DATA STORAGE CABINET

Model: 2200

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Customer Engineering
Product Maintenance Manual 741-1806

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PREFACE

This document is the Product Maintenance Manual (PMM) for the Wang 2200 Data Storage Cabinet. The manual is organized in accordance with Customer Engineering Technical Documentation's approved PMM outline. The scope of this manual reflects the type of maintenance philosophy selected for this product.

The purpose of this manual is to provide the Wang-trained Customer Engineer (CE) with sufficient instructions to operate, troubleshoot, and repair the 2200 Data Storage Cabinet. The manual will be updated on a regular schedule or as necessary. Such updates will be published either as Publication Update Bulletins (PUBs) or as full revisions.

First Edition (August, 1987)

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1.1 Scope and Purpose

This manual contains installation, operation, troubleshooting, and repair information for the Model 2200 Data Storage (DS) Cabinet. The Data Storage Cabinet houses and controls magnetic storage devices in various combinations. The availability of the various options enables customizing the cabinet to meet specific requirements. The 2200DS Cabinet is fully compatible with the 2200VP, 2200MVP/A/C, 2200LVP/C, Micro VPs, and the 2200CS.
1.2 Organization and Layout

This manual is divided into 12 sections numbered 1 through 12. Each section describes a separate maintenance subject and minimizes references to other sections. All or most of the information pertaining to a specific task appears on a single or double frame. Each frame, in turn, contains illustrations, numbered steps, and/or text describing the individual steps required to accomplish each task.
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- Floppy Disk Drive
- Option Slots
- Cabinet Fan
- Power Supply
- DPU Board
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## Controls and Indicators

### 3.1 Operator Controls and Indicators

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<thead>
<tr>
<th>Item</th>
<th>Name</th>
<th>Type and Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select</td>
<td>LED; during the power on diagnostic routine, the lamp turns on, and should go out when the drive is ready for use. Thereafter, the lamp lights whenever the drive is accessed.</td>
</tr>
<tr>
<td>2</td>
<td>AC Power Switch</td>
<td>Rocker switch; applies ac power to the power supply and cooling fan.</td>
</tr>
</tbody>
</table>
NOTE: Unused positions should be turned off.

<table>
<thead>
<tr>
<th>Item</th>
<th>Name</th>
<th>Type and Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SW2</td>
<td>DIP switch; 8-pole; defines configuration of Winchester drives 3 and 4.</td>
</tr>
<tr>
<td>2</td>
<td>SW1</td>
<td>DIP switch; 8-pole; defines configuration of Winchester drives 1 and 2.</td>
</tr>
<tr>
<td>3</td>
<td>SW3</td>
<td>DIP switch; 4-pole; identifies type of floppy drive (360kb or 1.2mb) and indicates if a tape drive is present.</td>
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4.1 Power-Up Procedure

Installation as specified in Section 9 must precede equipment start up.

CAUTION
Do not switch DS Cabinet ON or OFF when a floppy diskette is mounted in drive. Also, never mount or remove a diskette while floppy activity LED is lighted.

1 Press "1" on DS Cabinet power switch.

2 Activity lamp turns on during the power on routine and when the drive is ready for use, the lamp goes out. Should lamp fail to light, go to Troubleshooting (6.1).

END
4.2 Power-Down Procedure

CAUTION
Ensure that no users are using the disk cabinet, that no diskette is in floppy drive, and that no activity lamps lamps are lighted.

1. Press "O" on DS Cabinet power switch.
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PREVENTIVE MAINTENANCE

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5.1 Materials Required

All magnetic storage devices for the 2200 Data Storage Cabinet are field replaceable. Therefore, no scheduled preventive maintenance procedures.

The customer is responsible for periodic cleaning of the floppy-disk drive. The diskette-drive cleaning kit, part No. 725-1413, is recommended.
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6.1 Utility Faults (Sheet 1 of 2)

POWER SUPPLY FAN WORKING?

