VELOCITOR Enhanced IPI-2 Desktop Storage Subsystem

User's Guide

FCC NOTICE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

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Preface

Purpose of this Guide

This guide is designed to provide information on installing, operating, and maintaining the VELOCITOR storage subsystem. It should be used in conjunction with the documentation listed in the Related Documentation section.

Who Should Use this Guide

This guide is a support and reference document for engineers and system managers who have basic knowledge of hardware configurations, as well as system management training with ULTRIX and OSF/1 operating systems.

Organization

This guide is divided into four chapters and two appendicies:

Chapter 1 - Provides an introduction and general description of the VELOCITOR storage subsystem.

Chapter 2 - Provides a technical description of the VELOCITOR storage subsystem and specifications for the enclosure.

Chapter 3 - Explains how to prepare and install the VELOCITOR storage subsystem.

Chapter 4 - Provides basic problem solving and maintenance information.

Appendix A - Describes how to upgrade a single drive enclosure.

Appendix B - Provides Seagate disk drive jumper information.

Conventions Used in this Guide

The following conventions are used in this document:

Note	A note calls the reader's attention to any item of information that may be of special importance.
Caution	A caution contains information essential to avoid damage to the equipment.
Warning	A warning contains information essential to the safety of personnel.

Related Documentation

The following documents provide additional information about the VELOCITOR storage subsystem and the host systems:

Title	Source	Part Number
DEC 3000 Model 500/500S AXP Owner's Guide	Digital	EK-FLAMI-OG
DEC 3000 Model 500/500S AXP Options Guide	Digital	EK-FLAMI-IG
DEC 3000 Model 400/400S AXP Owner's Guide	Digital	EK-SNDPR-OG
DEC 3000 Model 400/400S AXP Options Guide	Digital	EK-SNDPR-OP
DEC 4000 AXP Options Guide	Digital	EK-KN430-OG
DEC 4000 AXP Owner's Guide	Digital	EK-KN430-OP
DECstation 5000 Model 240 Hardware Installation Guide	Digital	EK-PM38A-IN
DECstation 5000 Model 240 Operator's Guide	Digital	EK-PM38B-OG
DECstation 5000 Model 260 Operator's Guide	Digital	EK-4MAXX-OP
Guide to Installing DEC OSF/1	Digital	AA-PS2DA-TE
Guide to Installing ULTRIX	Digital	AA-PBL0E-TE
TURBOstor IPI-242F IPI Disk Controller User's Manual	GENROCO	740-42FV
TURBOstor IPI-242T IPI Disk Controller User's Manual	GENROCO	740-42TV
Seagate ST43200K User's Manual	Seagate	83327650

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Introduction

1.1 Storage Subsystem Overview

The VELOCITOR storage subsystem is designed for applications that demand a high I/O throughput. It is a high-performance Enhanced Intelligent Peripheral Interface (IPI-2) disk subsystem. This subsystem consists of a low profile desktop enclosure with 5.25 inch IPI-2 disks manufactured by Seagate Technology, Inc. and either a TURBOchannel controller or Futurebus+ controller manufactured by GENROCO International, Inc.

The desktop enclosure can accommodate up to two three-gigabyte (Gb) drives. Up to four two-drive enclosures (eight drives maximum) can be daisy chained to a single controller.

In this document, information that applies to the TURBOchannel and the Futurebus+ disk controller will be referred to as the IPI-242T/F disk controller. Information that applies only to the TURBOchannel disk controller will be referred to as the IPI-242T disk controller and information that applies only to the Futurebus+ disk controller will be referred to as the IPI-242F disk controller.

1.2 IPI-2 Overview

Users of high-performance systems are limited in terms of disk performance by the overhead the Small Computer System Interface (SCSI) has in supporting disks, tapes, printers, scanners, and so forth. The enhanced IPI-2 interface is a dedicated interface that supports a single device type and improves system I/O capabilities.

The interface is the communications channel between the controller and the drive. It provides high-speed transfer of commands, responses, and data between the controller and the drive.

IPI-2 is appropriate in either workstation or server environments where sustained disk throughput is required. From the host operating system's point of view an IPI disk emulates an RA-series device using Mass Storage Control Protocol (MSCP).

1.3 Minimum Operating System Versions

The VELOCITOR storage subsystem requires the following minimum operating system versions:

- ULTRIX Version 4.2
- OSF/1 Version 1.2

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Technical Description

2.1 VELOCITOR Storage Subsystem

The following is an overview of the major components of the VELOCITOR storage subsystem.

2.1.1 TURBOstor IPI-242T/F Disk Controller

The GENROCO TURBOstor IPI-242T disk controller occupies a single TURBOchannel slot in the host computer. The GENROCO TURBOstor IPI-242F disk controller occupies a single Futurebus+ option slot in the host computer. For specific details refer to the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual*. This manual provides an overview on installing and configuring the controller into the host computer, and installing and performing software setup.

2.1.2 Enhanced IPI-2 Disk Drives

The Enhanced IPI-2 Seagate 5.25-inch disk drive features include read/write buffers, zone mapped disk drives, parallel heads, and drive error code correction (ECC). For further details refer to the *Seagate ST43200K User's Manual*.

2.1.3 Desktop Storage Enclosure

This enclosure is part of the Digital SZ16 storage expansion series, utilizing the same power supply and low profile enclosure. These enclosures have been modified to accommodate up to two IPI-2 disk drives.

The internal cables link the drive or drives, in series, to the enclosure rear panel.

2.1.4 External Interface Connections

The storage expansion box rear panel has four IPI interface connectors:

- Port A IPI-2 IN (male)

- Port A IPI-2 OUT (female)

- Port B IPI-2 IN (male)

- Port B IPI-2 OUT (female)

The maximum total IPI-2 cable length is 50 m (164 ft).

In a typical single port application a shielded 50 conductor cable is connected from the IPI-242T/F controller to the A IN port on the rear of the enclosure. The bus is terminated by installing an IPI-2 terminator on the A OUT connector.

Terminators should be installed on all unused connectors.

2.1.5 Dual Porting

Each disk drive has two independent ports that can be connected to two separate controllers. These dual ports allow a disk to be shared between two disk controllers, thus enabling a second data path to be used. This is a robust configuration, because the two data paths are electrically and logically independent.

2.2 Specifications

This section provides specifications for the VELOCITOR storage subsystem. For the TURBOstor controller and the Seagate ST43200K disk drive specifications refer to the related documentation listed in the Preface.

2.2.1 Physical Specifications

Table 2–1 and Table 2–2 provide the physical specifications.

Table 2–1 Desktop Enclosure Weight

Number of Drives	Weight
One	10.7 kg (23.5 lb)
Two	14.8 kg (32.5 lb)

Table 2–2 Desktop Enclosure Dimensions

Height	Width	Depth
10.9 cm (4.3 in)	48.3 cm (19.0 in)	38.35 cm (15.5 in)

2.2.2 Electrical Specifications

Table 2–3 provides the electrical specifications.

