

PERSTORTM

200 Series

Advanced RLL Controllers

PERSTOR SYSTEMS, INC.

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OWNER'S MANUAL

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Location: 7631 EAST GREENWAY RD.
SCOTTSDALE, AZ 85260

OWNER'S MANUAL

PERSTOR 200 SERIES CONTROLLER OWNER'S MANUAL

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The PERSTOR 200 Series Advanced RLL Controllers

The PERSTOR 200 Series Controllers include two models, PS180 and PS200. The terms "PERSTOR" and "PERSTOR 200 Series" refer to both models. Model PS180, the 9 megabit per second version, is approved for use with MFM or RLL drives having high quality oxide or plated media. Model PS200, the 10 megabit per second version, is approved for use ONLY with plated media RLL drives.

The PERSTOR 200 Series Controllers can only be used with the IBM PC, XT, AT, Personal System/2 Model 30, and compatible computers. They replace the IBM PC and XT hard disk controller and can co-reside with the AT hard disk controller. To use the PERSTOR 200 Series Controllers, you must format your hard disk(s), so a backup copy of your hard disk(s) must be made prior to installation of the controller.

The PERSTOR 200 Series Controllers have an on-board BIOS ROM addressed at C800:0 allowing the user to boot from the Hard Disk once the system has been installed. They are smaller cards but do require a full-size expansion slot, and each supports up to two hard disk drives.

PLEASE READ AND FOLLOW THE INSTRUCTIONS CAREFULLY DURING YOUR INSTALLATION PROCEDURE

While this manual is complete as concerns the PERSTOR product, it is not intended to instruct you on the use of your computer or any peripheral equipment you may have. It is assumed that you have read your computer's User and DOS Manual and are familiar with the terminology and the Operating System of your computer.

REGISTRATION CARD

Please take the time to complete the owner registration card and return it to Perstor Systems, Inc., Registration Dept., 7825 East Redfield Road, Scottsdale, Arizona 85260. The Registration Card Service will allow us to notify you of product and software enhancements and improvements.

WARRANTY

Perstor Systems, Inc.'s warranty information is listed at the end of this manual. **YOU MUST READ THE WARRANTY CAREFULLY BEFORE INSTALLING YOUR PERSTOR 200 SERIES CONTROLLER** so that you will understand your rights and the protection provided with the PERSTOR Products.

CUSTOMER SERVICE

Service information may be obtained by calling (602) 998-5033. Please refer to the information at the end of the manual for the procedure if the unit is still under warranty.

SECTION 1

GETTING STARTED

Please read the following section thoroughly before further unpacking. The controller is susceptible to shock, contamination, and static electricity and must be handled properly.

1.1 UNPACKING

In your package, you will have received the Owner's Manual, a PERSTOR Software Diskette, and a PERSTOR 200 Series Controller.

— CAUTION —
THE PERSTOR CONTROLLER CARD CONTAINS COMPONENTS WHICH ARE SENSITIVE TO AND MAY BE DAMAGED BY STATIC ELECTRICITY.

Before handling the PERSTOR Controller, make sure that you have sufficiently grounded yourself by touching any large metal surface, such as the metal housing on your personal computer. Do not handle these components with rubber soled shoes on nylon carpet. The combination of the rubber soles and the nylon can generate static electricity up to 50,000 volts!

Place the PERSTOR Controller on a soft flat anti-static surface with the expansion bracket to the right and the component side up.

At all steps of the unpacking process, carefully inspect the shipment for any damage. If damage is discovered on the exterior of the shipping carton or on the internal contents, contact your shipper at once. The PERSTOR products are double packaged in shipping materials approved by UPS. If they are damaged, it is the responsibility of the carrier.

— NOTE —
RETAIN THE ORIGINAL SHIPPING CARTON AND PACKING MATERIALS. The PERSTOR unit must be returned in the original shipping carton in the event of warranty repair.

1.2 REQUIRED EQUIPMENT AND TOOLS

You will need the following tools, equipment and knowledge to install the PERSTOR System. This manual is written primarily for users of DOS operating systems.