CHECK VOLTAGE AT UNUSED CONNECTOR

CHECK AC POWER SOURCE

VOLTAGE OK?

REPLACE CABINET ON/OFF SWITCH

CORRECT POWER SOURCE

VOLT CHECK
UNDER I/O CABLE J4
TP1 GROUND
TP2 +5V
TP3 +12V
TP4 -12V

+11.4V TO +12.6V
+4.7V TO +5.3V

FROM FRONT LOOKING THROUGH GRILL HOLE
LEFT POT INSIDE PS
RIGHT POT INSIDE PS
6.1 Utility Faults (Sheet 2 of 2)

A

1

CHECK DPU BOARD VOLTAGE

VOLTAGE OK?

YES

REPLACE DPU BOARD

NO

REPLACE POWER SUPPLY

B

1

ONE AT A TIME DISCONNECT POWER FROM EACH DRIVE. REPEAT CHECK AT EACH STEP.

VOLTAGES CORRECTS?

YES

REPLACE UNIT LOADING DOWN VOLTAGE

NO

REPLACE POWER SUPPLY

(TP1) GND
(TP2) +5V
(TP3) +12V
(TP4) -12V
6.2 Floppy Light Stays On/Continues to Blink

- PRESS RESET
- LED CONTINUES TO BLINK?
  - YES: REPLACE DPU BOARD
  - NO: RUN DS CONFIGURATION UTILITY (DISKETTE) TO DETECT FAULTY DRIVE
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7.1 Front Panel Removal

Before removing panels:

- Power off unit
- Disconnect power cable from outlet
- Power down CPU, if attached


2. Pull lower end of panel away from cabinet; remove slip-on power connectors from switch. (Note connector orientation for reconnection)

BROWN
BLUE

3. Lift panel free of cabinet.
Before removing panel:
- Power off unit
- Disconnect power cable from outlet
- Power down CPU, if attached
- Remove I/O cable

1. Loosen screws (10) around edge of panel. (Do not remove).

2. Remove I/O cable screws, and power-supply screws.

3. Lift panel to enable keyhole apertures to clear screws.

4. Disconnect power connector from cabinet fan.
7.3 Power Switch Removal

Before removing panels:
- Power off unit.
- Disconnect power cable from outlet.
- Power down CPU, if attached.

1. Remove front panel [→7.1].

2. Press spring cams to release power switch from panel aperture.
Before removing panel:
- Power off unit
- Disconnect power cable from outlet
- Power down CPU, if attached
- Remove I/O cable

1. Disconnect ON/OFF switch slip-on connectors (⇒ 7.1).
2. Remove rear panel (⇒ 7.2).
3. Disconnect power plug(s) from drive(s) power connectors.
4. Disconnect plug (J3) at DPU board.
5. Slide power supply from cabinet.
Before removing panel:
- Power off unit
- Disconnect power cable from outlet
- Power down CPU, if attached
- Remove I/O cable

1. Remove rear panel (➔7.2).

2. Disconnect power and signal connectors from board.

3. Slide board from cabinet.
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8.1 Adjustments and Alignment

The magnetic devices used with the DS Cabinet are field replaceable. Field maintenance of these items does not therefore include adjustment or alignment.
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### SECTION 9

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9.1 Installation Site Check

Proper location and site preparation are important for overall operating efficiency. Ideally, the area should be easily accessible, relatively dust free, and temperature and humidity controlled. An adequate number of dedicated, regulated, noise-free ac power outlets should be provided to minimize electromagnetic interference. The DS Cabinet draws up to 3.15 amps at 120 VAC; 1.57 amps at 220 VAC.
The DS Cabinet and associated magnetic storage devices are shipped separately. Ensure that all power is disconnected prior to cabinet preparation.

1. Remove screws (2) from recessed portion of lower front panel.

2. Pull lower end of panel away from cabinet; remove slip-on power connectors from switch. (Note connector orientation for reinstallation).

