure 1–4 Dual-Host System Configuration Sheet

KFMSA/DSSI VAXcluster Configuration Sheet

[for VAX 6000 and 9000 systems]

KFMSA XMI Node # _____

Bus _____   Bus _____
DSSI ID #_____   DSSI ID #_____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____
System ID _____

KFMSA XMI Node # _____

Bus _____   Bus _____
DSSI ID #_____   DSSI ID #_____

Color Code _____   Color Code _____

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1.5 Sx300 Storage Array Site Preparation

Figure 1–5 Three-Host System Configuration Sheet

KFMSA/DSSI VAXcluster Configuration Sheet

[for VAX 6000 and 9000 systems]

KFMSA XMI Node # _____

| Bus _____ | Bus _____ |
| DSSI ID #_____ | DSSI ID #_____ |

KFMSA XMI Node # _____

| Bus _____ | Bus _____ |
| DSSI ID #_____ | DSSI ID #_____ |

Device Type _____ ALLO_CLASS _____	Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____	DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____	Node Name _____ UNITNUM _____
System ID _____	System ID _____

Device Type _____ ALLO_CLASS _____	Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____	DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____	Node Name _____ UNITNUM _____
System ID _____	System ID _____

Device Type _____ ALLO_CLASS _____	Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____	DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____	Node Name _____ UNITNUM _____
System ID _____	System ID _____

Device Type _____ ALLO_CLASS _____	Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____	DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____	Node Name _____ UNITNUM _____
System ID _____	System ID _____

Device Type _____ ALLO_CLASS _____	Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. # _____	DSSI ID # _____ Array Pos. # _____
Node Name _____ UNITNUM _____	Node Name _____ UNITNUM _____
System ID _____	System ID _____

KFMSA XMI Node # _____

| Bus _____ | Bus _____ |
| DSSI ID #_____ | DSSI ID #_____ |

Color Code _____   Color Code _____

config_shr−x0133b.rags

1.6 Thermal Stabilization

Thermal stabilization prevents temperature differences between the disk or tape drive and its environment from damaging the disk drive's components.

CAUTION

The thermal stabilization procedure is **mandatory**. Do not open the moisture barrier bag until the thermal stabilization period is complete.

Prior to installation, the DECArray300 cabinet system and/or add-on storage elements must be stored at a temperature of 60 degrees F (16 degrees C) or higher for a minimum of 24 hours. This equipment may be stored either in the computer room or in another storage room under controlled temperature conditions. If stored in another storage room, the equipment must remain for an additional hour in the computer room in which it will be installed.

Refer to the Storage Element Manuals for details about thermal stabilization of the storage elements.

After the thermal stabilization criteria have been met, carefully cut and remove the moisture barrier bag. Proceed with the installation.

2

Unpacking and Repacking a DECArray300 Storage Array

2.1 Unpacking and Placing the Storage Array

Before unpacking and placing the S*x*300 storage array, make sure that the site is ready to receive the array. Refer to Chapter 1 for site preparation information and for array specifications.

This chapter describes the steps to perform the following:

- Correctly unpack the S*x*300 storage array (Section 2.1.1)

- Remove the S*x*300 storage array from the shipping pallet (Section 2.1.2)

- Place the S*x*300 storage array with the host system (Section 2.1.3)

- Level the S*x*300 storage array (Section 2.1.4)

- Inspect the S*x*300 storage array before installation (Section 2.1.5)

2.1.1 Unpacking the Storage Array

The S*x*300 storage array is packed in a cardboard carton attached to a wooden shipping pallet and sealed in a barrier bag with desiccant for environmental protection.

_____ **NOTE** _____

Before beginning to unpack the equipment, inspect the shipping carton for signs of external damage. Report any damage to the local carrier and either Digital™ Customer Services or the Digital sales office.

_____

2.1 Unpacking and Placing the Storage Array

Remember:

Retain the shipping container and all packing materials.

_____ **CAUTION** _____

Failure to stabilize the equipment thermally may damage the drive
media or associated electronics when the unit is powered up.

_____

Remove the outer shipping carton, but leave the sealed moisture barrier with
desiccant in place for at least 24 hours (thermal stabilization time). Thermal
stabilization begins when the equipment is placed in the room where it is to be
installed.

_____ **WARNING** _____

Adhere to electrostatic discharge (ESD) procedures at all times. Use
the ESD straps available with every storage array. The strap is inside
the rear door. See Section 3.3.

_____

Once the storage array is unpacked, examine the front and rear, the right
and left side panels, and undercarriage for any apparent damage. Report any
damage.

2.1.2 Removing the S*x*300 Storage Array from the Pallet

This section provides the procedure for removing the storage array from the
pallet and leveling the array. For personal safety, adhere to the following
WARNING before starting the procedure:

_____ **WARNING** _____

Serious personal injury may result if correct safety conditions are not
met. During the unpacking procedure, personnel should wear safety
glasses. Inspect the ramps, ramp side rails, and metal hardware for
the following defects:

- Cracks more than 25 percent of the ramp depth, either across or
  lengthwise on the ramp

- Knots or knotholes going through the thickness of the ramp and
  greater than 50 percent of the ramp width

2.1 Unpacking and Placing the Storage Array

- Loose, missing, or broken ramp side rails

- Loose, missing, or bent metal hardware

If any of these defects exist, DO NOT USE THAT RAMP. Investigate alternate means of removing the array or order a new ramp. The part number for the left ramp is 99–07689–01; the part number for the right ramp is 99–07689–02.

Use the following procedure to remove the array from the shipping pallet (see Figure 2–2):

1. Remove the two unloading ramps.

2. Remove the cardboard carton and packing material.

3. Examine the equipment for physical damage.

4. Remove the shipping bolts (see Figure 2–1).

5. Remove the shipping brackets from the cabinet levelers.

6. Extend the ramp to its full length, and insert the steel dowel as shown in Figure 2–2.

7. Position the unloading ramps on the pallet by fitting the grooved end of each ramp over the metal mating strip on the pallet.

8. Screw the cabinet levelers all the way up until the storage array cabinet rests on its rollers on the pallet.

9. Loosen the locking nuts on all four leveler feet.

10. Carefully roll the array down the ramps. Three people are required to unload the storage array from the shipping pallet (see Figure 2–3).

2.1 Unpacking and Placing the Storage Array

Figure 2–1   Shipping Bolts

LEVELER

SHIPPING
BOLT

SHIPPING
BRACKET
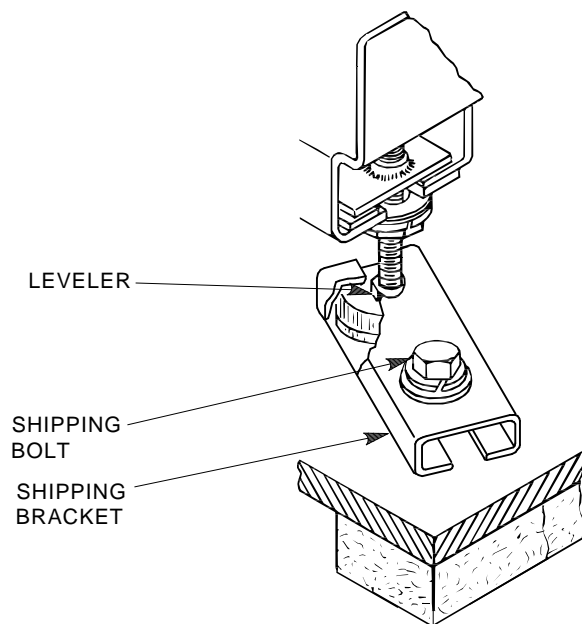
SHR_X1102A_89_SCN

2.1.3 Placing the Storage Array

Move the array to its final position—a distance not to exceed 0.9 meters (3 feet)
from any host system cabinet (for DSSI).

2.1.4 Leveling the Storage Array

Once the array is in its final position:

1. Loosen the locknuts on all four leveler feet (see Figure 2–4).

2. Turn each leveler hex nut clockwise until the leveler foot contacts the floor.

3. Adjust all four feet until the cabinet is level and the load is removed from
   all casters. Verify that the casters spin freely.

4. Tighten the locknuts on all four leveler feet (see Figure 2–4).

2.1 Unpacking and Placing the Storage Array

Figure 2–2 Ramp Installation on Shipping Pallet


```
CXO-688C_S
SHR_X1103_89_SCN
```
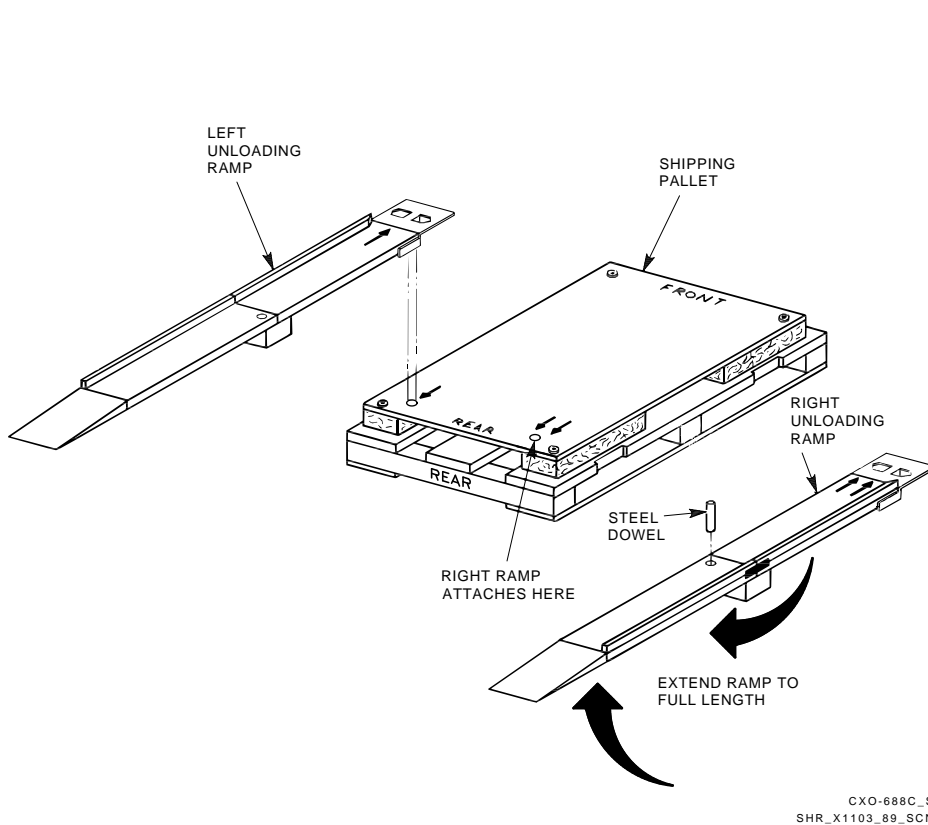
2.1.5 Inspecting the Storage Array

Inspect the storage array first from the front, then from the rear.

1. Open the rear cabinet door.

   a. Turn the two hex-Allen fasteners at the top edges of the rear door
      counterclockwise to unlock.

   b. For rear door, grasp the door by its edge, and pull toward you.

2. At the front of the S*x*300 storage array, verify that all operator control
   panels are correctly seated on each storage enclosure installed in the
   cabinet (see Figure 2–5).

2.1 Unpacking and Placing the Storage Array

Figure 2–3 Storage Array Removal from the Pallet
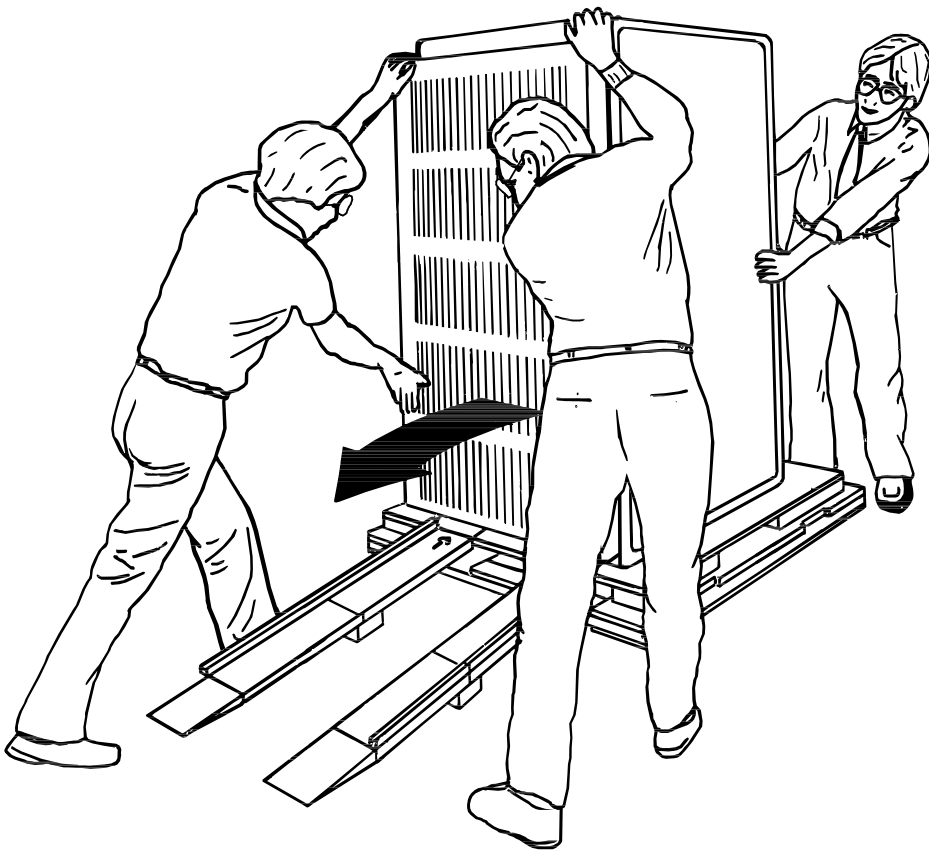
CXO-924A_S
SHR_X1104_89_SCN

_____ **WARNING** _____

Adhere to ESD procedures at all times. Use the ESD straps available
with every storage array. The straps are inside the rear door. See
Section 3.3.

3. Check that the voltage rating of the power controller matches to the local
    main voltage.

Figure 2–4   Adjusting Leveler Feet

LOCKNUT

LEVELER
HEX NUT

LEVELER
FOOT
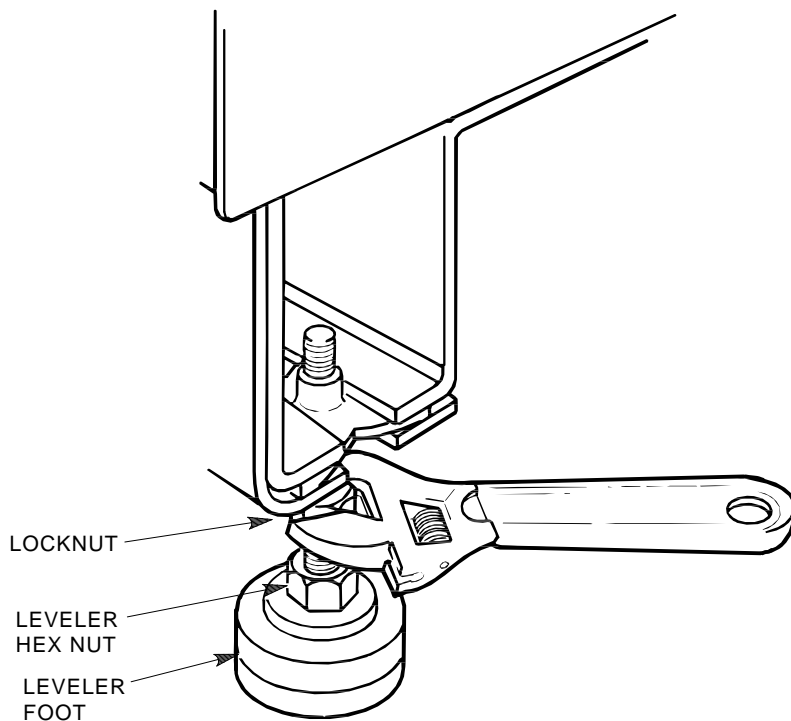
CXO-395C_S
SHR_X1105_89_SCN

Figure 2–5   Verifying the S*x*7*x* OCP Seating
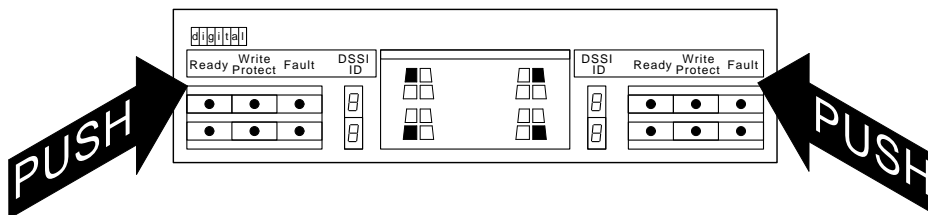
SHR_X1127A_89

4. Make sure that all ac power cords going to the power controller from devices installed in the storage array are correctly seated in the power controller.

2.1 Unpacking and Placing the Storage Array

5. Make sure that the ac breaker is off.

6. Make sure that the bus switch of the power controller is in the ON (down) position.

7. Check the ac power cords for each Sx7x enclosure and magazine tape subsystem installed. Make sure that each is correctly seated.

8. Make sure that the voltage selection switches for each Sx7x storage enclosure and magazine tape subsystem are in the correct position for the power supplied by the installation site.

9. Make sure that all interface cables internal to the storage array are firmly seated.

2.1.6 Repacking the DECArray300 Cabinet System

Use the following procedure to repackage the DECArray300 cabinet system:

1. Place the barrier laminate on top of the original cushioned shipping pallet, matching front to front.

2. Using the original unloading ramps, push the cabinet onto the pallet, placing the cabinet on top of the barrier laminate, matching the front of cabinet with the front of the barrier laminate.

3. Place 10 bags of desiccant under the cabinet, between the barrier laminate and the cabinet.

4. Secure the cabinet to the original cushioned shipping pallet using the original cabinet hold-down brackets and bolts. Screw the bolts through the holes of the barrier laminate and into the T-nuts in the original pallet deck.

5. Place the antistatic bag over the top of the cabinet.

6. Place the moisture barrier bag over the top of the cabinet.

7. Fold over the moisture barrier bag and barrier laminate, then seal the bag using waterproof tape.

8. Repack the cabinet using the original carton, cover, and shipping material.

Please refer to the storage element's user guide (for example, SF72/SA72) for details of unpacking and repacking of the storage elements. For the SF72 storage elements and the TF857 tape loader magazine (see Chapter 5 and Chapter 7).

2.1.7 Add-on Variation Part Numbers

See Table 2–1 for the S*x*300 add-on storage elements part numbers.

Table 2–1   S*x*300 Storage Element variation P/Ns

Add-On Storage Elements	Add-On P/Ns
RA90	RA90–NA
RA92	RA92–NA
SA70	SA70–JK
SA71	SA71–JK (4 drives)
SA71	SA71–CK (1 drive)
SA72	SA72–JK (4 drives)
SA72	SA72–CK (1 drive)
SF72	SF72–JK/HK
TF857	TF857–AB
TF857	TF857–AA

_____ **Note** _____

After receiving the disk or tape drive, check the packaging for external damage. Read and save any packing information. Keep all packing material and receipts in the event of equipment damage or difficulties.

_____

2.1.8 Repackaging Equipment for Storage or Shipment

Should it be necessary to repackage equipment for storage or shipment, use the original shipping containers in addition to the new materials listed in Table 2–2.

2.1 Unpacking and Placing the Storage Array

Table 2–2 Storage Elements Repackaging Materials

| Item | Sx300 Add-On Disk Drive | | DECArray300 Cabinet System | |
	Quantity	P/N	Quantity	P/N
Moisture barrier bag	1	9908507–01	1	9908191–05
Barrier laminate	N/A	N/A	1	9908190–01
Desiccant	2	9906086–21	10	9906086–21
PE bag	N/A	N/A	1	9906104–20
Waterproof tape	As req'd	9908258–01	As req'd	9908358–01

_____ **Note** _____

For the T*x*8*xx* tape drive, you do not need the barrier laminate and the desiccant.

_____

3

Preparation and Installation

3.1 Add-On Disk or Tape Drive Order Sequence

When installing additional disk or tape drives in an DECArray300 cabinet
system, the storage elements should be added in a specific order. See
Figure 3–1 and Table 3–1.

```
_____ WARNING _____
```

Failure to adhere to the disk or tape drive add-on order sequence can
cause cabinet instability, resulting in damage to equipment and/or
personnel.

```
_____
```

The procedures for installing an add-on disk or tape drive depend on the disk
drive position and cabinet level in which the storage element is being installed.
In all cases, the disk or tape drive installation procedures describe installation
from the front of the cabinet.

3.1 Add-On Disk or Tape Drive Order Sequence

General rules:

1. DSSI has first priority. That means, you mount DSSI in accordance with the storage array cabling diagrams (see Appendix A). Mount additional SDI storage elements in the free slots remaining.

   - Start mounting tape elements top right position.

   - Continue to mount tape storage elements from top to bottom.

   - Start mounting disk storage elements in the right bottom position.

   - Continue mounting disk storage elements from bottom to top.

2. Second priority, if there are no DSSI storage elements:

   - Start mounting RA9*x* disk drive in positions 1-2 and 5-6 first. For this position, use the chassis stabilizer brackets.

   - Mount SA7x storage elements in the remaining slots.

3.1 Add-On Disk or Tape Drive Order Sequence

Figure 3–1 DECArray300 Cabinet System

DRIVE 6

DRIVE 5

DRIVE 4

DRIVE 3

DRIVE 2

DRIVE 1

CXO-2725A
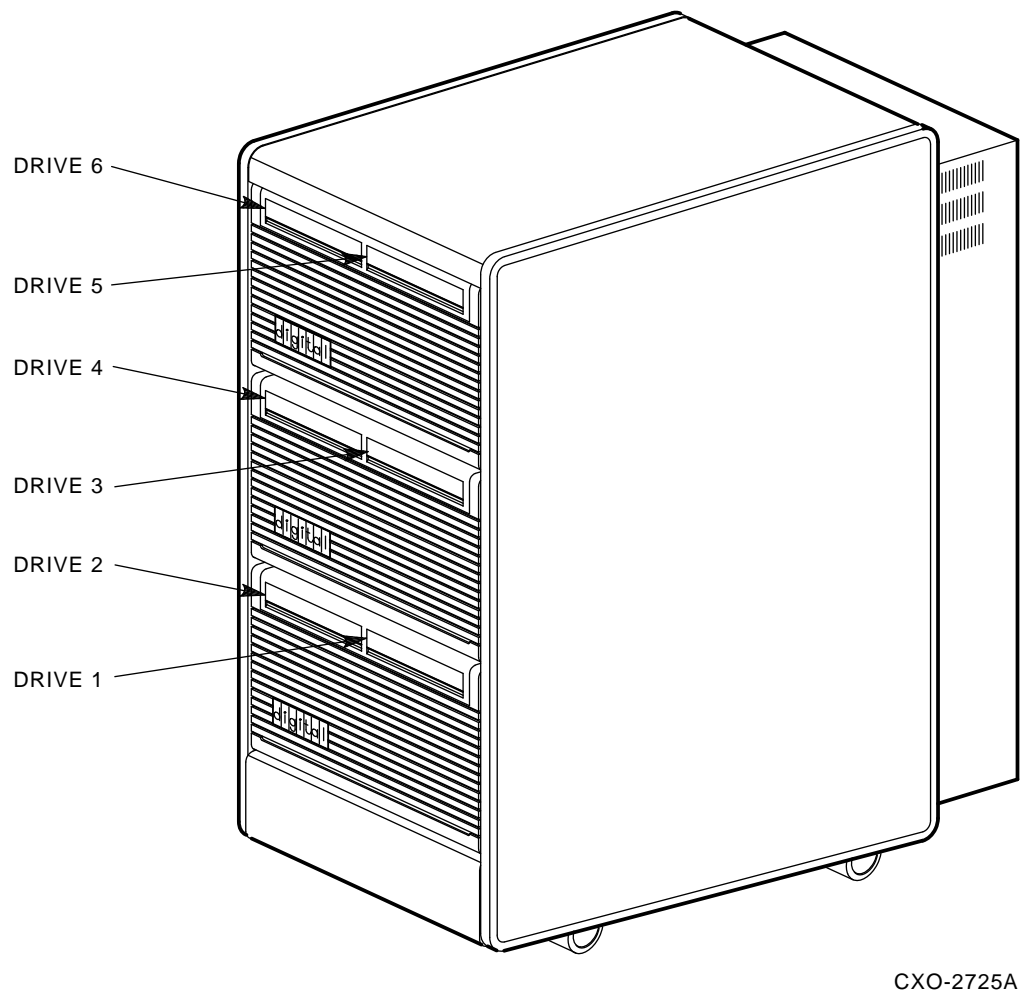
3.2 Add-On Disk or Tape Drive Positions

Table 3–1   Specific Sequence Position of the Storage Elements

Storage Element	Sequence Position
Disk elements	first add-on in pos. 1–2; second add-on in pos. 4–3; last add-on in pos. 6–5
Tape magazine elements	first add-on in pos. 5–6; second add-on in pos. 3–4

Note

Although it is possible to install the TF857 in position 1-2-, this is not recommended becuase the tape loader contains mechanical devices, which might be sensitive to dust and high particle concentration. See Table 3–1.

Table 3–2   Specific Sequence Position of the DSSI Disk Storage Elements

Storage Element	Position
SF1–first SF storage element to install	Position 1
SF2–second SF storage element to install	Position 2
SF3–third SF storage element to install	Position 4
SF4–fourth SF storage element to install	Position 3
SF5–fifth SF storage element to install	Position 6
SF6–sixth SF storage element to install	Position 5

Table 3–3   Specific Sequence Position of the DSSI Tape Storage Elements

Storage Element	Position
TF1–first tape loader storage element to install	Position 6
TF2–second tape loader storage element to install	Position 5
TF3–third tape loader storage element to install	Position 3
TF4–fourth tape loader storage element to install	Position 4

3.2 Add-On Disk or Tape Drive Positions

Example 1: Two RA90, one SA72, and two SF72 should be mounted.

- First priority is DSSI. Therefore, mount the two SF72 to positions 1 and 2.

- Second priority is the RA90. Therefore, mount the RA90 to positions 5 and 6. Use the chassis stabilizer brackets.

- Mount the SA72 to position 4.

Example 2: Two SF72, one TF857, two RA92, and one SA70 should be mounted in the cabinet.

- First priority is DSSI. Therefore, mount the SF72 to positions 1 and 2. Mount the TF857 tape loader magazine to position 6.

- Second priority is to mount the RA9x to the top or bottom slots. Therefore, mount the first RA92 to position 5. Use the Stabilizer brackets.

- Fill the rest of the open slots with the SDI storage elements. For example, you might mount the SA70 to position 4 and the second RA92 to position 3.

Example 3: There are two SA72's mounted to the storage cabinet to positions 1 and 2. The customer would like to add one SF72 storage element.

- First priority is DSSI. Therefore, the SF72 Storage Element should be mounted to position 1. Remount the SA72 from position 1 and mount the SF72 to position 1. Another possibility is to mount the first SF storage element in position 4. Nevertheless, cable the first DSSI storage element as SF1 and label it accordingly.

- Mount the second SA72 to position 4 in case you mounted the first SF storage element into Position 1.

1. **Upper level disk or tape drive installation**

   When installing an add-on RA9x storage element to positions 6 or 5 of the cabinet, it is necessary to remove the cabinet top cover. The drive chassis stabilizer bracket cannot be removed from the frame and attached to the upper level disk drive without first removing the cabinet top cover. See Section 3.7.

   Each upper level disk or tape drive is supported by two chassis retainer brackets (top and bottom). Only for the RA90/RA92 you need one chassis stabilizer bracket, and two (top and bottom) rear lock-down brackets with one U-clip each. Detailed instructions for removing/installing this hardware are found in Section 3.12 and in Section 3.17.

3.2 Add-On Disk or Tape Drive Positions

_____ **Note** _____

A DECArray300 cabinet system with only one S*x*300 disk or tape
drive in positions 1 or 5 will have a 25-pound stabilizer plate (weight)
attached to the underneath of the upper cabinet H-stiffener. This is
required to fulfill the requirement of stability in accordance to IEC 950.

_____

2. **Center level disk or tape drive installation**

   When installing an add-on storage element, each storage element is
   supported by two chassis retainer brackets (top and bottom).

3. **Lower level disk drive installation**

   Before installing an add-on disk drive in the lower level of the cabinet
   (positions 1 or 2), it is recommended to remove the cabinet kick plate
   in Section 3.9. Each lower level disk drive is supported by two chassis
   retainer brackets (top and bottom). For mounting RA9*x* storage elements,
   you have to remove the cabinet kick plate and mount the cabinet stabilizer
   brackets.

4. **No more than two storage elements**

   Do not mount more than two SA70 storage elements per cabinet. You
   might violate the FCC or VDE 0878 requirements.

5. **EMC finger strips**

   Some of the SA7x storage elements might have EMC finger strips on top of
   the chassis. The EMC finger strips are not necessary for the S*x*300 cabinet.
   For mounting top positions, remove the EMC finger strips prior to sliding
   the storage element into the cabinet.)

3.3 Electrostatic Discharge

Electrostatic discharge (ESD) is caused by the build up and release of static
electricity. An electrical charge from a person or object can damage hardware
components and result in premature device or option failure.

Use the following guidelines when handling static-sensitive components and
modules:

1. Read all instructions and installation procedures including the static
   control materials and kits.

2. Wear a properly grounded ESD wrist strap when handling modules, components, or static sensitive devices:

   • Make sure the wrist strap fits snugly for proper conductivity.

   • Attach the alligator clip securely to a clean, unpainted, grounded, metal surface such as the drive or cabinet chassis.

   • Do not overextend the grounding cord.

3. Use static-protective containers to transfer modules and components (including bags and tote boxes).

The ESD grounding strap for the DECArray300 cabinet system is attached to the rear bustle inside the rear panel of the cabinet.

_____ WARNING _____

Do not attempt the following procedures unless you have taken proper precautions against ESD. Wear an ESD grounding strap with the clip end securely connected to a known grounding point while removing the storage element operator control panel (OCP) or other ESD-sensitive components.

_____

3.4 Removing and Replacing the Cabinet Front Bezels

Remove the cabinet front bezel as shown in Figure 3–2:

1. Grasp the lower edge of the bezel, and place your fingers in the finger cutouts (lower edge).

2. Lift up and pull forward. The top of the bezel should rock against the two rubber bezel bumpers attached to the cabinet frame.

_____ Note _____

Take care not to push the adjacent OCP out of place with the top edge of the bezel during bezel removal. The operating disk or tape drive may power down if this occurs.

_____

3.4 Removing and Replacing the Cabinet Front Bezels

To replace the cabinet front bezel, see Figure 3–2:

1. Set the lower edge of the bezel in place, aligning the slots in each bottom corner of the bezel over the bottom tabs of the clear plastic grille mounting brackets.

2. Snap the upper portion of the bezel in place, pushing the bezel top into the top tabs of the clear plastic grille mounting brackets.

3. Remove the cabinet front bezel to switch the ON/OFF dc supply voltage of 5 1/4-inch disk drives.

3.4 Removing and Replacing the Cabinet Front Bezels

Figure 3–2 Removing Bezel, OCP, Bezel Connector Cap

TOP COVER

PREFILTER

OCP

BEZEL

PREFILTER
CLIP

BEZEL
CONNECTOR
CAP
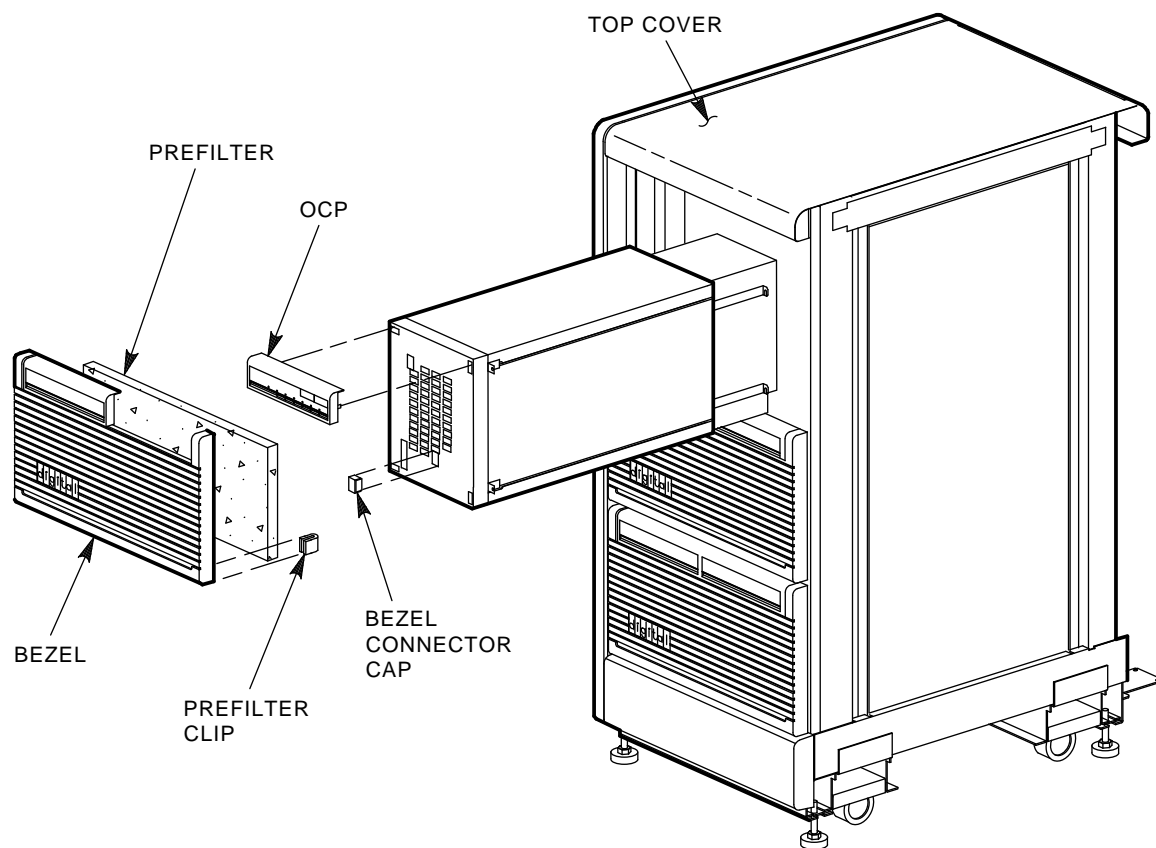
CXO-2726A

The bezel contains a prefilter (part number 12–13121–33) held in place with
six prefilter clips (part number 90–9748-00). Make sure prefilter clips are
properly seated before reinstalling the bezel after storage element installation.

3.5 Mounting the Half Bezel

The half bezel is utilized when mounting only one tape loader or odd numbers of tape loaders. Mount the half bezel using the following procedure:

1. Mount the half bezel bracket to the inner side of the tape loader.

2. Mount the tape loader to its final position.

3. Set the lower edge of the half bezel in place, aligning the slots in each bottom corner of the bezel over the tabs of the clear plastic grille mounting brackets.

4. Snap the upper portion of the half bezel in place, pushing the bezel top into the top tabs of the clear plastic grille mounting brackets.

3.6 Removing and Replacing the OCP

To remove the storage element OCP:

1. Grasp both sides of the OCP and pull straight out.

2. Set OCP aside until disk or tape drive installation is complete.

To replace the storage element OCP:

1. Grasp both sides of the OCP.

2. Align the connector on the back of the OCP with the socket on the storage element.

3. Push the OCP gently into place, ensuring that the plastic tabs and spring clip on the OCP are seated in the bezel casting slots on the storage element.

-------------------- **Note** --------------------

This is valid only for RA9x disk drives.

The OCP should be at the top of the disk drive. If it is at the bottom, remove the OCP by gently pulling it straight out. Turn the OCP around and replace it in the top position. There may be a bezel connector cap over the top OCP connector slot. If so, remove the cap before trying to replace the OCP. Move the cap to the bottom connector slot, as shown in Figure 3–2. The OCP of the tape drive should be on the right-hand site.

3.7 Removing and Replacing the Cabinet Top Cover

Remove the cabinet top cover using the following procedure:

1. At the rear of the cabinet, remove the two serrated, truss-head, Phillips screws from the underside of the rear bustle. Save these screws.

2. Lift the cabinet top cover up, then slide it back approximately 1 to 1–1/2 inches. This will enable the metal tabs on the cover to clear the cabinet H-stiffener slots.

3. Carefully remove the top cover from the cabinet and store in a safe place to avoid damage to the painted finish.

Replace the cabinet top cover using the following procedure:

1. Lift the top cover over the cabinet and rest it on the H-stiffener.

2. Align the top cover metal tabs with the two slots in the top of the cabinet H-stiffener.

3. Slide the metal tabs into the slots.

4. Push the top cover forward until the screw holes in the top cover align with the holes in the rear bustle. The top cover now should be flush with the cabinet side panel profiles (top and front).

5. Insert and secure the two previously removed truss-head screws.

3.8 Removing and Replacing the Cabinet Rear Access Panel

Many products use a rear bustle assembly with a rear access panel secured with two quarter-turn hex fasteners, as shown in Figure 3–3.

To remove this type of rear access panel, perform the following procedure:

1. Unlock the two hex fasteners located at the top of the panel with a counterclockwise one-quarter turn.

2. Tilt the panel toward you, and lift it up to disengage the pins at the bottom of the panel.

3. Lift the panel clear of the cabinet system.

To replace the rear access panel:

1. Lift the panel into place and fit the pins into the holes at the top of the I/O bulkhead.

2. Push the top of the panel into place and turn the two hex fasteners one-quarter turn clockwise.

3.8 Removing and Replacing the Cabinet Rear Access Panel

Figure 3–3 Rear Access Panel

HEX
FASTENER

HEX
WRENCH

I/O BULKHEAD

REAR
ACCESS
PANEL

PINS

EXTERNAL
CABLES
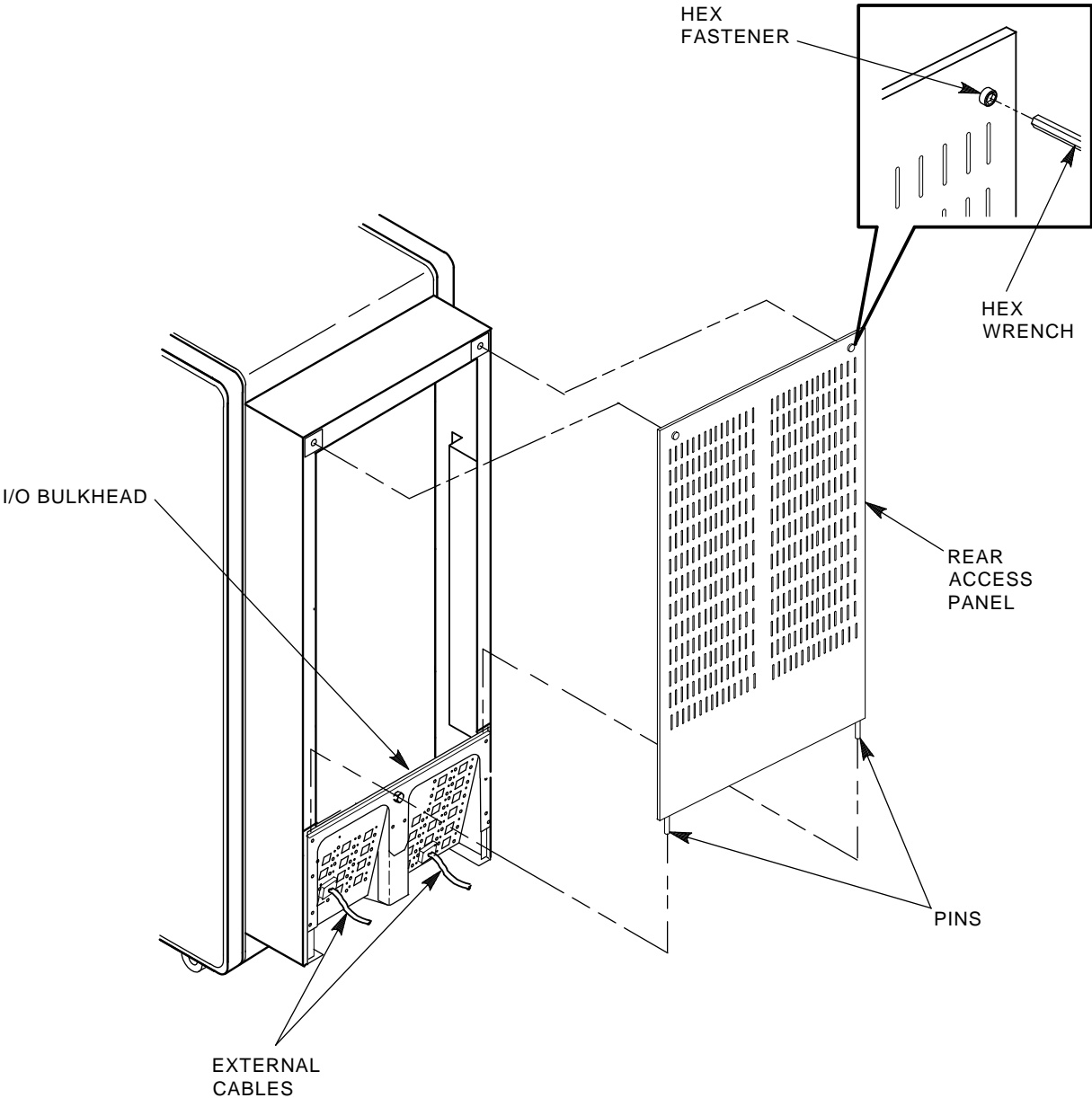
CXO-2719A

3.9 Removing and Replacing the Cabinet Kick Plate

When installing or removing disk or tape drives in the two lower positions (positions 1 and 2), you must remove the cabinet front kick plate to install the chassis stabilizer brackets, only for the RA90/RA92 disk drive.

Remove the cabinet kick plate using the following procedure and Figure 3–10:

1. Remove the two 10/32 pan-head Phillips sems screws that secure the kick plate to the cabinet frame. Hold the kick plate with one hand after removing the second screw, or it will fall to the floor.

2. Place the kick plate and its hardware in a safe place.

Replace the cabinet kick plate using the following procedure and Figure 3–10:

1. Slide the pointed tabs on the back of the kick plate into the cabinet mounting bracket holes at the base of the frame. Note the kick plate tabs slide up into the holes, as opposed to seating down into the holes.

2. Push the kick plate flush to the frame, then reinsert the two 10/32 pan-head Phillips sems screws.

3. Tighten the screws.

3.10 Stabilizer Plate (Weight)

To make sure the stability of a cabinet that contains a single storage element in position 5 or 1, a 25-pound stabilizer plate has been installed at the factory. The stabilizer plate is attached to the underside of the upper cabinet H-stiffener, and is fastened to the upper front and rear cabinet crossbars. It is not necessary to remove the stabilizer plate after installing additional add-on storage elements.

3.11 Ground Wire

An additional ground wire is shipped with the cabinet and mounted at the rear. This ground wire is used to optimize the signal integrity. Connect the open end of the ground wire to the target system to achieve equal ground levels between storage cabinet and the system. This wire has to be used in case the cabinet and the system are connected to different grounding systems or different mains.

3.12 Installing Cabinet Hardware

After removing the bezel, half bezel, OCP, and cabinet rear panel, prepare the cabinet hardware for storage element installation as follows:

1. Remove the two clear plastic grille mounting brackets. The brackets are designated as left-hand (part number 74–37919–02) and right-hand (part number 74–37919–01). Each bracket is secured with two 10-32 x 5/8 pan-head Phillips sems screws. Save these brackets and screws.

   _____ **Note** _____

   A nylon washer is located in the hardware stack-up of the bottom hole of the clear plastic grille mounting bracket. The nylon washer resides between the grille mounting bracket and the cabinet frame. The nylon washer maintains spacing for bezel alignment until the add-on disk or tape drive retainer bracket is installed. The nylon washer can be discarded after the storage element installation.

   Be sure to reinstall these plastic grille mounting brackets after placing the add-on storage element into the cabinet. See Section 3.17.

   _____

2. If installing an upper-level storage element, remove the cabinet top cover. See Section 3.7.

   _____ **Note** _____

   Only for the RA90/RA92 disk drive.

   _____

   - Remove the two 10-32 x 5/8 hex serrated screws of the associated cabinet stabilizer bracket from the cabinet frame.

   - Attach the cabinet stabilizer bracket to the top of the add-on disk drive with two 10/32 x 7/16 flat-head Phillips screws (from the plastic bag that came with the RA90–NA/RA92–NA disk drive add-on kit).

     The chassis stabilizer bracket position corresponds to the disk drive position and level the disk drive will occupy. The chassis stabilizer brackets for disk drive positions 5 and 6 attach to the cabinet frame crossbar above the disk drives. The chassis stabilizer brackets for disk drive positions 1 and 2 attach to the cabinet frame crossbar below the disk drives. Disk drive positions 3 and 4 do not require chassis stabilizer brackets.

3.   Attach the top and bottom chassis retainer brackets (L-shaped brackets)
     to the site of the disk drive using the short 10-32 x 3/8 pan-head Phillips
     sems screws (from the plastic bag that is part of the RA90/RA92 disk drive
     add-on kit). Two screws will be used for each retainer bracket. The chassis
     retainer bracket has screw slots for mounting to the storage enclosure.
     These screw slots are required to line up the SDI and DSSI devices after
     mounting. After mounting the bracket, push the bracket towards the
     storage elements for SDI devices. Pull it in the opposite direction away
     from the storage element for DSSI devices. After adjusting the bracket,
     tighten the mounting screws.

3.13 Guide Rail Plate Installation (RETMA Rails)

—————————————— **Note** ——————————————

Two types of guide rails are available: universal and Radio Electronics
and Television Manufacturer's Association (RETMA).

——

Two round standoff on each end of the guide rail plate are used to locate
the guide rail plate along the cabinet vertical uprights. The round standoffs
are inserted into front and rear cabinet vertical upright mounting holes to
position the guide rail plate while it is fastened to the cabinet. Guide rail plate
installation procedures for both left and right enclosure mounting positions are
presented in Section 3.14 and Section 3.15.

If an ESD bolt is mounted to the vertical upright in your selected installation
position, remove the ESD bolt until your installation is complete, then fasten it
to an open space on the cabinet vertical upright.

3.14 Left Position Guide Rail Plate Installation

Install the guide rail plate in the left position within the cabinet as follows (see
Figure 3–4):

3.14 Left Position Guide Rail Plate Installation

Figure 3–4 Chassis Rail Assembly
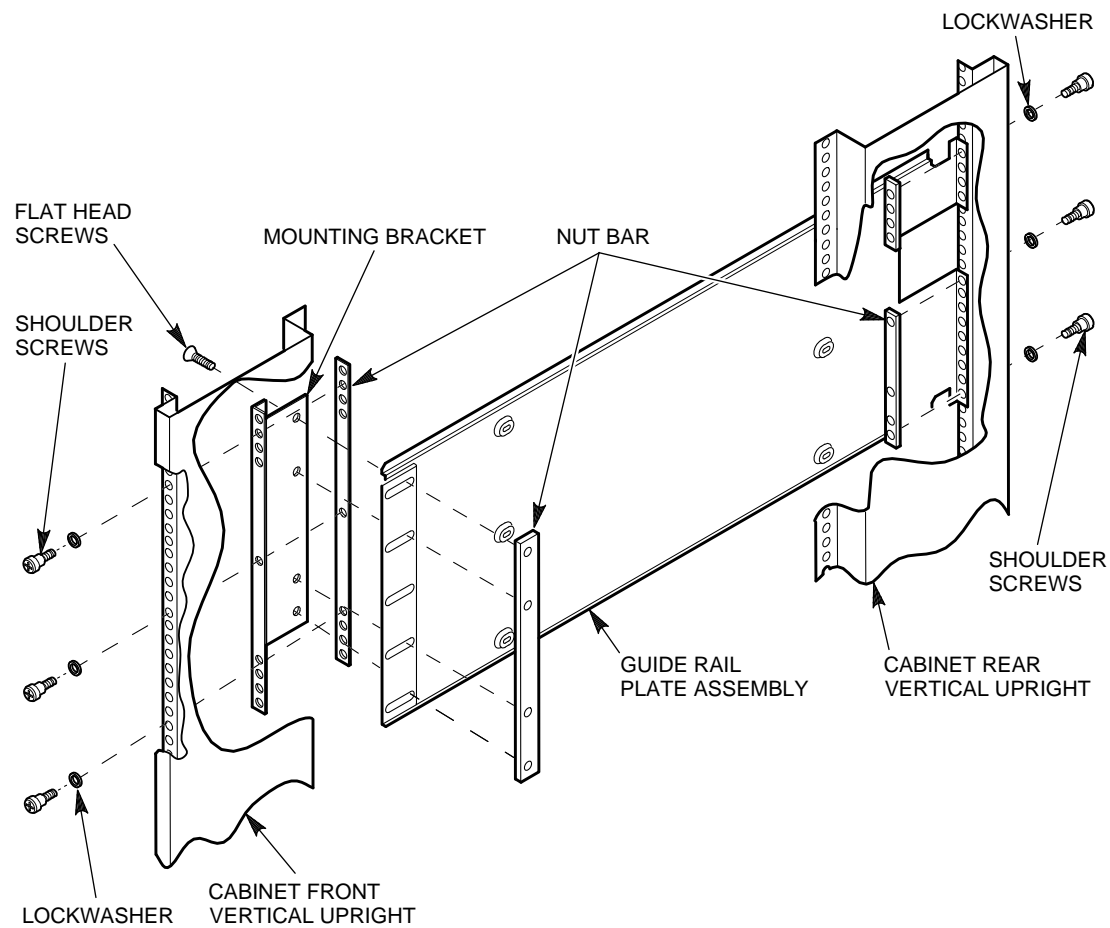
CXO-4144A-TI

_____ **WARNING** _____

Cabinet vertical upright edges may be sharp and can slice or abrade
skin or cable insulation.

3.14 Left Position Guide Rail Plate Installation

1. Turn the cabinet power off.

2. This procedure installs an enclosure in add-on sequence position 6. Refer to Table 3–1 to select the optimum add-on sequence position for your installation.

3. Remove the rear access panel.

4. Remove the bezel filler that corresponds to add-on sequence position 6.

   a. Refer to Table 3–1 to select the optimum add-on sequence position for your installation.

   b. Remove the four U-clips securing the bezel filler to the bezel.

   c. Remove the bezel filler.

   _____ WARNING _____

   Use care in supporting the guide rail plate. It is heavy and awkward to position within the cabinet. If possible, use two persons to support and position the guide rail plate. The guide rail plate may cause personnel injury if dropped during installation.

   _____

5. Install the guide rail plate in add-on sequence position 6. Add-on sequence position 6 corresponds to mounting hole numbers 5, 12, and 18 as shown in Figure 3–5.

   a. From the rear of the cabinet, position the guide rail plate with the mounting bracket to the rear, making sure that the arrow on the mounting bracket is pointing up.

   b. Insert the two front round stand-offs into the cabinet so that hole 12 becomes the center mounting hole in the guide rail plate.

   c. While supporting the guide rail plate against the cabinet front vertical upright, extend the mounting bracket to engage the two rear round stand-offs into hole numbers 6 and 19 on the cabinet rear vertical upright.

3.14 Left Position Guide Rail Plate Installation

Figure 3–5   RETMA Frame Mounting Hole Locations

HOLE 1
HOLE 5
HOLE 6
HOLE 12
HOLE 18
HOLE 23
HOLE 24
HOLE 30
HOLE 36
HOLE 41
HOLE 42
HOLE 48
HOLE 54
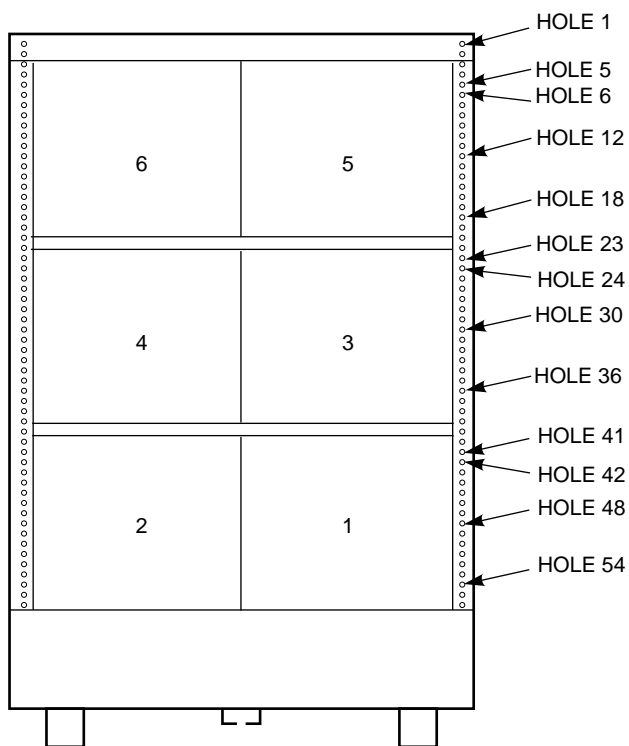
CXO-4062A-MC

d. From the front, insert and tighten the three shoulder screws and lockwashers in mounting holes 5, 12, and 18.

e. From the rear, insert and tighten the shoulder screws and lockwashers in mounting holes 5, 12, and 18.

f. Tighten the four mounting bracket screws.

3.15 Right Position Guide Rail Plate Installation

Install the guide rail plate in the right position within the cabinet as follows
(refer to Figure 3–4):

WARNING

Cabinet vertical upright edges may be sharp and can slice or abrade
skin or cable insulation.

---

1. Turn the cabinet power off.

2. This procedure installs an enclosure in add-on sequence position 5. Refer
   to Table 3–1 to select the optimum add-on sequence position for your
   installation.

3. Remove the rear access panel.

4. Remove the bezel filler that corresponds to add-on sequence position 5.

   a. Remove the bezel. See Section 3.4.

   b. Remove the U-clips securing the bezel filler to the bezel.

   c. Remove the bezel filler.

WARNING

Use care in supporting the guide rail plate. It is heavy and awkward to
position within the cabinet. If possible, use two persons to support and
position the guide rail plate. The guide rail plate may cause personnel
injury if dropped during installation.

---

5. Install the guide rail plate in add-on sequence position 5. Add-on sequence
   position 5 corresponds to mounting hole numbers 5, 12 and 18 as shown in
   Figure 3–5.

   a. From the front of the cabinet, position the guide rail plate with the
      mounting bracket to the front, making sure that the arrow on the
      mounting bracket is pointing up.

   b. Insert the two rear round stand-offs into the cabinet so that hole 12
      becomes the center mounting hole in the guide rail plate.

3.15 Right Position Guide Rail Plate Installation

    c.   While supporting the guide rail plate against the cabinet rear vertical upright, extend the mounting bracket to engage the two front round stand-offs into hole numbers 6 and 19 on the cabinet front vertical upright.

    d.   From the front, insert and tighten the three shoulder screws and lockwashers in mounting holdes 5, 12, and 18.

    e.   From the rear, insert and tighten the three shoulder screws and lockwashers in mounting holes 5, 12 and 18.

    f.   Tighten the four flathead mounting bracket screws as shown in Figure 3–4.

3.16 Chassis Rail Installation (Universal Rails)

—————————————— **Note** ——————————————

Two types of guide rails are available: universal and Radio Electronics and Television Manufacturer's Association (RETMA).

————————————————————————————————

To allow the length of the chassis rail to be adjusted to fit the cabinet, one end of the rail is extendable using a sliding rail bracket. One round standoff on each end of the guide rail plate is used to locate the chassis rail along the vertical cabinet rails. The round standoffs are inserted into front and rear chassis rail locating holes to position the chassis rail while it is fastened to the cabinet.

—————————————— **Note** ——————————————

Standoff location holes, front and rear, both sides, are holes 17, 35, and 53 as shown in Figure 3–6. Two small ESD grounding posts are provided with the cabinet. One is located on a front vertical cabinet rail, and one on a rear rail. Should an ESD grounding post interfere with the installation of the chassis rail, move the post out of the way to any free hole on the cabinet.

————————————————————————————————

3.16 Chassis Rail Installation (Universal Rails)

3.16.1 Chassis Rail Assembly

Before the chassis rail components can be mounted in the cabinet, they must be assembled. Assemble the chassis rail components as follows (see Figure 3–7):

1. If it is necessary to reconfigure the chassis slide from metric to RETMA, remove the two round standoffs from the top position on each chassis rail and install in the bottom position.

2. Position the rail bracket against the chassis rail, as shown in the illustration.

3. Fasten the rail bracket to the chassis rail with the unbeveled nut bar and 4 screws, as shown. Leave the screws loose enough to allow the rail bracket to be moved along the chassis rail.

4. Install a U-nut in the groove near the end of each of the beveled nut bars. The flat side of the U-nuts must be on the *beveled* side of the nut bar.

5. Install the beveled nut bars on the chassis rail and rail bracket, using the round standoffs to hold them in place. The beveled side of the nut bars must face the flanges on the chassis rail and rail bracket.

6. The chassis rail assembly is now ready to be installed in the cabinet.

3.16 Chassis Rail Installation (Universal Rails)

Figure 3–6 Universal Frame Mounting Hole Locations

HOLE 5

HOLE 17

HOLE 35

HOLE 53

6	5
4	3
2	1
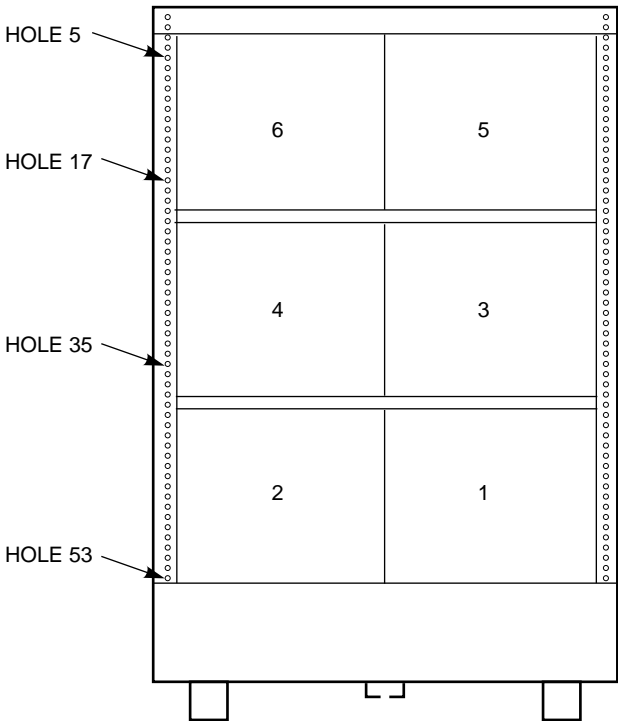
CXO-4063A

3.16 Chassis Rail Installation (Universal Rails)

Figure 3–7 Chassis Rail Assembly

U-NUT, 10-32
(2 PLACES)

NUT BAR,
UNBEVELED

ROUND
STANDOFF

CHASSIS
RAIL

SCREW, 10-32
FH
(4 PLACES)

NUT BAR,
BEVELED
(2 PLACES)

RAIL
BRACKET

ROUND
STANDOFF

UP
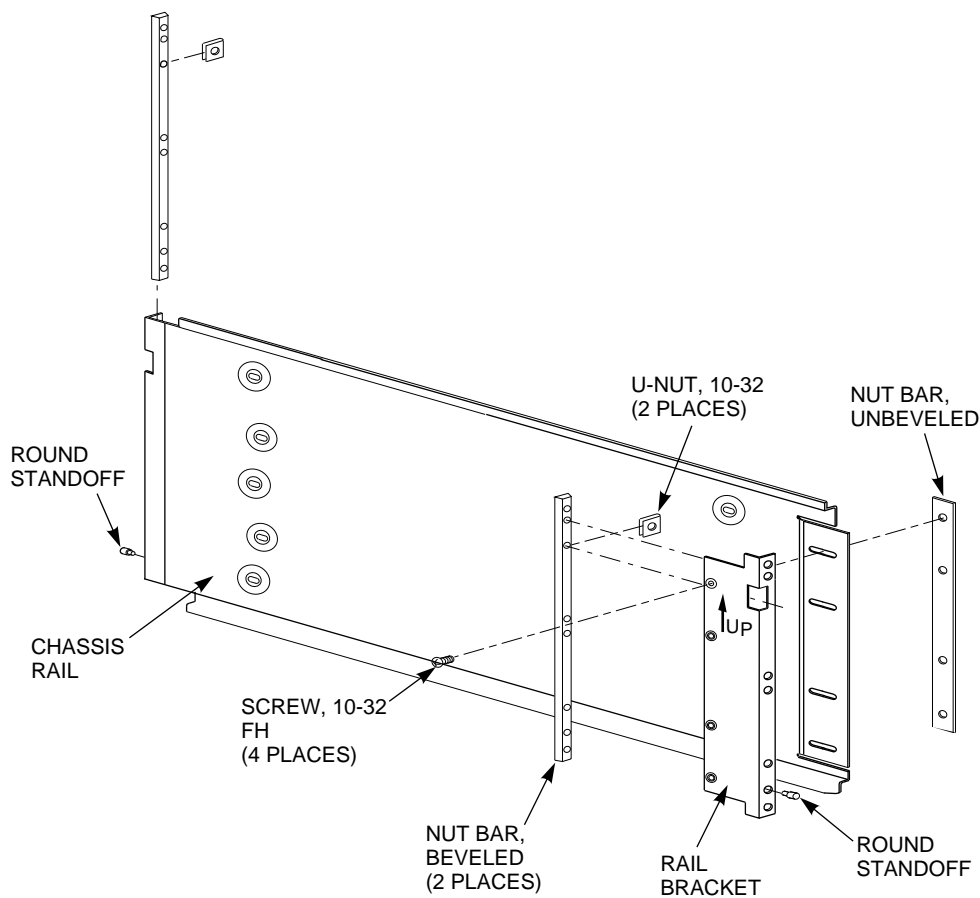
CXO-4145A-MC

3.16.2 Right Position Chassis Rail Assembly Installation

Install the chassis rail assembly in the right position within the cabinet as
follows (see Figure 3–8):

_____ **WARNING** _____

Cabinet rail edges may be sharp and can slice or abrade skin or cable
insulation.

_____

3.16 Chassis Rail Installation (Universal Rails)

1. Turn the cabinet power off.

2. Determine the correct enclosure mounting locations and corresponding cabinet rail mounting holes for the chassis rail assembly. Refer to the chapter in this document pertaining to your specific cabinet configuration for this information. The enclosure mounting hole specified for each position is the chassis rail locating hole shown in Figure 3–8.

WARNING

Use care in supporting the chassis rail assembly. It is heavy and awkward to position within the cabinet. If possible, use two persons to support and position the chassis rail assembly. The chassis rail assembly may cause personnel injury and equipment damage if dropped during installation.

Note

To be sure of proper alignment of the chassis rail assembly, use care to position the round standoffs in the correct front and rear chassis rail locating holes.

---

3. From the front of the cabinet, position the chassis rail assembly at the correct mounting holes, as shown. Be sure that the rail bracket is positioned toward the front of the cabinet, and that the arrow on the rail bracket points up.

4. Insert the rear round standoff into the rear chassis rail locating hole.

5. Support the chassis rail against the rear vertical cabinet rail and maintain the rear round standoff in its locating hole. Extend the rail bracket to insert the front round standoff into its correct front chassis rail locating hole.

3.16 Chassis Rail Installation (Universal Rails)

Figure 3–8 Right Position Chassis Rail Assembly Installation

REAR VERTICAL
CABINET RAIL

INNER
FLANGE

FRONT VERTICAL
CABINET RAIL

INNER
FLANGE

OUTER
FLANGE

U-NUT, 10-32
(2 PLACES)

SCREW, SEM
10-32 x .625
(2 PLACES)

UP

CHASSIS
RAIL ASSEMBLY

RAIL
BRACKET

FRONT CHASSIS
RAIL LOCATING
HOLE

SCREW, 10-32
(4 PLACES)

ROUND
STANDOFF
(2 PLACES)

WASHER, LOCK
10-32, INTERNAL
(4 PLACES)

CXO-4146A-MC
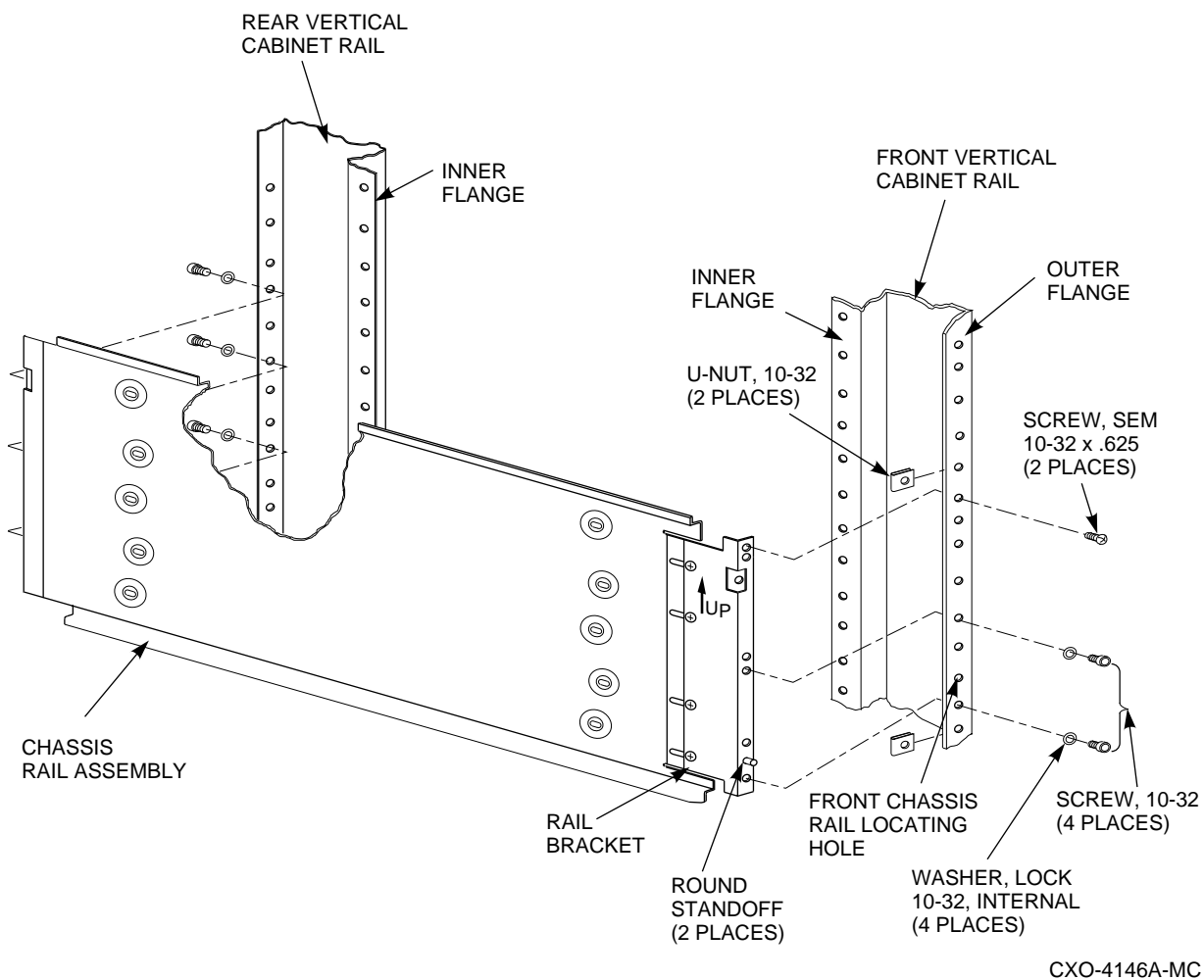
6. Using the shelf bracket as a template, mark the four U-nut mounting holes on the inner flanges of both the front and rear vertical cabinet rails. Make sure to use the correct set of holes in the chassis rail.

7. Temporarily remove the chassis rail assembly and install four U-nuts along the inner flanges of the front and rear vertical cabinet rails at the holes marked in step 6.

8. Reposition the chassis rail assembly as directed in steps 3 through 5.

3.16 Chassis Rail Installation (Universal Rails)

9. Fasten the chassis rail to the inner flanges of the front and rear vertical cabinet rails with 4 screws, as shown.

10. Fasten the rail bracket to the front vertical cabinet rail with its beveled nut bar and three screws, as shown.

11. Fasten the chassis rail to the rear vertical cabinet rail with its beveled nut bar and three screws, as shown.

12. Tighten the screws fastening the rail bracket to the chassis rail.

13. Install two U-nuts along the outer flange of the front vertical cabinet rail. Install one U-nut at the hole just above the front chassis rail locating hole and the other at the eighth hole below the locating hole.

