R23RF Removable Storage Element /System Installation and User Guide

Order Number EK-A0375-IN-04

Digital Equipment Corporation

1st Edition, October 1989

This document was prepared and published by Educational Services Development and Publishing, Digital Equipment Corporation.

Contents

About This Manual vii

1 GENERAL INFORMATION

1.1 Introduction 1–1
1.2 R23RF Specifications 1–1
1.3 Selecting a Location 1–5

2 UNPACKING INSTRUCTIONS

2.1 Unpacking RSEs 2–1

3 USING THE R23RF REMOVABLE STORAGE ELEMENT SYSTEM

3.1 Caring for the R23RF 3–1
3.2 Handling RSEs 3–1
3.2.1 Mechanical Shock 3–1
3.2.2 Transportation and Storage 3–2
3.2.3 Static Electricity 3–2
3.3 The Operator Control Panel (OCP) 3–3
3.4 Drive Key Locks 3–6
3.5 Powering Up the Pedestal 3–6
3.6 Inserting an RSE into a Pedestal 3–6
3.6.1 Inserting an RSE into a Pedestal when Power is Off 3–6
3.6.2 Inserting an RSE into a Pedestal when Power is On 3–8
3.7 Removing an RSE 3–8
3.8 Switching off the Pedestal 3–9

4 USING AN RSE IN A VAXcluster SYSTEM

4.1 Allocation class 4–1
4.2 Unit number 4–2
4.3 RSE Node ID Initialization Procedure 4–2
4.4 Mounting and Dismounting RSEs in a VAXcluster System . . 4–4
4.5 Transporting RSEs Between VAXcluster Systems 4–4

5 TROUBLESHOOTING

5.1 No Power to the Pedestal 5–1
5.2 No Power to the RSE 5–2

6 DIGITAL REPAIR SERVICES

6.1 Digital International Customer Services Information Numbers 6–2

A OPTION KITS

A.1 OPTION KITS FOR SINGLE DRIVE R23RF REMOVABLE STORAGE ELEMENT/SYSTEMS A–1
A.2 Supported Configurations A–4

B CUSTOMER SERVICES INSTALLATION

B.1 Introduction B–1
B.2 Delivery B–1
B.3 Unpacking B–1
B.4 Installing a DSSI adapter B–3
B.4.1 A Host without its own DSSI adapter B–3
B.4.2 A Host with its own DSSI adapter B–4
B.5 Cabling the Pedestal B–4
B.5.1 Single Pedestal Configurations B–4
B.5.2 Multiple Pedestal Configurations B–6
B.6 Installing the DSSI Node ID Plugs B–6
B.7 Testing the R23RF B–6

Glossary

Index

Figures

1–1 Front View of R23RF Pedestal with Canisters Removed 1–3
2–1 Rear View of RSE 2–3
2–2 Front View of RSE 2–4
3–1 Operator Control Panel (OCP) 3–4
3–2 Inserting an RSE 3–7
A–1 Supported DSSI Configurations A–4
B–1 Rear View of R23RF Pedestal B–2
B–2 Cabling the Pedestal B–5
B–3 Interpedestal Cabling B–7

Tables

1–1 R23RF Characteristics 1–2
1–2 R23RF Environmental Specification 1–4
1–3 R23RF Electrical Requirements 1–4
1–4 R23RF Space Requirements 1–4
A–1 R23RF 110-120V/220-240V Single Drive Options A–1
A–2 R23RF Cable Options A–2
A–3 RSE Options A–3
A–4 R23RF AC Power Cords A–3

PAGE 6 IS A BLANK PAGE

About This Manual

Document Structure

This guide, which explains how to install, configure, and operate an R23RF Removable Storage Element System, is made up as follows:

- Chapter 1 contains general information about the R23RF.
- Chapter 2 describes how to unpack a Removable Storage Element (RSE). Unpacking the R23RF pedestal is described in Appendix B. This information is for Digital Customer Services.
- Chapter 3 describes how to operate the R23RF.
- Chapter 4 describes how to set up the RSE for use in a VAXcluster system.
- Chapter 5 gives some simple troubleshooting advice which may help to get an inoperative R23RF working again.
- Chapter 6 describes the service plans available from Digital Customer Services.
- Appendix A lists the option kits available.
- Appendix B explains how to unpack, install, and test an R23RF Removable Storage Element System. This information is for Digital Customer Services personnel.

Intended Audience

This guide is intended primarily for computer users, and familiarity with the VMS operating system is assumed. The guide also provides information for Digital Customer Services personnel involved in the installation of R23RFs.

NOTE

Certain tasks, such as R23RF pedestal installation, should be carried out by Digital Customer Services personnel or other trained service engineers.

Associated Documents

R23RF users may find the following useful:

Document Title	Order No.
KFQSA Installation and User Guide	*EK-KFQSA-IN*
RF31/RF72 Integrated Storage Element User Guide	*EK-RF72D-UG*
RF73 Integrated Storage Element User Guide	*EK-RF73D-UG*

Digital Customer Services, or other trained service engineers may require:

Document Title	Order No.
R23RF Removable Storage Element System Technical Manual	*EK-A0376-TM*
KFQSA Service Guide	*EK-KFQSA-SG*
KA640 CPU System Maintenance	*EK-179AA-MG*
KA640 Installation Guide	*EK-017AA-IN*
RF31/72 Integrated Storage Element Installation Manual	*EK-RF72D-IM*
RF73 Integrated Storage Element Installation Manual	*EK-RF73D-IM*
Micro/VAX Systems Maintenance Guide	*EK-001AA-MG*
MDM User Guide	*AA-FM7A-DN*
VMS VAXcluster Manual	*AA-LA28A-TE*
Guide to VAXclusters	*AA-Y513A-TE*

Customers requiring extra hardcopy documents should contact their Digital representative.

WARNINGS, CAUTIONS and NOTES

Warnings, cautions and notes have the following meanings in this guide:

WARNING Contains information essential to your personal safety.

CAUTION Contains information essential to the safety of equipment and software.

NOTE Contains general information of which you should be aware.

FCC STATEMENT

This equipment generates, uses, and may emit radio frequency energy. The equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such radio frequency interference. Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

1
GENERAL INFORMATION

1.1 Introduction

The R23RF Removable Storage Element System consists of a BA23-style pedestal (refer to Figure 1–1) into which can be inserted two Removable Storage Elements (RSEs). Each Removable Storage Element (RSE) consists of one RF Integrated Storage Element (ISE) and one canister, that is (RSE = ISE + canister). Thus, the R23RF allows RF Integrated Storage Element devices to be removed from the host computer system while still maintaining total data integrity.

The R23RF is compatible with the Micro/VAX II series, the Micro/VAX 3000 series and VAX 4000 series, running under the VMS operating system.

The R23RF system is quiet in operation and designed for an open office environment. One or more R23RFs can be linked together to provide increased on-line storage capacity. Extra RSEs can be ordered separately. (See Appendix A for a list of R23RF and RSE Option Kits.)

1.2 R23RF Specifications

The following tables summarize the characteristics, environmental specification, electrical requirements, and space requirements of the R23RF.

