SF100

SF10C Storage Array Installation Guide

Order Number   EK-SF100-IN-002

Digital Equipment Corporation

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About This Manual

IMPORTANT
This installation guide describes the installation procedure of the SF100 storage array, and the installation of an optional SF72 storage enclosure. For more information on the operating and servicing procedures of the TF857 magazine tape system, SF72 storage enclosures, or DSSI (Digital Storage System Interconnect) adapters, refer to the related documents listed in Table 1-3.

Chapter 1, Overview, contains a product description of the SF100 storage array, available product options, specifications, and related documentation.

Chapter 2, SF100 Storage Array Installation Procedure, contains guidelines for installing the SF100 storage array.

Chapter 3, TF857 Subsystem Verification, contains information about local diagnostic programs used to verify the TF857 magazine tape subsystem operation. Also included are DSSI node ID verification, power-on self-test (POST) procedure, and the PARAMS, LDRTST, and DRVTST utility information.

Chapter 4, SF72 Storage Enclosure Installation Procedure, describes the installation procedure of an optional SF72 storage enclosure, and the slide mount assembly, power-on, and troubleshooting procedures.

Intended Audience

This installation guide is intended for use by Digital Services engineers.

Conventions Used

The SF72 storage enclosure is also referred to as the **SF72 enclosure**.

The TF857 magazine tape subsystem is also referred to as the **TF857 subsystem**.

The terms, KFMSA XMI or XMI, refer to the **KFMSA extended memory interconnect storage adapter module**.

The term ISE refers to **integrated storage element**.

The term DSSI adapter refers to either a **KFQSA module, KFMSA module, or embedded adapter** of a system.

CHAPT 1

1
Overview

This chapter contains an overview of the SF100 storage array, product options, specifications, and related documentation.

1.1 Product Description

The SF100 storage array (Figure 1-1) is a packaging alternative to the SF200 storage array. It does not require any special site preparation, and can be added to any installation that uses conventional ac power.

The SF100 storage array consists of two compartments: the upper compartment contains one factory-installed TF857 magazine tape subsystem; the lower compartment is optional storage space that can contain an SF72 storage enclosure.

NOTE
The SF72 storage enclosure can be factory-installed (U.S. only) before shipment to the customer, or installed by Digital Services engineers at the customer site. Chapter 4 of this guide contains the installation procedure.

The SF100 storage array does not contain an ac power controller; rather, it uses a duplex switch junction box (without filter).

The array provides:

* Alternative software distribution media that supplements or replaces existing boot loading storage elements.

* High speed data set management for use in both offices and data centers.

* Improved data interchange.

* Software support for normal use and error handling.

Rear Bustle

TF857
Subsystem

SF72
OCP Panel
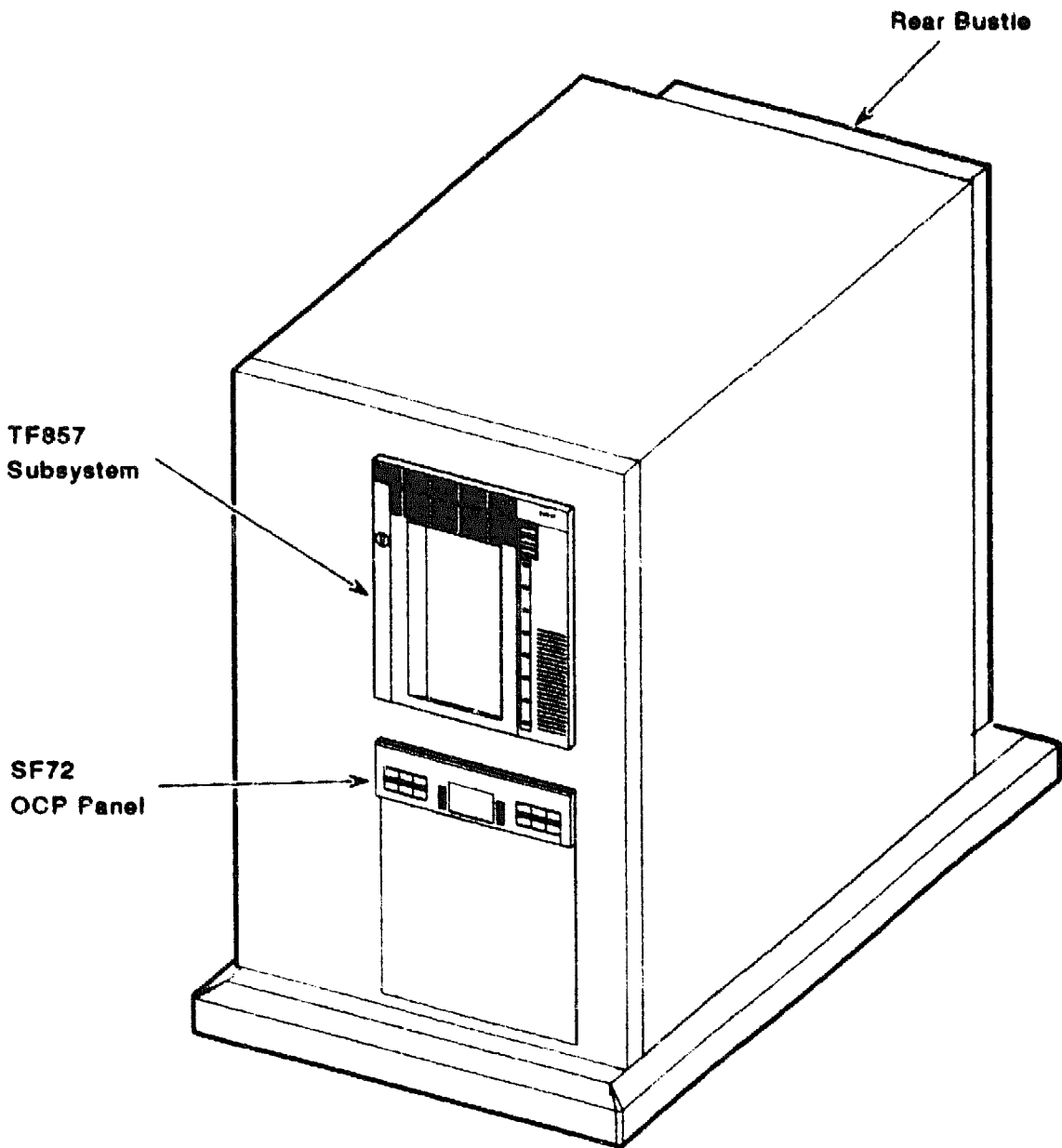
LJ-00923-TI0

Figure 1–1   Front View of SF100 Storage Array

1.2 Product Options

The following table lists options available for specific systems. Note that the cable kits are ordered separately.

Table 1-1   Product Options and Cable Kits

Option	Description
SF100-PA	Storage array with a TF857-AA (120 V) subsystem
SF100-PB	Storage array with a TF857-AB (240 V) subsystem
CK-SF100-LP	Cable kit with 9-foot DSSI cable for VAX 4000 models, MicroVAX/VAXserver 3xxx series, and MicroVAX II (Must be ordered separately)
CK-SF100-LM	Cable kit with 9-foot DSSI cable for VAX 6000 and VAX 9000 systems (Must be ordered separately)

1.3 Specifications

The following table lists the specifications of the SF100 storage array, and the variances when the TF857 magazine tape subsystem and an optional storage enclosure are included.

Table 1-2   Specifications

Characteristic	SF100 Storage Array	With TF857 Subsystem	With SF72 Storage Enclosure
Data backup capacity	–	18.2 GB	Up to 4 GB
Performance	–	2.9 GB/hour (backup)	–
Power requirements	100-120/220-240 V ac (50/60 Hz)	–	–
Weight	110 lbs	165 lbs	250 lbs
Height	28 in	–	–
Width	17 in	–	–

Table 1-2 (Cont.) Specifications

Characteristic	SF100 Storage Array	With TF857 Subsystem	With SF72 Storage Enclosure
Length	34 in	--	--
Communications interface	DSSI bus	--	--
Environmental temperature (operating)	--	10 to 40 °C or 50 to 104 °F	18 to 24 °C or 64.4 to 75.2 °F
Environmental Temperature (nonoperating)	--	-40 to 66 °C or -40 to 150.8 °F	Same as for TF857
EMI certification	Meets applicable FCC standards for Class A devices	--	--
Safety certification	Meets UL, CSA, and IEC standard	--	--
Power consumption	--	250 W	180 W

1.4   Related Documentation

The following documentation can be used to supplement this installation guide:

Table 1-3   Related Documentation

Title	Number
KFMSA Module Installation and User Manual	EK-KFMSA-IM
KFMSA Module Service Manual	EK-KFMSA-SM
KFQSA Installation and User Manual	EK-KFQSA-IN
SF200 Storage Array / SF72 Storage Enclosure Owner's Manual	EK-SF72S-OM
TF857 Magazine Tape Subsystem Owner's Manual	EK-TF857-OM
TF857 Magazine Tape Subsystem Service Manual	EK-TF857-SM
MicroVAX 3300 / VAXserver 3300 Installation Guide	EK-017AA-IN
MicroVAX 3300 / VAXserver 3300 Technical Information	EK-020AA-TI
MicroVAX 3400 / VAXserver 3400 Installation Guide	EK-160AA-IN
MicroVAX 3400 / VAXserver 3400 Technical Information	EK-163AA-TI
VAX 4000 Model 200 (BA215) Installation Guide	EK-432AA-IN
VAX 4000 Model 200 (BA430) Installation Guide	EK-436AB-IN
VAX 4000 Model 200 Technical Information	EK-396AB-TI
VAX 4000 Model 300 Installation Guide	EK-335AC-IN
VAX 4000 Model 300 Technical Information	EK-337AB-TI

CHAP 2

2

SF100 Storage Array Installation Procedure

This chapter contains the following:

- Installation guidelines

- DSSI (Digital Storage System Interconnect) connections for KFQSA, KFMSA, and embedded DSSI adapters.

NOTE
Before beginning the installation procedure, check the *Contents Listing* slip attached to the packaging to ensure that all parts have been shipped with the storage array. Report any missing parts or damages to the shipper and notify your office.

2.1 Installation Guidelines

The SF100 storage array has no I/O ports. All connections from the host system or systems are made to the rear of the enclosure(s) installed in the array.

NOTE
Be sure to use a terminator on the port that is not being used. Refer to individual system documentation for correct DSSI port connecting instructions.