3.16.3 Left Position Chassis Rail Assembly Installation

_____ Note _____

Install the chassis rail assembly in the left mounting position only if an enclosure is also installed in the right position. The bezel openings are designed to allow a single enclosure to be installed only in the right position.

_____

Install the chassis rail assembly in the left position within the cabinet as follows (see Figure 3–9):

_____ WARNING _____

Cabinet rail edges may be sharp and can slice or abrade skin or cable insulation.

_____

1. Turn the cabinet power off.

2. Determine the correct enclosure mounting locations and corresponding cabinet rail mounting holes for the chassis rail assembly. Refer to the chapter in this document pertaining to your specific cabinet configuration for this information. The enclosure mounting hole specified for each position is the chassis rail locating hole shown in Figure 3–9.

3.16 Chassis Rail Installation (Universal Rails)

_____ **WARNING** _____

Use care in supporting the chassis rail assembly. It is heavy and
awkward to position within the cabinet. If possible, use two persons
to support and position the chassis rail assembly. The chassis rail
assembly may cause personnel injury and equipment damage if
dropped during installation.

_____ **Note** _____

To be sure of proper alignment of the chassis rail assembly, use care to
position the round standoffs in the correct front and rear chassis rail
locating holes.

3. From the rear of the cabinet, position the chassis rail assembly at the
   correct mounting holes, as shown. Be sure that the rail bracket is
   positioned toward the rear of the cabinet, and that the arrow on the
   rail bracket points up.

4. Insert the front round standoff into the front chassis rail locating hole.

5. Support the chassis rail assembly against the front vertical cabinet rail
   and maintain the front round standoff in its locating hole. Extend the rail
   bracket to insert the rear round standoff into its correct rear chassis rail
   locating hole.

6. Fasten the chassis rail assembly to the inner flanges of the front and
   rear vertical cabinet rails with four shoulder screws with lockwashers, as
   shown.

7. Fasten the rail bracket to the rear vertical cabinet rail with one sems
   screw, as shown.

3.16 Chassis Rail Installation (Universal Rails)

Figure 3–9 Left Position Chassis Rail Assembly Installation

REAR VERTICAL
CABINET RAIL

INNER
FLANGE

FRONT VERTICAL
CABINET RAIL

OUTER
FLANGE

INNER
FLANGE

SCREW, SEM
10-32 x .625
(2 PLACES)

U-NUT, 10-32
(2 PLACES)

UP

RAIL
BRACKET

SCREW, 10-32
(4 PLACES)

FRONT CHASSIS
RAIL LOCATING
HOLE

CHASSIS
RAIL ASSEMBLY

WASHER, LOCK
10-32, INTERNAL
(4 PLACES)

ROUND
STANDOFF
(2 PLACES)
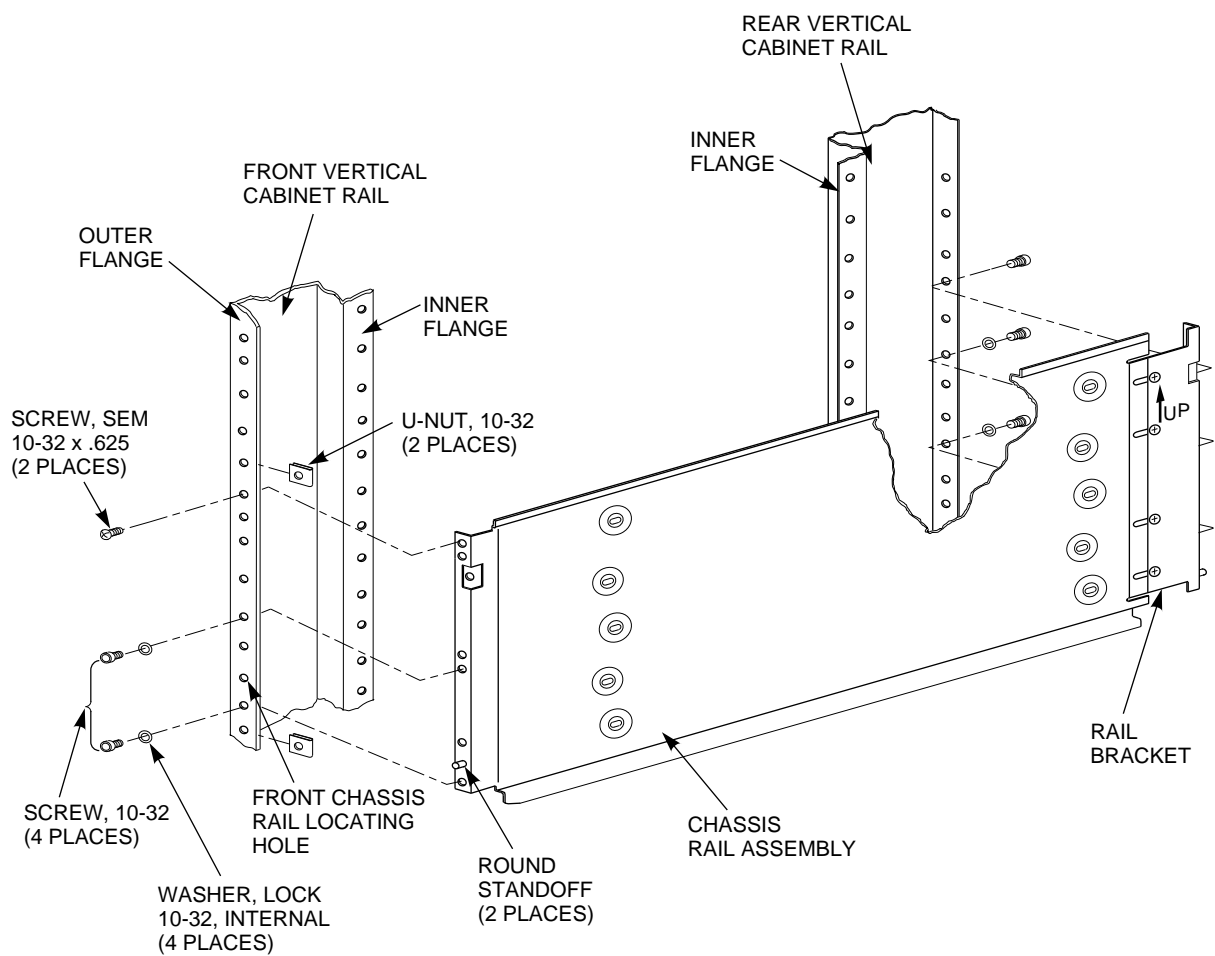
CXO-4147A-MC

8. Fasten the chassis rail to the front vertical cabinet rail with one sems
    screw, as shown.

9. Tighten the four screws fastening the rail bracket to the chassis rail.

10. Install two U-nuts along the outer flange of the front vertical cabinet rail.
    Install one U-nut at the hole just above the front chassis rail locating hole
    and the other at the eighth hole below the locating hole.

3.17 Placing the Add-On Storage Element into the Cabinet

The add-on storage element and the DECArray300 cabinet system hardware should be ready for installation. See Figure 3–10 while performing the installation procedure.

1. Turn the storage element so the side grooves are facing toward the cabinet guide rails. (The storage element may look upside down at this point; this will be rectified when the OCP is reinstalled to correspond with the disk or tape drive orientation.)

2. Use the mounting brackets, part number 74–44414–01, for mounting Storage Elements into the S*x*300 Cabinet. These mounting brackets are enclosed to the cabinet. The mounting holes in the brackets are adjustable (long holes).

3. Push the bracket towards the front for DSSI storage elements prior to tightening the mounting screws to fix the brackets to the storage enclosure.

4. Push the bracket towards the rear for SDI storage elements prior to tightening the mounting screws to fix the brackets to the storage enclosure.

5. Lift and move the storage element into place using a Digital lifting device (part number FC–10117–AC), and the following procedure:

--------------------- CAUTION ---------------------

If a lifting device is not available, two people are needed to install the disk or tape drive into the cabinet. The disk or tape drive must be handled with care. Manual installation is not recommended. See Table 3–4 for all single storage element weight you can install in the DECArray300 3 high cabinet.

---

   a. Place the lifting device in an upright position with the lift platform facing away from the operator.

   b. Make sure sufficient open space for extending the lift platform.

   c. Support the top of the lifting device with one hand. With the other hand, raise the lift platform holding latch from the cross bar to release it.

   d. Lower the lift platform to its service position.

   e. Check the hinges at the base of the lift platform to make sure they are fully extended and locked.

3.17 Placing the Add-On Storage Element into the Cabinet

f. Release the safety strap and move it to one side so it will not become tangled.

g. Move the lifting device to the disk or tape drive and center the lift platform under the storage element. Slide the disk drive to the back of the lift platform.

h. Secure the safety strap around the storage element.

i. Lower the lift platform to no more than 12 inches off the floor.

j. Transport the storage element to the cabinet.

k. For more details, see Chapters 5, 6 and 7.

l. Crank the lift platform up to the disk or tape drive installation level in front of the cabinet.

Table 3–4   Sx300 Storage Element weight:

DECArray300 Storage Element	Weight kilo
RA9x	34.0 kilograms
Sx7x	40.0 kilograms
TF857	25.0 kilograms

3.17 Placing the Add-On Storage Element into the Cabinet

Figure 3–10   Cabinet Rails and Kick Plate (Front)

GUIDE RAIL

DRIVE REAR

RIGHT SIDE MOUNTING RAIL

CABINET FRONT

RA90/RA92 DRIVE CHASSIS

CHASSIS STABILIZER BRACKET

KICK PLATE

10-32 X 5/8 PAN-HEAD PHILLIPS SEMS SCREWS

MOUNTING BRACKET HOLE

CXO-2728B_R
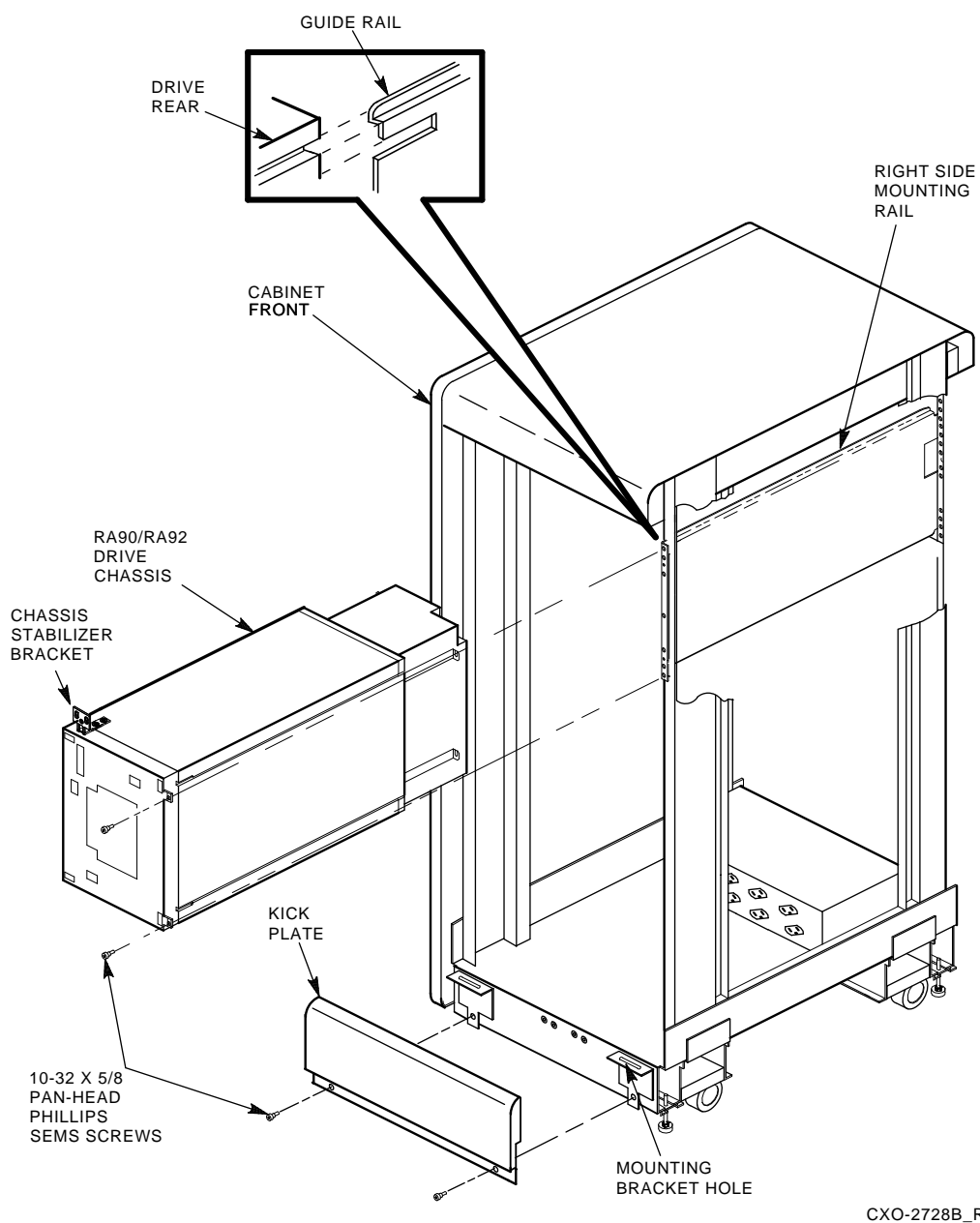
3.17 Placing the Add-On Storage Element into the Cabinet

_____ **Note** _____

Make sure the internal SDI/DSSI cables and drive power cables are
clear for storage element installation.

_____

m. Remove the safety strap from the storage element and slide it into
    the cabinet, making sure that the grooves on the side of the storage
    element align with the cabinet guide rails.

n. Move the lifting device away from the cabinet. The cabinet guide rails
    will support the weight of the storage element.

o. Slide the storage element completely into the cabinet frame.

p. Slide the Storage enclosure completely into the cabinet until the chassis
    stabilizer bracket or the mounting brackets on the drive meets with the
    holes in the cabinet frame.

q. Align the hole in the upper chassis retainer bracket with the hole in
    the cabinet frame refer to Figure 7–1.

r. Insert the 10-32 x 5/8 pan-head Phillips sems screw (from the add-on
    kit bag) through the upper chassis retainer bracket hole and into the
    frame. Screw down, but do not tighten at this time.

s. Align the previously removed, clear plastic grille mounting bracket(s)
    to the frame. Loosely secure the bracket to the frame by placing the
    pan-head screw into the top bracket hole.

t. Align the holes in the lower chassis retainer bracket (L-shaped bracket)
    and the clear plastic grille mounting bracket with the hole in the
    cabinet frame refer to Figure 7–1. Insert the 10-32 x 5/8 pan-head
    Phillips sems screw (previously removed) through both parts (clear
    plastic grille mounting bracket and the chassis retainer bracket) and
    secure, but do not tighten, to the cabinet frame.

u. If installing disk drives in upper or lower levels, align the two holes in
    the chassis stabilizer bracket with the threaded holes in the cabinet
    (H-stiffener) frame (above drives 5 and 6, below drives 3 and 4). For
    installing the Sx7x or the Tx8xx you don't need the chassis stabilizer
    bracket.

v. Insert the two 10-32 x 5/8 hex serrated screws through the chassis
    stabilizer bracket and into the frame.

w. Tighten all screws.

3.18 Cable and Power Cord Routing and Connections

The internal Storage element power cords have been factory-installed and routed. SDI/DSSI cables are factory installed for the mounted storage elements only. The SDI/DSSI cables have been connected to the cabinet I/O bulkhead panel. The power cords have been connected to the rear panel of the power controller.

Go to the rear of the cabinet. The storage element connections for both internal SDI/DSSI cables and power cords are coiled and tie-wrapped at the factory. Carefully cut the cable tie, then connect the SDI/DSSI cable connectors to the proper port connections on the rear of the storage element.

The 110/120 Vac version of the cabinet are preconfigured with power cords for all six possible positions.

3.19 Applying Power

This chapter describes the S*x*300 storage element switches and power controller power connector configurations encountered when installing a disk or tape drive in an DECArray300 cabinet system. Brief descriptions of the power controller switches, the storage element voltage selector switch, and the circuit breaker are included.

This chapter does not discuss fault codes or error conditions incurred at power-up. Please refer to the specific storage element manuals for such information.

3.20 Power Controller

The power controller has six switched and two unswitched outlets (a total of eight outlets). All variations include an ac line filter. The power controller is 19-inch rack-mountable.

The power controller serves four functions:

- Controls large amounts of power from a remote source

- Provides a convenient ac power distribution point for multiple units

- Protects equipment from some electrical disturbances

- Disconnects power (in case of overload) and provides circuit breaker protection

3.20 Power Controller

WARNING

High leakage current—earth connection is essential before connecting
power. Verify the integrity of the earth ground terminal of the power
receptacle before attaching the cabinet power controller cable and
applying power. If the continuity of the terminal-to-ground cannot
be verified, supplemental grounding to the cabinet system must be
provided.

Figure 3–11 shows the connector configurations for the power controller.
Figures 3–12 and 3–13 show the front and rear views of the 874-power
controller. The DECArray300 cabinet system utilizes the 874–D and 887–C
models.

The 887–C power controller is using IEC plugs at input and output.

Figure 3–11 Power Connector Configurations

POWER CORDS GOING TO 874 POWER CONTROLLER
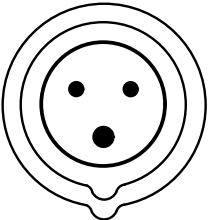
120V 50-60HZ POWER CORD DEC NO. A-PS-1700083-23 PLUG - POWER CONTROLLER END	

120/240V 47-63HZ 10A/6A POWER CORD DEC NO. A-PS-1700442-18 OR A-PS-1700442-19 RECEPTACLE - DRIVE END	

PLUGS GOING TO WALL OUTLET (FROM 874 CONTROLLER)

120V 60HZ 24A 1-PHASE		NEMA NO. L5-30P DEC NO. 12-11193 (874-D)
220/240V 50-60HZ 16A 1-PHASE		IEC 309 320-P6W DEC NO. 12-14379-03 (874-F)

KBO-2731B

3.20 Power Controller

Figure 3–12   874 Power Controller, Front View

POWER
CONTROLLER
CIRCUIT
BREAKER
(SEE NOTE)

POWER
LAMP

J9   J10   J11   J12

I

O

A   B

CORD
OPENING

POWER
CORD

OFF

O

A   B

REMOTE

LOCAL

REMOTE/OFF/LOCAL
SWITCH
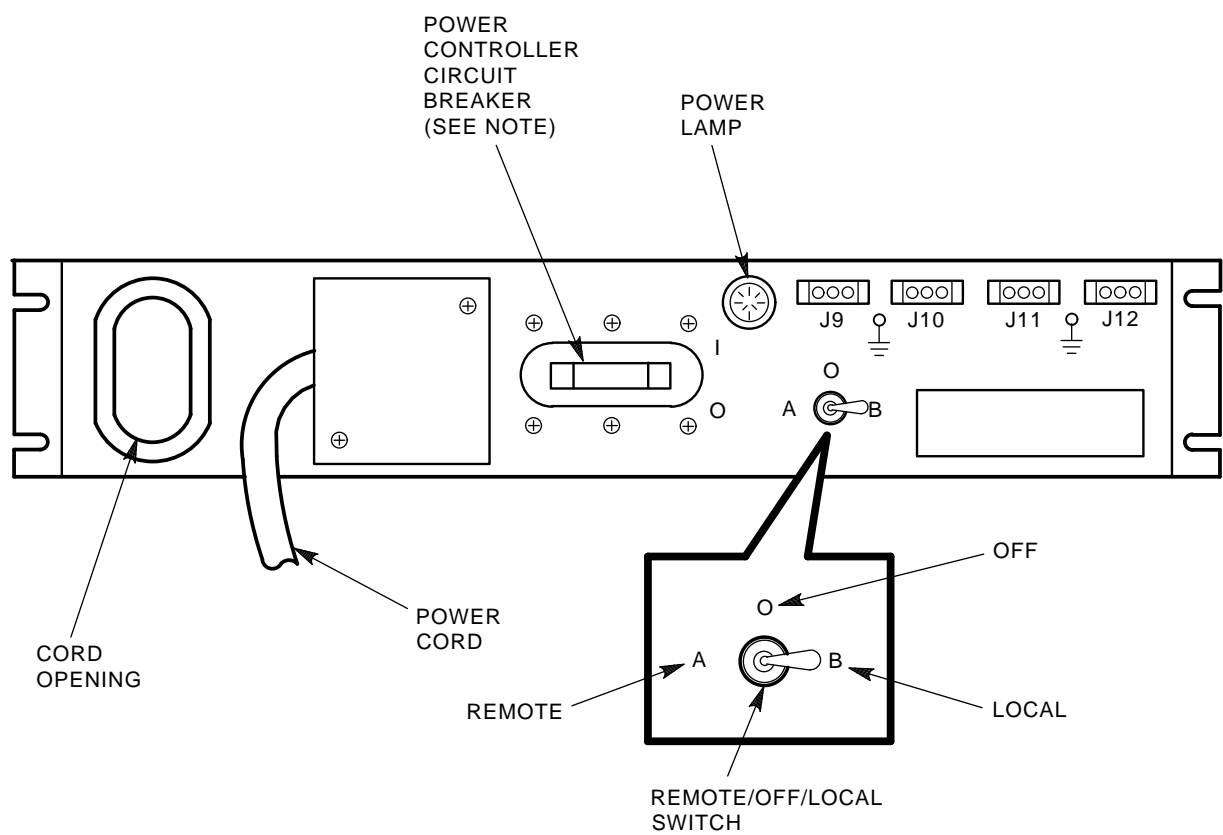
NOTE: CIRCUIT BREAKER OFF POSITION (0) IS DOWN, ON POSITION (1) IS UP.

CXO-2732A

Figure 3–13 874 Power Controller, Rear View
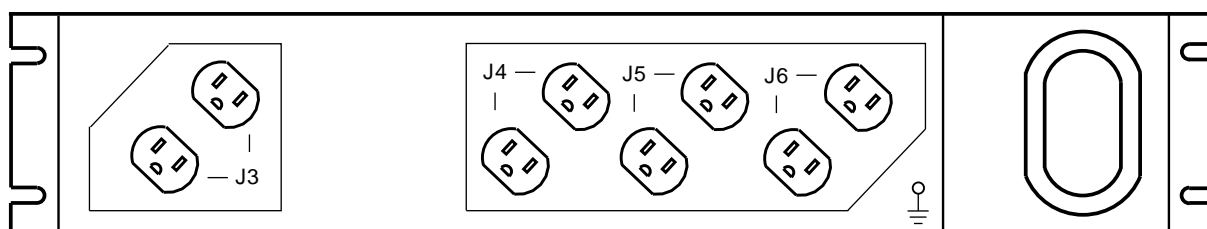
CXO-2733A

3.21 External Sense Connections

If external sense connections to another component are required, insert a
two-pin female (socket) MATE-N-LOK connector (DIGITAL part number 12–
10821–02 with connector pin sockets A–PS–1209379–0–0) from that component
into the mating male connector on the rear of the controller. (Only valid for
887–C P/C.)

3.22 Power Controller Indicators

The two basic controls on the power controller are the circuit breaker and the
BUS/OFF/ON switch. These and all but one of the other controls are located
on the front panel of the controller. Their functions are described in Table 3–5
and in the paragraphs that follow.

3.22 Power Controller Indicators

Table 3–5 Controls and Indicators

Control or Indicator	Function
CB circuit breaker	Provides overload protection for the eight output receptacles and control circuit.
BUS/OFF/ON switch	Controls ac power to the eight ac outlets and selects remote operation.
BUS position	Enables remote control of ac power via the Digital power control bus connectors.
OFF position	Removes ac power from the power controller output receptacles and prevents the power controller from responding to power control bus signals.
ON position	Applies ac power to ac outlets receptacles. Power control bus request signal is ignored. Power control bus inhibit signal is valid.
EXTERNAL SENSE connector 2-pin on rear of controller (only 887–C)	Isolates ac power from the output receptacles. The circuit then must be reset for normal operation by cycling the circuit breaker off and then on.
Power control bus (3-pin)	Provides a means of controlling the power state of a system from remote locations. A switch closure between Pins 1 and 3 will supply ac power to the output receptacles. A switch closure between Pins 2 and 3 will isolate ac power.
Sequenced power control bus (3-pin)	Adds a 0.5 to 2.0 second delay to the power request line (pin 1).
Fuse	Protects the ac bus from control circuitry overload.

3.23 BUS/OFF/ON Switch (S1)

The three positions of this switch are BUS, OFF, and ON. When the circuit breaker to the power controller is ON, this switch controls to the ac outlet in the following ways:

- BUS position—Enables remote control of ac power via the Digital power control bus connectors. The BUS position is intended for remote sensing of Digital power control bus instructions. This position requires the use of a remote sensing cable not shipped with the power controller. If you don't have this cable, or your application does not require the use of the Digital power control bus, leave the switch in the ON position.

- OFF position—Removes ac power from the power controller output receptacles and prevents the power controller from responding to power control bus signal.

- ON position—Applies ac power to ac outlet receptacles. Power control bus request signal is ignored. Power control bus inhibit signal is valid.

3.24 Power Control Bus (Front Panel J10, J11)

_____ WARNING _____

Do not rely on the Digital power control bus to isolate hazardous voltages from the system. Use the circuit breaker to isolate all hazardous voltages.

_____

The power control bus both supplies and detects signals in response to sensors and a master switch. Connections to the Digital power control bus are made through the use of Digital power bus cables (Digital part number 7008288–0– 0). Pin 1 is the power request (requests ac power when the state of Pin 1 is low), Pin 2 is the power inhibit (inhibits ac power when the state of Pin 2 is low), and Pin 3 is the return (the states of Pin 1 and Pin 2 referenced to Pin 3, not to ground). Use Table 3–6 to determine bus logic.

Table 3–6 Power Control Bus Logic Table

(Pin 1)	(Pin 2)	(Switched AC Power)
High	High	OFF
Low	High	ON
High	Low	OFF
Low	Low	OFF

_____ Note _____

The number of bus controls attached to the power control bus must not exceed 40.

_____

3.25 External Sense Connector (J14)

This two-pin male receptacle (J14) on the back of the 887–C power controller attaches to Digital cable connector part number 12–10821–02 with connector pin sockets A–PS–1209379–0–0. It removes power from the loads when enabled by an external sensor. Conditions that a sensor may detect include system over temperature or system air-flow loss. To engage the external sense, plug an appropriate sensor (one that presents a switch closure in the event of an out-of-tolerance condition) into the two pins on the connector. To reset the external sense, cycle the circuit breaker off and then back on again.

_____ WARNING _____

Do not rely on the external sense control to isolate hazardous voltages from the system. Use the circuit breaker to isolate all hazardous voltages.

_____

3.26 Power Controller Circuit Breaker

The power controller circuit breaker has two positions: **0** and **1**. The **0** position represents OFF and the **1** position represents ON.

3.27 887–C Power Controller Cable (Cordage)

The 887–C power controller requires power connector cable replacement to accommodate international power requirements and power connector plug configurations. Table 3–7 lists the cable (cordage) part numbers for some countries using 220/240 Vac power applications.

Table 3–7 887–C Power Controller 220/240 Vac Power Cable Variations

part number	Country
17–01255–01	Europe, U.S., Japan (IEC 309 plug and cordage)
17–00199–10	Central Europe (Schuko-plug)
17–00198–05	Australia
17–00364–06	Italy
17–00209–05	United Kingdom

3.27 887–C Power Controller Cable (Cordage)

---------------------- **Note** ----------------------

All 887–C power controllers are shipped with part number 17–01255–01 power cables in accordance with IEC 320. If the supplied cable requires replacement, the installation team will order a suitable version prior to equipment arrival. The original cable then may be replaced and discarded.

4

Installing an SF3*xx* Storage Array to a VAX 6000 System

This chapter describes the steps to install the SF3*xx* storage array in a single-host or dual-host configuration. The SF300 storage array could be connected to various VAX systems. This chapter uses the connection to the VAX 6000™ as an example.

Make sure that all precautions for site preparation have been completed. Refer to Chapters 1 and 3.

Digital Multivendor Customer Services or trained installing personnel must perform the step in the following warning.

_____ **WARNING** _____

Hazardous voltages are in the storage array and in the components of the storage array.

When performing any operation involving the power source, turn off the power controls of all components and on the power controller. Disconnect the power cable from the source outlet. Perform the operation, then reconnect the power cable to the source.

_____

4.1 Configuration Overview

The SF3*xx* is offered in a number of variants to provide storage capacity from 2 to 24 gigabytes. Additional SF7*x* storage enclosures, and one or two TF8xx series Magazine Tape Subsystems, may also be added to each variant.

This section describes the variants that are supported in single-host and dual-host configurations. Appendix A provides cabling diagrams for each variant described in this section.

4.1 Configuration Overview

All DSSI shipping variations are cabled for single hosts. See Appendix B for recabling to a dual-host configuration.

4.1.1 Single-Host Configurations

In a single-host configuration, one tape integrated storage element (ISE) and up to six disk ISEs can be connected to one DSSI bus. Table A–4 lists the building blocks for each single-host configuration.

For further information on single-host configurations, refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM).

4.1.2 Dual-Host Configurations

In a dual-host configuration, one tape ISE and, up to, four disk ISEs can be connected to one DSSI bus. Table A–4 lists the building blocks for each dual-host configuration.

For further information on dual-host configurations, refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM).

4.2 Single-Host Installation of an SF3*xx* Storage Array

This section provides the procedures for installing the SF3*xx* storage array in a single-host configuration correctly and safely. Digital Multivendor Customer Services or trained installing personnel must perform the procedures.

Make sure that all precautions for site preparation have been completed. Refer to Chapters 1 and 3.

The procedures provide the steps to do the following:

- Inspect the SF3*xx* storage array for the correct configuration (Section 4.2.1)

- Cable the SF3*xx* storage array to the host system in the single-host configuration (Section 4.2.2)

- Power up the SF3*xx* storage array after a successful installation (Section 4.2.4)

- Verify the SF3*xx* storage array for correct operation (Section 4.2.5)

4.2 Single-Host Installation of an SF3*xx* Storage Array

4.2.1 Inspecting the Storage Array (Single-Host)

This procedure describes the steps to inspect the SF3*xx* storage array for correct configuration.

Inspect the storage array from the front, then from the rear.

1. At the front of the SF3*xx* storage array:

    a. Verify the correct setting for all the DSSI ID switches behind the door of the operator control panel (OCP) of every SF7*x* enclosure installed. Make sure that each ISE has a unique DSSI node ID for the DSSI bus that it is on. By convention, DSSI node ID (0) is used for a tape ISE. Disk ISEs should start with DSSI node ID (1) and sequence up from there.

    b. The Mass Storage Control Protocol (MSCP) switch should be in the down (enabled) position at all times unless you are instructed to change it to the up (disabled) position.

Table 4–1   SF7*x* DSSI ID Verification (Front View)

SF1, SF2, SF4, SF5	
Left Rear (LR)	001
Left Front (LF)	010
Right Front (RF)	011
Right Rear (RR)	100
SF3, SF6 in split bus mode	
Left Rear (LR)	101
Left Front (LF)	110
Right Front (RF)	110
Right Rear (RR)	101

    c. Make sure that all OCP buttons are in the out position.

    d. Make sure that the OCP itself is correctly seated in the SF7*x* enclosure. To do so, place a thumb on either side of the OCP and press in. See Figure 4–2.

4.2 Single-Host Installation of an SF3*xx* Storage Array

Figure 4–1 Verifying the SF7*x* DSSI ID Switch Settings
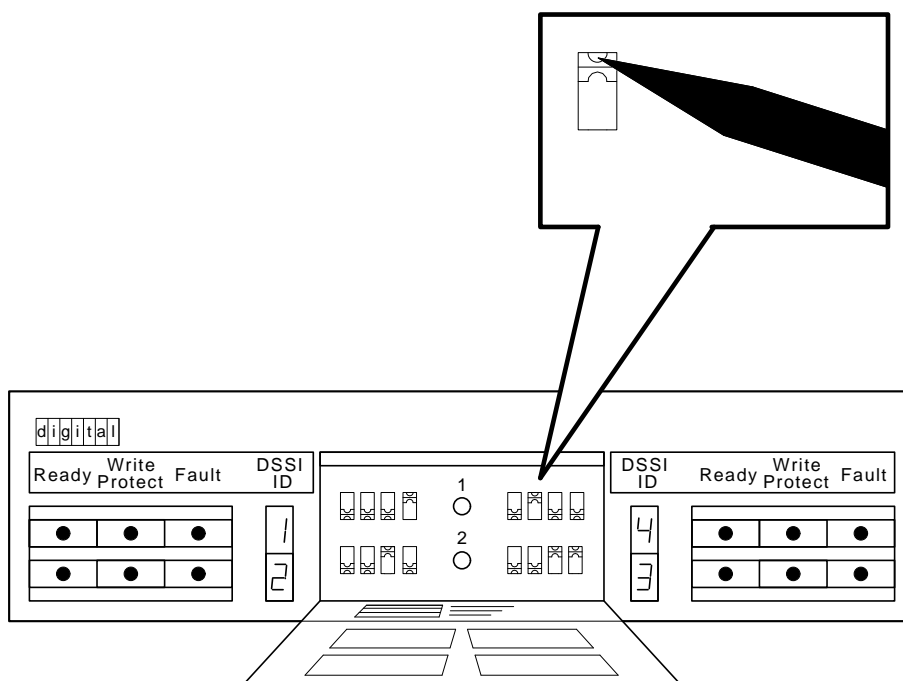
SHR_X1128B_89

    e. Make sure that all drive dc power switches (lower half of the enclosure) are in the out position. You have to replace the front bezels to do so.

                          WARNING

Adhere to electrostatic discharge (ESD) procedures at all times. Use the ESD straps available with every storage array. The straps are inside the rear door. For details see Section 3.3.

4.2 Single-Host Installation of an SF3*xx* Storage Array

Figure 4–2   Seating the SF7*x* OCP
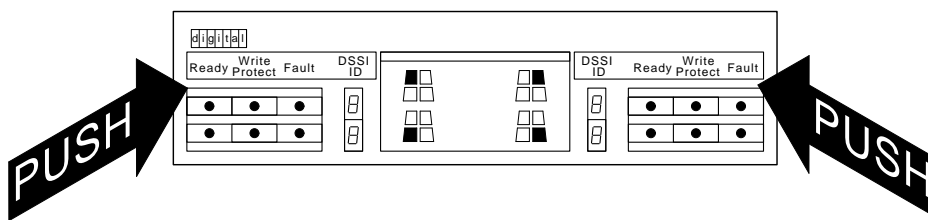
SHR_X1127A_89

2. Make sure that the DSSI ID numbers of each magazine tape subsystem installed in the array are set to 0 and that the Tape Mass Storage Control Protocol (TMSCP) switch is enabled (down). Refer to the magazine tape subsystem documentation for the procedure to access the DSSI controller module.

3. At the rear of the SF3*xx* storage array:

    a. Verify that the correct variation of the power controller exists to meet the power supplied to the installation site.

    b. Make sure that all ac power cords going to the power controller from devices installed in the storage array are correctly seated in the power controller.

    c. Make sure that the ac breaker is off.

    d. Make sure that the bus switch of the power controller is in the on (down) position. Make sure that the BUS/OFF/ON switch is in the down position.

CAUTION

Make sure that all ac power switches on each storage element enclosure and magazine tape subsystem are in the off position.

---

4. For each SF7*x* storage enclosure and magazine tape subsystem installed, check that the ac power cord is correctly seated. See Figure 4–3 and 4–4.

5. Make sure that each SF7*x* storage enclosure and magazine tape subsystem has the correct voltage selected for the power. Note that each has a voltage label for its factory setting.

4.2 Single-Host Installation of an SF3xx Storage Array

6. Make sure that the voltage selection switches for each SF7x storage enclosure and magazine tape subsystem are in the correct position.

7. Make sure that all DSSI connectors in the SF3xx storage array are firmly seated.

Figure 4–3   Sx7x Power Cords and Voltage Selection
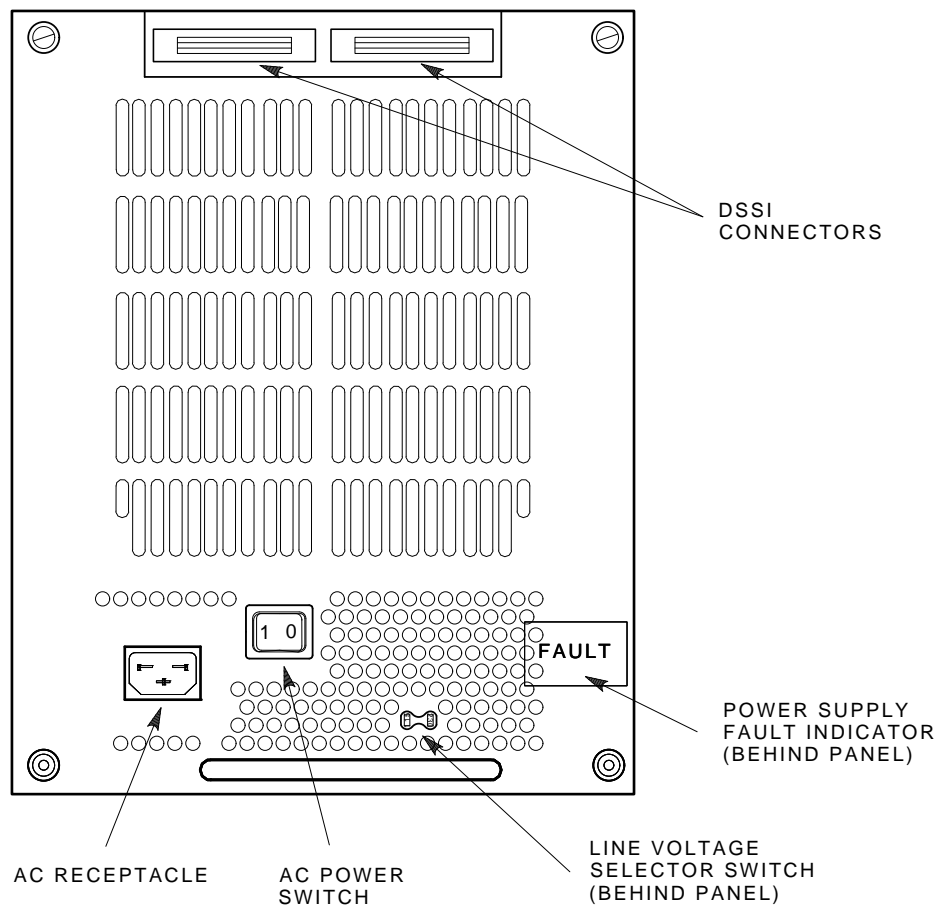
SHR-X0127A-90

4.2 Single-Host Installation of an SF3*xx* Storage Array

Figure 4–4   Magazine Tape Subsystem Power Cords and Voltage Selection
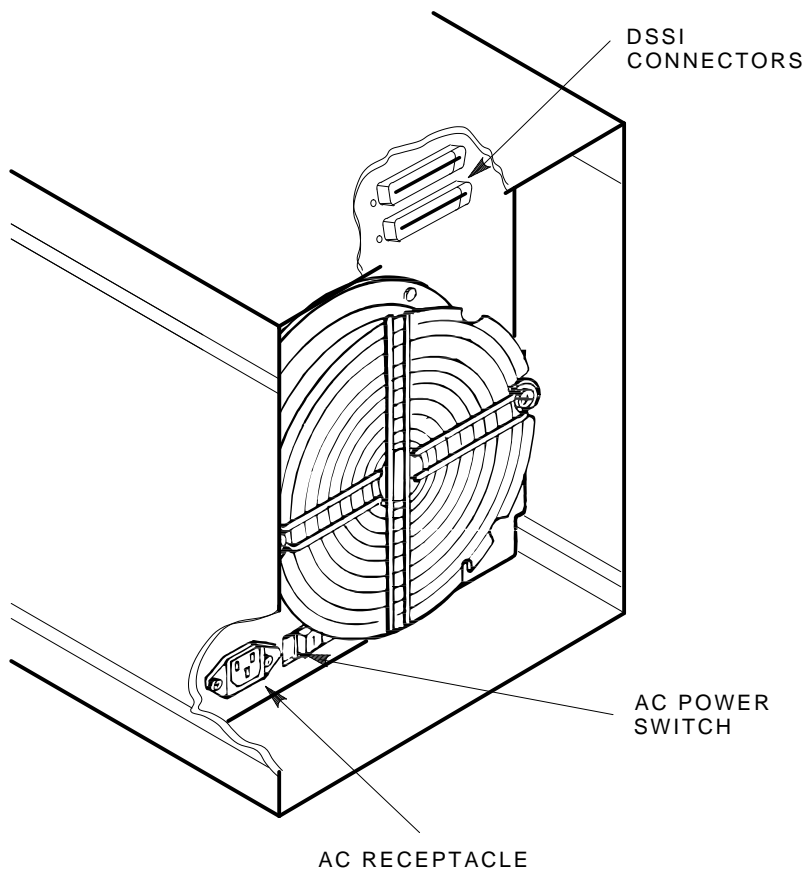
SHR-X0141B-90-CPG

4.2.2 Cabling the Storage Array (Single-Host)

Start at the rear of the SF3*xx* storage array cabinet.

1. Plug the main power cable of the storage array into its power receptacle.

_____ **WARNING** _____

Hazardous voltages are contained in the storage array and in the
components of the storage array.

When performing any operation involving the power source, turn off
the power controls of all components and on the power controller.

4.2 Single-Host Installation of an SF3*xx* Storage Array

Disconnect the power cable from the source outlet. Perform the
operation, then reconnect the power cable to the source.

2. Connect the 108-inch DSSI cable or cables (part number BC21Q–09) from
   the array DSSI I/O panel to the system I/O panel.

   a. At the system I/O panel, remove the terminator or terminators (part
      number 12–31281–01). See Figure 4–5. Store these terminators in the
      ESD pouch on the rear door of the storage array cabinet.

   b. To determine which of the two DSSI connectors on the system I/O panel
      to connect to:

      - Open the system I/O panel by removing the screws that secure it to
        the system chassis. Let the panel swing down to its rest position.

      - Find the first KFMSA module installed in the system XMI
        backplane. It is the KFMSA module in the lowest numbered
        slot of the KFMSA modules installed.

      - Follow the cabling from the backplane to the system I/O panel.

      - While viewing the front of the I/O panel, note that the DSSI
        connector on the right is KFMSA DSSI bus 1 and on the left is
        bus 2.

      - For port 1 and 3 on the SF3*xx* I/O panel, connect the 108-inch DSSI
        cable to the right DSSI connector of the system I/O panel.

      - For port 2 and 4 on the SF3*xx* I/O panel, connect the 108-inch DSSI
        cable to the left DSSI connector of the system I/O panel.

   c. Install one end of the 108-inch DSSI cable (part number BC21Q–09) to
      one of the ports on I/O panel at the bottom rear of the system cabinet.
      See Figure 4–5.

      - Connect the DSSI cable from the DSSI port 1 (of the I/O panel) to
        the first DSSI connector of the first KFMSA bulkhead connector on
        the system I/O panel.

      - Connect the DSSI cable from the DSSI port 2 (of the I/O panel) to
        the second DSSI connector of the first KFMSA bulkhead connector
        on the system I/O panel.

Figure 4–5   Removing Terminators and Connecting DSSI Cables at the System I/O Panel

SHR-X0121-90
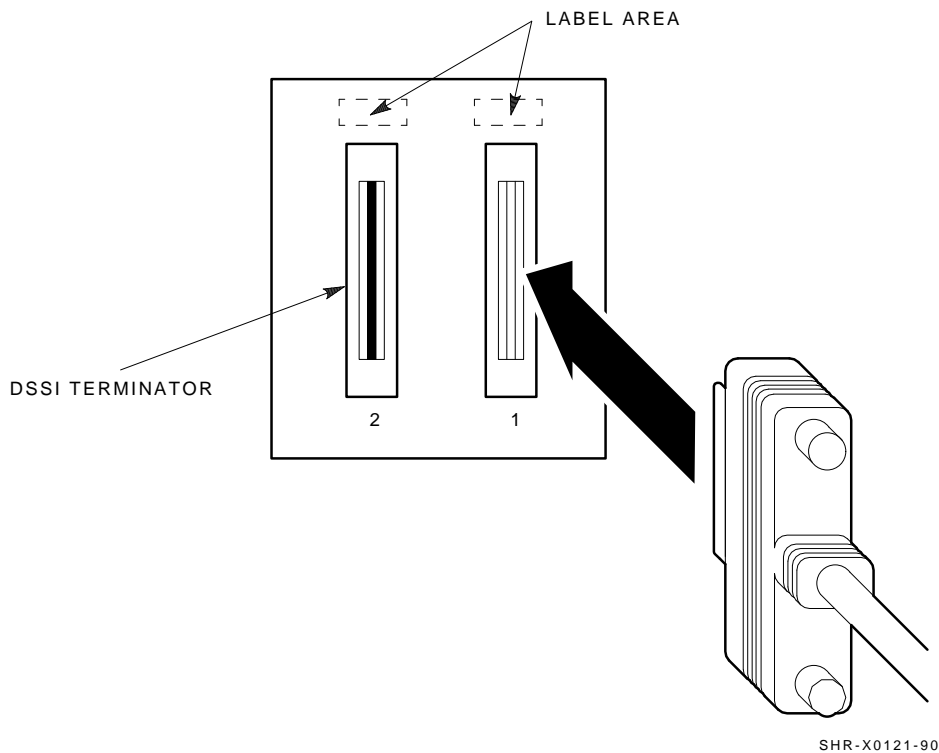
3. Install the terminator or terminators (part number 12–31281–01) to their correct position on the SF7*x* enclosures, magazine tape subsystems, and system I/O panel.

4. See Appendix A for the need of terminators.

4.2.3 Labeling the Cables (Single-Host)

This section describes the steps to label correctly the cables for the host system, the SF3*xx* storage array, and its SF7*x* storage enclosures and magazine tape subsystems.

At this point, all steps in the previous sections must be complete.

Digital Multivendor Customer Services or trained installing personnel must perform the steps that follow.

4.2 Single-Host Installation of an SF3*xx* Storage Array

4.2.3.1 Completing the System Configuration Sheet (Single-Host)

At this time, you should be ready to fill out the system configuration sheet. Examples of these sheets are shown in Section 1.5 and in the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM).

Refer to these examples when filling out the system's configuration sheet.

-------------------- **Note** --------------------

Do not attempt to fill out and place the labels until you have completed the system configuration sheet.

The information from the system configuration sheet is used to fill out the labels correctly for all DSSI cables, enclosure OCPs, and subsystems.

You can also refer to the inside cover of the *SF Family Label Booklet* (part number 36–32882–01) for instructions on how to fill out the labels.

4.2.3.2 Filling Out the Labels (Single-Host)

There are two sizes of labels: the larger one for the DSSI cables, and the smaller one for the inside of the SF7*x* OCP door and the system I/O panel.

Refer to the inside cover of the *SF Family Label Booklet* (part number 36–32882–01) for instructions on what information to put on each of the two types of labels.

See Table 4–2 for the single-host configuration on the SF7*x* OCP door, the front panel of the magazine tape subsystem, and all DSSI cables.

Table 4–2   Single Host Colored Labels for the SF72 OCP Door

Label Color	Port	Position
Blue	Port 1	SF1 and SF3 and TF1
Red	Port 2	SF2 and SF3 and TF2
Yellow	Port 3	SF4 and SF6 and TF3
Green	Port 4	SF5 and SF6 and TF4

SF3 and SF6 are in split-bus mode.

4.2 Single-Host Installation of an SF3*xx* Storage Array

Proceed once you have filled the cable and OCP labels according to the instructions on the inside cover of the *SF Family Label Booklet* (part number 36–32882–01).

4.2.3.3 Placing the Labels (Single-Host)

Now that the labels have been filled out, place them on the DSSI cables and the SF7*x* OCP doors. Also place a label on the front of the magazine tape subsystem.

On the DSSI cable, place the label 2 inches behind the DSSI connector. See Figure 4–6.

Figure 4–6 Placing a Label on a DSSI Cable

LABEL

SHR-X0108-90
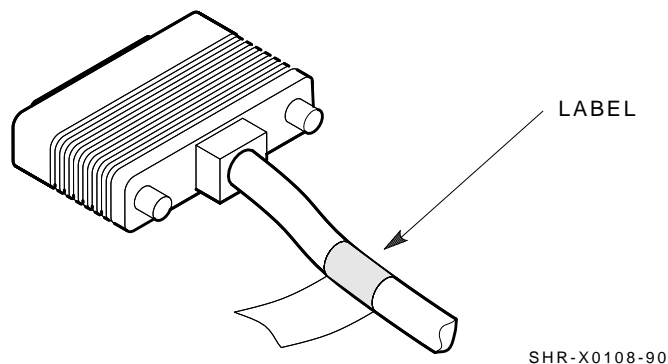
Place the SF7*x* OCP label as shown in Figure 4–7 and the magazine tape subsystem label as shown in Figure 4–8.

4.2 Single-Host Installation of an SF3*xx* Storage Array

Figure 4–7   Placing a Label on the OCP Door
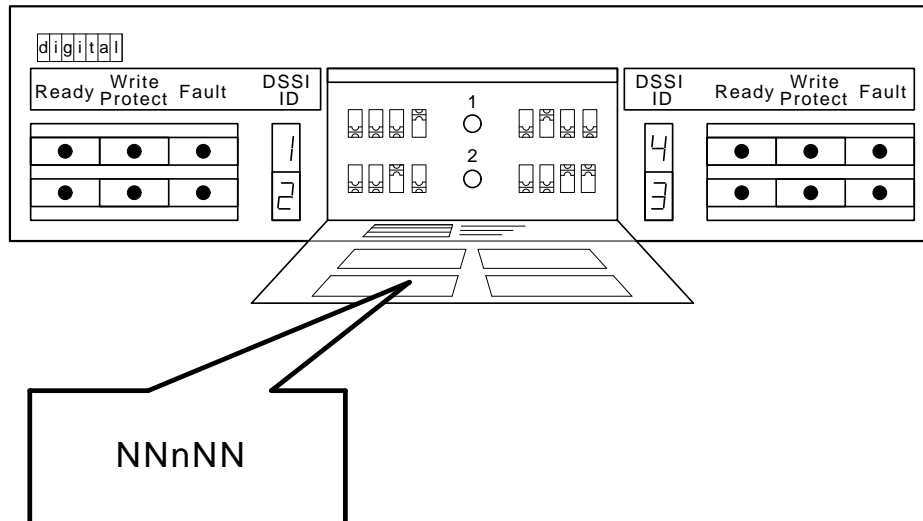
SHR_X1128C_89

4.2.4   Powering Up the SF3*xx* Storage Array (Single-Host)

Now that the SF3*xx* storage array has been installed and labeled, you are
ready to apply power. Follow the steps in order.

_____ **CAUTION** _____

Make sure that the ac power switch on each SF7*x* storage enclosure
and magazine tape subsystem installed is in the off position.

_____

1. At the rear of the storage array, turn the power controller on. Make sure
   that the BUS/OFF/ON switch is in the down position.

2. At the rear of the storage array, turn on each magazine tape subsystem
   installed (if present). Observe the front panel. If a failure occurs, see
   Chapter 8.

3. At the rear of the storage array, turn on each SF7*x* storage enclosure
   starting with position 1 and continuing in numerical order.

4.2 Single-Host Installation of an SF3*xx* Storage Array

Figure 4–8 Placing a Label on the Magazine Tape Subsystem

OPERATOR CONTROL PANEL

Eject

Load/Unload

Slot Select

Power On

Write
Protected

Tape In Use

Use
Cleaning Tape

Magazine
Fault

Loader Fault

DSSI
NODE
ID LABEL

SHR_X1025C_89
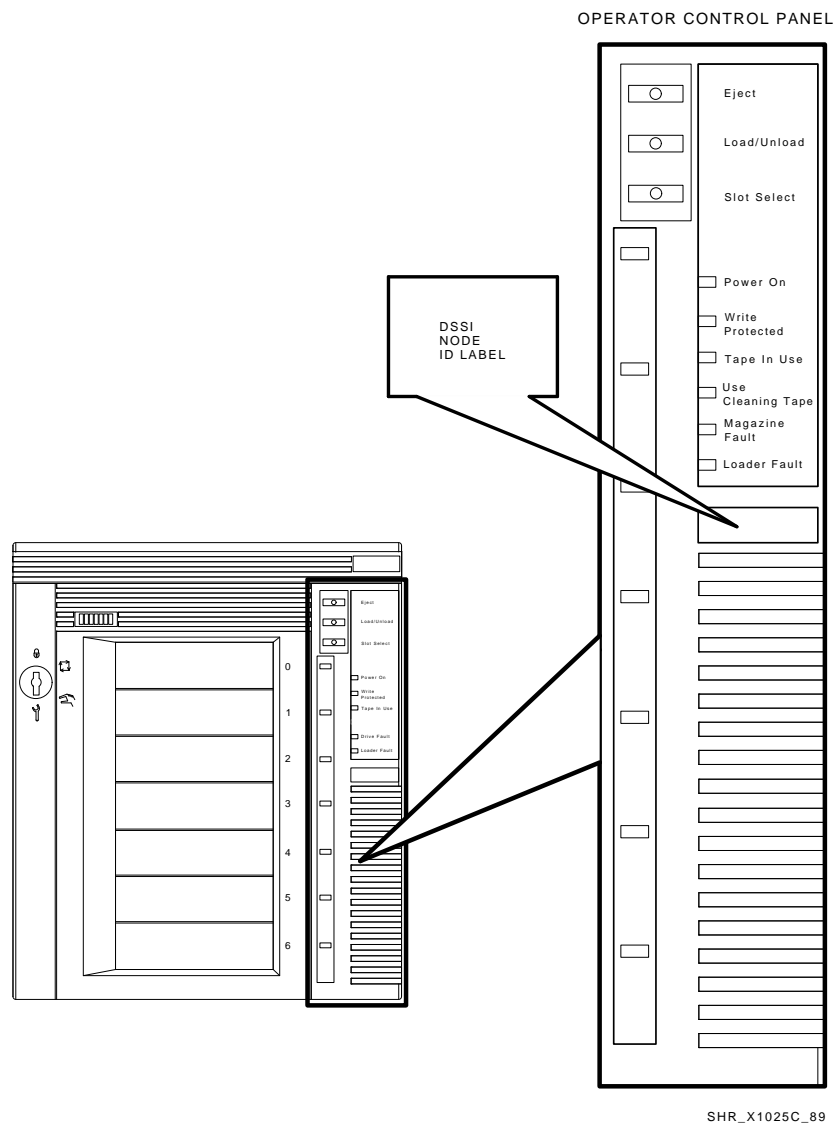
4. Press each drive dc power switch for each SF7*x* storage enclosure. Start
    with position 1 and continue in numerical order. See Figure 4–9. If the
    Fault indicator lights for any disk ISE, see Chapter 8.

4.2 Single-Host Installation of an SF3*xx* Storage Array

5. In order to access the drive DC power switch, you might remove the front bezel of the cabinet.

Figure 4–9 Drive DC Power Switches
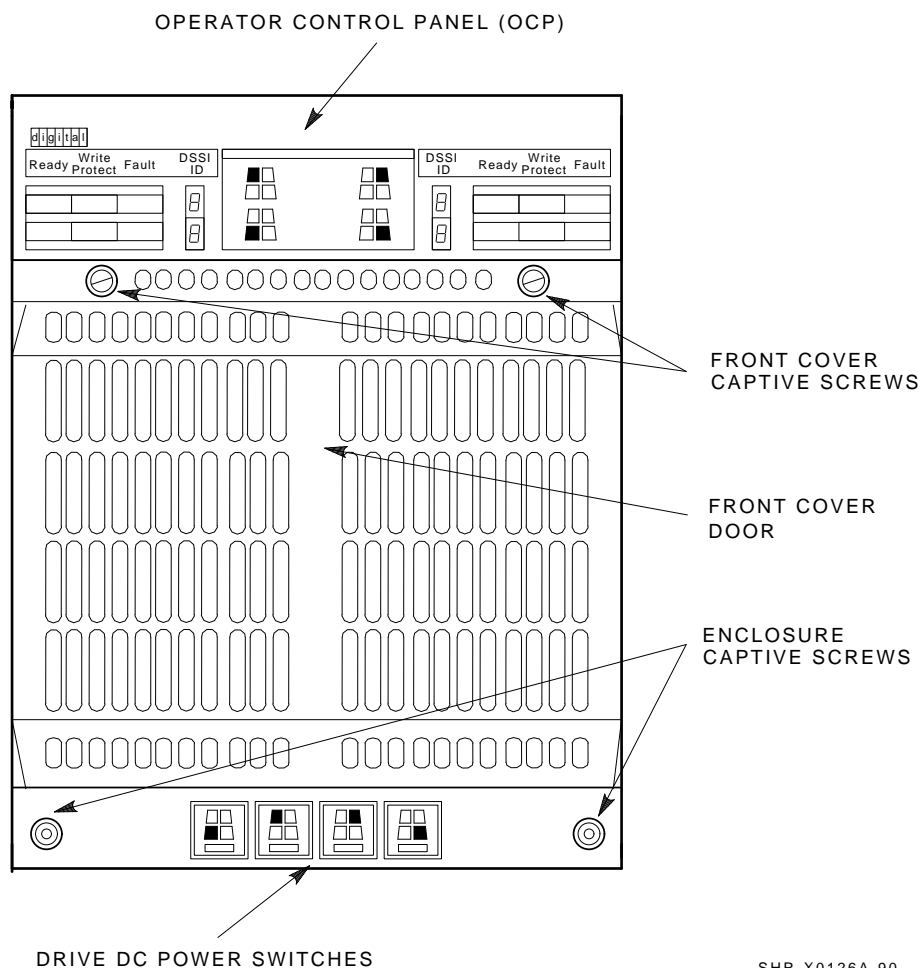
SHR-X0126A-90

1. Observe the OCP indicators (see Figure 4–10).

    a. Check that the TERM PWR indicator (behind the door of the OCP) is on for all positions installed.

    b.   Check that the SPLIT indicator (behind the door of the OCP) is on for SF3 and SF6 only.

2.   Press the Ready button on the OCP (see Figure 4–10). The Ready indicator flickers, then lights steadily green once the ISE is on-line.

Figure 4–10   OCP Indicators and Controls
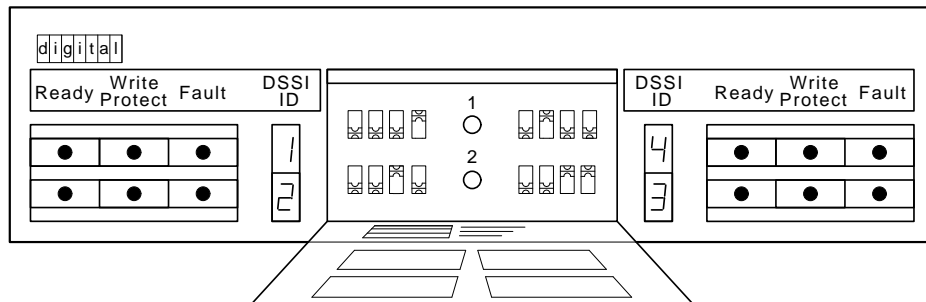
SHR_X1128_89

4.2.5 Single-Host Final Verification

Now that all the hardware installation, cabling and labeling, and the powering up steps are complete, you are ready to configure the DSSI subsystem and verify the correct operation of each ISE in the array with the host system.

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM) and the TF857 *Magazine Tape Subsystem Service Manual* (EK–TF857–SM) for detailed information on how to proceed with verifying the correct operation of each ISE that has been installed. In this manual, you will find the procedure for establishing the communications between the ISEs, the adapter module, and the system. You will also find the step-by-step procedures for reconfiguring the system with its newly installed DSSI devices.

Refer to the manuals for the disk ISE and tape ISE for detailed information on the local programs in the ISEs.

4.2 Single-Host Installation of an SF3xx Storage Array

Remember, each SF7x enclosure can contain two or four disk ISEs. Each magazine tape subsystem contains one tape ISE. A fully configured storage array contains 24 disk ISEs or up to four tape ISEs.

If at any time you detect a failure, see Chapter 8.

Once the verification is complete, the system is ready to be turned over to the system manager.

4.3 Dual-Host Installation of an SF3xx Storage Array

This section provides the procedures for installing the SF3xx storage array in a dual-host configuration correctly and safely. Digital Multivendor Customer Services or trained installing personnel must perform the procedures.

Make sure that all precautions for site preparation have been completed. Refer to Chapter 1 and Chapter 3.

The following procedures provide the steps to do the following:

- Inspect the SF3xx storage array for correct configuration (Section 4.3.1)

- Convert the storage array from the single-host to the dual-host configuration. See Appendix C.

- Cable the SF3xx storage array to the host systems in the dual-host configuration (Section 4.3.2)

- Power up the Sx300 storage array after a successful installation (Section C.2.5)

- Verify the Sx300 storage array for correct operation (Section C.2.7)

4.3.1 Inspecting the Storage Array (Dual-Host)

This procedure describes the steps to inspect the SF3xx storage array for correct configuration.

Inspection the storage array from the front, then from the rear.

1. At the front of the SF3xx storage array:

    a. Verify the correct setting for all the DSSI ID switches behind the door of the operator control panel (OCP) of every SF7x enclosure installed. Refer to Table 4–1.

    b. The MSCP switch should be in the down or enabled position at all times unless you are instructed to change it to the up or disabled position.

4.3 Dual-Host Installation of an SF3*xx* Storage Array

4.3.2 Cabling the Storage Array (Dual-Host)

Start at the rear of the SF3*xx* storage array cabinet.

1. Plug the main power cable of the storage array into its power receptacle.

_____ **WARNING** _____

Hazardous voltages are in the storage array and in the components of the storage array.

When performing any operation involving the power source, turn off the power controls of all components and on the power controller. Disconnect the power cable from the source outlet. Perform the operation, then reconnect the power cable to the source.

_____

2. Connect the 108-inch DSSI cable or cables (part number BC21Q–09) from the array DSSI I/O panel to the system I/O panel.

   a. At the system I/O panel, remove the terminator or terminators (part number 12–31281–01). See Figure 4–11.

   b. To determine which of the two DSSI connectors on the system I/O panel to connect to:

   - Open the system I/O panel by removing the screws that secure it to the system chassis. Let the panel swing down to its rest position.

   - Find the first KFMSA module installed in the system XMI backplane. It is the KFMSA module in the lowest numbered slot of the KFMSA modules installed.

   - Follow the cabling from the backplane to the system I/O panel.

   - While viewing the front of the I/O panel, note that the DSSI connector on the right is KFMSA DSSI bus 1 and on the left is bus 2.

   - For port 1, 3, and 5 on the SF3*xx* I/O panel, connect the 108-inch DSSI cable to the right DSSI connector of the system I/O panel.

   - For port 2, 4, and 6 on the SF3*xx* I/O panel, connect the 108-inch DSSI cable to the left DSSI connector of the system I/O panel.

4.3 Dual-Host Installation of an SF3xx Storage Array

3. Install one end of the 108-inch DSSI cable (part number BC21Q–09) to the I/O panel on the system cabinet (see Figure 4–11).

   - Connect the DSSI cable from the DSSI port 1 (of the I/O panel) to the first DSSI connector of the first KFMSA bulkhead connector on the system I/O panel.

   - Connect the DSSI cable from the DSSI port 2 (of the I/O panel) to the second DSSI connector of the first KFMSA bulkhead connector on the system I/O panel.

   - Connect the DSSI cable from the DSSI port 3 (of the I/O panel) to the first DSSI connector of the second KFMSA bulkhead connector on the system I/O panel.

   - Connect the DSSI cable from the DSSI port 4 (of the I/O panel) to the second DSSI connector of the second KFMSA bulkhead connector on the system I/O panel.

   - Connect the DSSI cable from the DSSI port 5 (of the I/O panel) to the first DSSI connector of the third KFMSA bulkhead connector on the system I/O panel.

   - Connect the DSSI cable from the DSSI port 6 (of the I/O panel) to the second DSSI connector of the third KFMSA bulkhead connector on the system I/O panel.

4.3.3 Labeling the Cables (Dual-Host)

This section describes the steps to label correctly the cables for the host systems, the SF3xx storage array, and its SF7x storage enclosures and magazine tape subsystems.

At this point, all steps in the previous sections must be complete.

Digital Multivendor Customer Services or trained installing personnel must perform the steps that follow.

4.3 Dual-Host Installation of an SF3*xx* Storage Array

Figure 4–11 Removing Terminators and Connecting DSSI Cables at the System I/O Panel

LABEL AREA

DSSI TERMINATOR

2   1

SHR-X0121-90
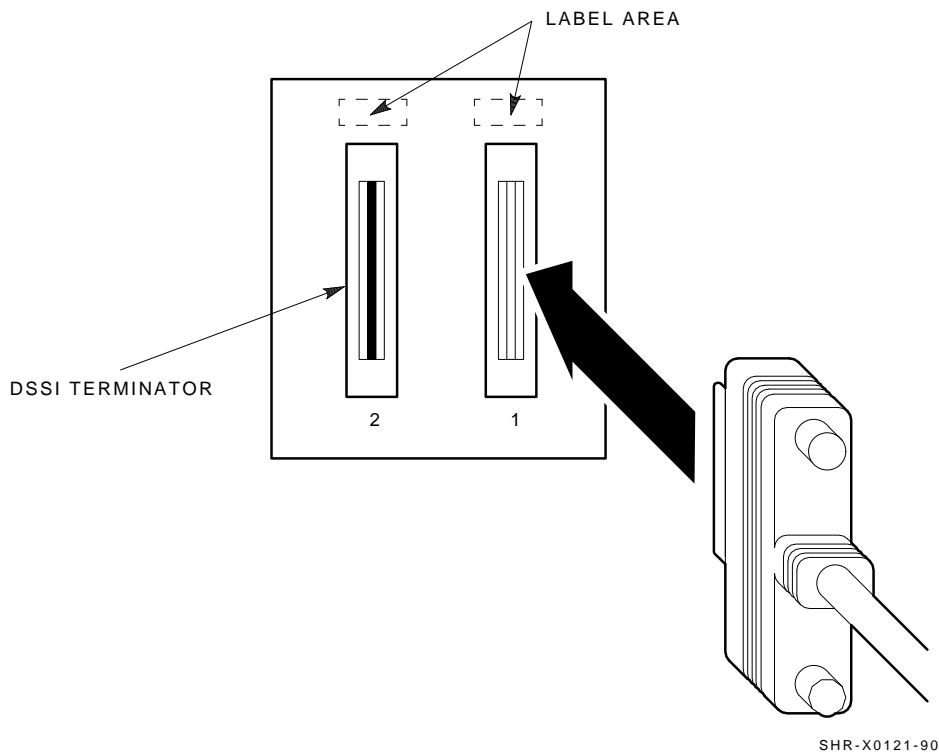
4.3.3.1 Completing the System Configuration Sheet (Dual-Host)

At this time, you should be ready to fill out the system configuration sheet. Examples of these sheets are in Chapter 1 and in the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM).

Refer to these examples when filling out the system's configuration sheet.

_____ **Note** _____

Do not attempt to fill out and place the labels until you have completed the system configuration sheet.

The information from the system configuration sheet is used to fill out the labels correctly for all DSSI cables, enclosure OCPs, and subsystems.

4.3 Dual-Host Installation of an SF3*xx* Storage Array

You can also refer to the inside cover of the *SF Family Label Booklet* (part number 36–32882–01) for instructions on how to fill out these labels.

4.3.3.2 Filling Out the Labels (Dual-Host)

There are two sizes of labels: the larger one for the DSSI cables, and the smaller one for the inside of the SF7*x* OCP door and the system I/O panel.

Refer to the inside cover of the *SF Family Label Booklet* (part number 36–32882–01) for the instructions on what information to put on each of the two types of labels.

For the dual-host configuration, Table 4–3 lists the colored labels to be used on the SF7*x* OCP door, the front panel of the magazine tape subsystem, and all DSSI cables.

Table 4–3   Dual-Host Colored Labels for the SF72 OCP Door

Label Color	Port/Position
Blue	Port 1, SF1 and TF1, port 7
Red	Port 2, SF2 and TF2, port 8
Yellow	Port 3, SF3 and TF3, port 9
Green	Port 4, SF4 and TF4, port 10
Blue with white strip	Port 5, SF5, port 11
Red with white strip	Port 6, SF6, port 12

Proceed once you have filled the cable and OCP labels according to the instructions on the inside cover of the *SF Family Label Booklet* (part number 36–32882–01).

