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# Hardware Maintenance and Service

Volume 2

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# Hardware Maintenance and Service

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**First Edition (March 1984)**

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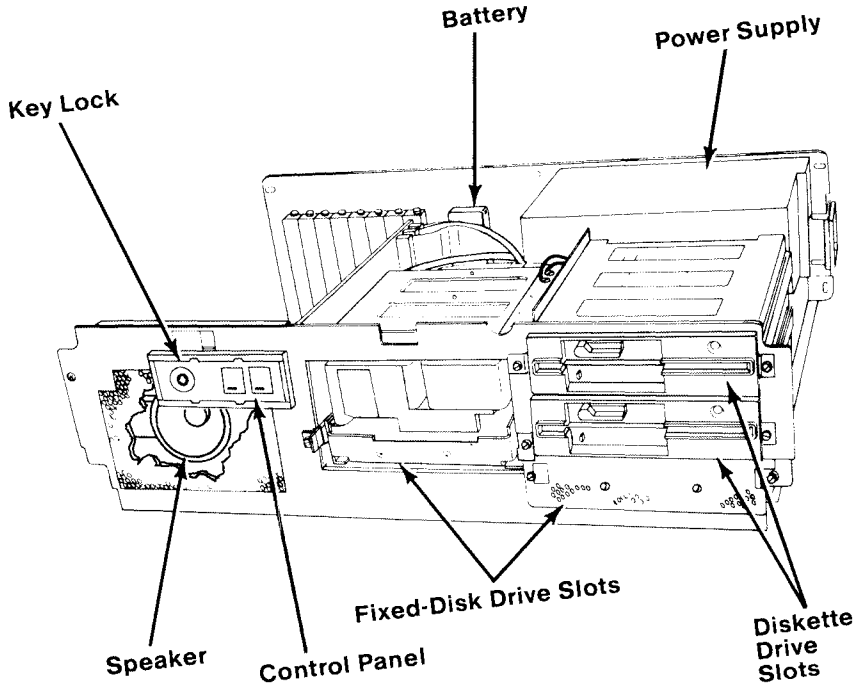
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# System Unit