When beginning the installation, be sure to:

1. Observe all electrostatic discharge (ESD) precautions.

2. Always use the Static-Discharge Protective Field Service Kit (antistatic mat and wristbands).

3. Verify that there are no missing parts in the shipment.

4. Inspect the SF100 storage array for damage.

For more information on troubleshooting or verifying the installation, refer to the Table 1–3.

2.2   DSSI Cables and Configurations

This section provides information on the types of DSSI cables (and other hardware), and some guidelines that are to be followed when configuring each DSSI bus.

2.2.1   DSSI Cables

The interconnect cables, connectors, and terminators for the MicroVAX/VAXserver 3xxx series, MicroVAX II, and VAX 4000 (all models) systems are called *DSSI Pin-Socket* (DSSI/PS). The cables and terminator are:

> 108–inch (system to SF100), BC22Q-09
> 108–inch (SF100 to SF100), BC21Q-09
> 42–inch (TF857 to SF72), BC21Q-3F
> Terminator (system or KFQSA), 12-29258-01
> Terminator (TF857 or SF72), 12-31281-01

The interconnect cables, connectors, and terminators for the VAX 6000 and VAX 9000 series systems are called *DSSI Micro-Ribbon* (DSSI/MR). The cables and terminator are:

> 108–inch (SF100 to system and SF100 to SF100), BC21Q-09
> 42–inch (TF857 to SF72), BC21Q-3F
> Terminator (TF857 or SF72), 12-31281-01

There are no functional differences between the DSSI/PS and DSSI/MR interconnects.

2.2.2 Configuration Guidelines

The following guidelines should be observed when connecting the SF100 to the single-system or DSSI VAXcluster:

1. A DSSI bus **MUST** be terminated on both ends.

2. Each DSSI bus supports up to 8 DSSI nodes.

3. All DSSI adapters are supported:
    - KFMSA (XMI) adapter module
    - KFQSA (Q-bus) adapter module

    NOTE
    The TF857 is fully supported on all DSSI adapters with the following exceptions:

    –TF85s connect to a KFQSAs installed in a MicroVAX II or MicroVAX/VAXserver 3xxx, do not support booting of VMS or MDM. An additional load device is needed to accomplish either of these.
    – KFQSAs installed in a VAX 4000 series system supports booting of VMS and MDM.

    - SHAC embedded, VAX 4000.
    - EDA640 embedded, MicroVAX/VAXserver 3300 and 3400

4. Each adapter (module or embedded) counts as 1 DSSI node.

5. Each DSSI ISE (tape or a disk) counts as 1 DSSI node.

6. When a DSSI bus is connected to only one system, the adapter counts as 1 DSSI node, leaving DSSI nodes for up to 7 DSSI ISEs.

7. When a DSSI bus is connected to two or more systems, each adapter counts as 1 DSSI node. In a two system configuration for example, there are two adapters leaving DSSI nodes for up to 6 DSSI ISEs.

8. DSSI adapters typically have the highest node ID number(s) on the bus (7 when one adapter is on the bus, 7 and 6 for two adapters, 7, 6, and 5 for three adapters, and so on.).

    NOTE
    Refer to the systems technical manual or DSSI device manual for more information on setting DSSI nodes.

9. Tape ISEs typically have a low number DSSI node (in most cases 0).

10. Disk ISEs are typically assigned the remaining DSSI nodes after any existing adapters and tape ISEs have been assigned.

11. When adding a second TF85x to a DSSI bus you must change the factory-set DSSI node to a number other than 0. Refer to the TF857 documentation for the correct procedure on how to change the DSSI node.

    NOTE
    Depending on the configuration, performance on that DSSI bus may degrade.

12. Whenever installing or changing a configuration, check to see that no two devices on the DSSI bus have the same DSSI node.

13. A maximum of two SF100 storage arrays are supported on the same DSSI bus.

14. It is recommended that the SF100 and all MicroVAX/VAXserver 3xxx, MicroVAX II, and VAX 4000 systems share a common ac source.

15. Use of a ground strap is required when connecting the SF100 storage array to all MicroVAX/VAXserver 3xxx, MicroVAX II, and VAX 4000 systems or another SF100 storage array. This ground strap is included in the CK-SF100-LP cable kit.

2.2.3 KFQSA and Embedded DSSI Buses

The KFQSA is an intelligent storage adapter module that allows Q22-bus systems to communicate with integrated storage elements (ISEs) based on the DSSI bus.

NOTE
The TF857 is fully supported on all DSSI adapters with the following exceptions:

- **KFQSAs installed in a MicroVAX II of MicroVAX/VAXserver 3xxx, do not support booting of VMS or MDM. An additional load device is needed to accomplish either of these.**
- **KFQSAs installed in a VAX 4000 series system supports booting of VMS and MDM.**

For information on KFQSA configuration, refer to the *KFQSA Module Installation and User Manual*.

Embedded DSSI buses are those that are a part of the CPU module. These are found on MicroVAX/VAXserver 3300 and 3400 and VAX 4000 series systems.

For more information, refer to the technical information manuals.

2.2.4 KFMSA Adapter Module

KFMSA adapters are separate modules, designed for systems using XMI bus card cages. These systems include mid-range systems such as the VAX 6000 system and large systems such as the VAX 9000 system.

For information on KFMSA configuration, refer to the *KFMSA Module Installation and User Manual*.

2.3   Cabling Procedures

This section contains cabling procedures and configurations for the SF100 in:

* Single-system configurations, Section 2.3.1

* DSSI VAXcluster configurations, Section 2.3.2

When a single-system configuration is used a DSSI terminator must be installed on the last device on that bus. Termination at the magazine tape subsystem is accomplished with a DSSI terminator, part number 12-31281-01. Termination for the SF72 storage enclosure is accomplished externally with a DSSI terminator (part number 12-31281-01) or internally when the SF72 enclosure is in split-bus mode (refer to the Table 1-3).

Remember that both ends of a DSSI bus must be terminated,

The figures that follow depict the possible configurations for DSSI buses: when connected to a single system, and as part of a DSSI VAXcluster configuration.

In the following figures the letter D in the SF72 storage enclosures represents a disk ISE. The letter T in the magazine tape subsystem represents the tape ISE.

Note that a SF72 storage enclosures can be full (SF72-Jx) or half (SF72-Hx) populated. When half populated only the two rear disk ISEs are installed. The ID settings normally do not change from the factory setting of 1, 2, 3, and 4.

2.3.1 Single-System Cabling

Figure 2–1 shows the various single-system bus configurations.

The procedure that follows describes the procedure for cabling a SF100 storage array in the single-system configuration.

NOTE
When installing DSSI cables, you must power down the system first.

Be careful not to disturb or damage existing power cords and DSSI cables.
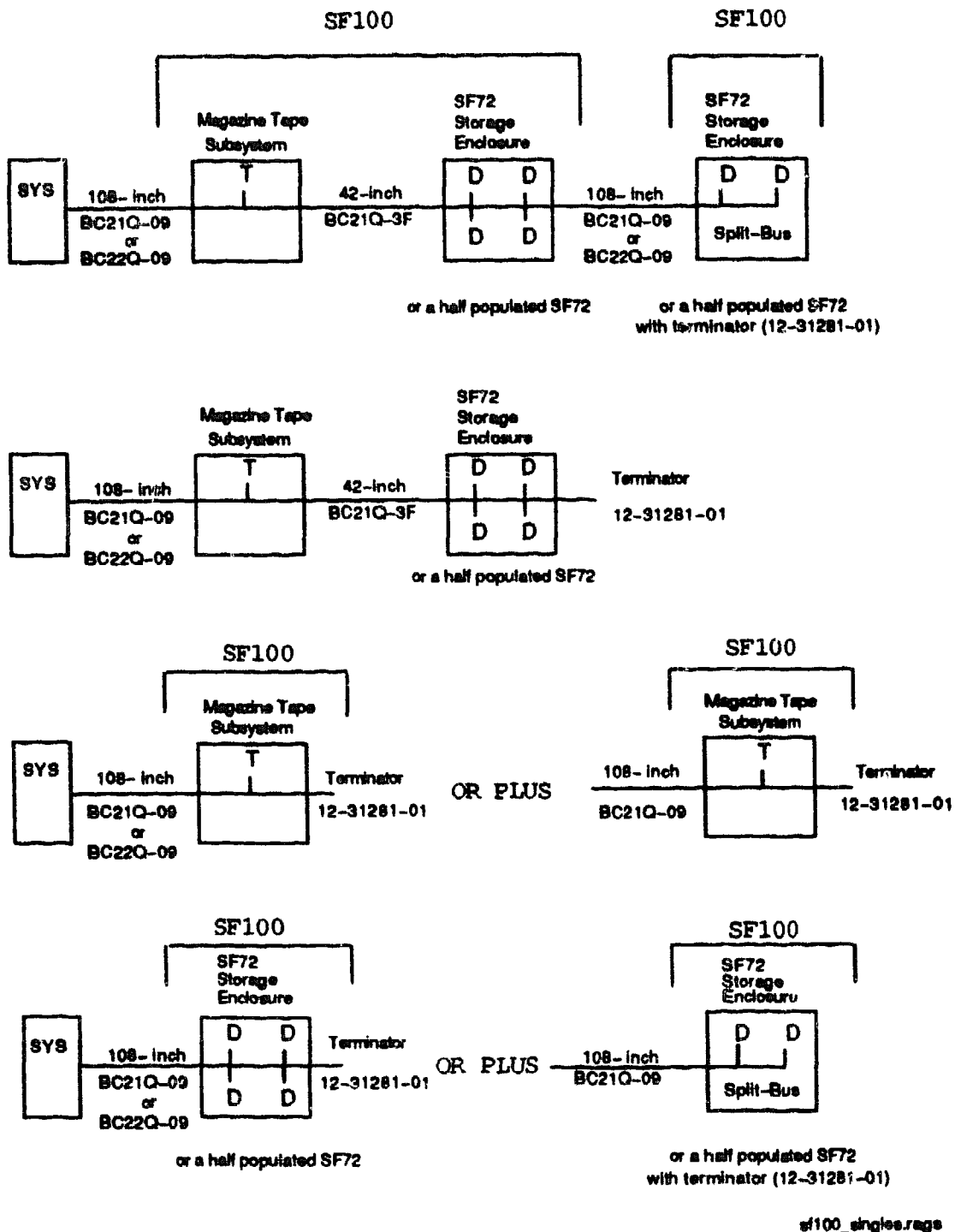
Figure 2-1   Possible Single-System DSSI Bus Configurations

1. Ensure that the shipping screw in the rear, upper right corner, of the TF857 magazine tape subsystem is tight.

2. Install the 108-inch DSSI cable ensuring that all cables from the SF100 to the system are routed through the skirt opening and within the bustle door bracket. Connect this cable to the top DSSI connector on the rear of the TF857.