4.3.3.3 Placing the Labels (Dual-Host)

Now that the labels have all been filled out, place the labels on the DSSI cables and the SF7*x* OCP doors. Also place a label on the front of the magazine tape subsystem.

On the DSSI cable, place the label 2 inches behind the DSSI connector as shown in Figure 4–12.

4.3 Dual-Host Installation of an SF3*xx* Storage Array

Figure 4–12   Placing a Label on a DSSI Cable

LABEL

SHR-X0108-90
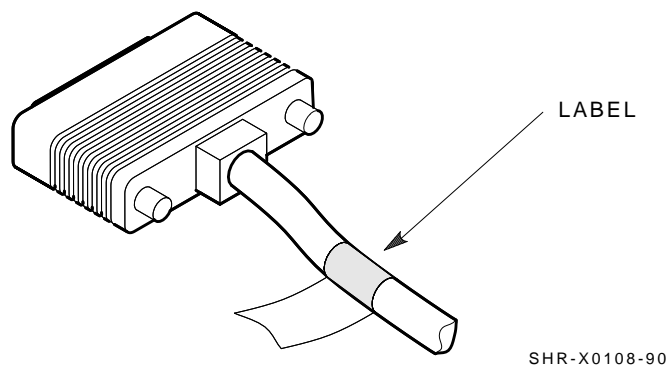
Figure 4–13   Placing a Label on the OCP Door
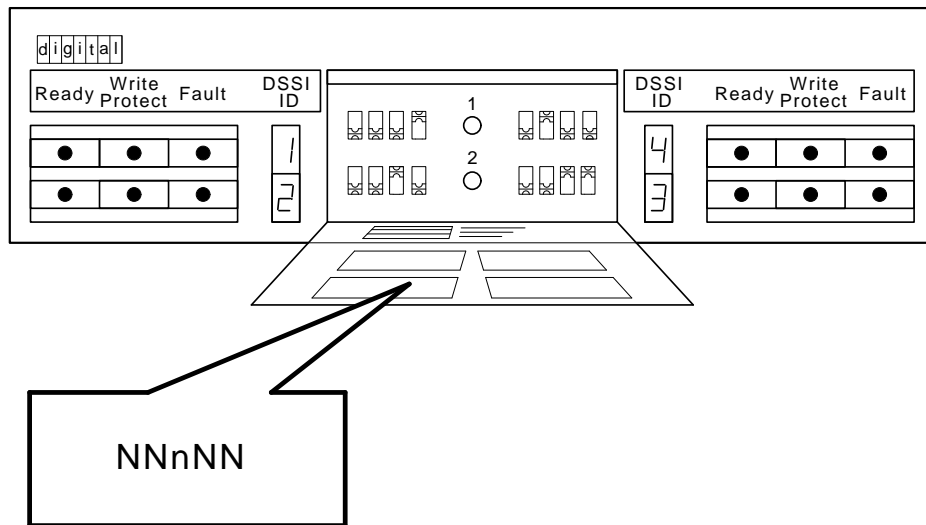
SHR_X1128C_89

Place the SF7*x* OCP label as shown in Figure 4–13 and the magazine tape subsystem label as shown in Figure 4–14.

4.3 Dual-Host Installation of an SF3*xx* Storage Array

Figure 4–14 Placing a Label on the Magazine Tape Subsystem
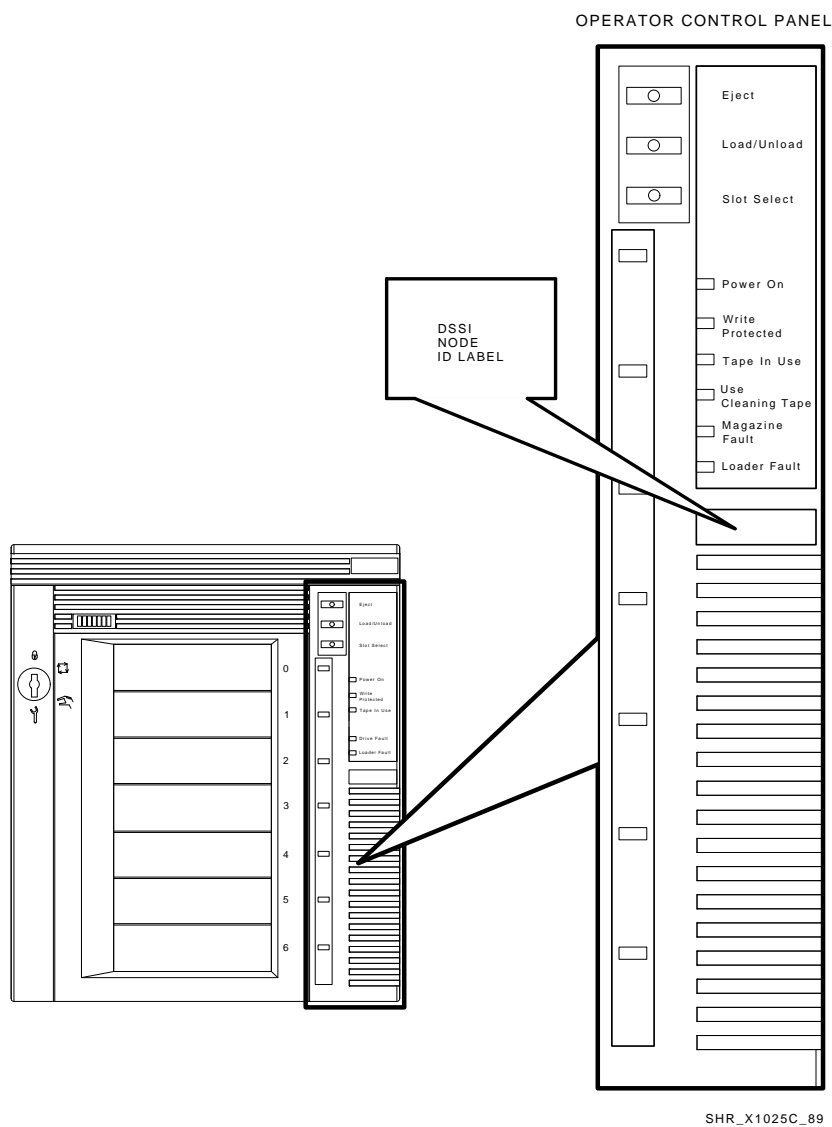
OPERATOR CONTROL PANEL

Eject

Load/Unload

Slot Select

Power On

DSSI
NODE
ID LABEL

Write
Protected

Tape In Use

Use
Cleaning Tape

Magazine
Fault

Loader Fault

Eject

Load/Unload

Slot Select

0

Power On

Write
Protected

Tape In Use

1

2

Drive Fault

Loader Fault

3

4

5

6

SHR_X1025C_89

5

Installing the SF7*x* Storage Enclosure in an S*x*300 Storage Array

This chapter describes the steps to install the SF7*x* storage enclosure in an existing S*x*300 storage array:

- Steps to install (Section 5.1)

- Cabling the SF7*x* (Section 5.2)

    Single-host configuration (Section 5.2.1)
    Dual-host configuration (Section 5.2.2)

- Powering up the SF7*x* (Section 5.3)

- Labeling the DSSI cables and operator control panel (OCP) (Section 5.4)

- Final verification (Section 5.5)

If you are attempting to install an SF7*x* in a cabinet other than an S*x*300 storage array cabinet, refer to the host system documentation.

Only Digital Multivendor Customer Services and other installing personnel that have been trained in ESD procedures should use the procedures in this chapter.

Follow all the steps in this chapter to install an SF7*x* storage enclosure in an S*x*300 storage array. The steps apply for SF1 to SF6 in the storage array.

Table 5–1 lists the tools required to install the SF7*x* enclosure into the storage array.

Table 5–1 SF7*x* Required Tool List

Description	Part Number
Lifting device	FC–10117–AC
#0 Phillips screwdriver	29–10991–00
#1 Phillips screwdriver	29–11001–00
#2 Phillips screwdriver	29–11005–00
1/8-inch slot screwdriver	29–10802–00
5/16-inch slot screwdriver	29–10960–00
1/8-inch hex key	29–26115–00
3/16-inch hex key	29–26118–00
11/32-inch nutdriver	29–10674–00

See Chapter 8 for tools or equipment recommended for use when troubleshooting after a successful installation.

5.1 Steps to Install

_____ **CAUTION** _____

If a lifting device is not available, two people are needed to install the disk or tape drive into the cabinet. The disk or tape drive must be handled carefully. Manual installation is not recommended.

_____

The following procedures assume that the existing S*x*300 storage array is correctly installed and configured.

The SF7*x* storage enclosure that you are installing may contain two or four RF72 disk integrated storage elements (ISEs). To determine if the SF7*x* contains two or four, simply look at the front of the enclosure. Remove the front bezel of the S*x*300 storage array. If you can see two disk ISEs in the front of the SF7*x*, then the enclosure contains four ISEs (SF7*x*–JK variant). If you do not see two ISEs in the front of the enclosure, then that enclosure contains only two ISEs (SF7*x*–HK variant). If you wish to verify an enclosure that is already installed in a cabinet or array, observe the number of seven-segment displays that are lit on the OCP. If the top two displays are lit, then the enclosure contains only two RF72 disk ISEs.

This section contains several major parts. (The first part explains the steps to):

- Unpack, inspect for damage, and identify parts
- Determine where to install the SF7*x* enclosures
- Read and fill out the system configuration sheet

The next part explains the steps to install the SF7*x* enclosure itself:

- Prepare the array cabinet to receive an SF7*x* storage enclosure
- Install the supporting hardware and SF7*x*, and set the DSSI ID switches
- Cable the SF7*x* storage enclosure to comply with the DSSI bus cabling conventions

The last part explains the steps to:

- Power up the SF7*x* enclosure, run the power-on self-test, and run the configuration programs
- Label all cables and operator control panels
- Verify the operation of the enclosure after a successful installation

Follow all the steps in each of these parts in the order they are presented and do not skip any steps.

When the array is to operate in a single-host configuration, remember that the enclosures SF1, SF2, SF4, SF5 operates in the through-bus mode. To be sure that the SF7*x* storage enclosure you are installing is in the through-bus mode after the installation is complete, observe the bottom indicator on the OCP. It should be off. SF3 and SF6 operate in the split-bus mode and require you to reconfigure their transition termination module (TTM). That same indicator should be on once the enclosure is set for split-bus mode. The procedure to accomplish this is presented later in this chapter.

When the array is to operate in a dual-host configuration, remember that *all* enclosures operate in the through-bus mode.

5.1.1 Unpacking the SF7*x* Storage Enclosure

Unpack the SF7*x* shipping container. The enclosure is shipped in an environmental barrier bag with desiccant.

―――――――――――――― **Note** ――――――――――――――

After unpacking, retain the container and all packing materials.

――――――――――――――――――――――――――――――――――

5.1 Steps to Install

At this time, examine the enclosure for physical damage. If you find *any* damage, do *not* attempt to install the enclosure. Notify your office immediately.

If there is no damage, then unpack all the boxes and bags, and identify all the parts by using Table 5–2.

Table 5–2   SF7x Kit Contents

Description	Quantity	Part Number
SF7x storage enclosure	1	SF7x–HK (2-drive) SF7x–JK (4-drive)
Slide mount assembly	1	–[1]
Shoulder screw, 10-32, 0.501	4	12–24007–01
Shoulder screw, 10-32, 0.438	6	12–24007–02
Lock washer, internal steel	10	90–06637–00
DSSI cable retainer	1	74–41302–01
Chassis retainer	2	74–35858–01
10-32 Phillips (SEMS)	4	12–21368–03
Machine screw, Phillips, 10-32, 0.500	2	90–06073–02
Machine screw, Phillips, 10-32, 1.5	2	90–06079–03
Lock washer, external steel	2	90–07651–00
AC power cord, 9-foot	1	17–00442–18
DSSI cables, 42-inch, box-to-box	1	BC21Q–3F
Owner's manual	1	EK–SF7xS–OM
Installation guide	1	EK–Sx300–IG
Label booklet	1	36–32882–01

[1]The slide mount assembly comes assembled and does not have a single part number.

_____ **Note** _____

The chassis retainer and cable retainer of this kit are not used for the Sx300 cabinet.

_____

5.1.2 Where to Install the SF7*x* Storage Enclosure

The SF7*x* storage enclosures install in numerical order. Refer to Chapter 3.

SF7*x* storage enclosures could occupy positions 1, 2, 3, 4, 5, and 6 .

In split-bus mode, the following drives are part of the same DSSI bus (note that split-bus mode is supported in the single-host configuration only):

1. Four drives of SF1 with the two left drives SF3

2. Four drives of SF2 with the two right drives SF3

3. Four drives of SF4 with the two left drives of SF6

4. Four drives of SF5 with the two right drives of SF6

_____ **Note** _____

In a stripeset configuration, all SF7*x* storage enclosures must be in split-bus mode. Each DSSI bus is connected to two ISEs in each SF7*x* enclosure. One KFMSA module is required for each SF7*x* storage enclosure.

_____

All SF7*x* storage enclosures must be in through-bus mode when the S*x*300 storage array is in the dual-host configuration:

1. Four drives of SF1

2. Four drives of SF2

3. Four drives of SF3

4. Four drives of SF4

5. Four drives of SF5

6. Four drives of SF6

5.1.3 Checking the System Configuration Sheet

Locate the system configuration sheet. If you cannot locate this sheet or if the one that is available is either not filled out or filled out incorrectly, fill one out immediately.

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM) for an explanation of this sheet and how to fill it out.

5.1 Steps to Install

Figures 5–1 and 5–2 show examples of the system configuration sheet filled out for an S*x*300 storage array with one magazine tape subsystem.

5.1 Steps to Install

Figure 5–1   System Configuration Sheet (Single-Host)

KFMSA/DSSI Single-host Configuration Sheet

KFMSA XMI Node # _____

| Bus 1 | Bus 2 |
| DSSI ID # _____ | DSSI ID # _____ |

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Color Code   Color Code
on Cables _____   on Cables _____

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5.1 Steps to Install

Figure 5–2 System Configuration Sheet (Dual-Host)

KFMSA/DSSI Dual-host Configuration Sheet

KFMSA XMI Node # _____

Bus 1	Bus 2
DSSI ID # _____	DSSI ID # _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Sx300 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Bus 1	Bus 2
DSSI ID # _____	DSSI ID # _____

KFMSA XMI Node # _____

Color Code
on Cables _____   Color Code
on Cables _____

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Figure 5–3 System Configuration Sheet (Three-Host)

KFMSA/DSSI Dual-host Configuration Sheet

KFMSA XMI Node # _____

| Bus 1 DSSI ID # __7__ | Bus 2 DSSI ID # __7__ |

Device Type __Tape__ ALLO_CLASS __2__	Device Type __Tape__ ALLO_CLASS __2__
DSSI ID # __0__ Sx300 Box # __5__	DSSI ID # __0__ Sx300 Box # __6__
Node Name ____ UNITNUM ____	Node Name ____ UNITNUM ____
System ID _____	System ID _____

Device Type __RF72__ ALLO_CLASS __2__	Device Type __RF72__ ALLO_CLASS __2__
DSSI ID # __1__ Sx300 Box # __1__	DSSI ID # __1__ Sx300 Box # __2__
Node Name ____ UNITNUM ____	Node Name ____ UNITNUM ____
System ID _____	System ID _____

Device Type __RF72__ ALLO_CLASS __2__	Device Type __RF72__ ALLO_CLASS __2__
DSSI ID # __2__ Sx300 Box # __1__	DSSI ID # __2__ Sx300 Box # __2__
Node Name ____ UNITNUM ____	Node Name ____ UNITNUM ____
System ID _____	System ID _____

Device Type __RF72__ ALLO_CLASS __2__	Device Type __RF72__ ALLO_CLASS __2__
DSSI ID # __3__ Sx300 Box # __1__	DSSI ID # __3__ Sx300 Box # __2__
Node Name ____ UNITNUM ____	Node Name ____ UNITNUM ____
System ID _____	System ID _____

Device Type __RF72__ ALLO_CLASS __2__	Device Type __RF72__ ALLO_CLASS __2__
DSSI ID # __4__ Sx300 Box # __1__	DSSI ID # __4__ Sx300 Box # __2__
Node Name ____ UNITNUM ____	Node Name ____ UNITNUM ____
System ID _____	System ID _____

| Bus 1 DSSI ID # __6__ | Bus 2 DSSI ID # __6__ |

KFMSA XMI Node # _____

Color Code on Cables __Blue__   Color Code on Cables __Red__

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5.1 Steps to Install

5.1.4 Installation Procedure

Before attempting any of the following steps, make sure that the SF7*x*
enclosures installed in the array cabinet contain four disk ISEs.

To determine if the SF7*x* contains two or four drives, simply look at the front
of the enclosure. If you can see two drives in the front of the SF7*x*, then the
enclosure contains four drives (SF7*x*–JK variant). If you do not see two drives
in the front of the enclosure, then that enclosure contains only two drives
(SF7*x*–HK variant). If you wish to verify an enclosure that is already installed
and running in a cabinet or array cabinet, observe the number of 7-segment
displays that are lit on the operator control panel (OCP). If the top two displays
are lit, then the enclosure contains only two RF72 disk ISEs.

The procedure for installing the upgrade kit is in Appendix B.

This section describes the step-by-step procedures for installing an SF7*x*
storage enclosure in S*x*300 storage array.

Be sure to:

- Follow each step in order, and do not skip any steps

- Leave sufficient room to perform the installation (approximately 1.5 meters
  to 1.8 meters [5 feet to 6 feet] front and rear of the array)

WARNING

Observe all ESD precautions and procedures. An anti static wrist strap
is inside the front and rear doors.

CAUTION

Do not attempt to pick up or support the SF7*x* by the handle in the
rear of the enclosure. Doing so will injure the person attempting the
installation or damage the power supply.

To maintain stability, extend only one SF7*x* storage enclosure or
magazine tape subsystem on the slide mounts at a time.

5.1.4.1 Preparing the S*x*300 Storage Array

The following procedure describes how to prepare the array to receive the SF7*x* storage enclosure(s):

1. Place the SF7*x* to be installed to one side, in front of the array cabinet.

2. Open the front and rear bezels of the storage array.

5.1.4.2 Hardware Installation Procedures

Perform the following steps in full and in the order presented.

> ———————————— **WARNING** ————————————
>
> Before performing the following steps, refer to the system documenta-
> tion for the correct steps to perform an orderly shutdown of the system
> that the storage array is connected to.
> ———————————————————————————————

1. Install the ac power cord (only for 220/240 Vac version):

   a. Go to rear of cabinet. Open the Back panel by loosening the two captive screws on the top.

   > ———————————— **CAUTION** ————————————
   >
   > Use care not to disturb or damage power cords and DSSI cables that
   > are already connected to the DSSI I/O panel.
   > ———————————————————————————————

   b. Leave approximately 0.6 meter (2 feet) of slack at the position location.

   c. Connect the male end of the ac power cord to the first available outlet on the power controller.

   d. Install the slide mount and associated hardware. Refer to Figure 3–9 and Chapter 3.

2. Position the OCP.

   a. Adjust the SF7*x* OCP mount, Figure 5–4, to the **LEFT** for positions SF1, SF4, SF6 and to the **RIGHT** for positions SF2, SF3, SF5.

   b. Check that this and all other OCPs and magazine tape subsystem fronts project through the front bezels of the storage array correctly.

5.1 Steps to Install

Figure 5–4   Adjusting the OCP
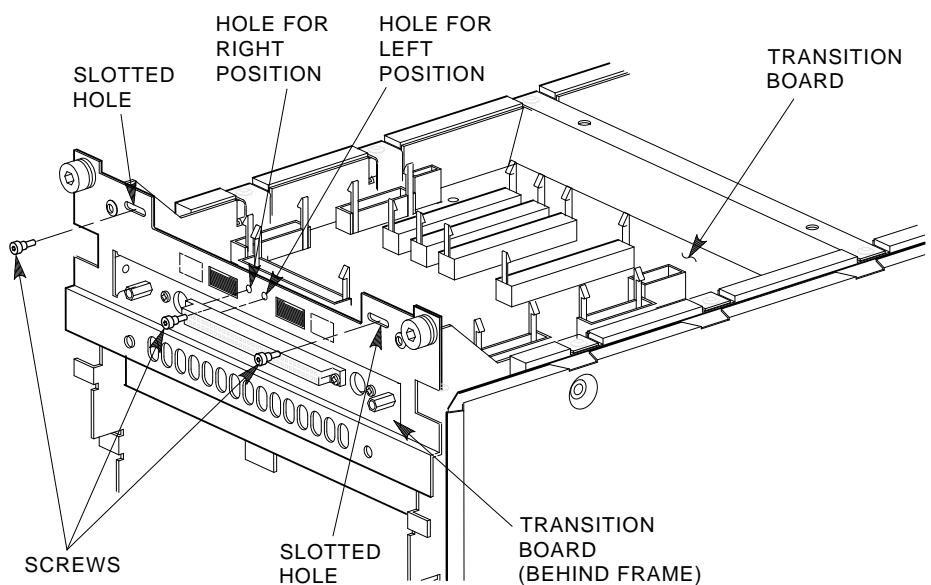
SHR-X0124-90

3. Check the DSSI ID switches on the OCP.

    Open the door on the front of the OCP. Make sure that the DSSI ID
    switches (the three rightmost switches) are set according to Figure 5–5.
    If they are not, then use a pointed instrument to set the switches to their
    correct configuration. See Table 5–3.

    ――――――――――――――――――― **Note** ―――――――――――――――――――

    The leftmost switch (Mass Storage Control Protocol (MSCP)) should in
    the down or enabled position at all times, unless you are instructed to
    change it to the up or disabled position.

    ――

Table 5–3   DSSI ID Switch Settings (SF7*x* Only)

SF1, SF2, SF4, SF5[1]

Left Rear (LR)	001
Left Front (LF)	010
Right Front (RF)	011
Right Rear (RR)	100

SF3, SF6 in split bus mode (Single-Host Only)[1]

Left Rear (LR)	101
Left Front (LF)	110
Right Front (RF)	110
Right Rear (RR)	101

[1]The switch settings for OCPs in these positions are 0 = down and 1 = up.

_____ **CAUTION** _____

Observe all ESD precautions and procedures.

An antistatic wrist strap is inside the front and rear doors.

_____

4. Install the OCP (see Figure 5–6).

_____ **Note** _____

Make sure that the power if off to the enclosure.

Make sure that ALL the buttons are in the out position.

_____

5. At the front of the SF7*x* enclosure, make sure that all four (4) drive dc power switches are out (see Figure 5–7).

6. At the rear of the SF7*x* enclosure, make sure that the ac power switch is in off or in the 0 position (see Figure 5–8).

5.1 Steps to Install

Figure 5–5   DSSI ID Switch Settings
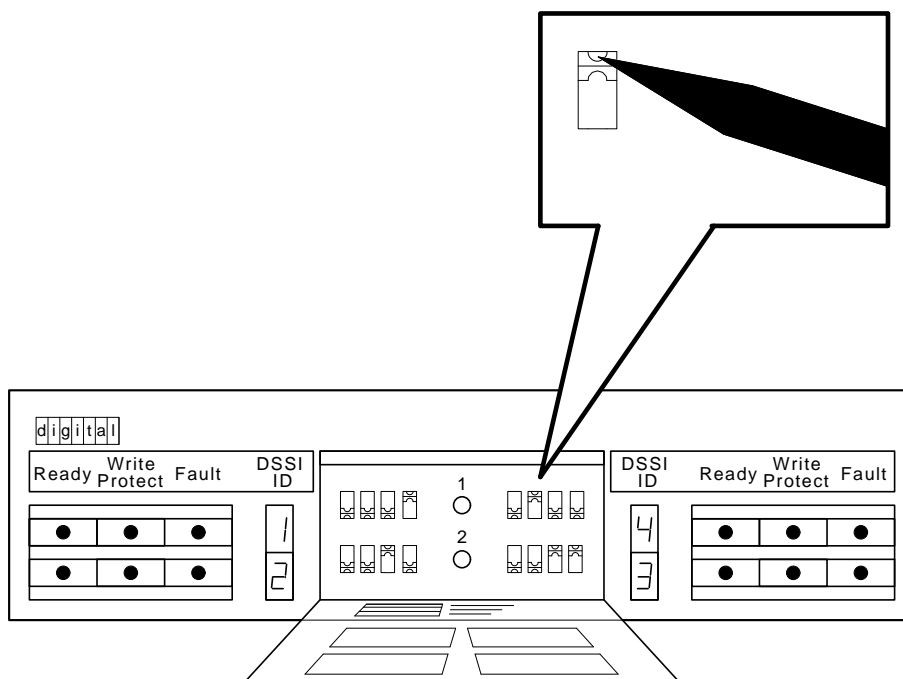
SHR_X1128B_89

7. Also check the select line voltage. Set it to the correct setting for your application.

8. At this time, connect the ac power cord to the SF7*x* enclosure.

5.2 Cabling the SF7*x* in Storage Array Position

This section describes the step-by-step procedure to cable the SF7*x* storage enclosure that you just installed to the existing DSSI bus configuration of the S*x*300 storage array.

5.2 Cabling the SF7x in Storage Array Position

Figure 5–6   Installing the OCP on the SF7x Enclosure
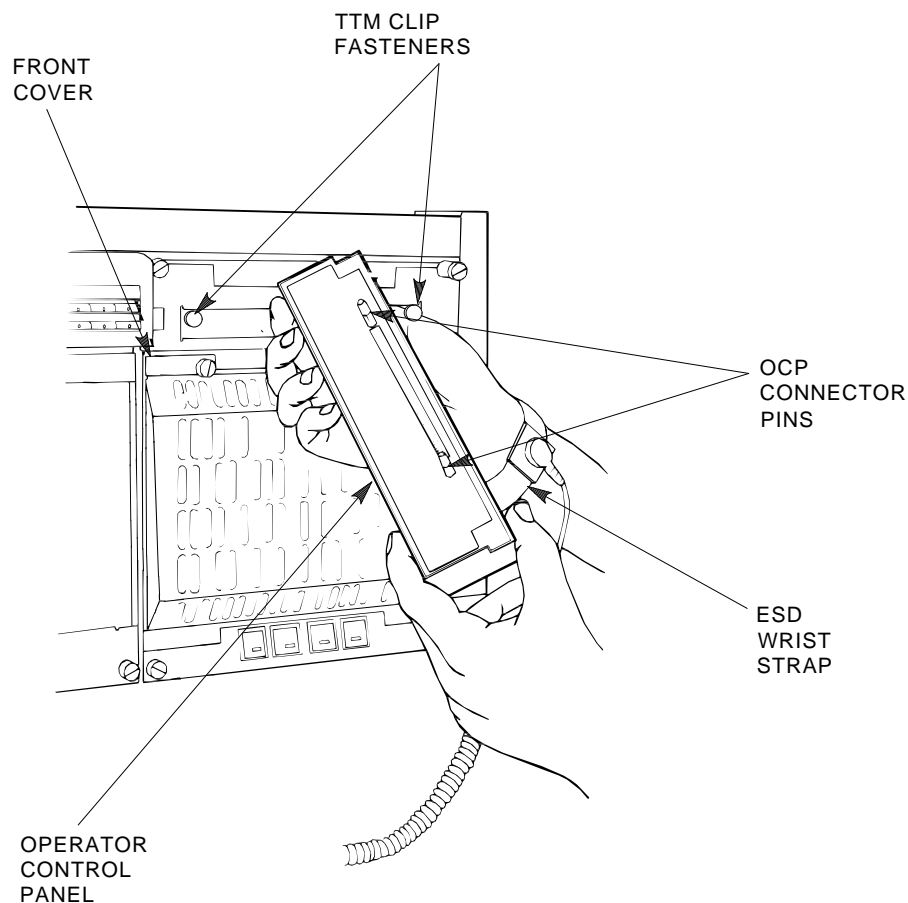
SHR_X1113_89_SCN

See Section 5.2.1 for instructions on how to cable the SF7x storage enclosure in an Sx300 storage array configured for single-host. See Section 5.2.2 for instructions on how to cable the SF7x storage enclosure in an Sx300 storage array configured for dual-host.

Once the cabling of the Sx300 storage array is complete, each bus must be connected to match one of the following eight buses. Figure 5–9 shows the five possible single-host configurations, and Figure 5–10 shows the three possible dual-host configurations.

5.2 Cabling the SF7*x* in Storage Array Position

Figure 5–7 Drive DC Power Switches

SHR-X0126A-90
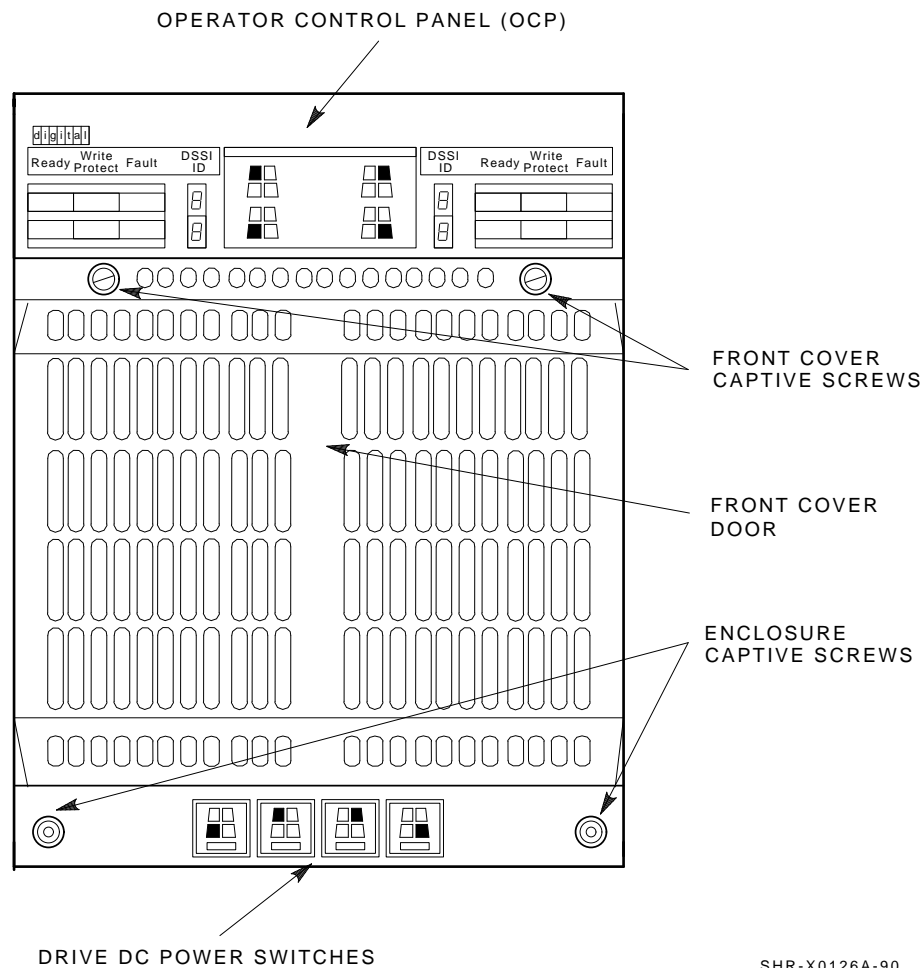
5.2.1 Single-Host Configuration

Use the following procedures for cabling an SF7*x* storage enclosure in an existing S*x*300 storage array configured for single-host.

5.2 Cabling the SF7x in Storage Array Position

Figure 5–8 AC Power Switch, Voltage Selections, and Power Cord

DSSI
CONNECTORS

FAULT

POWER SUPPLY
FAULT INDICATOR
(BEHIND PANEL)

LINE VOLTAGE
SELECTOR SWITCH
(BEHIND PANEL)

AC RECEPTACLE   AC POWER
SWITCH
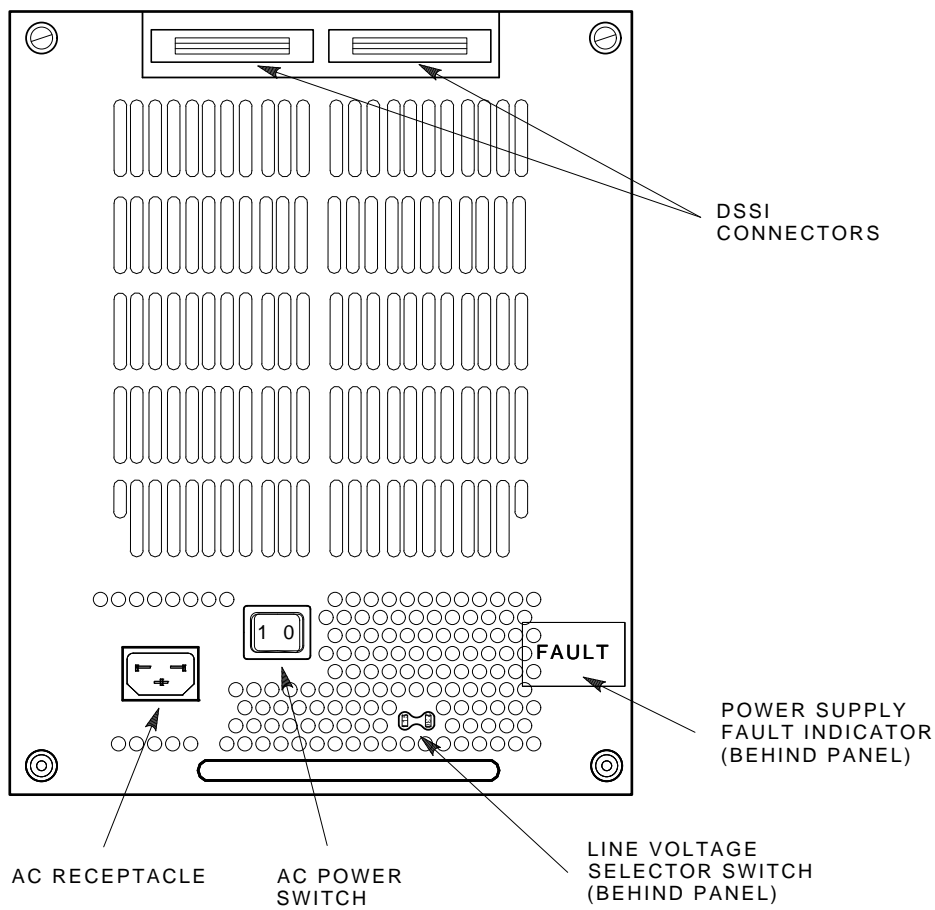
SHR-X0127A-90

The following procedures assume that all devices installed previous to a
new installation of an SF7x storage enclosure are cabled in the single-host
configuration.

5.2 Cabling the SF7x in Storage Array Position

Figure 5–9 Single-Host Bus Configurations
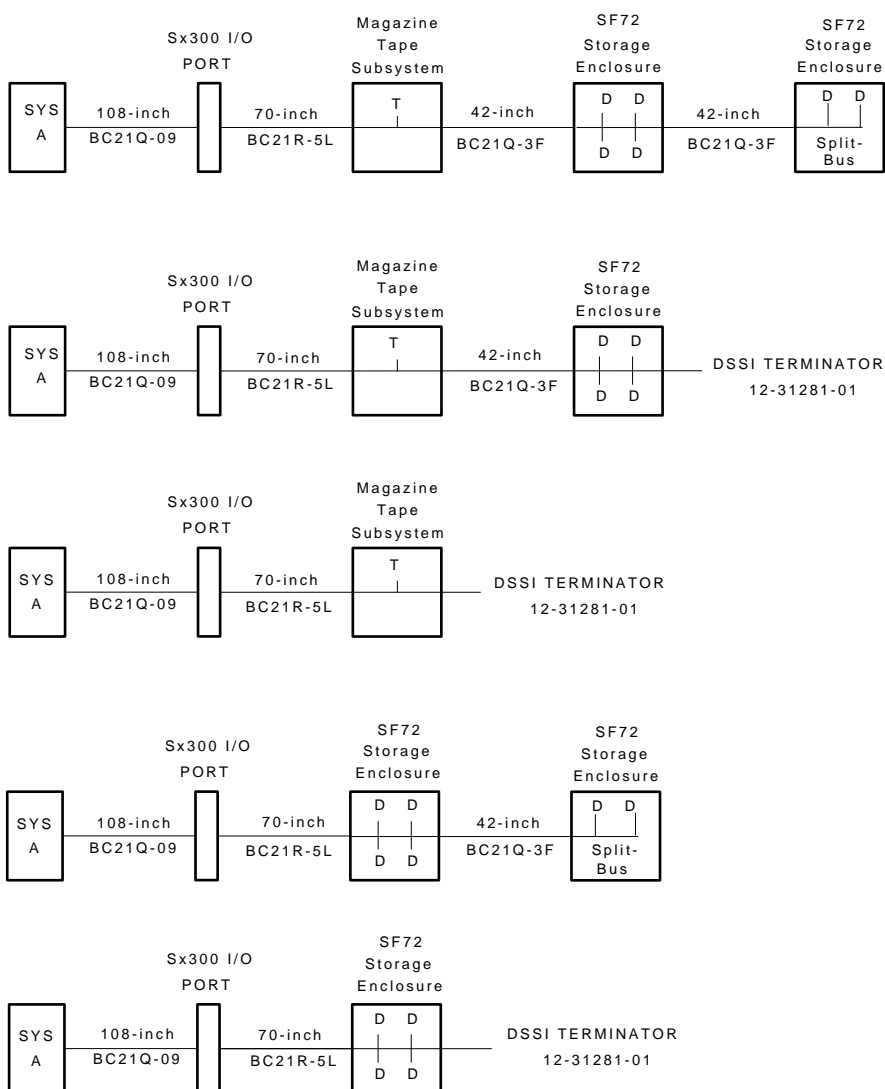
SHR-X0167-90

5.2.1.1 Identifying DSSI Connectors on the System I/O Panel

The following procedure explains how to locate and identify the DSSI connections on the host system I/O panel.

5.2 Cabling the SF7*x* in Storage Array Position

Figure 5–10   Dual-Host Bus Configurations
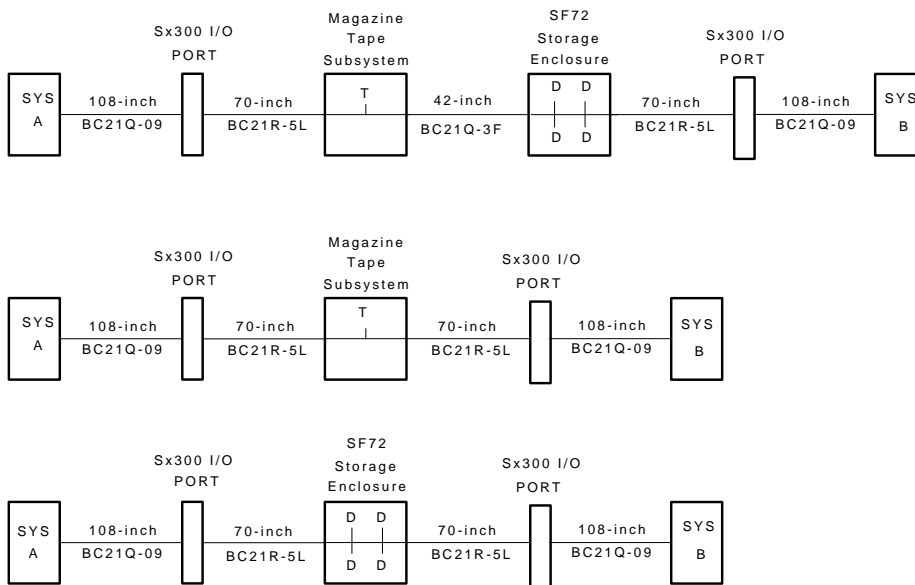
SHR-X0168-90

_____ **WARNING** _____

Before performing the following steps, refer to the system documenta-
tion for the correct steps to perform an orderly shutdown of the systems
that the S*x*300 storage array is connected to.

_____

_____ **Note** _____

This procedure assumes that no SF7*x* storage enclosures are installed
internally in the system cabinet. If SF7*x* storage enclosures are in the
system cabinet, then one of the KFMSA modules in the system XMI
backplane must be connected to those SF7*x* storage enclosures. Do
NOT use this KFMSA module or its DSSI connections to connect the
system to the S*x*300 storage array. Do NOT count this KFMSA module
in the following steps.

_____

5.2 Cabling the SF7*x* in Storage Array Position

1. Open the system I/O panel on the system by removing the screws that secure the I/O panel to the system chassis. Let the panel swing down to its rest position.

2. Find the first KFMSA module installed in the XMI backplane of the system. It will be the KFMSA module in the lowest numbered slot of the XMI backplane.

3. Follow the cabling from the backplane to the system I/O panel.

4. While viewing the front of the I/O panel, note that the DSSI connector on the left is KFMSA DSSI bus 2 and the DSSI connector on the right is KFMSA DSSI bus 1. These connectors should be labeled BLUE for bus 1 and RED for bus 2.

5. Find the next KFMSA module installed in the XMI backplane of the system. It will be the next KFMSA module after the KFMSA module in the lowest numbered slot of the XMI backplane.

6. Follow the cabling from the backplane to the system I/O panel.

7. While viewing the front of the I/O panel, note that the DSSI connector on the left is KFMSA DSSI bus 2 and the DSSI connector on the right is KFMSA DSSI bus 1. These connectors should be labeled YELLOW for bus 1 and GREEN for bus 2.

If these connectors are not labeled, label them now with the small colored labels in the *SF Family Label Booklet* (part number 36–32882–01).

For the single-host configuration, use the BLUE, RED, YELLOW, and GREEN labels only.

5.2.1.2 Cabling SF1

_____ WARNING _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the S*x*300 storage array is connected to.

_____

The following steps are for cabling SF1 with a magazine tape subsystem TF1:

_____ CAUTION _____

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

_____

5.2 Cabling the SF7*x* in Storage Array Position

1. Remove the DSSI terminator from the bottom DSSI connector on the rear of the magazine tape subsystem in position 5.

2. Install a 42-inch DSSI cable (part number BC21Q–3F) in the bottom DSSI connector on the rear of the magazine tape subsystem TF1.

3. Route this DSSI cable on the right side of the cabinet. Cabling the magazine tape subsystem should make sure that the correct cable slack will be provided.

4. Connect the 42-inch DSSI cable from the bottom DSSI connector on the rear of the magazine tape subsystem TF1 to the rightmost DSSI connector on the rear of the SF7*x* storage enclosure SF1.

   _____ **Note** _____

   Perform the next step if this is the only SF7*x* storage enclosure to be installed on this particular DSSI bus. If not, then proceed to the cabling instructions for the next SF7*x* storage enclosure that has been installed.

   _____

5. Install a DSSI terminator in the leftmost DSSI connector at the rear of the SF7*x*.

   _____ **CAUTION** _____

   Do not apply power to the SF7*x* storage enclosure at this time.

   _____

5.2.1.3 Cabling SF2

_____ **WARNING** _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the S*x*300 storage array is connected to.

The SF7*x* storage enclosure installed as SF2 of the S*x*300 storage array has two possible cabling configurations. The difference depends on whether a magazine tape subsystem is installed (TF2) of the S*x*300 storage array.

_____

5.2 Cabling the SF7*x* in Storage Array Position

The following steps are for cabling SF2 without a magazine tape subsystem (TF2):

1. At the rear of the S*x*300 storage array, locate the DSSI I/O panel at the bottom. Use a 3/16-inch flatblade screwdriver to loosen the two captive screws at the right of the panel.

2. Swing open and remove the panel from the cabinet frame.

CAUTION

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

---

3. Install a 70-inch DSSI cable (part number BC21R-5L).Secure this cable to the I/O panel with two Phillips screws. See Figure 5–11.

4. Plug the other end of this cable into the rightmost DSSI connector at the rear of the SF7*x* storage enclosure (SF2).

5. Route this DSSI cable under on the left side of the cabinet.

6. Plug a 108-inch DSSI cable (part number BC21Q–09) into the DSSI cable you just installed in port 2. Tighten the retainer screws with your fingers.

Note

The following step assumes that no SF7*x* storage enclosures are installed internally in the system cabinet. If there are SF7*x* storage enclosures installed in the system cabinet, then one of the KFMSA modules installed in the system XMI backplane must be connected to those SF7*x* storage enclosures. Do NOT use this KFMSA module or its DSSI connections to connect the system to the S*x*300 storage array.

---

7. Plug the other end of the 108-inch DSSI cable into the appropriate port on the system I/O panel at the rear of the system cabinet. To determine which of the two DSSI connectors on the system I/O panel to connect to:

   a. Locate the DSSI connectors on the system I/O panel labeled BLUE and RED.

5.2 Cabling the SF7*x* in Storage Array Position

Figure 5–11   Installing the 70- and 108-Inch DSSI Cables for SF2

70 INCH
DSSI CABLE

s*x*300
I/O PANEL
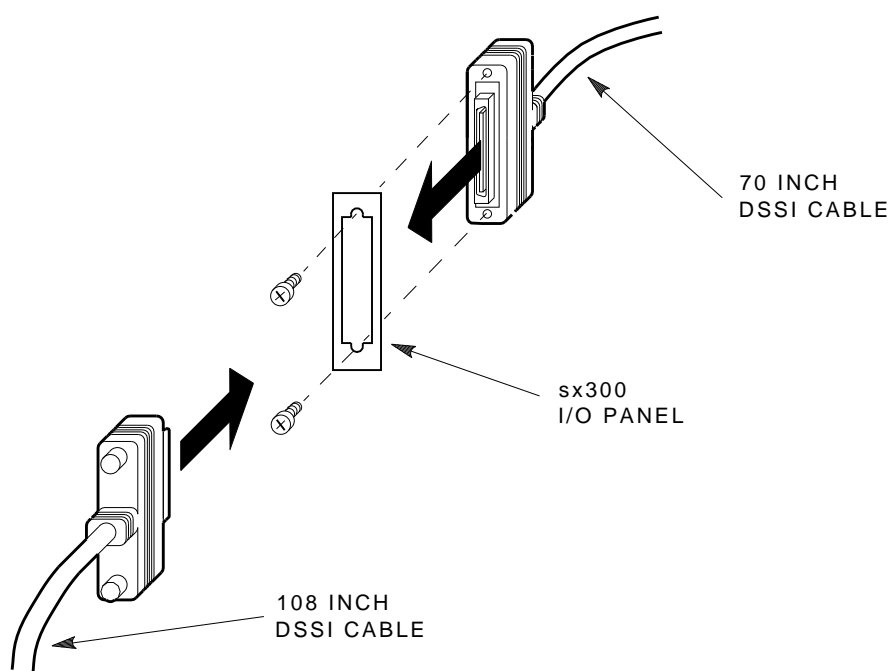
108 INCH
DSSI CABLE

SHR-X0122-90

b.   From port 2 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to
    the left DSSI connector (RED) of the first system I/O panel.

_____ **CAUTION** _____

Do not apply power to the SF7*x* storage enclosure at this time.

_____ **Note** _____

Perform the next step if this is the only SF7*x* storage enclosure to
be installed on this particular DSSI bus. If not, then proceed to the
cabling instructions for the next SF7*x* storage enclosure that has been
installed.

5.2 Cabling the SF7x in Storage Array Position

8. Install a DSSI terminator in the leftmost DSSI connector at the rear of the SF7x.

9. Replace the Sx300 I/O panel to its original position and secure it by tightening the two right captive screws.

The following steps are for cabling SF2 with a magazine tape subsystem (TF2):

_____ CAUTION _____

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

_____

1. Remove the DSSI terminator from the bottom DSSI connector on the rear of the magazine tape subsystem TF2.

2. Install a 42-inch DSSI cable (part number BC21Q–3F) in the bottom DSSI connector on the rear of the magazine tape subsystem TF2 (see Figure 5–12).

3. Route this DSSI cable on the left side of the cabinet. Cabling the magazine tape subsystem makes sure that the correct cable slack will be provided when the inner assembly is pushed back into the extrusion tube.

4. Push the inner assembly of the magazine tape subsystem back into the extrusion tube.

5. Connect the 42-inch DSSI cable from the bottom DSSI connector on the rear of the magazine tape subsystem TF2 to the rightmost DSSI connector on the rear of the SF7x storage enclosure SF2.

_____ Note _____

Perform the next step if this is the only SF7x storage enclosure to be installed on this particular DSSI bus. If not, then proceed to the cabling instructions for the next SF7x storage enclosure that has been installed.

_____

6. Install a DSSI terminator in the leftmost DSSI connector at the rear of the SF7x.

_____ CAUTION _____

Do not apply power to the SF7x storage enclosure at this time.

_____

5.2 Cabling the SF7x in Storage Array Position

Figure 5–12 Installing the 42-Inch DSSI Cable

DSSI
CONNECTORS

FAULT

POWER SUPPLY
FAULT INDICATOR
(BEHIND PANEL)

LINE VOLTAGE
SELECTOR SWITCH
(BEHIND PANEL)

AC RECEPTACLE   AC POWER
                       SWITCH
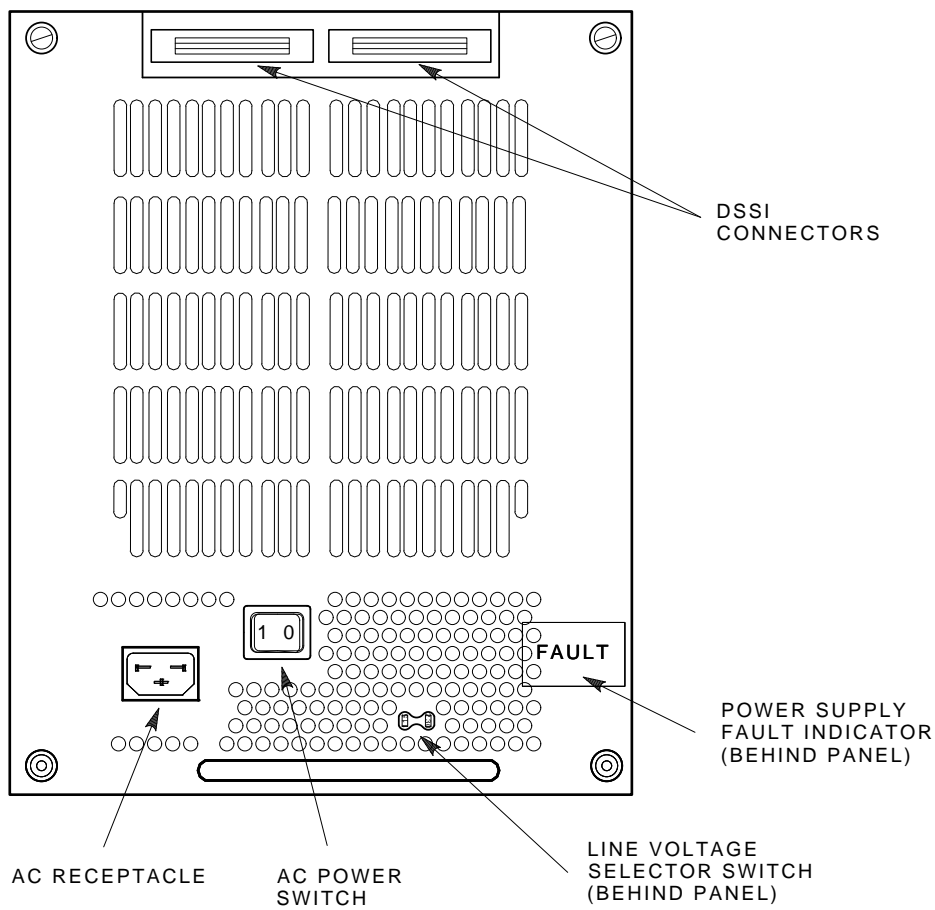
SHR-X0127A-90

5.2 Cabling the SF7*x* in Storage Array Position

5.2.1.4 Cabling SF4 and SF5

_____ **WARNING** _____

Before performing the following steps, refer to the system documenta-
tion for the correct steps to perform an orderly shutdown of the system
that the S*x*300 storage array is connected to.

_____

The following steps are for cabling SF4 and SF5:

1. At the rear of the S*x*300 storage array, locate the DSSI I/O panel at the
   bottom.

2. Swing open and remove the panel from the cabinet frame.

_____ **CAUTION** _____

Use care not to disturb or damage power cords and DSSI cables that
are already connected to the DSSI I/O panel.

_____

3. Install a 70-inch DSSI cable (part number BC21R–5L). Secure this cable to
   the I/O panel with the two Phillips screws. See Figure 5–13.

4. Plug the other end of the 70-inch DSSI cable into the rightmost DSSI
   connector at the rear of the SF7*x* storage enclosure, in either SF4 or SF5.

5. Route this DSSI cable on the appropriate side of the cabinet, left side for
   SF4 , and right side for SF5.

6. Plug a 108-inch DSSI cable (part number BC21Q–09) into the port you
   just installed in the previous steps (see Figure 5–13). Tighten the retainer
   screws on the 108-inch DSSI cable with your fingers.

_____ **Note** _____

The following step assumes that no SF7*x* storage enclosures are
installed internally in the system cabinet. If there are SF7*x* storage
enclosures installed in the system cabinet, then one of the KFMSA
modules installed in the system XMI backplane must be connected to
those SF7*x* storage enclosures. Do NOT use this KFMSA module or its
DSSI connections to connect the system to the S*x*300 storage array.

_____

5.2 Cabling the SF7*x* in Storage Array Position

Figure 5–13   Installing 70- and 108-Inch DSSI Cables for SF4 or SF5
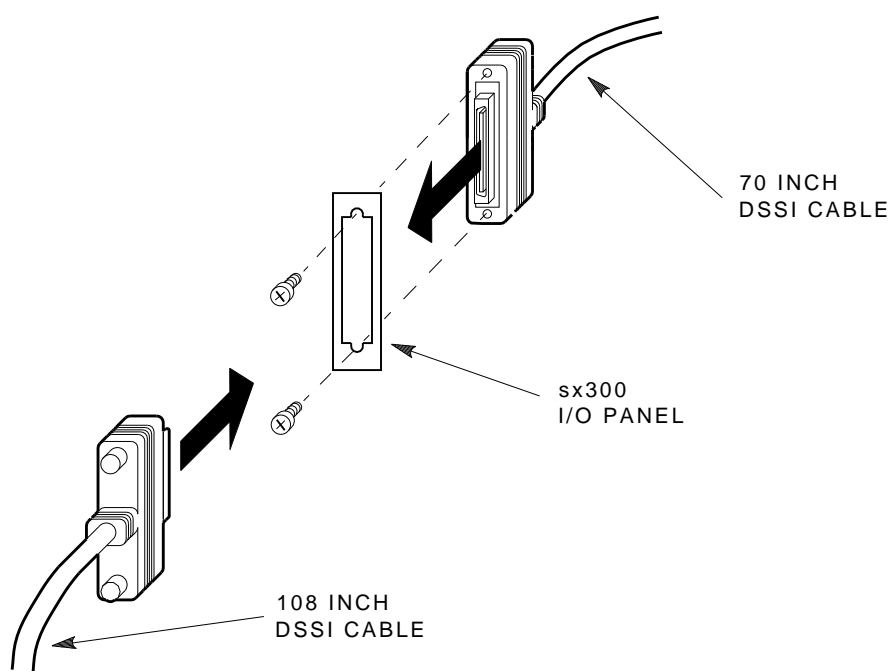
70 INCH
DSSI CABLE

sx300
I/O PANEL

108 INCH
DSSI CABLE

SHR-X0122-90

7. Plug the other end of the 108-inch DSSI cables into the appropriate port on
    the system I/O panel at the rear of the system cabinet. To determine which
    of the two DSSI connectors on the system I/O panel to connect to:

    a. Locate the DSSI connectors on the system I/O panel labeled YELLOW
        and GREEN.

    b. For port 3 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to
        the right DSSI connector (YELLOW) of the first system I/O panel.

    c. For port 4 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to
        the right DSSI connector (GREEN) of the first system I/O panel.

    ――――――――――――――― **CAUTION** ―――――――――――――――

    Do not apply power to the SF7*x* storage enclosure at this time.

    ―――――――――――――――――――――――――――――――――――――――

5.2 Cabling the SF7x in Storage Array Position

_____ **Note** _____

Perform the next step if this is the only SF7x storage enclosure to
be installed on this particular DSSI bus. If not, then proceed to the
cabling instructions for the next SF7x storage enclosure that has been
installed.

_____

8. Install a DSSI terminator in the leftmost DSSI connector at the rear of the
   SF7x storage enclosure in SF4 and SF5.

9. Replace the Sx300 I/O panel to its original position and secure it by
   tightening the two right captive screws.

5.2.1.5 Cabling SF3 or SF6

_____ **WARNING** _____

Before performing the following steps, perform an orderly shutdown of
the system that the Sx300 storage array is connected to.

_____

The following steps describe cabling for SF3 and SF6. Note that SF3 and SF6
operate in split-bus mode for a single-host configuration.

1. Power down the SF7x storage enclosures SF1 and SF2 if you are installing
   SF3. Power down the SF7x storage enclosures SF4 and SF5 if you are
   installing SF6. To power down an enclosure, first press the Ready button
   for each ISE, then press each drive dc power switch (one at a time), and
   finally at the rear of the enclosure press the ac power switch to 0.

2. Install a 42-inch DSSI cable (part number BC21Q–3F) to the rightmost
   DSSI connector on the rear of the SF7x storage enclosure SF3 and SF5.

3. Route this DSSI cable on the right side of the cabinet for SF3. For SF6,
   route this cable above the SF7x storage enclosures in SF4 and SF5.

4. For SF3, connect this 42-inch DSSI cable to the leftmost DSSI connector at
   the rear of the SF7x SF1. For SF6, connect this 42-inch DSSI cable to the
   leftmost DSSI connector at the rear of the SF75.

5. Install a 42-inch DSSI cable (part number BC21Q–3F) to the leftmost DSSI
   connector on the rear of the SF6 and SF3.

6. Route this DSSI cable on the left side of the cabinet SF3 and on the right
   side of the cabinet for SF6

7. For SF3, connect this 42-inch DSSI cable to the leftmost DSSI connector at the rear of the SF7*x* SF2. For SF6, connect this 42-inch DSSI cable to the leftmost DSSI connector at the rear of the SF7*x* SF4.

WARNING

Do not apply power to the SF7*x* storage enclosure at this time.

5.2.2 Dual-Host Configuration

Use the following procedures for cabling an SF7*x* storage enclosure in an existing S*x*300 storage array configured for dual-host.

The following procedures assume that all devices installed previous to an new installation of an SF7*x* storage enclosure are cabled in the dual-host configuration.

5.2.2.1 Identifying DSSI Connectors on the System I/O Panel

The following procedure explains how to locate and identify the DSSI connections on the system I/O panel.

WARNING

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the systems that the storage array is connected to.

Note

This procedure assumes that no SF7*x* storage enclosure are installed internally in the system cabinet. If there are SF7*x* storage enclosures installed in the system cabinet, then one of the KFMSA modules installed in the system XMI backplane must be connected to those SF7*x* storage enclosures. Do NOT use this KFMSA module or its DSSI connections to connect the system to the S*x*300 storage array. Do NOT count this KFMSA module in the following steps.

---

1. Open the system I/O panels on both systems by removing the screws that secure the I/O panel to the system chassis. Let the panel swing down to its rest position.

5.2 Cabling the SF7*x* in Storage Array Position

2. Find the first KFMSA module installed in the XMI backplane of each system. It will be the KFMSA module in the lowest numbered slot of the XMI backplane.

3. Follow the cabling from the backplane to the system I/O panel.

4. While viewing the front of the I/O panel, note that the DSSI connector on the left is KFMSA DSSI bus 2 and the DSSI connector on the right is KFMSA DSSI bus 1. These connectors should be labeled BLUE for bus 1 and RED for bus 2.

5. Find the next KFMSA module installed in the XMI backplane of each system. It will be the next KFMSA module after the KFMSA module in the lowest numbered slot of the XMI backplane.

6. Follow the cabling from the backplane to the system I/O panel.

7. While viewing the front of the I/O panel, note that the DSSI connector on the left is KFMSA DSSI bus 2 and the DSSI connector on the right is KFMSA DSSI bus 1. These connectors should be labeled YELLOW for bus 1 and GREEN for bus 2.

8. Find the next KFMSA module installed in the XMI backplane of each system. It will be the next KFMSA module after the KFMSA module in the previous steps.

9. Follow the cabling from the backplane to the system I/O panel.

10. While viewing the front of the I/O panel, note that the DSSI connector on the left is KFMSA DSSI bus 2 and the DSSI connector on the right is KFMSA DSSI bus 1. These connectors should be labeled BLUE/WHITE for bus 1 and RED/WHITE for bus 2.

If these connectors are not labeled, label them now with the small colored labels in the *SF Family Label Booklet* (part number 36–32882–01).

5.2.2.2 Cabling SF1

—————————————— WARNING ——————————————

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the systems that the storage array is connected to.

———————————————————————————————————

5.2 Cabling the SF7*x* in Storage Array Position

The following steps are for cabling SF1 with a magazine tape subsystem TF1:

─────────────── **CAUTION** ───────────────

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

──

1. Disconnect the 70-inch DSSI cable (part number BC21R–5L) from the bottom DSSI connector of the magazine tape subsystem TF1.

2. Reconnect this 70-inch DSSI cable to the leftmost DSSI connector on the rear of the SF1. See Figure 5–14.

3. Install a 42-inch DSSI cable (part number BC21Q–3F) in the bottom DSSI connector of the magazine tape subsystem TF1.

4. Loosen the shipping screw in the rear, upper right corner, of the magazine tape subsystem TF1.

5. Cabling the magazine tape subsystem makes sure that the correct cable slack will be provided when the inner assembly is pushed back into the extrusion tube.

6. Connect the 42-inch DSSI cable from the bottom DSSI connector of the magazine tape subsystem of the SF1 (see Figure 5–14).

7. Route this DSSI cable on the right side of the cabinet.

─────────────── **CAUTION** ───────────────

Do not apply power to the SF7*x* enclosure at this time.

──

5.2.2.3 Cabling SF2

─────────────── **WARNING** ───────────────

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the storage array is connected to.

The SF7*x* storage enclosure installed as SF2 of the storage array has two possible cabling configurations. The difference depends on whether

5.2 Cabling the SF7*x* in Storage Array Position

Figure 5–14 Installing the 42-Inch DSSI Cable (Position 1)

SHR-X0127A-90
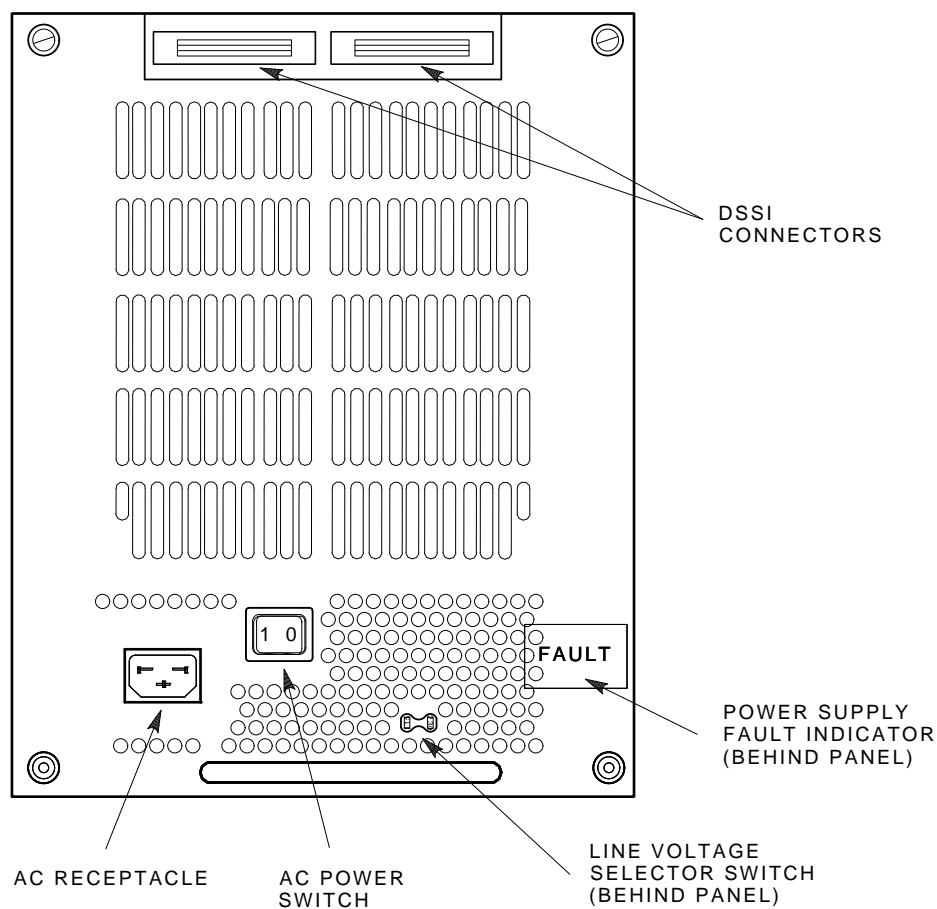
a magazine tape subsystem is installed (TF2) of the S*x*300 storage array.

The following steps are for cabling SF2 without a magazine tape subsystem TF2:

1. At the rear of the storage array, locate the DSSI I/O panel at the bottom.

5.2 Cabling the SF7*x* in Storage Array Position

2. Swing open the panel.

—————————————— **CAUTION** ——————————————

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

——

3. Install two 70-inch DSSI cables (part number BC21R–5L). Secure this cable to the I/O panel with two Phillips screws .

4. Plug the other end of the 70-inch DSSI cable from port 2 into the rightmost DSSI connector at the rear of the SF7*x*.

5. Route this DSSI cable on the right side of the cabinet.

6. Plug the other end of the 70-inch DSSI cable from port 8 into the leftmost DSSI connector at the rear of the SF7*x*. See Figure 5–15.

7. Route this DSSI cable on the left side of the cabinet.

8. Plug two 108-inch DSSI cables (part number BC21Q–09) into ports 2 and 8 (see Figure 5–15). Tighten the retainer screws with your fingers.

—————————————— **Note** ——————————————

The following step assumes that no SF7*x* storage enclosures are installed internally in the system cabinet. If there are SF7*x* storage enclosures installed in the system cabinet, then one of the KFMSA modules installed in the system XMI backplane must be connected to those SF7*x* storage enclosures. Do NOT use this KFMSA module or its DSSI connections to connect the system to the S*x*300 storage array.

——

9. Plug the other end of the 108-inch DSSI cables into the appropriate ports on the system I/O panel at the rear of the system cabinet. To determine which of the two DSSI connectors on the system I/O panel to connect to:

   a. Locate the DSSI connectors on the system I/O panel labeled BLUE and RED.

   b. From port 2 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to the right DSSI connector (RED) of the first system I/O panel.

5.2 Cabling the SF7x in Storage Array Position

Figure 5–15   Installing the 70- and 108-Inch DSSI Cables for Position 2

70 INCH
DSSI CABLE

sx300
I/O PANEL
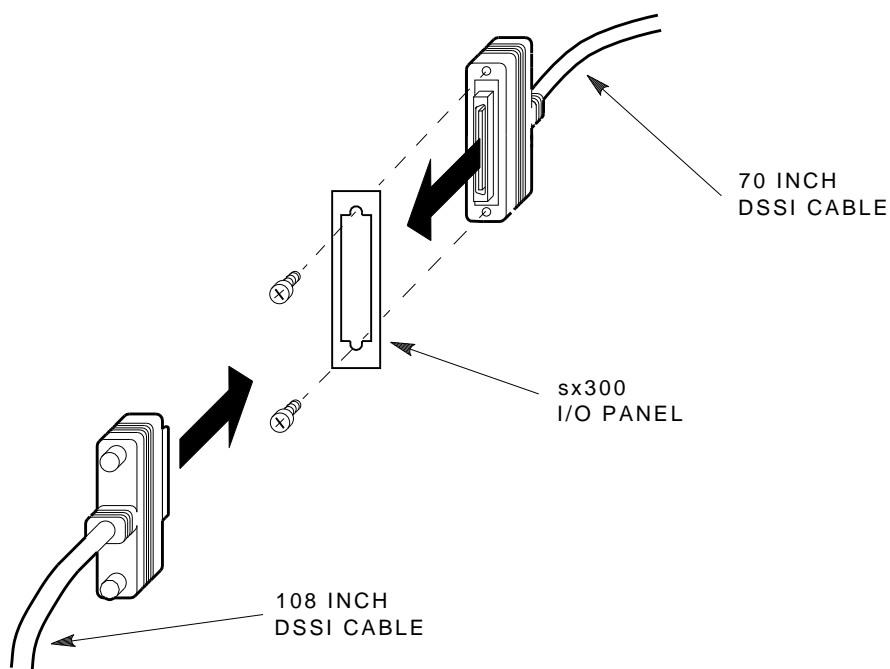
108 INCH
DSSI CABLE

SHR-X0122-90

c.   From port 8 on the Sx300 I/O panel, connect the 108-inch DSSI cable to
the right DSSI connector (RED) of the second system I/O panel.