1. An IBM compatible Personal Computer with:
 - A minimum of 256 K bytes of memory
 - A minimum of one floppy disk drive
 - One open expansion slot with adequate power
 - Diskette copy of your Disk Operating System

2. A flat blade medium screw driver, and a medium size Phillips head screw driver.
3. A general knowledge of your computer and all its peripherals and the ability to install an additional card in an expansion slot.
4. A backup diskette copy (copies) of any information presently on your hard disk drive(s).

Installation of the PERSTOR Controller is a simple procedure, providing the directions are followed. **All procedures can be done without the use of force.** If something does not go together easily, stop and re-examine the instructions.

(NOTE: Do not cut the ground plug or defeat its purpose)

SECTION 2

JUMPERING THE CONTROLLER

2.1 SETTING THE DRIVE CONFIGURATION JUMPER (JMP6)

The drive configuration jumper block is JMP6, located to the left of location U41 (the BIOS) as a vertical row of 8 pairs of pins. Pin set 1 is at the top, as shown in Figure One.

Your PERSTOR Controller will be shipped from the factory with jumper plugs on the JMP6 block. These jumper plugs must be in the proper position to support your drive(s). Place the jumper plugs on the designated pin sets as determined by the configuration (the cylinder and head number) of the drive(s) you are attaching to the PERSTOR Controller.

Find the drive configuration of the **first drive** (or the only drive you are attaching) in one of the **UNIT 0** tables below and read ACROSS to determine whether the pin set should have the jumper plug ON or OFF. If you are attaching a **second drive**, find its configuration in one of the **UNIT 1** tables below and read ACROSS to determine whether the pin set should have the jumper plug ON or OFF.

NOTE 1: If you have TWO drives attached to the PERSTOR Controller, you must make sure that BOTH drive configurations are listed in the same table number. If your drives are listed in two different table numbers, you should call Perstor Systems, Inc. to purchase a Custom BIOS.

NOTE 2: If your drive configuration is NOT listed in any of the tables below, you should call Perstor Systems, Inc. to purchase a Custom BIOS.

TABLE 1 FOR DRIVE UNIT 0

CYLS/HEADS	PIN SETS			
	5-6	7-8	13-14	15-16
306/4	OFF	OFF	OFF	OFF
640/4	ON	OFF	OFF	OFF
640/6	OFF	ON	OFF	OFF
1024/3	ON	ON	OFF	OFF

TABLE 1 FOR DRIVE UNIT 1

CYLS/HEADS	PIN SETS			
	1-2	3-4	13-14	15-16
306/4	OFF	OFF	OFF	OFF
640/4	ON	OFF	OFF	OFF
640/6	OFF	ON	OFF	OFF
1024/3	ON	ON	OFF	OFF

TABLE 2 FOR DRIVE UNIT 0

CYLS/HEADS	PIN SETS			
	5-6	7-8	13-14	15-16
615/4	OFF	OFF	ON	OFF
1024/5	ON	OFF	ON	OFF
1024/8	OFF	ON	ON	OFF
1024/15	ON	ON	ON	OFF

TABLE 2 FOR DRIVE UNIT 1

CYLS/HEADS	PIN SETS			
	1-2	3-4	13-14	15-16
615/4	OFF	OFF	ON	OFF
1024/5	ON	OFF	ON	OFF
1024/8	OFF	ON	ON	OFF
1024/15	ON	ON	ON	OFF

TABLE 3 FOR DRIVE UNIT 0

CYLS/HEADS	PIN SETS			
	5-6	7-8	13-14	15-16
697/5	OFF	OFF	OFF	ON
872/6	ON	OFF	ON	ON
925/5	OFF	ON	OFF	ON
918/15	ON	ON	OFF	ON

TABLE 3 FOR DRIVE UNIT 1

CYLS/HEADS	PIN SETS			
	1-2	3-4	13-14	15-16
697/5	OFF	OFF	OFF	ON
872/6	ON	OFF	OFF	ON
925/5	OFF	ON	OFF	ON
918/15	ON	ON	OFF	ON