3. If the array *does not* contain a SF72 enclosure, install a DSSI terminator (part number 12-31281-01) in the bottom DSSI connector.

4. If the array *does* contain a SF72 enclosure, ensure that there is a 42-inch DSSI cable installed between the bottom DSSI connector of the TF857 and the right-most DSSI connector of the SF72 enclosure. If this cable is present install a DSSI terminator (part number 12-31281-01) in the left-most DSSI connector.

5. If required, install the ground strap using the instruction included with the CK-SF100-LP cable kit.

   NOTE
   You will install this ground strap from the SF100 to the system and to another SF100 according to the DSSI bus configuration.

Refer to Figure 2-2 for possible single-system cabling configurations. Note that the letter T on a rear DSSI connector represents a terminator (12-31281-01).

108-inch DSSI cables from either the TF857 or SF72 to the system are BC22Q-09 (for MicroVAX/VAXserver 3xxx, MicroVAX II and VAX 4000) or BC21Q-09 (for VAX 6000 and VAX 9000).
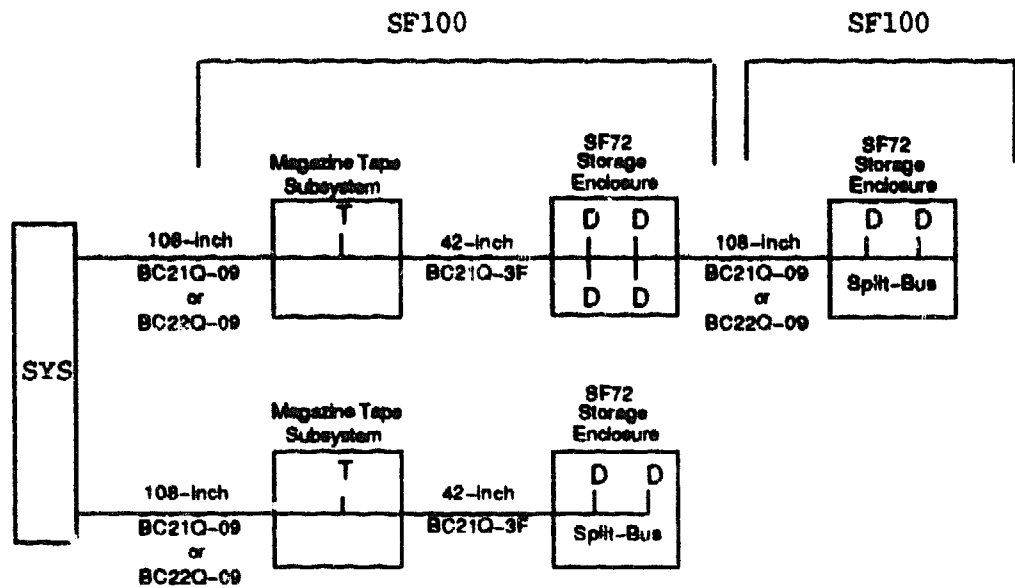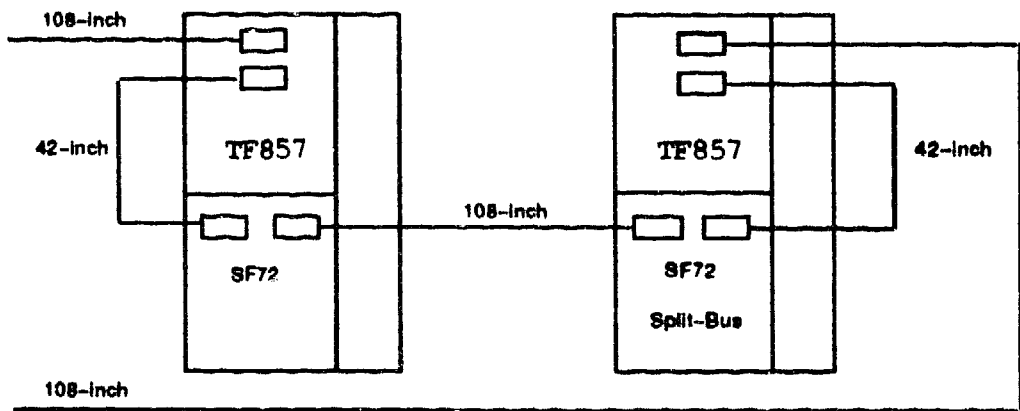
Figure 2–2   Example of Two DSSI Buses to a Single System

2.3.2 DSSI VAXcluster Cabling

Figure 2-3 shows the various DSSI VAXcluster bus configurations.

The procedure that follows describes the procedure for cabling a SF100 storage array in the DSSI VAXcluster configuration.

NOTE
When installing DSSI cables, you must power down the system first.

Be careful not to disturb or damage existing power cords and DSSI cables.
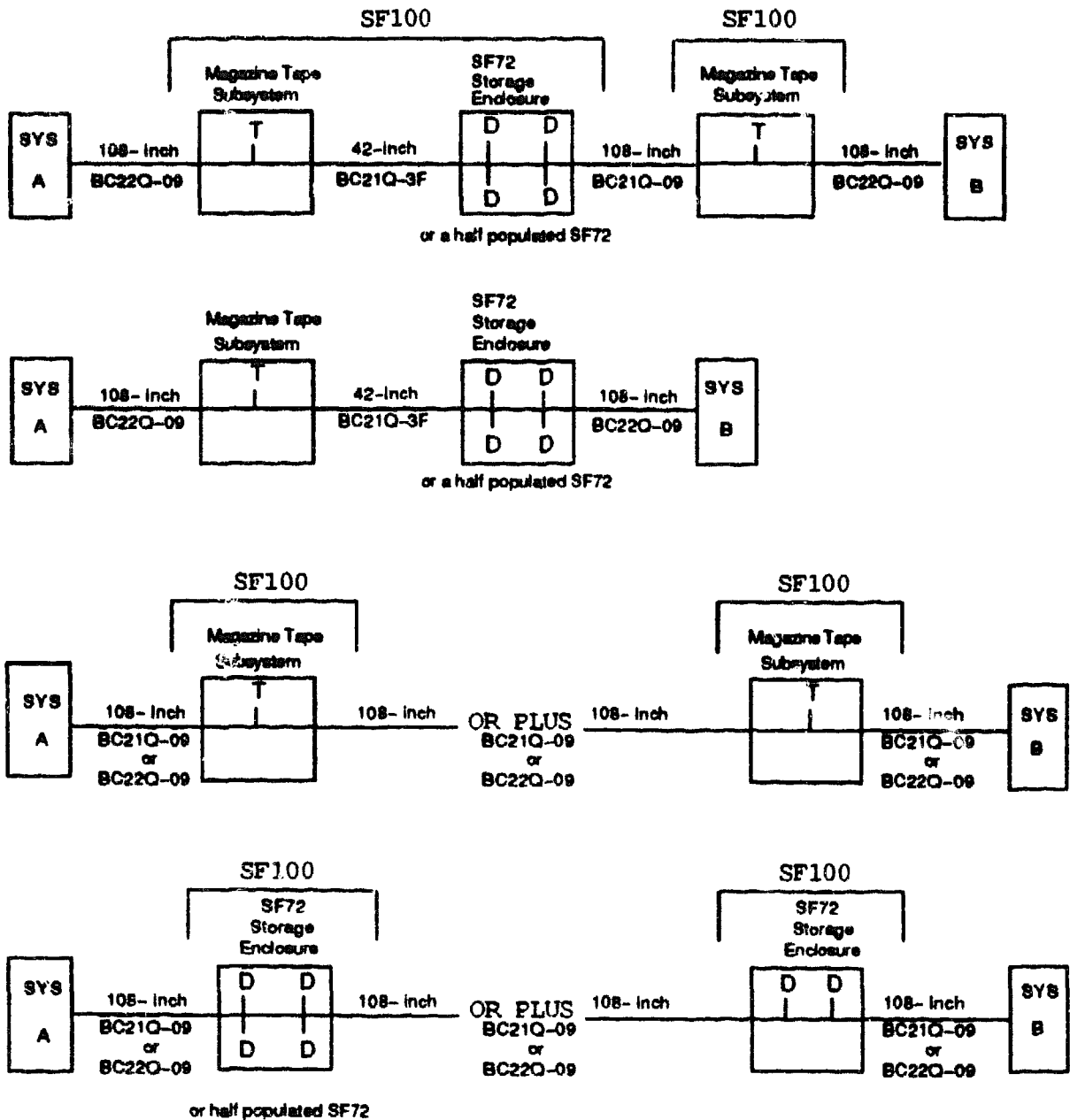
Figure 2–3   Possible VAXcluster DSSI Bus Configurations

The following procedure describes the procedure for cabling SF100 storage array in the DSSI VAXcluster configuration.

1. Ensure that the shipping screw in the rear, upper right corner, of the TF857 magazine tape subsystem is tight.

2. Install the 108–inch DSSI cable ensuring that all cables from the SF100 to the system are routed through the skirt opening and within the bustle door bracket. Connect this cable to the top DSSI connector on the rear of the TF857.

3. If the array *does not* contain a SF72 enclosure, install a DSSI cable in the bottom DSSI connector.

4. If the array *does* contain a SF72 enclosure, ensure that there is a 42–inch DSSI cable installed between the bottom DSSI connector of the TF857 and the right-most DSSI connector of the SF72 enclosure. If this cable is present then install a cable in the left-most DSSI connector.

5. Install the ground strap using the instruction included with the kit.

   NOTE
   **You will install this ground strap from the SF100 to the system and to another SF100 according to the DSSI bus configuration.**

Refer to Figure 2–4 for possible single-system cabling configurations. Note that the letter T on a rear DSSI connector represents a terminator (12-31281-01).