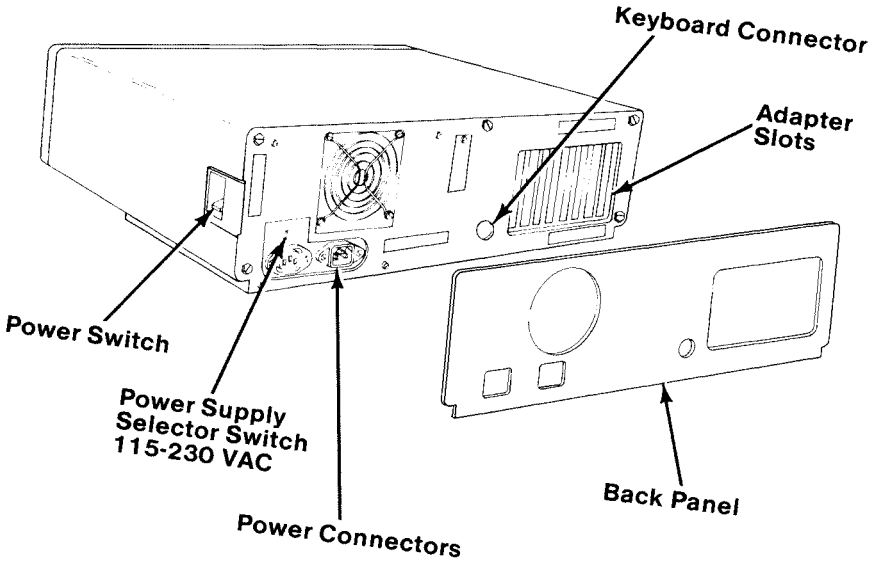
## Front View






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# Rear View



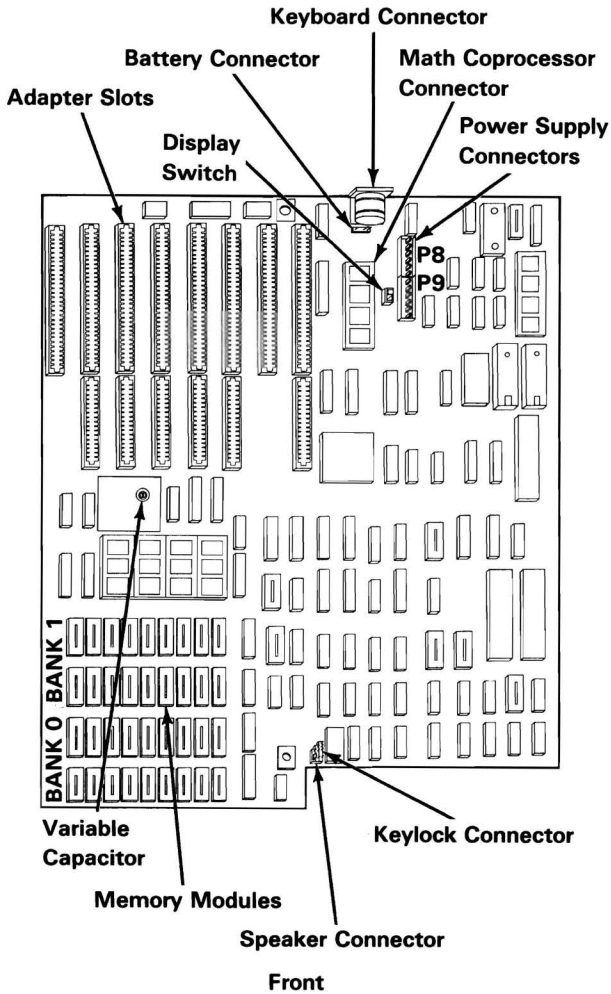



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# System Board, Type 1

**Notes:**

1. All memory modules on this system board are 128Kb RAM modules.
2. With two rows of memory modules installed the system board is populated to 256Kb.
3. With four rows of memory modules installed the system board is populated to 512Kb.