3. Lift panel free of cabinet.

4. Remove front bezel covers (4 nuts).
Remove screws (4) securing power supply and DPU board to rear panel.

Loosen (do not remove) screws (10) around perimeter of rear panel; lift panel to enable keyhold apertures to clear screws.
Each magnetic device is shipped with an installation kit containing (in addition to items pertaining to the specific device):

Two Drive Mounting Brackets
Four screws - 6/32 x 1/4"
Two Grounding Clips

The mounting brackets must be attached to the given drive to enable installation of the drive into the selected location in the cabinet.

1. Line up holes in mounting bracket and grounding clip; fasten with screw onto drive. (Use hole in mounting bracket which best fits location of screw receptacle.) Curved end of grounding clip must protrude through bracket aperture.

2. Repeat procedure for opposite side of drive.
The floppy-disk drive is shipped with an installation kit containing:

Two Drive Mounting Brackets
Four screws - 6/32 x 1/4"
Two Grounding Clips

1. Attach mounting brackets and grounding clips to drive (Section 9.3).
2. Install drive into slot 4. Insert to point at which mounting brackets engage latch.
3. Install floppy signal cable [furnished with DS Cabinet] between drive and J6 on DPU board.
4. Insert available power supply connector.
The Streaming Tape Drive is shipped with an installation kit containing:

- Two Drive Mounting Brackets
- Four screws - 6/32 x 1/4"
- Two Grounding Clips
- Tape drive cable

1. Attach mounting brackets and grounding clips to drive (► 9.3).

2. Install drive into slot 3. Insert to point at which mounting brackets engage latch.

3. Install tape signal cable (furnished installation kit) between drive and J8 on DPU board.

4. Insert available power supply connector.
Each Winchester drive is shipped with an installation containing:

- One Winchester "B" cable
- Two Drive Mounting Brackets
- Four screws - 6/32 x 1/4"
- Two Grounding Clips
- Half-width front bezel cover

1. Attach mounting brackets and grounding clips to drive (§9.3).

If drive is full-height, install in available full-height slot.