108–inch DSSI cables from either the TF857 or SF72 to the system are BC22Q-09 (for MicroVAX/VAXserver 3xxx, MicroVAX II and VAX 4000) or BC21Q-09 (for VAX 6000 and VAX 9000).
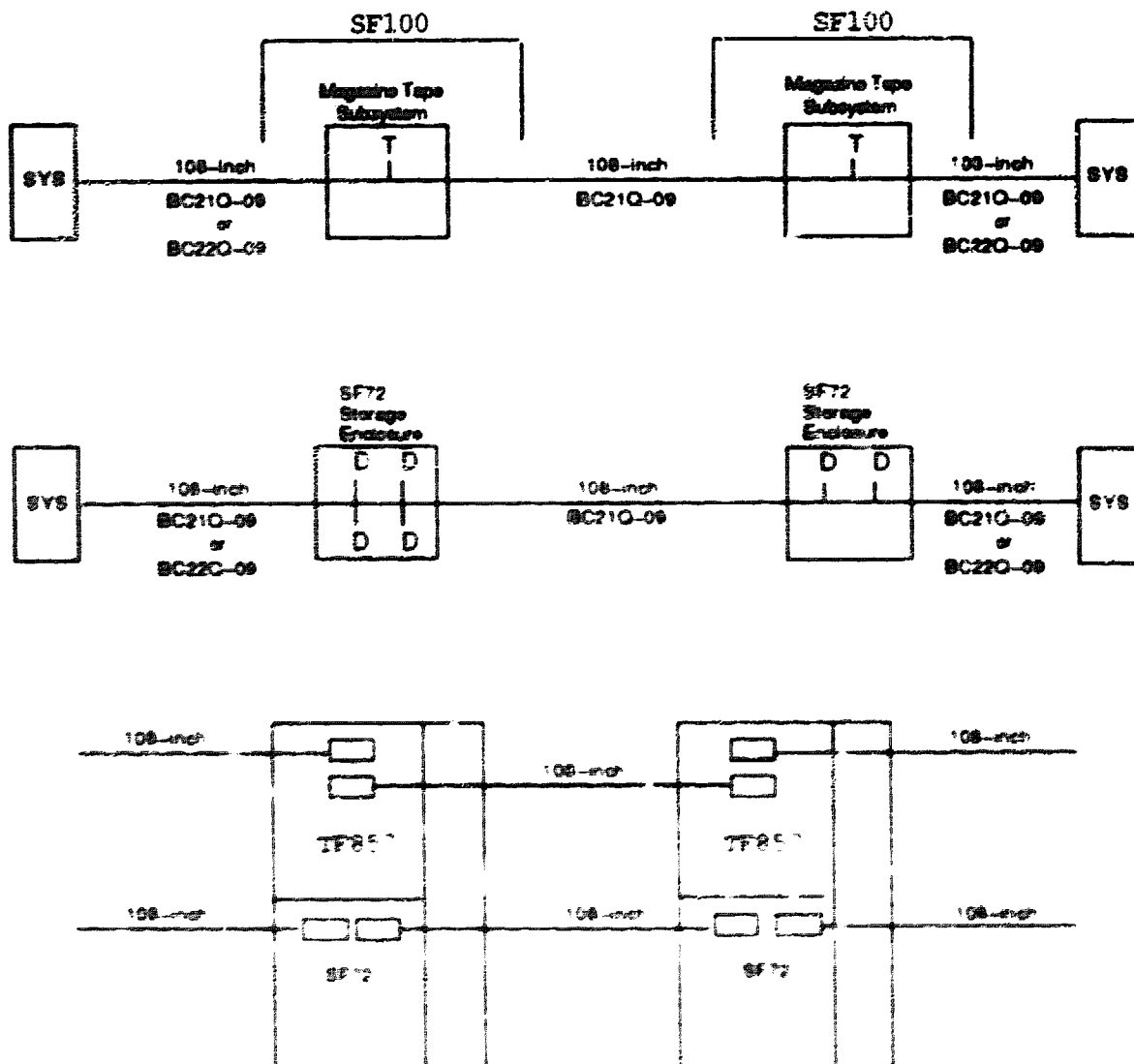
Figure 2–4   DSSI Cable Configurations

CHAP 3

3

TF857 Subsystem Verification

This chapter describes the verification of the TF857 subsystem operation. Refer to the *TF857 Magazine Tape Subsystem Owner's Manual* or to the *TF857 Magazine Tape Subsystem Service Manual* for detailed information.

The following information is included:

- DSSI node ID verification

- Power-on self-test (POST) procedure

- Local diagnostic programs

- PARAMS utility

3.1 DSSI Node ID Verification

The TF857 subsystem's operator control panel (OCP) contains a space for a DSSI node ID label (Figure 3–1). This label identifies the device bus ID number, and is preset during manufacturing to its normal setting of zero (0). Be sure to verify this setting during installation.

OPERATOR CONTROL PANEL

MODE SELECT KEY

OCP
DISABLED

AUTOMATIC
MODE

SERVICE
MODE

MANUAL
MODE

Eject

Load/Unload

Slot Select

BUTTON
AND
INDICATOR
AREA

CURRENT
SLOT
INDICATORS
0-6

Power On

Write
Protected

Tape In Use

Use
Cleaning Tape

Magazine
Fault

Loader Fault

OCP LABEL

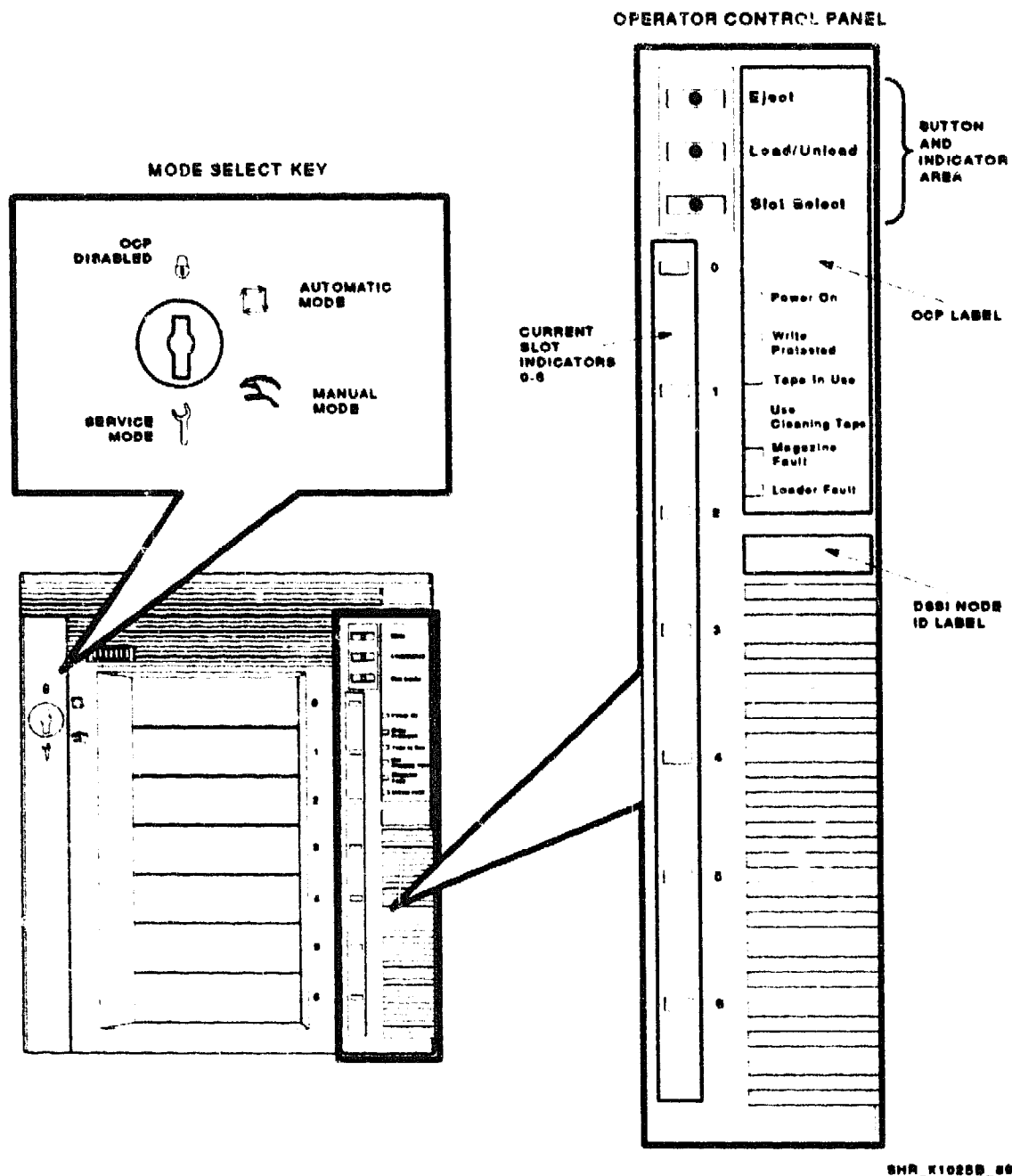DSSI NODE
ID LABEL

SHR_K1025B_89

Figure 3-1   Front View of the TF857 Operator Control Panel

3.2 Power-On Self-Test (POST) Procedure

When the TF857 subsystem is powered on, the OCP indicators (Figure 3-1) light within 15 seconds. While the elevator scans the magazine, all OCP indicators (except for Power On) turn off. Assuming the subsystem has a magazine with a cartridge in slot 0, and there is no cartridge in the drive, the following occurs:

- Power On indicator is on
- Eject indicator is on
- Load/Unload indicator is on
- Slot Select indicator is on
- Slot 0 indicator is on

During POST, all indicators are on while the loader transfer assembly is completing the initialization. Once the self-test is complete, the two fault indicators turn off (assuming there were no failures during the initialization), and the controller module begins a magazine scan to determine which slots in the magazine contain cartridges.

At power-on, the following components run simultaneous, yet separate, self-tests:

- Loader transfer assembly
- TF85 tape drive
- Controller module

3.2.1 Loader Transfer Assembly Power-On Self-Test

At power-on, the loader transfer assembly runs its own self-test. All OCP indicators are on. After a successful completion of the self-test, the Loader Fault and Magazine Fault indicators turn off while all others remain on. This self-test is completed in about 5 seconds. If an error occurs during the loader transfer assembly initialization, the Loader slot indicator displays the device in which the error occurred.

3.2.2 TF85 Tape Drive Power-On Self-Test

The TF85 drive runs its self-test during power-on or during a reset process. A successful self-test is indicated by the Operate Handle or Tape In Use indicators on the TF85 being on.

3.2.3 Controller Module Self-Test

A successful self-test is indicated by the eight indicators on the controller module.

3.3 Local Diagnostic Programs

Use the SET HOST/DUP command to access local diagnostic programs.

NOTE
You may receive an error message after issuing the SET HOST/DUP command. If you do, then you must load the FYDRIVER program.