Table 2–3 Desktop Enclosure Specifications

Electrical Specifications	
Input voltage	Automatically adjusting ac input 100 V ac to 240 V ac
Frequency range	47 to 63 Hz

2.2.3 Heat Dissipation

A two drive desktop enclosure generates approximately 1000 BTUs.

3

Set Up and Installation

This chapter contains the following set up and installation information for the VELOCITOR storage subsystem:

- Subsystem prerequisites

- Connecting the power cord

- IPI-2 drive ID switch settings

- Configuring the subsystem

- Powering the VELOCITOR storage subsystem on and off

- Software installation

- TURBOraid disk striping and shadowing

3.1 Requirements

The subsystem is configured with one or two drives as ordered. The Seagate drives are preformatted with a data block size of 4096 bytes per sector.

3.1.1 Site Preparation

The VELOCITOR storage subsystem requires a minimum of 20.3 cm (8 in) rear clearance for cabling and 12.7 cm (5 in) clearance on each side for cooling.

3.1.2 Required Materials

The following materials are required to prepare your system:

- Phillips screwdriver

- Antistatic wrist strap

- *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual*

- *Seagate ST43200K User's Manual*

3.1.3 Power Requirements

The power supply in the desktop enclosure is an auto-ranging 120 V ac to 240 V
ac, 43 to 63 Hz single phase supply.

3.2 Connecting the Power Cord

Connect the power cord to the rear of the desktop storage enclosure as shown in
Figure 3–1, and plug the other end into an electrical outlet.

3.3 Setting the IPI-2 Disk IDs

The IPI-2 disk drive IDs can be set between 0-7 by setting the push switch shown
in Figure 3–1. All drives are required to have unique IDs.

Figure 3–1 Power Cord Connection and ID Switch Location

Disk 0 ID Switch   Disk 1 ID Switch

Power Cord

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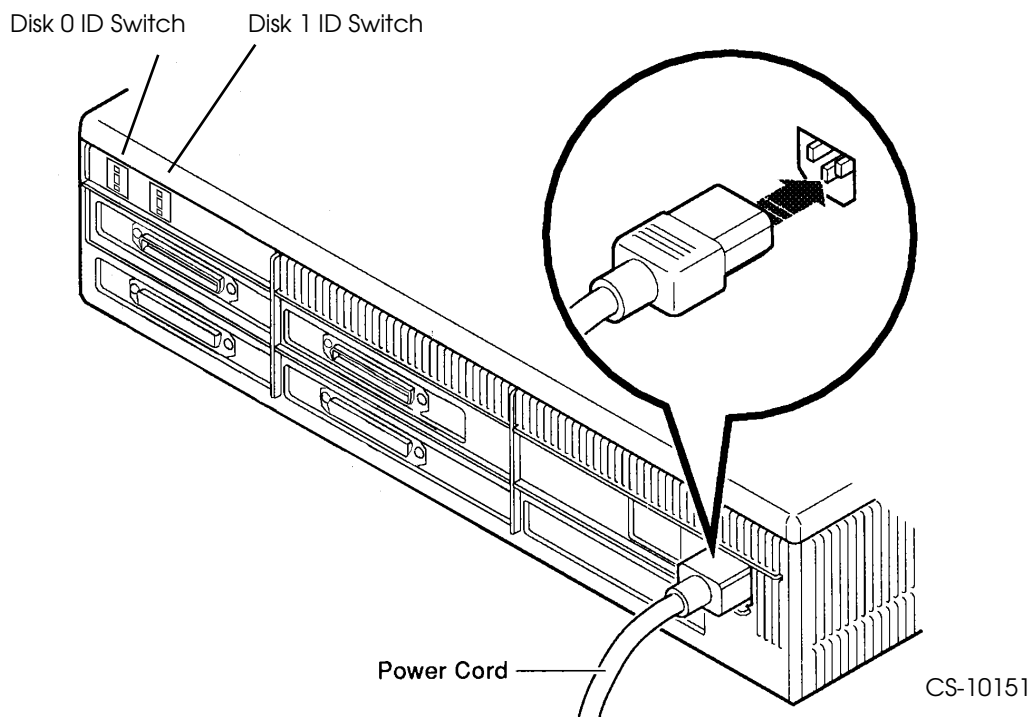
3.4 Connecting a Single Ported Desktop Enclosure

Note

The VELOCITOR storage subsystem can be configured as a single or dual ported storage device. The factory default setting is single ported. For dual ported information refer to Section 3.6.

The following steps outline how to install and configure a single ported VELOCITOR storage subsystem.

1. Use the host system owner's/operator's guide and the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual* to install the IPI-242T/F disk controller into a vacant TURBOchannel slot or Futurebus+ slot.

2. For single ported storage devices, no internal drive jumper changes are necessary. Table 3–1 lists the factory default jumper settings. For more information on drive jumpering refer to Appendix B.

Table 3–1 Single Ported Disk Drive Jumpers

Jumper Description	Location	State
Master/Slave	J12	Out
Local/Remote	J12	In
Read/Write Diagnostics	I/O board	In
Background Sweeps	I/O board	Out
Sweep on Seek	J12	In
Write Enable	J10	Out
Disable Port A	J10	Out
Disable Port B	J10	In

Set Up and Installation

3. Connect the male end of the data cable to the IPI-242T/F disk controller and the female end to the Port A IN on the back of the VELOCITOR enclosure. See Figure 3–2.

4. Terminate both the Port A and B OUT ports on the back of the VELOCITOR enclosure along with the unused Port B IN with the supplied terminators. See Figure 3–2.

Figure 3–2 Single Ported Desktop Enclosure

Port A OUT Terminator

Port B OUT Terminator

Port A IN
(From IPI-242T/F
Controller)