TABLE 4 FOR DRIVE UNIT 0

CYLS/HEADS	PIN SETS			
	5-6	7-8	13-14	15-16
615/4	OFF	OFF	ON	ON
733/5	ON	OFF	ON	ON
820/6	OFF	ON	ON	ON
1024/9	ON	ON	ON	ON

TABLE 4 FOR DRIVE UNIT 1

CYLS/HEADS	PIN SETS			
	1-2	3-4	13-14	15-16
615/4	OFF	OFF	ON	ON
733/5	ON	OFF	ON	ON
820/6	OFF	ON	ON	ON
1024/9	ON	ON	ON	ON

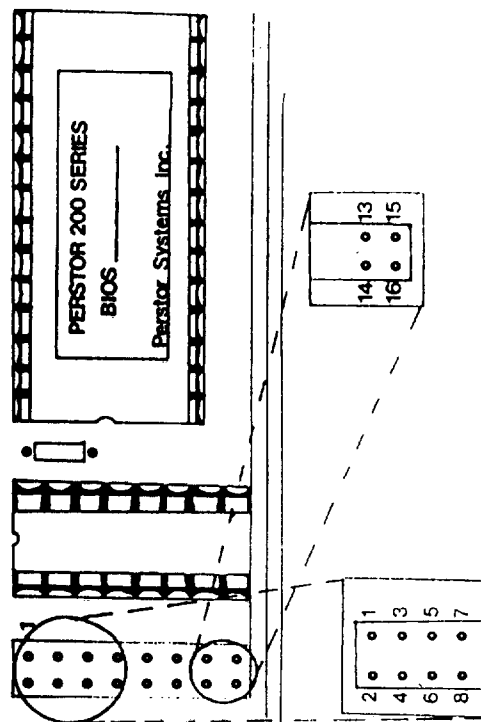


FIGURE ONE

2.2 ENABLING THE BIOS (JMP4)

The Model PS180 Controller is offered with two standard BIOS configurations, XT9-x.xx and AT9-x.xx. The Model PS200 Controller is also offered with two standard BIOS configurations, XT10-x.xx and AT10-x.xx.

The XT BIOSes are to be used with IBM PCs, XTs, and compatibles (8086, 8088 based machines). The AT BIOSes are to be used with IBM ATs, compatibles, 80286 and 80386 based machines. The BIOS code is written on the top of the PERSTOR 200 BIOS chip, at location U41, at the center bottom edge of the component side.

The BIOS as shipped from the factory resides at C800:0. To enable the BIOS, you must have a jumper plug on pin 1 to 2 of the JMP4 jumper block. You should have received it from the factory this way.

To disable the BIOS, you must remove the jumper plug from pin 1 to 2 of jumper block JMP4. This should be done if the controller is to co-reside with another hard disk controller which **already has a BIOS**. In this case, you will need a driver to access the PERSTOR 200 Series Controller. NOTE: you should not remove this jumper plug if the controller is to co-reside with an AT hard disk/floppy controller and if it is to be the primary bootable controller.

2.3 PORT SELECTION JUMPER (JMP5)

The controller shipped from the factory is set to use Port 0320H with no jumper plug on pin 7 to 8 of JMP5. If pin 7 to 8 of JMP5 is jumpered, the controller will be using Port 0300H.

At this point, if you **do not** have an IBM AT or compatible, or a 80286 or 80386 based machine, proceed to Section 3 (Hardware Installation).

2.4 SETTING THE CMOS RAM

This step applies **ONLY** to those users who have IBM ATs or compatibles. All other users should proceed to Section 3.

Using your "SETUP" program, set the CMOS RAM to indicate that there are no disk drives installed (attached to the AT controller). You may now proceed to Section 3.