3.3.1 PARAMS Utility

The three PARAMS commands you are most likely to use are SHOW, SET, and WRITE. These commands allow you to see the current parameter values of all devices, one parameter at a time, and change them as necessary.

Use the PARAMS utility to change or display parameters such as:

- Allocation class TMSCP

- MSCP/TMSCP unit numbers

- System ID number

- System nodename

3.3.2 LDRTST Program

The LDRTST program sends commands to the loader controller module to ensure that the module correctly loads a cartridge into the drive, performs a write or a read function, and unloads and returns the cartridge to the slot from which it was taken. This test also verifies when the loader controller module retrieves a cartridge from an empty slot.

3.3.3 DRVTST Program

The DRVTST program is a pass/fail test that invokes a comprehensive test of the TF85 tape drive hardware. No statistics are sent to the host upon completion of this test. Testing is accomplished in approximately 25 minutes, and terminates with either a Test Passed message or a fatal error message.
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CHAP 4

4

# SF72 Storage Enclosure Installation Procedure

This chapter describes how to install the SF72 storage enclosure into the SF100 storage array. Also included are:

* SF72 kit contents and unpacking instructions

* Installation preparation

* Slide mount installation procedure

* Power-on procedure

* Troubleshooting procedure

4.1 Getting Started

Unpack the SF72 storage enclosure from the shipping container. It is shipped in an environmental barrier bag with desiccant. After unpacking, keep the container and all packing materials.

The SF72 enclosure is inside an extrusion tube (Figure 4-1). Examine the enclosure for physical damage. If you find any damage, *do not* attempt to install the enclosure. Notify your office immediately.

SHR_X112BC_89
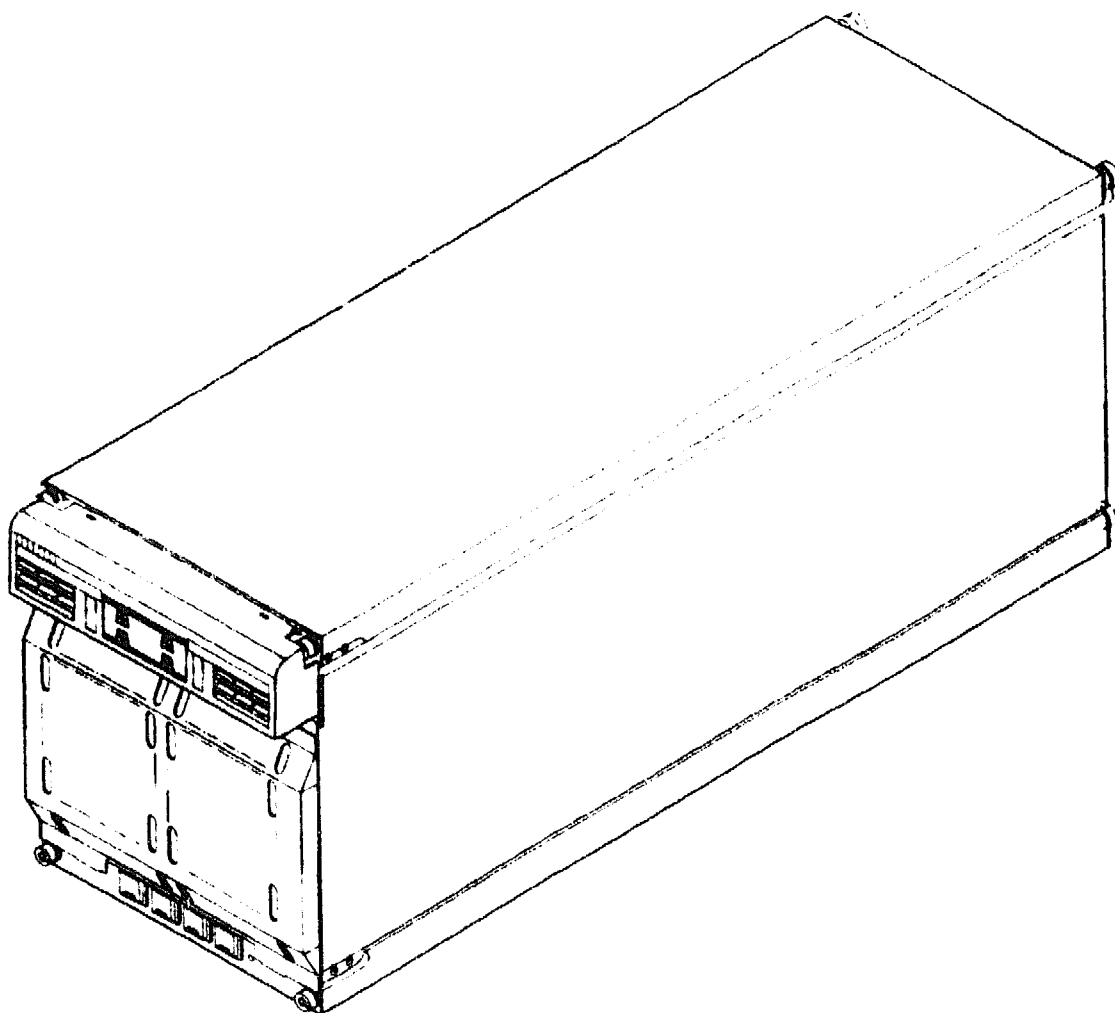
Figure 4–1   SF72 Storage Enclosure In Extrusion Tube

If there is no damage, unpack the containers, and ensure that all parts are present. The following table lists all parts:

Table 4-1 SF72 Kit Contents

Description	Quantity	Part Number
SF72 storage enclosure	1	SF72-HK (2-drive) SF72-JK (4-drive)
SF72 OCP	1	70-26060-01
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 cable, 42-inch, box-to-box	1	BC21Q-3F
Owner's manual	1	EK-SF72S-OM
Installation guide	1	EK-SF200-IG
Label booklet	1	36-32882-01-B01

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

4.1.1 Preparing for Installation

Before installing the SF72 storage enclosure, prepare the SF100 storage array as follows:

1. Remove the rear bustle from the SF100 storage array by rotating the one-quarter turn fasteners.

2. Remove the two rear screws securing the top panel and remove the panel.

3. Remove the two screws securing the front panel and remove the panel.

4. Remove the two-piece filler panel (Figure 4–2) from the front panel of the SF100 storage array by releasing the spring latch.

5. Remove the OCP section from the two-piece filler panel by bending the locking tabs and sliding the OCP away from the main panel.
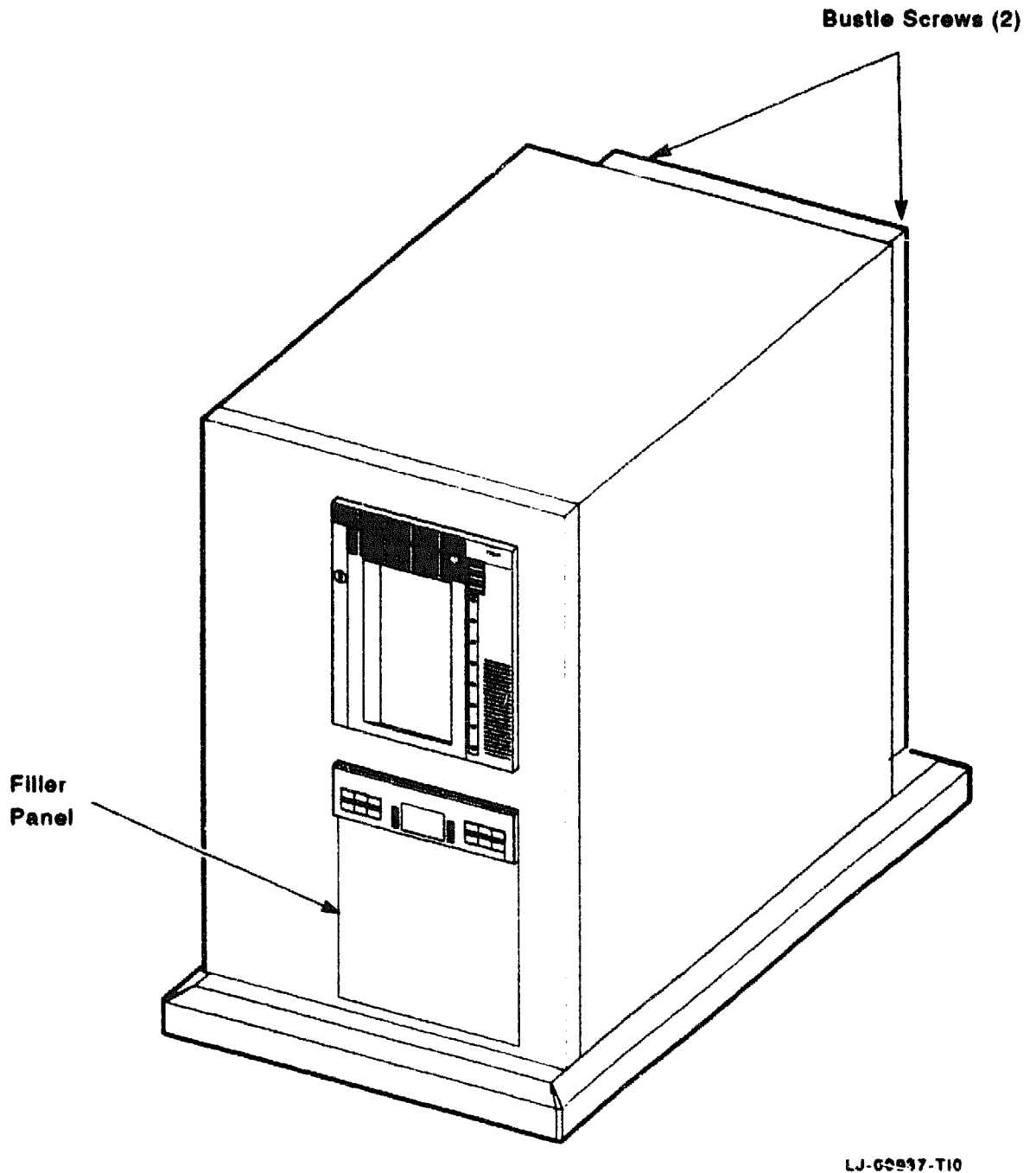
6. Reinstall the remaining filler panel.