_____ **CAUTION** _____

Do not apply power to the SF7x enclosure at this time.

_____

The following steps are for cabling SF2 with a magazine tape subsystem TF2:

_____ **CAUTION** _____

Use care not to disturb or damage power cords and DSSI cables that
are already connected to the DSSI I/O panel.

_____

5.2 Cabling the SF7*x* in Storage Array Position

1. Disconnect the 70-inch DSSI cable (part number BC21R–5L) from the bottom DSSI connector of the magazine tape subsystem TF2.

2. Reconnect this 70-inch DSSI cable to the leftmost DSSI connector on the rear of the SF2.

3. Install a 42-inch DSSI cable (part number BC21Q–3F) in the bottom DSSI connector of the magazine tape subsystem TF2.

4. Cabling the magazine tape subsystem makes sure that the correct cable slack will be provided when the inner assembly is pushed back into the extrusion tube.

5. Connect the 42-inch DSSI cable from the bottom DSSI connector of the magazine tape subsystem TF2 to the rightmost DSSI connector of the SF2..

6. Route this DSSI cable on the right side of the cabinet.

CAUTION

Do not apply power to the SF7*x* enclosure at this time.

5.2.2.4 Cabling SF3

WARNING

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the storage array is connected to.

The following steps are for cabling SF3 :

1. At the rear of the storage array, locate the DSSI I/O panel at the bottom.

2. Swing open the panel from the cabinet frame.

CAUTION

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

---

3. Install a 70-inch DSSI cable (part number BC21R–5L). See Figure 5–16. Secure this cable to the I/O panel with the two Phillips screws removed from the blank panel. Plug the other end of this cable into the rightmost DSSI connector at the rear of the SF7*x* in SF3.

5.2 Cabling the SF7*x* in Storage Array Position

4. Install a 70-inch DSSI cable (part number BC21R–5L) (see Figure 5–16). Plug the other end of this cable into the leftmost DSSI connector at the rear of the SF3.

5. For the cable to port 3, route the DSSI cable on the right side. For the cable to port 11, route the DSSI cable under the cable retainer on the left side.

6. Plug two 108-inch DSSI cables (part number BC21Q–09) into ports 3 and 11. Tighten the retainer screws on the 108-inch DSSI cables with your fingers.

Figure 5–16   Installing the 70-Inch DSSI Cables (Position 3)

70 INCH
DSSI CABLE

sx300
I/O PANEL

108 INCH
DSSI CABLE
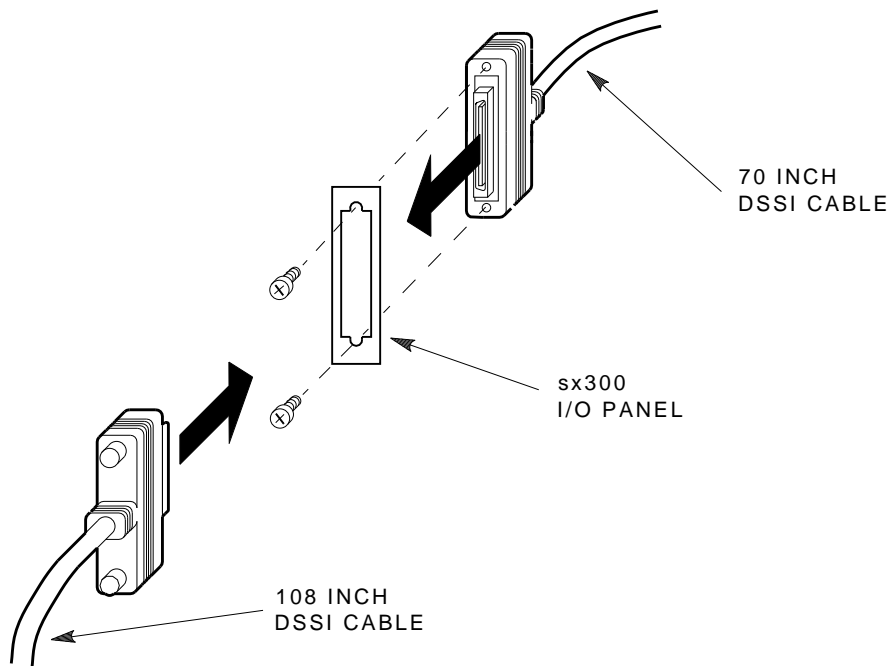
SHR-X0122-90

5.2 Cabling the SF7*x* in Storage Array Position

_____ **Note** _____

The following step assumes that no SF7*x* storage enclosures are installed internally in the system cabinet. If there are SF7*x* storage enclosures installed in the system cabinet, then one of the KFMSA modules installed in the system XMI backplane must be connected to those SF7*x* storage enclosures. Do NOT use this KFMSA module or its DSSI connections to connect the system to the S*x*300 storage array.

_____

7. Plug the other end of the 108-inch DSSI cables into the appropriate ports on the system I/O panel at the rear of the system cabinet. To determine which of the two DSSI connectors on the system I/O panel to connect to:

    a. Locate the DSSI connectors on the system I/O panel labeled YELLOW and GREEN.

    b. From port 3 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to the right DSSI connector (YELLOW) of the first system I/O panel.

    c. From port 11 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to the right DSSI connector (YELLOW) of the second system I/O panel.

_____ **CAUTION** _____

Do not apply power to the SF7*x* enclosure at this time.

_____

5.2.2.5 Cabling SF4

_____ **WARNING** _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the storage array is connected to.

_____

The following steps are for cabling SF4:

1. At the rear of the storage array, locate the DSSI I/O panel at the bottom. Use a 3/16-inch flatblade screwdriver to loosen the two captive screws at the right of the panel.

5.2 Cabling the SF7*x* in Storage Array Position

2. Swing open the panel from the cabinet frame.

CAUTION

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

---

3. Install a 70-inch DSSI cable (part number BC21R–5L). Plug the other end of this cable into the rightmost DSSI connector at the rear of SF4.

4. Install a 70-inch DSSI cable (part number BC21R–5L) in place of the panel blank you just removed in the previous step. Plug the other end of this cable into the leftmost DSSI connector at the rear of the SF4.

5. For the cable to port 4, route the DSSI cable on the right side. For the cable to port 8, route the DSSI cable under the cable retainer on the left side.

6. Plug two 108-inch DSSI cables (part number BC21Q–09) into ports 4 and 8. Tighten the retainer screws on the 108-inch DSSI cables with your fingers.

Note

The following step assumes that no SF7*x* storage enclosures are installed internally in the system cabinet. If there are SF7*x* storage enclosures installed in the system cabinet, then one of the KFMSA modules installed in the system XMI backplane must be connected to those SF7*x* storage enclosures. Do NOT use this KFMSA module or its DSSI connections to connect the system to the S*x*300 storage array.

---

7. Plug the other end of the 108-inch DSSI cables into the appropriate ports on the system I/O panel at the rear of the system cabinet. To determine which of the two DSSI connectors on the system I/O panel to connect to:

   a. Locate the DSSI connectors on the system I/O panel labeled YELLOW and GREEN.

   b. From port 4 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to the right DSSI connector (GREEN) of the first system I/O panel.

   c. From port 10 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to the right DSSI connector (GREEN) of the second system I/O panel.

5.2 Cabling the SF7*x* in Storage Array Position

CAUTION

Do not apply power to the SF7*x* enclosure at this time.


5.2.2.6 Cabling SF5

WARNING

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the storage array is connected to.

The following steps are for cabling SF5:

1. At the rear of the storage array, locate the DSSI I/O panel at the bottom. Use a 3/16-inch flatblade screwdriver to loosen the two captive screws at the right of the panel.

2. Swing open and remove the panel from the cabinet frame.

CAUTION

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

---

3. Install a 70-inch DSSI cable (part number BC21R–5L). See Figure 5–17. Plug the other end of this cable into the rightmost DSSI connector at the rear of the SF5.

4. Install a 70-inch DSSI cable (part number BC21R–5L) (see Figure 5–17) in place of the panel blank you just removed in the previous step. Plug the other end of this cable into the leftmost DSSI connector at the rear of the SF5.

5. For the cable to port 5, route the DSSI cable on the right side. For the cable to port 11, route the DSSI cable under the cable retainer on the left side.

6. Plug two 108-inch DSSI cables (part number BC21Q–09) into ports 5 and 11. Tighten the retainer screws on the 108-inch DSSI cables with your fingers.

5.2 Cabling the SF7*x* in Storage Array Position

_____ **Note** _____

The following step assumes that no SF7*x* storage enclosures are installed internally in the system cabinet. If there are SF7*x* storage enclosures installed in the system cabinet, then one of the KFMSA modules installed in the system XMI backplane must be connected to those SF7*x* storage enclosures. Do NOT use this KFMSA module or its DSSI connections to connect the system to the S*x*300 storage array.

_____

Figure 5–17 Installing the 70- and 108-Inch DSSI Cables for Position 5
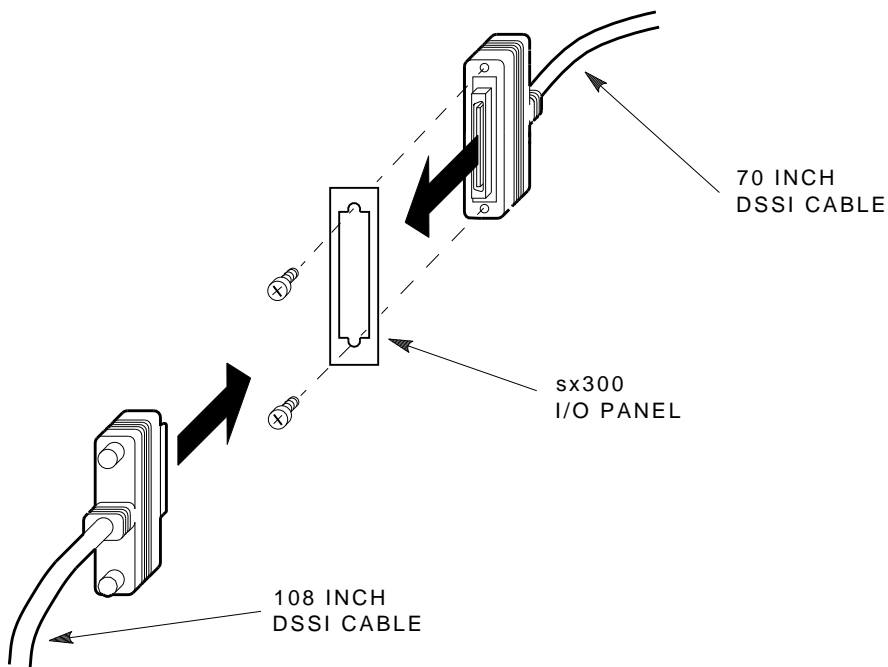
70 INCH
DSSI CABLE

sx300
I/O PANEL

108 INCH
DSSI CABLE

SHR-X0122-90

7. Plug the other end of the 108-inch DSSI cables into the appropriate ports on the system I/O panel at the rear of the system cabinet. To determine which of the two DSSI connectors on the system I/O panel to connect to:

   a. Locate the DSSI connectors on the system I/O panel labeled BLUE/WHITE and RED/WHITE.

   b. From port 5 on the Sx300 I/O panel, connect the 108-inch DSSI cable to the right DSSI connector (BLUE/WHITE) of the first system I/O panel.

   c. From port 11 on the Sx300 I/O panel connect, the 108-inch DSSI cable to the right DSSI connector (BLUE/WHITE) of the second system I/O panel.

CAUTION —————————————————

Do not apply power to the SF7x enclosure at this time.

5.2.2.7 Cabling SF6

————————————————— **WARNING** —————————————————

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the storage array is connected to.

The following steps are for cabling SF6:

1. At the rear of the storage array, locate the DSSI I/O panel at the bottom. Use a 3/16-inch flatblade screwdriver to loosen the two captive screws at the right of the panel.

2. Swing open and remove the panel from the cabinet frame.

————————————————— **CAUTION** —————————————————

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

---

3. Install a 70-inch DSSI cable (part number BC21R–5L). Plug the other end of this cable into the rightmost DSSI connector at the rear of the SF7x in position 6.

4. Install a 70-inch DSSI cable (part number BC21R–5L) in place of the panel blank you just removed in the previous step.

5.2 Cabling the SF7*x* in Storage Array Position

Plug the other end of this cable into the leftmost DSSI connector at the rear of the SF7*x* in SF6.

5. For the cable to port 6, route the DSSI cable on the right side. For the cable to port 12, route the DSSI cable under the cable retainer on the left side.

6. Plug two 108-inch DSSI cables (part number BC21Q–09) into ports 6 and 12. Tighten the retainer screws on the 108-inch DSSI cables with your fingers.

---------------------------- **Note** ----------------------------

The following step assumes that no SF7*x* storage enclosures are installed internally in the system cabinet. If there are SF7*x* storage enclosures installed in the system cabinet, then one of the KFMSA modules installed in the system XMI backplane must be connected to those SF7*x* storage enclosures. DO NOT USE this KFMSA module or its DSSI connections to connect the system to the S*x*300 storage array.

---

7. Plug the other end of the 108-inch DSSI cables into the appropriate ports on the system I/O panel at the rear of the system cabinet. To determine which of the two DSSI connectors on the system I/O panel to connect to:

    a. Locate the DSSI connectors on the system I/O panel labeled BLUE/WHITE and RED/WHITE.

    b. From port 6 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to the right DSSI connector (RED/WHITE) of the first system I/O panel.

    c. From port 12 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to the right DSSI connector (RED/WHITE) of the second system I/O panel.

---------------------------- **CAUTION** ----------------------------

Do not apply power to the SF7*x* enclosure at this time.

5.3 Powering Up the SF7*x*

Follow these steps to apply power to a newly installed SF7*x* storage enclosure:

_____ CAUTION _____

Make sure that the drive dc power switches on the front of the
enclosure are in the out position.

_____

1. Turn the ac power switch on the rear of the enclosure on. If the green
   power supply fault light emitting diode (LED) is lit, see Chapter 8.

2. Press *each* of the four (4) drive dc power switches on the front of the SF7*x*
   enclosure, one at a time. If the green LED on the drive dc power switch
   does not light, see Chapter 8.

3. Observe the OCP indicators for each drive. If the Ready indicator is lit and
   no other LED comes on and stays on, the drive has passed the power-on
   self-test (POST). Should the Ready indicator not come on and the red Fault
   indicator come on, see Chapter 8.

4. Press each of the four (4) Ready buttons, one at a time. The Ready
   indicator should be on and stay on, with the Fault indicator remaining off.
   If a fault occurs, refer to Chapter 8.

Once these steps are done and the drive has passed POST, then — and only
then — should you proceed to the next section.

5.3.1 Updating the System Configuration Sheet

Now that the enclosure has been successfully installed, power has been
applied, and the drives have passed POST, you are ready to update the system
configuration sheet to add the new ISEs.

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM)
for complete details on how to fill out a system configuration sheet.

5.4 Labeling the DSSI Cables and OCP

For a single-host configuration, use the following colored labels on the SF7*x*
OCP door, magazine tape subsystem front panel, and all DSSI cables:

5.4 Labeling the DSSI Cables and OCP

Label Colors	Connections
Blue	Port 1, SF1, SF3, TF1
Red	Port 2, SF2, SF3, TF2
Yellow	Port 3, SF4, SF6, TF3
green	Port 4,SF5, SF6, TF4

For a dual-host configuration, use the following colored labels on the SF7*x* OCP door, magazine tape subsystem front panel, and all DSSI cables:

Label Colors	Connections
Blue	Port 1, SF1, TF1, port 7
Red	Port 2, SF2, TF2, port 8
Yellow	Port 3, SF3, TF3, port 9
Green	Port 4, SF4, TF4, port 10
Blue with white strip	Port 5, SF5, port 11
Red with white strip	Port 6, SF6, port 12

5.4.1 Filling Out the Labels

Follow the steps on the inside of the *SF Family Label Booklet* (part number 36-32882-01) to fill out the labels for the DSSI cables and SF7*x* operator control panels.

Proceed once you have filled the cable and OCP labels.

5.4.2 Labeling the Cables

For each cable you just installed, place a label 2 inches behind the connector as shown in Figure 5–18.

5.4.3 Labeling the OCP

For each OCP on each SF7*x* you installed, place a label as shown in Figure 5–19.

5.4 Labeling the DSSI Cables and OCP

Figure 5–18 Placing a Label on a DSSI Cable

LABEL

SHR-X0108-90
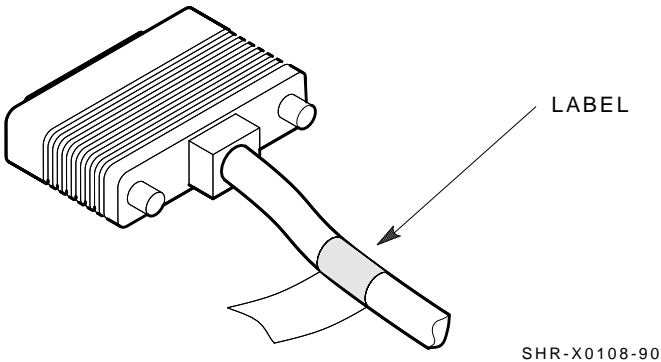
Figure 5–19 Placing a Label on the OCP Door

SHR_X1128C_89

5.5 Final Verification

Now that all the hardware installation, cabling and labeling, and the powering up steps are complete, you are ready to configure the DSSI subsystem and verify the correct operation of each ISE in the array with the host system.

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM) and the *TF857 Magazine Tape Subsystem Service Manual* (EK–TF857–SM) for detailed information and how to proceed with verifying the correct operation of each ISE that has been installed. In these manuals, you will find the procedure for establishing the communications between the ISEs, the adapter module, and the system. You will also find the step-by-step procedures for reconfiguring the system with its newly installed DSSI devices.

Refer to the manuals for the disk ISE and tape ISE for detailed information on the local programs in the ISEs.

Remember, each SF7*x* enclosure can contain two or four disk ISEs. Each magazine tape subsystem contains one tape ISE. A fully configured storage array contains 24 disk ISEs and 2 tape ISEs.

If at any time you detect a failure, see Chapter 8.

Once the verification is complete, close the cabinet doors; turn the hex-Allen fasteners one quarter turn clockwise to lock. The system is ready to be turned over to the system manager.

6

Installing the Magazine Tape Subsystem in an S*x*300 Storage Array

This chapter describes the steps to install the magazine tape subsystem in an S*x*300 storage array:

- Steps to install (Section 6.1)
- Cabling the subsystem (Section 6.2)

      Single-host configuration (Section 6.2.1)
      Dual-host configuration (Section 6.2.2)

- Powering up the subsystem (Section 6.3)
- Labeling the subsystem (Section 6.4)
- Final verification (Section 6.5)

As many as two magazine tape subsystems can be installed in the S*x*300 storage array.

Only Digital Multivendor Customer Services and other installing personnel that have been trained in ESD procedures can use the procedures in this chapter.

Follow all the steps in this chapter to install a magazine tape subsystem in an S*x*300 storage array.

Table 6–1 lists the tools required to install the magazine tape subsystem into the storage array.

Table 6–1 Magazine Tape Subsystem Required Tool List

Description	Part Number
#0 Phillips screwdriver	29–10991–00
#1 Phillips screwdriver	29–11001–00
#2 Phillips screwdriver	29–11005–00
1/8-inch slot screwdriver	29–10802–00
5/16-inch slot screwdriver	29–10960–00
1/8-inch hex key	29–26115–00
3/16-inch hex key	29–26118–00
11/32-inch nutdriver	29–10674–00

See Chapter 8 for tools or equipment recommended for use when
troubleshooting after a successful installation.

6.1 Steps to Install

The magazine tape subsystem that you are installing contains a tape
integrated storage element (ISE) and the tape cartridge loader assemblies.

This section contains several major parts. The first part explains the steps
necessary to do the following:

- Unpack, inspect for damage, and identify parts

- Determine where to install the magazine tape subsystem

- Read and fill out the system configuration sheet

The next part explains the steps to install the magazine tape subsystem itself:

- Prepare the array cabinet to receive a magazine tape subsystem

- Install the supporting hardware and magazine tape subsystem, and set the
  DSSI ID switches

- Cable the magazine tape subsystem to comply with the DSSI bus cabling
  conventions

The last part explains the steps to do the following:

- Power up the magazine tape subsystem, run the power-on self-test, and
  run the configuration programs

- Label all cables and operator control panels

- Verify the operation of the enclosure after a successful installation

Follow all the steps in each of these parts in the order they are presented and do not skip any steps.

Remember that the magazine tape subsystem installs in positions 5 and 6 and 4 and 3 *only*.

The first step is to unpack the shipping container. See Section 6.1.1.

6.1.1 Unpacking the Magazine Tape Subsystem

The subsystem is shipped in an environmental barrier bag with desiccant, the container, and all packing materials.

Note

After unpacking, retain the container and all packing materials.

At this time, examine the subsystem for physical damage. If you find *any* damage, do *not* attempt to install the subsystem. Notify your office immediately.

If there is no damage, then unpack all the boxes and bags, and identify all the parts by using Table 6–2.

Table 6–2 Magazine Tape Subsystem Kit Contents

Description	Quantity	Part Number
Magazine tape subsystem	1	Subsystem specific
Hardware mounting assembly	1	Subsystem specific
Slide mount assembly	1	—[1]
Weldment bracket (front top)	1	70–26052–01
Weldment bracket (front bottom)	1	70–26052–02
Shoulder screw, 10-32. 0.500	4	12–24007–01
Shoulder screw, 10-32, 0.438	6	12–24007–02
Lock washer, internal steel	10	90–06637–00
DSSI cable retainer	1	74–41302–01

[1]The slide mount assembly comes assembled and does not have a single part number.

6.1 Steps to Install

Table 6–2 (Cont.)   Magazine Tape Subsystem Kit Contents

Description	Quantity	Part Number
Chassis retainer	2	74–35858–01
10-32 Phillips (SEMS)	4	12–21368–03
Machine screw, Phillips, 0.500	2	90–06073–02
Machine screw, Phillips, 1.5	2	90–06079–03
Lock washer, external steel	2	90–07651–00
AC power cord, 8-foot	1	17–00442–03
DSSI cables, 42-inch, box-to-box	1	BC21Q–3F
Owner's manual	1	EK–SF72S–OM
Installation guide	1	EK–S*x*300–IG
Subsystem owner's manual	1	Subsystem specific
Label booklet	1	36–32882–01

Note

DSSI cable retainer and weldment bracket of this kit are not used for the S*x*300 cabinet.

6.1.2 Where to Install the Magazine Tape Subsystem

The second & third level of the S*x*300 storage array cabinet is used for magazine tape subsystems. The subsystems install in numerical order. Facing the front of the cabinet, note that position 4 is on the left and position 3 is on the right.

6.1.3 Completing the System Configuration Sheet

Locate the system configuration sheet. If you cannot locate this sheet or if the one that is available is either not filled out or filled out incorrectly, fill one out immediately.

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM) for an explanation of this sheet and how to fill it out.

Figure 6–1   System Configuration Sheet (Single-Host)

KFMSA/Single–System Configuration Sheet

[for VAX 6000 and 9000 systems]

KFMSA XMI Node # _____

Bus _____   Bus _____
DSSI ID #_____   DSSI ID #_____

| Device Type _____ ALLO_CLASS _____ |
| DSSI ID # _____ Array Pos. # _____ |
| Node Name _____ UNITNUM _____ |
| System ID _____ |

config_shr–x0109.rags

Figure 6–1 and 6–2 show examples of the system configuration sheet.

6.1 Steps to Install

Figure 6–2 System Configuration Sheet (Dual-Host)

KFMSA/DSSI VAXcluster Configuration Sheet

[for VAX 6000 and 9000 systems]

KFMSA XMI Node # _____

Bus _____   Bus _____
DSSI ID # _____   DSSI ID # _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
      System ID _____   System ID _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
      System ID _____   System ID _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
      System ID _____   System ID _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
      System ID _____   System ID _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
      System ID _____   System ID _____

KFMSA XMI Node # _____

Bus _____   Bus _____
DSSI ID # _____   DSSI ID # _____

Color Code _____   Color Code _____

config_shr−x0133.rags

Figure 6–3 System Configuration Sheet (Three-Host)

KFMSA/DSSI VAXcluster Configuration Sheet

[for VAX 6000 and 9000 systems]

KFMSA XMI Node # _____

Bus _____   Bus _____
DSSI ID #_____   DSSI ID #_____

KFMSA XMI Node # _____

Bus _____   Bus _____
DSSI ID #_____   DSSI ID #_____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
     System ID _____   System ID _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
     System ID _____   System ID _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
     System ID _____   System ID _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
     System ID _____   System ID _____

Device Type _____ ALLO_CLASS _____   Device Type _____ ALLO_CLASS _____
DSSI ID # _____   Array Pos. # _____   DSSI ID # _____   Array Pos. # _____
Node Name _____   UNITNUM _____   Node Name _____   UNITNUM _____
     System ID _____   System ID _____

KFMSA XMI Node # _____

Bus _____   Bus _____
DSSI ID #_____   DSSI ID #_____

Color Code _____   Color Code _____

config_shr–x0133b.rags

6.1 Steps to Install

6.1.4 Installation Procedure

This section describes the step-by-step procedures for installing a magazine tape subsystem in an S*x*300 storage array.

Be sure to:

- Follow each step in order, and do not skip any steps

- Leave sufficient room to perform the installation (approximately 1.5 meters to 1.8 meters [5 feet to 6 feet] front and rear of the array)

————————————————— **WARNING** —————————————————

Observe all ESD precautions and procedures.

An antistatic wrist strap is inside the front and rear doors.

———

————————————————— **CAUTION** —————————————————

Do not attempt to pick up or support the product by the rear of the enclosure. Doing so will injure the person attempting the installation or damage the power supply.

To maintain stability, extend only one SF72 storage enclosure or magazine tape subsystem on the slide mounts at a time.

———

6.1.4.1 Preparing the S*x*300 Storage Array

The following procedure describes how to prepare the array to receive the magazine tape subsystem:

1. Place the magazine tape subsystem to be installed to one side, in front of the cabinet.

2. Open front and rear doors of the S*x*300 storage array.

3. Remove the front bezel panel that corresponds to the position of the S*x*300 storage array you are installing.

6.1.4.2 Hardware Installation Procedures

Perform the following steps in full and in the order presented.

WARNING

Before performing the following steps, refer to the system documenta-
tion for the correct steps to perform an orderly shutdown of the system
that the S*x*300 storage array is connected to.

---

1. Install the ac power cord:

    a. Swing open the panel from the cabinet frame.

    CAUTION

    Use care not to disturb or damage power cords and DSSI cables that
    are already connected to the DSSI I/O panel.

    ---

    b. Connect the male end of the ac power cord to the first available outlet
        on the power controller.

2. Install the slide mount and associated hardware. Refer to Figure 3–9 and
    Chapter 3.

    The slide mount has two parts. One part is called the "adjustable" end and
    the other is called the "slotted" end. The adjustable end has four screws
    that, when loosened, allow the slide mount to be placed in the cabinet and
    then extended to make a secure fit.

3. Install the magazine tape subsystem.

    a. Loosen the screw in the rear, right corner, of the magazine tape
        subsystem.

    b. Install both chassis retainers on the front, right side (position 5) or left
        side (position 6) of the extrusion tube (top and bottom, Figure 6–4).

    c. At the front of the cabinet, lift the extrusion tube up and onto the slide
        mount until the chassis retainers touch the weldment brackets.

    d. Install and tighten the two outer weldment screws, then install and
        tighten the two inner weldment screws. See Figure 6–5.

6.1 Steps to Install

Figure 6–4   Chassis Retainers

SEMS SCREWS (4)
12-21368-03

CHASSIS
RETAINERS

SHR_X1123B_89
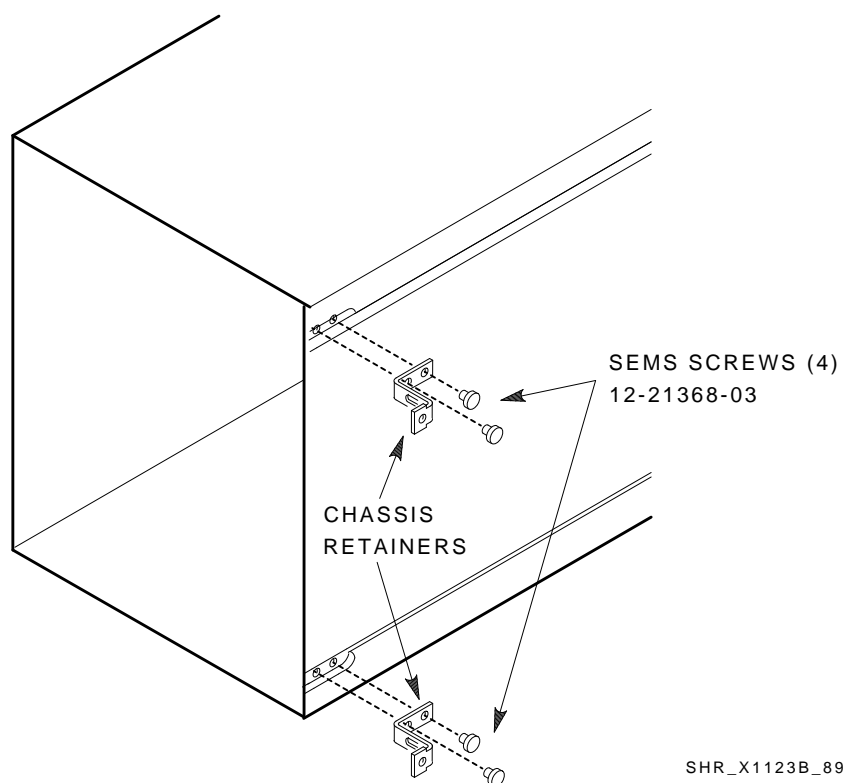
   e.   Tighten the upper and lower weldment 1/2-inch shoulder screws and washers.

4.   While the inner assembly is out of the extrusion tube, check the DSSI ID switches on the DSSI controller module. Make sure that the DSSI ID switch is set to 0 and that the Tape Mass Storage Control Protocol (TMSCP) switch is down or enabled. Refer to the magazine tape subsystem documentation for information on how to access the DSSI controller module.

5.   Perform the following steps to complete the hardware installation of the magazine tape subsystem:

   a.   Lift and push the inner assembly back into the extrusion tube.

Figure 6–5 Securing the Tube to the Weldment Brackets

CHASSIS RETAINER (2)
74-35858-01

1/2-INCH PHILLIPS
SCREW (2)
90-06079-02

LOCK WASHER (2)
90-07651-03

SLIDE MOUNT

1 1/2-INCH PHILLIPS
SCREW (2)
90-06079-03

HARDWARE
HERE IS
SAME AS
LISTED
ABOVE

SHR-X0132A-90
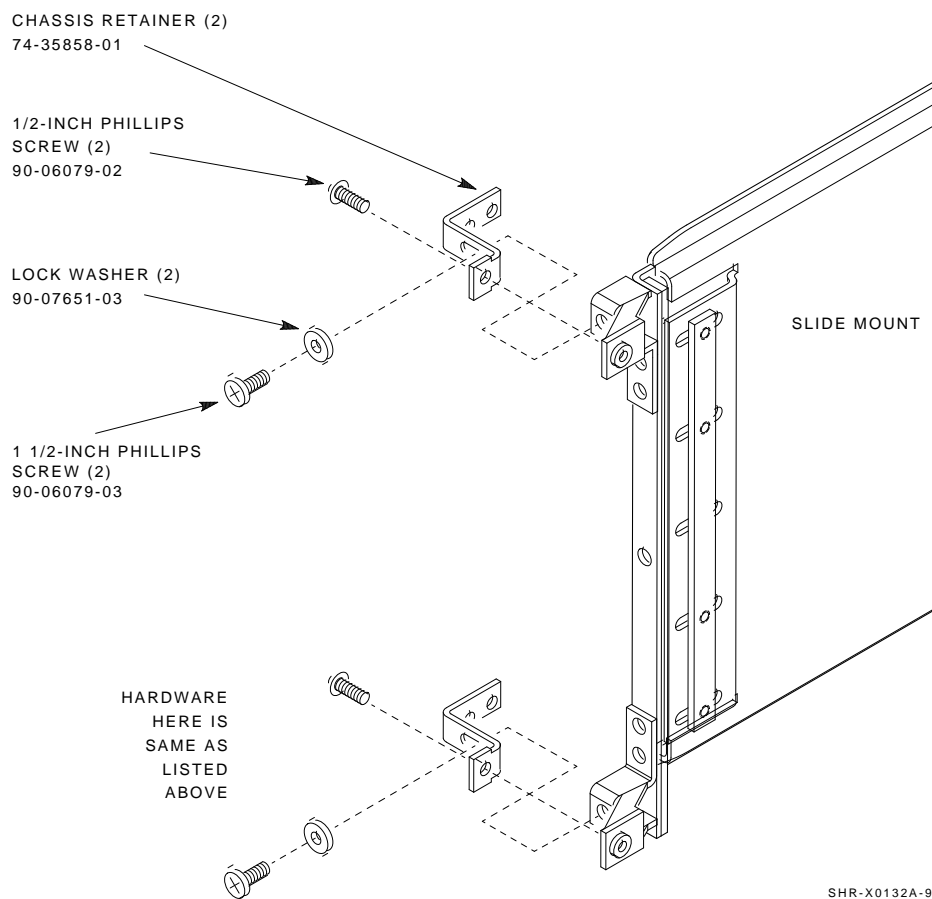
b. At the rear of the magazine tape subsystem, make sure that the ac power switch is off or in the 0 position. See Figure 6–6.

c. Also check the factory set ac power on the magazine tape subsystem. Model variants –AA are 120 Vac and model variants –AB are 220 Vac.

d. Place the subsystem in the head cleaning position (first mechanical stop).

e. Mount the half bezel bracket to the tape system.

f. At this time, connect the ac power cord to the subsystem.

6.1 Steps to Install

g. Check that this and all other operator control panel (OCP) and magazine tape subsystem fronts project through the front storage array correctly. If not, adjust the height with shims. Place the half bezel and the side strips in position.

_____ **CAUTION** _____

Do not power up the enclosure at this time.

_____

Figure 6–6   AC Power Switch, Voltage Selections, and Power Cord
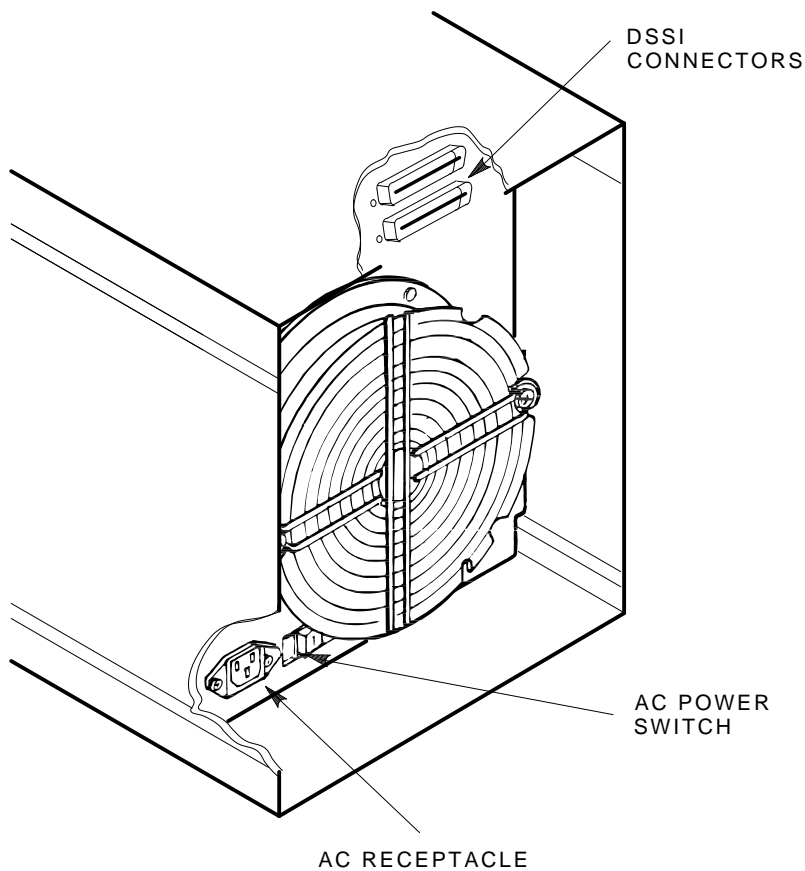

```
                                           DSSI
                                           CONNECTORS

                                                    AC POWER
                                                    SWITCH

        AC RECEPTACLE

                                    SHR-X0141B-90-CPG
```

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

This section describes the step-by-step procedure to cable the magazine tape subsystem that you just installed to the existing DSSI bus configuration of the S*x*300 storage array.

See Section 6.2.1 for instructions on how to cable the magazine tape subsystem in an S*x*300 storage array configured for single-host. See Section 6.2.2 for instructions on how to cable the magazine tape subsystem in an S*x*300 storage array configured for dual-host.

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

6.2.1 Single-Host Configuration

Use the following procedures for cabling a magazine tape subsystem in an existing S*x*300 storage array configured for single-host.

6.2.1.1 Cabling TF1

_____ WARNING _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system which the S*x*300 storage array is connected to.

_____

The following steps are for cabling a magazine tape subsystem in an existing S*x*300 storage array configured for single-host:

1. Take the disk ISEs SF1 off-line before you proceed. To do so, first take each ISE off-line by pressing the Ready buttons. Then press all the drive dc power switches to the out position. Lastly, turn off the ac power at the rear of the storage enclosure.

_____ CAUTION _____

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

_____

2. Disconnect the 70-inch DSSI cable (part number BC21Q–3F) connected to the rightmost DSSI connector at the rear of the SF1.

3. Connect the 70-inch DSSI cable removed from SF1 (Figure 6–7) and connect it to the top DSSI connector on the rear of the magazine tape subsystem. Route this DSSI cable on the right side of the cabinet.

4. Connect a 42-inch DSSI cable (part number BC21Q–3F) to the rightmost DSSI connector at the rear of the SF2 and to the bottom DSSI connector at the rear of the magazine tape subsystem TF1. Route this DSSI cable on the right side of the cabinet.

_____ CAUTION _____

Do not power up the magazine tape subsystem or the SF72 storage enclosure at this time.

_____

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

Figure 6–7   Installing the 42- and 70-Inch DSSI Cable (TF1)

DSSI
CONNECTORS

AC POWER
SWITCH

AC RECEPTACLE
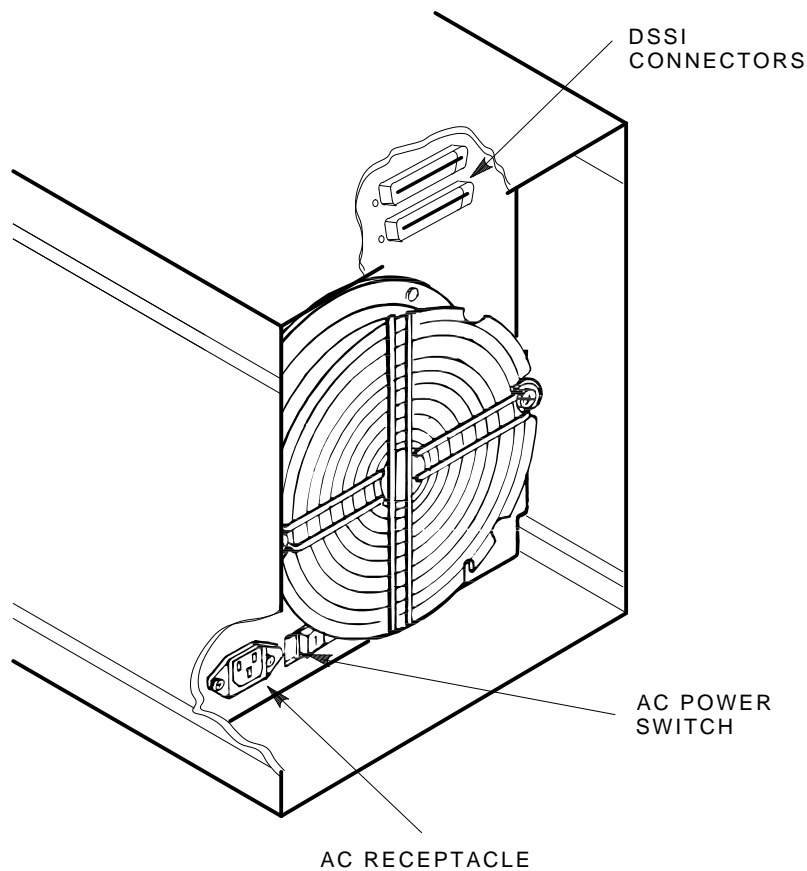
SHR-X0141B-90-CPG

6.2.1.2   Cabling TF2

_____ **WARNING** _____

Before performing the following steps, refer to the system documenta-
tion for the correct steps to perform an orderly shutdown of the system
that the S*x*300 storage array is connected to.

_____

1. Take the drives SF2 (if present) off-line before you proceed. To do so, first
   take each ISE off-line by pressing the Ready buttons. Then press all the

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

drive dc power switches to the out position. Lastly, turn off the ac power at the rear of the storage enclosure.

CAUTION

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

---

2. Disconnect the 70-inch DSSI cable (part number BC21R–5L) connected to the rightmost DSSI connector at the rear of the SF2.

3. Install this 70-inch DSSI cable to the top DSSI connector on the rear of the magazine tape subsystem.

4. Route this DSSI cable on the right side of the cabinet.

5. At this time, connect a 42-inch DSSI cable (part number BC21Q–3F) to the rightmost DSSI connector at the rear of the SF2 and to the bottom DSSI connector at the rear of the magazine tape subsystem in TF2.

6. Route this DSSI cable on the appropriate side of the cabinet.

7. If no SF72 storage enclosure is installed SF2, then at the rear of the S*x*300 storage array, locate the DSSI I/O panel at the bottom.

8. Swing open the panel from the cabinet frame.

9. Install a 70-inch DSSI cable (part number BC21R–5L).

10. Connect the other end of this cable into the top DSSI connector at the rear of the magazine tape subsystem. See Figure 6–8.

11. Route this DSSI cable on the left side of the cabinet.

12. Connect a 108-inch DSSI cable (part number BC21Q–09) into the port you just installed in the previous steps. Tighten the retainer screws with your fingers.

13. Plug the other end of this cable into the appropriate port on the system I/O panel at the rear of the system cabinet. To determine which of the two DSSI connectors on the system I/O panel to connect to:

    a. Open the system I/O panel by removing the six screws that secure the I/O panel to the system chassis. Let the panel swing down to its rest position.

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

Figure 6–8   Installing the DSSI Cables

70 INCH
DSSI CABLE

sx300
I/O PANEL

108 INCH
DSSI CABLE
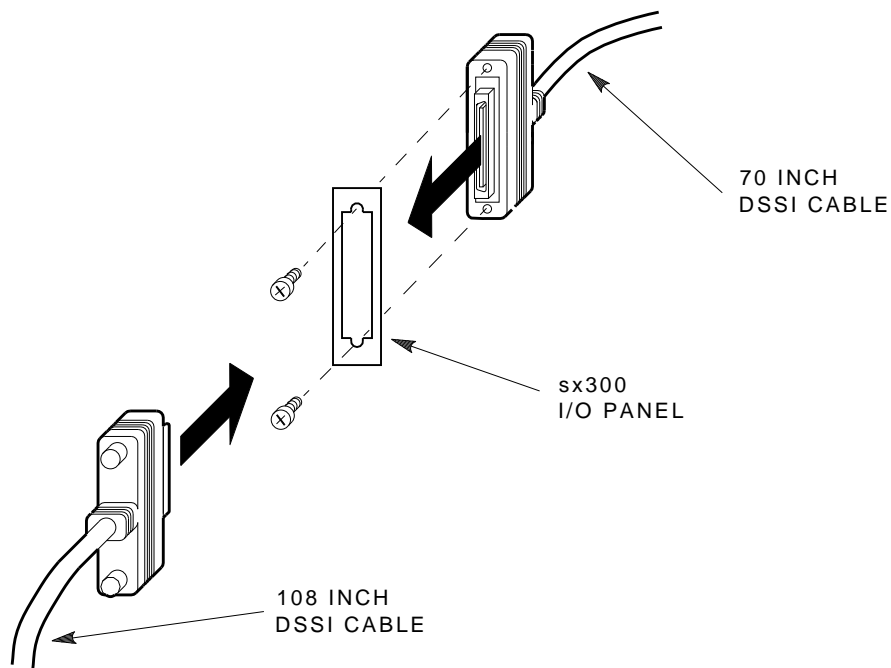
SHR-X0122-90

b.   Find the first KFMSA module installed in the system XMI backplane.
It will be the KFMSA module in the lowest numbered slot of the
KFMSA modules installed.

c.   Follow the cabling from the backplane to the system I/O panel.

d.   While viewing the front of the I/O panel, note that the DSSI connector
on the right is KFMSA DSSI bus 1 and the left is bus 2.

e.   For port 2 on the S*x*300 I/O panel, connect the 108-inch DSSI cable to
the left DSSI connector of the system I/O panel.

_____ **CAUTION** _____

Do not apply power to the subsystem at this time.

_____

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

14. Install a DSSI terminator in the bottom DSSI connector at the rear of the subsystem.

6.2.1.3 Cabling TF3

_____ WARNING _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the S*x*300 storage array is connected to.

_____

1. Take the drives SF4 (if present) off-line before you proceed. To do so, first take each ISE off-line by pressing the Ready buttons. Then press all the drive dc power switches to the out position. Last, turn off the ac power at the rear of the storage enclosure.

_____ CAUTION _____

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

_____

2. Disconnect the 70-inch DSSI cable (part number BC21R–5L) connected to the rightmost DSSI connector at the rear of the SF4.

3. Install this 70-inch DSSI cable to the top DSSI connector on the rear of the magazine tape subsystem.

4. Route this DSSI cable on the right side of the cabinet.

5. At this time, connect a 42-inch DSSI cable (part number BC21Q–3F) to the rightmost DSSI connector at the rear of the SF4 and to the bottom DSSI connector at the rear of the magazine tape subsystem in TF3.

6. Route this DSSI cable on the appropriate side of the cabinet.

7. If no SF72 storage enclosure is installed (SF4), then at the rear of the S*x*300 storage array, locate the DSSI I/O panel at the bottom.

8. Swing open the panel from the cabinet frame.

9. Install a 70-inch DSSI cable (part number BC21R–5L).

10. Connect the other end of this cable into the top DSSI connector at the rear of the magazine tape subsystem. Refer to Figure 6–8.

11. Route this DSSI cable on the left side of the cabinet.

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

12. Connect a 108-inch DSSI cable (part number BC21Q–09) into the port you just installed in the previous steps. Tighten the retainer screws with your fingers.

13. Plug the other end of this cable into the appropriate port on the system I/O panel at the rear of the system cabinet.

CAUTION

Do not apply power to the subsystem at this time.

---

14. Install a DSSI terminator in the bottom DSSI connector at the rear of the subsystem.

6.2.1.4 Cabling TF4

WARNING

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the S*x*300 storage array is connected to.

CAUTION

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

---

1. At the rear of the S*x*300 storage array, locate the DSSI I/O panel at the bottom.

2. Swing open the panel from the cabinet frame.

3. Install a 70-inch DSSI cable (part number BC21R–5L).

4. Connect the other end of this cable into the top DSSI connector at the rear of the magazine tape subsystem. Refer to Figure 6–8.

5. Route this DSSI cable on the left side of the cabinet.

6. Connect a 108-inch DSSI cable (part number BC21Q–09) into the port you just installed in the previous steps. Tighten the retainer screws with your fingers.

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

7. Plug the other end of this cable into the appropriate port on the system I/O panel at the rear of the system cabinet.

_____ **CAUTION** _____

Do not apply power to the subsystem at this time.

_____

8. Install a DSSI terminator in the bottom DSSI connector at the rear of the subsystem.

6.2.2 Dual-Host Configuration

Use the following procedures for cabling a magazine tape subsystem in an existing S*x*300 storage array configured for dual-host.

6.2.2.1 Cabling TF1

_____ **WARNING** _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the S*x*300 storage array is connected to.

_____

1. Take the disk ISEs in position 1 off-line before you proceed. To do so, first take each ISE off-line by pressing the Ready buttons. Then press all the drive dc power switches to the out position. Last, turn off the ac power at the rear of the storage enclosure.

_____ **CAUTION** _____

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

_____

2. Disconnect the 70-inch DSSI cable (part number BC21R–5L) connected to the rightmost DSSI connector at the rear of the SF72 enclosure in position 1.

3. Connect the 70-inch DSSI cable removed from the SF72 storage enclosure to the top DSSI connector on the rear of the magazine tape subsystem.

4. Route this DSSI cable on the right side of the cabinet.

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

5. Connect a 42-inch DSSI cable (part number BC21Q–3F) to the rightmost DSSI connector at the rear of the SF72 in position 1 to the bottom DSSI connector at the rear of the magazine tape subsystem TF1.

6. Route this DSSI cable on the right side of the cabinet.

6.2.2.2 Cabling TF2

_____ WARNING _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the S*x*300 storage array is connected to.

_____

1. Take the disk ISEs SF2 off-line before you proceed. To do so, first take each ISE off-line by pressing the Ready buttons. Then press all the drive dc power switches to the out position. Last, turn off the ac power at the rear of the storage enclosure.

_____ CAUTION _____

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

_____

2. Disconnect the 70-inch DSSI cable (part number BC21R–5L) connected to the rightmost DSSI connector at the rear of the SF72 enclosure (SF2).

3. Connect the 70-inch DSSI cable removed from the SF72 storage enclosure to the top DSSI connector on the rear of the magazine tape subsystem.

4. Route this DSSI cable on the right side of the cabinet.

5. Connect a 42-inch DSSI cable (part number BC21Q–3F) to the rightmost DSSI connector at the rear of the SF3 to the bottom DSSI connector at the rear of the magazine tape subsystem TF2.

6. Route this DSSI cable on the right side of the cabinet.

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

6.2.2.3 Cabling TF3

_____ WARNING _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the S*x*300 storage array is connected to.

_____

1. Take the disk ISEs (SF3) off-line before you proceed. To do so, first take each ISE off-line by pressing the Ready buttons. Then press all the drive dc power switches to the out position. Last, turn off the ac power at the rear of the storage enclosure.

_____ CAUTION _____

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

_____

2. Disconnect the 70-inch DSSI cable (part number BC21R–5L) connected to the rightmost DSSI connector at the rear of the SF3.

3. Connect the 70-inch DSSI cable removed from the SF72 storage enclosure to the top DSSI connector on the rear of the magazine tape subsystem.

4. Route this DSSI cable on the right side of the cabinet.

5. Connect a 42-inch DSSI cable (part number BC21Q–3F) to the rightmost DSSI connector at the rear of the SF3 to the bottom DSSI connector at the rear of the magazine tape subsystem TF3.

6. Route this DSSI cable on the right side of the cabinet.

6.2.2.4 Cabling TF4

_____ WARNING _____

Before performing the following steps, refer to the system documentation for the correct steps to perform an orderly shutdown of the system that the S*x*300 storage array is connected to.

_____

_____ CAUTION _____

Use care not to disturb or damage power cords and DSSI cables that are already connected to the DSSI I/O panel.

_____

6.2 Cabling the Subsystem in S*x*300 Storage Array Position

1. Swing open the I/O panel from the cabinet frame.

2. Install a 70-inch DSSI cable (part number BC21R–5L) to port 4 on the S*x*300 storage array I/O panel.

3. Connect the other end of this 70-inch DSSI cable to the top DSSI connector on the rear of the magazine tape subsystem.

4. Install a 70-inch DSSI cable (part number BC21R–5L) to port 10 on the S*x*300 storage array I/O panel.

5. Connect the other end of this 70-inch DSSI cable to the bottom DSSI connector on the rear of the magazine tape subsystem.

6.3 Powering Up the Magazine Tape Subsystem

Follow these steps to apply power to a newly installed magazine tape subsystem.

1. Turn the ac power switch on the rear of the subsystem to the on or 1 position.

    a. All its OCP indicators turn on (generally within 15 seconds).

    b. While the elevator scans the magazine, all OCP indicators, except for Power On, turn off.

    c. Assuming the subsystem has a magazine with a cartridge in position 0, and no cartridge is in the drive, the final power-on self-test (POST) status displays:

    > Power On indicator on
    > Eject indicator on
    > Load/Unload indicator on
    > Slot Select indicator on
    > Slot 0 indicator on

2. If a fault occurs, see Chapter 8 or the Magazine Tape Subsystem service manual.

Proceed to Section 6.3.1 once these steps are accomplished and the subsystem has passed POST.

6.3 Powering Up the Magazine Tape Subsystem

6.3.1 Updating the System Configuration Sheet

Now that the subsystem has been successfully installed, power has been applied, and the drives have passed POST, you are ready to update the system configuration sheet.

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM) for complete details on how to fill out a system configuration sheet.

6.4 Labeling the DSSI Cables and Magazine Tape Subsystem

For a single-host configuration, use the following colored labels on the SF72 OCP door, magazine tape subsystem front panel, and all DSSI cables.

Label Colors	Connections
Blue	Port 1, TF1
Red	Port 2, TF2
Yellow	Port 3, TF3
Green	Port 4, TF4

For a dual-host configuration, use the following colored labels on the SF72 OCP door, magazine tape subsystem front panel, and all DSSI cables.

Label Colors	Connections
Blue	Port 1, TF1, port 7
Red	Port 2, TF2, port 8
Yellow	Port 3, TF3, port 9
Green	Port 4, TF4, port 10

6.4.1 Filling Out the Labels

Follow the steps on the inside cover of the *SF Family Label Booklet* (part number 36–32882–01) to fill out the labels for the DSSI cables and SF72 operator control panels.

Proceed once you have filled the cable and OCP labels.

6.4 Labeling the DSSI Cables and Magazine Tape Subsystem

6.4.2 Labeling the Cables

For each cable you just installed, place a label 2 inches behind the connector as shown in Figure 6–9.

Figure 6–9   Placing a Label on a DSSI Cable

LABEL

SHR-X0108-90
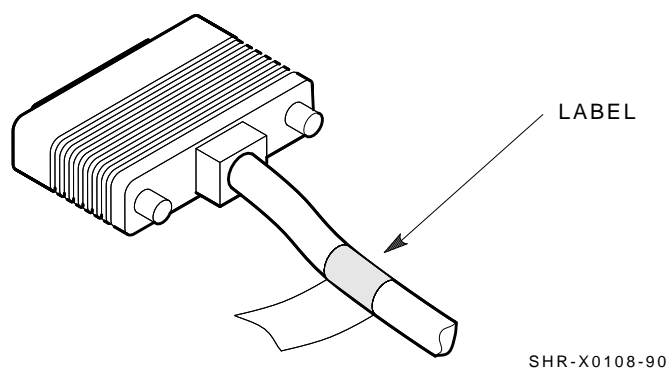
6.4.3 Labeling the Magazine Tape Subsystem

Place the labels for the front panel of the magazine tape subsystem as shown in Figure 6–10.

6.4 Labeling the DSSI Cables and Magazine Tape Subsystem

Figure 6–10   Placing a Label on the Magazine Tape Subsystem

OPERATOR CONTROL PANEL

Eject

Load/Unload

Slot Select

Power On

Write
Protected

Tape In Use

Use
Cleaning Tape

Magazine
Fault

Loader Fault

DSSI
NODE
ID LABEL

SHR_X1025C_89
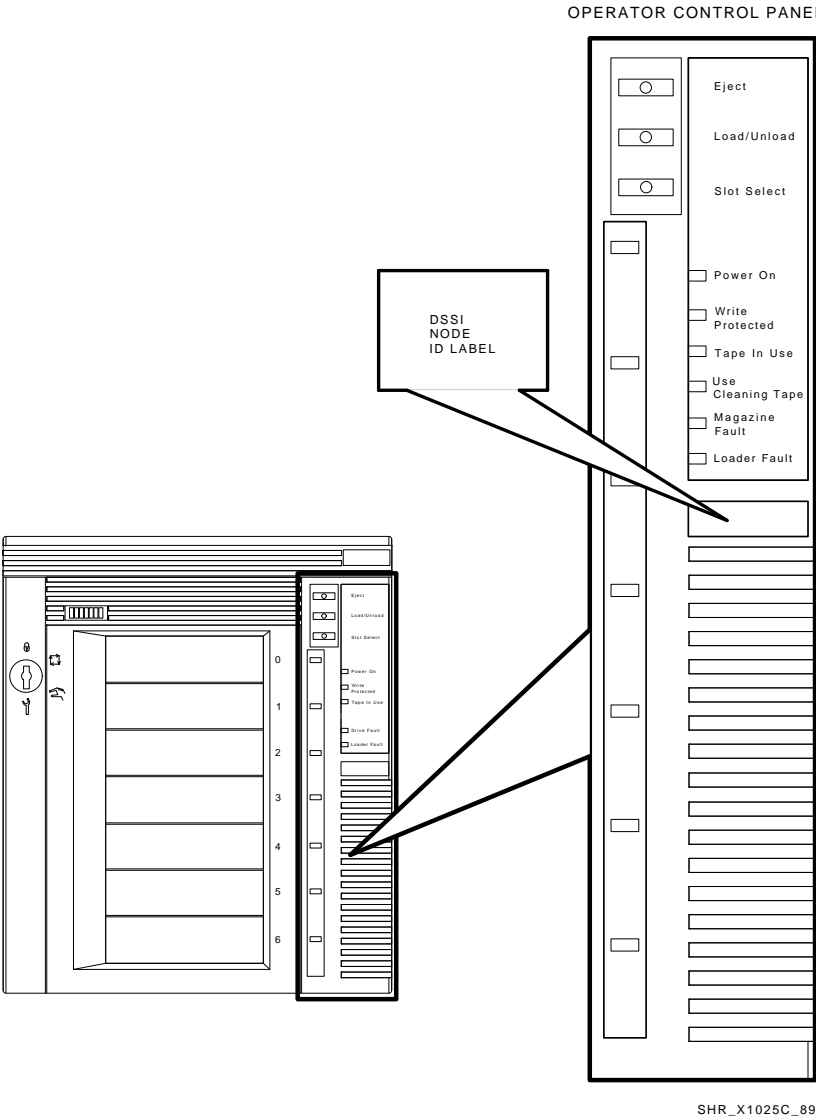
6.5 Final Verification

Now that all the hardware installation, cabling and labeling, and the powering up steps are complete, you are ready to configure the DSSI subsystem and verify the correct operation of each ISE in the array with the host system.

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA– IM) for detailed information and how to proceed with verifying the correct operation of each ISE which has been installed. In these manuals, you will find the procedure for establishing the communications between the ISEs, the adapter module, and the system. You will also find the step-by-step procedures for reconfiguring the system with its newly installed DSSI devices.

Refer to the manuals for the disk ISE and tape ISE for detailed information on the local programs in the ISEs.

Remember, each SF72 enclosure can contain two or four disk ISEs. Each magazine tape subsystem contains one tape ISE. A fully configured Sx300 storage array contains 24 disk ISEs or max. 4 tape ISEs in mixed configurations.

If at any time you detect a failure, see Chapter 8.

Once the verification is complete mount the front bezel. The system is ready to be turned over to the system manager.

7

Installation and Preparation of the Add-On SDI Storage Elements

This chapter describes the procedures for installing an add-on disk drive, for example RA9*x*/SA7x in a DECArray300 cabinet. Procedures for using the Digital lifting device and removing and replacing the cabinet front bezels, operator control panels (OCPs), cabinet rear panel, cabinet top cover, and cabinet kick plate are described. Finally, internal Standard Disk Interface (SDI) cable and power cable routing and connections are included.

7.1 Site Preparation and Planning

Site preparation and planning are necessary before installing an DECArray300 cabinet system or add-on disk drive. The focus of this chapter is the installation of additional SDI disk drives in an existing DECArray300 cabinet system; therefore, much of the site preparation and planning should be complete. Please refer to Section 1.5 for Site Preparation. However, it will be necessary to plan for the added weight and power requirements of additional disk drives. It is recommended that ac power wiring for the computer system be checked to determine adequate capacity for expansion. The wiring used by Digital in this product conforms to Underwriter's Laboratory (UL) Canadian Standards Association (CSA) standards.

To prevent damage to equipment and personnel, make sure power sources meet the specifications required for this equipment. For product specifications, refer to Chapter 1.

The DECArray300 cabinet system will arrive at the site ready for installation.

_____ WARNING _____

Hazardous voltages are present in this equipment. Installation and service must be performed by trained Digital Multivendor Customer Services personnel. Bodily injury or equipment damage may result from incorrect servicing.

_____

7.1 Site Preparation and Planning

7.2 SA300/H9643 Cabinet System Installation

Refer to Chapter 2 for cabinet unpacking and de-skidding procedures.

To install the DECArray300 cabinet system, use the following procedure:

1. After following the thermal stabilization procedure described in Chapter 1, move the cabinet into position within the computer room.

CAUTION

It is important to adhere to the thermal stabilization procedure described in Chapter 1. Failure to do so may result in damage to the equipment.

---

2. Before applying power to the system, make sure the storage element voltage selector switches have been set correctly for the site's voltage requirements. See Section 7.3.5.

3. Remove the cabinet rear access panel using the procedure described in Section 3.8.

4. The internal SDI cables for the already installed Storage Enclosures have already been connected to the cabinet I/O bulkhead panel at the factory. The disk drive power cords have also been connected to the rear panel and the power controller (Section 7.3.4). The Additional SDI cables for ADD-on Storage enclosures are shipped with the add-on Kits. For the 220/240 Vac version the additional power cords required for add-on storage enclosures are part of the installation kits.

5. Connect the external SDI cables from the cabinet I/O bulkhead panel to the host system I/O panel. Connect Port A/B of RA90/92 disk drives to connector LF (see Figure 7–2).

6. Plug the power controller power cable into the proper wall outlet.

7. Set the power controller BUS/OFF/ON bus switch (marked on the power controller front panel) to the proper position. Refer to Chapter 3.

8. Turn on the power controller circuit breaker. Perform the power-up and acceptance testing procedures in Chapter 3 to complete the installation.

7.2 SA300/H9643 Cabinet System Installation

Table 7–1 Add-on Kit content- CK-SA300-LX

NBR	Part_number	Description	L1	L2
1	17–01699–01	CABLE ASSY, TRIAX 93 OHM 16 COND M	2	–
2	90–09984–00	SCREW, SEMS 6–32 PAN .375 XRCS	16	4
3	17–01482–01	CABLE ASSY, TRIAX 93OHM 04 COND F–	—	2
4	17–00442–19	PWR CORD, TERM 9' LG 15A	1	1
5	70–25686–02	RAIL CHASSIS ASSEMBLY	1	1
6	70–25687–02	BRACKET, RAIL ASSEMBLY	1	1
7	74–36464–01	BAR, INSERT NUT	1	1
8	90–00039–26	SCREW, MACH 10–32 FLT .500 XRCS	4	4
9	90–06637–00	WASHER, LOCK INTERNAL STEEL	6	6
1	12–24007–02	SCREW, SHLD 10–32 CAP .438 SOCK	6	6
1	90–06078–01	SCREW, MACH 10–32 PAN XRCS	2	—
1	90–06664–00	WASHER, FLAT SST	2	—
1	90–07906–00	WASHER, HELICAL SPLIT STEEL	2	—
1	74–36160–01	BLOCK, WEDGE	2	—
1	74–35860–03	BRACKET, CHASSIS RETAINER, REAR	2	—
1	90–10201–01	CLIP, "U" SPEED	—	2
1	74–39075–02	BLOCK, REAR LOCKING	—	2
1	90–00063–39	SCREW, THRL 10– TRS .500 XRCS	—	3
1	74–37241–02	BRACKET, CHASSIS,STABILIZER	—	1
2	90–10893–01	SCREW, MACH 1/4– HEX .625 SOCK	—	2
2	90–00039–27	SCREW, MACH 10–32 FLT .437 XRCS	—	2
2	36–16923–40	LABEL, PORT IDENT "A"	5	2
2	36–16923–41	LABEL, PORT IDENT "B"	5	2
2	90–10266–00	TIE, CABLE 7.312L	10	10
2	99–06557–30	BAG, POLY RECLOSE 2 MIL THK clar	2	2
2	99–08213–01	LAMINATE	1	1
2	99–08980–01	SHEET, CORR, DC, 275, C, NG	1	1
2	EK–OSA7X–UG	SA7X USER GUIDE	1	—
2	EK–ORA90–UG	RA90/RA92 DISK DRIVE USER GUIDE	—	1

- VARIATION L1 IS THE MOUNTING KIT FOR SA7X IN THE SX3XX 42"
  CABINET.

7.2 SA300/H9643 Cabinet System Installation

- VARIATION L2 IS THE MOUNTING KIT FOR RA9X IN THE SX3XX 42"
  CABINET.

7.3 Add-On of SDI Disk Drive Installation

The disk drive mounting guide rails have been installed at the factory for
each storage enclosure mounted in the original cabinet configuration. The disk
drive mounting hardware will be located in two places: in the add-on shipping
container and attached to the front of the cabinet frame. Before proceeding
with the add-on installation, make sure all add-on disk drive and cabinet
hardware is available. See Section 7.3.1.

7.3.1 Hardware Check list

Following is a complete list of hardware needed to install and secure the disk
drive in the cabinet. Refer to 7–1:

1. RA90–NA/RA92–NA hardware:

    - Chassis retainer brackets (2), for attaching the RA90/RA92 disk drive
      to the cabinet frame.

    - Short 10-32 x 3/8 pan-head Phillips sems screws (4), two screws for
      each chassis retainer bracket (for holes on the side of the RA90/RA92
      disk drive).

    - Short 10-32 x 7/16 flat-head Phillips screws (2), for attaching the
      chassis stabilizer bracket to the top of the RA90/RA92 disk drive.

    _____ **CAUTION** _____

    It is important to use the correct screws here, to avoid damage to disk
    drive modules.
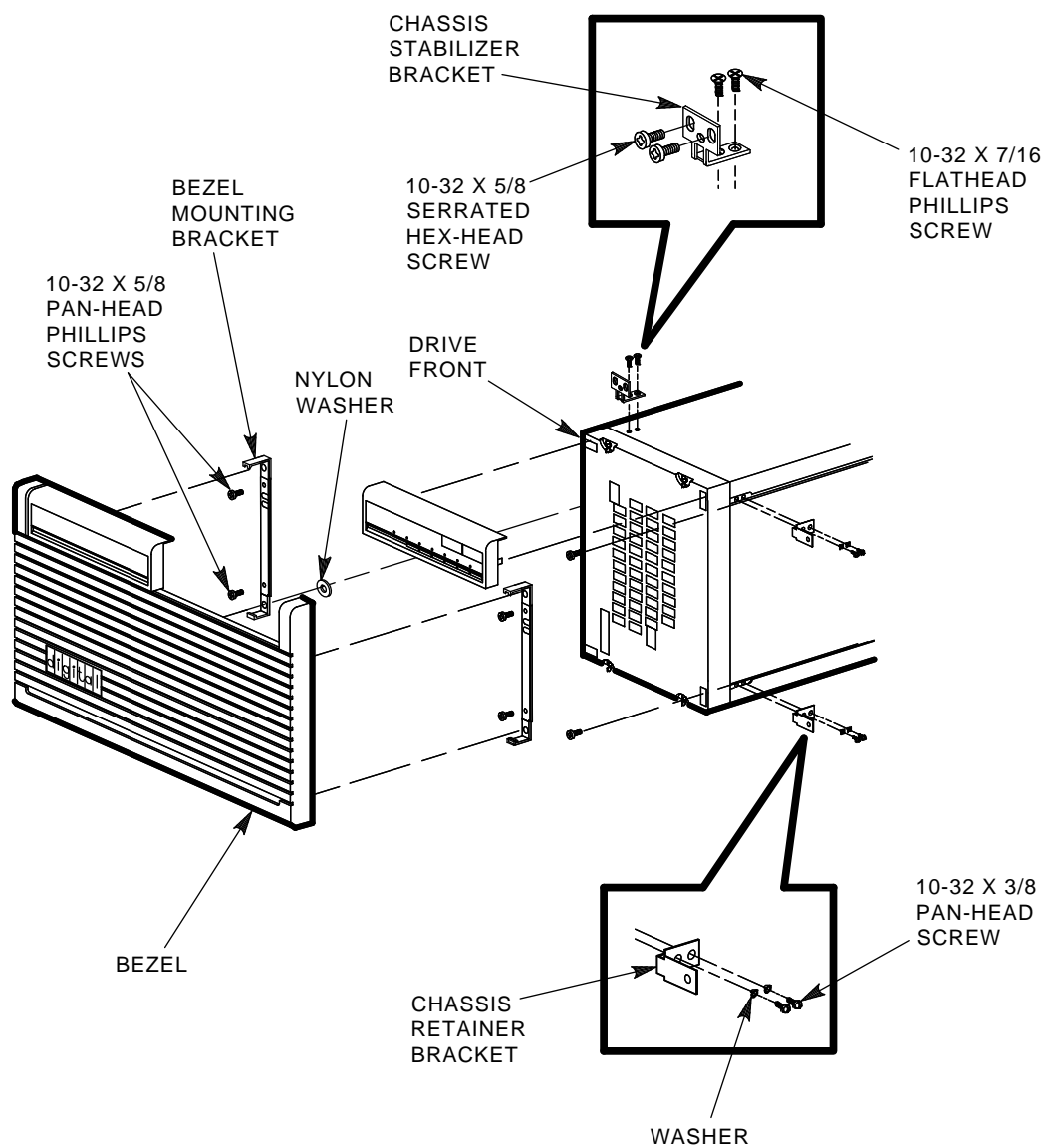
    _____

2. DECArray300 cabinet hardware:

    - Long 10-32 x 5/8 pan-head Phillips sems screws (2), one for each
      retainer bracket (for drive-to-frame connection, located on the cabinet
      frame).