Table 1–1 R23RF Characteristics

Pedestal Height	24 in (61 cm)
Pedestal Width	10 in (25.5 cm)
Pedestal Depth	28.5 in (72.5 cm)
Pedestal Weight (including 2 RF31 RSEs)	69 lb (31.3 kg)
Pedestal Weight (including 2 RF72 RSEs)	75.4 lb (34 kg)
RSE Weight	
RF31	6.0 lb (2.7 kg)
RF72	9.0 lb (4.2 kg)
RF73	9.0 lb (4.2 kg)

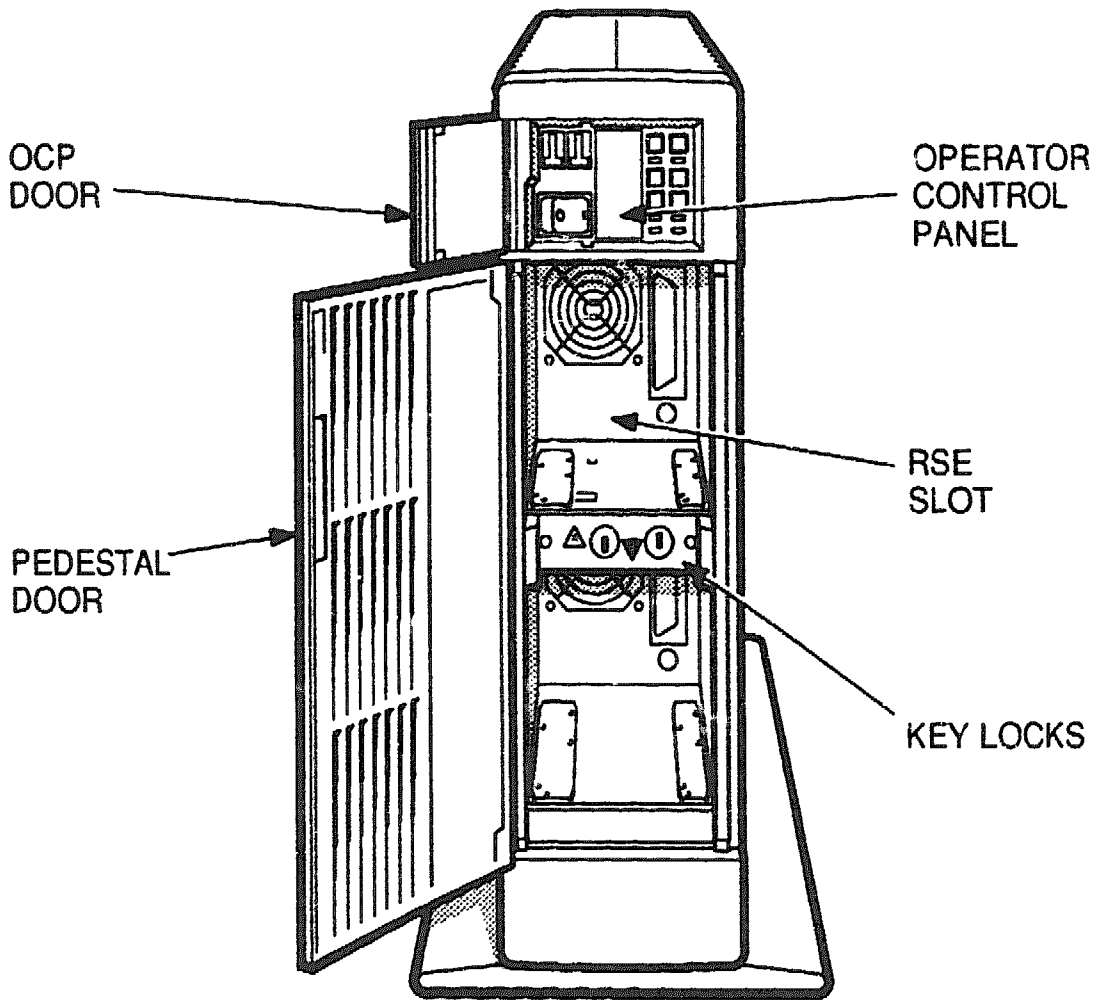

Figure 1–1 Front View of R23RF Pedestal with Canisters Removed

Table 1–2 R23RF Environmental Specification

Temperature	
Operating	10 to 40°C (50 to 104°F)
Non-Operating	-40 to 66°C (-40 to 151°F)
Relative Humidity	
Operating	10 to 90% (non-condensing) maximum wet bulb temperature 28°C (82°F) minimum dew point 2°C (36°F)
Non-Operating	8 to 90% (non-condensing)
Altitude	
Operating	2,438 m (8,000 ft)
Non-Operating	4,876 m (16,000 ft)
Noise	5.0 Bels
Agency Compliance	VDE 0871 Class A FCC Part 15J Class A

Table 1–3 R23RF Electrical Requirements

Voltage (V)	220–240	100–120
Power (average) (W)	86	86
Current (A)	0.7	1.3
Frequency (Hz)	50	60

Table 1–4 R23RF Space Requirements

Floor Space	10 x 32 in (25.5 x 81 cm)
Maintenance Space	12 x 74 in (30.5 x 188 cm)

1.3 Selecting a Location

The R23RF is designed to operate in an office environment. To find the most suitable location, use the following guidelines:

- Leave space around the pedestal for air circulation and servicing.
- Place the pedestal away from heaters, photocopiers, and direct sunlight.
- Minimize static by placing the pedestal away from busy office corridors.
- Keep the area free from dust and abrasive materials.
- Keep the pedestal and RSEs away from magnets and equipment that generates magnetic fields, such as motors, transformers, and terminals.
- Set aside a secure, clean area near the pedestal to store the RSEs.

2
UNPACKING INSTRUCTIONS

Whenever an entire R23RF Removable Storage Element System is delivered to the user's premises, its unpacking, installation, testing, and demonstration must only be carried out by Digital Customer Services or other trained service engineers. These processes are described in Appendix B. Once the pedestal is installed, the RSEs can be unpacked and used.

When extra RSEs are ordered, users can unpack and install the RSEs themselves since, once unpacked, RSEs are ready for use.

2.1 Unpacking RSEs

Each RSE is delivered in a small container to which a shipping list is attached. Since an RSE can weigh up to 11.0 lb (5 kg), always use both hands to lift it.

To unpack the RSE:

- Check the shipping list for compliance with your order.
- Check that the correct number of shipping containers are present.
- Check the shipping containers for damage such as dents, holes and crushed corners.
- Take the containers to the site at which the R23RF is operating.
- Open and unpack the shipping containers. Check the contents against the shipping list and the order. Retain shipping containers and packing materials for possible future use.
- Visually inspect each RSE for damage, particularly the shock detector and Low Insertion Force (LIF) socket (refer to Figure 2–1). If the shock detector shows red, contact your Digital representative.
- Remove the transit plate and transit screws (refer to Figure 2–2) from each RSE and store them for possible future use.

- Report any damage or shortages to the shipper and notify your Digital representative.

CAUTION

The Removable Storage Element contains precision equipment. Mishandling may cause damage and lead to the Warranty/Contract being invalidated.

All electronic equipment can be damaged by the static electricity present in most working environments. To prevent damage to the RSE's internal electronics, DO NOT TOUCH the socket at the rear of the RSE. Also, do not allow small objects to fall into the socket, as this may damage the pins on the pedestal or the RSE socket.