SECTION 3

HARDWARE INSTALLATION

3.1 CABLE INFORMATION

The PERSTOR Controller you have received may have come with the cables attached. If they are attached, there should be no need to change the connections, although you may want to check that they are secure. The cables should be attached according to the following instructions.

NOTE: It is assumed that the cables are straight (flat) and not sliced open and twisted.

The controller should be on a soft flat surface with the expansion bracket to the right and the component side up. Proceed with caution to prevent static electricity. The cable connections to the controller are the same for all drives and systems once the correct pin sets have been identified:

The 34-pin cable labeled J1 goes to the J1 pins on the controller.

The 20-pin cable labeled J2 goes to the J2 pins on the controller.

If you have two hard disk drives,

The 20-pin cable labeled J3 goes to the J3 pins on the controller.

Only one end of the cables will have a socket-pin connector, and this end must be attached to the controller. The other end of the cable will have an edge card connector. **PROPER ALIGNMENT OF THE PINS AND CABLE CONNECTORS IS IMPERATIVE!**

3.2 CABLE ATTACHMENT

Step One

If you have only one drive you will have a 34-pin cable labeled J1 and a 20-pin cable labeled J2. If you have two drives, you will have an additional 20-pin cable labeled J3. Locate the **Pin Sets** on your PERSTOR Controller labeled J1, J2, J3. Pin #1 is at the top right hand side of each Pin Set. Refer to Figure Two.

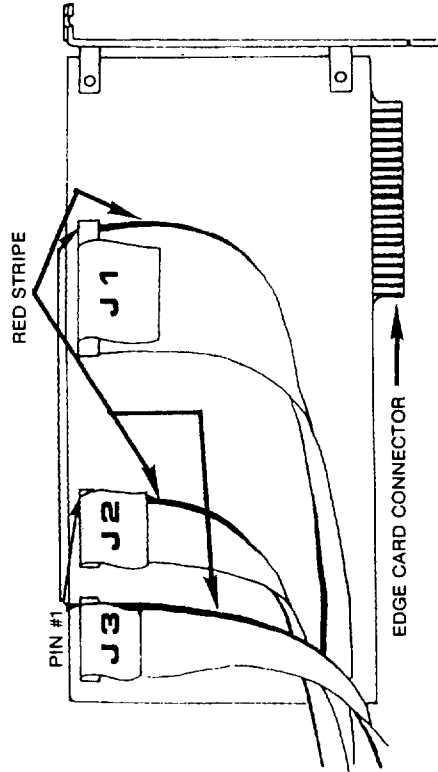


FIGURE TWO

Step Two

NOTE THE RED STRIPE ON ALL CABLES. ALIGN THIS RED STRIPE WITH PIN #1 FOR EACH CABLE ATTACHMENT. Make sure that the connector sockets are directly over the Pins, then carefully press each connector onto the proper Pin Set.

3.3 INSERTING THE CONTROLLER IN YOUR COMPUTER

* If your IBM PC, XT, or compatible does not have a hard disk controller, simply place the PERSTOR Controller in any available slot. To accomplish this:

- Remove the cover of your personal computer according to the instructions in your computer's user manual.
- Remove the filler bracket from any available expansion slot and retain its screw (refer to Figure Three).

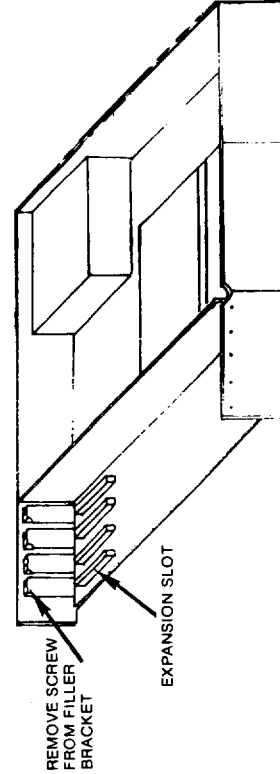


FIGURE THREE

- c. Gently insert the controller into the designated slot.
- d. Using the screw you retained from the filler bracket, secure the controller by tightening down (clockwise) the expansion bracket screw (refer to Figure Four). Now proceed to Section 3.4.