    - Chassis stabilizer bracket (1), one per drive for disk drive positions 1,
      2, 5, and 6. This bracket will be attached to the cabinet frame with two
      10-32 x 5/8 hex serrated screws.

7.3 Add-On of SDI Disk Drive Installation

• Nylon washers will be located in the bottom hole of the grille (bezel) mounting bracket hardware stack-up for disk drive positions without disk drives. The nylon washer resides between the grille mounting bracket and the cabinet frame. These nylon washers will be discarded when the chassis retainer brackets are installed.

7.3 Add-On of SDI Disk Drive Installation

Figure 7–1 Installing Disk Drive/Cabinet Hardware, Front View

CHASSIS
STABILIZER
BRACKET

10-32 X 7/16
FLATHEAD
PHILLIPS
SCREW

BEZEL
MOUNTING
BRACKET

10-32 X 5/8
SERRATED
HEX-HEAD
SCREW

10-32 X 5/8
PAN-HEAD
PHILLIPS
SCREWS

NYLON
WASHER

DRIVE
FRONT

BEZEL

10-32 X 3/8
PAN-HEAD
SCREW

CHASSIS
RETAINER
BRACKET

WASHER

CXO-2727A

7.3.2 Add-On Disk Drive Installation

Unpack the add-on disk drive and complete the thermal stabilization per the procedures in Chapter 1. Make sure all add-on disk drive and cabinet hardware is available before beginning installation procedures. Refer to Section 7.3.1.

The following sections describe the add-on disk drive installation tasks.

Note

For the add-on storage element or sequence for the DECArray300 cabinet, refer to Chapter 3.

---

1. **Upper Level Disk Drive Installation**

   Only valid for RA9x Drives : When installing an add-on disk drive in the left-hand, disk drive position 5 of the cabinet, it is necessary to remove the cabinet top cover. The drive chassis stabilizer bracket cannot be removed from the frame and attached to the upper level disk drives without first removing the cabinet top cover refer to Section 3.7.

   Each upper level disk drive is supported by two chassis retainer brackets (top and bottom), and two (top and bottom) factory-installed rear lock-down brackets with one U-clip each (only RA9x). Detailed instructions for removing / installing this hardware are found in Section 3.12 and 3.17. The RA9x disk drives will be supported by two chassis stabilizer brackets.

Note

An DECArray300 cabinet system with only one disk drive in disk drive position 5 or 1 will have a 25-pound stabilizer plate (weight) attached to the underside of the upper cabinet H-stiffener.

---

2. **Center Level Disk Drive Installation**

   When installing an add-on disk drive in the center level of the cabinet (disk drive position 3 or 4), each disk drive is supported by two chassis retainer brackets (top and bottom), and two factory-installed rear lock-down brackets (top and bottom) with one U-clip each (only RA9x). Detailed instructions for removing / installing this hardware are described in Section 3.12 and 3.17.

   Chassis stabilizer brackets are not used for center level disk drive support in this cabinet.

7.3 Add-On of SDI Disk Drive Installation

3. **Lower Level Disk Drive Installation**

   Before installing an add-on disk drive in the lower level of the cabinet (disk drive position 1 or 2), it will be necessary to remove the cabinet kick plate refer to (Section 3.9). Each lower level disk drive is supported by two chassis retainer brackets (top and bottom), one chassis stabilizer bracket (only RA9x), and two (top and bottom) factory-installed rear lock-down brackets with one U-clip each (only RA9x). Detailed instructions for removing / installing this hardware are in Section 3.12 and 3.17.

7.3.3 Electrostatic Discharge

The electrostatic discharge (ESD) grounding strap for the DECArray300 cabinet system is attached to the rear bustle inside the rear panel of the cabinet.

WARNING

Do not attempt the following procedures unless you have taken proper precautions against ESD. Wear an ESD grounding strap with the clip end securely connected to a known grounding point while removing the disk drive OCP or other ESD-sensitive components.
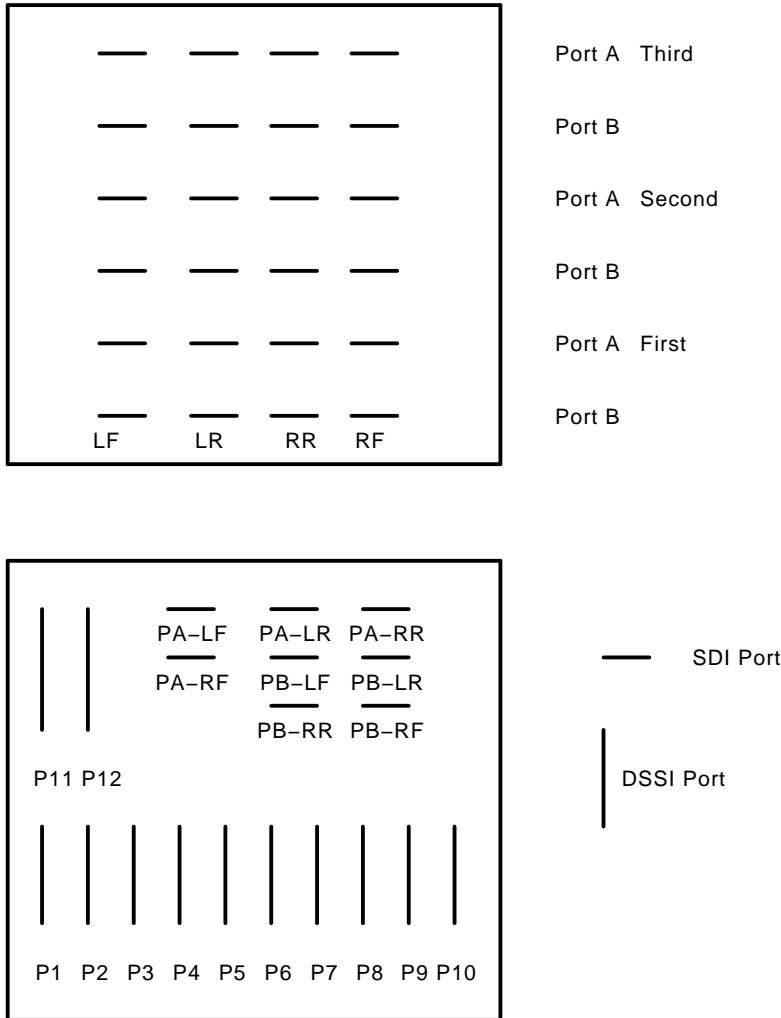

Note

For removing, replacing and installing all DECArray300 cabinet hardware, refer to Chapter 3.

7.3.4 SDI Cable and Power Cord Routing and Connections

The internal SDI cables and disk drive power cords have been factory-installed and routed for all mounted Storage enclosures . The SDI cables have been connected to the cabinet I/O bulkhead panel. The power cords have been connected to the rear panel of the power controller.

7.3 Add-On of SDI Disk Drive Installation

Figure 7–2   DSSI and SDI I/O Panel

```
┌──────────────────────────────┐
│   ──   ──   ──   ──            │   Port A   Third
│                                │
│   ──   ──   ──   ──            │   Port B
│                                │
│   ──   ──   ──   ──            │   Port A   Second
│                                │
│   ──   ──   ──   ──            │   Port B
│                                │
│   ──   ──   ──   ──            │   Port A   First
│                                │
│   ──   ──   ──   ──            │   Port B
│   LF    LR    RR    RF         │
└──────────────────────────────┘
```

```
┌──────────────────────────────┐
│             ──    ──    ──     │
│  │  │    PA–LF  PA–LR  PA–RR   │        ──      SDI Port
│  │  │     ──    ──    ──       │
│  │  │    PA–RF  PB–LF  PB–LR   │
│  │  │           ──    ──       │        │
│  │  │          PB–RR  PB–RF    │        │
│  P11 P12                       │        │       DSSI Port
│                                │        │
│  │ │ │ │ │ │ │ │ │ │           │
│  │ │ │ │ │ │ │ │ │ │           │
│  P1 P2 P3 P4 P5 P6 P7 P8 P9 P10│
└──────────────────────────────┘
```

Use the following procedure to connect the internal SDI cables and power cords at the rear of the cabinet:

1. Go to the rear of the cabinet. The disk drive connections for both internal SDI cables and power cords are coiled and tie-wrapped at the factory for the already installed storage enclosures. Carefully cut the cable tie, then

7.3 Add-On of SDI Disk Drive Installation

connect the SDI cable connectors to the Port A and Port B connections on
the rear of the disk drive. The power cords for the 110/120 VAC versions of
the cabinet are the only once installed for all 6 storage enclosure slots.

───────────────────────── **Note** ─────────────────────────

There are two I/O panels mounted in the rear of the cabinet. For SDI
cables start mounting on the right panel. Mount the cables of the first
SDI storage device on the bottom connectors of the right panel. The
second one in the middle and the third one on top of the right panel.
Depending of the storage elements mounted an DSSI/SDI panel might
be mounted as left panel or a SDI panel with the possibility to connect
additional three storage enclosures.

For RA9X Storage devices use the LF connector slots.

───

2. Connect each power cord to the ac power input on the rear of the storage
    element, near the circuit breaker. See Figure 7–3.

3. Before applying power to the cabinet, turn to (Section 3.19) for information
    about the power controller switches, disk drive voltage selector switch, and
    the circuit breaker.

7.3 Add-On of SDI Disk Drive Installation

Figure 7–3 Storage Element Voltage Selector Switch/Circuit Breaker

DRIVE
REAR

DRIVE
CIRCUIT
BREAKER

AC POWER
INPUT

VOLT

120V
OR
240V

VOLTAGE
SELECTOR
SWITCH
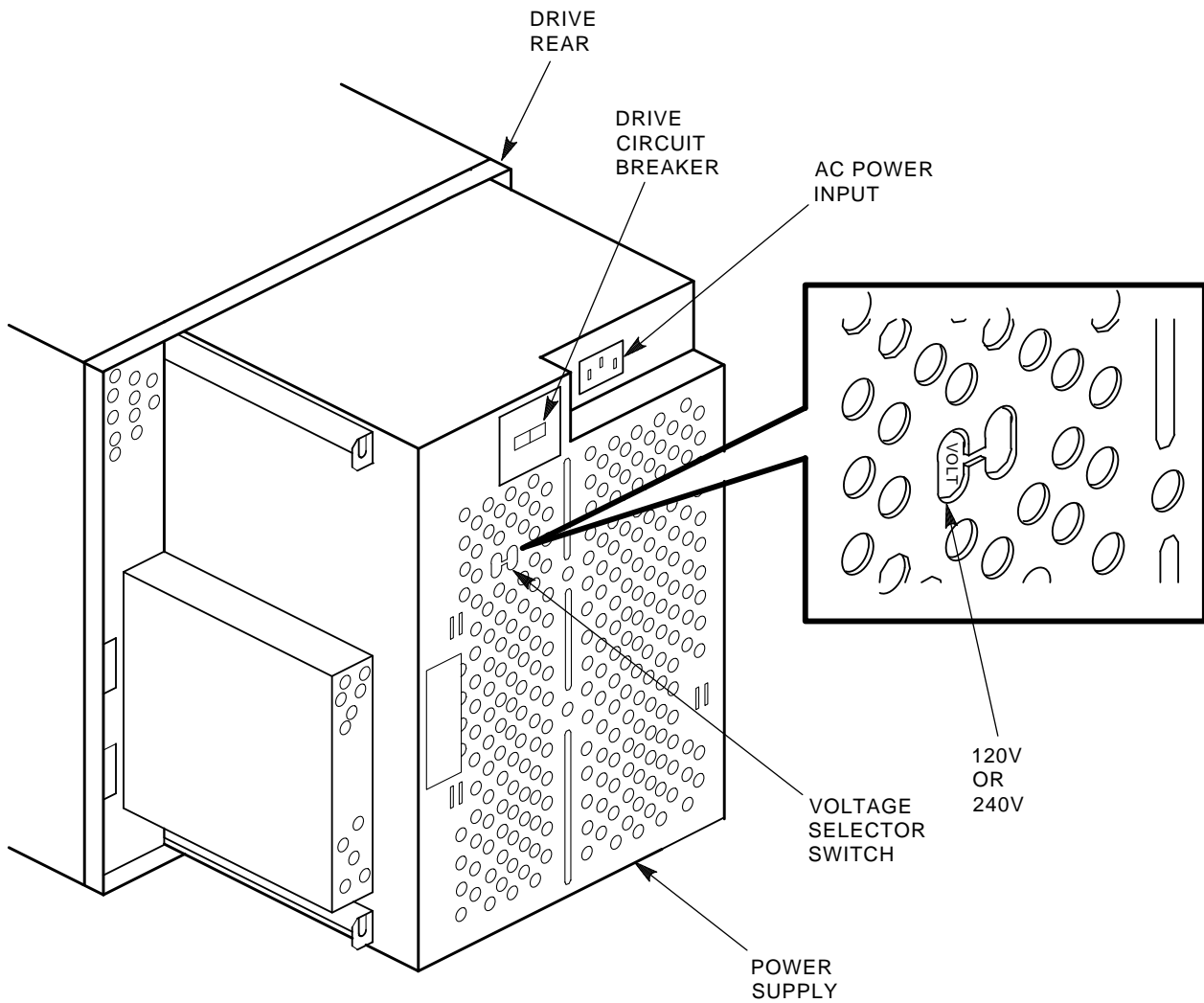
POWER
SUPPLY

CXO-2135C

7.3 Add-On of SDI Disk Drive Installation

7.3.5 Storage Element Voltage Selector Switch

Before applying power to the storage elements, Make sure the proper operating voltage (100/120V or 220/240V) has been selected for your area of operation. Refer to Figure 7–3. Use the following procedure to select the proper storage element operating voltage:

1. Locate the line voltage selector switch. (The line voltage selector switch is located on the storage element rear panel, to the right of the circuit breaker, when facing the rear of the drive. This switch can be seen through holes in the storage element rear power supply panel).

2. Using a non-conductive pointed object, slide the switch into the voltage selection position applicable to your site.

7.3.6 Storage Element Circuit Breaker

The storage element circuit breaker is located at the rear of the disk drive, near the center, on the storage element power supply. Refer to Figure 7–3.

7.3.7 Applying Power to the DECArray300 Cabinet System

After all storage element(s) have been installed in the cabinet, and all cabling has been connected, use the following procedure to apply power to the cabinet and its components:

1. Make sure all storage element are switched to the proper voltage for your site (storage element voltage selector switches).

2. Set the bus/off/on bus switch on the power controller (marked on the front panel) to the proper position. Refer to Figure 3–12.

3. Make sure the storage element and power controller circuit breakers are in the OFF position.

4. Plug the cabinet power cable into the wall outlet.

5. Turn the power controller circuit breaker to the ON (up) position.

6. Turn the circuit breaker for each storage element to the ON position.

8

Installation Troubleshooting

This chapter explains what to do if you detect problems during the installation of the SF7*x* storage enclosure.

The procedures in this chapter involve taking devices on- and off-line. This causes a failure in the communications with the devices affected, resulting in potential user problems. For this reason, the system manager should perform an orderly shutdown of all DSSI integrated storage elements (ISEs) before any troubleshooting. Refer to the service or maintenance manuals for the device.

8.1 Troubleshooting the SF7*x* Storage Enclosure

This section presents symptoms of a failed device, the probable cause or causes of the failure, and the corrective action to take for correcting the failure. Much of the corrective action calls either for taking a device or devices off-line or for removing power from the enclosure containing the failed device.

WARNING

Take all ESD and safety precautions when handling the devices, more specifically, when taking a device off-line or when removing a device. Failure to do so will damage the device.

Use the following basic steps for all troubleshooting that you perform for the R*x*7*x* disk ISE in an SF7*x* storage enclosure, as it resides in an S*x*300 storage array:

1. Inspect the ISE's operator control panel (OCP). Is a Fault indicator lit? If so, press the Fault button and read the error code.

2. Access the ISE in question. Open the front or rear of the SF7*x* enclosure and gain access to the ISE's various cables and check that they are seated correctly.

3. Run various tests on the ISE by using DUP.

8.1 Troubleshooting the SF7*x* Storage Enclosure

4. According to the findings from the error codes and results from DUP, repair or replace the ISE.

5. Run EVCXE configuration programs, EVCXF configuration programs, or both.

6. Verify the repair or replacement of the ISE with DRVTST and DRVEXR under DUP.

7. Return the system to the user.

Use Table 8–1 to isolate a failure in an SF7*x* storage enclosure.

Table 8–1 Troubleshooting Chart

Symptoms	Probable Causes	Corrective Actions
No OCP indicators are lit.	1. SF7*x* enclosure is not plugged in or not turned on.	1. At the rear of the SF7*x* enclosure, plug in the ac power cord or turn on the SF7*x*.
	2. Drive dc power switch is off.	2. At the front of the SF7*x* enclosure, turn on the drive dc power switch.
	3. OCP is not plugged in or seated firmly.	3. Press the OCP firmly in place.
	4. Bad OCP.	4. Configure and replace a new OCP.
	5. Bad TTM.	5. Configure and replace a new TTM.
Single Fault indicator lit on OCP.	1. Faulty R*x*7*x* disk ISE.	1. Press lit Fault button, then read fault code and replace failed FRU.
	2. Conflicting DSSI ID numbers.	2. Verify correct DSSI ID switch settings on KFMSA module, SF7*x*, and magazine tape subsystems for that bus.

8.1 Troubleshooting the SF7*x* Storage Enclosure

Table 8–1 (Cont.)   Troubleshooting Chart

Symptoms	Probable Causes		Corrective Actions	
Multiple Fault indicators lit on OCP.	1.	Conflicting DSSI ID number.	1.	Verify correct DSSI ID switch settings on KFMSA module, SF7*x*, and magazine tape subsystems for that bus.
	2.	Bad OCP.	2.	Configure and install a new OCP.
	3.	Bad DSSI cables.	3.	Isolate with DSSI bus meter[1] and replace.

Symptoms	Probable Causes		Corrective Actions	
One or more indicators continue to cycle.	Conflicting DSSI ID numbers.		Verify correct DSSI ID switch settings on KFMSA module, SF7*x*, and magazine tape subsystems for that bus.	
One ISE is not accessible.	1.	DC power to ISE is not on.	1.	Turn on dc power switch.
	2.	Bad ISE drive module.	2.	Replace ISE drive module.
	3.	Bad DSSI cables.	3.	Isolate with DSSI bus meter[1] and replace.
	4.	Bad remote front cable.	4.	Replace cable.
	5.	Bad power harness.	5.	Replace power harness.
ISE is not seen or seen at unexpected DSSI ID value.	1.	RFP cables are not plugged in the SF7*x* TTM or ISE.	1.	Check that both ends of RFP cables are plugged in.
	2.	Bad OCP ID switch.	2.	Reconfigure and replace OCP.
	3.	Bad RFP cable.	3.	Replace appropriate RFP cable.

Symptoms	Probable Causes		Corrective Actions	
Fan is not spinning and power supply LED is lit.	1.	Bad power supply.	1.	Replace power supply.

[1]The DSSI bus meter part number is 29–28008–01.

(continued on next page)

8.1 Troubleshooting the SF7*x* Storage Enclosure

Table 8–1 (Cont.) Troubleshooting Chart

Symptoms	Probable Causes		Corrective Actions	
	2.	Bad fan.	2.	Replace fan.
	3.	Bad TTM.	3.	Configure a new TTM and replace.
Fan is not spinning and power supply LED is not lit, but SF7*x* enclosure is on.	1.	Bad power supply.	1.	Replace power supply.
	2.	Bad power cord.	2.	Replace cord.
	3.	Bad TTM.	3.	Configure a new TTM and replace.

_____ **Note** _____

The DSSI bus meter, or DBM, is a small, easily portable device
used to look at bus signals in real-time as well as to verify DSSI ID
numbers. The DBM can quickly locate faulty cables or duplicate DSSI
ID numbers on a given DSSI bus.

_____

8.1.1 Removing an R*x*7*x* Disk ISE from an SF7*x* Storage Enclosure

This section provides the procedure for removing an R*x*7*x* disk ISE from an
SF7*x* storage enclosure.

_____ **WARNING** _____

Take all possible ESD precautions when unpacking the R*x*7*x* disk ISEs.
Wear a correctly grounded ESD strap.

Have an orderly shutdown of the SF7*x* enclosure containing the disk
ISE performed. Refer to the system documentation.

_____

1. Power down the SF7*x* enclosure.

    a. Take each existing R*x*7*x* disk ISE on that DSSI bus off-line (Figure 8–1)
        by pressing and releasing each Ready button on the operator control
        panel (OCP). The button indicators go out.

    b. Press and release the drive dc power switches for all the ISEs on that
        DSSI bus.

8.1 Troubleshooting the SF7*x* Storage Enclosure

   c. Set the ac power switch on the rear of the enclosure to 0.

Figure 8–1 Powering Down the SF7*x* Storage Enclosure

OPERATOR CONTROL PANEL (OCP)

FRONT COVER
CAPTIVE SCREWS

FRONT COVER
DOOR

ENCLOSURE
CAPTIVE SCREWS

DRIVE DC POWER SWITCHES

SHR-X0126A-90
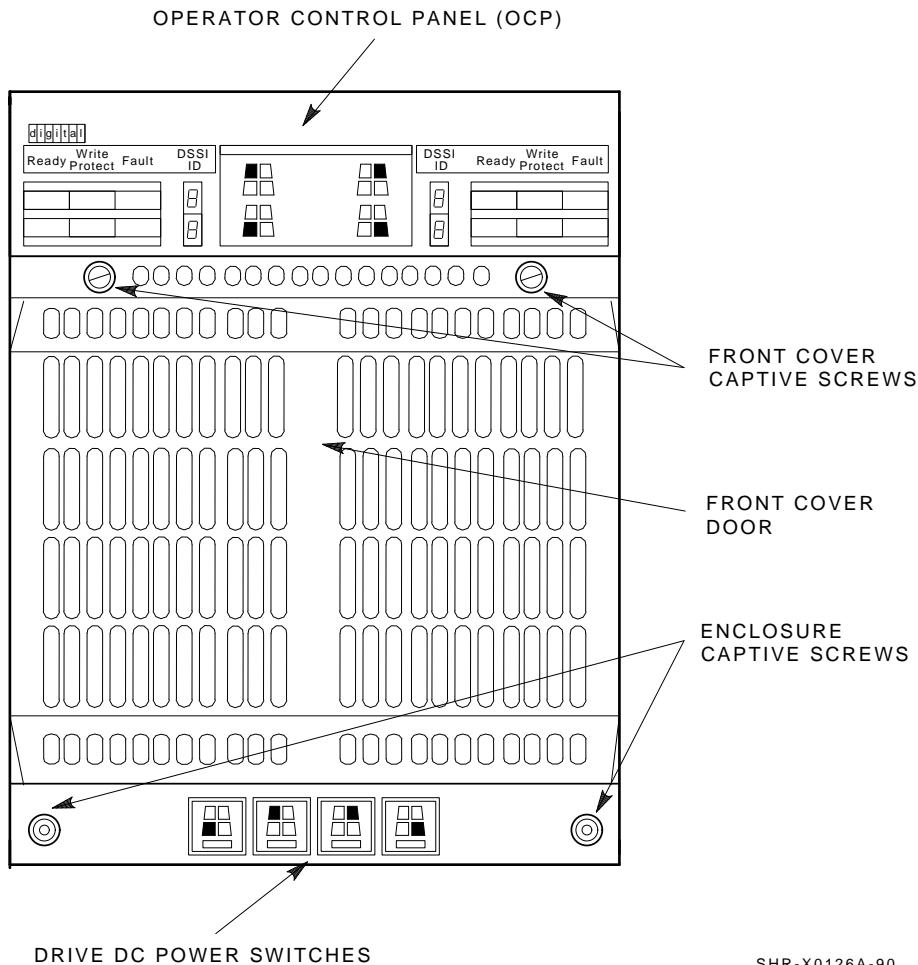
2. Remove the R*x*7*x* disk ISE.

   a. Remove the SF7*x* enclosure front cover. See Figure 8–2. Loosen the
      screws and lift off the covers.

8.1 Troubleshooting the SF7*x* Storage Enclosure

Figure 8–2 SF7*x* Front Cover Removal

OPERATOR CONTROL PANEL (OCP)

FRONT COVER
CAPTIVE SCREWS

FRONT COVER
DOOR

ENCLOSURE
CAPTIVE SCREWS

DRIVE DC POWER SWITCHES

SHR-X0126A-90
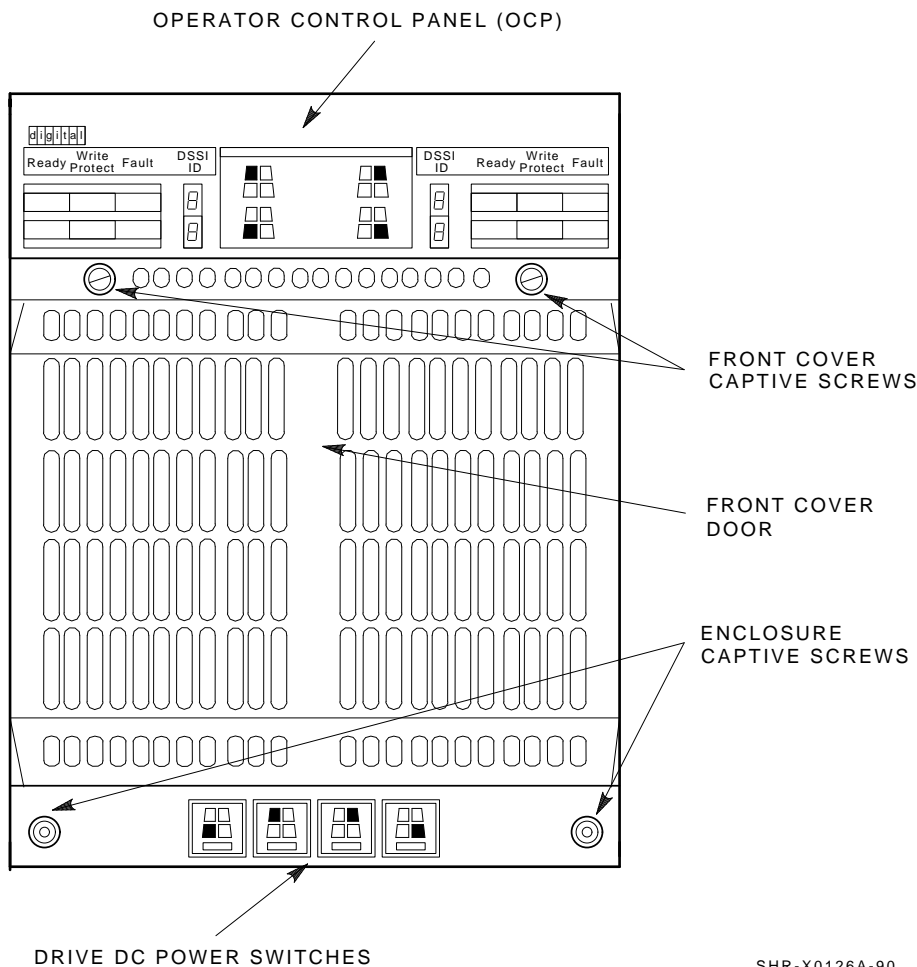
b. Loosen the wedges on the disk ISE.

c. Disconnect all cables to the disk ISE as shown in Figure 8–3.

d. Remove the R*x*7*x* disk ISE as shown in Figure 8–4. Slide out the disk
    ISE gently, while holding all cables out of the way. Do not force the
    disk ISE.

8.1 Troubleshooting the SF7x Storage Enclosure

Figure 8–3   Disconnecting the Cables

DSSI CABLE

10-PIN
OCP CABLE

6-PIN DRIVE
POWER CABLE

SHR-X0135A-90
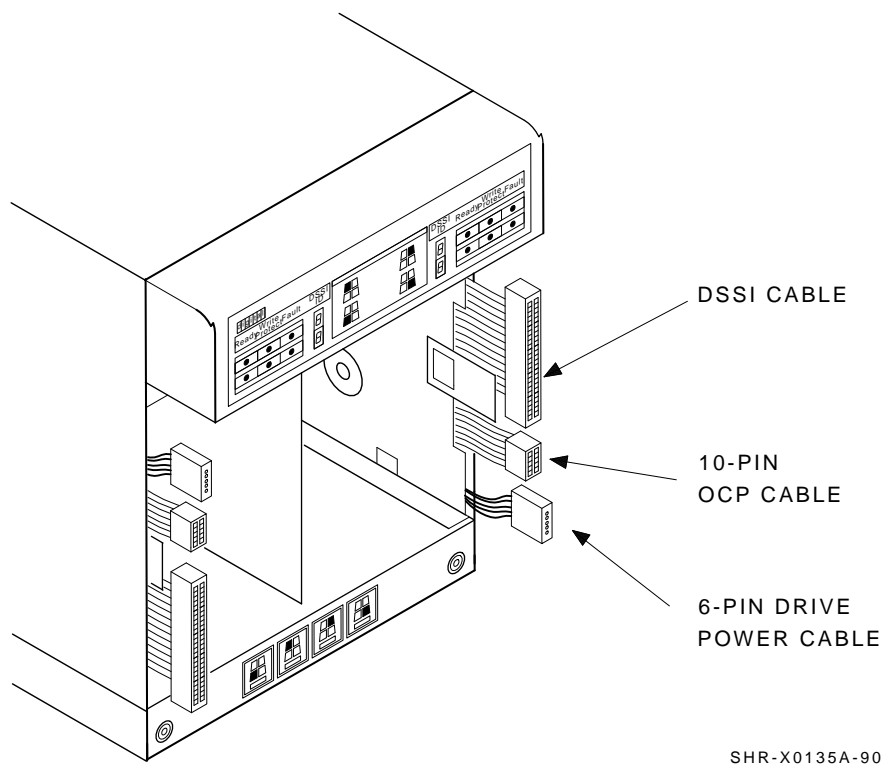
3. Unpack the replacement R*x*7*x* disk ISE:

   a. Open the shipping carton.

   b. Remove the disk ISE wrapped in the protective wrapper.

   c. Open the protective wrapper and remove the disk ISE. Discard the desiccant bags.

   d. Place the disk ISE on the protective wrapper.

4. Remove the skid plate and wedges from the faulty disk ISE and install them on the replacement disk ISE. See Figure 8–5.

8.1 Troubleshooting the SF7x Storage Enclosure

Figure 8–4 Rx7x Disk ISE Removal
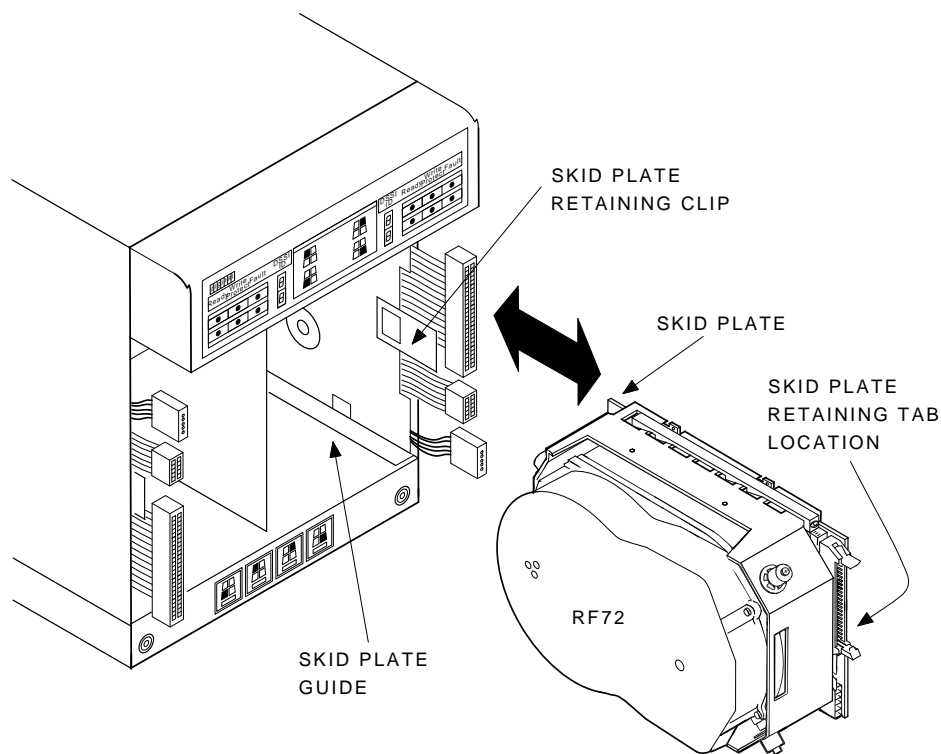
SHR-X0136A-90

5. Orient the Rx7x disk ISE as shown in Figure 8–6 and install the disk ISE in the enclosure. Slide the disk ISE gently into place, while holding all cables out of the way. Do not force the disk ISE.

6. Verify that the disk ISE is locked into place and tighten the wedges.

7. Connect all cables as shown in Figure 8–7. Connectors are keyed so that the cables cannot be installed incorrectly.

8. Replace the front cover on the SF7x enclosure. See Figure 8–8.

8.1 Troubleshooting the SF7*x* Storage Enclosure

Figure 8–5   R*x*7*x* Wedges and Skid Plate

RF72

WEDGE

SKID PLATE

SHR-X0158A-90
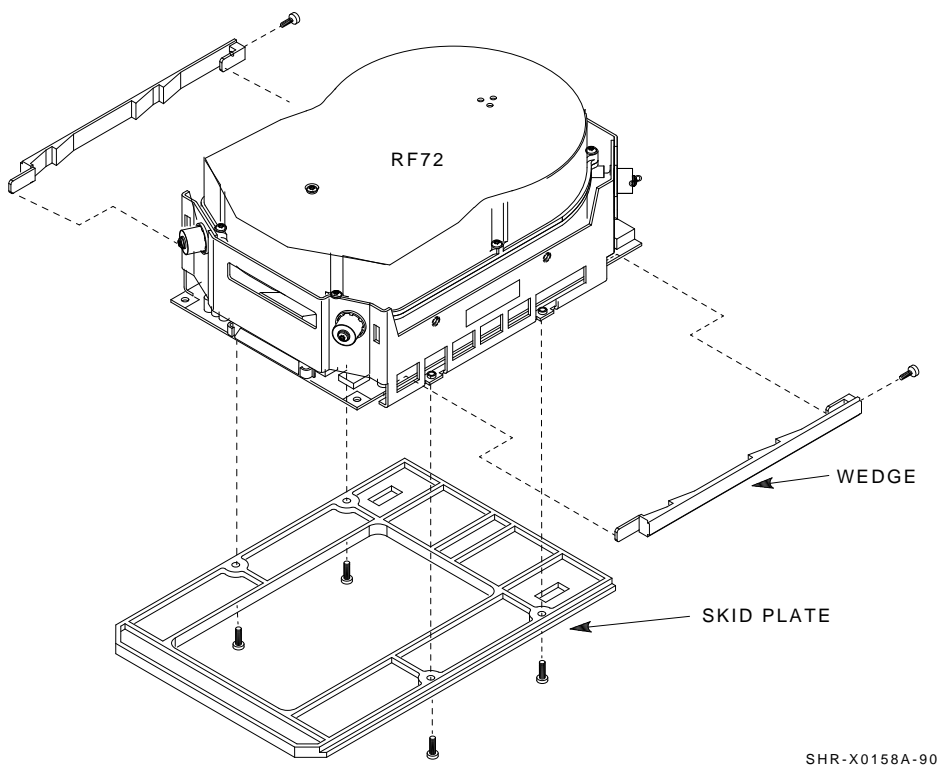
Proceed to Section 8.1.2.

8.1.2   Bringing the R*x*7*x* Disk ISE On-Line

This section provides the procedure for bringing all the ISEs in the SF7*x* enclosure on-line and for setting DSSI ID numbers.

1.   Make sure that the DSSI ID switches (behind the door on the OCP) are set correctly. For positions 1, 2, 4, and 5, they are LR:1, RR:4, LF:2, RF:3. For positions 3 and 6, they are LR:6, RR:6, LF:5, RF:5.

2.   Place the ac power switch at the rear of the SF7*x* enclosure to the 1 or on position.

3.   Press all drive dc power switches.

8.1 Troubleshooting the SF7*x* Storage Enclosure

Figure 8–6   R*x7x* Disk ISE Orientation

SKID PLATE
RETAINING CLIP

SKID PLATE

SKID PLATE
RETAINING TAB
LOCATION

RF72

SKID PLATE
GUIDE
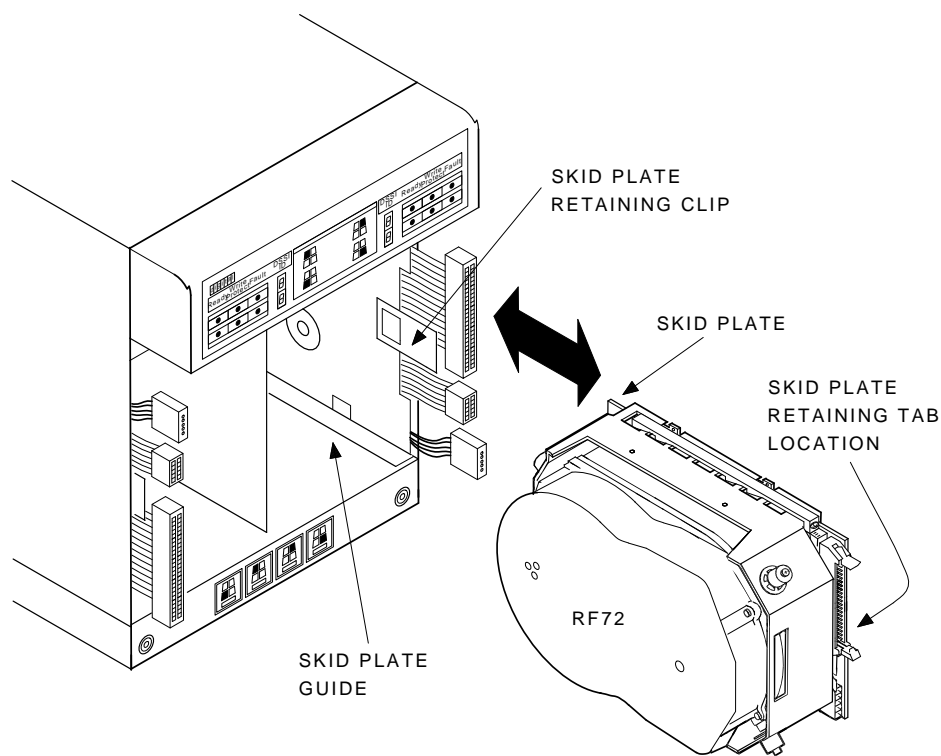
SHR-X0136A-90

4. Press all four Ready buttons on that OCP, one at a time.

5. If no Fault indicators are lit, then continue. If a Fault indicator is lit, recycle the dc power once. If the failure appears again, refer to Section 8.1.1.

6. Run the EVCXE or EVCXF programs to add the new disk ISE to the configuration and to change any disk ISE internal parameters, if necessary.

7. Update the system configuration sheet.

8. Run DRVTST and DRVEXR (under DUP) to verify the correct operation of the new disk ISEs.

9. Return the system to the user.

Figure 8–7   Cabling the R*x*7*x* Disk ISE

DSSI CABLE

10-PIN
OCP CABLE

6-PIN DRIVE
POWER CABLE

SHR-X0135A-90
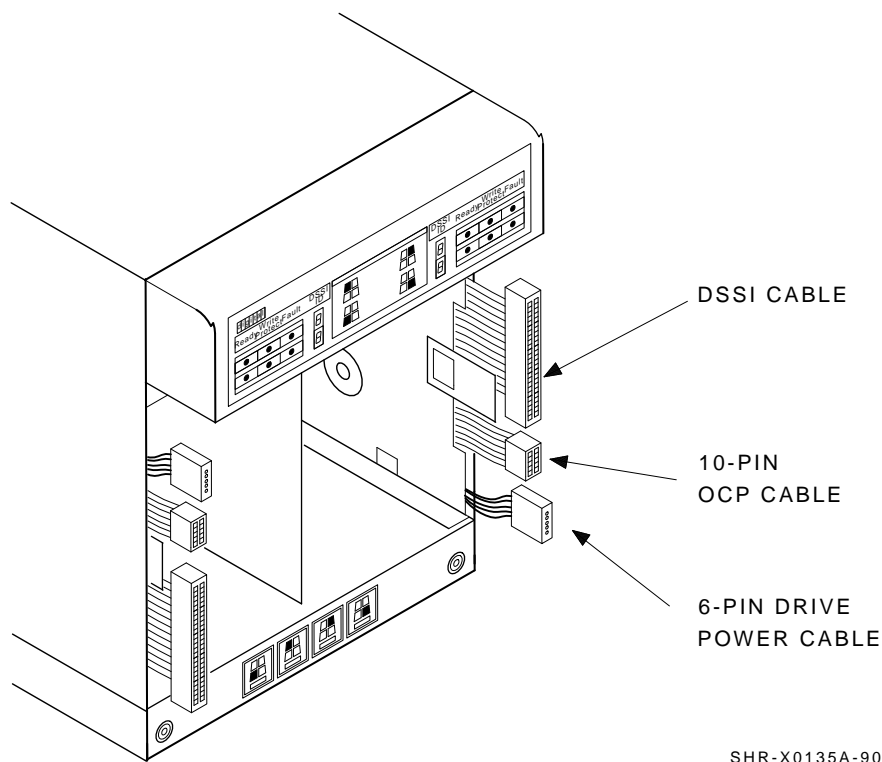
8.2 Troubleshooting the Magazine Tape Subsystem

Refer to the magazine tape subsystem documentation for troubleshooting
information.

This section presents symptoms of a failed device, the probable cause or causes
of the failure, and the corrective action to be taken to correct the failure. any
of the corrective action steps call for either taking a device or devices off-line or
removing power from the enclosure containing the failed device.

_____ **WARNING** _____

Take all ESD and safety precautions in handling the devices with
respect to taking the device off-line and in the physical removal of the

8.2 Troubleshooting the Magazine Tape Subsystem

Figure 8–8   SF7x Front Cover Replacement
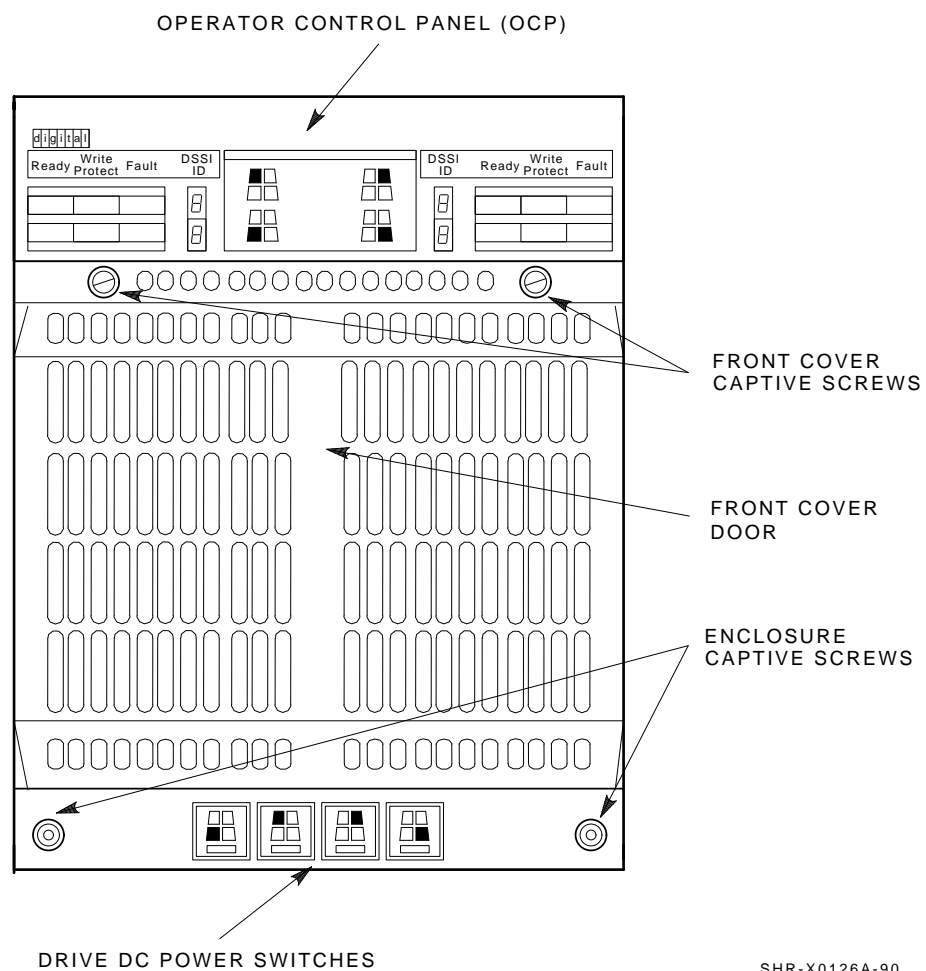
device. Failure to do so will result in a decrease in system performance and damage to the device itself.

8.2 Troubleshooting the Magazine Tape Subsystem

8.2.1 Operator Control Panel Fault Indicators

The light emitting diodes (LEDs) on the operator control panel of the tape magazine subsystem will light to indicator errors and faults as they occur in the subsystem. These errors and faults are found in Table 8–2.

Table 8–2 Operator Control Panel Fault Indicators

LED Lit	Condition
	With the REJECT LED lit
Position 6	Indicates an extra cartridge present in tape ISE.
Position 5	Indicates an problem in the magazine.
	With the FAULT LED lit
Position 6	Indicates an loader fault.
Position 5	Indicates an tape ISE fault.
Position 4	Indicates an controller module fault.

Should any of the above exist, refer to the magazine tape subsystem owner's and service manuals.

8.2.2 Fault Matrix

The fault matrix Table 8–3 describes possible scenarios associated with FRU failures not detectable via diagnostics.

Table 8–3 Fault Matrix

Minor FRU	Possible Failure Scenario
Interlock Switch	After sliding the unit forward for head cleaning or service, the Power indicator remains on.
Internal Communications Cable	After replacing either a faulty ISE or subsystem assembly, the power is on, but the unit still fails MDM.
Handle Motor Assembly	Same as above. Characterized by subsystem retry errors.

(continued on next page)

8.2 Troubleshooting the Magazine Tape Subsystem

Table 8–3 (Cont.)   Fault Matrix

Minor FRU	Possible Failure Scenario
Power Supply Assembly	When connected to a known good source of power, and power switch is set to ON, the unit does not power up and the Power indicator remains off.
Operator Control Assembly	After replacing either a faulty controller module or other FRU, either the OCP buttons or indicators do not function.
	All indicators do not come on briefly at power on.
Fan	Visual Inspection Required.

This section describes error conditions, failure influences, soft error rates, and how to run an error log code. See Table 8–4 for a list of common failures, causes, and fixes.

8.2.3 Error Conditions

The word *error* is sometimes misunderstood. Recoverable (soft) errors are a fact of life in the tape world. There are many reasons why a soft error can occur.

The tape media is not perfect, drive heads eventually wear out and start producing higher error rates, heads can become contaminated, or foreign debris can pass through the tape path. If you examine the drive error count, you will see soft errors, events, and hard errors. For example, you will receive an error if you give the wrong label name during a mount. Be sure the errors you are interpreting are indicative of a real hardware problem before swapping out the drive.

8.2.4 Common Failure Influences

The tape ISE may appear to be the failing unit due to the operation being performed at the time of failure (such as back-up). However, it is important to understand that there are many factors that influence failures.

Some of the more common factors are:

- Defective media

- Operator or user errors

- Incorrect back up commands

8.2 Troubleshooting the Magazine Tape Subsystem

• Poor power or grounding

_____ **Note** _____

Make sure that any problem you encounter is not due to the above causes before you replace the drive.

_____

Table 8–4 Common Failures, Causes, and Fixes

Symptom	Probable Cause	Possible Fix
Volume not software enabled	Drive is not loaded or was unloaded by software	Make sure that the yellow LED is on (tape loaded and ready for use).
	TK50 formatted cartridge in a TK70 drive	Use correct cartridge.
	Bad cartridge or incorrectly written calibration tracks	Try another cartridge.
	Bad drive or dirty head	Clean head and/or replace drive.
Failure to mount or initialize with new media	Bad media	Clean head and retry with known good media.
All three LEDs blinking	Drive failed self-test or detected a hard error during operation	Attempt to clear error by pushing the unload button. If the error won't clear, you have a drive hardware failure or a power problem.
Green LED blinking	Calibration error	Clear error by pressing the unload button. Try another cartridge. If the error repeats, you have a drive hardware failure or more than one bad cartridge (physically damaged or bad calibration tracks).

(continued on next page)

Table 8–4 (Cont.)   Common Failures, Causes, and Fixes

Symptom	Probable Cause	Possible Fix
Cartridge stuck in drive with tape on take up reel	Hard drive error	Attempt recovery by pressing the unload button.
Drive leader runaway	Mispositioned cartridge leader	Inspect cartridge leader for correct position. Retire cartridge from use if leader cannot be repositioned.

8.2.5 Soft Error Rates

None of the cartridges contain perfect tape. All tapes contain some number of dropouts. Although these are imperfections in the tape, the tape is not considered to be defective. The hardware and software are designed to deal with these known imperfections. Dropout testing is performed on samples of media by our vendors and meet all of the specifications of Digital Equipment Corporation.

There are many variables that can cause soft errors. In fact, *errors* are somewhat of a misnomer since soft errors are considered to be events. In the case of soft errors, it is important to realize that no data has been lost. For a write, the data is rewritten. For a read, retries are performed.

Some of the variables that create soft errors are:

- Media dropouts
- Temperature of media (not acclimatized)
- System bus activity
- Applications
- Head wear
- Contamination

Changes in soft error rates for any particular drive and cartridge are more significant than any absolute number of soft errors. This is due to the variables described above.

A

SF300 DSSI Storage Array Cabling Diagrams

This appendix contains cabling diagrams for the S*x*300 storage array variations (DSSI), in both the single-host Section A.3 and dual-host Section A.4 configurations. This chapter also informs about some general rules about cabling single host,dual host or in stripe set mode.

A.1 General Cabling Rules

A.1.1 Single Host Configurations

In single host configurations port P1 to P4 is used. The left site of the DSSI panel of the SF1/SF2/SF4/SF5 will be connected to the ports. SF3 and SF6 will operate in split bus mode. In case tape loader systems will be mounted into the cabinet the TF1/TF2/TF3/TF4 will be connected to P1/P2/P3/P4. The bottom site of the tape loader will be connected to right site of the DSSI panel of a mounted SF disk enclosure. For example TF1 bottom will be connected to SF1 right connector.

Table A–1   Single Host Configuration

Device	LEFT	RIGHT	TOP	BOTTOM
SF1	Term	P01	N/A	N/A
SF2	Term	P02	N/A	N/A
SF3	SF2–L	SF1–L	N/A	N/A
SF4	Term	P04	N/A	N/A
SF5	Term	P05	N/A	N/A
SF6	SF5–L	SF4–L	N/A	N/A

(continued on next page)

A.1 General Cabling Rules

Table A–1 (Cont.)   Single Host Configuration

Device	LEFT	RIGHT	TOP	BOTTOM
TF1	N/A	N/A	P01	Term
TF2	N/A	N/A	P02	Term
TF3	N/A	N/A	P03	Term
TF4	N/A	N/A	P04	Term
TF1&SF1	Term	TF1–B	P01	SF1–R
TF2&SF2	Term	TF2–B	P02	SF2–R
TF3&SF4	Term	TF2–B	P03	SF3–R

Explanation

Left—Left DSSI connector on SFx storage enclosure)
Right—Right DSSI connector on SFx Storage enclosure)
TOP—TOP DSSI connector on TFx Storage enclosure)
Bottom—Bottom DSSI connector on TFx Storage enclosure)
P0x—DSSI port x of the I/O panel
SF2–L—Left DSSI connector of the SF2 Storage enclosure)
Term—Terminator

In case SF3 and SF6 are mounted in split-bus, connect SF3 & SF6 to SF1/SF2/SF4/SF5 instead of the terminator.

See the detail to the cabling diagrams.

A.1.2 Dual Host Configurations

For dual host all SF Disk drive enclosures will operate in through bus mode.

Table A–2   Cabling Overview Dual Host System

Device	LEFT	RIGHT	TOP	BOTTOM
SF1	P01	P07	N/A	N/A
SF2	P02	P08	N/A	N/A
SF3	P03	P09	N/A	N/A
SF4	P04	P10	N/A	N/A
SF5	P05	P11	N/A	N/A

(continued on next page)

Table A–2 (Cont.)   Cabling Overview Dual Host System

Device	LEFT	RIGHT	TOP	BOTTOM
SF6	P06	P12	N/A	N/A
TF1	N/A	N/A	P01	P07
TF2	N/A	N/A	P02	P08
TF3	N/A	N/A	P03	P09
TF4	N/A	N/A	P04	P10
SF1 & TF1	P07	TF1–B	P01	SF1–R
SF2 & TF2	P08	TF2–B	P02	SF2–R
SF3 & TF3	P09	TF3–B	P03	SF3–R

Explanation

> Left—Left DSSI connector on SFx storage enclosure)
> Right—Right DSSI connector on SFx Storage enclosure)
> TOP—TOP DSSI connector on TFx Storage enclosure)
> Bottom—Bottom DSSI connector on TFx Storage enclosure)
> P0x—DSSI port x of the I/O panel
> SF2–L—Left DSSI connector of the SF2 Storage enclosure)
> TERM—Terminator

For combinations of Tape Loader with Disk Storage enclosure like TF1 & SF1 or TF2 & SF2 or TF3 & SF3 connect the bottom connector tape loader with the right DSSI connector of the SF storage element. For example connect the bottom connector of the TF1 with the right connector of SF1.

A.1.3 Stripeset Configurations

This section contains cabling diagrams for DECarray stripeset configurations.

- The SF7x storage enclosure must operate in split-bus mode

- DSSI bus termination is supplied by the transition termination module (TTM) inside the SF7x storage enclosure

- Stripes are supported only in a single-system configuration

- DSSI termination of the Tape Loader magazine by terminators in bottom DSSI connector.

A.1 General Cabling Rules

Table A–3 Stripeset Configuration

Device	LEFT	RIGHT	TOP	BOTTOM
SF1	P01	P07	N/A	N/A
SF2	P02	P08	N/A	N/A
SF3	P03	P09	N/A	N/A
SF4	P04	P10	N/A	N/A
SF5	P05	P11	N/A	N/A
SF6	P06	P12	N/A	N/A
TF1	N/A	N/A	P06	Term
TF2	N/A	N/A	P05	Term
TF3	N/A	N/A	P04	Term
TF4	N/A	N/A	P03	Term

Explanation

> Left—Left DSSI connector on SFx storage enclosure)
> Right—Right DSSI connector on SFx Storage enclosure)
> TOP—TOP DSSI connector on TFx Storage enclosure)
> Bottom—Bottom DSSI connector on TFx Storage enclosure)
> P0x—DSSI port x of the I/O panel
> SF2–L—Left DSSI connector of the SF2 Storage enclosure)
> Term—Terminator

The cabling for dual-host and stripeset is very similar. In case a tape loader subsystem and SFx Storage enclosures are mounted, the SFx and the TFx will not be connected to each other.

A.2 Cabling Diagrams

Table A–4 explains the nomenclature used in the cabling diagrams.

Table A–4 Cabling Diagram Key

T and B R and L	Represent the top and bottom, right and left DSSI connectors in the rear of the magazine tape subsystems and SF7x storage enclosures.
TFx[1] SFx[2]	TF is the designation for a magazine tape subsystem. SF is the designation for a SF7x storage enclosure.
Px	Refers to the port number on the DSSI I/O panel.
Cables	Three DSSI cables are used:
	BC21Q–3F = 42-inch (unit to unit)
	BC21R–5L = 70-inch (Sx300 I/O panel to unit)
	BC21Q–09 = 108-inch (Sx300 to system)
T	T at a DSSI connector stands for a DSSI terminator (12–31281–01).

[1]There are only four magazine tape subsystems per Sx300 storage array.

[2]There are up to six SF7X storage enclosures per Sx300 storage array.

Table A–5 lists the diagrams in this appendix.

Table A–5 Cabling Diagram List

Title	Reference
Single-Host Configurations	
Sx300 with one SF7x element	Figure A–1
Sx300 with two SF7x elements	Figure A–2
Sx300 with three SF7x elements	Figure A–3
Sx300 with four SF7x elements	Figure A–4
Sx300 with five SF7x elements	Figure A–5
Sx300 with six SF7x elements	Figure A–6
Sx300 with tape magazine elements only	Figure A–7

(continued on next page)

A.2 Cabling Diagrams

Table A–5 (Cont.)   Cabling Diagram List

Dual-Host Configurations	
Dual-Host Configurations	
S*x*300 with one SF7*x* element	Figure A–8
S*x*300 with two SF7*x* elements	Figure A–9
S*x*300 with three SF7*x* elements	Figure A–10
S*x*300 with four SF7*x* elements	Figure A–11
S*x*300 with five SF7*x* elements	Figure A–12
S*x*300 with six SF7*x* elements	Figure A–13
S*x*300 with tape magazine elements only	Figure A–14

A.3 Single-Host Configurations

This section contains cabling diagrams for S*x*300 storage array variations in the single-host configuration. See Figure A–1 through Figure A–7.

Note the following:

- DSSI bus termination is supplied by the TTM module inside the SF7*x* storage enclosures in position 3 and 5.

- The SF7*x* storage enclosures in positions 3 and 5 must be operating in split-bus mode.

- If a DSSI bus is not connected to a SF7*x* storage enclosure in position 3 or 5, then DSSI bus termination is accomplished by using a DSSI terminator (part number 12–31281–01).

- Split-bus mode is supported only in the single-host configuration.