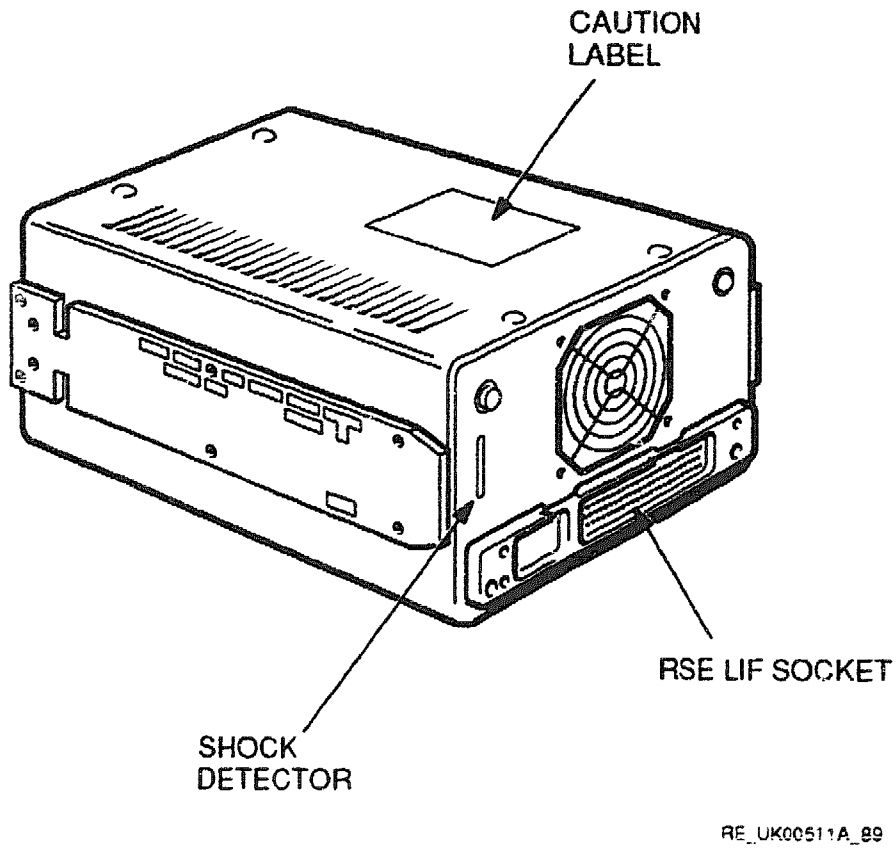

Figure 2–1 Rear View of RSE

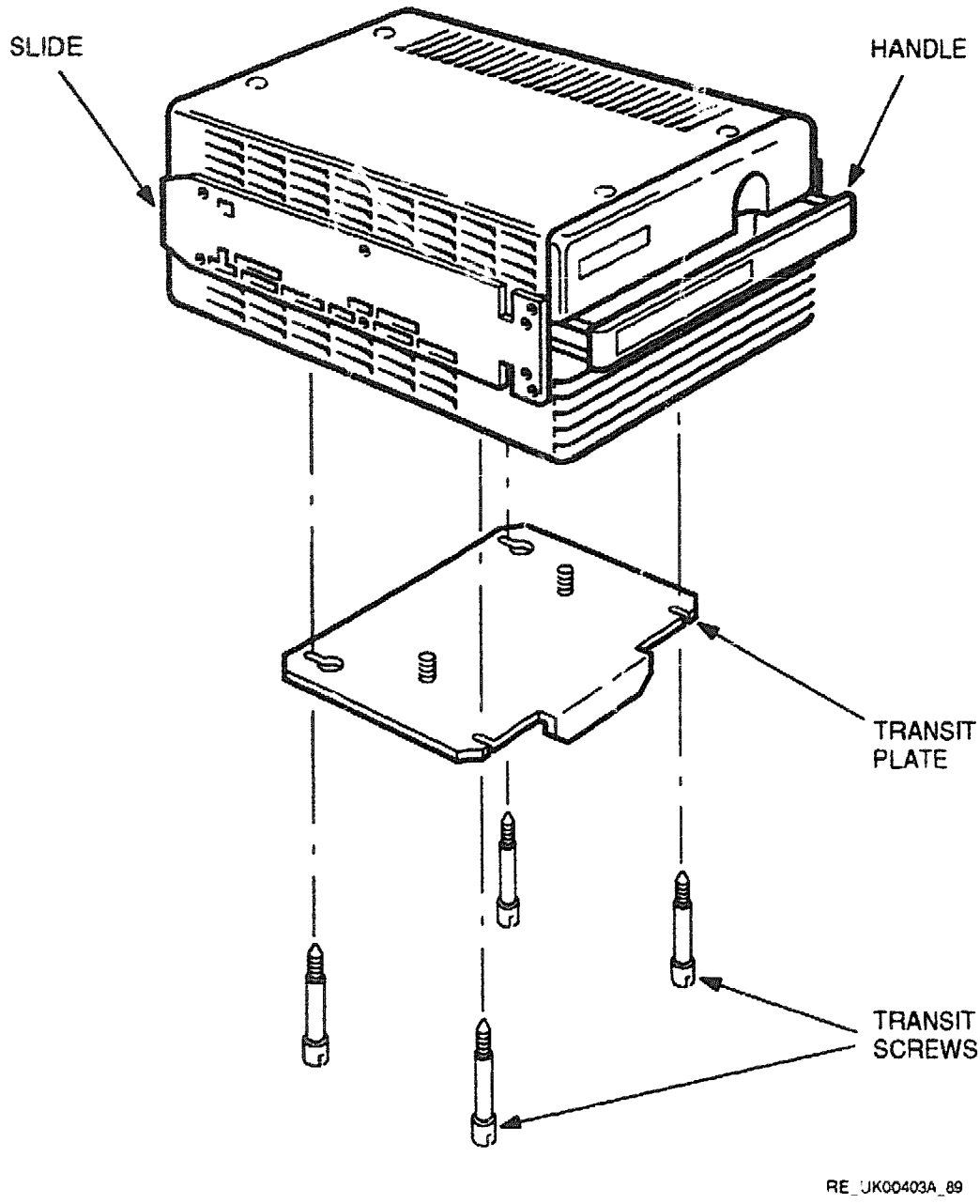

Figure 2–2 Front View of RSE

3
USING THE R23RF REMOVABLE STORAGE ELEMENT SYSTEM

3.1 Caring for the R23RF

The R23RF requires no physical preventative maintenance. There are, however, some simple precautions to take when using the system.

- Never put beverages on top of the pedestal or use an excessive amount of cleaning liquid when cleaning the pedestal. Liquids can be pulled into the pedestal by the forced air circulation inside. Such an incident can destroy the electronics.
- Keep ventilation slots clear and pedestal covers in place. Blocking the ventilation slots or removing pedestal covers can disrupt the flow of air through the system, causing the system to overheat.

3.2 Handling RSEs

To ensure data integrity and high reliability, it is essential to follow these handling procedures for RSEs.

3.2.1 Mechanical Shock

An RSE should not be handled roughly. Since it can weigh up to 11.0 lb (5 kg), always use both hands to lift it. Do not drop an RSE or knock it against a hard surface. A shock detector is installed on each RSE (refer to Figure 2–1):

- If the shock detector shows red, the contract/warranty may be void.
- If the shock detector shows red and the RSE is operative, make a backup copy of the RSE.
- If the shock detector shows red and the RSE is inoperative, contact Digital Customer Services.

3.2.2 Transportation and Storage

When an RSE is not in the pedestal, store it safely in an area set aside for that purpose, and preferably in its carrying case. Use the carrying case (refer to <REFERENCE>(tblrse)) when transporting an RSE from one location to another.

The RSE's recommended storage position is:

- With the rubber feet down
- Out of direct sunlight
- Away from magnetic fields such as electric motors or transformers

CAUTION

The recommended storage temperature range is -40 to 66°C (-40 to 151°F) (refer to Table 1–2). It is preferable to store RSEs in the same environment as the system. If an RSE has been left in a hot/cold place for any length of time, its temperature should be allowed to normalize before use. No normalization is required between 15 and 45°C (59 and 113°F). Below 15°C or above 45°C, allow one hour for every 5°C (9°F) outside these limits.

3.2.3 Static Electricity

CAUTION

The Removable Storage Element contains precision equipment. Mishandling may cause damage and lead to the Warranty/Contract being invalidated.

All electronic equipment can be damaged by the static electricity present in most working environments. To prevent damage to the RSE's internal electronics, DO NOT TOUCH the socket at the rear of the RSE. Also, do not allow small objects to fall into the socket, as this may damage the pins on the pedestal or the RSE socket.

3.3 The Operator Control Panel (OCP)

The Operator Control Panel (refer to Figure 3–1) contains all the switches and indicators required to use the R23RF. The functions of the switches and indicators are as follows:

Behind the small door:

- The DSSI node select plugs. There is one plug for each RSE slot, labeled A and B. The plugs are set up when the pedestal is installed. The plugs determine the DSSI node ID of the RSE residing in that slot.
- The ac power OFF/ON rocker switch, labeled O/ | . This switch connects/disconnects ac power to/from the R23RF pedestal.

On the right-hand side of the OCP are two columns of switches and indicators, one column for each drive slot (A and B). When the pedestal is switched on, both RSEs spin up automatically and light the top four indicators for each drive. After a few seconds, when the RSEs are up to speed, the FAULT and WRITE PROTECT indicators go out, leaving the POWER and READY indicators lit.