Power Cord

Port B IN Terminator
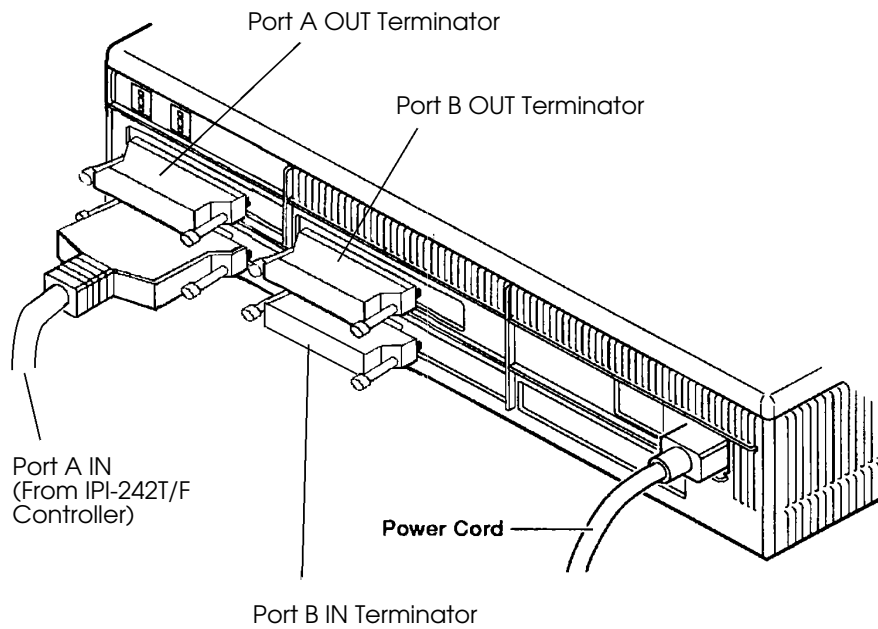
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3.5 Adding a Single Ported Desktop Enclosure

To add an additional single ported subsystem to an existing configuration, remove the terminator on the Port A OUT of the original storage expansion enclosure. Connect the male end of the data cable to the Port A OUT of the first enclosure and connect the female end to the Port A IN of the second enclosure. Terminate the Port A OUT of the second, or in the case of several expansion enclosures, the last enclosure.

3.6 Connecting Dual Ported Desktop Enclosures

The following steps outline how to install and configure a dual ported VELOCITOR storage subsystem or systems.

1. Use the host system owner's/operator's guide and the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual* to install the IPI-242T/F disk controllers into vacant TURBOchannel slots or Futurebus+ slots.

2. Since the storage devices are configured for single ported operation it is necessary to reconfigure the drives for dual porting. To reconfigure the drives:

    a. Follow the instructions in Appendix A for removing the cover of the storage subsystem.

    b. Locate jumper J10 using Figure B–2.

    c. Remove the shunt jumper corresponding to Disable Port B (DB) on the drive or drives. Table 3–2 lists the jumper settings to be used for dual porting. For more information on drive jumpering see Appendix B.

    d. Replace the cover to the subsystem.
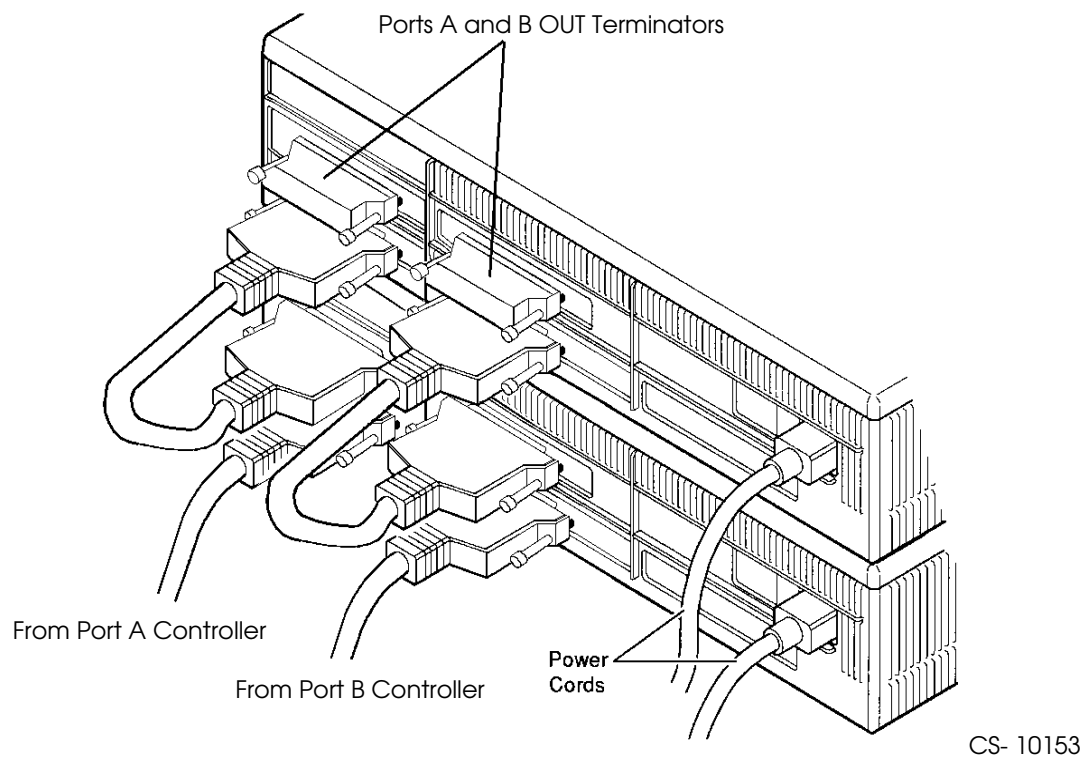
Table 3–2   Dual Ported Disk Drive Jumpers

Jumper Description	Location	State
Master/Slave	J12	Out
Local/Remote	J12	In
Read/Write Diagnostics	I/O board	In
Background Sweeps	I/O board	Out
Sweep on Seek	J12	In
Write Enable	J10	Out
Disable Port A	J10	Out
Disable Port B	J10	Out

3. Connect the male end of the data cable to the IPI-242T/F disk controller and the female end to the Port A IN on the back of the VELOCITOR storage subsystem.

4. Connect the male end of the other data cable to the second IPI-242T/F disk controller and the female end to the Port B IN. See Figure 3–3.

5. If there is only one storage subsystem enclosure or it is the last storage subsystem, terminate both the Port A and B OUT ports on the back of the VELOCITOR storage subsystem with the supplied terminators.

    If an additional enclosure is to be added, prepare the enclosure as described above for dual porting. Then take the male end of the data cable and connect it to the Port A OUT of the first enclosure and connect the female end to the Port A IN of the second enclosure. Repeat this procedure for Port B and then terminate. See Figure 3–3 for an illustration of two dual ported expansion enclosures.

Figure 3–3   Dual Ported Desktop Enclosures

Ports A and B OUT Terminators

From Port A Controller

From Port B Controller

Power
Cords

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## 3.7 Powering On/Off

The enclosure On/Off switch is illustrated in the off (O) position in Figure 3–4. Configuration changes and external cable connections must be made prior to turning on power to the desktop storage subsystem(s). Turn on power to the subsystem(s) before turning on power to the host system.

The storage subsystems are jumpered to allow a sequenced delay for spindle spin up after power on. Power is applied to each drive 10 seconds after the previous drive in the sequence has received power. Each drive takes approximately 30 seconds (maximum) to spin up after it receives dc power.