Bustle Screws (2)

Filler
Panel

LJ-C0937-TIO

Figure 4–2   Rear Bustle and Filler Panel

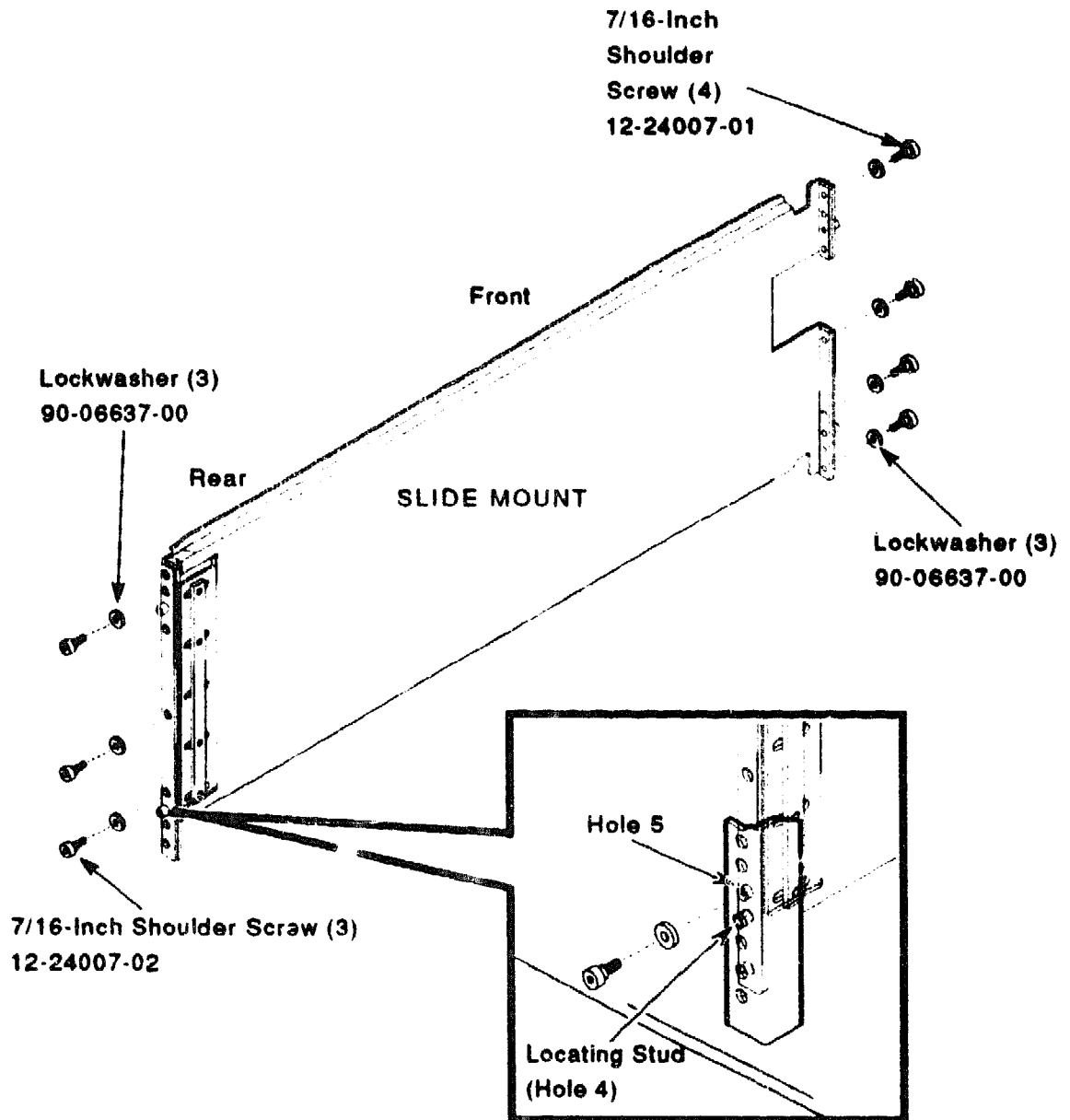## 4.1.2   Installing the SF72 Slide Mount Assembly

The slide mount assembly lets you install the SF72 storage enclosure into the SF100 storage array. It consists of an adjustable end at the rear and a slotted end at the front. The adjustable end lets you extend it for a secure fit.

Use the following steps to install the slide mount assembly into the SF100 storage array:

1. Loosen the flat-head screws on the adjustable   d of the slide mount assembly so that the pieces slide.

2. From the rear of the storage array, install the slide mount assembly on the right-hand side of the opening. The *UP* and *arrow* symbol (stamped on the side) point upward.

3. Align the lower locating stud (Figure 4–3) on the adjustable end of the slide mount assembly with the fourth hole from the bottom of the internal frame.

4. Install and hand-tighten the shorter 7/16-inch shoulder screw and lockwasher in the center threaded hole (Figure 4–3) of the slide mount assembly.

5. From the rear of the storage array, install the remaining shoulder screws (Figure 4–3) into the slide mount assembly (third hole from the top and the fifth hole from the bottom of the internal frame).

6. From the front of the storage array, align the locating studs and install the shoulder screws and lockwashers as you did at the rear of the storage array.

7. From the rear of the storage array, tighten the screws on the adjustable end of the slide mount assembly.

NOTE
Be sure to tighten all shoulder screws.

7/16-Inch
Shoulder
Screw (4)
12-24007-01

Front

Lockwasher (3)
90-06637-00

Rear

SLIDE MOUNT

Lockwasher (3)
90-06637-00

Hole 5

7/16-Inch Shoulder Screw (3)
12-24007-02

Locating Stud
(Hole 4)

LJ-00919-TI0

Figure 4–3   Installing the Slide Mount Assembly

4.2   SF72 Storage Enclosure Installation Procedure

WARNING
Be sure that the SF72 ac power switch (at the rear of the enclosure), the SF72 power switches (at the front of the enclosure), and all OCP buttons are *OFF* (in the out position).

CAUTION
To ensure storage array stability, extend only the SF72 storage enclosure or the TF857 magazine tape subsystem at a time.

To install the SF72 storage enclosure:

1. Install both chassis retainers on the top right and left sides of the front of the SF72 enclosure extrusion tube (Figure 4–4).

2. At the front of the storage array, use a two people to lift the SF72 storage enclosure, and slide it onto the slide mount assembly until the chassis retainers are flush with the vertical rails.

    CAUTION
    Do not attempt to lift or support the enclosure by the power supply handle located at the rear of the enclosure.

SEMS SCREWS (4)
12-21368-03

CHASSIS
RETAINER
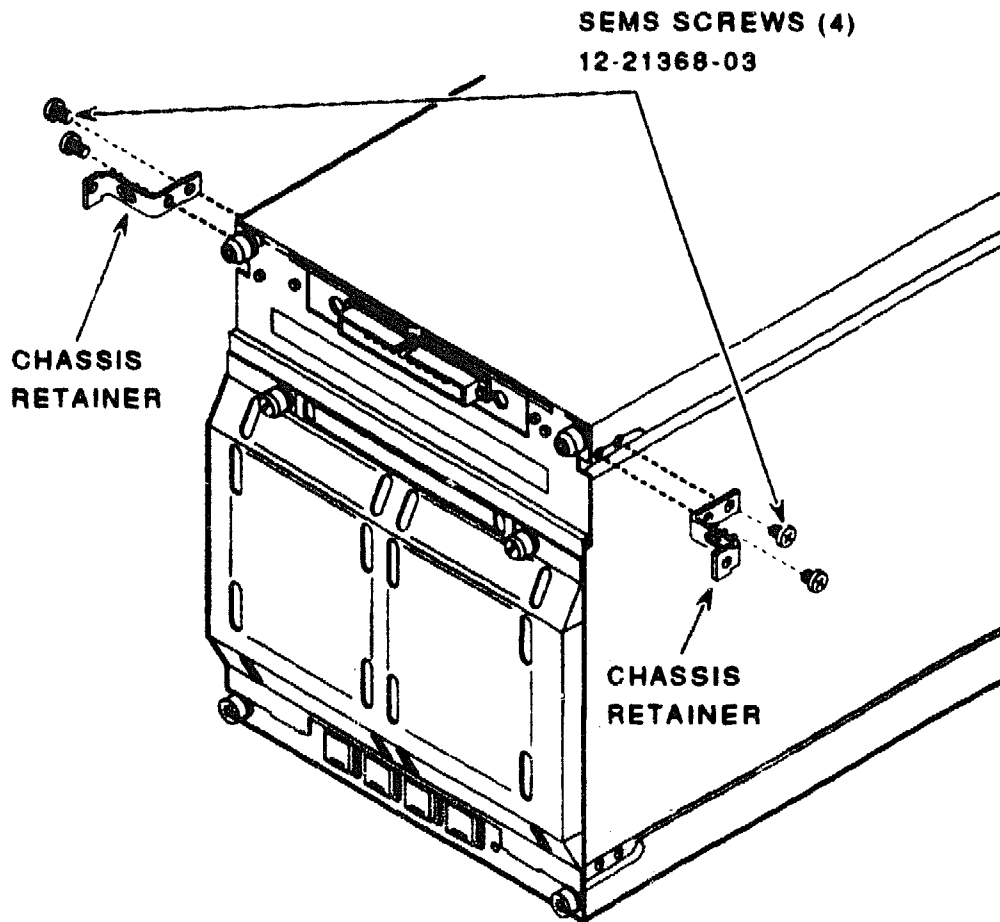
CHASSIS
RETAINER

LJ-00974-T10

Figure 4-4   Attaching Chassis Retainers to Extrusion Tube

3.   Insert one 1-1/4-inch Phillips screw (90-06079-02) through the right-hand chassis retainer into the vertical rail and hand tighten. Using a screwdriver or other tool to level the SF72 enclosure, insert the left-hand screw and hand tighten. Use a #2 Phillips screwdriver to tighten both screws.

NOTE
If you have difficulty leveling the enclosure, loosen the six shoulder screws and level the enclosure again. Be sure to retighten the screws. Refer to steps four through seven in Section 4.1.2.

4.   Remove the SF72 OCP from the packaging.

5.   Verify the switch settings on the SF72 OCP (refer to Table 4-2 and Figure 4-5).

Table 4-2   SF72 DSSI ID Switch Settings

SF72 Settings[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

Split-Bus Settings[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.