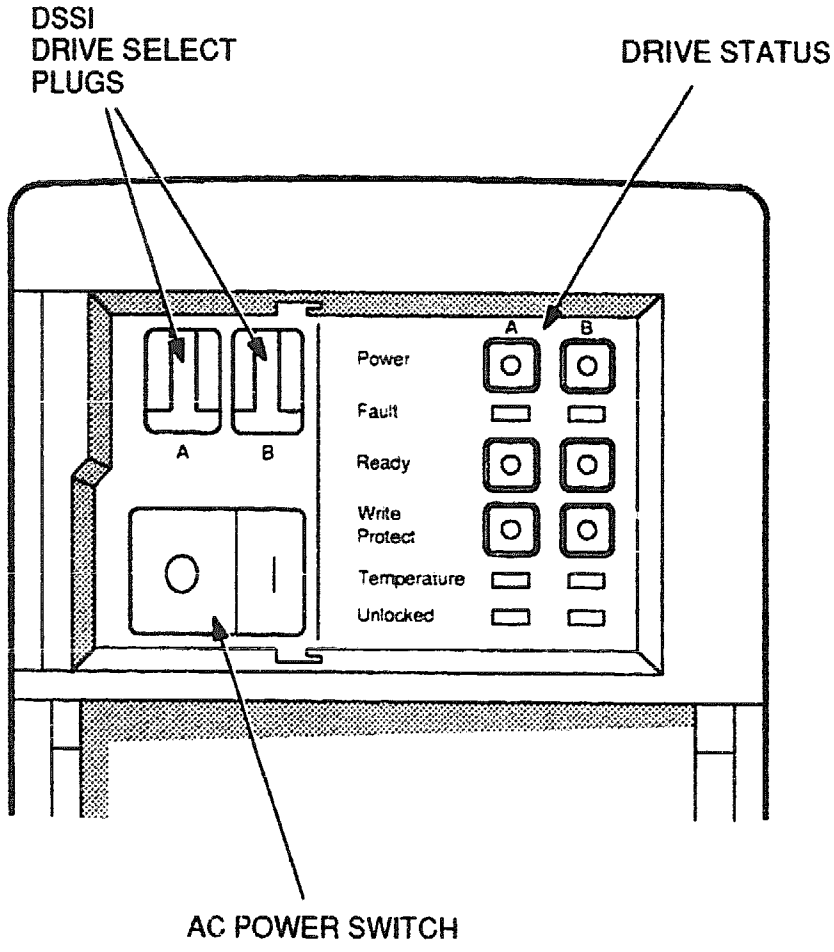

Figure 3–1 Operator Control Panel (OCP)

The switches and indicators are used as follows:

- The POWER switch is an operator-controlled pushbutton with an integral green indicator. When this button is pressed, the RSE interlock (an electromechanical drive lock) is engaged and power is applied to the appropriate RSE (if the RSE was not already switched on). The green indicator lights to signify that the RSE is powered up.

  When the POWER switch is pressed again, power is removed from the RSE. The indicator flashes for about 15 seconds while the RSE is spinning down. When powering down is complete, the indicator goes out and the interlock disengages. Once the interlock is disengaged, the RSE can be withdrawn from its drive slot by turning the key in the appropriate drive key lock (see Section 3.4).

- The red FAULT indicator lights if a drive error is detected by the RSE's internal diagnostics. Note: The FAULT indicator lights briefly during Power-Up diagnostics and this does not indicate a fault. However, if the indicator remains lit, power down and remove the RSE, and call Digital Customer Services. You may still use other RSEs in the R23RF.

- The READY switch is an operator-controlled, alternate-action pushbutton with an integral green indicator. When this indicator is lit, the RSE is ready to be accessed by the operating system.

  When this button is pressed, the indicator goes out and the RSE goes off-line, inhibiting further access by the software. Press this button again to put the RSE back on line. The indicator lights, showing that the RSE is again ready. During seek operations, this indicator flickers. Note: The READY indicator lights briefly during Power-Up diagnostics.

- The WRITE PROTECT switch is an operator-controlled, alternate-action pushbutton with an integral amber indicator. When this button is pressed, the indicator lights to show that the RSE is write protected, so that the operating system can only *read* data from the RSE.

  When this button is pressed again, the indicator goes out and both reading and writing of the RSE are enabled.

- The red TEMPERATURE indicator lights if the temperature inside the RSE has risen above its maximum operating limit. If the TEMPERATURE indicator lights, remove the RSE from the drive slot and contact Digital Customer Services. *Do not* use the RSE or place another RSE in the drive slot until the problem has been rectified and the TEMPERATURE indicator is no longer lit.

Should this over-temperature condition be detected, the RSE automatically powers down at the end of the data transfer. This indicator remains lit until the RSE cools to an acceptable temperature, when it goes out. However, the RSE does *not* power up again automatically: you must press the POWER button.

- When the green UNLOCKED indicator is lit, the drive interlock is disengaged and the RSE may be removed from the drive slot. When the indicator is not lit, the drive interlock is engaged and the RSE may not be removed from its slot. Note that this electromechanical locking is in addition to the drive key locks.

3.4 Drive Key Locks

In addition to the electromechanical drive lock, key locks (refer to Figure 3–2) provide extra security for the RSE since, without a key, the RSE cannot be removed from the drive slot. (However, it is not necessary to have a key to insert the RSE.)

3.5 Powering Up the Pedestal

Switch on the ac power using the OFF/ON switch on the Operator Control Panel. You may switch the pedestal on with or without the RSEs in place.

On switching on the pedestal, for each RSE in place, the top four drive indicators and switches light to show that the disk is spinning up and performing its Power-Up diagnostics. After a few seconds, when the RSE is ready for use, the FAULT and WRITE PROTECT indicators go out, leaving the POWER and READY indicators lit.

3.6 Inserting an RSE into a Pedestal

The procedure for inserting an RSE depends on whether the pedestal is powered down (refer to Section 3.6.1) or up (refer to Section 3.6.2).

3.6.1 Inserting an RSE into a Pedestal when Power is Off

With the pedestal switched off:

1. Check that two DSSI node ID plugs have been installed on the Operator Control Panel. These plugs override the RSE's internal drive select switches so that the RSE requires no adjustment or configuration.

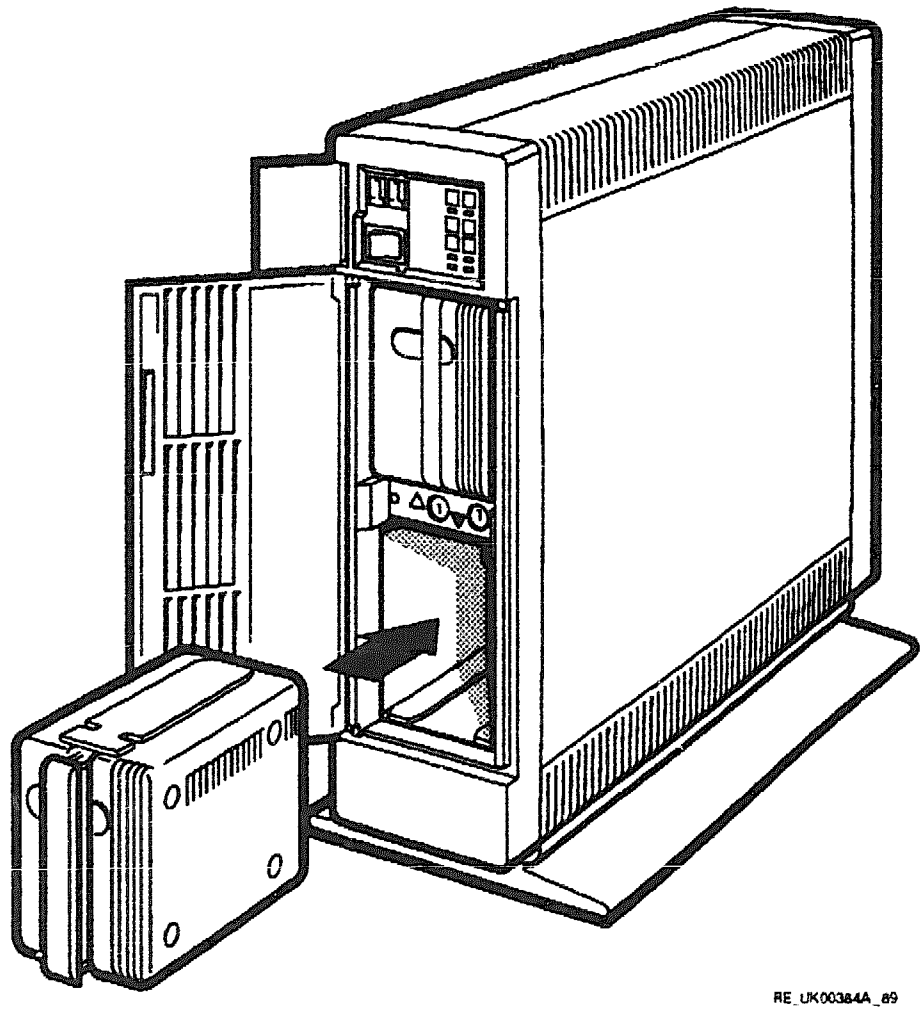

Figure 3–2 Inserting an RSE

2. Open the pedestal door and insert the RSE as follows:
   - Pull the RSE handle out to its full extent.
   - Offer up the RSE to the empty slot as shown in Figure 3–2. (The RSE has slides which are keyed to ensure that it can only be inserted in the correct orientation.)
   - Slide the RSE fully home, making sure that the canister is fully inserted after the lock mechanism clicks.
   - Push the RSE handle back in.
3. Close the pedestal door.