Figure 3–4 On/Off Switch

On/Off Switch
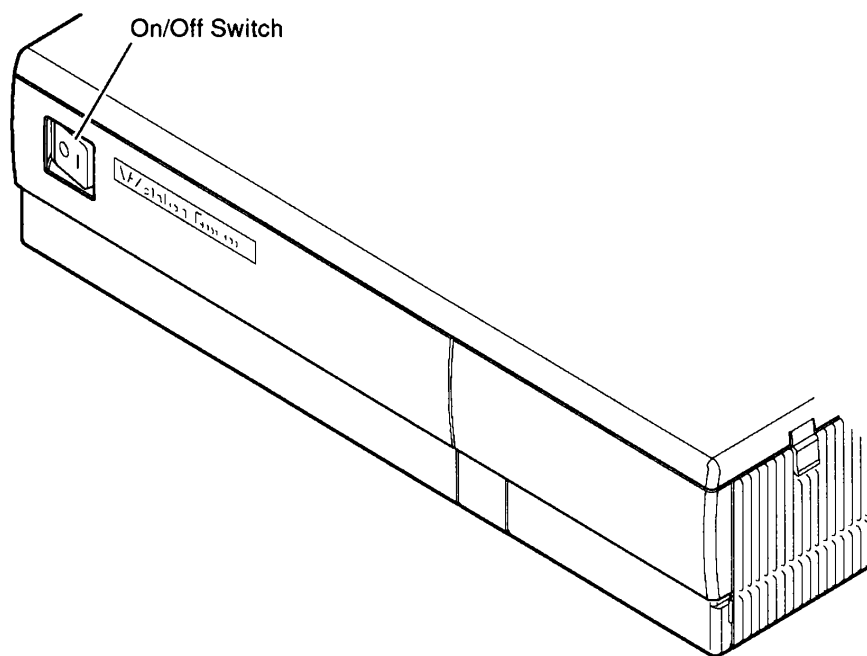
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3.8 Software Setup

The subsystem software driver is supplied on a CD-ROM or other media for the Alpha AXP OSF/1 or ULTRIX operating system. Refer to the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual* for information on how to:

- Install TURBOstor software
- Modify the configuration file
- Build a new OSF/1 or ULTRIX kernel
- Partition the disk(s)
- Create an OSF/1 or ULTRIX file system

───────────────── **Caution** ─────────────────

Read the TURBOstor Software Installation & Setup chapter in the appropriate user's manual completely before performing the software installation and setup. Pay particular attention to the section on partitioning disk(s) and building file systems to prevent system or performance problems. Failure to follow the instructions could result in system errors or loss of performance if the disks are incorrectly partitioned.

───────────────── **Caution** ─────────────────

Back up your system disk before installing the IPI-242T/F driver.

3.9 EEPROM Parameters

There are several parameters that can be changed by using the TURBOstor Offline Maintenance Utility (OMU). Refer to the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual* for instructions on using OMU.

One parameter has been factory preset and is different from the default EEPROM values: data block size (default - 512, factory setting - 4096).

—————————————————— **Caution** ——————————————————

If you use the OMU to check the parameters that are set for your device, do not answer "yes" to the query "Set default parameters (y/n)." Otherwise you will reset all the EEPROM parameters back to the default settings, including the data block size and the cache size.

3.10 TURBOraid Disk Striping

The IPI-242T/F supports TURBOraid controller-based disk striping, providing controller-based RAID 0 functionality for your IPI system. TURBOraid controller-based striping improves I/O performance by interleaving pairs of disks, making them appear to the operating system as a single, faster disk with twice the capacity. The operations of TURBOraid striping are completely transparent to the user.

TURBOraid striping is enabled by setting an EEPROM parameter. Refer to the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual* for more information on TURBOraid striping.

3.11 TURBOraid Disk Shadowing

The IPI-242T/F supports TURBOraid controller-based disk shadowing, providing controller-based RAID 1 functionality for your IPI system. TURBOraid controller-based disk shadowing automatically maintains a duplicate copy of the data from one disk on another disk, providing greater data availability, and in some cases, improved I/O performance.

TURBOraid shadowing is enabled by setting an EEPROM parameter. Refer to the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual* for more information on TURBOraid shadowing.

4
Maintenance and Problem Solving

4.1 TURBOstor Offline Maintenance Utility (OMU)

Offline maintenance functions such as drive formatting, setting the EEPROM parameters, and diagnostic functions can be performed using the IPI-242T/F controller TURBOstor Offline Maintenance Utility (OMU). The IPI-242T/F controller uses a microcode program in firmware to perform these functions.

_____ **Caution** _____

Always back up your disks before performing any function in the Drive Formatting submenu.

_____

4.1.1 Drive Formatting

The drives in the VELOCITOR storage subsystem are preformatted to 4096 bytes per sector and typically do not require reformatting.

_____ **Note** _____

All drives connected to a controller must be formatted using the same data block size. Drives in a dual-ported configuration must also be formatted using the same data block size.

_____

Maintenance and Problem Solving

For information on formatting a drive refer to the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual*. In addition, the following functions are available under the formatting menu:

- Display media defects
- Process media defects
- Media check patterns
- Data copy
- Data compare
- Display bad block table (RCT)
- Display bad block replacements
- Format/test multiple drives
- Replace LBN

Caution

Data is overwritten during reformatting. Always back up data before reformatting the disk.

4.1.2 Other Maintenance Operations

Other functions that can be performed using the OMU are:

- Display drive characteristics
- Seek test
- Data rate test
- Change EEPROM parameters
- Spin-up drive
- Spin-down drive

These options are described in the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual*.

4.2 Problem Solving

To ensure that the installation was performed correctly, perform the quick operational check as described in the *TURBOstor IPI-242T IPI Disk Controller User's Manual* or the *TURBOstor IPI-242F IPI Disk Controller User's Manual*. Further troubleshooting and diagnostic information is also documented.

In addition, the following list contains some basic checks that can be done:

1. Ensure that the drive enclosures are correctly cabled in series, with the controller at one end and a terminated enclosure at the other.

2. Secure all cables and terminators with screw-posts.

3. Turn power on to the drive enclosure(s) **before** turning power on to the system.

4. Verify that the IPI-242T/F controller data block size parameter matches the format on the drive.

5. Ensure that all disk drives have unique IDs between 0-7.

If the above steps or the quick checks do not work, contact your local Digital Customer Service Center for support on your VELOCITOR storage subsystem.

4.3 Preventive Maintenance, Cleaning, and Repairs

4.3.1 Preventive Maintenance

The VELOCITOR storage subsystem is designed to be preventive maintenance free.

4.3.2 Cleaning

Periodically, the ventilation should be checked to ensure that air is being exhausted through the enclosure side. If the enclosure appears dusty, then the outside can be cleaned with an antistatic foam cleaner. Do not allow any liquid to enter the unit. Always spray a cleaner onto the applying cloth. In extremely dusty conditions, vacuum the enclosure internals.