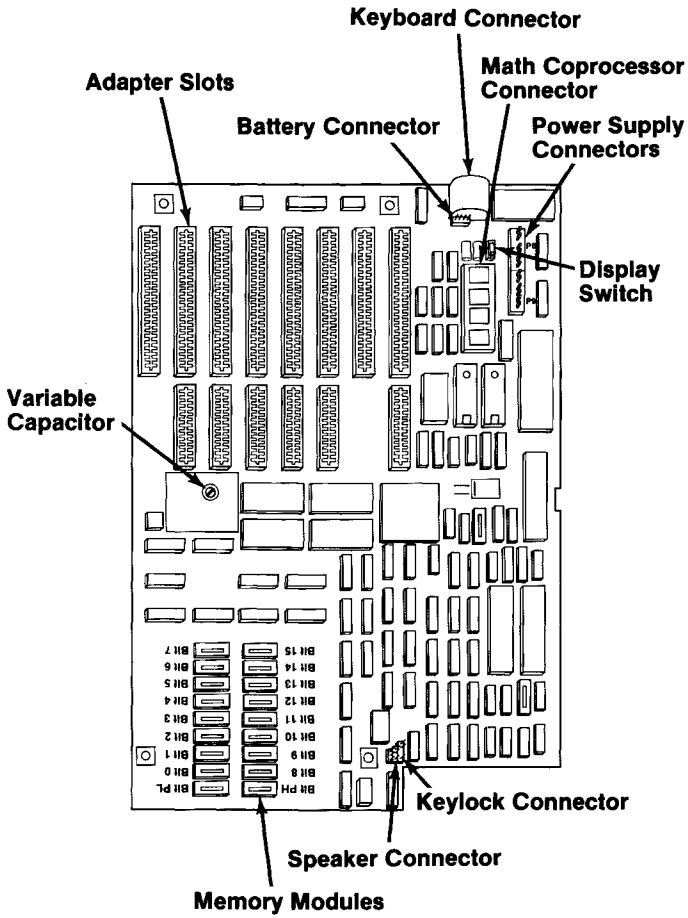


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# System Board, Type 2

**Notes:**

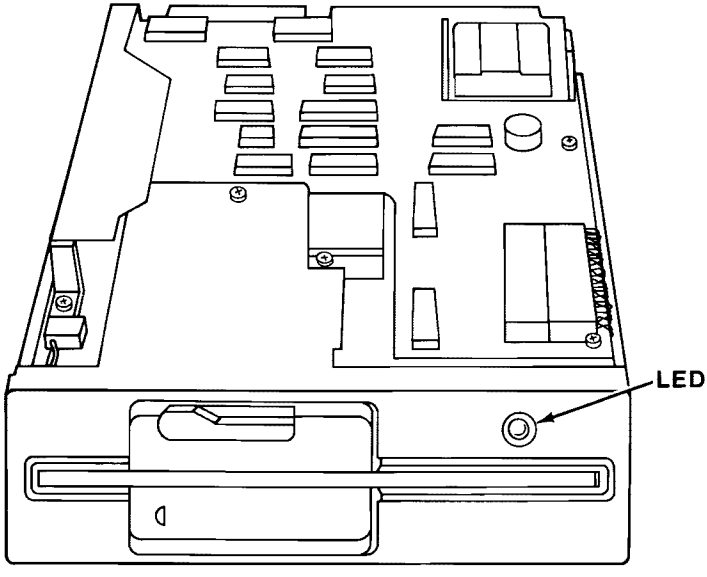
1. All memory modules on this system board are 256Kb RAM modules.
2. Type 2 system boards have 512Kb of Base Memory installed on the system board.

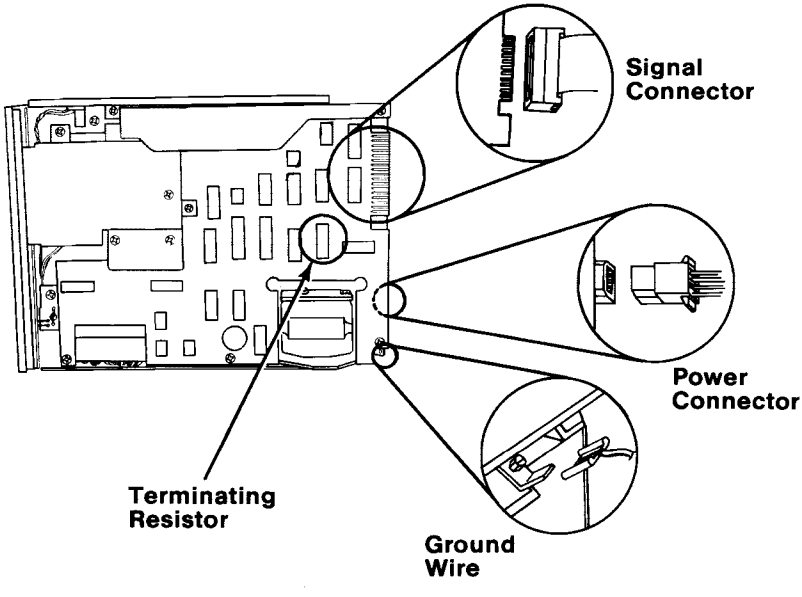




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# High Capacity Diskette Drive