Power up the pedestal (see Section 3.5).

Under VMS, MOUNT the drive using the standard VMS commands. For example:

```
$ MOUNT DIA2: VOL_NAME
```

or, if the volume label is not known:

```
$ MOUNT/OVERRIDE=ID DIA2:
```

The RSE is now available for use as a standard RF ISE, using all standard VMS commands.

3.6.2 Inserting an RSE into a Pedestal when Power is On

With the pedestal switched on:

- Insert the RSE as described in steps 1 to 4 of Section 3.6.1.
- Press the POWER button to power up the RSE. The POWER button illuminates when the RSE is powered up.
- MOUNT the drive, as described in Section 3.6.1.

3.7 Removing an RSE

To remove an RSE, first DISMOUNT the drive, using the standard VMS command. For example:

```
$ DISMOUNT DIA2:
```

CAUTION

You must DISMOUNT the drive before powering it down, and before powering down the pedestal (see Section 3.8).

Press the POWER button to power down the drive. The indicator flashes when the drive is spinning down, and goes out when the drive is powered down.

When the green UNLOCKED indicator lights, the drive is unlocked. You can remove the RSE by turning the key in the key lock, and pulling the RSE from its slot.

3.8 Switching off the Pedestal

- Dismount both drives.
- Switch off both drives.
- Remove the RSEs, if required, and store safely.
- Switch off the pedestal.

4

USING AN RSE IN A VAXcluster SYSTEM

Before an RSE can be used in a VAXcluster environment, a number of its parameters must be checked and possibly changed to ensure that the RSE is usable in the VAXcluster system. These procedures normally need to be performed once only, unless the VAXcluster system is reconfigured.

While these procedures are not strictly required for single node systems, Digital recommends that these initialization procedures be followed for all RSEs.

4.1 Allocation class

The allocation class parameter is used by VMS throughout the VAXcluster system as part of the unique name for the RSE, e.g. 4DIA0: . If the RSE is to be served to other members of the VAXcluster system, the allocation class of the serving node and the RSE must be identical. (Refer to *VMS VAXcluster Manual*, AA-LA28A-TE, section 5.0, for more information on disk serving and allocation classes.) Note that once VMS has associated an allocation class with a device, it will not recognize a change in allocation class. Therefore, these initialization procedures must be performed on a standalone system before booting VMS.

The allocation class of the VMS system is a SYSGEN parameter (ALLOCLASS). If multiple VAXcluster members are serving a given RSE, all of those VAXcluster members must have the same allocation class.

CAUTION

If the allocation class of the RSE and serving node do not match, the RSE will not be accessible from members of the VAXcluster system that do not have a direct connection to the RSE via DSSI.

4.2 Unit number

The unit number is used by VMS in forming the device name. An RSE can either take its unit number from the DSSI node ID plug or it can use a unit number stored in its nonvolatile memory. Digital recommends a consistent policy of either setting unit numbers on all RSEs or allowing all RSEs to take their unit numbers from the DSSI node ID plugs.

The resulting name (e.g. 4DIA0:) must be unique throughout the VAXcluster system.

CAUTION

In large configurations with multiple nodes serving DSSI ISEs /RSEs, use different allocation classes within the VAXcluster system or set unique unit numbers for all RSEs to ensure a unique device name.

4.3 RSE Node ID Initialization Procedure

It is important that you place the RSE to be initialized in a standalone system, i.e. one that is not actively running as a VAXcluster member. If you change parameters while the system is running as a VAXcluster member, then the results may be unpredictable.

- Use the console command SET HOST/DUP/DSSI to connect to the PARAMS task in the RSE.

  ```
  >>>SET HOST/DUP/DSSI # PARAMS
  ```

  where # is the SSP controller number of the ISE to be accessed. Refer to the *KFQSA Installation and User Manual* when setting up an ISE connected through a KFQSA, or the *KA640 Installation Guide* for an ISE connected through a Micro/VAX 3300/3400 embedded DSSI adapter.

- Use PARAMS to display and, if required, to modify the following parameters:

  - ALLCLASS, the controller allocation class. This should be set to match that of the host.
  - UNITNUM, the MSCP unit number.
  - FORCEUNI should be true (1) if the unit number is to be taken from the DSSI ID. FORCEUNI should be false (0) if the UNITNUM value is to be used instead.

For example, using an ISE connected by the Micro/VAX 3300/3400 embedded DSSI adapter, use the following commands to change the allocation class:

```
>>> SET HOST/DUP/DSSI 2 PARAMS
Starting DUP server..
PARAMS> SET ALLCLASS 1
PARAMS> WRITE
Changes require controller initialization, ok?[Y/N] Y
Stopping DUP server ..
>>>
```

To change the FORCEUNI parameter, use the following commands:

```
>>> SET HOST/DUP/DSSI 2 PARAMS
Starting DUP server..
PARAMS> SET FORCEUNI 1
PARAMS> WRITE
PARAMS> EXIT
>>>
```

To change the UNITNUM parameter, use the following commands:

a. To set an explicit unit number -

```
>>> SET HOST/DUP/DSSI 2 PARAMS
Starting DUP server..
PARAMS> SET FORCEUNI 0
PARAMS> SET UNITNUM 3
PARAMS> WRITE
PARAMS> EXIT
>>>
```

b. To use the DSSI plug unit number -

```
>>> SET HOST/DUP/DSSI 2 PARAMS
Starting DUP server..
PARAMS> SET FORCEUNI 1
PARAMS> WRITE
PARAMS> EXIT
>>>
```

The RSE is now ready to be used in the VAXcluster system.

4.4 Mounting and Dismounting RSEs in a VAXcluster System

If an RSE is mounted on multiple members of a VAXcluster system, then the RSE must be dismounted from all of those members before it is removed, as with any other disk. The MOUNT/CLUSTER and DISMOUNT/CLUSTER commands are available to mount and dismount disks on all members of the VAXcluster system. (See Section 3.7 and the manual *Guide to VAXclusters*.)

4.5 Transporting RSEs Between VAXcluster Systems

If RSEs are to be moved regularly between VAXcluster systems, it is advisable that the various VAXcluster systems involved use a common policy for allocation classes and unit numbers. If this is not possible, it may be necessary to reinitialize the RSE node ID for the new VAXcluster system (this does not affect information stored on the RSE) and again when it is returned to the original VAXcluster system.

5
TROUBLESHOOTING

This chapter describes some simple troubleshooting steps that may help you to get an inoperative RSE working again, or decide that Digital Customer Services should be called. Repairs to the R23RF should only be attempted by trained service engineers.

5.1 No Power to the Pedestal

Before calling Digital Customer Services, check that:

- The ac power cord is connected.
- The ac power OFF/ON switch is in the ON position.
- The fuse in the ac power plug has not blown (if applicable).
- The fuse in the inlet filter has not blown.

Warning

For continued protection replace only with the same type and rating of fuse.

5.2 No Power to the RSE

Before calling Digital Customer Services check that:

- The POWER button was pressed for the correct drive slot.
- The RSE is pushed completely home.
- The DSSI node ID plugs have been installed correctly in the DSSI drive select switches.
- The cabling is correct (refer to Figure B–2 and Figure B–3).

6
DIGITAL REPAIR SERVICES

Digital Customer Services offers a range of flexible service plans.

ON-SITE SERVICE offers the convenience of service at your site and insurance against unplanned repair bills. For a monthly fee, you receive personal service from our service specialists. Within a few hours, the specialist is dispatched to your site with equipment and parts to give you fast and dependable maintenance:

BASIC SERVICE offers full coverage from 8 a.m. to 5 p.m., Monday through Friday. Options are available to extend your coverage to 12-, 16-, or 24-hour periods, and to include Saturdays, Sundays, and holidays.

DECservice offers a premium, on-site service providing committed response to remedial service requests made during contracted hours of coverage. Remedial maintenance will be performed continuously until the problem is resolved, which makes this service ideal for customers requiring maximum service performance.