A.3 Single-Host Configurations

Figure A–1   S*x*300 with One SF7*x*
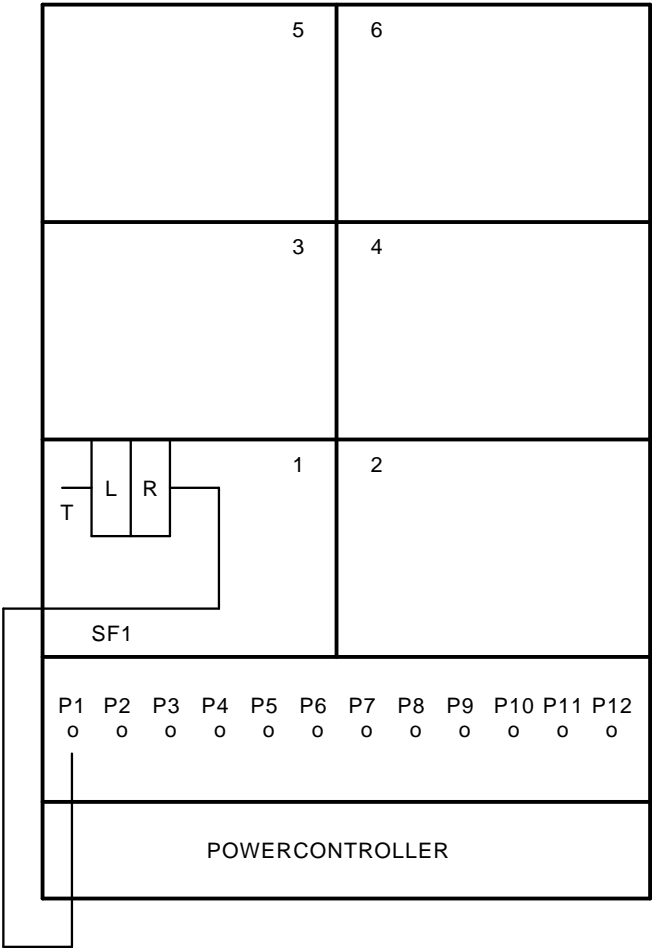
A.3 Single-Host Configurations

Figure A–1 (Cont.) S*x*300 with One SF7*x*

(continued on next page)

A.3 Single-Host Configurations

Figure A–1 (Cont.) S*x***300 with One SF7***x*

(continued on next page)
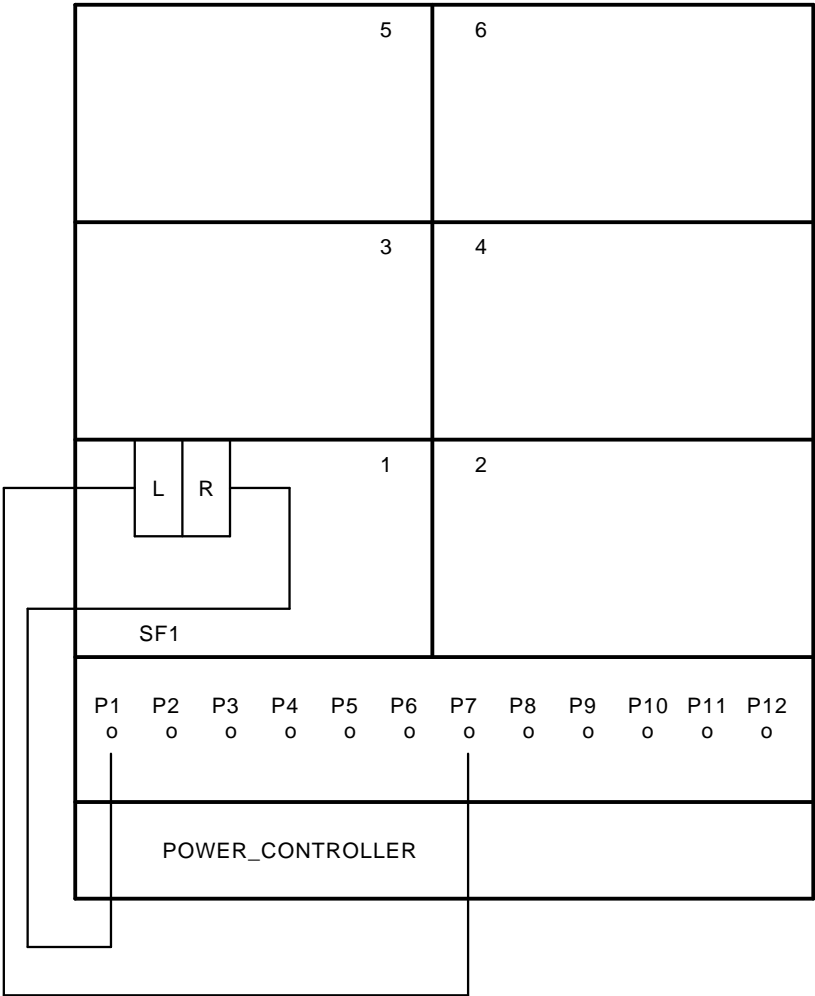
A.3 Single-Host Configurations

Figure A–1 (Cont.) S*x*300 with One SF7*x*

c
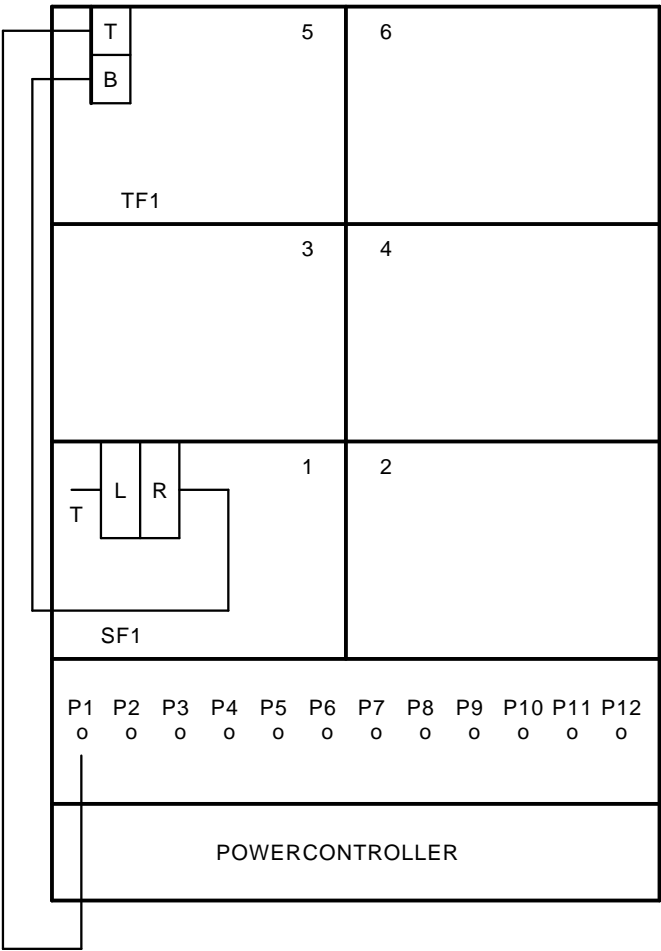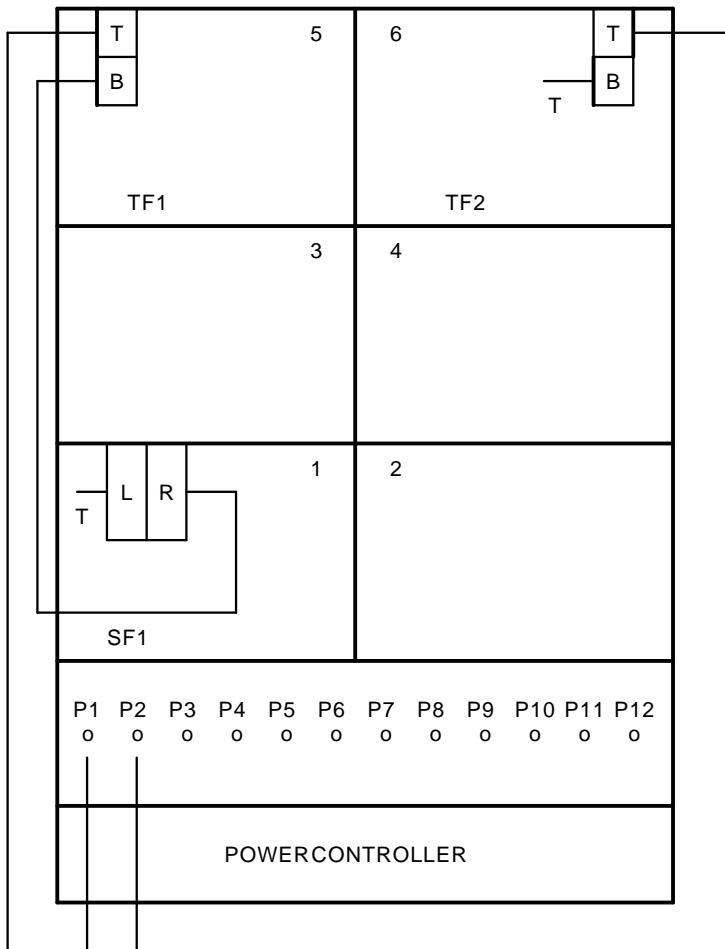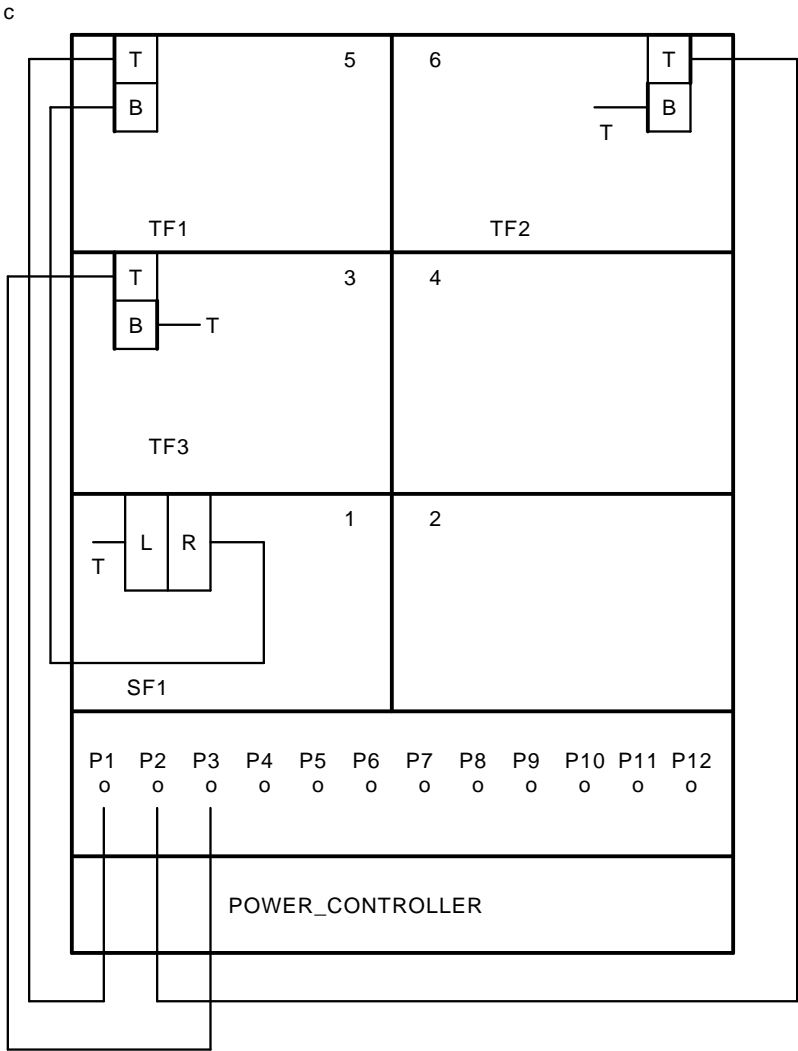
A.3 Single-Host Configurations

Figure A–1 (Cont.) S*x***300 with One SF7***x*
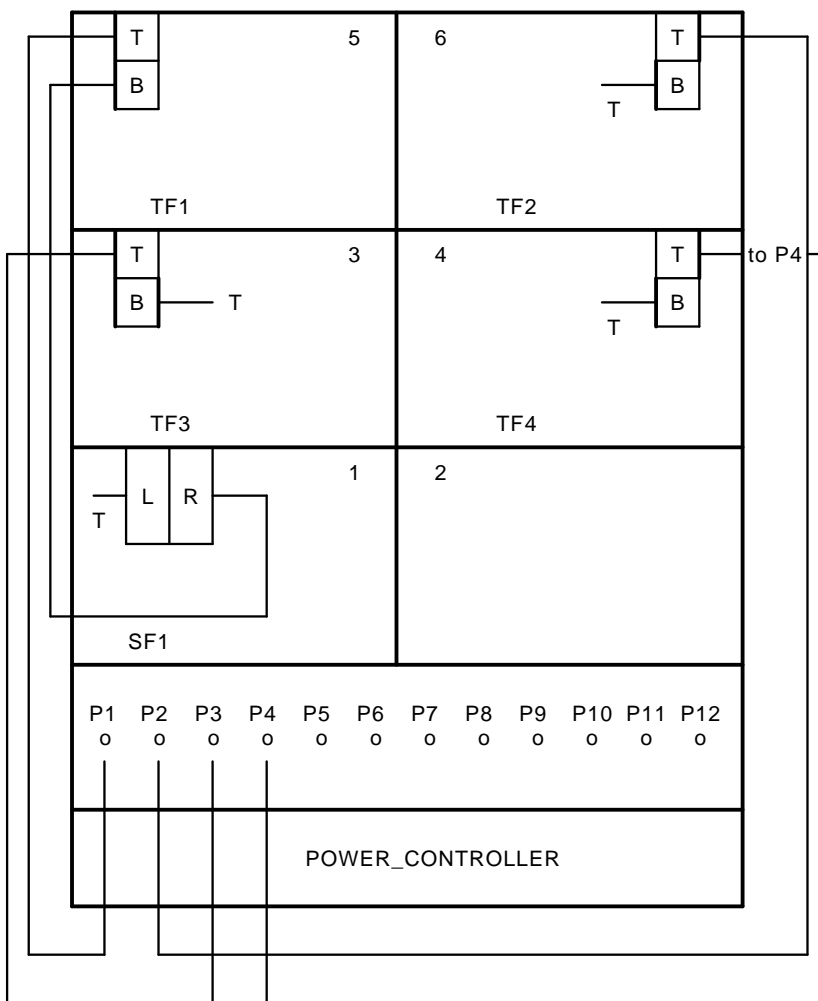
A.3 Single-Host Configurations

Figure A–2 S*x*300 with Two SF7*x*

A.3 Single-Host Configurations
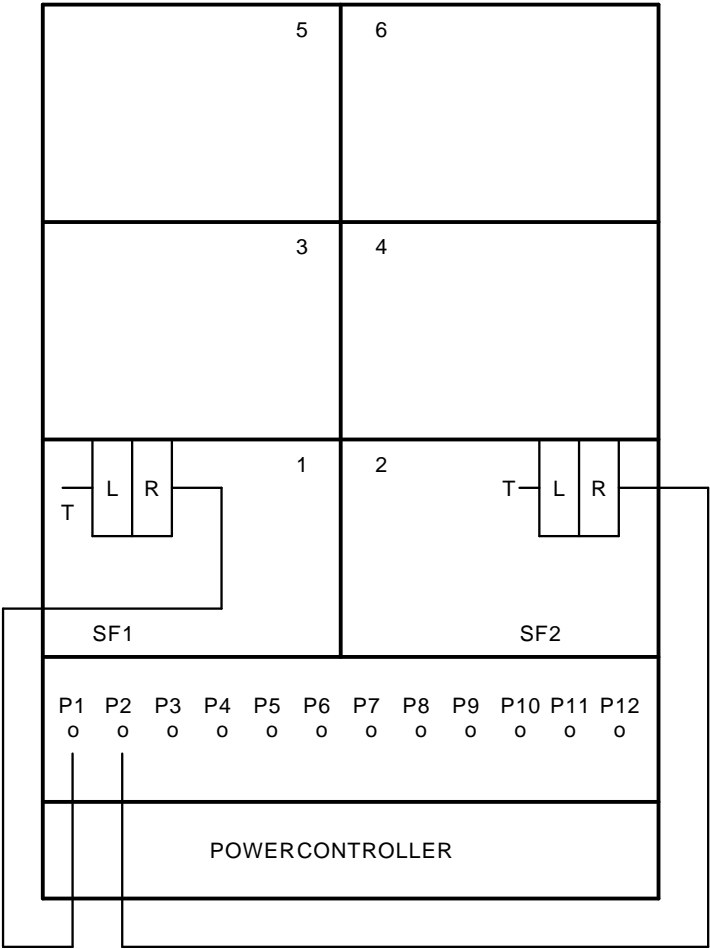
Figure A–2 (Cont.) S*x*300 with Two SF7*x*

A.3 Single-Host Configurations

Figure A–2 (Cont.) S*x*300 with Two SF7*x*

(continued on next page)

A.3 Single-Host Configurations
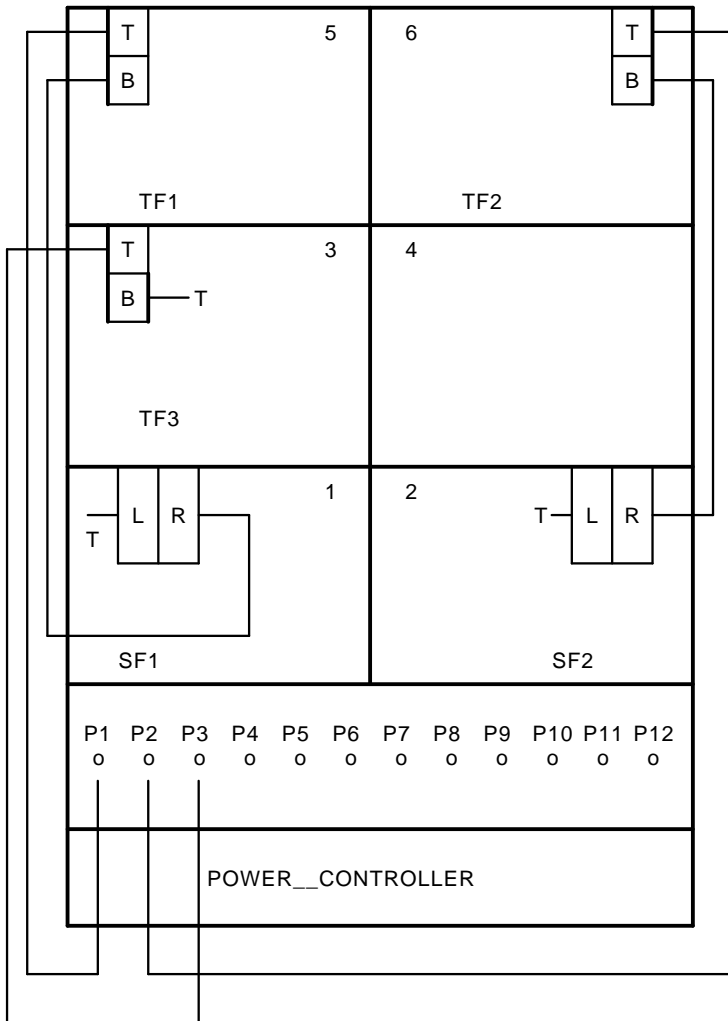
Figure A–2 (Cont.) Sx**300 with Two SF7**x

A.3 Single-Host Configurations

Figure A–2 (Cont.) S*x*300 with Two SF7*x*
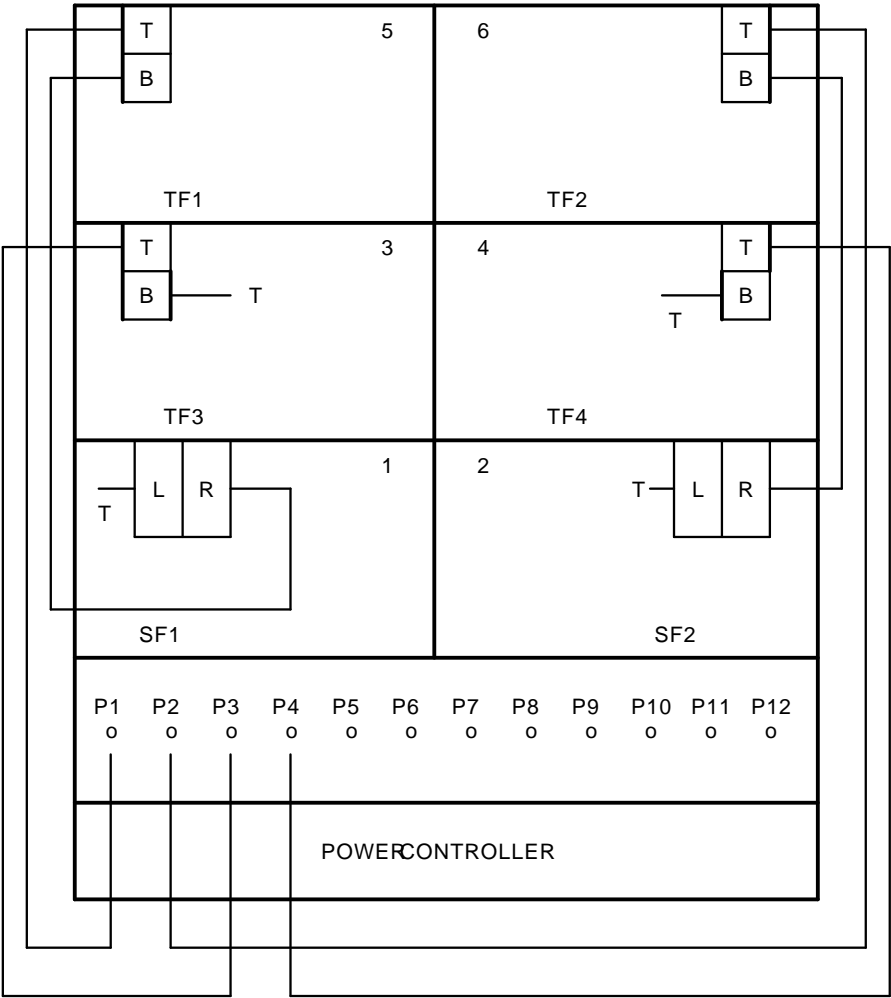
A.3 Single-Host Configurations

Figure A–3   S*x*300 with Three SF7*x*
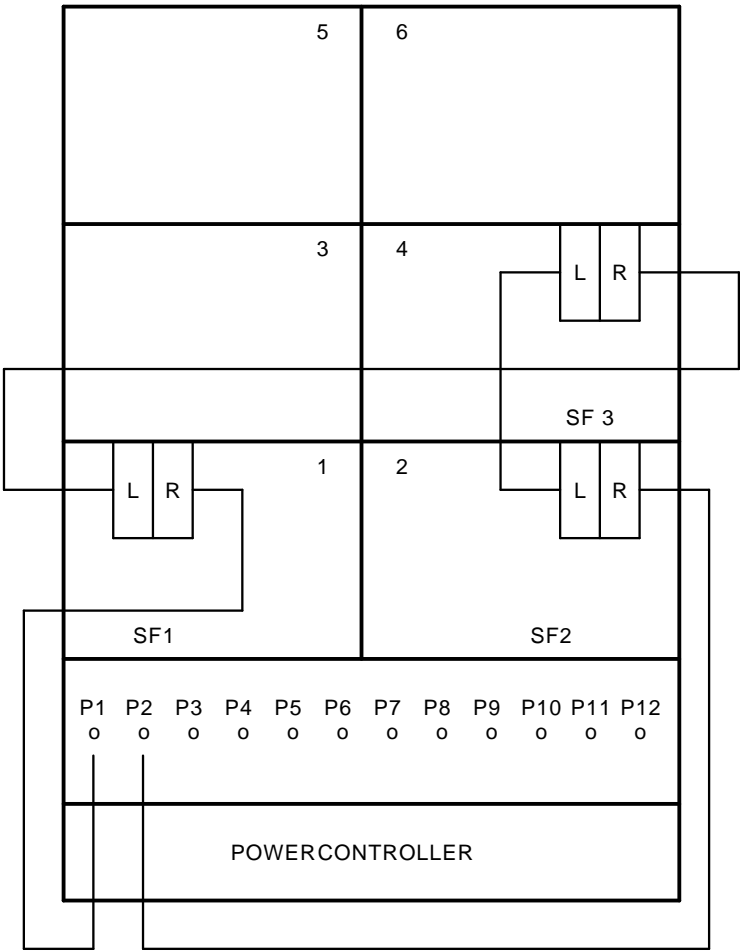
A.3 Single-Host Configurations
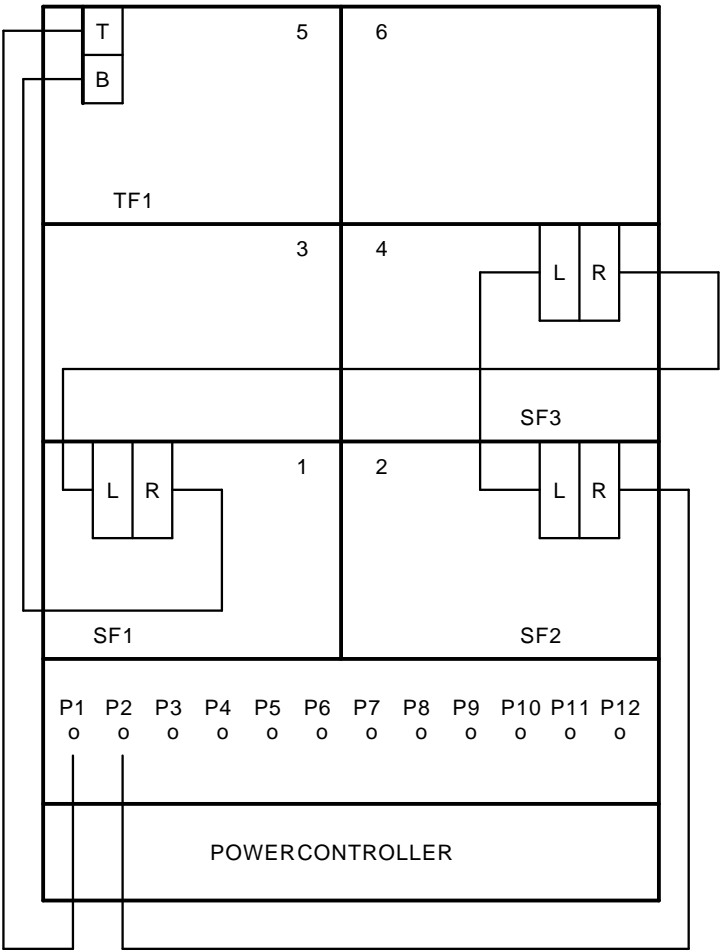
Figure A–3 (Cont.) S*x*300 with Three SF7*x*

A.3 Single-Host Configurations
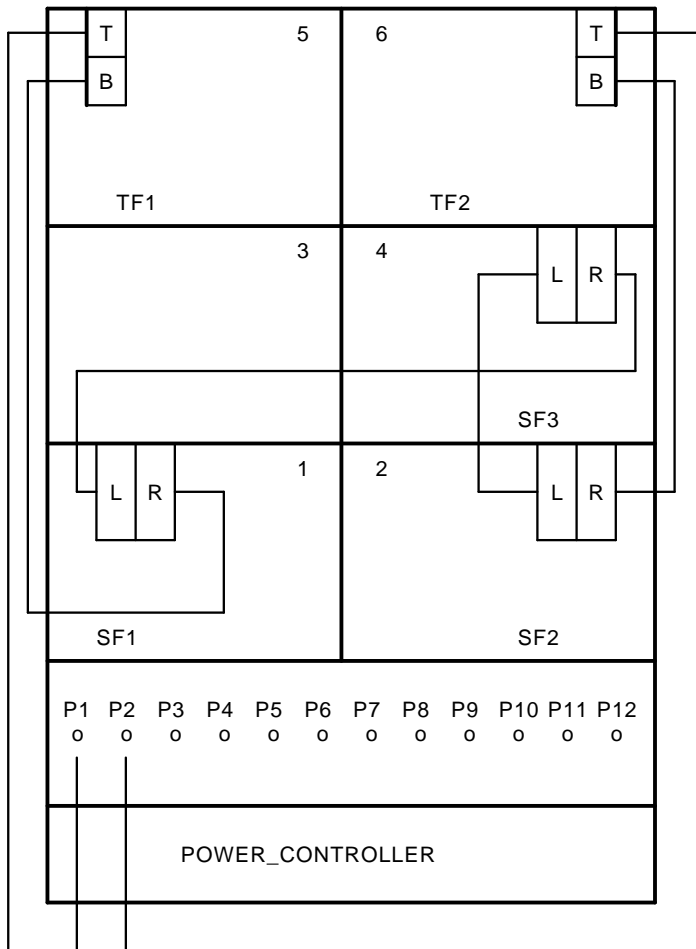
Figure A–3 (Cont.) S*x*300 with Three SF7*x*

A.3 Single-Host Configurations

Figure A–3 (Cont.) S*x*300 with Three SF7*x*
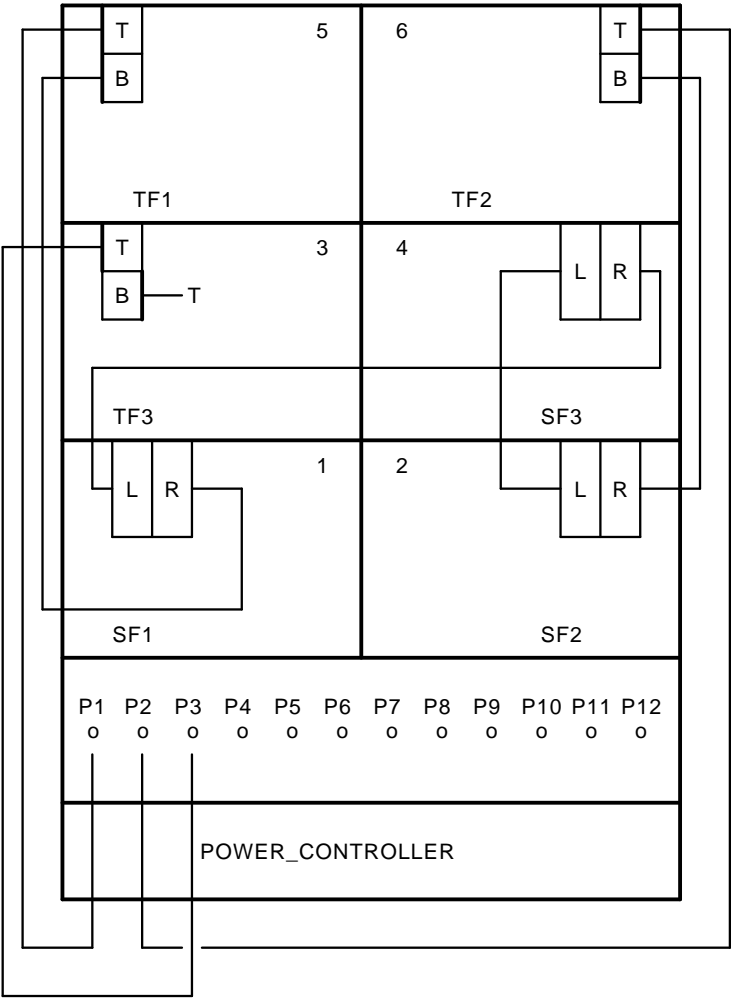
A.3 Single-Host Configurations

Figure A–4   S*x***300 with Four SF7***x*
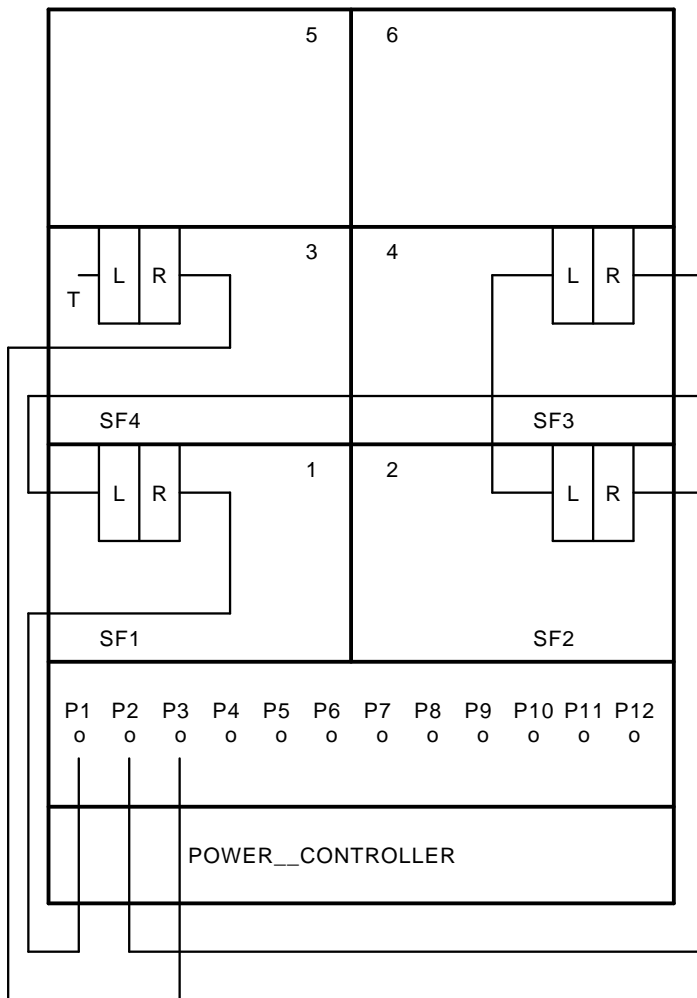
A.3 Single-Host Configurations
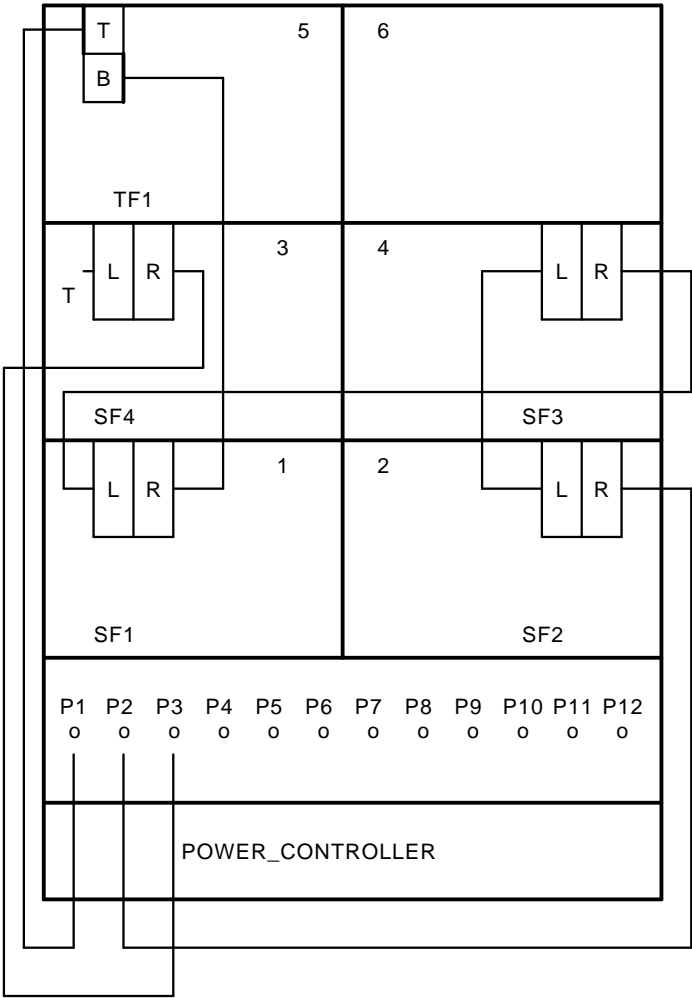
Figure A–4 (Cont.) S*x*300 with Four SF7*x*

A.3 Single-Host Configurations

Figure A–4 (Cont.) S*x*300 with Four SF7*x*
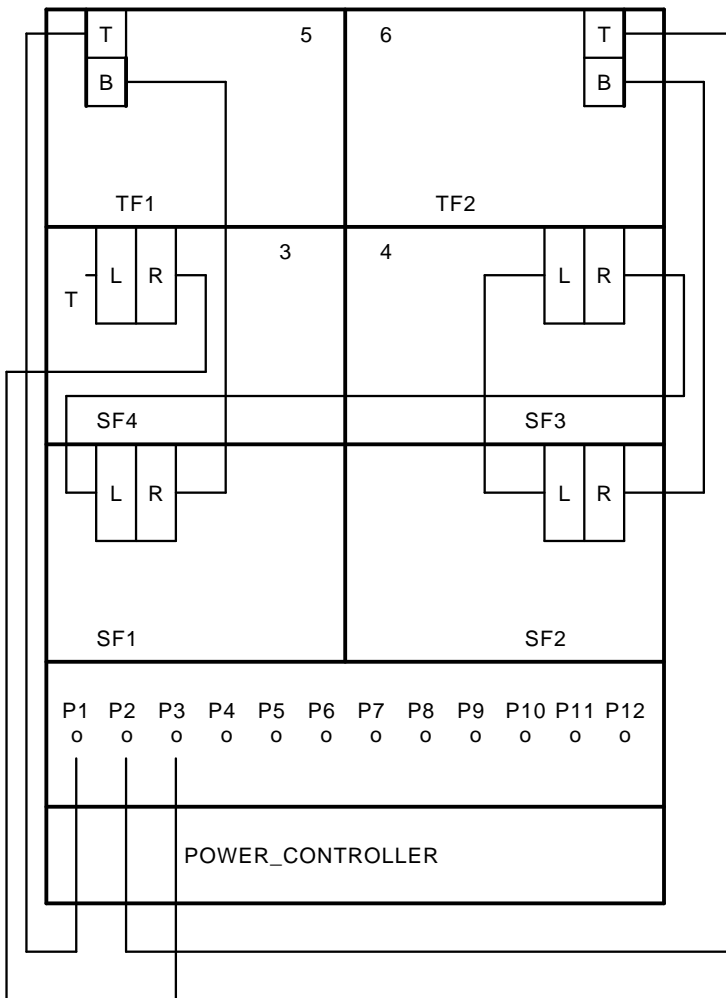
A.3 Single-Host Configurations

Figure A–5   S*x*300 with Five SF7*x*
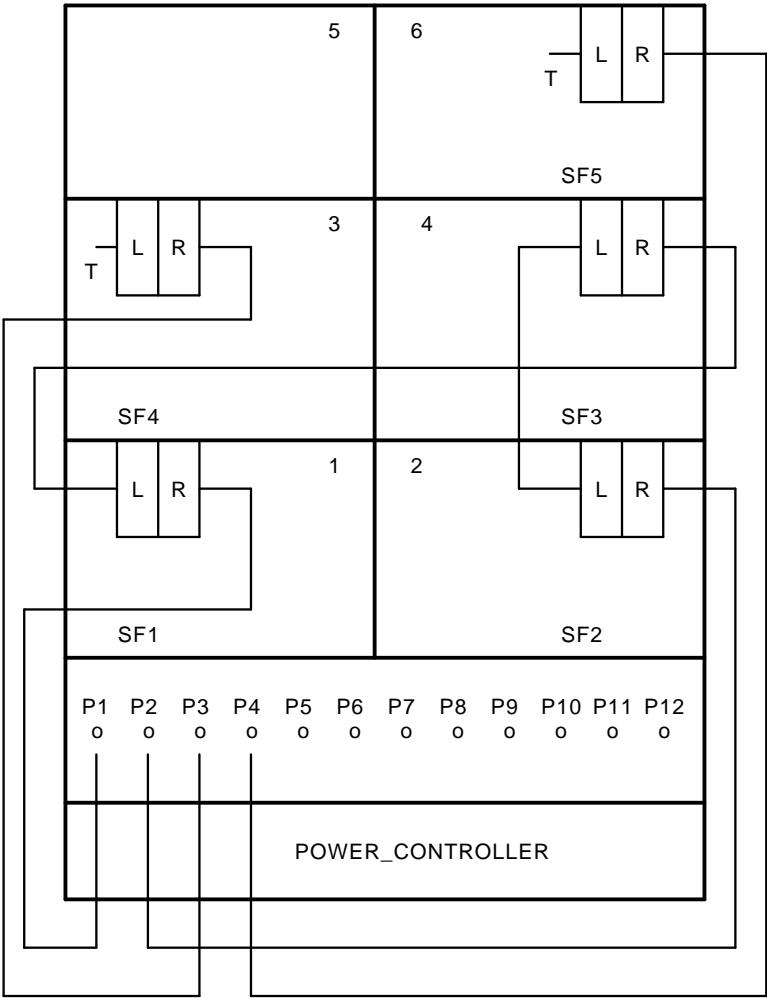
A.3 Single-Host Configurations

Figure A–5 (Cont.) S*x*300 with Five SF7*x*
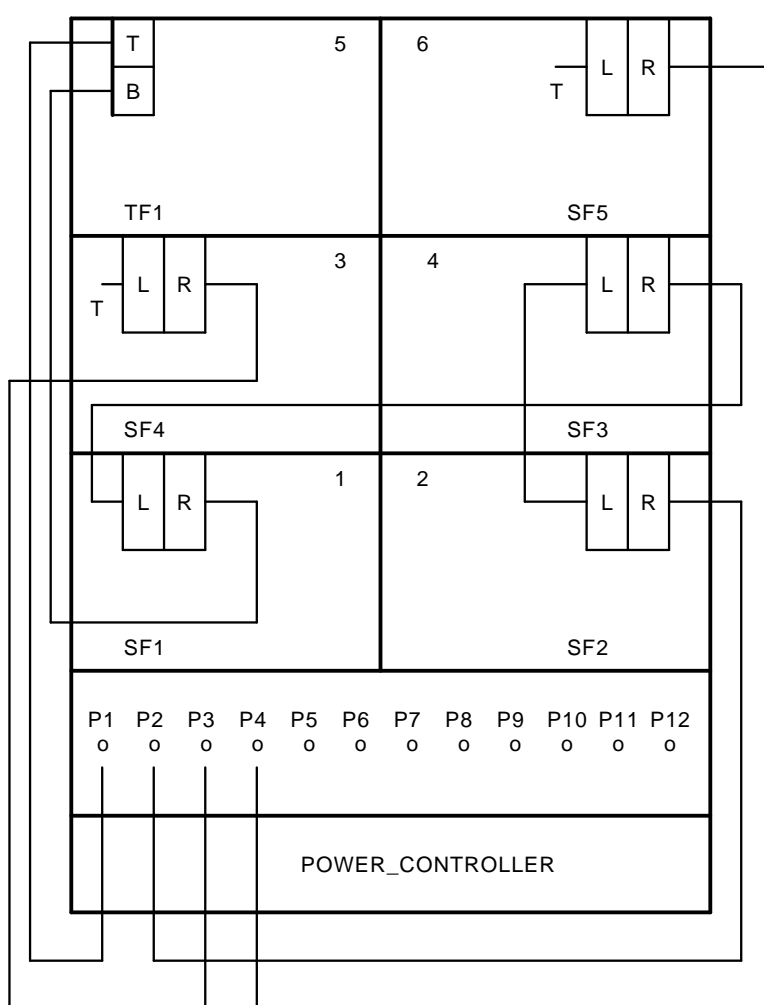
A.3 Single-Host Configurations

Figure A–6   S*x***300 with Six SF7***x*
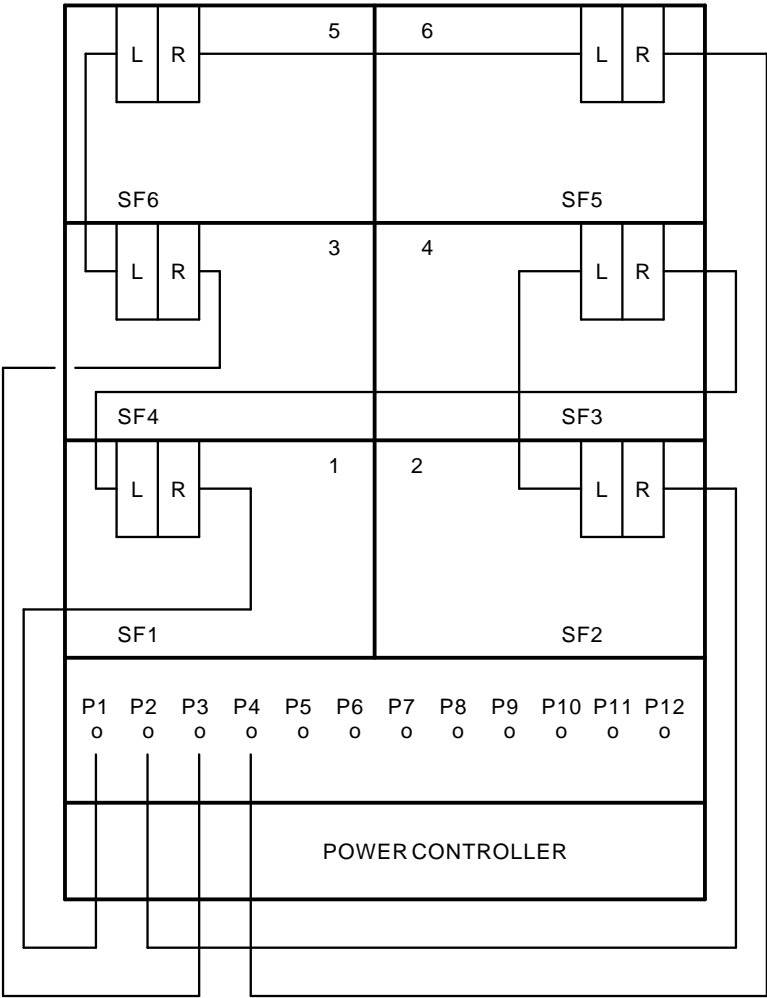
A.3 Single-Host Configurations

Figure A–7   S*x*300 (Magazine Tape Subsystems Only)
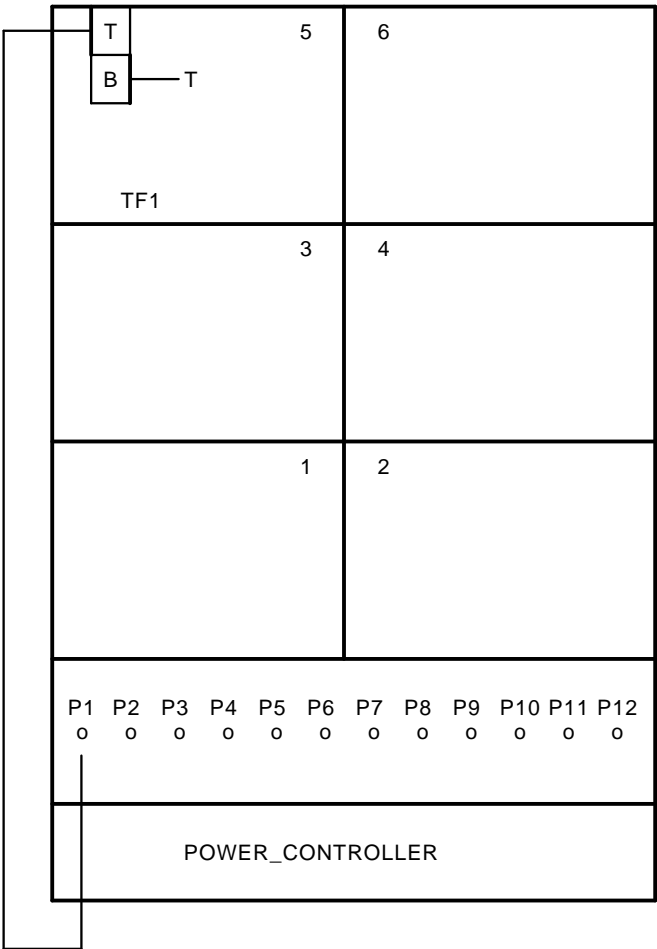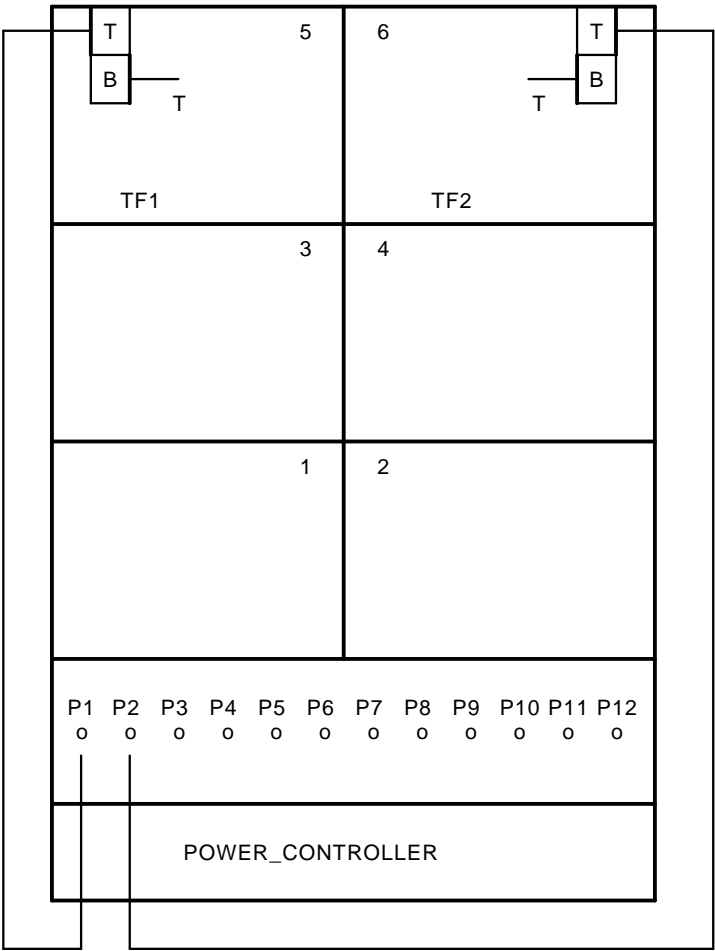
A.3 Single-Host Configurations

Figure A–7 (Cont.) S*x*300 (Magazine Tape Subsystems Only)

A.3 Single-Host Configurations
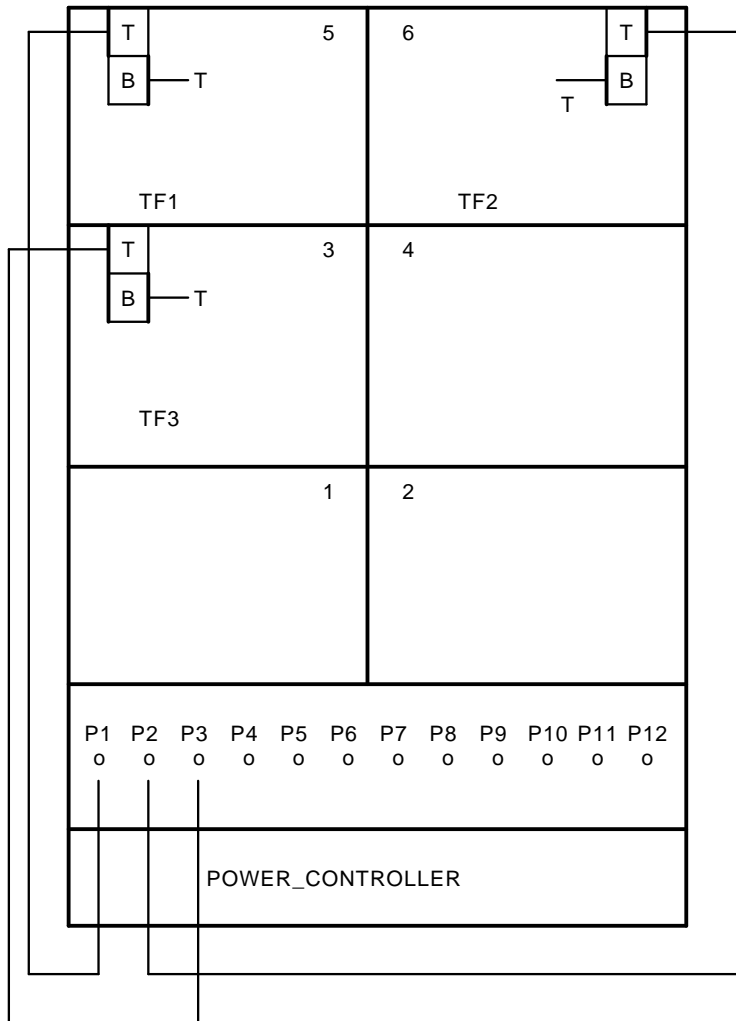
Figure A–7 (Cont.) S*x*300 (Magazine Tape Subsystems Only)

A.3 Single-Host Configurations

Figure A–7 (Cont.) S*x***300 (Magazine Tape Subsystems Only)**
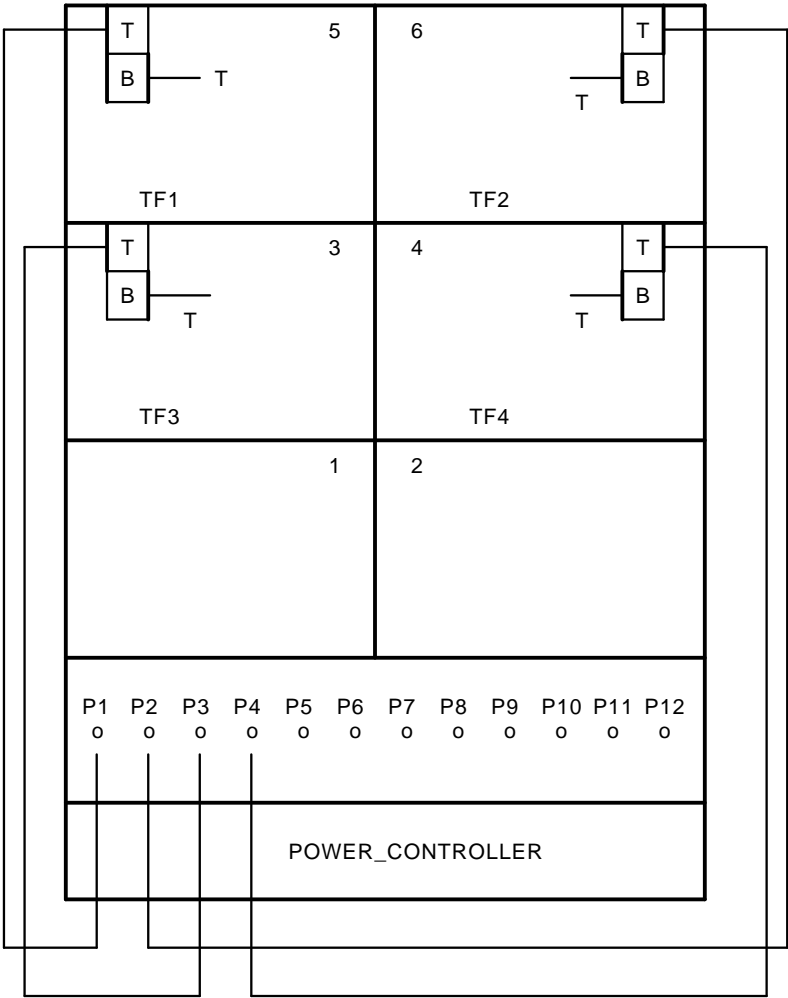
A.4 Dual-Host Configurations

This section contains cabling diagrams for S*x*300 storage array variations in the dual-host configuration. See Figure A–8 through Figure A–14.

Note the following:

- DSSI bus termination is supplied by the KFMSA modules installed in each host system.

- All KFMSA modules installed in each host system must be set to the same DSSI ID. DSSI ID 7 is used in one host system, and DSSI ID 6 is used in the other.

- All SF7*x* storage enclosures operate in through-bus mode.