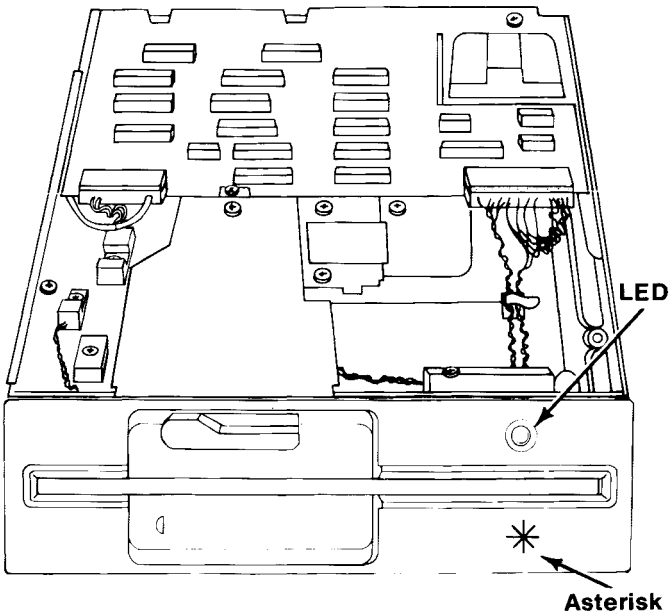


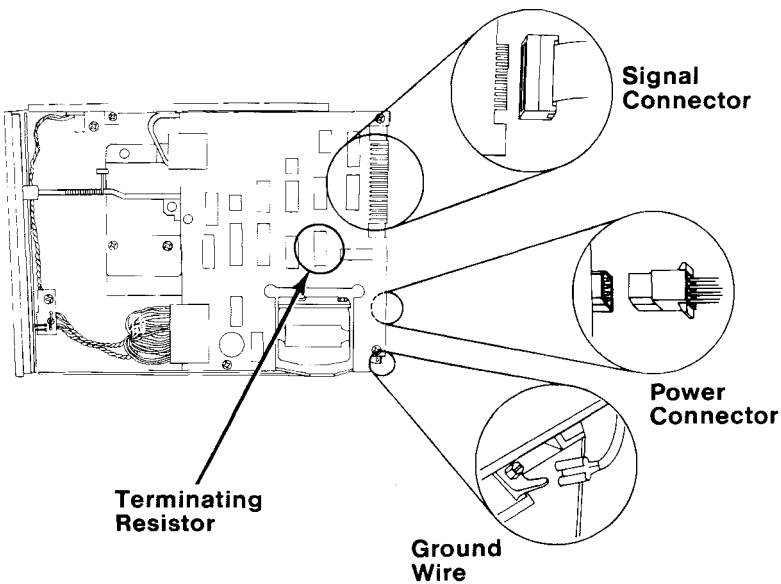
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# Double Sided Diskette Drive