4.3.3 Repairs

Repairs should be performed by trained service personnel.

A

VELOCITOR Storage Subsystem Upgrade

This appendix describes upgrading the VELOCITOR storage subsystem from a single drive to a dual drive configuration.

A.1 Powering Down the Storage Enclosure

Before attempting to remove the cover of the storage enclosure, allow at least 5 minutes after the storage subsystem is turned off to provide time for the drives to spin down and the power supply to discharge.
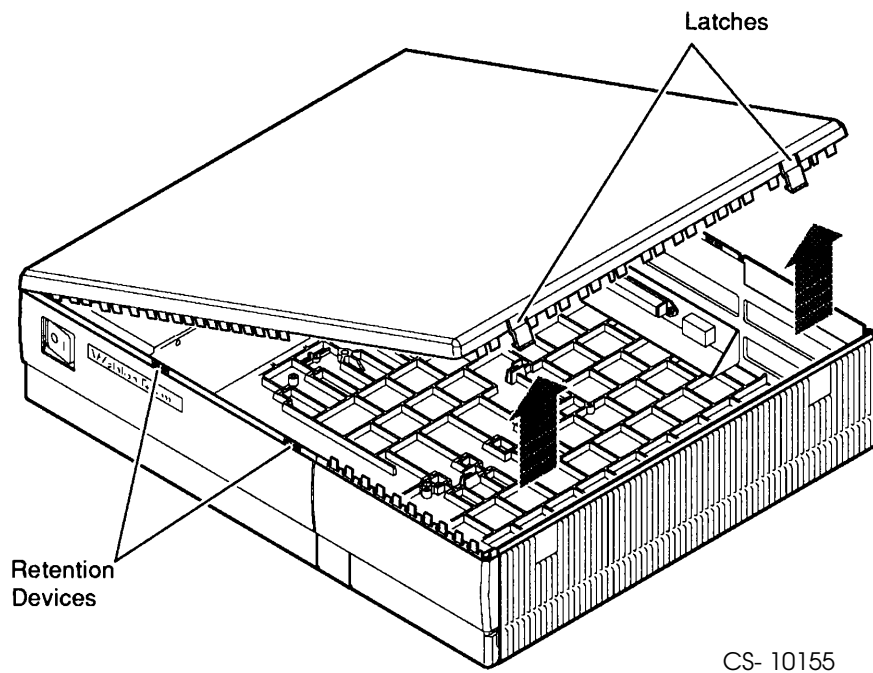
VELOCITOR Storage Subsystem Upgrade

A.2 Removing the Enclosure Cover

---------------------------- **Caution** ----------------------------

ESD procedures must be followed when performing any maintenance/upgrades.

To remove the cover:

1. Disconnect the power cord.

2. Disconnect the IPI-2 data cables.

3. Release the two latches and lift the cover off, as shown in Figure A–1, until the cover unhinges. Lift with sufficient force to release the retention catches on the middle of the front and rear edges of the cover.

4. Touch the TOUCH HERE space on the power supply.

VELOCITOR Storage Subsystem Upgrade

Figure A–1   Removing the Enclosure Cover

Latches

Retention
Devices

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A.3 Installing a Seagate ST43200K Disk Drive

Upgrading the VELOCITOR subsystem from a single drive to a dual drive enclosure requires the installation of a Seagate ST43200K disk drive.

Upgrade the storage expansion box as follows:

1. Locate and remove the two angled mounting brackets, four screws, and four washers already mounted inside the expansion box in drive position 1. See Figure A–2.

2. Attach the mounting brackets to the drive by aligning the slots on the longer side of the mounting brackets to the higher mounting holes on the drive sides. Fasten with four 6-32 screws and washers.

3. Align and mount the drive with four 6-32 screws and washers in the storage expansion enclosure in drive position 1 with the same orientation as the existing drive.

Figure A–2 Drive Positions and Mounting

Up

Drive mounting
bracket x 2

Power
Supply

Drive Position 0

Drive mounting holes
in the base plate x 8

Drive Position 1
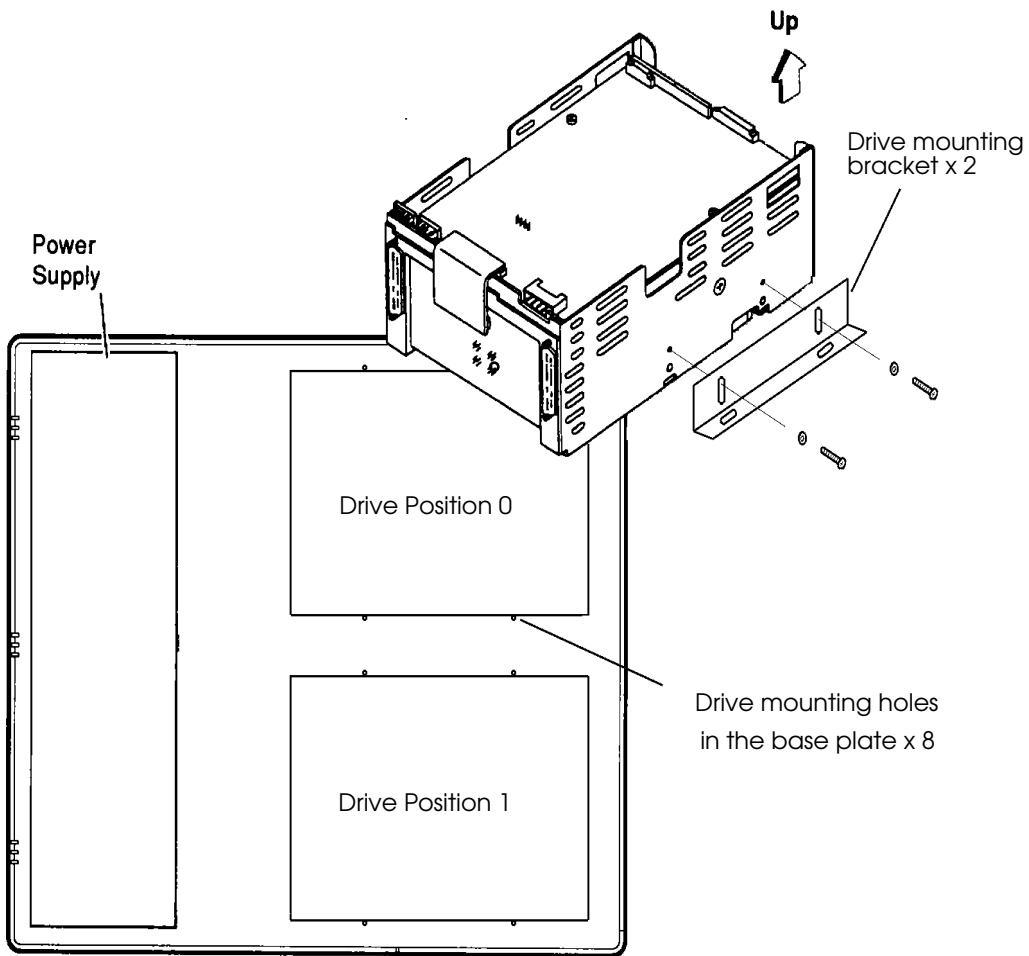
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VELOCITOR Storage Subsystem Upgrade

4. Connect cables as follows (see Figure A–3):

   a. Connect the dc power cable to connector J15.

   b. Connect the drive ID select cable to connector J10 with the orientation shown in Figure A–3.

   c. Connect the drive stub adapter cables, supplied with the upgrade kit, to ports A (J31) and B (J32) of the drive.

   d. Connect the other end of the Port A drive stub adapter cable to the internal IPI data cable that is connected to Port A of the existing drive. Repeat this step for Port B.