NOTE
**The same DSSI ID number can not be used twice on the same DSSI bus.**

Disk ISEs are typically assigned the remaining DSSI ID numbers after any existing adapters and tape ISEs have been assigned.
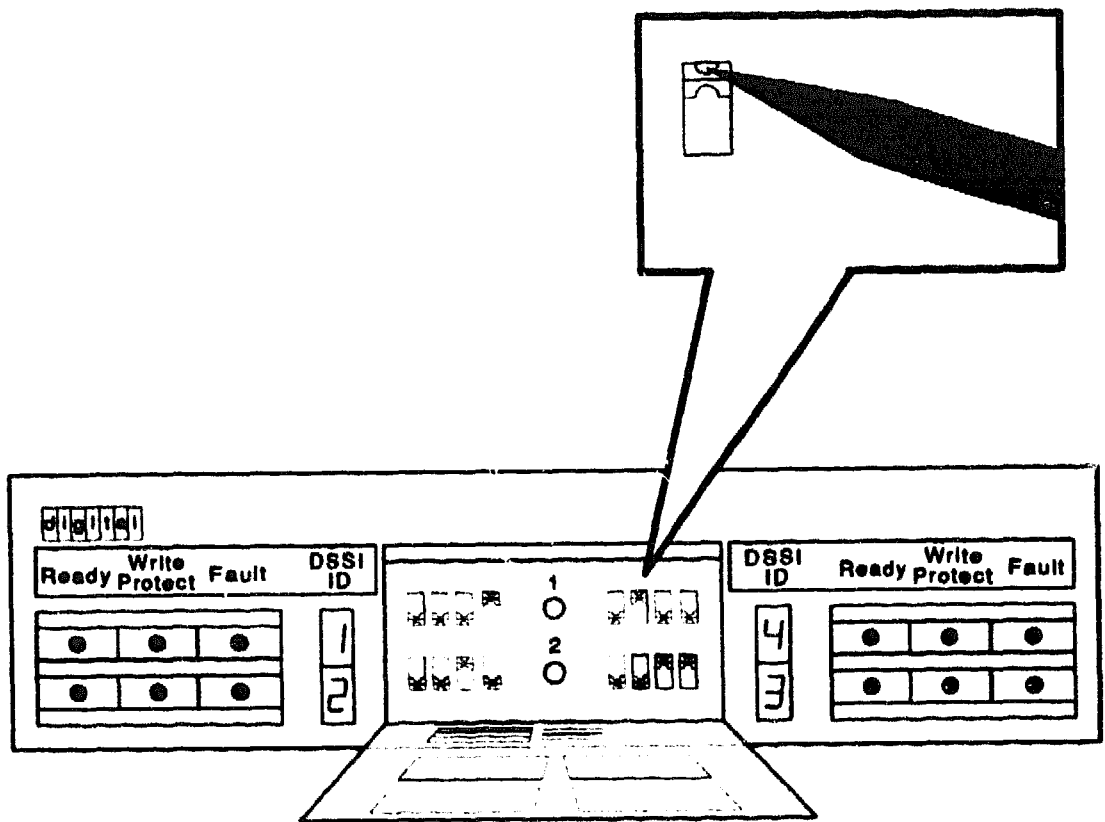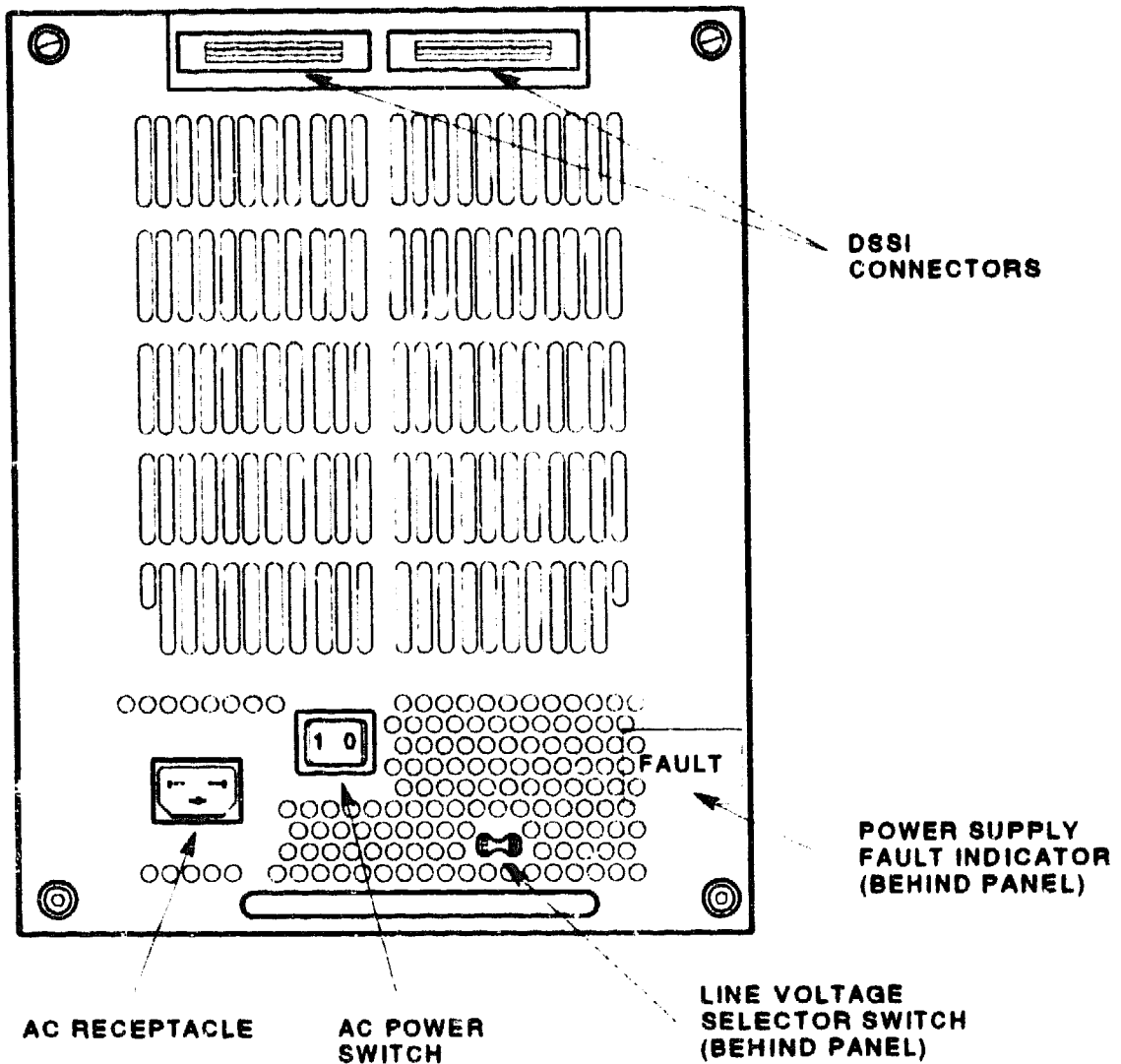
Figure 4-5   SF72 Enclosure DSSI ID Switch Settings

6. Wearing an ESD wrist strap, install the SF72 OCP into the SF100 storage array (Figure 4-6).

TTM CLIP
FASTENERS

FRONT
COVER

OCP
CONNECTOR
PINS

ESD
WRIST
STRAP

OPERATOR
CONTROL
PANEL
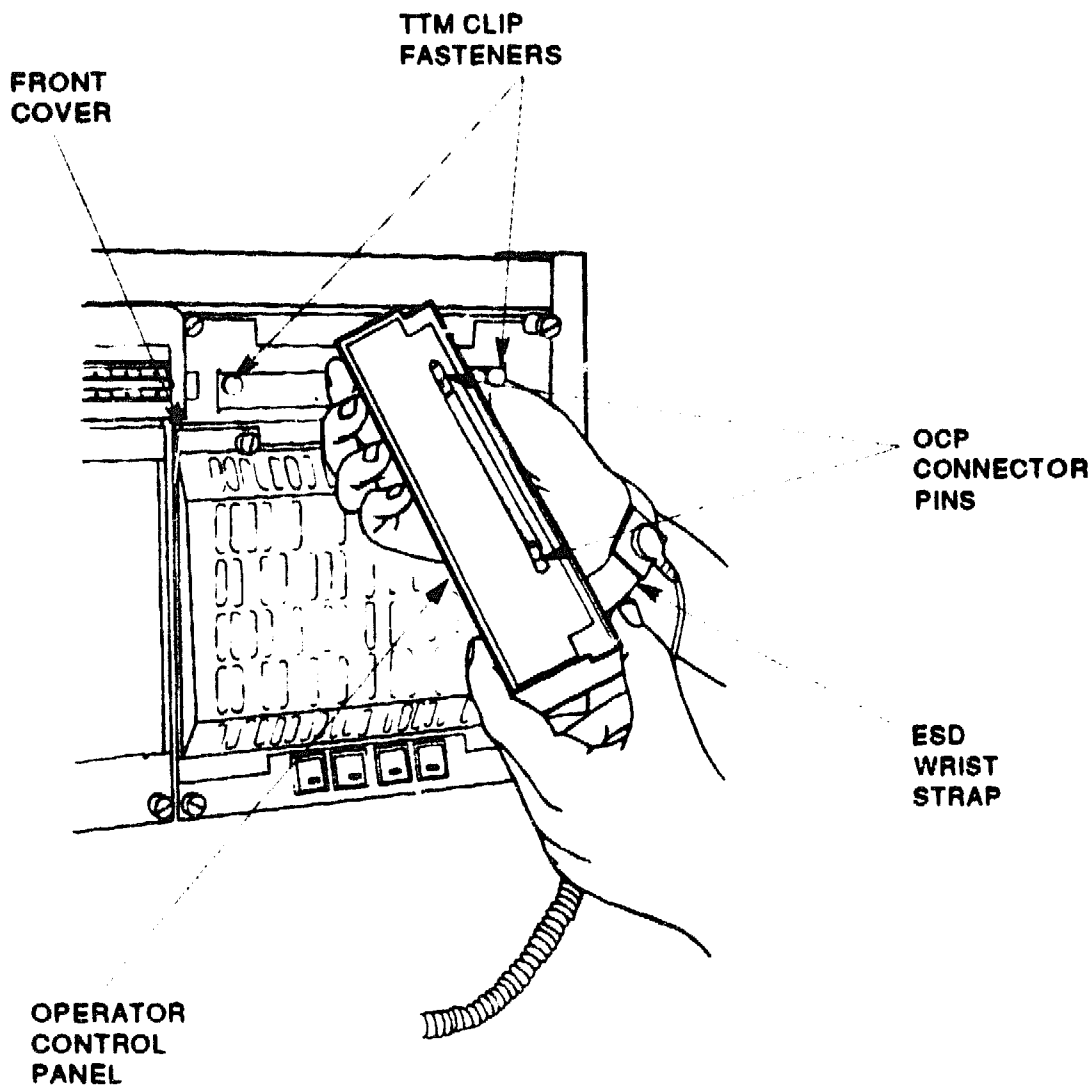
SHR_X1113_89_SCN

Figure 4-6   Installing the SF72 OCP

7. Check the SF72 enclosure line voltage selector switch; set to either 115 V or 220 V (Figure 4–7).

8. Connect the 9-foot power cord to the SF100 storage array.

DSSI CONNECTORS

FAULT

POWER SUPPLY FAULT INDICATOR (BEHIND PANEL)

AC RECEPTACLE

AC POWER SWITCH

LINE VOLTAGE SELECTOR SWITCH (BEHIND PANEL)

SHR-X0127A-90

Figure 4–7   Rear View of SF72 Enclosure

4.3   SF72 Cabling Procedure

This section describes the cabling procedure of the SF72 storage enclosure to the existing DSSI bus configuration of the SF100 storage array.