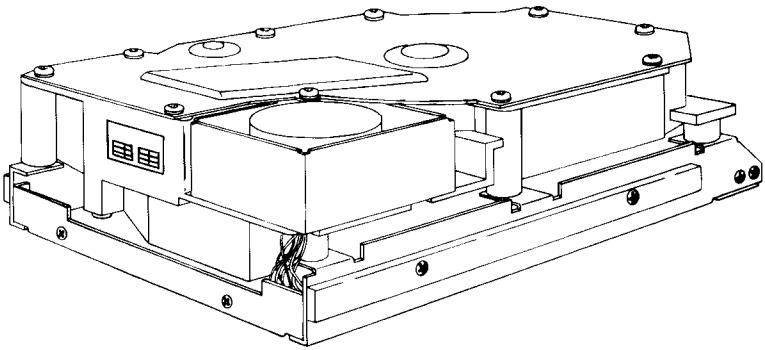


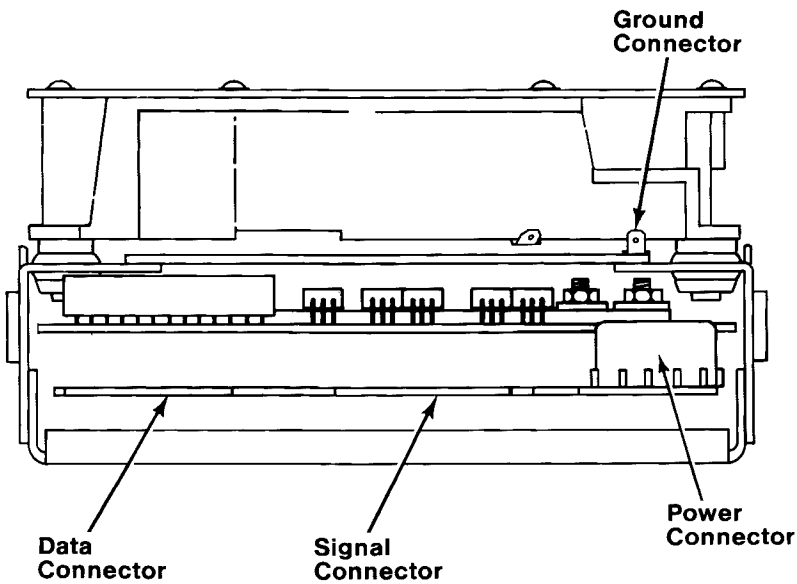





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# Fixed Disk Drive

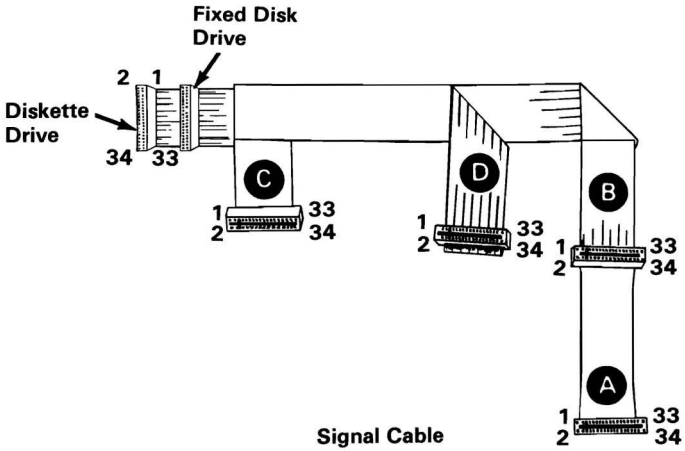





Rear View

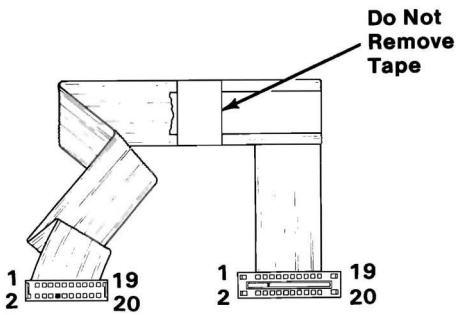

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# Fixed Disk and Diskette Drive Signal Cable




Signal Cable

# Fixed Disk Drive Data Cable

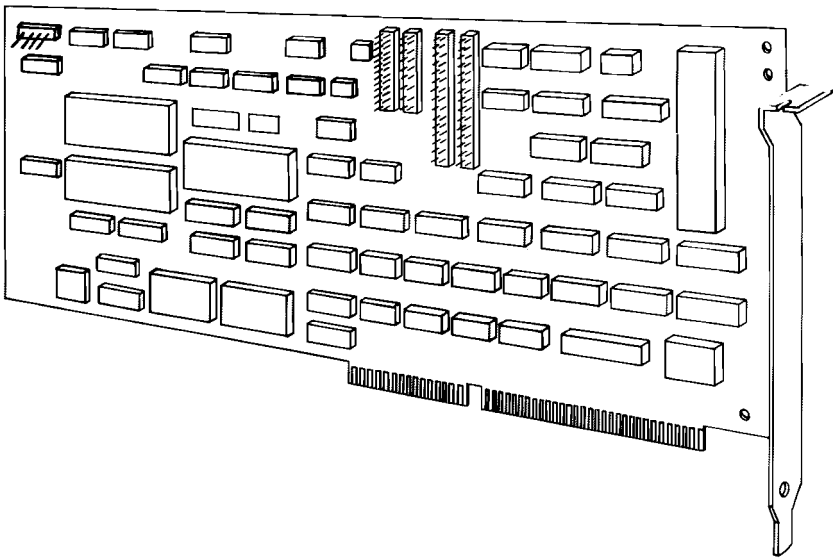



Data Cable



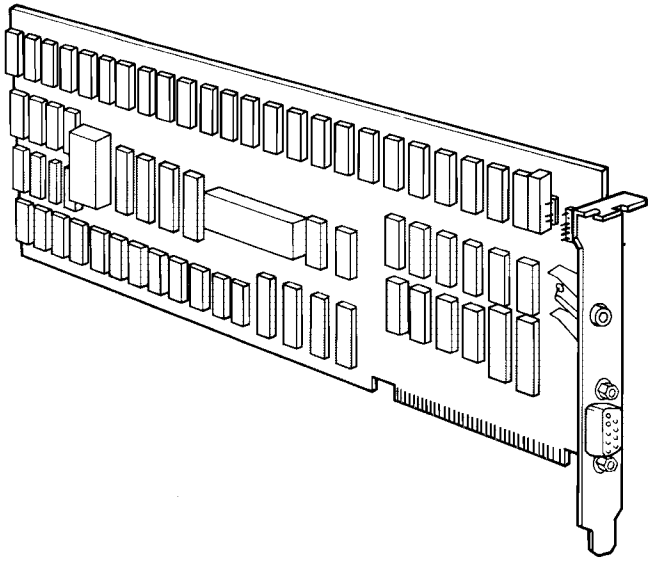
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# Fixed Disk and Diskette Drive Adapter