5. Verify all drive jumper settings. (See Table 3–1 or Table 3–2 for single or dual ported settings, respectively.)

VELOCITOR Storage Subsystem Upgrade

Figure A–3 Connecting a Seagate ST43200K
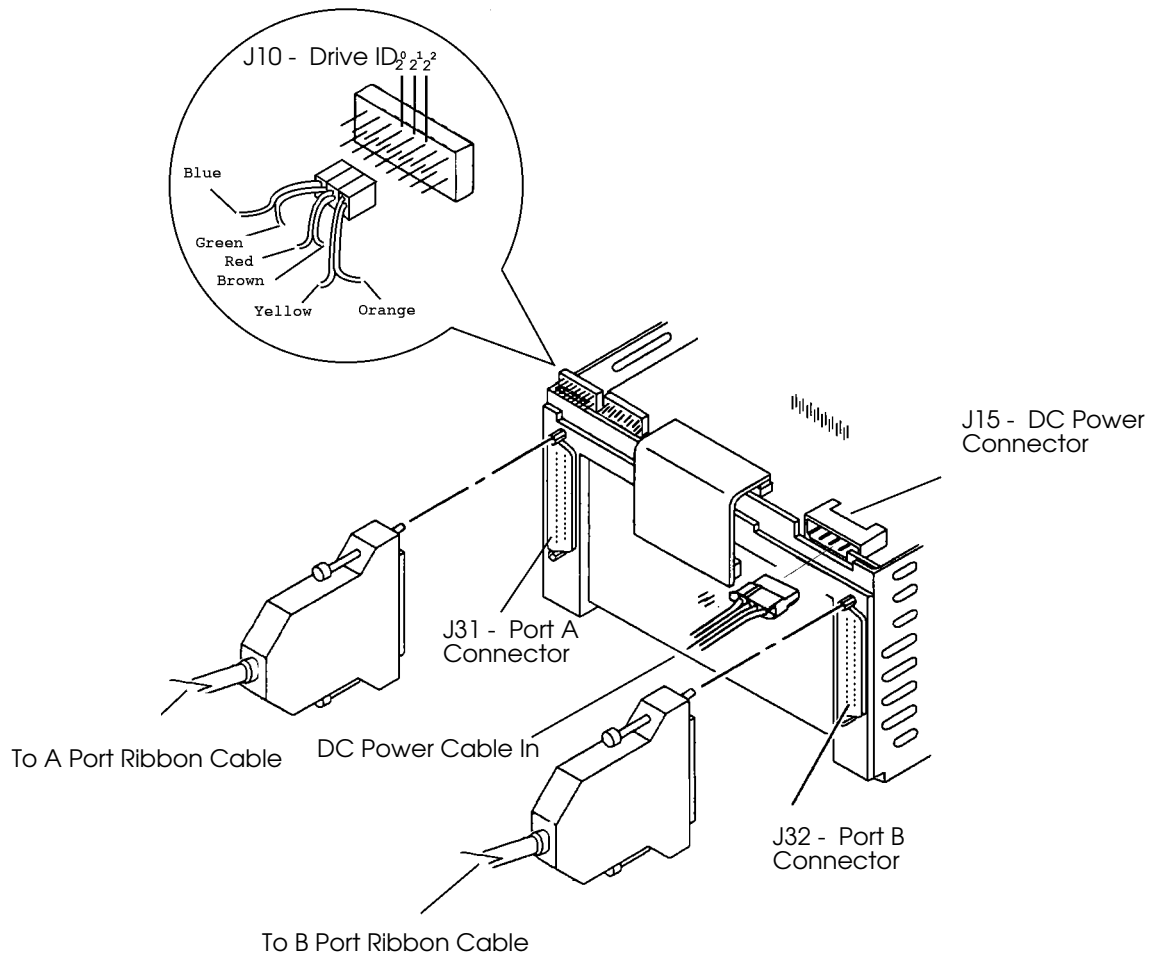
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A.4 Replacing the Enclosure Cover

---------------------- **Caution** ----------------------

Before closing the cover, ensure that the cabling has not been disturbed and will not be in the way of the cover when closed.

Lower the cover so that the teeth on the hinge mesh as shown in Figure A–4. The cover latches should click into place. Press firmly on the middle of the front and the rear edges of the cover until you hear the retention catches click.