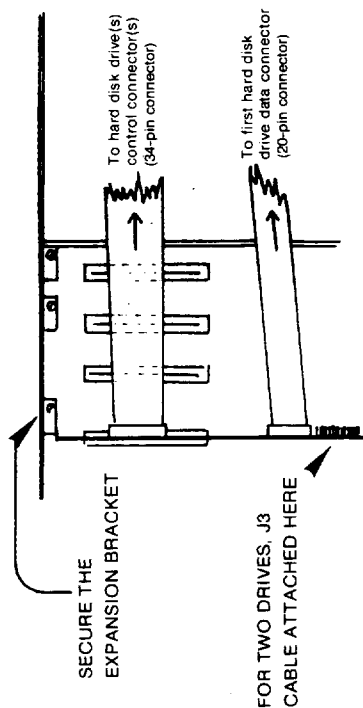


FIGURE FOUR

- * If you are attaching the controller to an IBM PC, XT, or compatible which already has a hard disk controller, you should at this time remove the existing hard disk controller and replace it with the PERSTOR Controller. Follow steps a, b, c, and d above as a guideline. Now proceed to Section 3.4.
- * If you are attaching the controller to an IBM AT or compatible, leave your existing hard disk/floppy controller in place to support your floppy drive(s). Place the PERSTOR Controller in any available slot to support your hard disk drive(s). Follow steps a, b, c, and d above as a guideline.

3.4 INSERTING THE DRIVE(S) AND ATTACHING CABLES

Step One

Jump the first drive as drive 1 and the second drive as drive 2 (if it exists) as explained in the owner's manual for your drive(s).

Step Two

Partially insert your drive(s) into your computer.

Step Three

Carefully attach the power supply plug(s) to the power connector on the back of the drive(s). The plug(s) will only fit one way. DO NOT FORCE! Refer to Figure Five.

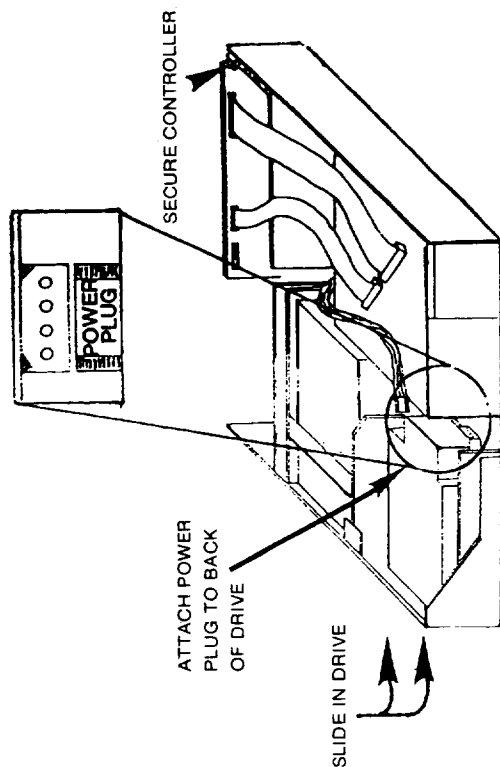


FIGURE FIVE

Step Four

Attach the edge card connector of the 34-pin cable labeled J1 to your drive(s), making sure that the red stripe is on the same side as the key slot (aligned with pin #1) of the 34-pin connector of the drive(s).

Attach the edge card connector of the 20-pin cable labeled J2 to your first drive, again making sure that the red stripe is on the same side as the key slot (aligned with pin #1) of the 20-pin connector of the first drive.

If you have two hard disk drives, attach the edge card connector of the 20-pin cable labeled J3 to your second drive, making sure that the red stripe is aligned with pin #1) of the 20-pin connector of the second drive.

Step Five

Re-inspect the installation to insure that all connectors are securely and properly attached.

Step Six

Slide the drive(s) in the rest of the way so that it is firmly in place, and secure it in the drive slot with mounting screws.