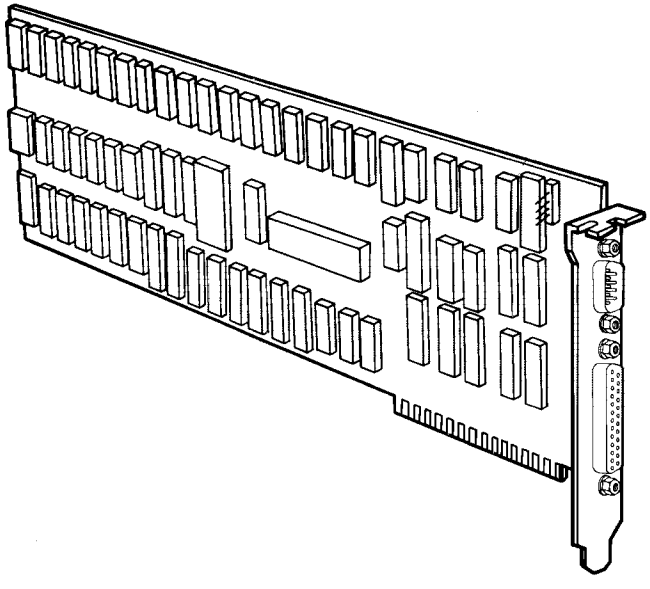



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## Color/Graphics Monitor Adapter



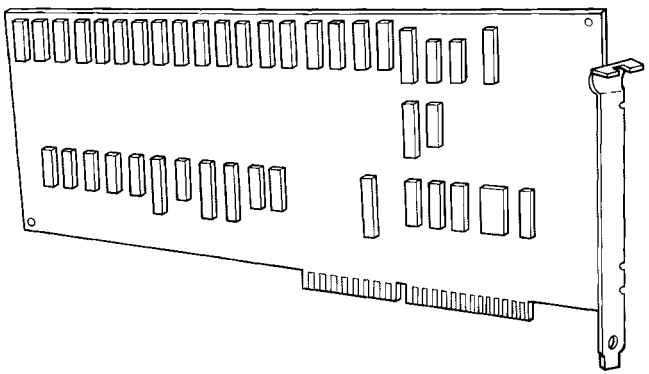
## Monochrome Display and Printer Adapter




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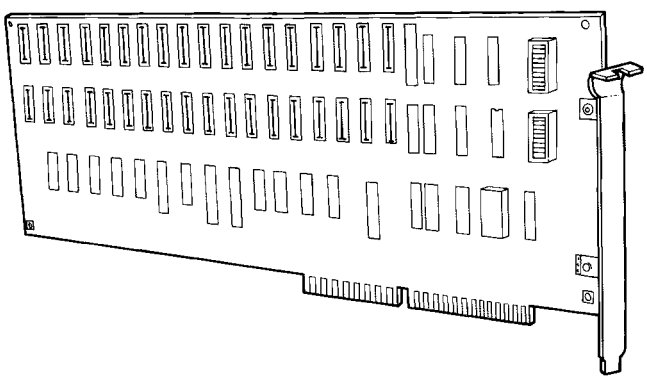
# 128Kb Memory Expansion Adapter