2. If drive is removable Winchester, install in slot 1 (for accessibility).

   If drive is half-height (non-removable), install into slot 2.

```
Each Winchester drive connects to the DPU board via two cables:

- An "A" (drive select) cable, furnished with cabinet, which connects to all Winchester drives in the DS Cabinet.
- A "B" (data) cable dedicated to the drive to which it attaches.

To connect the "A" cable:

1. Attach end of cable to J1 on DPU board.

2. Attach DRIVE SELECT PLUG 1 to Winchester removable drive (if present). If removable drive not present, attach to alternate Winchester. For Winchester operation, PLUG 1 must attach to a unit.

3. Attach DRIVE SELECT PLUGS 2/3/4 to other Winchester drive(s). (Plug may be selected for locational convenience.) Plug 1 is the only plug which must be used for Winchester installation. Plug selection will affect addressing (▶Appendix A).

**NOTE**

Drive connected to SELECT PLUG1 (farthest from DPU Board) must have cable terminator installed. Drives connected to SELECT PLUGS 2/3/4 must have terminators removed [see instruction manuals pertaining to specific drive].
To connect the "B" cable:

1. Connect cable between signal connector on non-removable Winchester drive and either J2, J9, or J10. Repeat for each additional non-removable Winchester drive.

2. Connect cable between signal connector on removable Winchester drive and J7.
Switch 1 and switch 2 identify the types of Winchester drives in the system. Each switch bank divides into two segments of four switches each; each segment identifies a given drive numbered according to its position on the "A" cable (19.6). To set switches:

1. Verify type of drive connected to DRIVE SELECT PLUG 1 [plug located farthest from DPU board].

2. Set switches for DRIVE 1 according to chart [positions 5-8, SWITCH 1].

3. Repeat steps 1 and 2 for DRIVE SELECT PLUGs 2 through 4, if applicable.

<table>
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<th>NO. OF ADDRESSES USED</th>
<th>DRIVES</th>
<th>DRIVES</th>
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<tr>
<td></td>
<td>10 MEG REM</td>
<td>DMA360/RICOH RH5130</td>
</tr>
<tr>
<td></td>
<td>20 MEG HH</td>
<td>NEC D512B/SEAGATE ST225</td>
</tr>
<tr>
<td></td>
<td>32 MEG FH</td>
<td>QUANTUM Q540</td>
</tr>
<tr>
<td></td>
<td>64 MEG FH</td>
<td>MICROPOLIS 1325W</td>
</tr>
<tr>
<td></td>
<td>140 MEG FH</td>
<td>MAXTOR 14 X 10</td>
</tr>
<tr>
<td></td>
<td>32 MEG FH</td>
<td>MICROPOLIS 1323</td>
</tr>
<tr>
<td></td>
<td>112 MEG FH</td>
<td>MAXTOR 7 X 16</td>
</tr>
</tbody>
</table>

**UNPACKING AND SETUP**

9.7 Switch Settings (Sheet 1 of 2)
Switch 3 identifies tape drive (whether present) and type of floppy-disk drive. Set switches according to chart. [Positions 3 and 4 of switch bank not used.]
9.8 Wrap-Up

After installation steps are completed, power-up should be performed [4.1] for verification that devices are initializing. Before performing power-up:

1. Verify that each device has power plug attached.

2. Verify that each Winchester device has both “A” and “B” cables attached [9.6].

3. Verify that floppy/tape device has signal cable attached [9.4/9.5].

4. Reassemble rear panel onto cabinet (verify that cabinet-fan power receptacle is connected [9.2].

5. Mount half-width/full width bezel covers as required to cover empty spaces (if any).

6. Reassemble front cover onto cabinet [9.2].

7. Connect system signal-input cable.

8. Connect power cord.

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### SECTION 10

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<td>10.2</td>
<td>MAGNETIC DEVICES</td>
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The 2200 Data Storage Cabinet is an open-slotted cabinet available with either a 320-kilobyte or a 1.2-megabyte diskette drive. The additional compartments in the cabinet can accommodate a variety of magnetic storage devices to meet user requirements. The complement of devices includes both fixed-disk drives and removable disks/cartridges thus providing virtually unlimited off-line data storage. As a minimum requirement, every complement must include either a 320-GB or a 1.2-GB diskette drive. Maximum complements may be summarized:

<table>
<thead>
<tr>
<th>10-MB Removable Hard Disk</th>
<th>220-MB Fixed Hard Disk</th>
<th>432/64/112 MB Fixed Hard Disk</th>
<th>Streaming Cartridge Tape Drive</th>
<th>112/140 MB MAXTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>3 OR</td>
<td>3 OR</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2 OR</td>
<td>-</td>
<td>2</td>
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<td>-</td>
<td>1</td>
<td>2 OR</td>
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<td>3 OR</td>
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<td>1</td>
<td>1</td>
<td>2 OR</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**A** WITH 2 140/112 MAXTOR DRIVES CANNOT HAVE A 3RD FULL HEIGHT WING BECAUSE OF POWER SUPPLY LOAD.

**A** WITH 3 FULL HEIGHT DRIVES OF THE 32MB/64MB TYPE, NO OTHER WINCHESTER DRIVES CAN BE USED.
10.2 Magnetic Devices

Disk Processing Unit

To speed processing and provide extensive error correction, an intelligent Disk Processing Unit (DPU), contained in the cabinet, controls the data storage units. The DPU board contains 256 kilobytes of cache memory.

The DPU allows users to set aside a portion of the cache memory for use as a RAM disk. The RAM disk, once established, responds to accessing the same as a disk platter, and supports all normal disk commands. The RAM disk is not permanent storage; its current contents are lost if it is deallocated, or if there is a loss of power to the DS Cabinet. As many as 990 sectors (256 bytes/sector) of cache may be allocated for use in the RAM DISK. If the number of sectors to allocate is specified as 0, then the RAM disk is deallocated.

Diskette Drive

The diskette drive uses a 5-1/4-inch double-sided, double-density (DSDD) diskette for removable storage. Two DSDD diskette formats are supported on each of the possible diskette drives: 256 and 512 bytes per sector. All the CS systems data and word processing applications use the standard 256-bps format. The 512-bps format (PC format) is used for interchange purposes. The 512-byte sectoring is transparent to the CS operating system. The DPU in the disk peripheral maps two 256-byte logical sectors into one 512-byte physical sector.

The 1.2-MB diskette drive can read 320- KB diskettes. However, not all 320-KB diskette drives will be able to read media written by 1.2-MB diskette drives.

The BASIC-2 programming language accesses diskettes with the 512-bps format as if the platter were formatted with 256-byte sectors. All BASIC-2 disk operations can be performed.

Disk Drive

The fixed and removable 5-1/4-inch hard disk (Winchester) drives are formatted to 256 bytes per sector. The removable cartridge features a write-enable tab that allows protection of valuable data.

Streaming Tape Cassette Tape Drive

The streaming tape cassette drive is a mass storage and recovery device with a storage capacity of 45 MB at 8000 bits per inch. The drive uses a backup/recovery that works on either a file by file basis, or platter image basis. The drive supports backup by way of reference files. It can run without constant user interaction during normal disk use.
SECTION 11

SPECIFICATIONS

11.1 DISK DRIVES ................................................................. 11-1
11.2 STREAMING CARTRIDGE TAPE DRIVE ............................... 11-2
## 11.1 Disk Drives

<table>
<thead>
<tr>
<th>No. of Platters/ Addresses</th>
<th>Capacity/ Platter</th>
<th>Sectors/ Platter</th>
<th>Average Access Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>320-KB Diskette</td>
<td>320 KB</td>
<td>1280</td>
<td>100 ms</td>
</tr>
<tr>
<td>(half height)</td>
<td></td>
<td>1440 (PC)</td>
<td></td>
</tr>
<tr>
<td>1.2-MB Diskette</td>
<td>1.2 MB</td>