Under Basic Service and DECservice, all parts, material, and labor are covered in full.

PER CALL SERVICE offers a maintenance program on a noncontractual, time-and-materials-cost basis. This service is available with On-Site Service. It is appropriate for customers who have the expertise to perform first-line maintenance, but may occasionally need in-depth support from Digital Customer Services.

Per Call Service is also offered as a supplementary program for Basic Service customers who need maintenance beyond their contracted coverage hours. There is no materials charge in this case.
On-Site Per Call Service is provided on a best effort basis, with a normal response time of two to three days. It is available 24 hours a day, seven days a week.

For more information on these Digital Service plans, prices, and special rates for volume customers, call the Digital Customer Services office nearest you.

6.1 Digital International Customer Services Information Numbers

U.S.A.	(800)554-3333
Australia	(02)4125555
Austria	(222)6776410
Belgium	(02)2425095
Canada	(800)267-5251
Denmark	(2)889666
Finland	(0)423511
France	(6)0778292
Holland	(30)640293
Ireland	(1)308433
Italy	(02)617961
Japan	(03)9897161
Norway	(2)160290
Portugal	(1)725402
Spain	(1)7331900
Sweden	(8)7338000
Switzerland	(01)8169111
United Kingdom	(734)868711
West Germany	(089)95910

A
OPTION KITS

A.1 OPTION KITS FOR SINGLE DRIVE R23RF REMOVABLE STORAGE ELEMENT/SYSTEMS

The following options are available for the R23RF Removable Storage Element/System with a single RSE drive, and for individual RSEs. Note that, if the host computer system does not have a DSSI adapter, an option which includes a DSSI adapter must be ordered or the DSSI adapter must be ordered seperately.

Table A–1 R23RF 110-120V/220-240V Single Drive Options

Options	Description
RF31B-KA	One 120V/240V (User Selectable Voltage) Pedestal, R23RF-A2 One RF31 Removable Storage Elements (Part No. RF31 -RA), One DSSI cable (Part No. BC21M-09) for all Enclosures, One DSSI terminator, Part No. 12-29258-01, Eight DSSI node ID plugs, One *R23RF Removable Storage Element System Installation and Users Guide (Part No. EK-A0375-IN)*
RF72B-KA	One 120/240V (User Selectable Voltage) Pedestal, R23RF-A2 One RF72 Removable Storage Elements (Part No. RF72 -RA), One DSSI cable (Part No. BC21M-09) for all Enclosures, One DSSI terminator, Part No. 12-29258-01, Eight DSSI node ID plugs, One *R23RF Removable Storage Element System Installation and Users Guide (Part No. EK-A0375-IN)*

Table A–1 (Cont.) R23RF 110-120V/220-240V Single Drive Options

Options	Description
RF73B-KA	One 120/240V (User Selectable Voltage) Pedestal, R23RF-A2 One RF73 Removable Storage Elements (Part No. RF73 -RA), One DSSI cable (Part No. BC21M-09) for all Enclosures, One DSSI terminator, Part No. 12-29258-01, Eight DSSI node ID plugs, One *R23RF Removable Storage Element System Installation and Users Guide (Part No. EK-A0375-IN)*

Table A–2 R23RF Cable Options

DSSI interpedestal cable (Part No. BC21M-09)
DSSI interpedestal cable (Part No. BC21M-06)
DSSI interpedestal cable (Part No. BC21M-03)

Table A–3 RSE Options

Options	Description
RF31-RA	RF31 Removable Storage Element, 381MB
RF72-RA	RF72 Removable Storage Element, 1000MB
RF73-RA	RF73 Removable Storage Element, 2000MB
RFXX-CK	RSE Carry Case

Table A–4 R23RF AC Power Cords

Options	Description	
BN19P-1K	120 VAC	U.S.A./Japan
BN19H-2E	220 VAC	Australia/New Zealand
BN19C-2E	220 VAC	Central Europe
BN19A-2E	240 VAC	U.K./Ireland
BN19E-2E	220 VAC	Switzerland
BN19K-2E	220 VAC	Denmark
BN19M-2E	220 VAC	Italy
BN19S-2E	240 VAC	India/South Africa
BN19U-2E	220 VAC	Israel

A.2 Supported Configurations

The supported DSSI configurations are shown in Figure A–1.

$HOST1 \longleftrightarrow RSE1/2 \dashv$

$HOST1 \longleftrightarrow RSE1/2 \longleftrightarrow RSE3/4 \dashv$

$HOST1 \longleftrightarrow RSE1/2 \longleftrightarrow RSE3/4 \longleftrightarrow RSE5/6 \dashv$

$HOST1 \longleftrightarrow RSE1/2 \longleftrightarrow HOST2$

$HOST1 \longleftrightarrow RSE1/2 \longleftrightarrow RSE3/4 \longleftrightarrow HOST2$

$HOST1 \longleftrightarrow RSE1/2 \longleftrightarrow RSE3/4 \longleftrightarrow RSE5/6 \longleftrightarrow HOST2$

where $\dashv$ is the DSSI terminator.

Figure A–1 Supported DSSI Configurations

B

CUSTOMER SERVICES INSTALLATION

B.1 Introduction

This appendix describes how to unpack, install, and test an R23RF Removable Storage Element System. These procedures should only be carried out by Digital Customer Services or other trained service engineers. (RSEs may be unpacked by users.)

The pedestal should be transported on a trolley and unpacked at its operating location.

B.2 Delivery

The R23RF is delivered as:

- One large container, containing the pedestal
- Two smaller containers, containing the RSEs. (There will be more containers if extra RSEs were ordered)
- Documentation, cabling, and DSSI adapters as appropriate to the option ordered

B.3 Unpacking

To unpack the R23RF Removable Storage Element System:

- Check the shipping list for compliance with the customer order.
- Check that the correct number of shipping containers are present.
- Check the shipping containers for damage such as dents, holes and crushed corners.
- Move the containers to the site at which the R23RF will operate (see Section 1.3).