**Note:** The memory modules on this adapter are 64Kb RAM Modules.



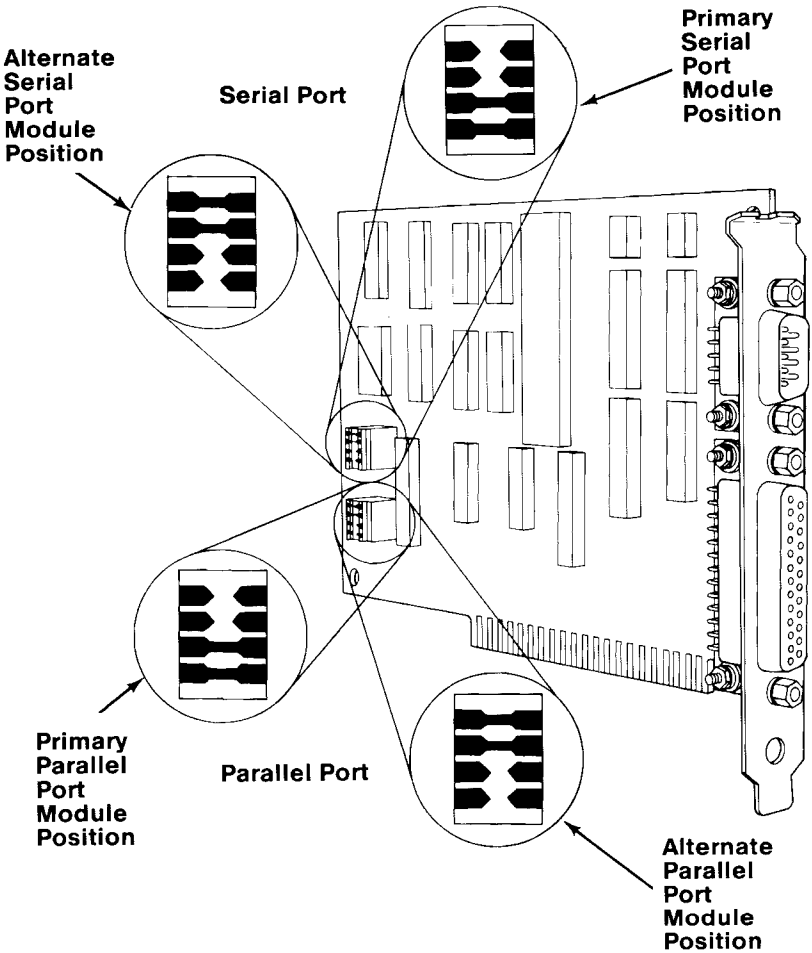
# 512Kb Memory Expansion Adapter

**Note:** The memory modules on this adapter are 128Kb RAM Modules.




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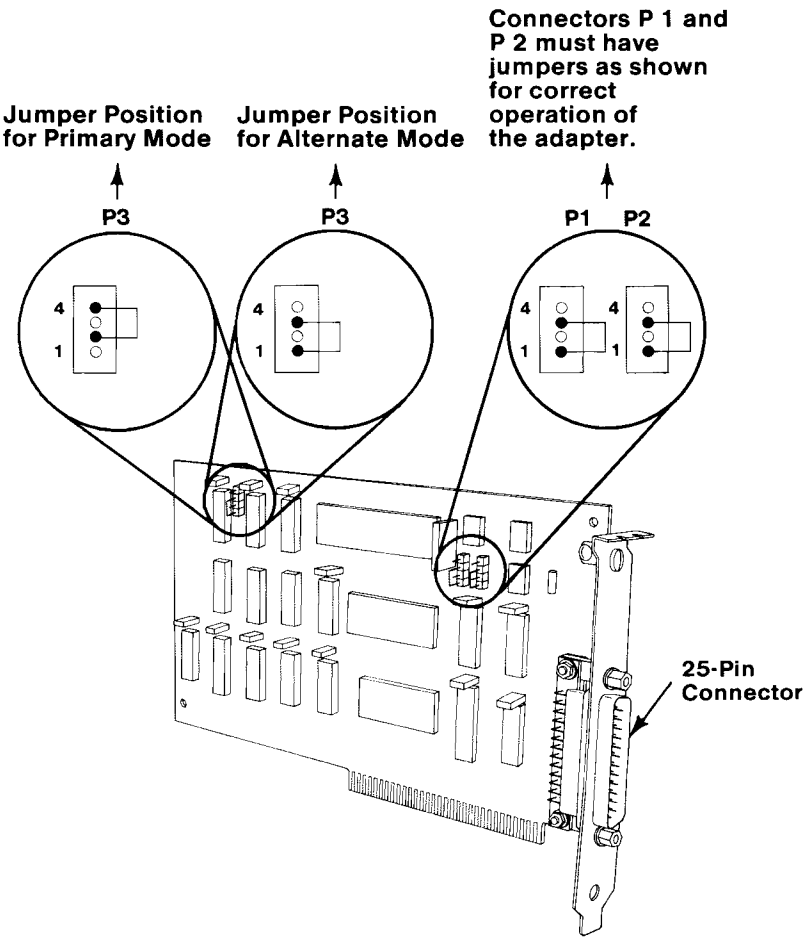
# Serial/Parallel Adapter