A.4 Dual-Host Configurations

Figure A–8   S*x*300 with One SF7*x*

A.4 Dual-Host Configurations

Figure A–8 (Cont.) S*x*300 with One SF7*x*

A.4 Dual-Host Configurations

Figure A–8 (Cont.) S*x*300 with One SF7*x*

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┌──────────────────────────────────┬──────────────────────────────────┐
│ ┌───┐                            5│6                          ┌───┐   │
│ │ T │                             │                           │ T │   │
│ ├───┤                             │                           ├───┤   │
│ │ B │                             │                           │ B │   │
│ └───┘                             │                           └───┘   │
│                                   │                                   │
│        TF1                        │           TF2                     │
├───────────────────────────────── ┼───────────────────────────────────┤
│                                  3│4                                  │
│                                   │                                   │
│                                   │                                   │
├─────┬─────┬─────────────────────1│2──────────────────────────────────┤
│ ┌───┬───┐ │                      │                                    │
│ │ L │ R │ │                      │                                    │
│ └───┴───┘ │                      │                                    │
│    SF1    │                      │                                    │
├───────────┴──────────────────────┴───────────────────────────────────┤
│  P1    P2    P3    P4    P5    P6    P7    P8    P9   P10   P11   P12  │
│   o     o     o     o     o     o     o     o     o     o     o     o  │
├───────────────────────────────────────────────────────────────────────┤
│            POWER__CONTROLLER                                           │
└───────────────────────────────────────────────────────────────────────┘
```
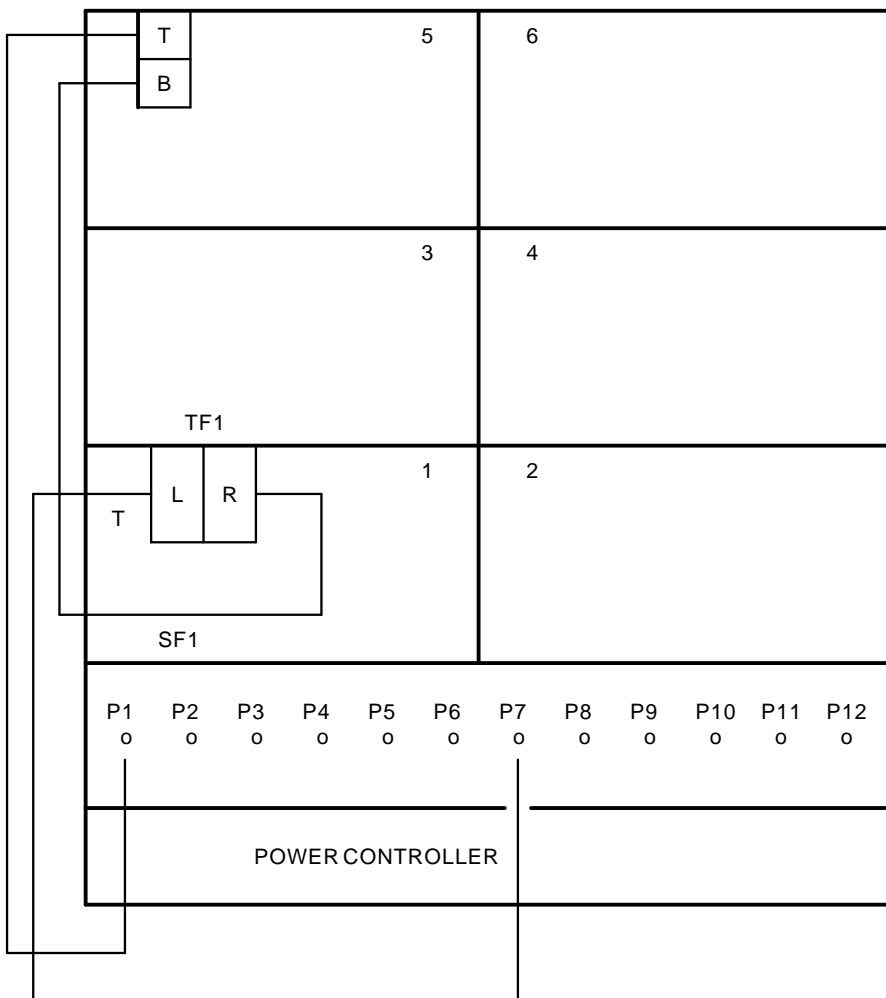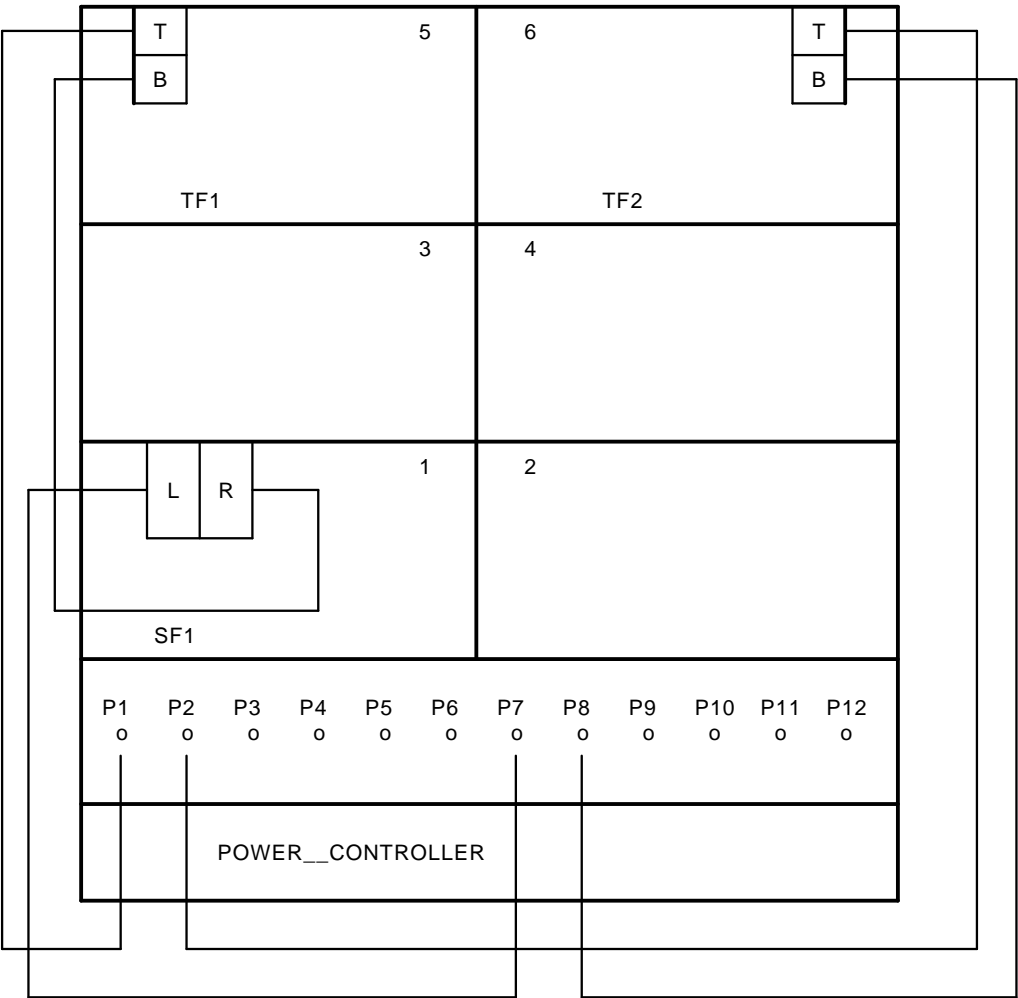
A.4 Dual-Host Configurations
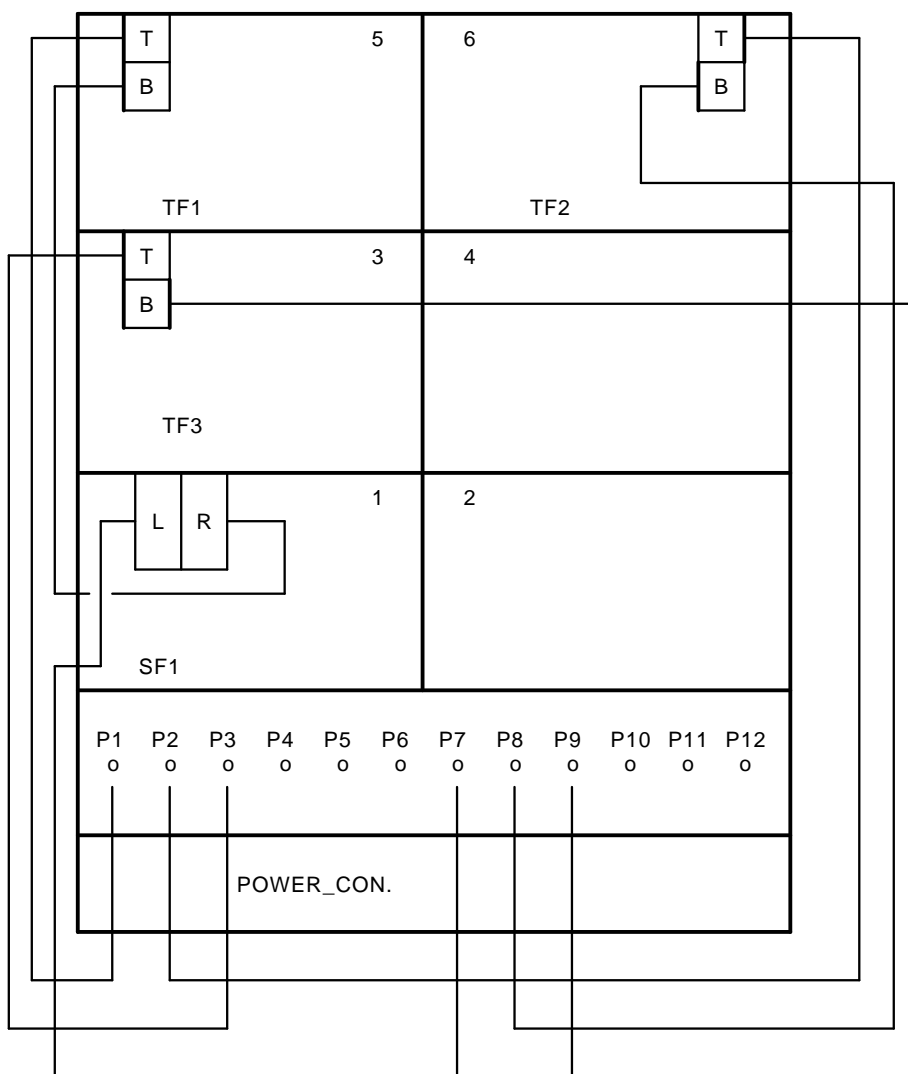
Figure A–8 (Cont.) S*x*300 with One SF7*x*

A.4 Dual-Host Configurations

Figure A–8 (Cont.) S*x*300 with One SF7*x*
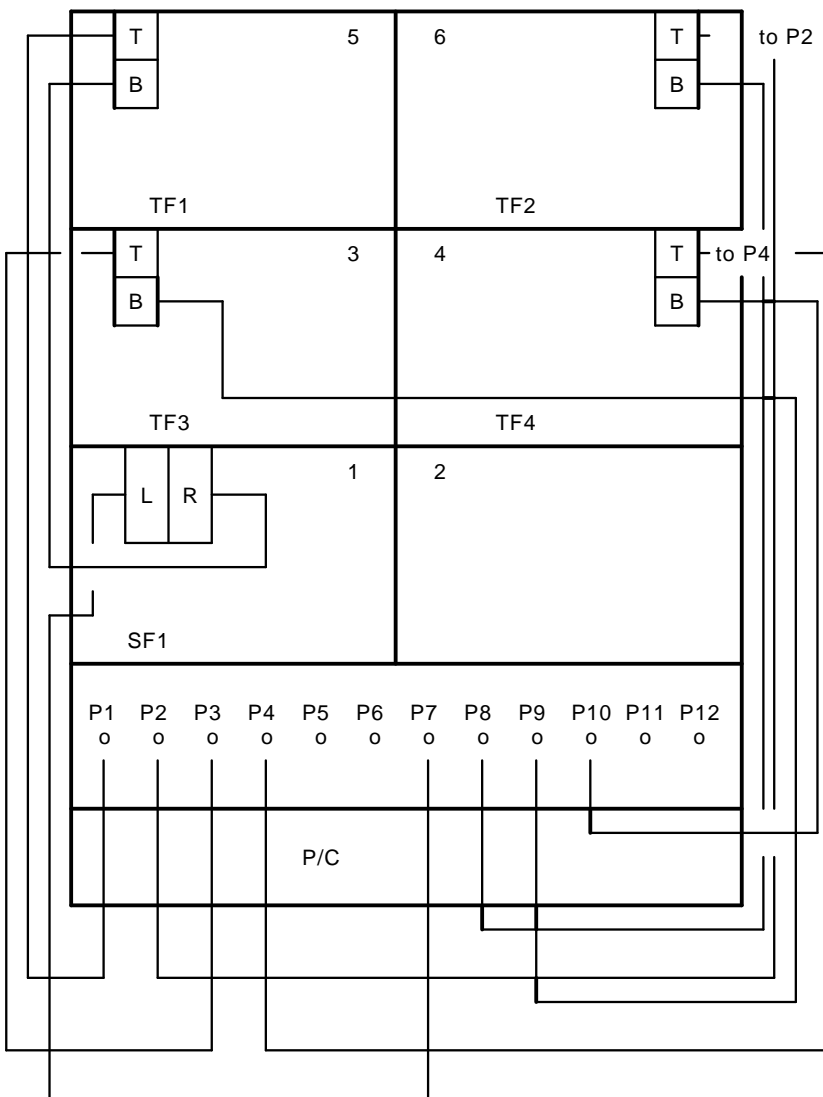
A.4 Dual-Host Configurations

Figure A–9 S*x*300 with Two SF7*x*
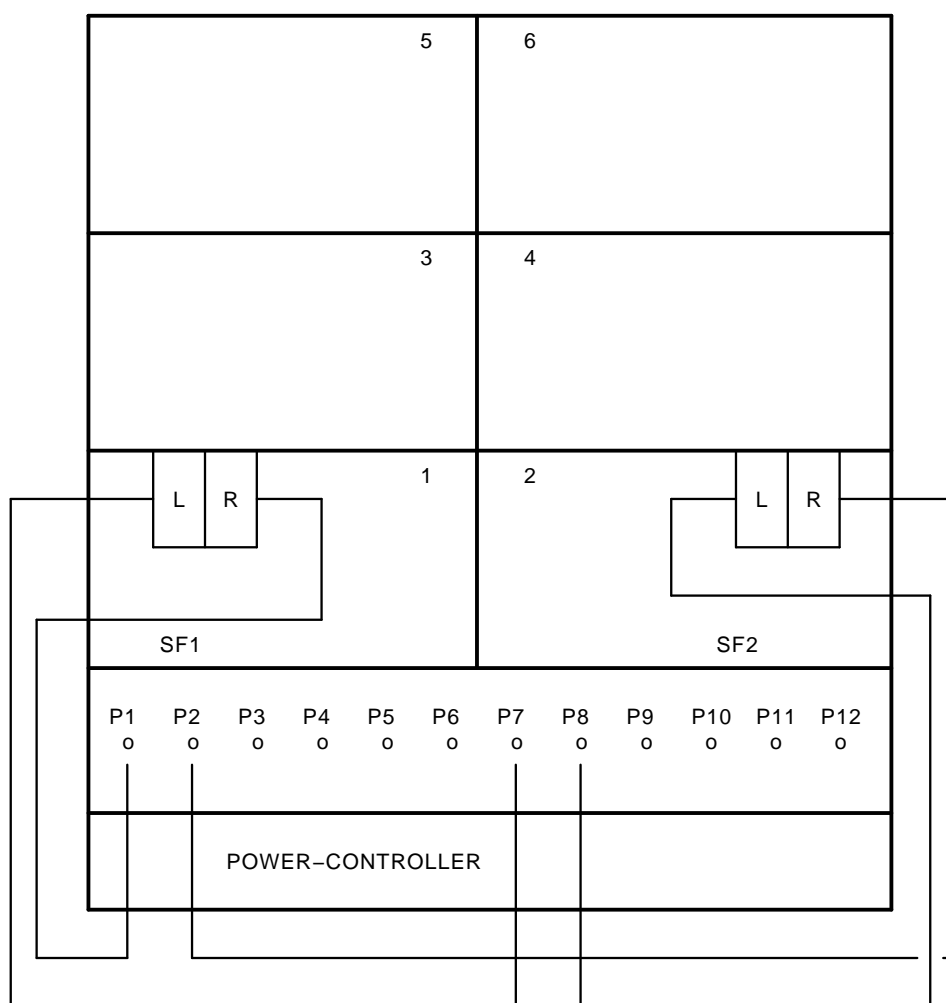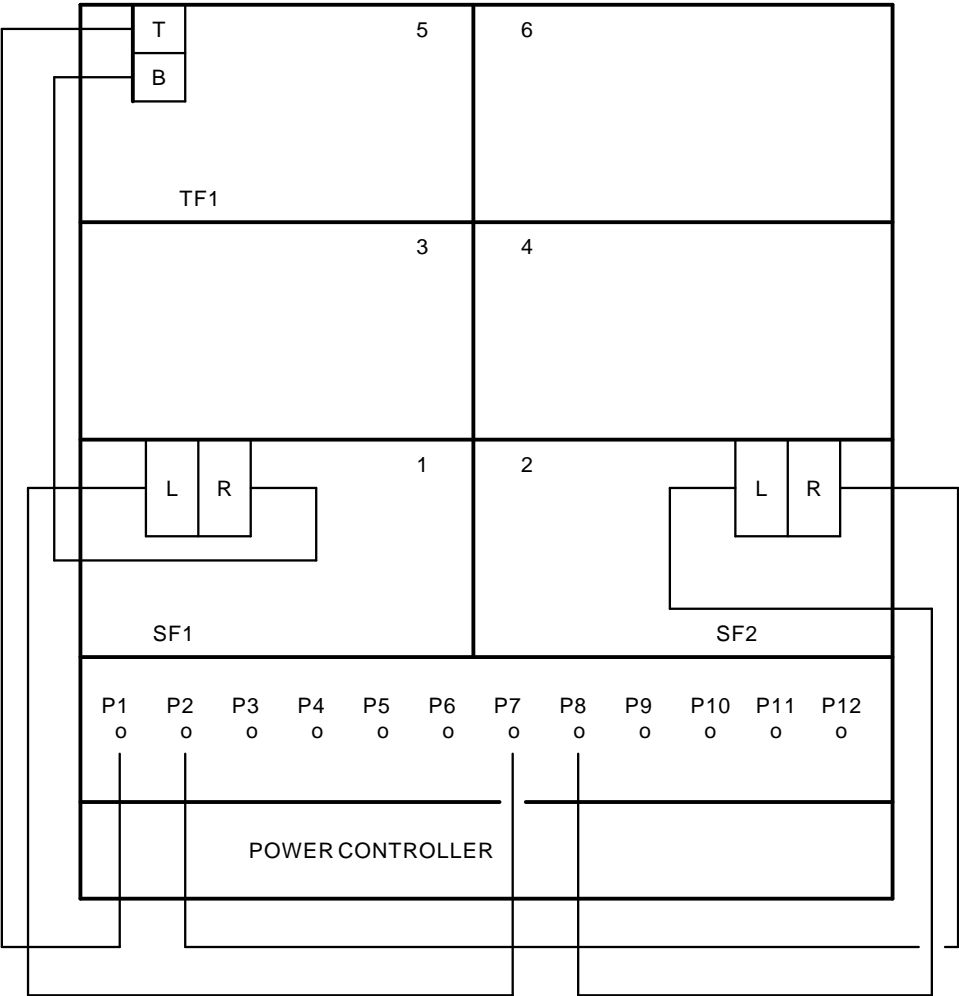
A.4 Dual-Host Configurations

Figure A–9 (Cont.) S*x*300 with Two SF7*x*
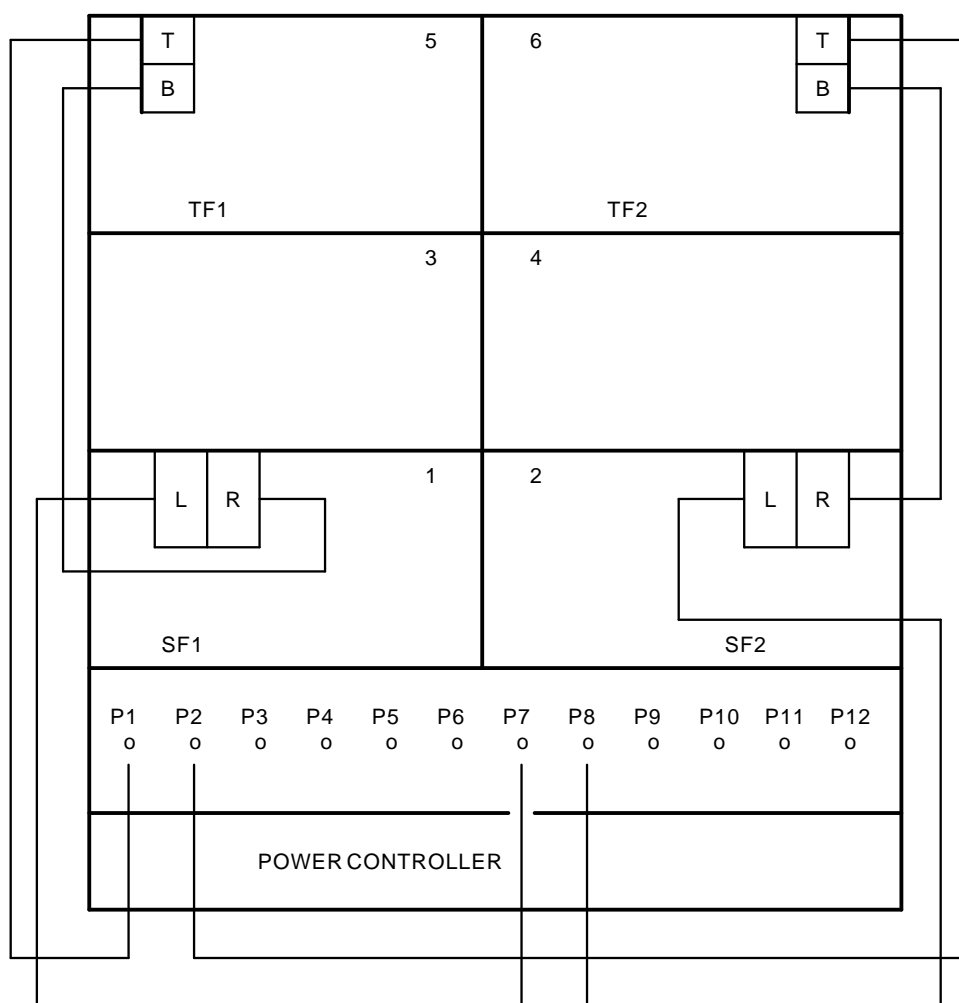
A.4 Dual-Host Configurations

Figure A–9 (Cont.) S*x*300 with Two SF7*x*

A.4 Dual-Host Configurations
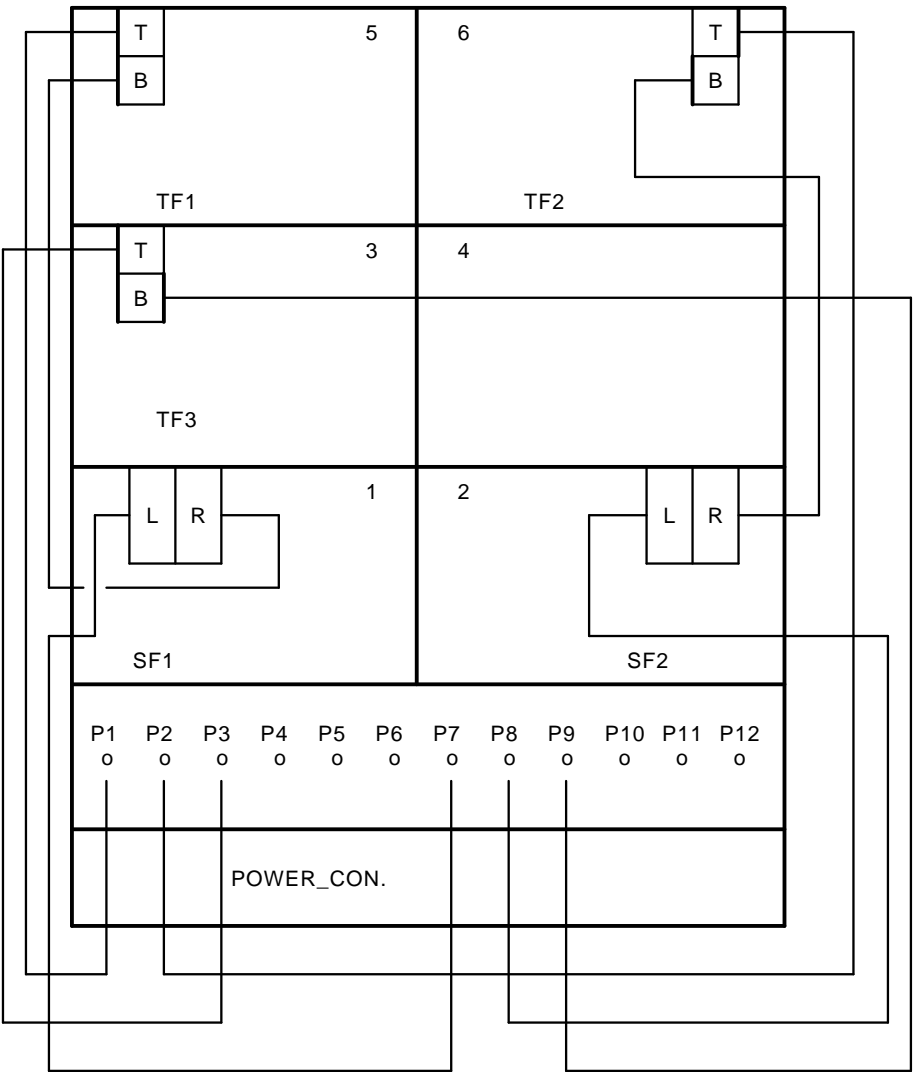
Figure A–9 (Cont.) S*x*300 with Two SF7*x*

A.4 Dual-Host Configurations

Figure A–9 (Cont.) S*x***300 with Two SF7***x*
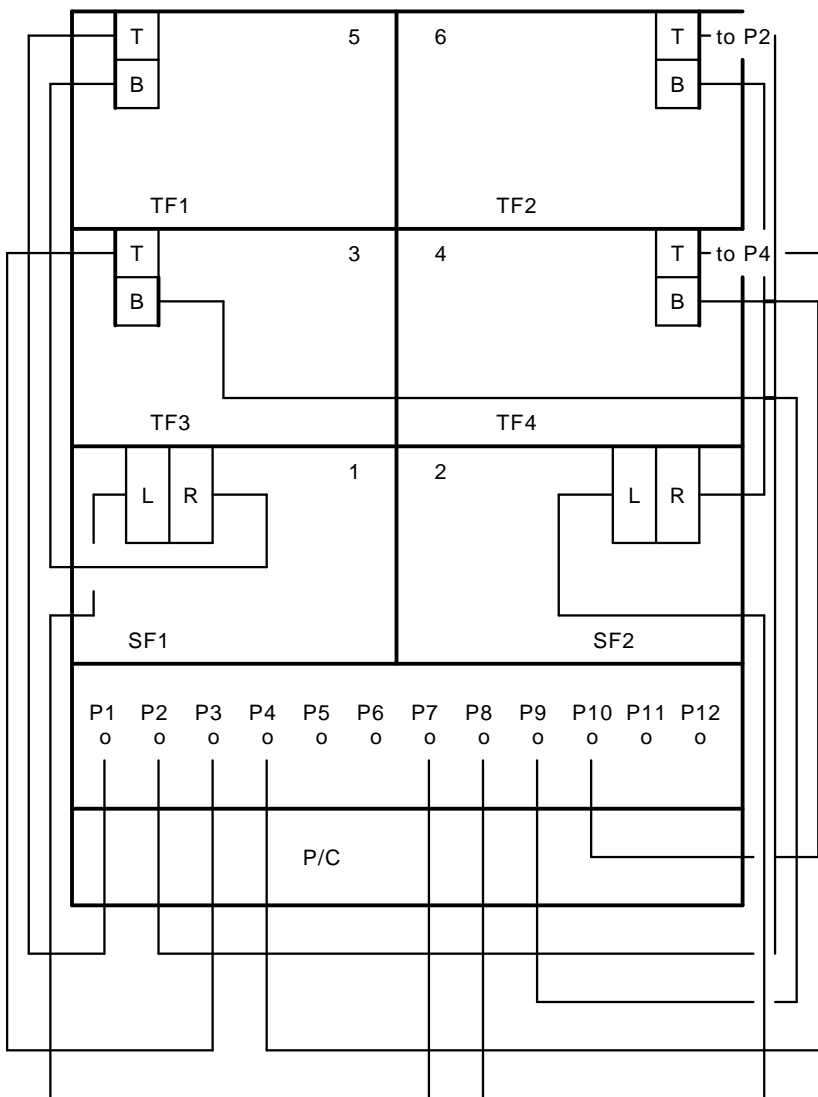
A.4 Dual-Host Configurations

Figure A–10 S*x*300 with Three SF7*x*
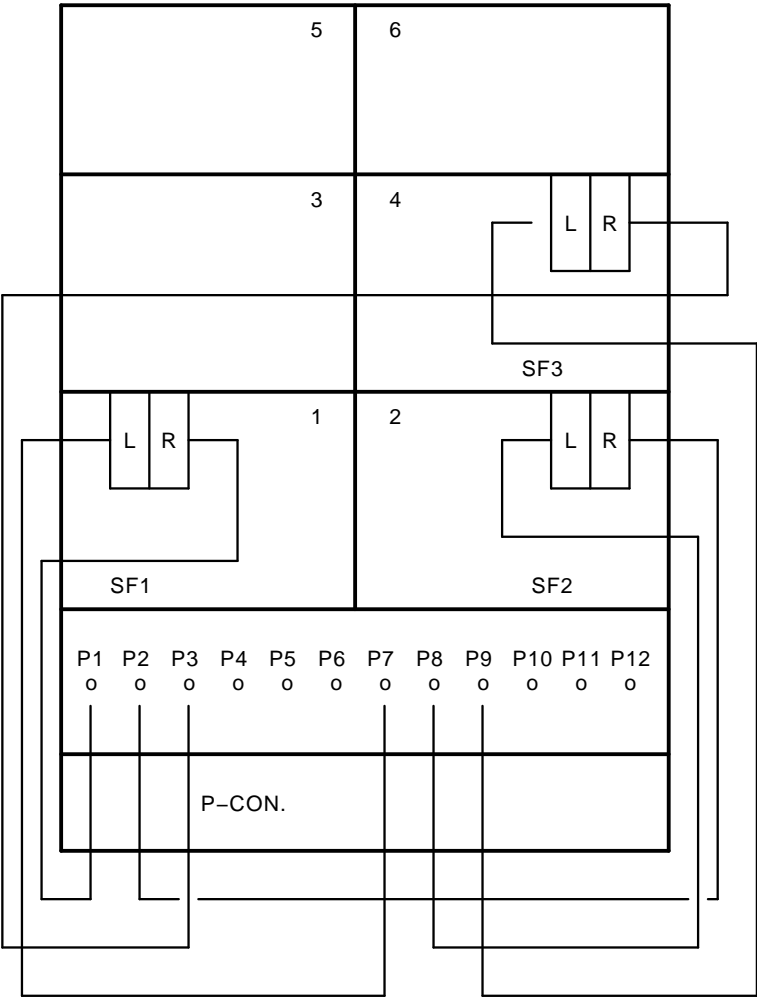
(continued on next page)

A.4 Dual-Host Configurations

Figure A–10 (Cont.) S*x*300 with Three SF7*x*

A.4 Dual-Host Configurations
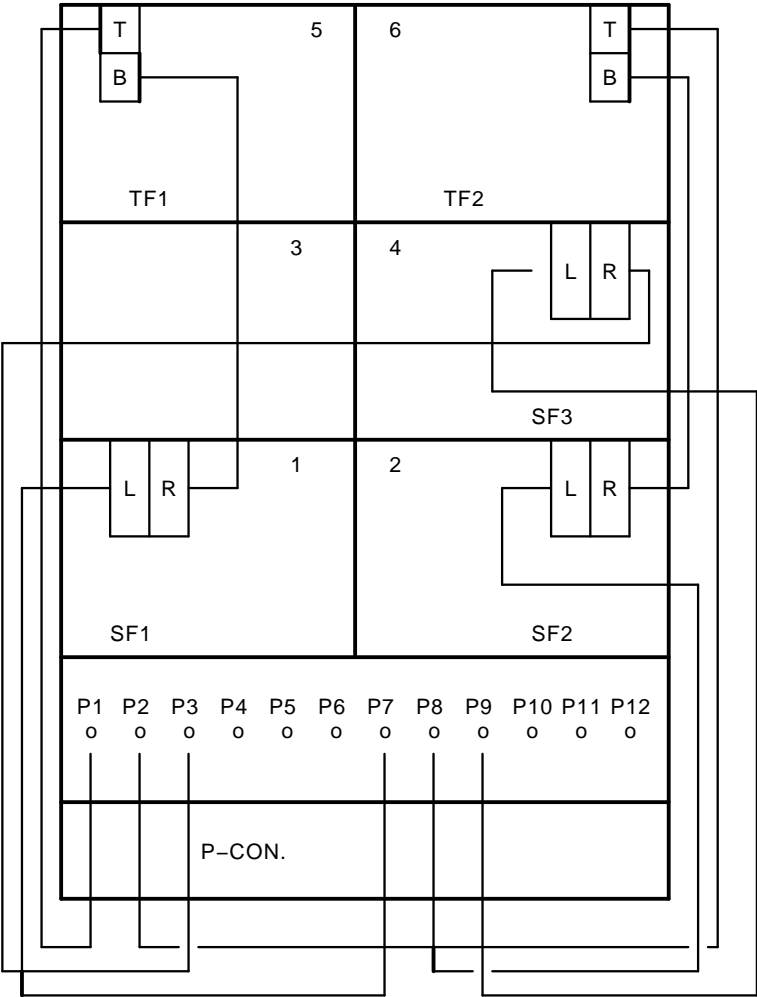
Figure A–10 (Cont.) S*x*300 with Three SF7*x*

A.4 Dual-Host Configurations

Figure A–10 (Cont.) S*x*300 with Three SF7*x*
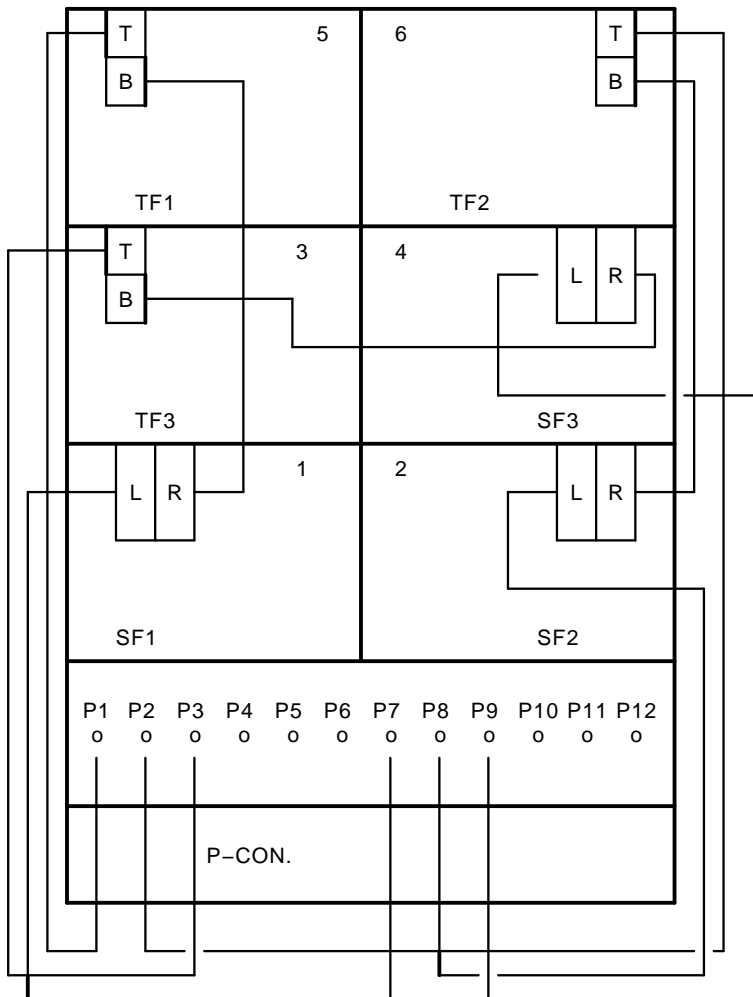
A.4 Dual-Host Configurations

Figure A–11   S*x*300 with Four SF7*x*
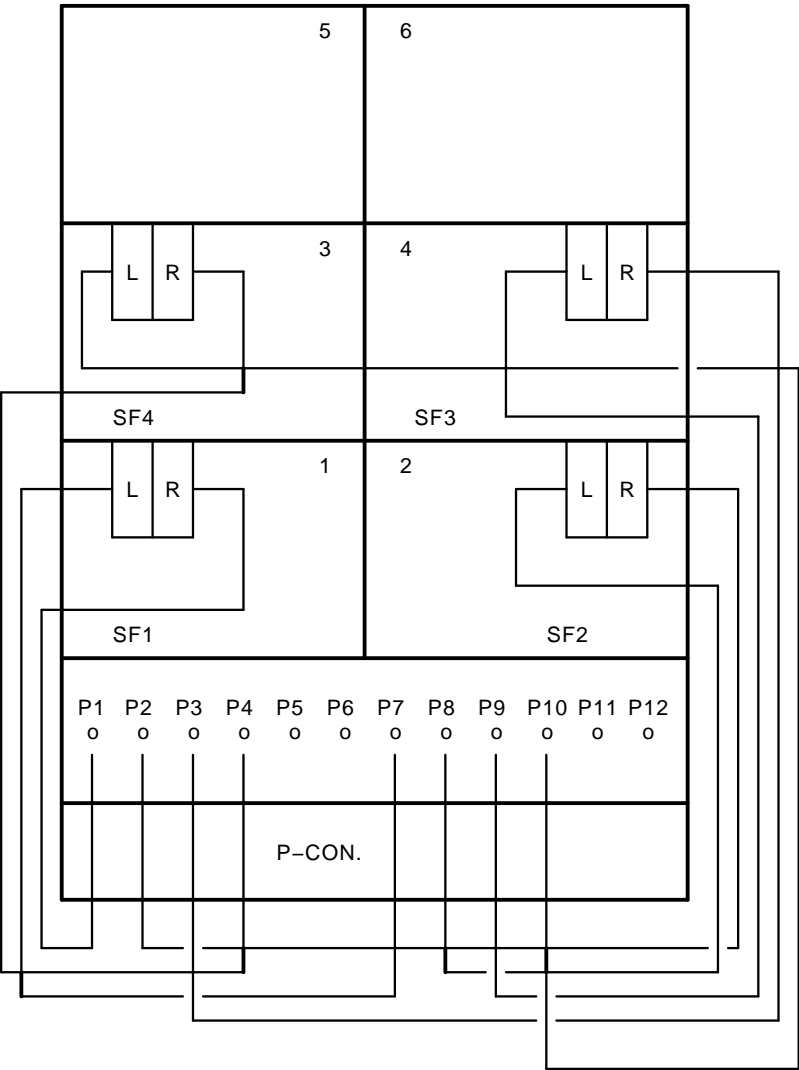
(continued on next page)

A.4 Dual-Host Configurations
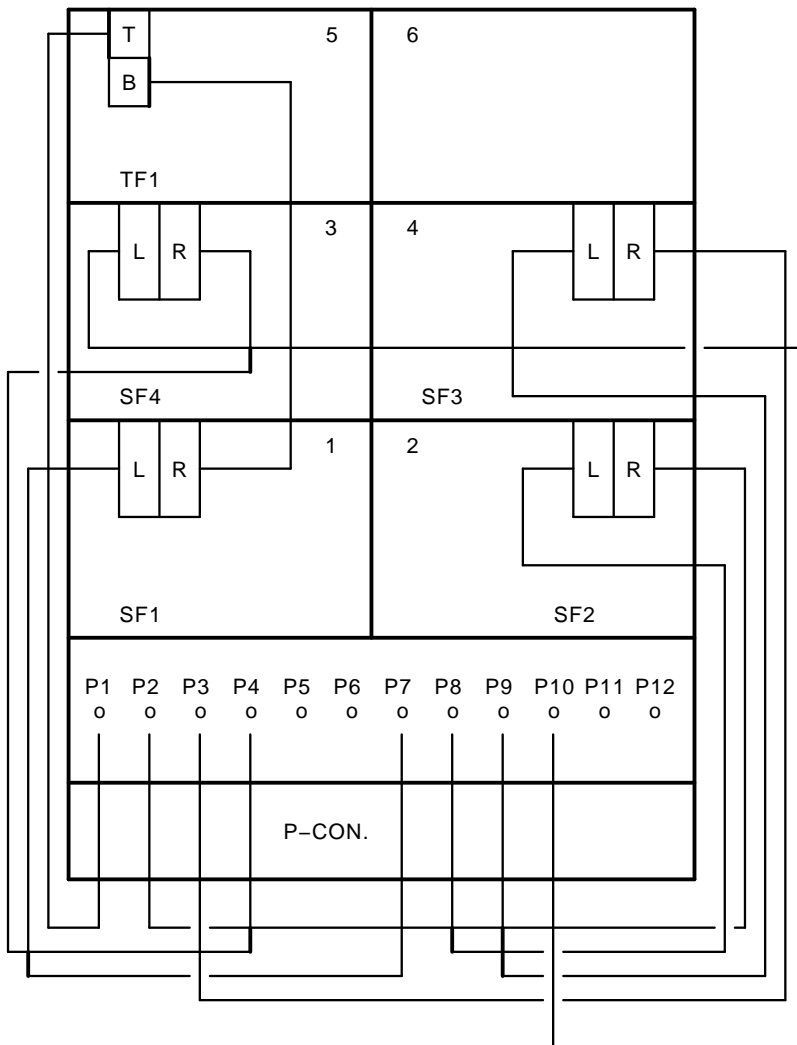
Figure A–11 (Cont.) S*x*300 with Four SF7*x*

A.4 Dual-Host Configurations

Figure A–11 (Cont.) S*x***300 with Four SF7***x*
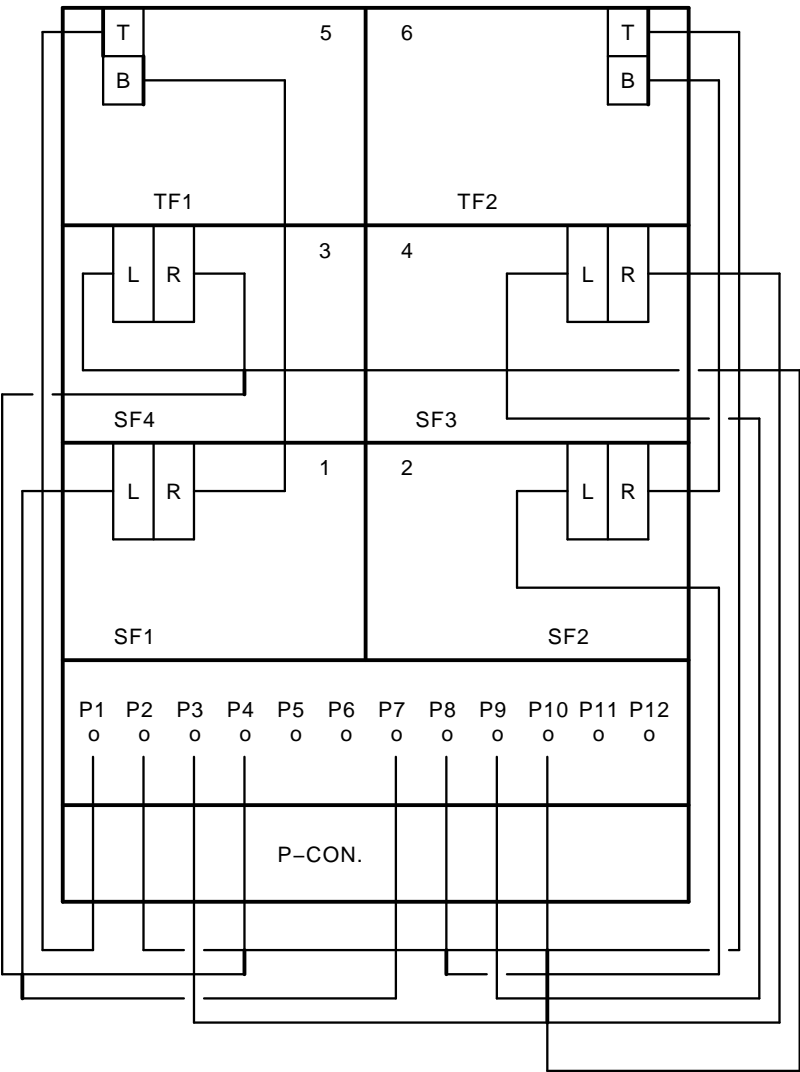
A.4 Dual-Host Configurations

Figure A–12 S*x*300 with Five SF7*x*
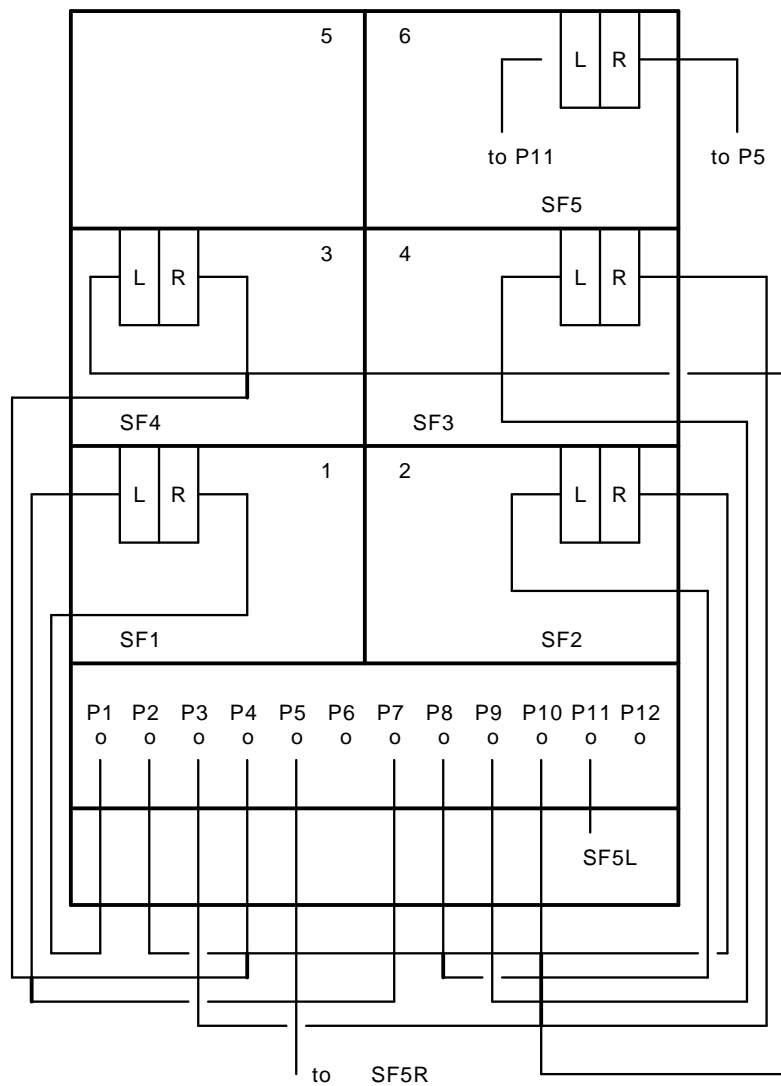
A.4 Dual-Host Configurations

Figure A–12 (Cont.)   S*x***300 with Five SF7***x*
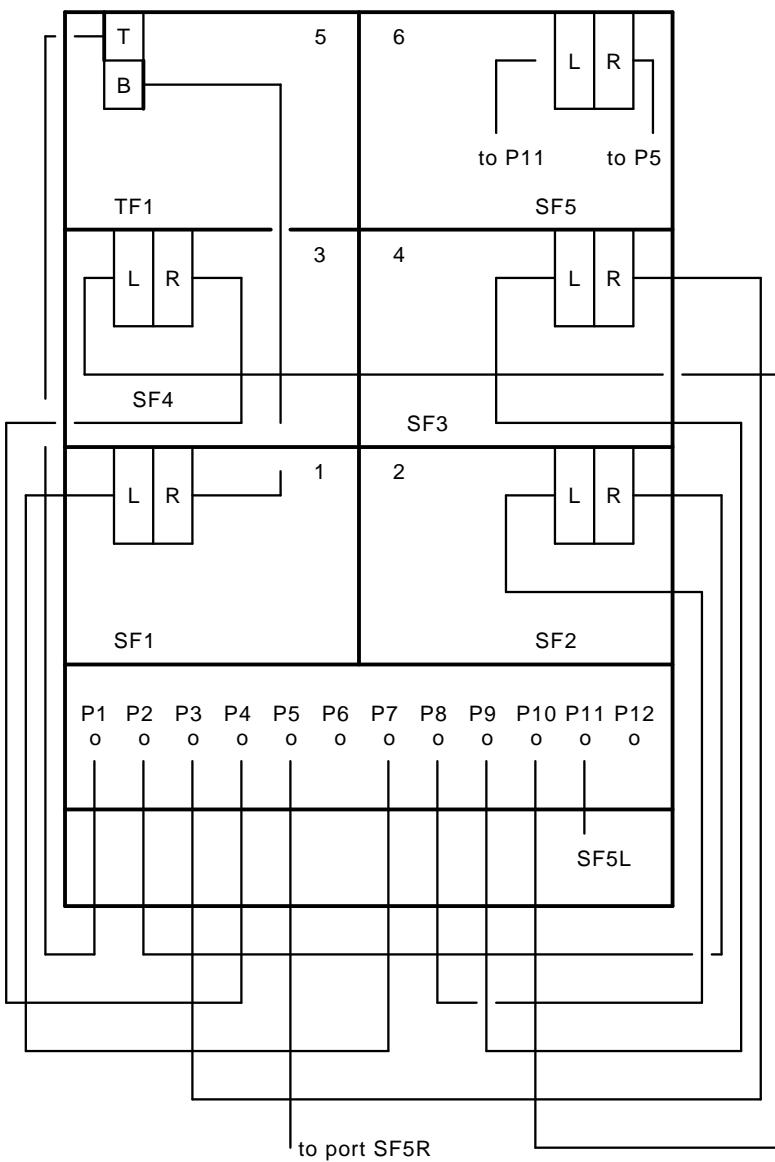
A.4 Dual-Host Configurations

Figure A–13 S*x***300 with Six SF7***x*
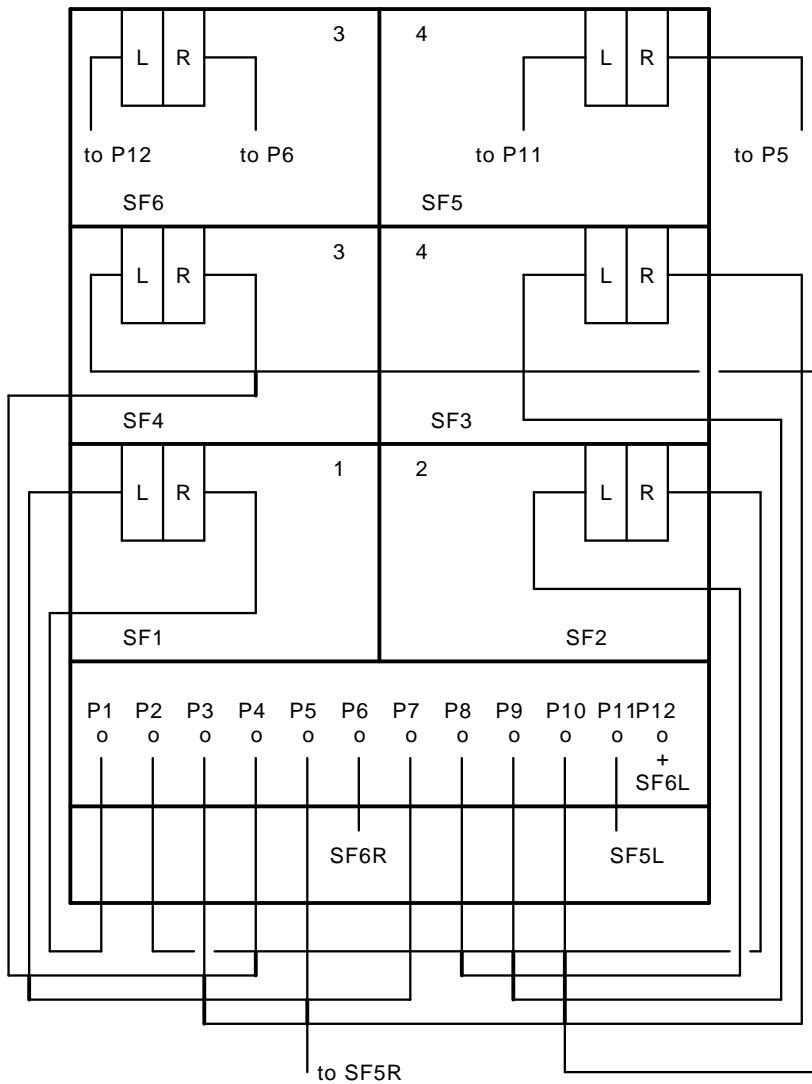
A.4 Dual-Host Configurations

Figure A–14 S*x*300 (Magazine Tape Subsystems Only)
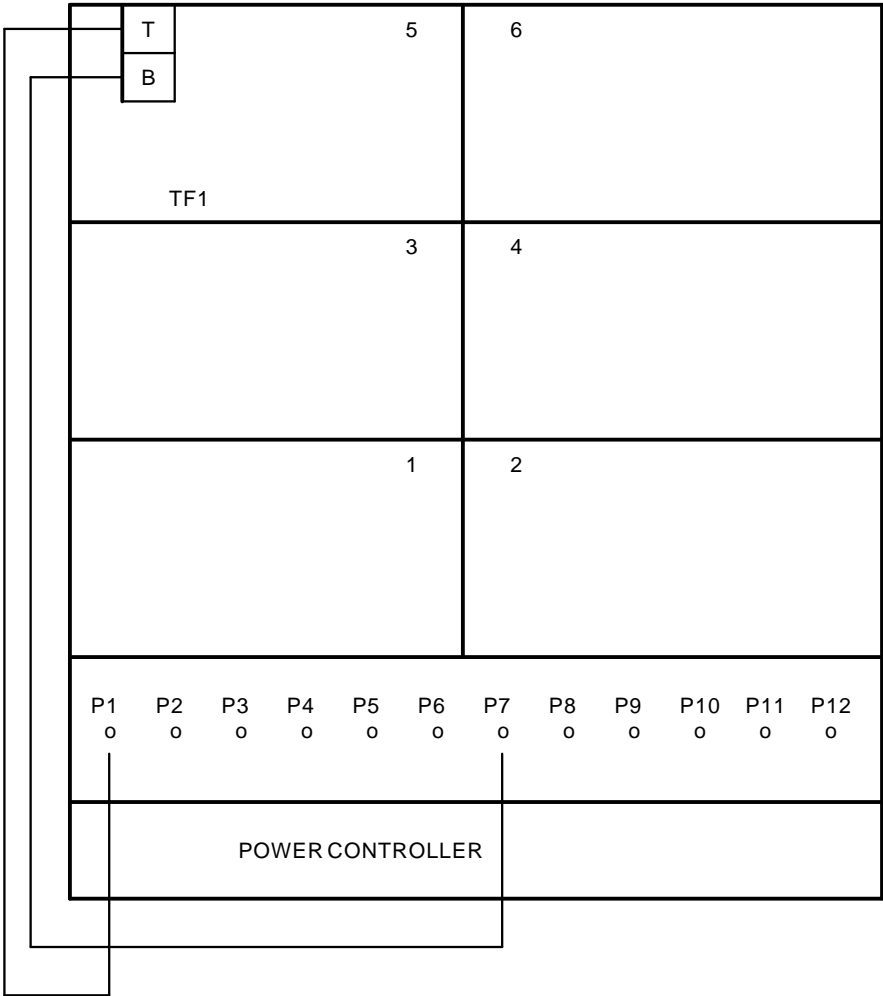
A.4 Dual-Host Configurations
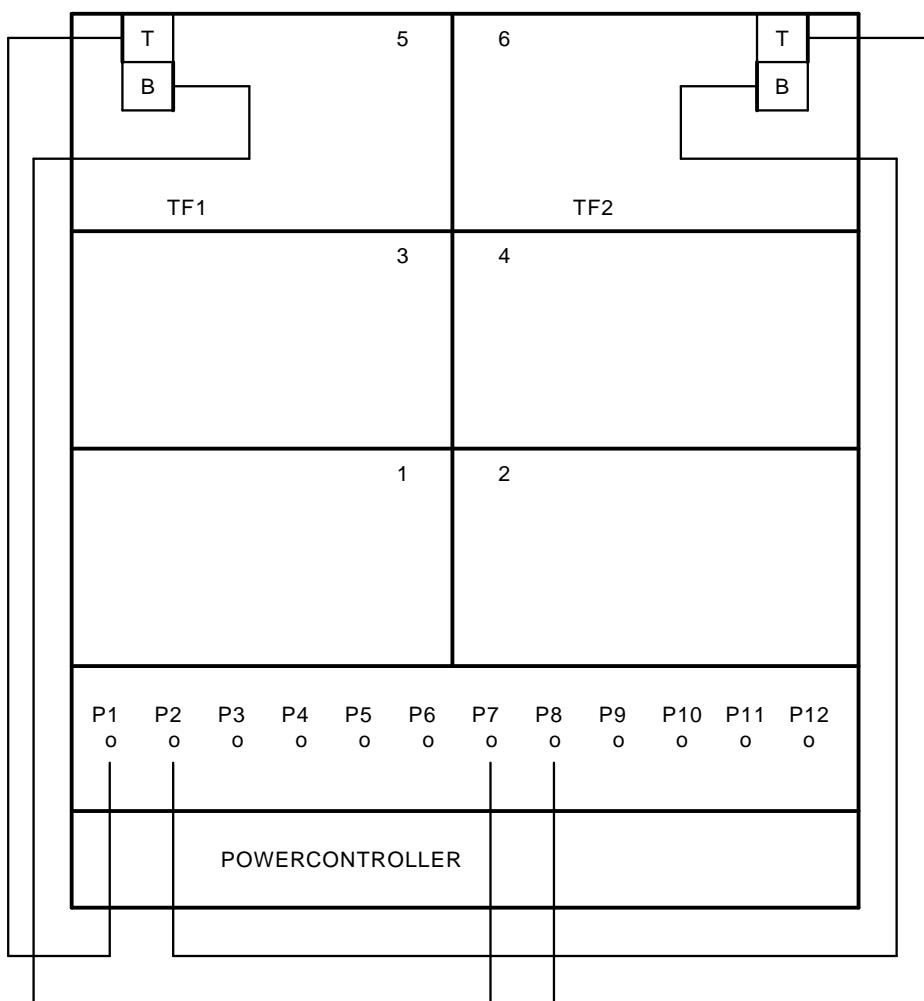
Figure A–14 (Cont.) S*x*300 (Magazine Tape Subsystems Only)

A.4 Dual-Host Configurations

Figure A–14 (Cont.)   S*x*300 (Magazine Tape Subsystems Only)
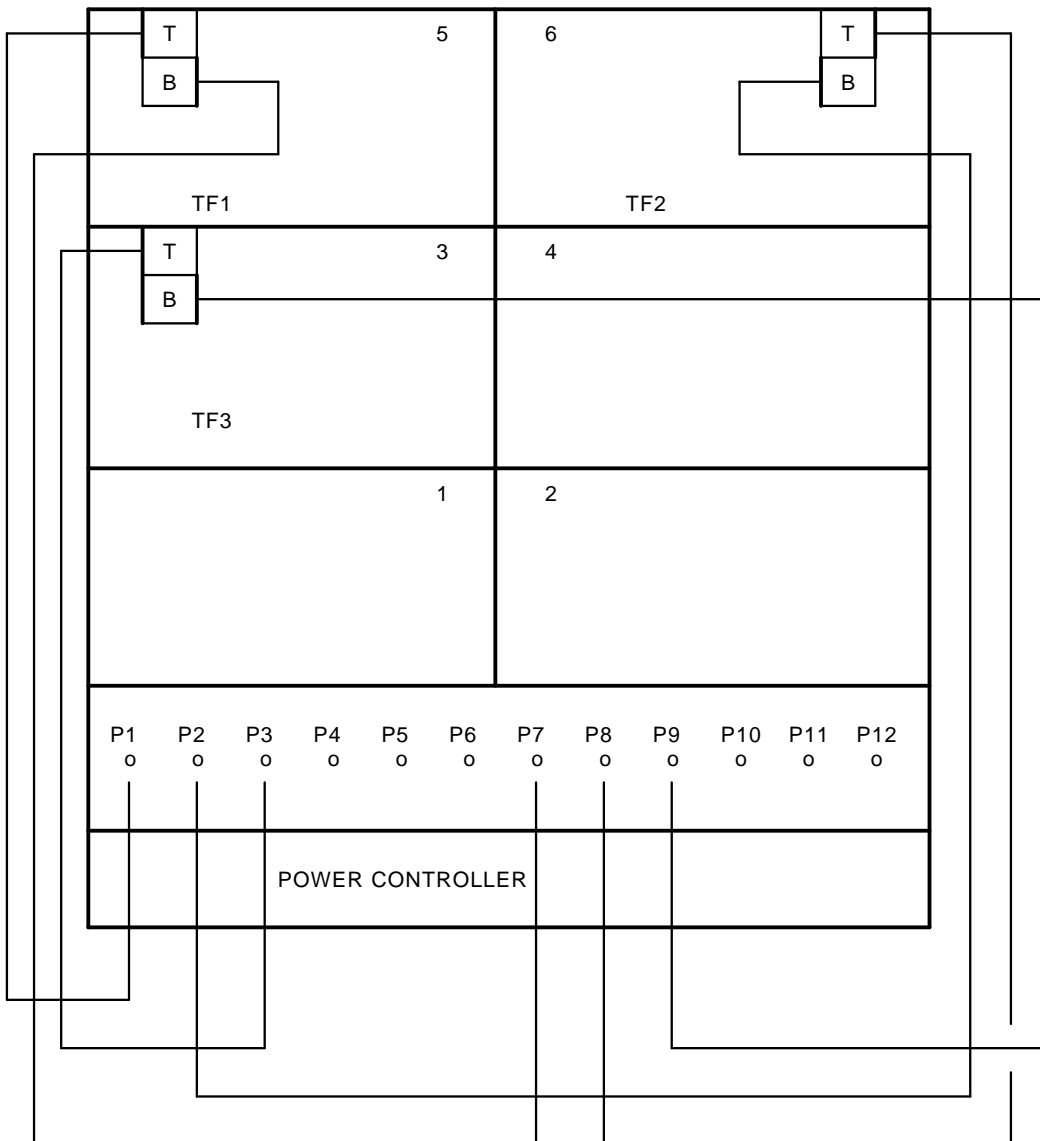
A.4 Dual-Host Configurations

Figure A–14 (Cont.) S*x***300 (Magazine Tape Subsystems Only)**

B
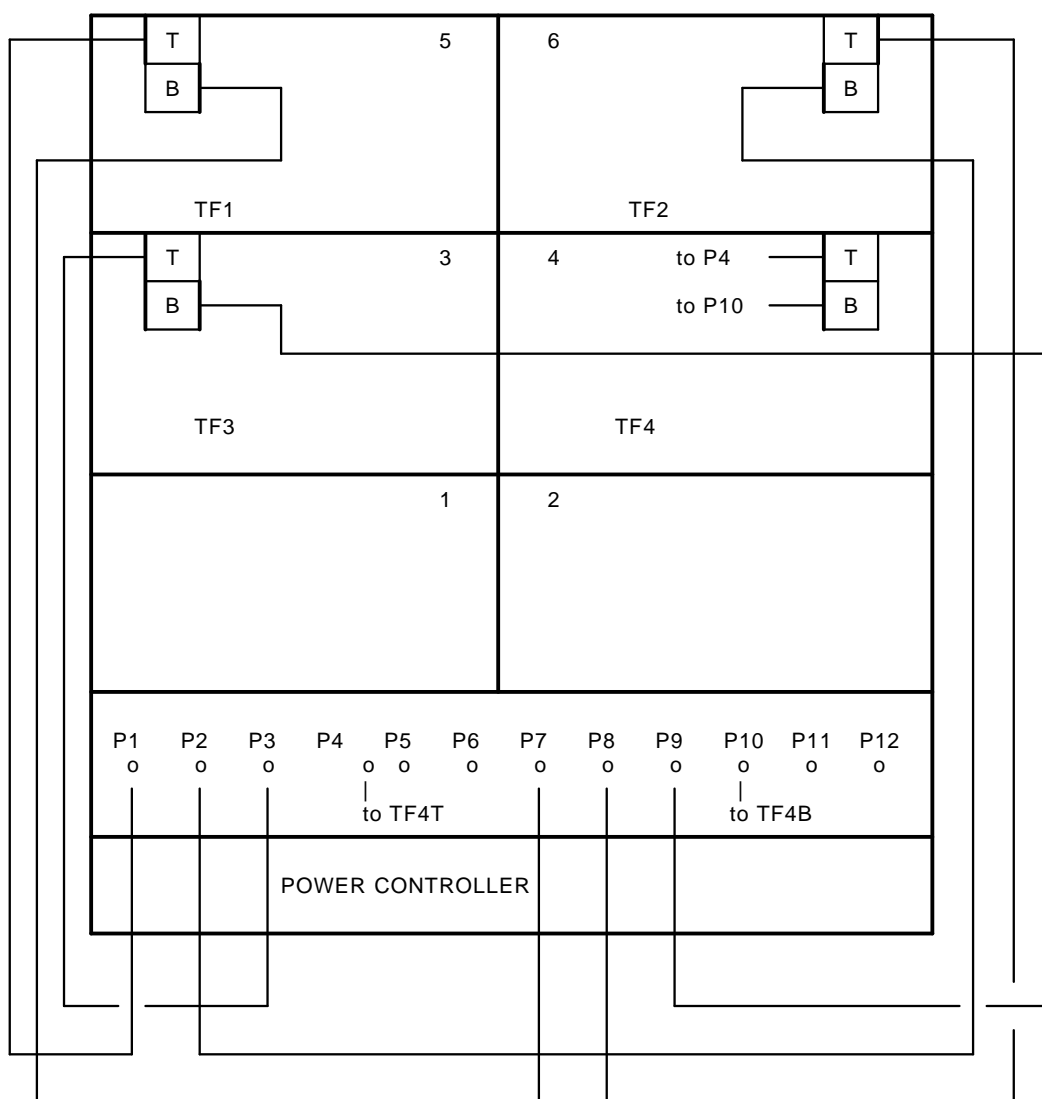
Installing an Sx72–UK Upgrade Kit

This appendix describes how to install the Sx72–UK upgrade kit while the host system and the disk integrated storage elements (ISEs) in the Sx72–HK storage enclosure are off-line. See Section B.1 for instructions on how to take a disk ISE off-line.

To make sure the integrity of the host system, follow the steps in this procedure in order and exactly as instructed.

_____ **Note** _____

You must upgrade the two-drive Sx72–HK storage enclosure to contain four drives before adding any other Sx72 storage enclosures on that bus of the Sx300 storage array.

Only one Sx72–HK storage enclosure can exist in an Sx300 storage array at one time.

_____

_____ **WARNING** _____

The following procedure assumes that the Sx300 storage array, and the Sx72 storage enclosures and magazine tape subsystems in the array, have been correctly installed and configured according to the standard bus and configuration guidelines in this guide.

_____

Locate the system configuration sheet and make sure that it is filled out.

- At this point, the host system must be brought down to continue.

- If the system configuration sheet reflects a configuration other than what is recommended in this guide, you must maintain that particular configuration throughout this procedure and work to make sure that no two devices on a DSSI bus have the same DSSI ID number. Should this

situation exist, do NOT attempt to use this procedure while the system is on-line.

_____ **Note** _____

Make sure that no two ISEs have the same DSSI ID number.

If this upgrade is to be followed by the installation of another S*x*72 storage enclosure, a magazine tape subsystem, or both, the host system must be brought down according to the system documentation.

_____

B.1 Securing the Array for the Upgrade

Once the host systems have been correctly brought down, perform the following steps:

1. Take each ISE installed in the S*x*300 storage array off-line.

   a. For all S*x*72 storage enclosures, press all operator control panel (OCP) Ready buttons to their out position.

   b. For all magazine tape subsystems, press the Load/Unload button. Wait until the cartridge is returned to the magazine and the In-Use light emitting diode (LED) is extinguished.

2. For all S*x*72 storage enclosures, press all drive dc power switches to their out position.

3. For all S*x*72 storage enclosures and magazine tape subsystems, turn the ac power switches at the rear of each to their 0 or off position.

4. At the rear of the array, turn the power controller circuit breaker off.

B.2 Installing the RF72 Disk ISE into an S*x*72–HK Storage Enclosure

This section describes the steps to install two RF72 disk ISEs into an S*x*72–HK storage enclosure.

_____ **WARNING** _____

Do not disconnect or disturb the existing DSSI cables and terminators on the present S*x*72 storage enclosures, magazine tape subsystems, or on the S*x*300 storage array I/O panel.

Customer data corruption could result.

B.2 Installing the RF72 Disk ISE into an S*x*72–HK Storage Enclosure

Take all possible ESD precautions when unpacking the RF72 disk
ISEs. Wear a correctly grounded ESD strap.

_____ **CAUTION** _____

Only one S*x*72 storage enclosure inner assembly should be extended on
the slide mount at a time.

The following steps describe how to install the two-drive S*x*72–UK upgrade
into an S*x*72–HK storage enclosure with two RF72 disk drives. The upgrade
includes the two RF72 disk ISEs to be installed in the two front positions of an
S*x*72–HK enclosure.

1. To unpack an RF72 disk ISE:

    a. Open the shipping carton.

    b. Remove the disk ISE wrapped in the protective wrapper.

    c. Open the protective wrapper and remove the disk ISE. Discard the
       desiccant bags.

    d. Place the disk ISE on the protective wrapper.

2. Install the RF72 disk ISEs.

_____ **WARNING** _____

Take all possible ESD precautions when handling the RF72 disk ISEs.
Wear a correctly grounded ESD strap.

---

    a. Remove the S*x*72 storage enclosure front cover (see Figure B–1) by
       loosening the screws and lifting the cover straight off.

    b. Orient the RF72 disk ISE as shown in Figure B–2 and install the
       disk ISE in the enclosure. Slide the disk ISE gently into place, while
       holding all cables out of the way. Do not force the disk ISE.

B.2 Installing the RF72 Disk ISE into an S*x*72–HK Storage Enclosure

Figure B–1 S*x*72 Front Cover Removal

OPERATOR CONTROL PANEL (OCP)

FRONT COVER
CAPTIVE SCREWS

FRONT COVER
DOOR

ENCLOSURE
CAPTIVE SCREWS

DRIVE DC POWER SWITCHES

SHR-X0126A-90
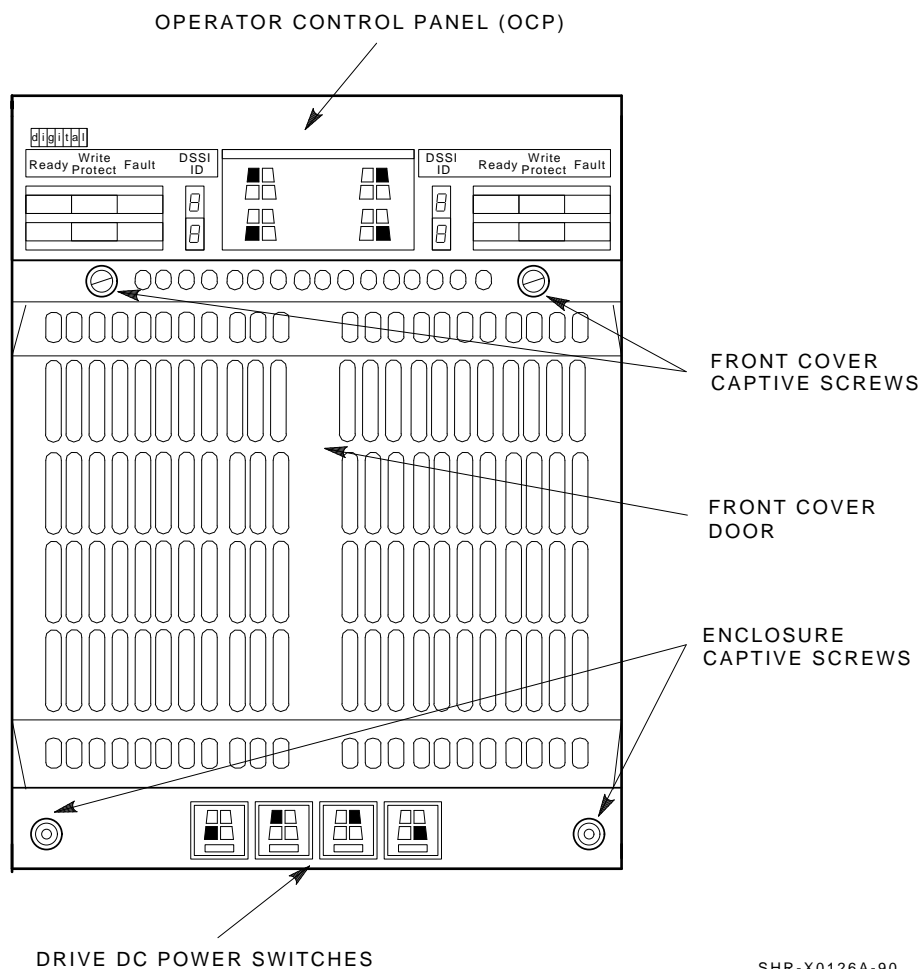
c. Verify that the disk ISE is locked into place and tighten the wedges.

d. Connect the cables as shown in Figure B–3 in the following order:
6-pin power cable, 10-pin OCP cable, and 50-pin DSSI cable. The
connectors are keyed so that the cables cannot be installed incorrectly.

B.2 Installing the RF72 Disk ISE into an S*x*72–HK Storage Enclosure

Figure B–2   RF72 Disk ISE Orientation
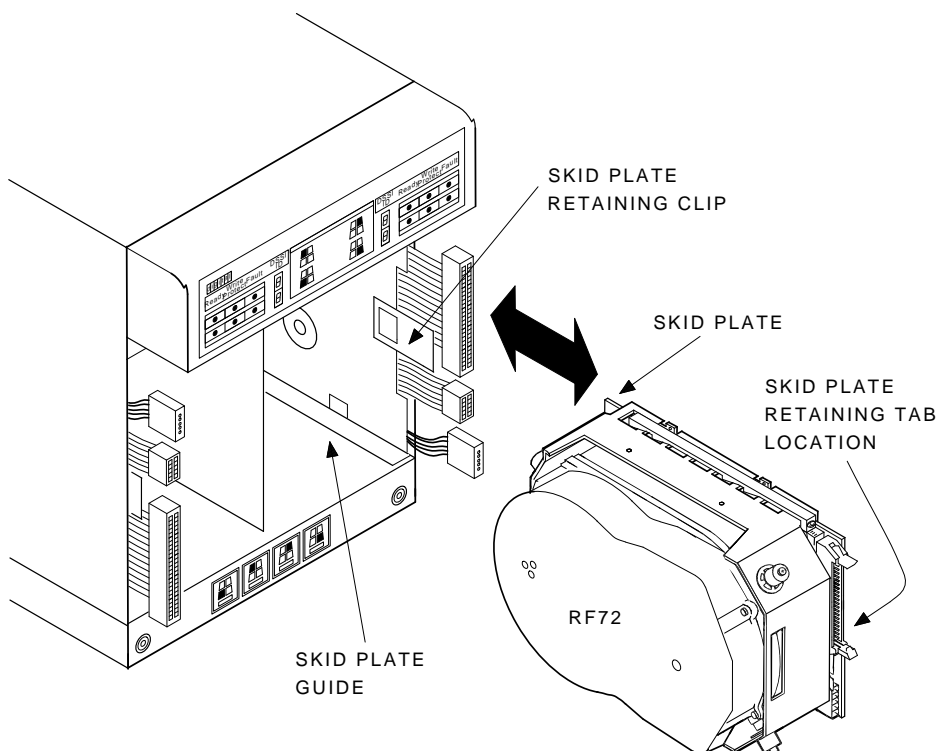
SHR-X0136A-90

   e.   Replace the front cover on the S*x*72 storage enclosure. See Figure B–4.

B.3 Powering Up the ISEs

Once all of the previous steps have been performed, use the following steps to power up the ISEs in the S*x*300 storage array:

1.   At the rear of the array, turn the 881 power controller circuit breaker on.

2.   For all S*x*72 storage enclosures and magazine tape subsystems, turn the ac power switches at the rear of each to their 1 or on position.

3.   For all S*x*72 storage enclosures, press all drive dc power switches to their in position.

B.3 Powering Up the ISEs

Figure B–3   Cabling the RF72 Disk ISE

DSSI CABLE

10-PIN
OCP CABLE

6-PIN DRIVE
POWER CABLE

SHR-X0135A-90
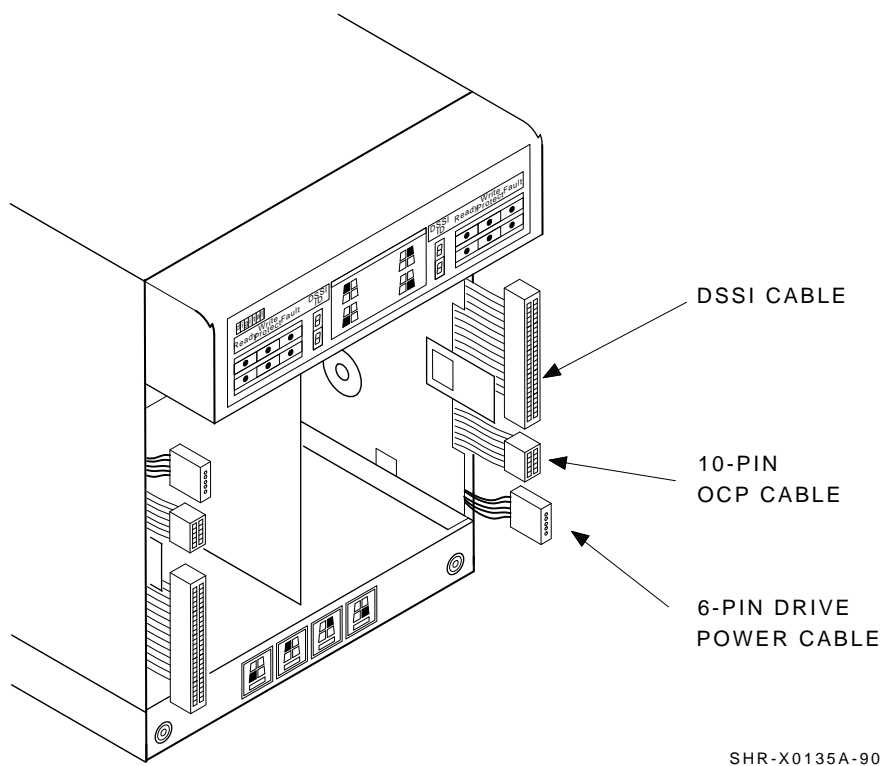
4. Place each disk ISE installed in the S*x*300 storage array on-line by pressing
    all OCP Ready buttons to their in position.

B.3 Powering Up the ISEs

Figure B–4   Sx72 Front Cover Replacement

OPERATOR CONTROL PANEL (OCP)

FRONT COVER
CAPTIVE SCREWS

FRONT COVER
DOOR

ENCLOSURE
CAPTIVE SCREWS

DRIVE DC POWER SWITCHES
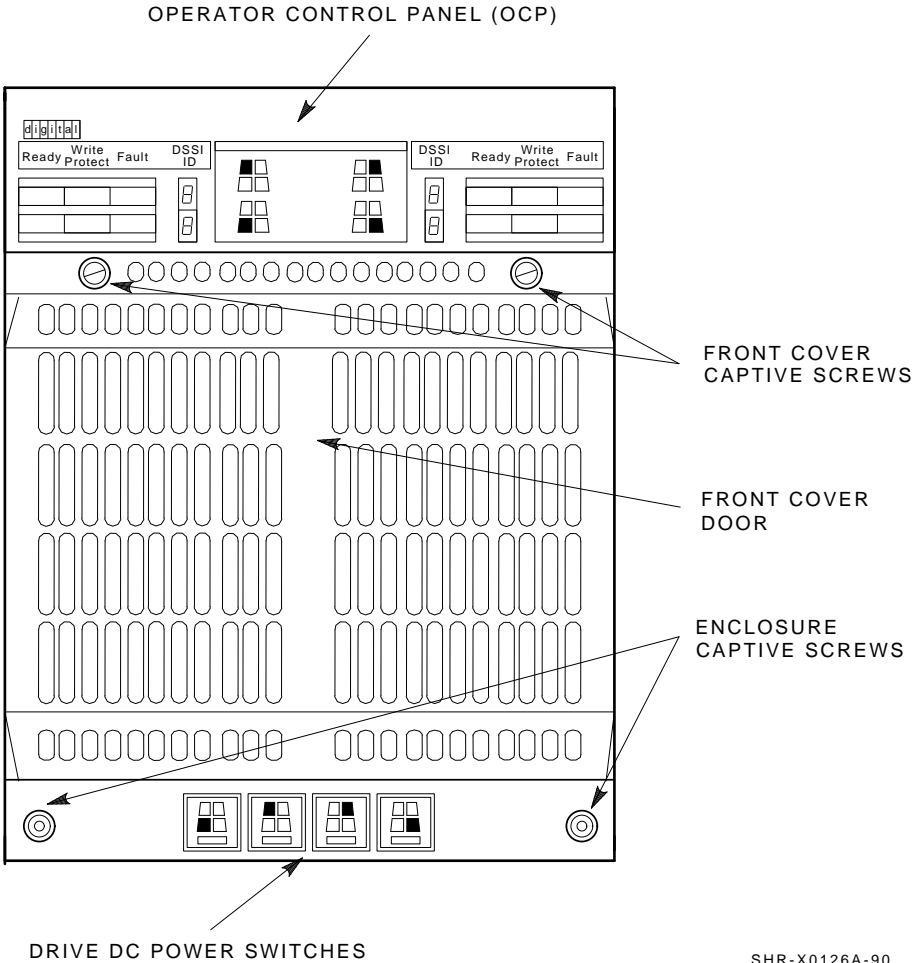
SHR-X0126A-90

B.4 Bringing the New RF72 Disk ISEs On-Line

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM) for the sections on configuring a single-host and dual-host configuration.

Note that you will be instructed by these sections to perform the following tasks:

- Boot VAX/DS on the host systems.

- Attach the KFMSA modules in each system.

- Select each KFMSA module in each system.

- Run EVCXE or EVCXF.

- Modify certain parameters in the disk ISEs.

- Make sure that all modified parameters are recorded as permanent values.

- Verify the communication path with all ISEs on the DSSI buses.

After all of the above have been accomplished successfully, return the systems and the S*x*300 storage array to normal operating mode.

C

Converting a Single-Host Configuration to a Dual-Host Configuration

This appendix describes how to convert an S*x*300 storage array, S*x*72 storage enclosure, or magazine tape subsystem that is configured according to single-host configuration guidelines to dual-host configuration guidelines.

Make sure that you have the following before starting any procedure:

- A #1 Phillips screwdriver (part number 29–11001–00)

- A 1/8-inch hex key (part number 29–26115–00)

- The *KFMSA Module Installation and User Manual* (EK–KFMSA–IM)

- The *SF Family Label Booklet* (part number 36–32882–01)

––––––––––––––––––––– **Additional Cables required** –––––––––––––––––

You need in addition for every SF7*x* a cable kit (CK-SF200-LM) .You need in addition for every tape loader magazine, which isn't connected to a SF7*x* device an additional cable kit (CK-SF200-LM).

––––––––––––––––––––––––––– **WARNING** –––––––––––––––––––––––––––

Only one S*x*72 storage enclosure inner assembly should be extended on the slide mount at a time.

Take all possible ESD precautions when performing this procedure. Wear a correctly grounded ESD strap.

Perform each step in the order presented.

_____ **CAUTION** _____

The following procedure assumes that the S*x*300 storage array, and the
S*x*72 storage enclosures and magazine tape subsystems in the array,
have been correctly installed and configured according to the standard
bus and configuration guidelines in this installation guide.

Locate the system configuration sheet an example can be found
in Figure C–1 and make sure that it is filled out. If the system
configuration sheet does not exist, fill one out immediately.

_____ **Note** _____

The host systems must be taken down to perform any of the steps
in this procedure, unless otherwise stated. Before cabling the S*x*300
storage array to the second host system, run the EVCXF configuration
program under VAX/DS and set the DSSI ID number of all KFMSA
modules in the second host system to 6. Refer to the *KFMSA Module
Installation and User Manual* for instructions on how to change the
KFMSA module DSSI ID number.

C.1 Securing the Array for Conversion

Once the host systems have been correctly brought down, perform the following
steps:

1. Take each integrated storage element (ISE) installed in the S*x*300 storage
   array off-line.

   a. For all S*x*72 storage enclosures, press all operator control panel (OCP)
      Ready buttons to their out position.

   b. For all magazine tape subsystems, press the Load/Unload button. Wait
      until the cartridge is returned to the magazine and the In-Use light
      emitting diode (LED) is extinguished.

2. For all S*x*72 storage enclosures, press all drive dc power switches to their
   out position.

3. For all S*x*72 storage enclosures and magazine tape subsystems, turn the ac
   power switches located at the rear of each to their 0 or off position.

C.1 Securing the Array for Conversion

Figure C–1   Example of a Single-Host System Configuration Sheet

KFMSA/DSSI Single-host Configuration Sheet

KFMSA XMI Node # _____

Bus 1
DSSI ID # ___7___

Bus 2
DSSI ID # ___7___

Device Type __Tape__   ALLO_CLASS ___0___
DSSI ID # ___0___   Sx300 Box # ___5___
Node Name _____   UNITNUM _____
System ID _____

Device Type __Tape__   ALLO_CLASS ___0___
DSSI ID # ___0___   Sx300 Box # ___6___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___1___   Sx300 Box # ___1___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___1___   Sx300 Box # ___2___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___2___   Sx300 Box # ___1___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___2___   Sx300 Box # ___2___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___3___   Sx300 Box # ___1___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___3___   Sx300 Box # ___2___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___4___   Sx300 Box # ___1___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___4___   Sx300 Box # ___2___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___5___   Sx300 Box # ___3___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___5___   Sx300 Box # ___3___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___6___   Sx300 Box # ___3___
Node Name _____   UNITNUM _____
System ID _____

Device Type __RF72__   ALLO_CLASS ___0___
DSSI ID # ___6___   Sx300 Box # ___3___
Node Name _____   UNITNUM _____
System ID _____

Color Code
on Cables ___Blue___

Color Code
on Cables ___Red___

SHR-X0109A-90

4.   At the rear of the array, turn the power controller circuit breaker off.

C.2 Conversion Procedure

This section contains the steps to do the following:

- Convert an S*x*72 storage enclosure from split-bus to through-bus mode (Section C.2.2)

- Convert an S*x*300 storage array, cabled for a single-host configuration, that contains S*x*72 storage enclosures, or magazine tape subsystems, or both, to a dual-host configuration (Section C.2.3)

- Label the cables (Section C.2.4)

      Fill out a new configuration sheet (Section C.2.4.1)
      Fill out the labels (Section C.2.4.2)
      Place the labels (Section C.2.4.3)

- Power up the S*x*300 storage array (Section C.2.5)

- Bring the new dual-host configuration back on-line (Section C.2.6).

- Verify the operation of the converted S*x*300 storage array (Section C.2.7)

Follow each step in the order presented.

C.2.1 Through-Bus to Split-Bus Conversion

1. Do the following if you are installing an SF7*x* in split bus mode (single-host only) (see Figure C–2):

   _____ **CAUTION** _____

   To maintain stability, extend only one SF7*x* storage enclosure or magazine tape subsystem on the slide mounts at a time.

   _____

   a. Loosen the four captive slide assembly screws. Slide the inner assembly out until the drawer locks in the service position.

   b. Push the inner assembly forward from the rear.

   _____ **Note** _____

   Do NOT completely remove the SF7*x* inner drawer assembly from the extrusion tube and extend only one at a time.

   _____

2. Reconfigure the transition termination module (TTM) for split-bus mode by first moving the small black jumper to the split-bus terminals, then moving cable connectors to the right pair of sockets.

3. Push the SF7*x* inner drawer back in, replace the front cover door, and tighten the four front door screws. To prevent pinching any cables, be sure that all cables are dressed correctly.

Figure C–2 Changing an SF7*x* to Split-Bus Mode

SPLIT-BUS MODE

J5   J4   J3   J2

• •

THRU

SPLIT

J11

TO OCP
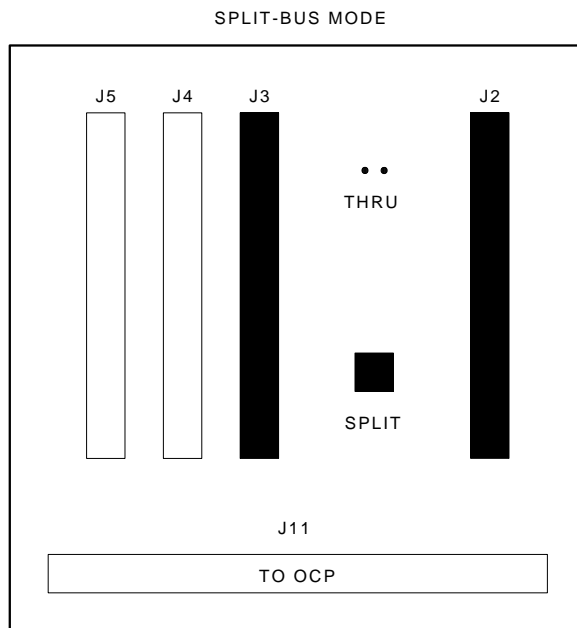
SHR_X1111_89

C.2 Conversion Procedure

C.2.2 Split-Bus to Through-Bus Conversion

Use the following steps only if you are converting an S*x*72 storage enclosure in position 3 or 5 of an S*x*300 storage array from single-host to dual-host configuration. S*x*72 storage enclosures in position 3 and 5 *must* be converted to through-bus mode.

CAUTION

Maintain ESD precautions at all times. Before performing the following steps, locate the ESD strap in the ESD pouch at the bottom of the front door.

To maintain stability, extend only one S*x*72 storage enclosure or magazine tape subsystem on the slide mounts at a time.

---

1. Remove the OCP by firmly grasping the right and left side of the OCP and pulling the OCP straight off.

2. Loosen the four captive slide assembly screws. At the rear, push the inner assembly out until the drawer locks in the service position.

Note

Do NOT completely remove the S*x*72 inner drawer assembly from the extrusion tube.

---

3. Reconfigure the transition termination module (TTM) for through-bus mode by first moving the small black jumper to the through-bus terminals. Then move the cable connector from J3 to J5, and the cable connector from J2 to J4 as shown in Figure C–3.

4. Push the S*x*72 inner assembly back into the extrusion tube. To prevent pinching any cables, be sure that all cables are dressed correctly.

5. Tighten the four captive slide assembly screws.

6. Set the DSSI ID number switches behind the OCP front door of positions 3 and 5 to match those in positions 1, 2, 4, and 5. See Figure C–4 and Table C–1.

7. Replace the OCP by lining up the taps on the back of the OCP with the slots on the front of the storage enclosure. Firmly press the right and left side of the OCP.

Figure C–3   Changing an S*x*72 to Through-Bus Mode

THROUGH-BUS MODE

J5   J4   J3   J2

THRU

• •

SPLIT

J11

TO OCP
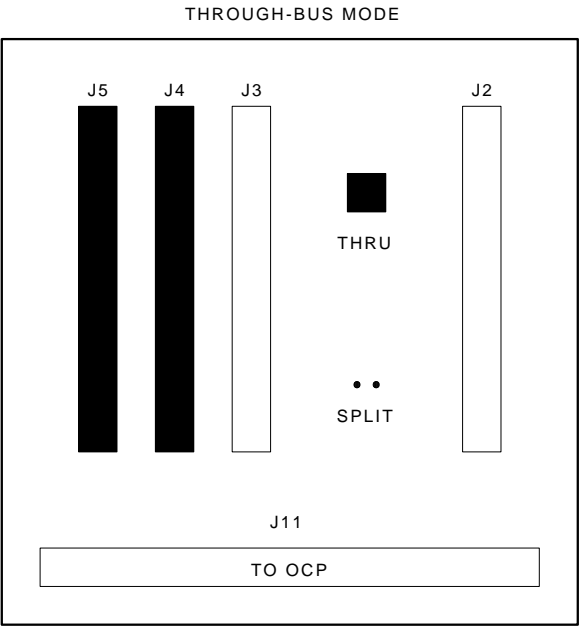
SHR_X1110_89

Figure C–4   OCP Indicators and Controls

digital

Ready Write Protect Fault DSSI ID   1   DSSI ID Ready Write Protect Fault

• • •   • • •
1 2   2   4 3   • • •
• • •   • • •
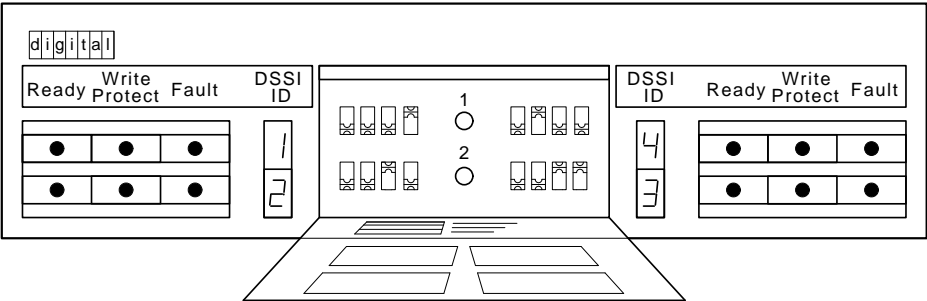
SHR_X1128_89

C.2 Conversion Procedure

Table C–1   DSSI ID Switch Settings (S*x*72 Only)

S*x*300 Positions 1, 2, 3, 4, 5, and 6[1]			
Left Rear (LR)	001	Right Front (RF)	011
Left Front (LF)	010	Right Rear (RR)	100

[1]The switch settings for OCPs in these positions are 0 = down and 1 = up.

C.2.3 Single-Host to Dual-Host Cabling Conversion

—————————————————————————— **Note** ——————————————————————————

Make sure that both host systems and the S*x*300 storage array are off-line and powered down.

——

This procedure explains the steps to recable a DSSI bus configured for a single-host application to a DSSI bus configured for a dual-host application.

Figure C–5 shows the five possible single-host bus configurations. Figure C–6 shows the three possible dual-host bus configurations.

The steps describe the conversion of each DSSI bus in the S*x*300 storage array individually. Follow each step for all DSSI buses present in the S*x*300 storage array, paying careful attention to all warnings, cautions, and notes.

The term *DSSI bus n* (where *n* = 1 to 6) refers to the DSSI buses used by the host system, the S*x*300 storage array, the S*x*72 storage enclosures, and the magazine tape subsystems. In the single-host configuration, the four DSSI buses used are:

DSSI bus 1, color code blue
DSSI bus 2, color code red
DSSI bus 3, color code yellow
DSSI bus 4, color code green

In the dual-host configuration, the six DSSI buses used are:

DSSI bus 1, color code blue
DSSI bus 2, color code red
DSSI bus 3, color code yellow
DSSI bus 4, color code green
DSSI bus 5, color code blue with a white strip
DSSI bus 6, color code red with a white strip

C.2 Conversion Procedure

Use Table C–2 to convert the existing S*x*300 storage array from single-host configured DSSI buses to the dual-host configuration and to Figures C–5 and C–6 for the actual bus configuration.

Figure C–5 Possible Single-Host Bus Configurations
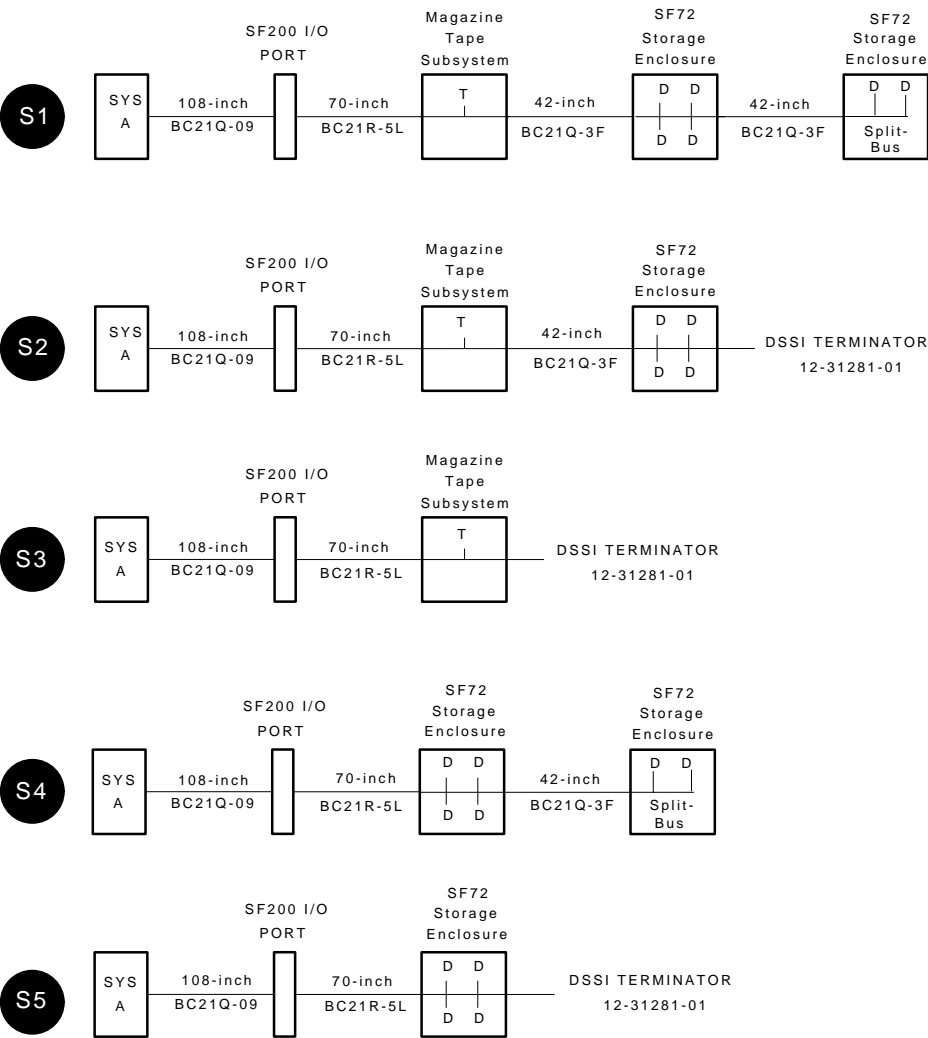
SHR-X0167A-90

C.2 Conversion Procedure

Figure C–6 Possible Dual-Host Bus Configurations

SHR-X0168A-90
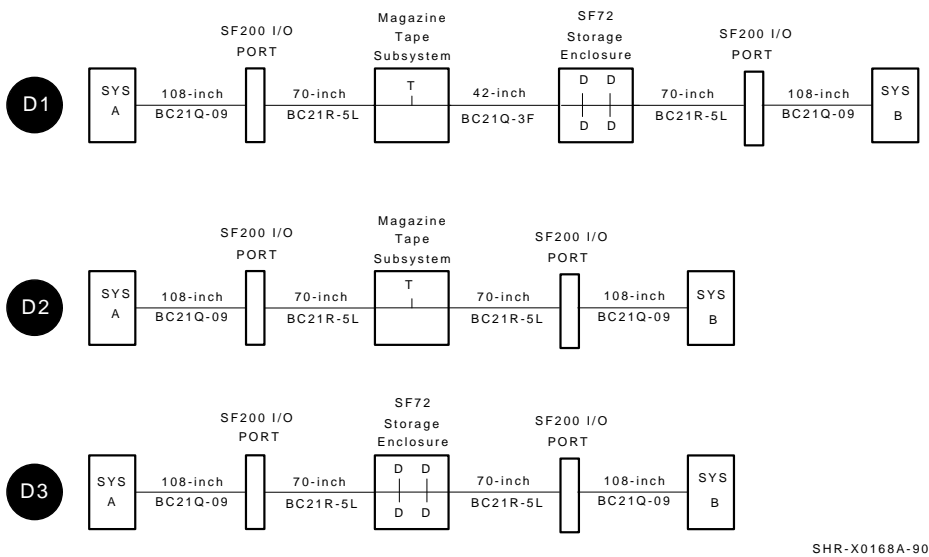
Table C–2   Single-Host to Dual-Host Conversion

Single-Host	To	Dual-Host
S1		D1[2]
S2[1]		D1
S3[1]		D2
S4		D3[2]
S5[1]		D3

[1]When converting these buses, remove the DSSI terminator (12–31281–01) and store these terminators in the ESD pouches on the inside S*x*300 storage array front or rear doors.

[2]Remove and discard the 42-inch DSSI cables between S*x*72 storage enclosures only. Remember that S*x*72 storage enclosures in positions 3 and 5 *must* be converted from split-bus to through-bus mode and become a D3 configuration only.

—————————— **CAUTION** ——————————

Do not disturb any existing DSSI cables unless otherwise instructed.

Do not remove any existing 42-inch DSSI cables (BC21Q–3F) between magazine tape subsystems and S*x*72 storage enclosures.

Install the 70-inch DSSI cables (BC21R–5L) where necessary to complete the bus connections to the S*x*300 I/O panel:

1. Connect one end of the 70-inch DSSI cable to the DSSI connector on the rear of the S*x*72 storage enclosure or magazine tape subsystem.

2. Install the other end to the appropriate port on the S*x*300 I/O panel. See Figure C–7.

Connect the appropriate number of 108-inch DSSI cables (BC21Q–09) to all the newly installed 70-inch DSSI cables on the S*x*300 I/O panel.

Next, connect the other end of the 108-inch DSSI cables to the appropriate DSSI connector on the system I/O panel.

Note

If you have not changed the KFMSA module DSSI ID numbers in the other host system to 6, do so at this time. Do NOT attempt to connect the 108-inch DSSI cables to this host system until the DSSI ID numbers have been changed. Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM).

Refer to Table A–5 for cabling diagrams of the single-host and dual-host configurations.

C.2.4 Labeling the Cables

This section describes the steps to label correctly the cables for the VAX 6000 series system, the S*x*300 storage array, and its S*x*72 storage enclosures and tape magazine subsystems.

At this point, all steps in the previous sections must be complete.

C.2 Conversion Procedure

Figure C–7 Connecting DSSI Cables on the S*x*300 I/O Panel

70 INCH
DSSI CABLE

sx300
I/O PANEL

108 INCH
DSSI CABLE
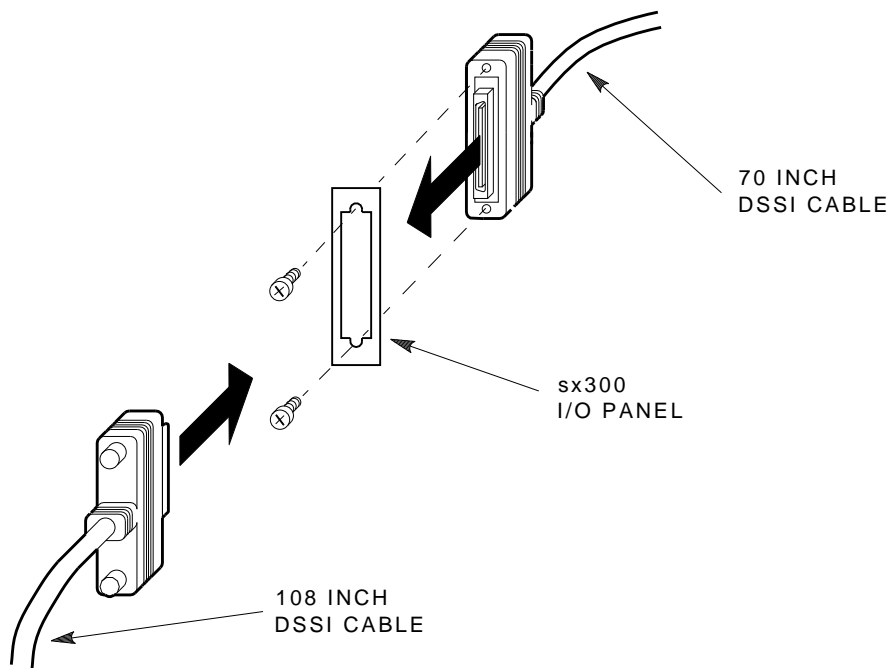
SHR-X0122-90

C.2.4.1 Completing the System Configuration Sheet

At this time, you should be ready to fill out the system configuration sheet. An example of the sheet is in Figure C–8 and in the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM).

Refer to these examples when filling out the system's configuration sheet.

_____ **Note** _____

Do not attempt to fill out and place the labels until you have completed the system configuration sheet.

The information from the system configuration sheet is used to fill out the labels correctly for all DSSI cables, S*x*72 storage enclosure OCPs, and magazine tape subsystem front panels.

You can also refer to the inside cover of the *SF Family Label Booklet* (part number 36–32882–01) for instructions on how to fill out these labels.

___

C.2.4.2 Filling Out the Labels

There are two sizes of colored labels: the larger one for the DSSI cables, and the smaller one for the inside of the S*x*72 OCP door, the front panel of a magazine tape subsystem, and the host system I/O panel.

Refer to the inside cover of the *SF Family Label Booklet* (part number 36–32882–01) for instructions on what information to put on each of the two types of labels.

For the dual-host configuration, use the following colored labels on the S*x*72 OCP doors, the front panels of the magazine tape subsystems, and all DSSI cables.

C.2 Conversion Procedure

Figure C–8 Blank Dual-Host System Configuration Sheet

KFMSA/DSSI Dual-host Configuration Sheet

KFMSA XMI Node # _____

Bus 1
DSSI ID # _____

Bus 2
DSSI ID # _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Device Type _____   ALLO_CLASS _____
DSSI ID # _____   Sx300 Box # _____
Node Name _____   UNITNUM _____
System ID _____

Bus 1
DSSI ID # _____

Bus 2
DSSI ID # _____

KFMSA XMI Node # _____

Color Code
on Cables _____

Color Code
on Cables _____

SHR-X0133-90

Label Color	S*x*300 Port / S*x*300 Position
Blue	Port 1, SF1 and TF1 , port 7
Red	Port 2, SF2 and TF2, port 8
Yellow	Port 3, SF3 and TF3, port 9
Green	Port 4, SF4 or TF4, port 10
Blue with white strip	Port 5, SF5, port 11
Red with white strip	Port 6, SF6, port 12

Proceed once you have filled the labels according to the instructions on the inside cover of the *SF Family Label Booklet* (part number 36–32882–01).

C.2.4.3 Placing the Labels

Now that the labels have been filled out, place them on the DSSI cables and the S*x*72 OCP doors. Also place a label on the front of the magazine tape subsystem.

Place cable labels 2 inches behind the DSSI connector on both ends of the DSSI cable as shown in Figure C–9.

Figure C–9 Placing a Label on a DSSI Cable

LABEL

SHR-X0108-90
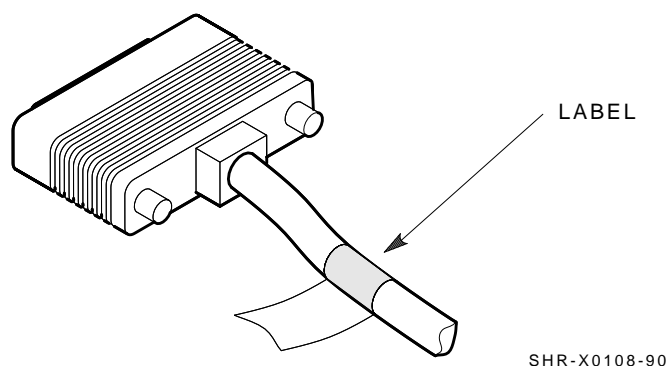
C.2 Conversion Procedure

Figure C–10 Placing a Label on the OCP Door
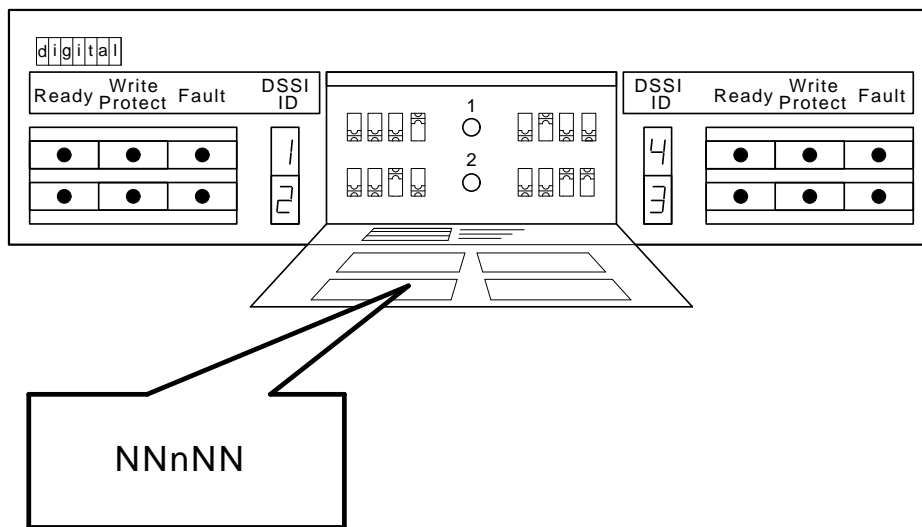
SHR_X1128C_89

Place the S*x*72 OCP label as shown in Figure C–10 and the magazine tape subsystem label as shown in Figure C–11.

C.2.5 Powering Up the S*x*300 Storage Array

Now that the S*x*300 storage array has been converted to the dual-host configuration and is labeled, you are ready to apply power.

CAUTION

Make sure that the ac power switch on each S*x*72 storage enclosure and magazine tape subsystem installed is in the off position.

---

1. At the rear of the storage array, turn the power controller on. Make sure that the BUS/OFF/ON switch is in the down position.

2. At the rear of the storage array, turn on each magazine tape subsystem installed (if present). Power up position 5, then 6. Observe the front panels for fault indications.

C.2 Conversion Procedure

Figure C–11   Placing a Label on the Magazine Tape Subsystem

OPERATOR CONTROL PANEL

Eject

Load/Unload

Slot Select

Power On

Write Protected

Tape In Use

Use Cleaning Tape

Magazine Fault

Loader Fault

DSSI NODE ID LABEL

SHR_X1025C_89
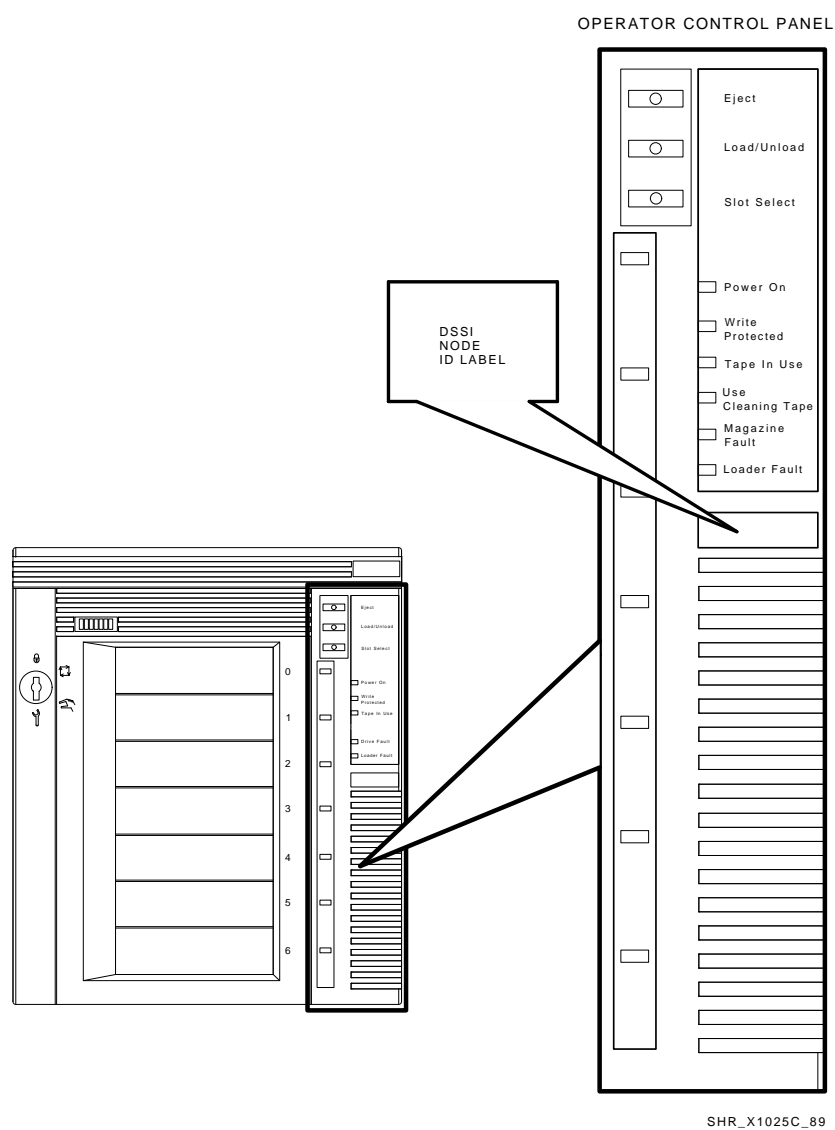
3. At the rear of the storage array, turn on each S*x*72 storage enclosure starting with position 1 and continuing in numerical order.

C.2 Conversion Procedure

4. Press each drive dc power switch for each S*x*72 storage enclosure. Start with position 1 and continue in numerical order.

5. Observe the OCP indicators. See Figure C–12.

    a. Check that the TERM PWR indicator (behind the door of the OCP) is on for all positions installed.

    b. Check that the SPLIT indicator (behind the door of the OCP) is *off* for all positions.

    c. Make sure that all DSSI ID switches on all OCPs are set to left-rear (ID = 1), left-front (ID = 2), right-front (ID = 3), and right-rear (ID = 4).

6. Press the Ready button on the OCP. See Figure C–12. The green Ready indicator flickers, then lights steadily once the ISE is on-line.

Figure C–12   OCP Indicators and Controls
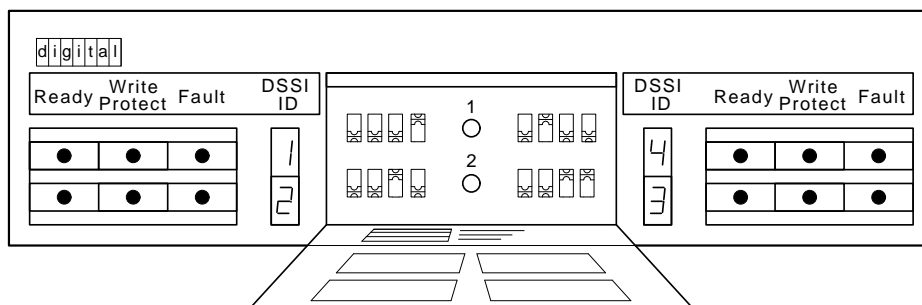
SHR_X1128_89

C.2.6 Bringing a Dual-Host Conversion On-Line

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM) for the section on configuring a dual-host configuration.

Note that you will be instructed to perform the following tasks:

- Boot VAX/DS on the host systems.

- Attach the KFMSA modules in each system.

- Select each KFMSA module in each system.

- Run EVCXE or EVCXF.

- Modify certain parameters in the disk ISEs.

- Make sure that all modified parameters are recorded as permanent values.

- Verify the communication path with all ISEs on the DSSI buses.

After all of the above have been accomplished successfully, return the systems and the S*x*300 storage array to normal operating mode.

C.2.7 Final Verification

Now that the S*x*300 conversion, cabling and labeling, and the powering up steps are complete, you are ready to configure the DSSI subsystem and verify the correct operation of each ISE in the array with the host system.

Refer to the *KFMSA Module Installation and User Manual* (EK–KFMSA–IM), Magazine Tape Subsystem Service Manual, and the Integrated Storage Element User Guide for detailed information and how to proceed with verifying the correct operation of each ISE that has been installed. In these manuals, you will find the procedure for establishing the communications between the ISEs, the adapter module, and the system. You will also find the step-by-step procedures for reconfiguring the system with its newly installed DSSI devices.

Refer to the manuals for the disk ISE and tape ISE for detailed information on the local programs in the ISEs.

Remember, each S*x*72 enclosure can contain two or four disk ISEs. Each magazine tape subsystem contains one tape ISE. A fully configured storage array contains 24 disk ISEs and 2 tape ISEs.

D

Installing a DECarray with VAX 4000 Systems

This appendix describes the steps to install the DECarray correctly and safely with VAX 4000™ systems in two configurations:

- Single-system installation (Section D.1) where one CK–SF200–LP cable kit is required per DSSI bus.

- DSSI VAXcluster™ installation (Section D.2) where two CK–SF200–LP cable kits are required per DSSI bus.

Perform the steps in the appropriate section only after you have completed the installation of the DECarray as described in previous chapters.

Make sure that all precautions for site preparation have been completed.

Digital Multivendor Customer Services or trained installing personnel must perform the step in the following *WARNING*:

_____ **WARNING** _____

Hazardous voltages are in the storage array and in the components of the storage array.

When performing any operation involving the power source, turn off the power controls of all components and on the power controller. Disconnect the power cable from the source outlet. Perform the operation, then reconnect the power cable to the source.
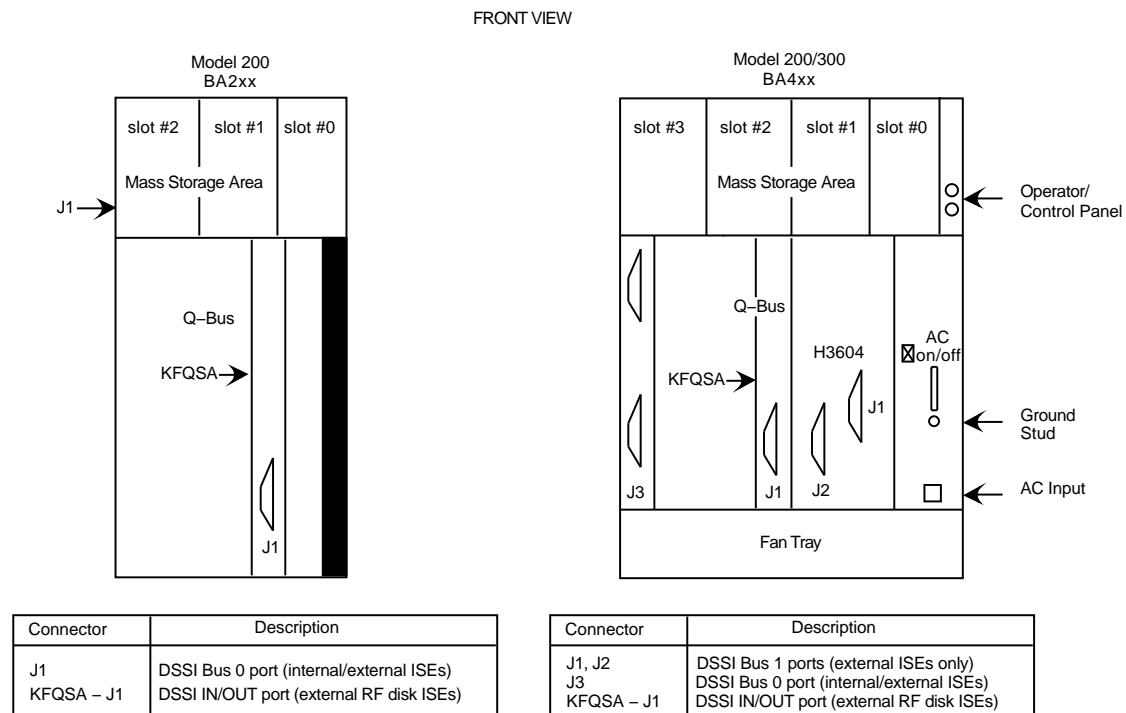
_____

D.1 Single-System Installation of an DECarray

As many as four single-system configured VAX 4000 systems can connect with a single DECarray.

The single DECarray requires connection to a DSSI adapter to support the DSSI integrated storage elements (ISEs). The VAX 4000 Model 300 provides two embedded DSSI adapters on the KA670 CPU module and also supports up to two KFQSA DSSI adapters installed in the system Q-bus™ backplane. The VAX 4000 Model 200 provides one embedded DSSI adapter on the KA660 CPU module and also supports up to two KFQSA DSSI adapters installed in the system Q-bus backplane.

In a single-system configuration, up to seven ISEs and one adapter can be supported on a single DSSI bus. That DSSI bus can consist of one tape ISE and up to, six disk ISEs or up to seven disk ISEs (where one disk ISE is in the system enclosure). For further information on single-system configurations, refer to the customer hardware information kit.

Briefly, a fully configured single-system system could contain one of the following:

- Two TF857 magazine tape ISEs. 8 RF disk ISEs (in SF7*x* storage enclosures) and no ISEs internal to the system enclosure.

- One TF857 magazine tape ISE. 20 RF disk ISEs (in SF7*x* storage enclosures) and one ISEs internal to the system enclosure.

- 24 RF disk ISEs (in SF7*x* storage enclosures) and two ISEs internal to the system enclosure.

Figure D–1 shows all the possible single-system DSSI buses.

Note

A single-system DSSI bus can only be connected from a VAX 4000 system to a single DECarray and then terminate in that array. No additional expanders can be connected to that DSSI bus.

For a VAX 4000 Model 200, DSSI bus 0 connect to ports 1 on the DECarray. The first KFQSA adapter connects to port 2 and the second KFQSA adapter connects to port 3.

D.1 Single-System Installation of an DECarray

Figure D–1 Possible Single-System DSSI Bus Configurations
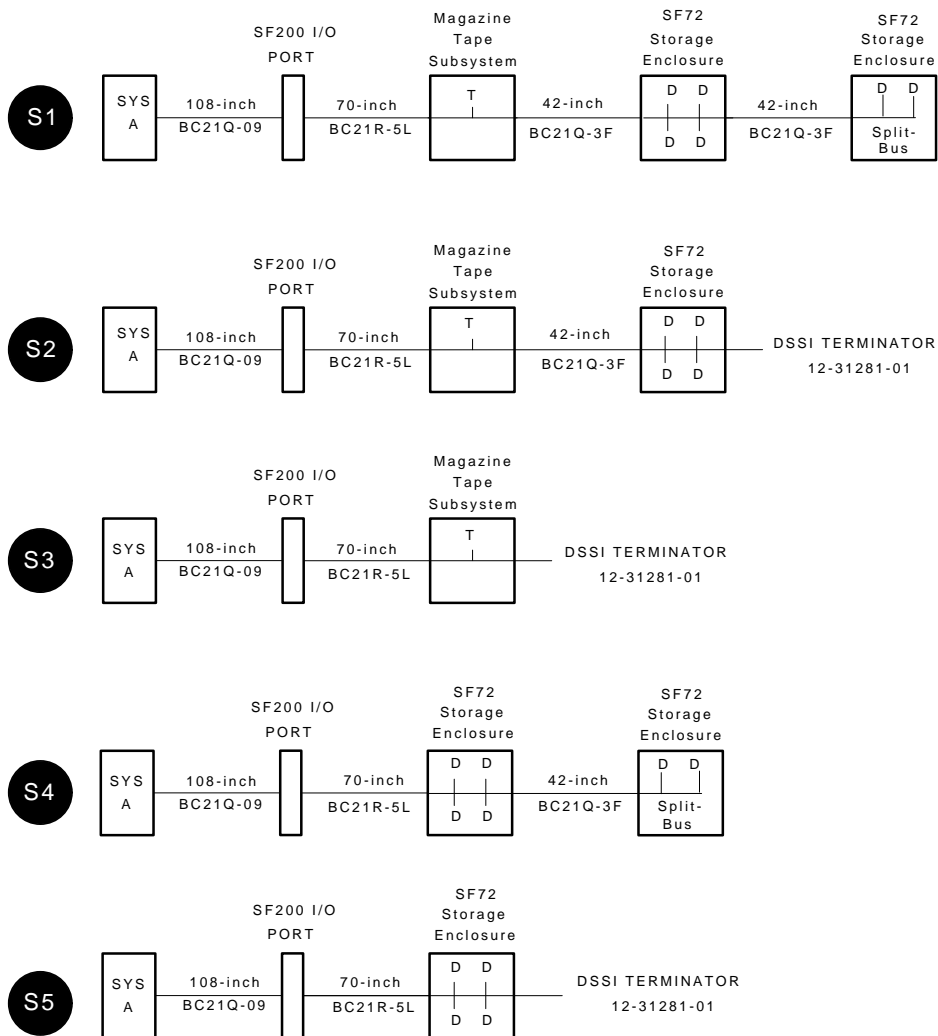
SHR-X0167A-90

For a VAX 4000 Model 300, DSSI bus 0 and 1 connect to ports 1 and 2 on the DECarray. The first KFQSA adapter connects to port 3 and the second KFQSA adapter connects to port 4.

D.1 Single-System Installation of an DECarray

This section provides the procedures for installing the DECarray in a single-system configuration correctly and safely. Digital Multivendor Customer Services or trained installing personnel must perform the procedures.

Make sure that all precautions for site preparation have been completed.

The procedures provide the steps to:

- Inspecting the array for proper configuration (Section D.1.1)
- Cable the DECarray with an existing VAX 4000 system in the single-system configuration (Section D.1.2)
- Verify the DECarray for correct operation (Section D.1.3)

D.1.1 Inspecting the Storage Array (Single-System)

This procedure describes the steps to inspect the DECarray for correct configuration.

At the front of the DECarray:

a. The DSSI ID switches behind the door of the operator control panel (OCP) of every SF7*x* enclosure installed are set according to Table D–1 and Figure D–2.

b. The Mass Storage Control Protocol (MSCP) switch (right-most switch of each switch pack) should be in the down or enabled position at all times unless you are instructed to change it to the up or disabled position.

Table D–1   SF7*x* DSSI ID Verification (Front View)

Positions 1, 2, 4, and 7[1]	MSCP	Switch Settings	Corresponding DSSI ID Number
Left Rear (LR)	0	001	1
Left Front (LF)	0	010	2
Right Front (RF)	0	011	3
Right Rear (RR)	0	100	4
Positions 3 and 8[1]	**MSCP**	**Switch Settings**	**Corresponding DSSI ID Number**

[1]The switch settings for OCPs in these positions are 0 = down and 1 = up.

Table D–1 (Cont.)   SF7x DSSI ID Verification (Front View)

Positions 3 and 8[1]	MSCP	Switch Settings	Corresponding DSSI ID Number
Left Rear (LR)	0	101	5
Left Front (LF)	0	110	6
Right Front (RF)	0	110	6
Right Rear (RR)	0	101	5

[1]The switch settings for OCPs in these positions are 0 = down and 1 = up.

Figure D–2   Verifying the SF7x DSSI ID Switch Settings
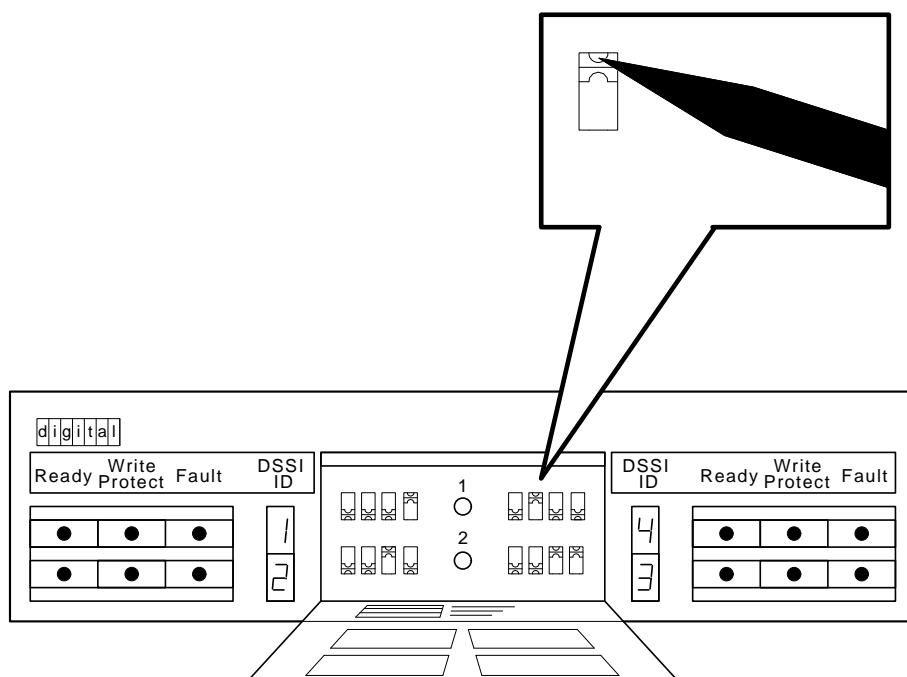
SHR_X1128B_89

D.1 Single-System Installation of an DECarray

Make sure that the DSSI ID numbers of each TF857 magazine tape ISE installed in the array are set to 0 and that the Tape Mass Storage Control Protocol (TMSCP) switch is enabled (down). Refer to the TF857 magazine tape ISE documentation for the procedure to access the DSSI adapter module.

D.1.2 Cabling the Storage Array (Single-System)

Start at the rear of the DECarray cabinet.

1. Plug the main power cable of the storage array into its power receptacle.

WARNING

Hazardous voltages are in the storage array and in the components of the storage array.

When performing any operation involving the power source, turn off the power controls of all components and on the power controller. Disconnect the power cable from the source outlet. Perform the operation, then reconnect the power cable to the source.

---

2. Connect the 108–inch DSSI cable or cables (part number BC22Q–09) from the array DSSI I/O panel to the appropriate system DSSI connector.

   a. At the system DSSI connector, remove the terminator or terminators (part number 12–29258–01). See Figure D–3. Store these terminators in the ESD pouch on the rear door of the storage array cabinet.

   b. The system DSSI connectors are (see Figure D–3):

      • DSSI Bus 0 (embedded adapter, also connects to internal TF and RF ISEs)

      • DSSI Bus 1, Model 300 only (embedded adapter, TF and RF ISEs)

      • KFQSA 1 (first installed adapter in the Q-bus backplane, RF ISEs only)

      • KFQSA 2 (second installed adapter in the Q-bus backplane, RF ISEs only)

Note

Only ports 1 through 4 are used on the DECarray in a single-system configuration.

D.1 Single-System Installation of an DECarray

Figure D–3   VAX 4000 DSSI Connectors

FRONT VIEW

Connector	Description
J1	DSSI Bus 0 port (internal/external ISEs)
KFQSA – J1	DSSI IN/OUT port (external RF disk ISEs)

Connector	Description
J1, J2	DSSI Bus 1 ports (external ISEs only)
J3	DSSI Bus 0 port (internal/external ISEs)
KFQSA – J1	DSSI IN/OUT port (external RF disk ISEs)

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c. Install the terminator or terminators (part number 12–31281–01) to their correct position on the SF7*x* enclosures, TF857 magazine tape ISEs, and system I/O panel.

Note that the positions are numbered on the cabinet frame side rails on the front and the rear of the cabinet.

- If the array has an SF7*x* storage enclosure in position 1 ONLY then install a terminator (12–31281–01) in the left DSSI connector of the enclosure.

- If the array has an SF7*x* storage enclosure in position 1 and a TF857 magazine tape ISE in positions 5 and 6, then install a terminator (12–31281–01) in the bottom DSSI connector of the TF857 magazine tape ISE in position 6.

D.1 Single-System Installation of an DECarray

- If the array has two TF857 magazine tape ISEs in positions 5 and 6, then install a terminator (12–31281–01) in the bottom DSSI connector of both TF857 magazine tape ISEs.

- If the array has an SF7x storage enclosure in position 1 only, then install a terminator (12–31281–01) in the leftmost DSSI connector of position 1.

- If the array has an SF7x storage enclosure in position 1 and 2, then install a terminator (12–31281–01) in the leftmost DSSI connectors of position 1 and 2.

- If the array has an SF7x storage enclosure in position 1, 2, 3, 4, and 7, then install a terminator (12–31281–01) in the leftmost DSSI connectors of positions 4 and 7.

- If the array has an SF7x storage enclosure in position 1, 2, 3, 4, 7, and 8, then install a terminator (12–31281–01) in the leftmost DSSI connectors of position 4 and 7.

3. Connect the ground strap (provided with the cable kit). Attach one end of the strap according to the instructions found in the *System Expansion Installation Supplement* (part number EK-431AB-IN). Connect the other end to one of the screws securing the power controller to the storage array.

4. All other configurations, with or without TF857 magazine tape ISEs, do not need terminators.

D.1.2.1 Example of a Fully Configured Single-System System

The following section shows a fully configured single-system consisting of a DECarray with 18 disk ISEs and two TF857 magazine tape ISEs connected to a VAX 4000 systems.

REMEMBER that DSSI Bus 0 from the VAX 4000 Model 300 can have tape and disk ISEs on it that are internally mounted in the system enclosure. Also DSSI Bus 0 and 1 (the embedded DSSI buses) are the ONLY two DSSI buses from the system that can support the DSSI tape ISEs (TF857).

Use Table D–2 for configuring DSSI bus 0.

Table D–2 DSSI Bus 0 Configurations

System Internal ISEs		DECarray	
Tape ISE	**Disk ISE**	**Tape ISE**	**Disk ISE**
0	0	0 or 1	up to 6
0	1	0 or 1	up to 6
0	2	0 or 1	up to 4
0	3	0 or 1	up to 4
0	4	0 or 1	up to 2
1	0	0	up to 6
1	1	0	up to 4
1	2	0	up to 4
1	3	0	up to 2

D.1.2.2 Completing the System Configuration Sheet (Single-System)

At this time, you should be ready to fill out the system configuration sheet (Figure D–5). The information from the system configuration sheet is used to fill out the labels correctly for all DSSI cables, enclosure OCPs, and ISEs.

Note

Do not attempt to fill out and place the labels until you have completed the system configuration sheet.

You can also refer to the inside cover of the *SF Family Label Booklet* (part number 36–32882–01) for instructions on how to fill out the labels.

D.1 Single-System Installation of an DECarray

Figure D–4 Single-System Bus Configurations
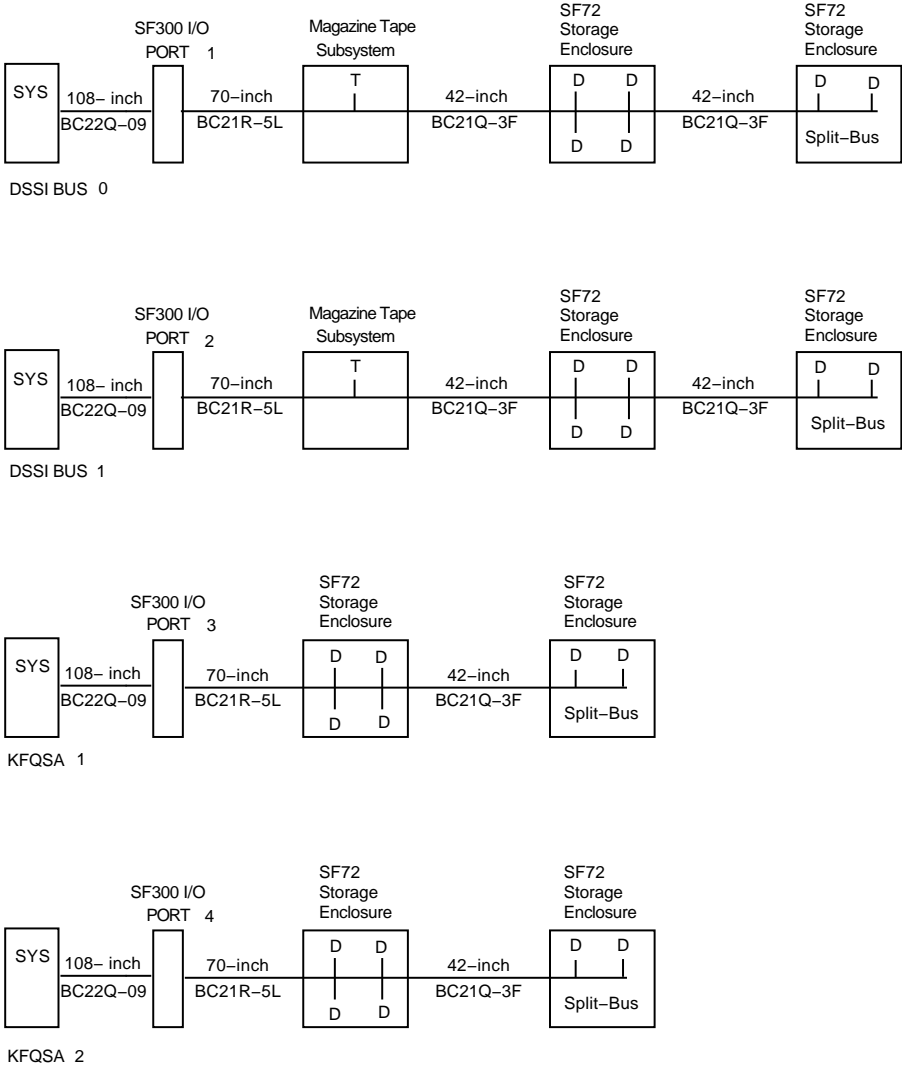
new_single.rags

D.1 Single-System Installation of an DECarray

Figure D–5 Single-System Configuration Sheet

DSSI Single–System Configuration Sheet

[for MicroVAX II, MicroVAX/VAXserver 3xxx (Q–bus), and VAX 4000 systems]

DSSI ADAPTER

Bus _____
DSSI ID #_____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. #_____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. #_____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. #_____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. #_____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. #_____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ Array Pos. #_____
Node Name _____ UNITNUM _____
System ID _____

Device Type _____ ALLO_CLASS _____
DSSI ID # _____ SF200 Box # _____
Node Name _____ UNITNUM _____
System ID _____

Color Code _____

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D.1 Single-System Installation of an DECarray

D.1.3 Single-System Final Verification

Now that all the hardware installation, cabling and labeling, and the powering up steps are complete, you are ready to configure the DSSI subsystem and verify the correct operation of each ISE in the array with the system.

Refer to the system installation manuals and *TF857 Magazine Tape ISE Service Manual* (EK–TF857–SM) for detailed information and how to proceed with verifying the correct operation of each ISE that has been installed. In these manuals, you will find the procedure for establishing the communications between the ISEs, the adapter module, and the system. You will also find the step-by-step procedures for reconfiguring the system with its newly installed DSSI devices.

Refer to the manuals for the disk ISE and tape ISE for detailed information on the local programs in the ISEs.

Remember, each SF7*x* storage enclosure can contain two or four disk ISEs. Each TF857 magazine tape ISE contains one tape ISE. A fully configured DECarray contains up to 24 disk ISEs and/or up to 4 tape ISEs.

If at any time you detect a failure, refer to Chapter 8.

Once the verification is complete, mount the front bezel and close the rear door; turn the hex-Allen fasteners clockwise to lock. The system is ready to be turned over to the system manager.

D.2 DSSI VAXcluster Installation of an DECarray

As many as two pairs of DSSI VAXcluster configured VAX 4000 systems can be used with a single DECarray.

A single DECarray requires connection to two DSSI adapters to support each DSSI bus. The VAX 4000 Model 300 provides two embedded DSSI adapters on the KA670 CPU module and also supports up to two KFQSA DSSI adapters installed in the system Q-bus backplane. The VAX 4000 Model 200 provides one embedded DSSI adapter on the KA660 CPU module and also supports up to two KFQSA DSSI adapters installed in the system Q-bus backplane.

In a DSSI VAXcluster configuration, up to six ISEs and two adapters can be supported on a single DSSI bus. That configuration can consist of one tape ISE and up to five disk ISEs or six disk ISEs (where one disk ISE is in the system enclosure). For further information on DSSI VAXcluster configurations, refer to the customer hardware information kit.

D.2 DSSI VAXcluster Installation of an DECarray

Briefly, a fully configured DSSI VAXcluster system could contain one of the following:

- Two TF857 magazine tape ISEs. 16 RF disk ISEs (in SF7x storage enclosures) and and two ISEs internal to the systems enclosure.

- One TF857 magazine tape ISE. 16 RF disk ISEs (in SF7x storage enclosures) and three ISEs internal to the systems enclosure.

- 16 RF disk ISEs (in SF7x storage enclosures) and four ISEs internal to the systems enclosure.

Figure D–6 shows the possible DSSI VAXcluster buses.

Figure D–6 Possible DSSI VAXcluster DSSI Bus Configurations
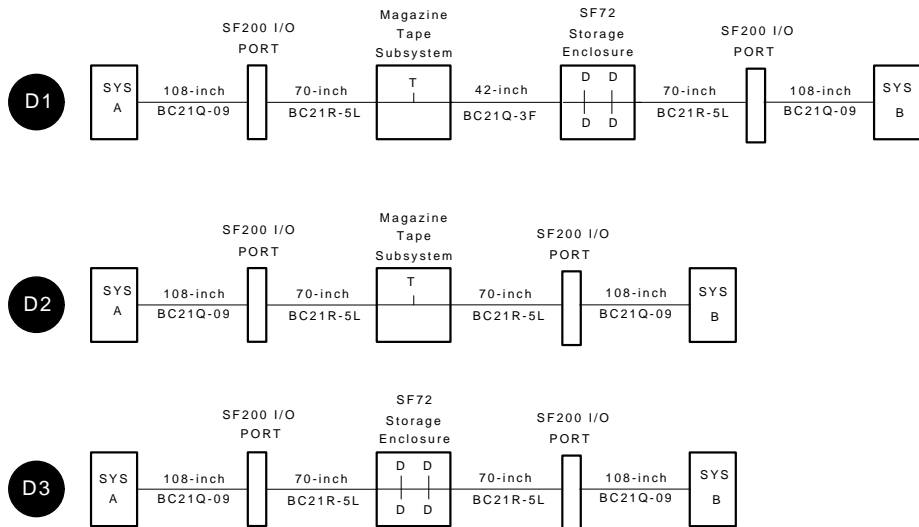
D.2 DSSI VAXcluster Installation of an DECarray

---------------------- **Note** ----------------------

A DSSI VAXcluster bus can only be connected from a VAX 4000 to a single DECarray and then to another VAX 4000.

For a VAX 4000 Model 200, DSSI bus 0 connect to ports 1 and 9 on the DECarray. The first KFQSA adapter connects to port 2 and 10. The second KFQSA adapter connects to port 3 and 11.

For a VAX 4000 Model 300, DSSI bus 0 and 1 connect to ports 1, 2 and 9, 10 on the DECarray. The first KFQSA adapter connects to port 3 and 11. The second KFQSA adapter connects to port 4 and 12.

This section provides the procedures for installing the DECarray in a DSSI VAXcluster configuration correctly and safely. Digital Multivendor Customer Services or trained installing personnel must perform the procedures.

Make sure that all precautions for site preparation have been completed. Refer to DECarray installation guide.

The following procedures provide the steps to:

- Inspecting the array for proper configuration (Section D.2.1)
- Cable the DECarray with an existing VAX 4000 Model 300 system in the DSSI VAXcluster configuration (Section D.2.2)
- Verify the DECarray for correct operation (Section D.2.3)

D.2.1 Inspecting the Storage Array (DSSI VAXcluster)

This procedure describes the steps to inspect the DECarray for correct configuration.

Inspection the DECarray from the front, then from the rear.

At the front of the DECarray:

a. The DSSI ID switches behind the door of the OCP of every SF7*x* enclosure installed are set according to Table D–3 and Figure D–7.

b. The MSCP switch (right-most switch of each switch pack) should be in the down or enabled position at all times unless you are instructed to change it to the up or disabled position.

D.2 DSSI VAXcluster Installation of an DECarray

Table D–3   SF7*x* DSSI ID Verification (Front View)

ALL Positions[1]	MSCP	Switch Settings	Corresponding DSSI ID Number
Left Rear (LR)	0	001	1
Left Front (LF)	0	010	2
Right Front (RF)	0	011	3
Right Rear (RR)	0	100	4

[1]The switch settings for OCPs in these positions are 0 = down and 1 = up.

Make sure that the DSSI ID numbers of each TF857 magazine tape ISE installed in the array are set to 0 and that the TMSCP switch is enabled (down). Refer to the TF857 magazine tape ISE documentation for the procedure to access the DSSI adapter module.

D.2 DSSI VAXcluster Installation of an DECarray

Figure D–7 Verifying the SF7x DSSI ID Switch Settings
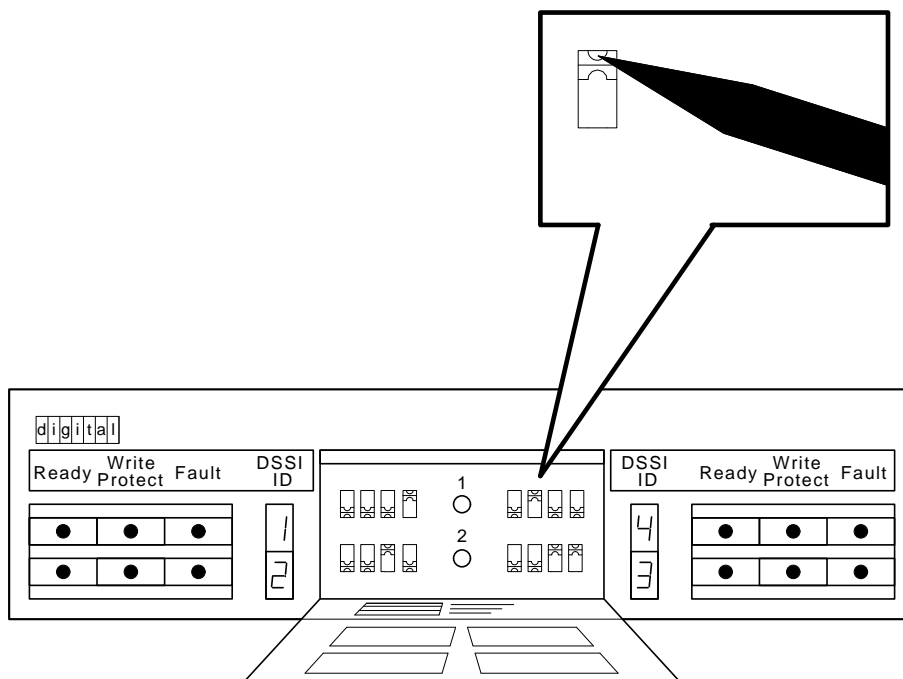
SHR_X1128B_89

D.2.2 Cabling the Storage Array (DSSI VAXcluster)

Start at the rear of the DECarray cabinet.

1. Plug the main power cable of the storage array into its power receptacle.

_____ **WARNING** _____

Hazardous voltages are in the storage array and in the components of the storage array.

When performing any operation involving the power source, turn off the power controls of all components and on the power controller. Disconnect the power cable from the source outlet. Perform the operation, then reconnect the power cable to the source.

_____

D.2 DSSI VAXcluster Installation of an DECarray

2. Connect the 108–inch DSSI cable or cables (part number BC22Q–09) from the array DSSI I/O panel to the appropriate system DSSI connector.

   a. At the system DSSI connector, remove the terminator or terminators (part number 12–29258–01). See Figure D–8. Store these terminators in the ESD pouch on the rear door of the storage array cabinet.

   b. The system DSSI connectors are (see Figure D–8):

      - DSSI Bus 0 (embedded adapter, also connects to internal TF and RF ISEs)

      - DSSI Bus 1, Model 300 only (embedded adapter, TF and RF ISEs)

      - KFQSA 1 (first installed adapter in the Q-bus backplane, RF ISEs only)

      - KFQSA 2 (second installed adapter in the Q-bus backplane, RF ISEs only)

   Connect DSSI bus 0 of either DSSI VAXcluster system through the DECarray and then to DSSI bus 1 on the other DSSI VAXcluster system. This allows for the maximum number of embedded ISEs in a DSSI VAXcluster configuration.

3. Connect the ground strap (provided with the cable kit). Attach one end of the strap according to the instructions found in the *System Expansion Installation Supplement* (part number EK-431AB-IN). Connect the other end to one of the screws securing the power controller to the storage array.

D.2.2.1 Example of a Fully Configured DSSI VAXcluster System

The following section shows a fully configured DSSI VAXcluster system consisting of a DECarray with 16 disk ISEs and two TF857 magazine tape ISEs connected to two VAX 4000 (each with one RF disk ISE).

DSSI Bus 0 from the VAX 4000 Model 300 can have tape and disk ISEs on it that are internally mounted in the system enclosure. Also DSSI Bus 0 and 1 (the embedded DSSI buses) are the ONLY two DSSI buses from the system that can support the DSSI tape ISEs.

Use Table D–4 for configuring DSSI bus 0 on either system to DSSI bus 1 of the other DSSI VAXcluster system.

D.2 DSSI VAXcluster Installation of an DECarray

Figure D–8 VAX 4000 DSSI Connectors

FRONT VIEW

Model 200
BA2xx

| slot #2 | slot #1 | slot #0 |

Mass Storage Area

J1 →

Q–Bus

KFQSA →

J1

Connector	Description
J1	DSSI Bus 0 port (internal/external ISEs)
KFQSA – J1	DSSI IN/OUT port (external RF disk ISEs)

Model 200/300
BA4xx

| slot #3 | slot #2 | slot #1 | slot #0 |

Mass Storage Area

← Operator/Control Panel

Q–Bus

KFQSA →

H3604

AC on/off

J1

← Ground Stud

J3   J1   J2

← AC Input

Fan Tray

Connector	Description
J1, J2	DSSI Bus 1 ports (external ISEs only)
J3	DSSI Bus 0 port (internal/external ISEs)
KFQSA – J1	DSSI IN/OUT port (external RF disk ISEs)

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Table D–4   DSSI Bus 0 to DSSI Bus 1 Configurations

| System Internal ISEs | | | |
| DSSI Bus 0 | | | DECarray |
Tape ISE	Disk ISE	Tape ISE	Disk ISE
0	0	0 or 1	up to 4
0	1	0 or 1	up to 4
0	2	0	up to 4
0	3	0 or 1	up to 2
0	4	0 or 1	none
1	0	0	up to 4
1	1	0	up to 4
1	2	0	up to 2
1	3	0	up to 2

D.2.2.2 Completing the System Configuration Sheet (DSSI VAXcluster)

At this time, you should be ready to fill out the system configuration sheet
(Figure D–10). The information from the system configuration sheet is used to
fill out the labels correctly for all DSSI cables, enclosure OCPs, and ISEs.

––––––––––––––––––––––– **Note** –––––––––––––––––––––––

Do not attempt to fill out and place the labels until you have completed
the system configuration sheet.

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You can also refer to the inside cover of the *SF Family Label Booklet* (part
number 36–32882–01) for instructions on how to fill out these labels.

D.2 DSSI VAXcluster Installation of an DECarray

Figure D–9   DSSI VAXcluster Bus Configurations

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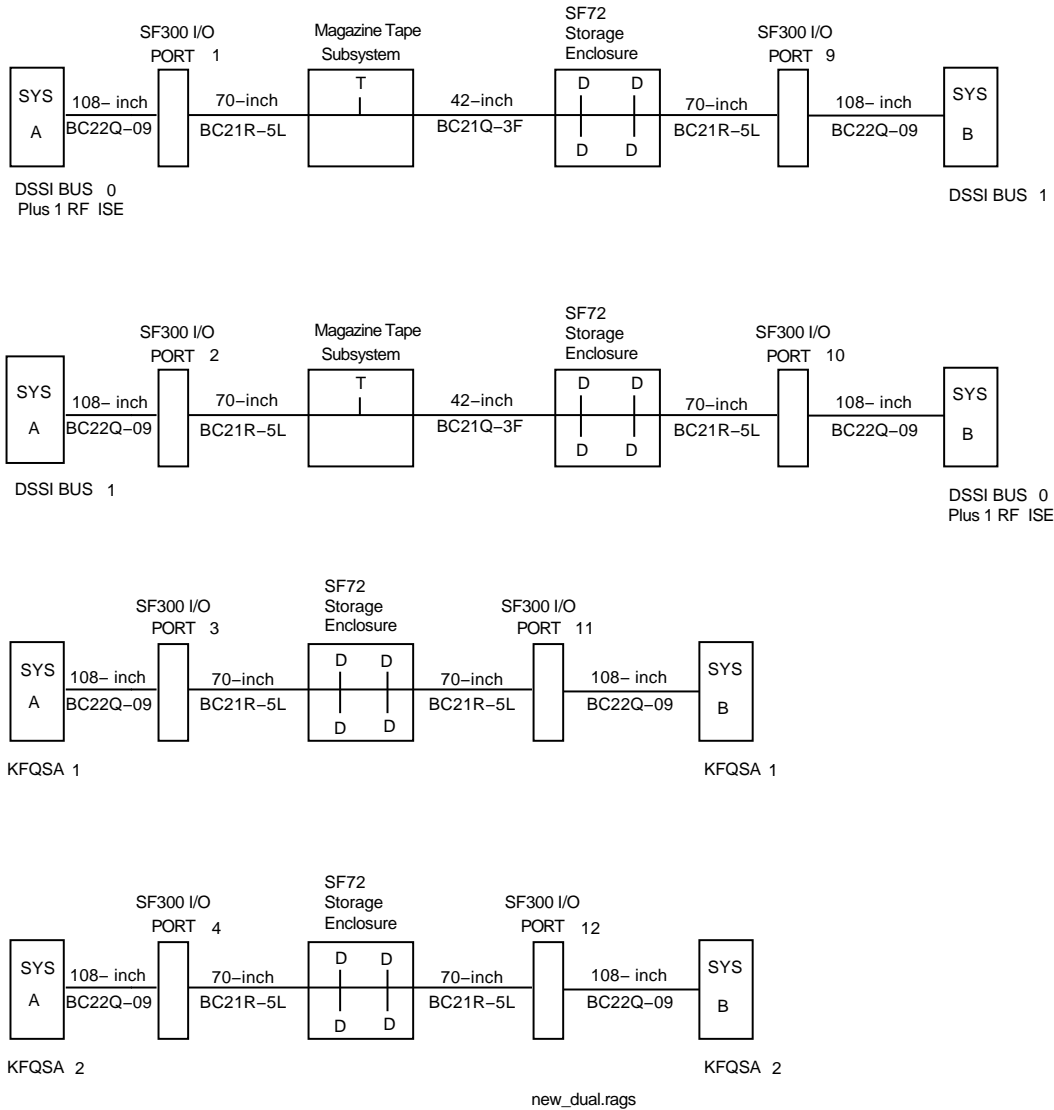
D.2 DSSI VAXcluster Installation of an DECarray

Figure D–10   DSSI VAXcluster Configuration Sheet

DSSI VAXcluster Configuration Sheet

[for MicroVAX II, MicroVAX/VAXserver 3xxx (Q–bus), and VAX 4000 systems]