Figure A–4 Replacing the Enclosure Cover

Latches

Retention
Devices

Retention
Devices

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B
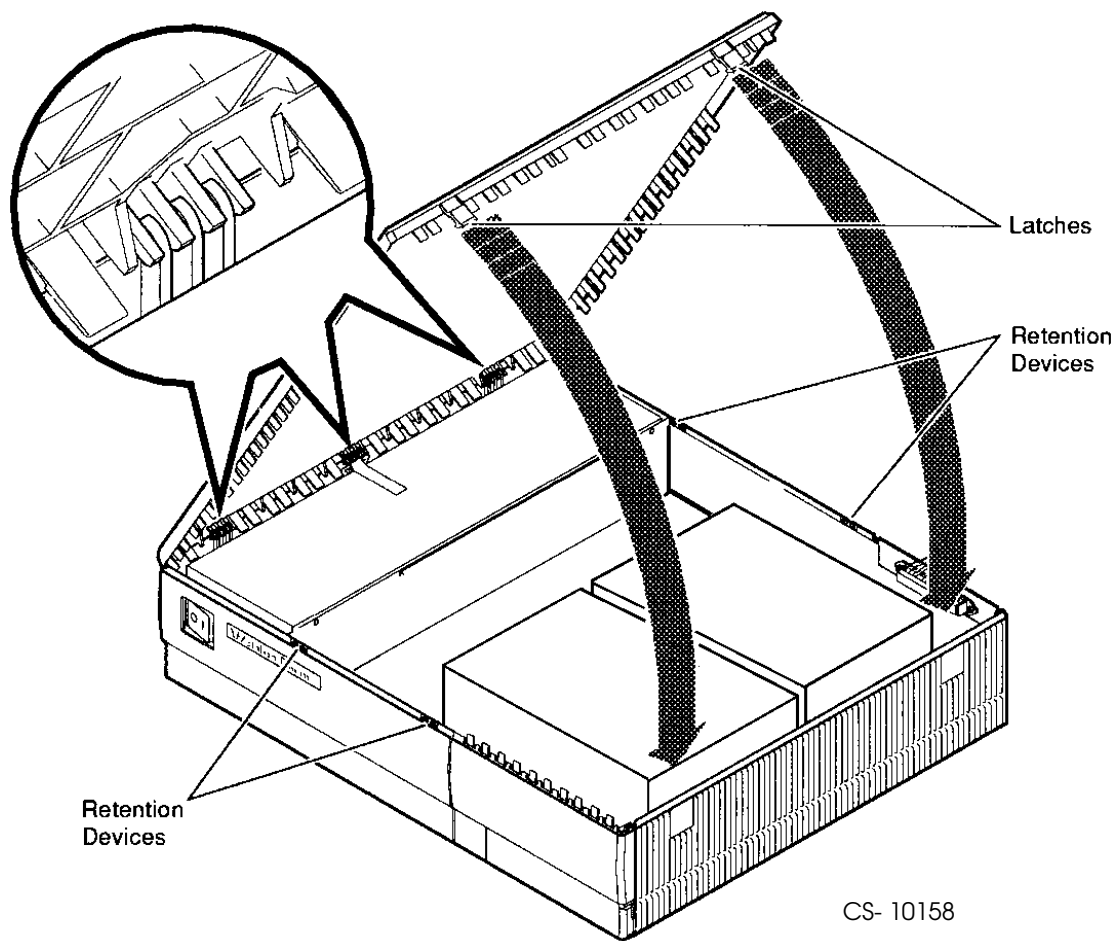
Seagate Drive Jumpering

This appendix provides information on the location and setting of jumpers on the Seagate Enhanced IPI-2 disk drive.

B.1 Seagate Drive Jumpering

Figure B–1 identifies the locations of jumpers on the I/O board. It also lists the possible settings for normal drive operation.

Figure B–1   I/O Board Jumpers
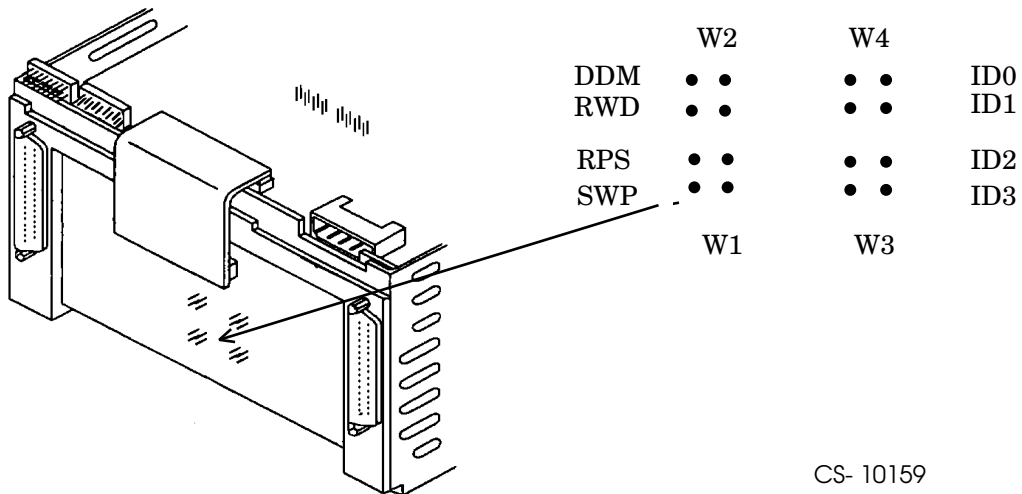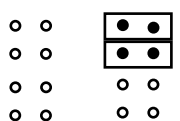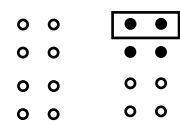
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Seagate Drive Jumpering
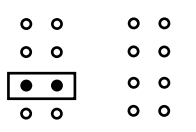
B.1.1 Microcode ID0 - ID3
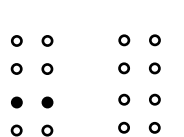
These jumpers assign a unique device configuration code. Use only one of the two configuration codes.

Enable the J10 write protect/over temperature (W/T) pins to determine over temperature status.

Enable the J10 write protect/over temperature (W/T) pins to determine write protect status.

B.1.2 Enable Short Rotational Position Sensing (RPS)[1]

Enable the drive to perform short rotational position sensing (RPS). This allows short RPS pulses to be generated when the drive performs a seek and arrives on-cylinder during the normal RPS pulse time.

Disable the RPS pulse for one full revolution if the actuator arrives on-cylinder during the normal RPS pulse time.

---

[1] Enabling short RPS generally provides better performance by reducing the average latency of a seek that includes RPS operation. This feature is available only during non-buffered write operations.

B.1.3 Disable Read/Write Diagnostics (RWD)

Prevent internal diagnostic program from doing read and write operations. This is the required setting if diagnostic cylinder (2736) is used for customer data.

Enable internal diagnostic program to perform read and write operations. The jumper is factory set to this position.

B.1.4 Enable Position Calibration on Seek (SWP)