THIS COMPLETES THE HARDWARE INSTALLATION.

SECTION 4

SOFTWARE INSTALLATION

Turn power to the computer ON. A Perstor Copyright message should appear at the top of your screen. If this message does not appear, go to Step 3.2 and begin again. You may also use Section 5, Troubleshooting to determine your problem. Insert the Disk Operating System (DOS) diskette (the system diskette) in Drive A.

4.1 COPYING YOUR PERSTOR DISKETTE ONTO YOUR OPERATING SYSTEM

This section assumes that you have two floppy disk drives, Drive A and Drive B. If you have only one floppy drive, refer to your DOS manual for instructions on how to use your drive as two drives.

Step One

We suggest you make a copy of the PERSTOR diskette for safe-keeping, using your DOS "diskcopy" command (as explained in your DOS manual). You should store this copy in a safe place in the event that you lose or destroy your original.

Step Two

With your DOS system diskette in Drive A, insert a new diskette in Drive B and at the prompt A>, type in:

[FORMAT B:/S]

Press return. This will format the diskette in Drive B and transfer the system onto it.

Step Three

Copy your DOS files onto your newly created diskette.

Step Four

Remove your original DOS diskette from Drive A and insert the PERSTOR Diskette in Drive A. With the newly created DOS diskette in Drive B, at the prompt A> type in:

[AUTOEXEC]

Step Four

Press return. This will step you through copying the PERSTOR files onto your newly created DOS diskette. When the copy is complete, check the directory on your newly created PERSTOR-DOS diskette. Please read the Update. Bat file carefully. It may contain addendum information to this manual. In addition, you should use this diskette when transferring system files during high level formatting.

Step Five

At this point, if your controller is attached to an AT manufactured by IBM, proceed to Section 4.2. If your controller is attached to an AT compatible, a PC, an XT, or compatible, skip to Section 4.3.

4.2 ATs MANUFACTURED BY IBM

IBM PC-DOS 3.1, 3.2, and 3.3 contain a special patch for IBM ATs with a BIOS date of 01/10/84. This patch must be reversed by using the FIXDOS31 (if you are using PC-DOS 3.1), FIXDOS32 (if you are using PC-DOS 3.2), or FIXDOS33 (if you are using PC-DOS 3.3) batch file included on the PERSTOR diskette. The patch is needed **ONLY** for ATs manufactured by IBM. Put the newly created PERSTOR-DOS diskette in Drive A, and type in FIXDOS31, FIXDOS32, or FIXDOS33, depending on which PC-DOS version you have.

4.3 LOW LEVEL FORMATTING YOUR DRIVE(S)

Step One

With the PERSTOR-DOS diskette in Drive A, reboot the system. Then perform low level formatting by entering the following command after the prompt A>.

[PS2FMT]

Press return. You will be asked which drive you wish to format. Enter 0 if you wish to format the first drive (Unit 0), or enter 1 if you wish to format the second drive (Unit 1).

Step Two

At this point, you will be asked to enter the interleave value of your choice. Please read the following information on interleaving so that you will be able to enter the proper value.

When physically sequential sectors on the disk are to be read, each sector reaches the read/write head before a read or write operation can be set up. The disk must then make a complete rotation to pick up the next sector. For example, when an attempt is made to read 31 sectors on a particular track, 31 rotations are required. This takes up a considerable amount of time, but performance can be significantly improved by proper interleaving.

For example, on a system requiring less than two sector times to process the data it has read and to set up for the next read operation, the second logical sector is physically placed three sectors away from the first. The controller can now read the second sector with minimal delay. This three-to-one interleave factor allows a potential reading of the entire track in about three rotations.

The optimum interleave value depends on many factors, such as the speed of your computer, drive, and controller, number of buffers, etc. The simplest way to determine the most suitable interleave value for any particular system is through experimentation. This is done by **re-low-level** formatting the drive with different interleave values each time, partitioning the drive, and testing the drive performance until you find the best interleave for your drive.