<td>4160</td>
<td>100 ms</td>
</tr>
<tr>
<td>(half height)</td>
<td></td>
<td>4800 (PC)</td>
<td></td>
</tr>
<tr>
<td>Removable Hard Disk</td>
<td>10 MB</td>
<td>38912</td>
<td>95 ms</td>
</tr>
<tr>
<td>(half height)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-MB Hard Disk</td>
<td>10 MB</td>
<td>38912</td>
<td>68 ms</td>
</tr>
<tr>
<td>(half height)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32-MB Hard Disk</td>
<td>16 MB</td>
<td>65024</td>
<td>45 ms</td>
</tr>
<tr>
<td>(full height)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternate 32-MB Drive</td>
<td>8 MB</td>
<td>32542</td>
<td>45 ms</td>
</tr>
<tr>
<td>(full height)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64-MB Hard Disk</td>
<td>16 MB</td>
<td>65024</td>
<td>27 ms</td>
</tr>
<tr>
<td>(full height)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>112-MB Maxtor</td>
<td>16 MB</td>
<td>65024</td>
<td>27 ms</td>
</tr>
<tr>
<td>(full height)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140-MB Maxtor</td>
<td>10 MB</td>
<td>38912</td>
<td>27 ms</td>
</tr>
<tr>
<td>(full height)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bytes per sector, all drives:** 256

**Data Transfer Rate**

- 320-KB Diskette: 250 KB per second
- 1.2-MB Diskette: 500 KB per second
- All hard-disk drives: 5 MB per second
11.2 Streaming Cartridge Tape Drive

**Recording**

- Capacity: Up to 45 MB with 450-ft tape
- Density: 8000 bits per inch
- Format: Read/Write operation - serial/serpentine
- Physical Tracks: Nine

**Tape Speed, Read/Write Forward/Reverse:**

- 90 inches/second

**Tape Heads**

- Dual read-after-write
- Full-width erase bar

**Data Transfer Rate (Drive to Controller)**

- Up to 86,700 bytes/second at 90 inches/second
SECTION 12 CONTENTS

SECTION 12
ILLUSTRATED PARTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.1</td>
<td>MAJOR ASSEMBLIES</td>
<td>12-1</td>
</tr>
<tr>
<td>12.2</td>
<td>MAGNETIC DEVICES</td>
<td>12-4</td>
</tr>
<tr>
<td>12.3</td>
<td>INSTALLATION KITS</td>
<td>12-5</td>
</tr>
</tbody>
</table>

741-1806  COMPANY CONFIDENTIAL
ILLUSTRATED PARTS

12.1 Major Assemblies

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>220-3627</td>
<td>Floppy Cable</td>
</tr>
<tr>
<td>2</td>
<td>210-8826</td>
<td>DPU Board</td>
</tr>
<tr>
<td>3</td>
<td>270-1094</td>
<td>Power Supply</td>
</tr>
<tr>
<td>4</td>
<td>220-3630</td>
<td>Winchester &quot;B&quot; Cable</td>
</tr>
</tbody>
</table>
### Illustrated Parts

**Major Assemblies**

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>220-3628</td>
<td>Tape Cable</td>
</tr>
<tr>
<td>2</td>
<td>220-3629</td>
<td>Winchester &quot;A&quot; Cable</td>
</tr>
</tbody>
</table>
ILLUSTRATED PARTS

12.1 Major Assemblies

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>273-3440</td>
<td>Fan Assembly</td>
</tr>
<tr>
<td>2</td>
<td>325-0096</td>
<td>ON/OFF Switch</td>
</tr>
</tbody>
</table>
# Illustrated Parts

## Magnetic Devices

<table>
<thead>
<tr>
<th>Wang Part No.</th>
<th>Vendor Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 1/4'' HH 360KB Floppy</td>
<td>278-4033 JU455</td>
</tr>
<tr>
<td>5 1/4'' HH 1.2MB Floppy</td>
<td>278-4055 JU475</td>
</tr>
<tr>
<td>5 1/4'' HH Cassette Tape</td>
<td>725-1481 MT-2ST</td>
</tr>
<tr>
<td>10 MB HH Removeable Disk</td>
<td>278-4049 RH5130/360 RICOH/DMF</td>
</tr>
<tr>
<td>20 MB HH Winchester</td>
<td>278-4062 ST225/D5126</td>
</tr>
<tr>
<td>32 MB FH Winchester</td>
<td>278-4034 Q540</td>
</tr>
<tr>
<td>32 MB FH Winchester</td>
<td>278-4069 1323</td>
</tr>
<tr>
<td>64 MB FH Winchester</td>
<td>278-4054 1325W</td>
</tr>
<tr>
<td>112 MB FH Winchester</td>
<td>Maxtor 7 x 16</td>
</tr>
<tr>
<td>140 MB FH Winchester</td>
<td>Maxtor 14 x 10</td>
</tr>
<tr>
<td>190 MB FH WINI</td>
<td>725-0271 MAXTOR 190MB FH</td>
</tr>
</tbody>
</table>

(289-0934 289-0934-A ADDON)
### Installation Kits

Each Winchester Disk Drive is shipped with an installation kit containing:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Winchester &quot;B&quot; Cable</td>