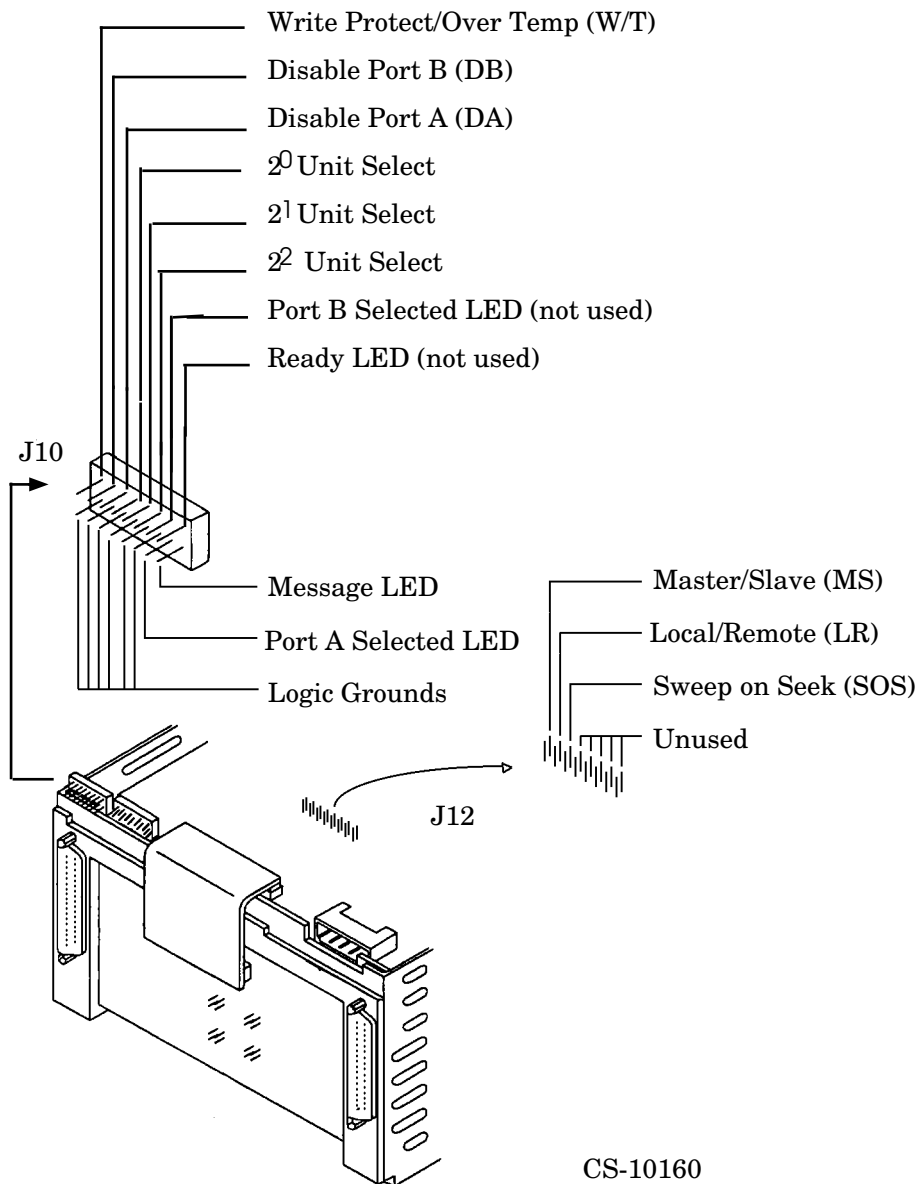Enable the drive to perform position compensation calibration cycles only during a Load Cylinder or Load Position operation (auto-initiated mode only).

Enable the drive to perform position compensation calibration cycles only during idle time (auto-initiated mode only).

Figure B–2 identifies J10 and J12 jumpers and gives their locations on the control board. Figure B–3 and Figure B–4 list the possible settings for normal drive operation for jumpers on the control board.
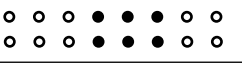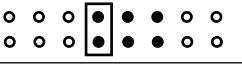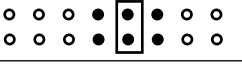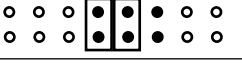
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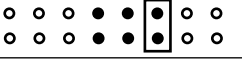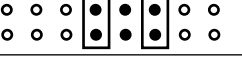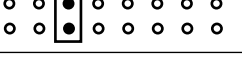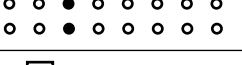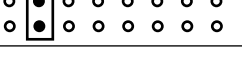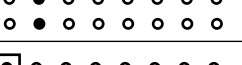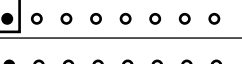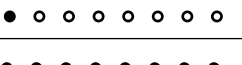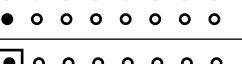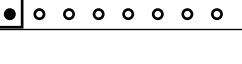
Figure B–2 J10 and J12 Control Board Jumpers

Write Protect/Over Temp (W/T)

Disable Port B (DB)

Disable Port A (DA)

2^0 Unit Select

2^1 Unit Select

2^2 Unit Select

Port B Selected LED (not used)

Ready LED (not used)

J10

Message LED

Port A Selected LED

Logic Grounds

Master/Slave (MS)

Local/Remote (LR)

Sweep on Seek (SOS)

Unused

J12

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Figure B–3   J10 Jumpers

Select unit ID, write protect,and disable port options by placing jumpers as shown below	
Unit Select ID = 0	o o o ● ● ● o o o o o ● ● ● o o
Unit Select ID = 1	o o o [●] ● ● o o o o o [●] ● ● o o
Unit Select ID = 2	o o o ● [●] ● o o o o o ● [●] ● o o
Unit Select ID = 3	o o o [● ●] ● o o o o o [● ●] ● o o
Unit Select ID = 4	o o o ● ● [●] o o o o o ● ● [●] o o
Unit Select ID = 5	o o o [●] ● [●] o o o o o [●] ● [●] o o
Unit Select ID = 6	o o o ● [● ●] o o o o o ● [● ●] o o
Unit Select ID = 7	o o o [● ● ●] o o o o o [● ● ●] o o
Disable Port A	o o [●] o o o o o o o [●] o o o o o
Enable Port A (factory setting)	o o ● o o o o o o o ● o o o o o
Disable Port B (factory setting)	o [●] o o o o o o o [●] o o o o o o
Enable Port B	o ● o o o o o o o ● o o o o o o
Report over-temperature status through the IPI interface when this pin goes low. *	[●] o o o o o o o [●] o o o o o o o
Do not report over-temperature status *	● o o o o o o o ● o o o o o o o
Enable writing (normal setting) **	● o o o o o o o ● o o o o o o o
Prevent writing (write protected) **	[●] o o o o o o o [●] o o o o o o o

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* Microcode ID positions 2^0 and 2^1 must both be jumpered for this option to be valid.

** Microcode ID position 2^1 must not be jumpered for this options to be valid.

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Figure B–4 J12 Jumpers

Master/Slave (MS)	
Establishes the drive as a master. (Factory setting.)	▣ o o o o o o o ◉ o o o o o o o (jumper on first column)
Establishes the drive as a slave. This allows the host to control whether the drive is a master or slave.	● o o o o o o o ● o o o o o o o

Local/Remote (LR)	
Establishes the drive as the remote. Spin up command from interface is required to start the drive.	o ● o o o o o o o ● o o o o o o
Establishes the drive as a local drive. Disk spinup starts (after a delay) when DC power is applied. (Factory setting.)	o ▣ o o o o o o o ◉ o o o o o o (jumper on second column)

Sweep On Seek (SOS)	
Enables the drive to perform background seeks when a Load Position or Load Cylinder command is issued by the host controller. If sweep mode is desired, but the host controller cannot tolerate drive busy conditions, this jumper should be connected (enabled). (Factory setting.)	o o ▣ o o o o o o o ◉ o o o o o (jumper on third column)
Disable sweeps on seek - If you want sweeps on seek, and the host controller can tolerate drive busy conditions, enable background sweeps as described in Section B.1.4.	o o ● o o o o o o o ● o o o o o

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