The PS180 Controller accepts any interleave value of 1 through 30. The PS200 Controller accepts any interleave value of 1 through 33, with the exception of 17 and even numbers. **Through our testing, we have found the interleave values in the following chart to produce the best results. These values were determined using the CORETEST program for drive performance.**

COMPUTER CONTROLLER	IBM XT	IBM XT	IBM AT	IBM AT
BIOS	PS180	PS200	PS180	PS200
SPEED	XT9-x.xx	XT10-x.xx	AT9-x.xx	AT10-x.xx
INTERLEAVE	4.77 MHz	4.77 MHz	6.0 MHz	6.0 MHz
	4	5	4	5

Step Three

Choose the interleave value that is best suited to your application. (Remember that if your system is different from those mentioned in the above chart, you should determine your proper interleave value through experimentation.)

Step Four

The formatting procedure will take some time. Your screen will then display the message: **FORMAT SUCCESSFUL**. If any other message appears, recheck the cable connections, power supply connections, and jumpers on the PERSTOR Controller. After your check is complete, start over at Step One to low-level format your drive(s). You may also refer to Section 5, Troubleshooting to determine your problem.

Step Five

Answer the questions which the software program asks you and follow the steps of the formatting procedure.

Step Six

If you have TWO disk drives, go back to Step One and enter that you wish to format Drive unit 1, following the same steps as before.

Step Seven

Reboot your system.

4.4 PARTITIONING AND HIGH LEVEL FORMATTING YOUR DRIVE(S)

The Partitioning allowed by PC-DOS or MS-DOS provides a maximum of 33 formatted megabytes per physical disk drive. If you have purchased a larger capacity drive and want to be able to partition more than one 33 megabyte partition per drive, you will need to use either DOS 3.3 or a special software program such as Ontrack Disk Manager to overcome this limitation and utilize the full capacity of your hard disk drive.

Partitioning and high level formatting your drive is beyond the scope of this manual, so you must NOW consult your DOS manual or partitioning software manual for instructions on these procedures.

SECTION 5

TROUBLESHOOTING

If you are having problems, normally a few quick rechecks will solve the problem. Turn power to your computer OFF and check all cable connections to insure that the red stripe on the cable is properly aligned. If necessary, remove the cover from your computer and check the connections to the drives and the PERSTOR Controller. Make sure that the pins on the controller card actually go into the connector and not into the plastic. Make sure that the PERSTOR Controller is firmly seated in the expansion slot. After correcting any of these problems, you will have to return to the Installation Procedures and **START OVER**.

STATIC ELECTRICITY: This can cause recurring problems during installation and even after the installation is complete. Sometimes for no apparent reason the system goes down. The screen may read PARITY CHECK or nothing at all. Turn power to the computer OFF. Wait three minutes. Ground yourself and turn the computer ON again. The screen you were working on when this happened has probably been destroyed. Go back to the section preceding the static problem to make sure its execution is complete.

SYMPTOM	SOLUTION
Controller passes test but drive does not work	Recheck cable connections.
Probable Cause: Cable is improperly connected.	
Controller passes test and one drive works but not the other.	Make sure red stripe is aligned properly.
Probable Cause: Inverted J2 or J3 cable attachment or attached to wrong drive	Check for proper cable to drive attachment, and proper cable to controller pin set connection.
Screen displays: Invalid Drive Specification	Check for proper cable to drive attachment, and proper cable to controller pin set connection.
Probable Cause: Incorrect partitioning or improper cable attachment.	Check partition on drive(s).

SYMPTOM	SOLUTION
Screen displays: Error Reading Drive C (or D)	Check all cables and cable connections. Replace cables if damaged.
Probable Cause: J2 & J3 cables reversed, damaged cables, low-level formatting incorrect.	Return to Section 4.3, low-level format your drive again, follow through remaining steps
Controller is not able to recognize the disk drive. Screen displays: 1701 when machine is turned on.	Reboot the system using the Ctrl-Alt-Del keys together.
Probable Cause: Reversed cables, power plug not connected to drive.	If problem persists, check power, cable and controller connections.
Disk drive has solid red light	Check for proper alignment of the red stripe on J1 cable.
Probable Cause: J1 cable inverted, line voltage problem, power supply problem.	Check power lines.
	Call computer or PERSTOR Service Center.