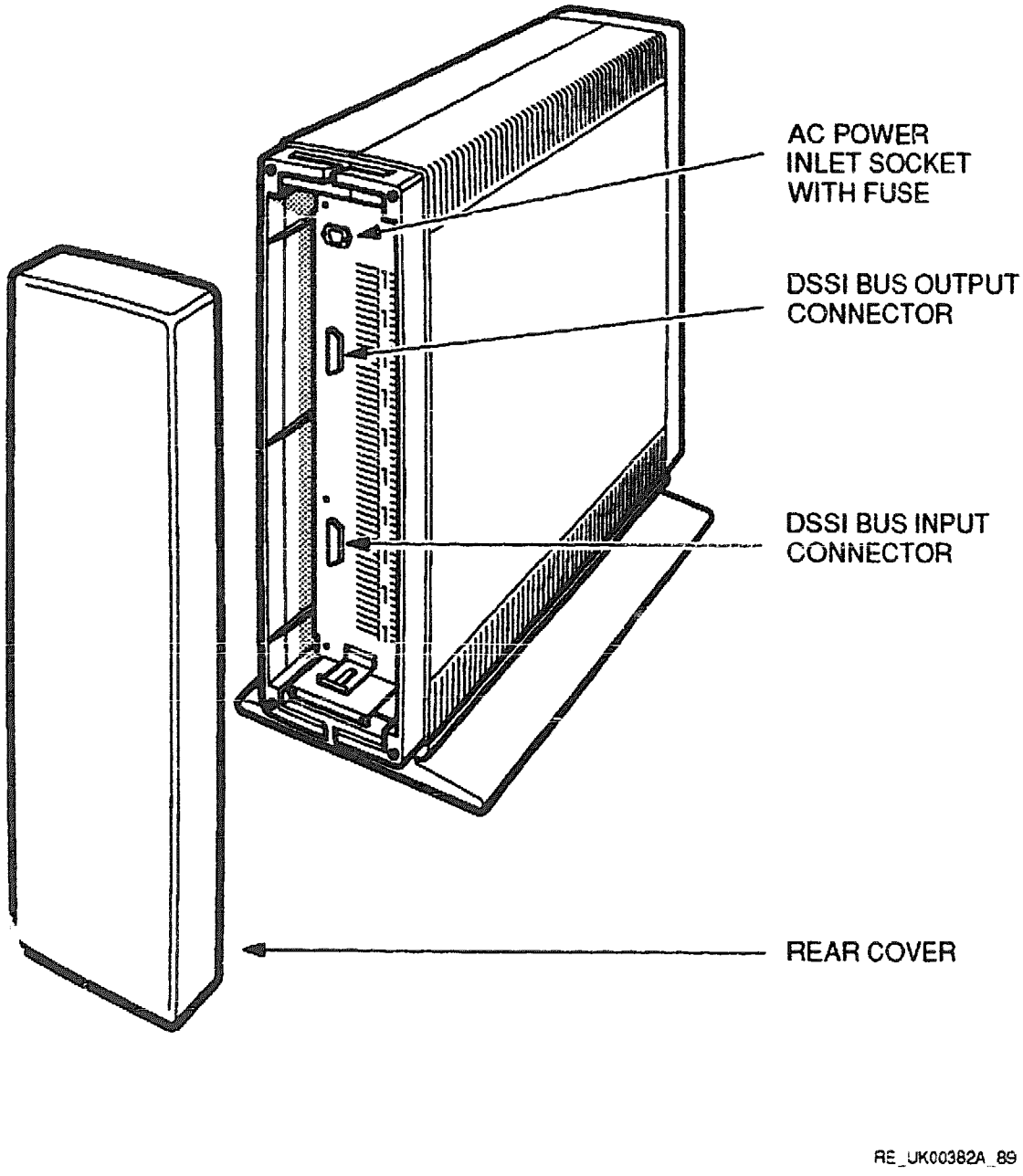

Figure B–1 Rear View of R23RF Pedestal

- Open and unpack the shipping containers. Check the contents against the shipping list to verify that there are no missing parts. Retain shipping containers and packing materials for possible future use.
- Visually inspect the R23RF and the RSEs for damage. Check the RSEs' shock detectors, the Low Insertion Force (LIF) socket on each RSE, and the pedestal LIF pins (inside each slot, at the back). If the shock detector shows red, contact the Digital representative.

CAUTION

The Removable Storage Element contains precision equipment. Mishandling may cause damage and lead to the Warranty/Contract being invalidated.

All electronic equipment can be damaged by the static electricity present in most working environments. To prevent damage to the RSE's internal electronics, DO NOT TOUCH the socket at the rear of the RSE. Also, do not allow small objects to fall into the socket, as this may damage the pins on the pedestal or the RSE socket.

If any item is missing or damaged, do not continue with the installation. Report any damage or shortages to the shipper and notify the Digital representative.

Check the voltage setting. To do this, remove the rear cover by grasping the top and bottom, and pulling the cover away from the fasteners. Check the sticker on the rear panel of the R23RF pedestal (next to the ac power inlet socket) to ensure that the pedestal is set to the correct ac voltage for your country. If the voltage setting is incorrect, contact the Digital representative.

B.4 Installing a DSSI adapter

Once you are sure that the pedestal is set to the correct ac voltage for your country, and a suitable location has been selected (as described in Section 1.3), installation of the DSSI adapter can begin.

B.4.1 A Host without its own DSSI adapter

If you are going to install an R23RF on a host without a DSSI adapter, first install and configure the DSSI adapter delivered with the R23RF together with its associated I/O panel.

To ensure that all available DSSI drive select plugs can be used, program the DSSI adapter for all seven drives.

B.4.2 A Host with its own DSSI adapter

If the host has its own DSSI adapter already installed, ensure that data for all seven drives has been programmed into the DSSI adapter. Also ensure that the DSSI adapter I/O panel has been installed.

B.5 Cabling the Pedestal

B.5.1 Single Pedestal Configurations

Refer to Figure B–2. Proceed as follows:

- Pull the rear cover from the pedestal.
- Connect the DSSI bus cable from the host's DSSI I/O panel to the DSSI bus input connector on the R23RF pedestal.
- Tighten all connector fastening screws.
- Connect the ac power cable to the ac power inlet socket on the rear of the R23RF pedestal.
- For single R23RF configurations, fit a DSSI bus terminator to the DSSI bus output connector.
- Route the cables behind the slotted cable restraint.
- Refit the rear cover with the slot at the bottom.

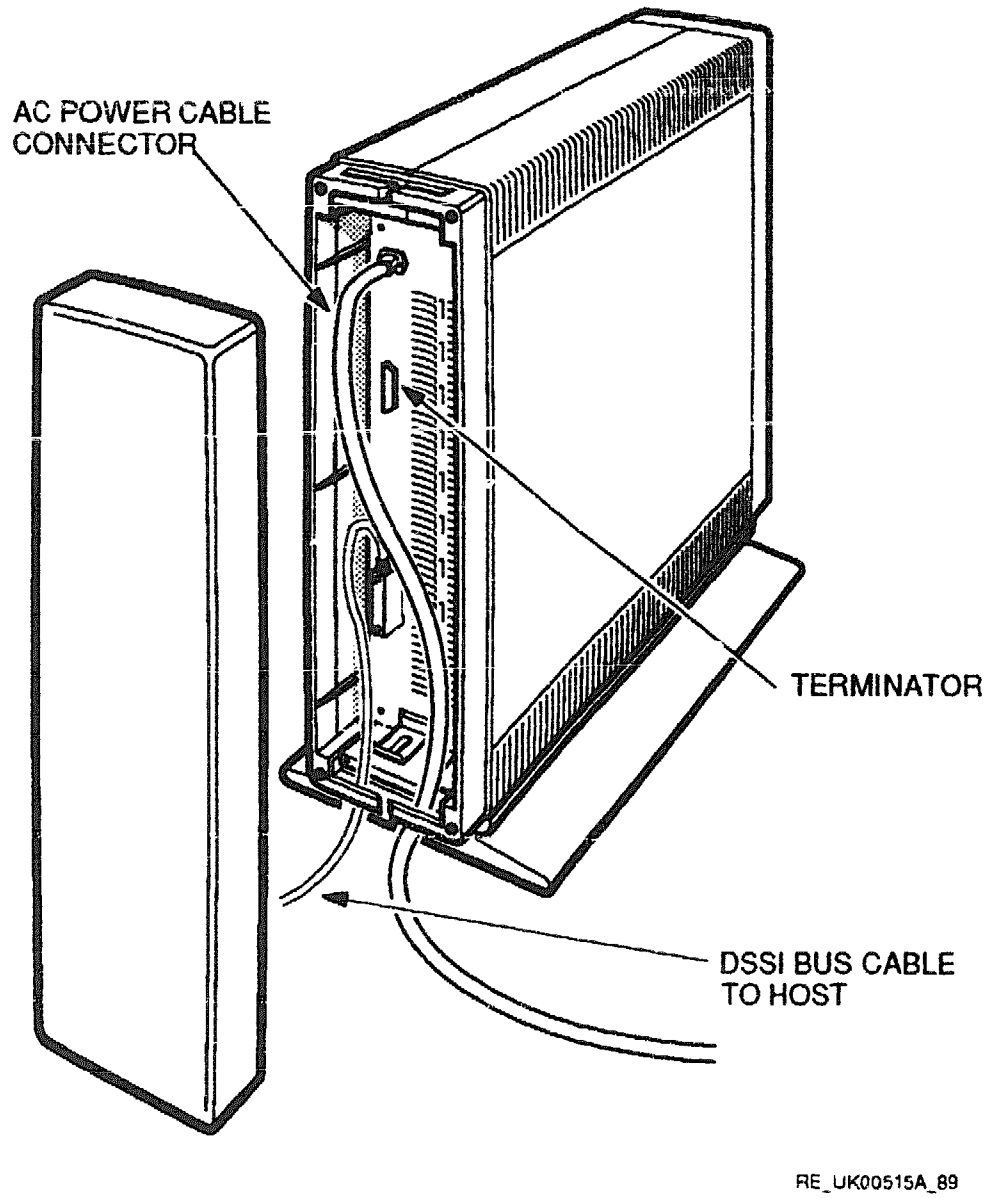

Figure B–2 Cabling the Pedestal

CAUTION

A terminator must be fitted to the bus cable to ensure data integrity.

B.5.2 Multiple Pedestal Configurations

Refer to Figure B–3. Connect the first R23RF pedestal to the adapter I/O port with a BC21M-09 DSSI cable. Connect the second R23RF pedestal to the first with a BC21M-09 DSSI cable. Install a DSSI terminator in the remaining DSSI connection on the last R23RF.