<td>220-3630</td>
</tr>
<tr>
<td>2</td>
<td>Drive Mounting Brackets</td>
<td>449-1213</td>
</tr>
<tr>
<td>2</td>
<td>Grounding Clips</td>
<td>465-1864</td>
</tr>
<tr>
<td>4</td>
<td>Screws - 6/32&quot; x 1/4&quot;</td>
<td>650-3080</td>
</tr>
<tr>
<td>1</td>
<td>Half-width front bezel cover</td>
<td>451-2611</td>
</tr>
</tbody>
</table>

The Floppy Drive Installation kit contains:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Drive Mounting Brackets</td>
<td>449-1213</td>
</tr>
<tr>
<td>2</td>
<td>Grounding Clips</td>
<td>465-1864/1864</td>
</tr>
<tr>
<td>4</td>
<td>Screws - 6/32&quot; x 1/4&quot;</td>
<td>650-3080</td>
</tr>
</tbody>
</table>

The Streaming Cartridge Tape Drive contains:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tape cable</td>
<td>220-3628</td>
</tr>
<tr>
<td>2</td>
<td>Drive Mounting Brackets</td>
<td>449-1213</td>
</tr>
<tr>
<td>2</td>
<td>Grounding Clips</td>
<td>465-1864</td>
</tr>
<tr>
<td>4</td>
<td>Screws - 6/32&quot; x 1/4&quot;</td>
<td>650-3080</td>
</tr>
</tbody>
</table>

- **High Density Tape (45.60 m)**: 725-1482-1/725-4055-1
- **150 m Extra Density Tape**: 725-7549 (TEAC model # CT650-N)
- **TEAC 150 m Prom (on drive w/ WANG ID)**: 750-1774
APPENDIX A CONTENTS

APPENDIX A
DEVICE ADDRESSING

DEVICE ADDRESSING ................................................................. A-1
Device Addressing (Sheet 1 of 3)

Device addresses are:

**MASTER**

Floppy
- D x 0 [hex]
- D x 1 [hex]
- D x 2 [hex]
- D x 3 [hex]
- D x 4 [hex]
- D x 5 [hex]

**SLAVE**

- D x 0 + 40 [hex] RAM Disk
- D x 1 + 40 [hex] see Note 9
- D x 2
- D x 3
- D x 4
- D x 5

**FIXED WIND ADDRESSES FOR DRIVE SELECT 1 to 2**

- D x 6 [hex]
- D x 7 [hex]
- D x 8 [hex]
- D x 9 [hex]
- D x A [hex]
- D x B [hex]
- D x C [hex]
- D x D [hex]
- D x E [hex]
- D x F [hex]

**Removeable Winchester**

- D x F + 40 [hex] Streaming Tape Drive

**NOTES (Drive Addressing):**

1. Switch settings on the Disk Controller PCB (in CPU) control the master base addressing.

2. The slave address is master address plus 40 [hex].
3. Switch settings on the DPU Board in coordinating with the Winchester "A" cable Drive Select connectors [9.6] control drive and/or platter addressing. A change to Drive Select 1 (via switches or plug connectors on the "A" cable) could result in a change of address for Drive Select 2. This relationship also holds for Drive Select 3 and 4. A change of switch settings, reflecting changed plug usage for Drive Select 3, could change the addresses for Drive Select 4.

4. The Drive Select 1 connector must be used, if any Winchesters are installed, because of termination concerns. Of the Winchesters, only the Winchester connected to Drive Select 1 will be terminated.

5. Master addresses control both the floppy and any Winchesters connected to Drive Selects 1 or 2.

6. Slave addresses control RAM Disk, tape (if applicable) and any other Winchesters connected to Drive Selects 3 or 4.
NOTES (Winchester Addressing):

7. The first drive address for the fixed Winchester starting with Drive Select 1 (if applicable) starts with $D \times 1$ (hex), and uses successive addresses as needed (see device address table for number of addresses used for each drive type).

8. If a removeable Winchester is used, Drive Select 2 address starts at $D \times 1$ (hex); if a fixed Winchester is at Drive Select 1, the first address for Drive Select 2 will immediately follow the last address for the fixed Winchester attached to Drive Select 1.

9. Drive Select 3, if used, starts at address $D \times 1 + 40$ (hex) using successive addresses as required (see device address table for number of addresses used for each drive type).

10. Drive Select 4 address continues at the next available address following the last address of Drive Select 3. If Drive Select 3 is not used, the first Drive Select 4 address will start at $D \times 1$ plus 40 (hex).