CAUTION
Do not disconnect any DSSI cabling with power applied to the host, the TF857 subsystem, or the SF72 enclosure. To do so may damage the equipment.

For specific single-system or DSSI VAXcluster cabling information, refer to Section 2.3

4.4 SF72 Enclosure Power-On Procedure

This section describes the SF72 enclosure power-on procedure.

CAUTION
Before you begin the power-on procedure of the SF72 enclosure, be sure that the SF100 storage array and SF72 enclosure power switches are *OFF*.

1. Power on the SF100 storage array.

2. Power on the TF857 magazine tape subsystem.

3. At the rear of the SF100 storage array, power on the SF72 enclosure.

4. Open the SF72 OCP to check indicators (Figure 4-5). The top LED should be *ON*; the bottom indicator should be *OFF*.

5. Press *each* of the four drive DC power switches (Figure 4-8) on the front of the SF72 enclosure, one at a time. The green LED should turn on in the DC power switch. If it does not light, refer to Section 4.5.

6. Observe the OCP indicators for each drive. If the Ready indicator is on and no other LED turn on and stay on, the drive has passed the power-on self-test (POST). If the Ready indicator does not turn on and the red Fault indicator is on, refer to Section 4.5.

7. Press each of the four Ready buttons. The Ready indicators should blink; when they stop blinking, the drives are ready. If a fault occurs, refer to Section 4.5.

8. Run the **host system** configuration program and note the drive IDs (for labeling of front door and rear cables). Refer to the appropriate host adpater module installation manual.

9. Complete labels (refer to the inside cover of the *SF Family Label Booklet* for detailed instructions). Use only one color for each DSSI bus.

10. Reinstall the SF100 storage array front and top panels.
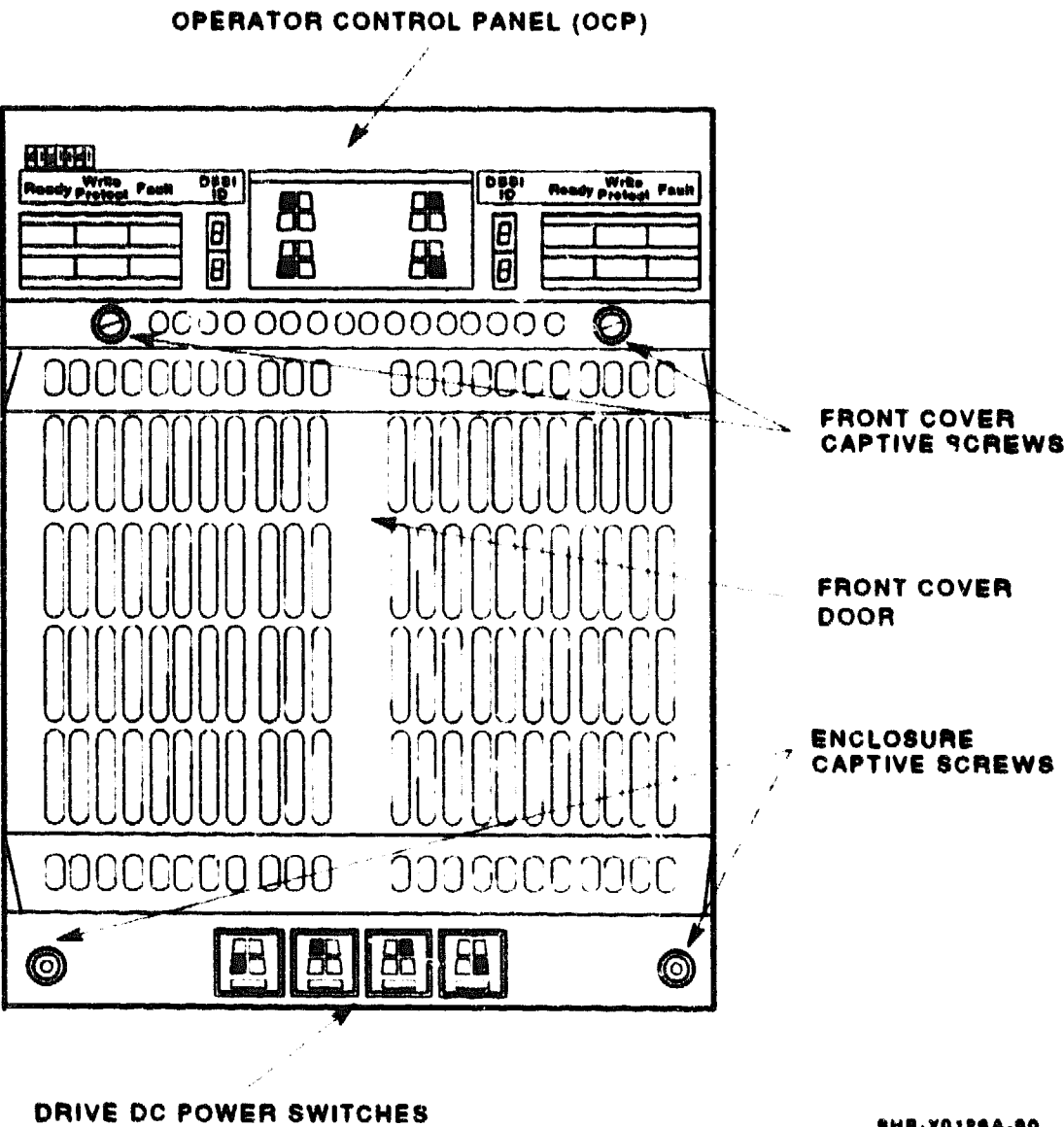
11. Replace the rear bustle.

OPERATOR CONTROL PANEL (OCP)

FRONT COVER
CAPTIVE SCREWS

FRONT COVER
DOOR

ENCLOSURE
CAPTIVE SCREWS

DRIVE DC POWER SWITCHES

SHR-X0126A-90

Figure 4–3   Front View of SF72 OCP and DC Power Switches

4.5 Troubleshooting

CAUTION
Be sure to adhere to ESD and safety precautions when taking a device off-line or when removing a device. Failure to do so can damage the device.

This section describes solutions to problems you may detect during the installation of the SF72 storage enclosure. It includes descriptions and symptoms of a failed device, the probable cause or causes of the failure, and the corrective action needed to correct the problem.

These procedures 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 ISEs before any troubleshooting. Refer to service or maintenance manuals for specific devices.

Use Table 4–3 to isolate a failure in an SF72 storage enclosure and the troubleshooting chart in the *SF72 Storage Enclosure and SF200 Storage Array Service Guide* (EK–SF72S–SG).

Table 4-3   Troubleshooting Chart

Symptom	Probable Cause	Corrective Action
Terminator indicator is OFF.	Cables are not connected correctly.	Reinstall cables.
	SF72 module is faulty.	Replace module.
No OCP indicators are on.	SF72 enclosure is not plugged in or powered on.	At the rear of the SF72 enclosure, plug in the ac power cord or power on the SF72.
	Drive dc power switch is off.	At the front of the SF72 enclosure, turn on the drive dc power switch.
	OCP is not plugged in or seated firmly.	Press the OCP firmly in place.
	Faulty OCP.	Configure and replace with a new OCP.
	Faulty transition termination module (TTM).	Configure and replace with a new TTM.
Single Fault indicator (on OCP) is on.	Faulty RF72 disk ISE.	Press Fault button if on; read fault code and replace failed FRU.
	Conflicting DSSI ID numbers.	Verify correct DSSI ID switch settings on KFMSA module, SF72, and magazine tape subsystems for that bus.
Multiple Fault indicators (on OCP) are on.	Conflicting DSSI ID numbers.	Verify correct DSSI ID switch settings on KFMSA module, SF72, and magazine tape subsystems for that bus.

Table 4-3 (Cont.)   Troubleshooting Chart

Symptom	Probable Cause	Corrective Action
	Faulty OCP.	Configure and install a new OCP.
	Faulty DSSI cable(s).	Isolate with DSSI bus meter and replace.
One or more indicators continue to cycle.	Conflicting DSSI ID numbers.	Verify correct DSSI ID switch settings on KFMSA module, SF72, and magazine tape subsystems for that bus.
One ISE is not accessible.	DC power to ISE is not on.	Turn on dc power switch.
	Faulty ISE drive module.	Replace ISE drive module.
	Faulty DSSI cable(s).	Isolate with DSSI bus meter and replace.
	Faulty remote front cable.	Replace cable.
	Faulty power harness.	Replace power harness.
ISE is not seen or is seen at unexpected DSSI ID value.	RFP cables are not plugged into the SF72 TTM or ISE.	Check that both ends of RFP cables are plugged in.
	Faulty OCP ID switch.	Reconfigure and replace OCP.
	Faulty RFP cable.	Replace appropriate RFP cable.

Table 4–3 (Cont.) Troubleshooting Chart

Symptom	Probable Cause	Corrective Action
Fan is not spinning and power supply indicator is lit.	Faulty power supply.	Replace power supply.
	Faulty fan.	Replace fan.
	Faulty TTM.	Configure a new TTM and replace.
Fan is not spinning and power supply indicator is not lit, but the SF72 enclosure is on.	Faulty power supply.	Replace power supply.
	Faulty power cord.	Replace cord.
	Faulty TTM.	Configure a new TTM and replace.

NOTE
The DSSI bus meter (29–28008–01), or DBM, is a small portable device used to look at bus signals in real-time as well as to verify DSSI ID numbers. The DBM can locate faulty cables or duplicate DSSI ID numbers on a given DSSI bus.

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