SECTION 6

PERSTOR 200 SERIES CONTROLLER JUMPERS

JMP1

This jumper block is located above the edge card connector. It selects DRQ1, DRQ2, or DRQ3. DRQ1 is the first position on the left and DRQ2 is the rightmost position. It is factory set in the middle as DRQ3. **NOTE:** The AT BIOS does not use the DRQ line.

JMP2

This jumper block is located to the left of JMP1 and above the edge card connector. It selects DACK0 through DACK3. DACK0 is in the leftmost position and DACK3 is in the rightmost position. It is factory set at the rightmost position as DACK3. **NOTE:** The AT BIOS does not use the DACK line.

JMP3

This jumper block is located at the left of JMP2 and above the edge card connector. It selects the IRQ level as IRQ3, IRQ4, IRQ5, IRQ6, or IRQ7. It is factory set in the middle for IRQ5. **NOTE:** The AT BIOS does not use the IRQ line.

JMP4

This jumper block is located above JMP1. It sets the BIOS address and enables the BIOS. Pin (1) is on the left. To disable the BIOS, remove the jumper from pin set 1-2. This jumper block is shipped from the factory with pin sets 1-2, 3-4, 5-6, 9-10, 11-12, and 17-18 shorted and pin sets 7-8, 13-14, and 15-16 open. This sets BIOS Enabled at C8000. **NOTE:** Pin set 1-2 is shorted via a jumper plug.

JMP5

This jumper block is located to the left of JMP4. It sets the Port address base. With pin sets 1-2, 3-4, 5-6, 9-10, and 11-12 shorted the port base is 320H, as shipped from the factory. **NOTE:** Pin set 7-8 has a jumper pin set and it does not have a jumper plug as shipped from the factory. If pin set 7-8 is jumpered the port base will be at 300H.

JMP6

This jumper block is located to the left of the BIOS socket, at the bottom edge of the middle of the card. It allows the selection of different drive types supported by the BIOS. Pin 1 is on the top. In order to jumper this jumper block to support your drive, refer to Section 2.1 Setting the Drive Configuration Jumper.

PERSTOR PRODUCTS LIMITED WARRANTY

Perstor Systems, Inc. warrants the PERSTOR Product to be in good working order for a period of ninety (90) days from the date of purchase from Perstor Systems, Inc. or an Authorized PERSTOR Dealer.

Should the PERSTOR product fail to be in good working order at any time during warranty period, Perstor Systems, Inc. will at its option, repair or replace the PERSTOR at no additional charge except as set forth below, providing the warranty has not been voided. Repair parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replacement parts and PERSTOR become the property of Perstor Systems, Inc. This limited warranty does not include service to repair damage to the PERSTOR resulting from accident, disaster, misuse, abuse, or non-Perstor Systems, Inc. modification of the PERSTOR.

If you have purchased a PERSTOR Controller to use with a fixed drive supplied by ANYONE other than Perstor Systems, Inc., PERSTOR does not warrant the suitability of these drives. Perstor Systems, Inc. has tested a wide variety of drives, but only recommends certain drives. Recommended drives must be of high quality and capable of passing original factory tests without errors.

Limited Warranty service may be obtained by delivering the PERSTOR during the warranty period to an Authorized PERSTOR Dealer, and providing proof of purchase date. If this product is delivered by mail, you agree to insure the PERSTOR or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location and to use the original shipping container or equivalent.

Perstor Systems, Inc. hereby disclaims all other express and implied warranties for the PERSTOR products, including the warranties or merchantability and fitness for a particular purpose. Some states do not allow the exclusion of implied warranties, so the above limitations may not apply to you.

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