B.6 Installing the DSSI Node ID Plugs

Once the DSSI adapter has been configured and cabled, install two of the eight supplied DSSI node ID select plugs in the DSSI drive select switches on the Operator Control Panel (refer to Figure 3–1). These plugs, which are numbered 0 to 7, define the DSSI Node ID for each slot.

DO NOT install two plugs with the same number on the same OCP. If several R23RFs are connected together, install plugs numbers which are unique throughout the system. *DO NOT* use node ID plugs that conflict with the adapter node ID (usually 6 or 7).

B.7 Testing the R23RF

Having set the DSSI Drive IDs, insert the RSEs into the pedestal (see Chapter 3 for details).

Power up the R23RF pedestal using the ac power OFF/ON switch on the Operator Control Panel (refer to Figure 3–1). Both RSEs spin up automatically and the top four indicators for each RSE light while they run their internal diagnostics. After a few seconds, when the RSEs are up to speed, the FAULT and WRITE PROTECT indicators go out, leaving the POWER and READY indicators lit.

The system is now ready for testing using MDM Diagnostics (refer to the *MDM User Guide* for details).

The R23RF is now ready for use.

Give the user a demonstration of how to use it.

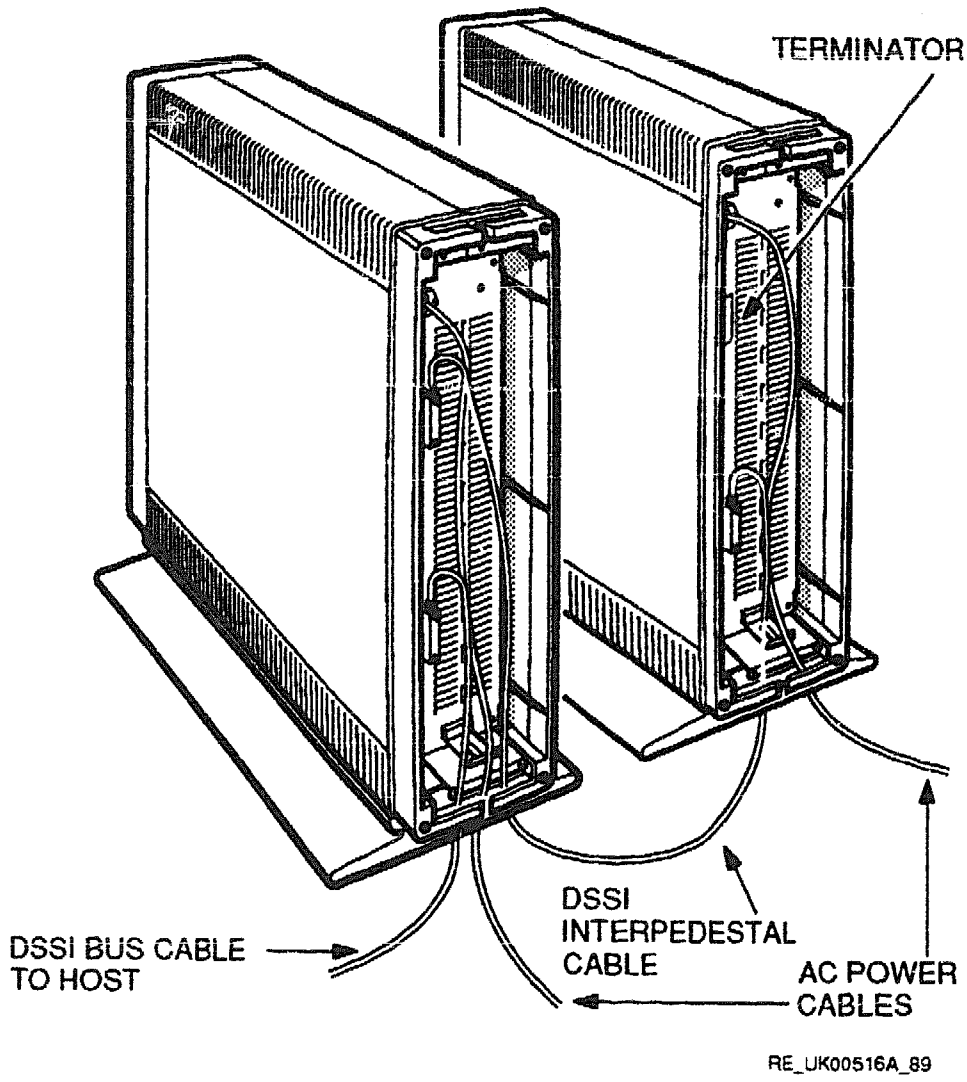

Figure B–3 Interpedestal Cabling

Glossary

DSA
Digital Storage Architecture

DSSI
Digital Storage Systems Interconnect

DUP
Diagnostic Utilities Protocol

ID
Abbreviation for Identification. The DSSI node ID allows ISEs, RSEs, and adapters to address one another on the DSSI.

KA640
The KA640 is the CPU module as used on the Micro/VAX 3300/3400. It includes an embedded DSSI adapter.

KFQSA
The KFQSA is an adapter that provides an interconnect between the Q–bus and the Digital Storage System Interconnect (DSSI).

LED
Light Emitting Diode, an illuminated indicator.

LIF
Low Insertion Force, a type of electrical connector.

MDM
Micro/VAX Diagnostic Monitor, for testing Digital modules and options.

MSCP
Mass Storage Communications Protocol

OCP
Operator Control Panel, contains all controls for operating the R23RF.

RF Integrated Storage Elements (ISE)
The RF family of disks belong to a new generation of storage solutions which contain their own controllers and Mass Storage Communications Protocol (MSCP) Servers. Hence, the name Integrated Storage Element.

RF31
The RF31 is a 381 Megabyte, half-height, 5 ¼" ISE.

RF72
The RF72 is a 1000 Megabyte, full-height, 5 ¼" ISE.

RF73
The RF73 is a 2000 Megabyte, full-height, 5 ¼" ISE.

RSE
Removable Storage Element.

Terminator
An electrical device which improves the integrity of signals on a bus.

Index

A

AC power, 3–3, 3–6, 5–1, B–6

C

Cabling
  Multiple configurations, B–6
  Single configurations, B–4
Carrying case, 3–2
CAUTIONS, ix

D

Documentation, viii
Drive ID, B–6
Drive select plugs
  See DSSI
Drive select switches
  See DSSI
DSSI
  Bus cable, B–4
  Bus input connector, B–4
  Bus output connector, B–4
  Bus terminator, B–4
  Drive select plugs, B–3, B–6
  Drive select switches, 3–3, 3–6
  Node ID, B–6
  Node ID select switches, B–6
DSSI adapter, B–3

F

FAULT indicator, 3–5

I

Integrated Storage Element
  See ISE
ISE, 1–1

K

Key locks, 3–6

M

MDM diagnostics, B–6
Mechanical shock, 3–1
Micro/VAX 3000, 1–1
Micro/VAX II, 1–1

N

Noise, 1–1
NOTES, ix

O

OCP
  See Operator Control Panel
Operator Control Panel, 3–3
Ordering
  Documentation, viii

P

Powering up
  The drive, 3–8
  The pedestal, B–6
POWER switch, 3–5, 3–8
Power-Up diagnostics, 3–6

R

READY switch, 3–5
Removable Storage Element
  See RSE
RSE, 1–1
  DISMOUNTing, 3–8
  Handle, 3–8
  Lock mechanism, 3–8
  MOUNTing, 3–8
RSEs
  Characteristics, 1–4
  Cold, 3–2
  Configuring, 3–6
  Handling, 3–1
  Hot, 3–2
  Inserting, 3–8
  Ordering, 1–1
  Storing, 3–2
  Unpacking, 2–1

S

Safety
  Of equipment, ix
  Of software, ix
  Personal, ix
Shock detector, 3–1
Static, B–3
Static electricity, 2–2, 3–2

T

TEMPERATURE indicator, 3–5
Transit plate, 2–2
Transit screws, 2–2

U

UNLOCKED indicator, 3–6, 3–9

V

VMS commands, 3–8
Voltage, B–3

W

WARNINGS, ix
WRITE PROTECT switch, 3–5