```
┌─────────────────────────────────────────────┐
│              DSSI ADAPTER                     │
│   ┌───────────────────────────────────┐       │
│   │ Bus ──────────────────────         │       │
│   │ DSSI ID #────────────────          │       │
│   └───────────────────────────────────┘       │
└─────────────────────────────────────────────┘

┌─────────────────────────────────────────────┐
│ Device Type _____  ALLO_CLASS _____    │
│ DSSI ID # _____  Array Pos. # _____    │
│ Node Name _____   UNITNUM _____     │
│       System ID _____      │
└─────────────────────────────────────────────┘

┌─────────────────────────────────────────────┐
│ Device Type _____  ALLO_CLASS _____    │
│ DSSI ID # _____  Array Pos. # _____    │
│ Node Name _____   UNITNUM _____     │
│       System ID _____      │
└─────────────────────────────────────────────┘

┌─────────────────────────────────────────────┐
│ Device Type _____  ALLO_CLASS _____    │
│ DSSI ID # _____  Array Pos. # _____    │
│ Node Name _____   UNITNUM _____     │
│       System ID _____      │
└─────────────────────────────────────────────┘

┌─────────────────────────────────────────────┐
│ Device Type _____  ALLO_CLASS _____    │
│ DSSI ID # _____  Array Pos. # _____    │
│ Node Name _____   UNITNUM _____     │
│       System ID _____      │
└─────────────────────────────────────────────┘

┌─────────────────────────────────────────────┐
│ Device Type _____  ALLO_CLASS _____    │
│ DSSI ID # _____  Array Pos. # _____    │
│ Node Name _____   UNITNUM _____     │
│       System ID _____      │
└─────────────────────────────────────────────┘

┌─────────────────────────────────────────────┐
│ Device Type _____  ALLO_CLASS _____    │
│ DSSI ID # _____  Array Pos. # _____    │
│ Node Name _____   UNITNUM _____     │
│       System ID _____      │
└─────────────────────────────────────────────┘

┌─────────────────────────────────────────────┐
│              DSSI ADAPTER                     │
│   ┌───────────────────────────────────┐       │
│   │ Bus ──────────────────────         │       │
│   │ DSSI ID #────────────────          │       │
│   └───────────────────────────────────┘       │
└─────────────────────────────────────────────┘
```

Color Code _____

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D.2 DSSI VAXcluster Installation of an DECarray

D.2.3 DSSI VAXcluster Final Verification

Now that all the hardware installation, cabling and labeling, and the powering up steps are complete, you are ready to configure the DSSI subsystem and verify the correct operation of each ISE in the array with the system.

Refer to the system installation manuals and *TF857 Magazine Tape ISE Service Manual* (EK–TF857–SM) for detailed information and how to proceed with verifying the correct operation of each ISE that has been installed. In these manuals, you will find the procedure for establishing the communications between the ISEs, the adapter module, and the system. You will also find the step-by-step procedures for reconfiguring the system with its newly installed DSSI devices.

Refer to the manuals for the disk ISE and tape ISE for detailed information on the local programs in the ISEs.

Once the verification is complete, close the cabinet doors; turn the hex-Allen fasteners one quarter turn clockwise to lock. The system is ready to be turned over to the system manager.

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