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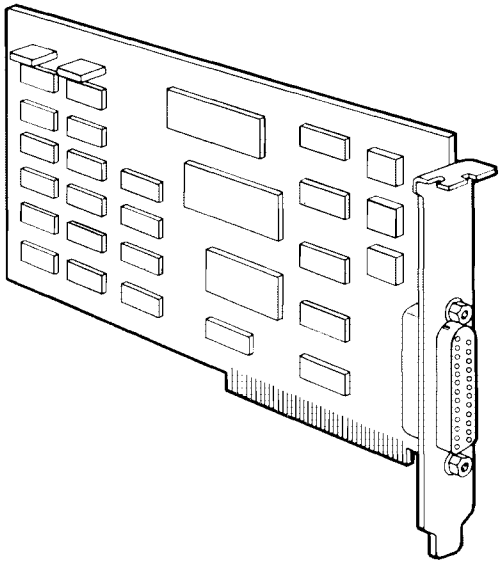
# Binary Synchronous Communications Adapter



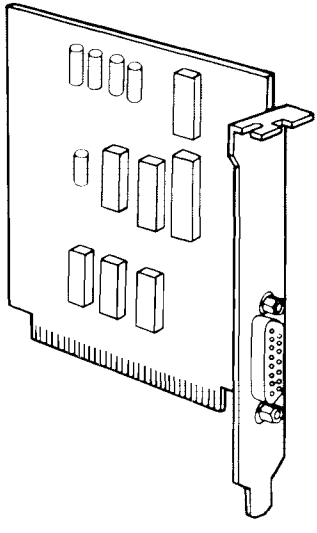


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# Synchronous Data Link Communications Adapter



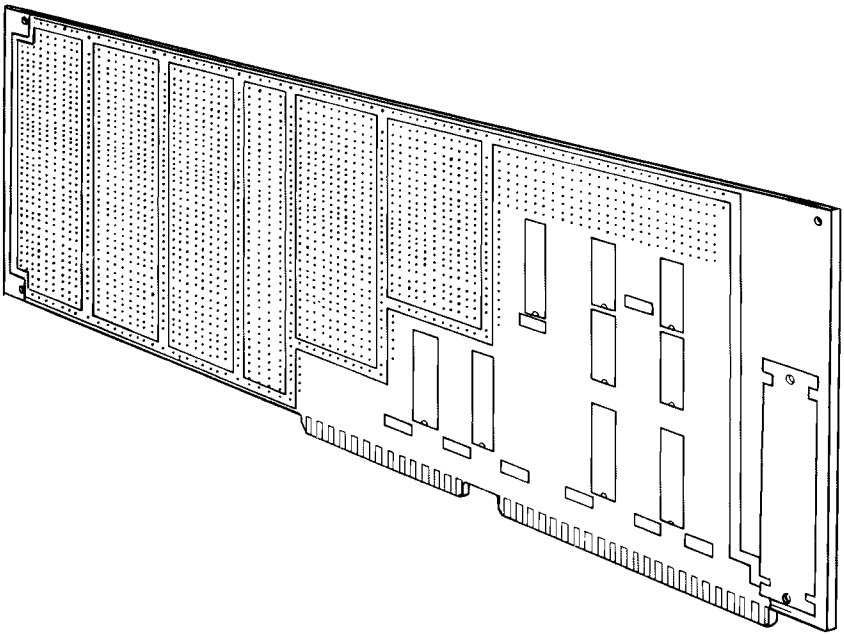
# Game Control Adapter





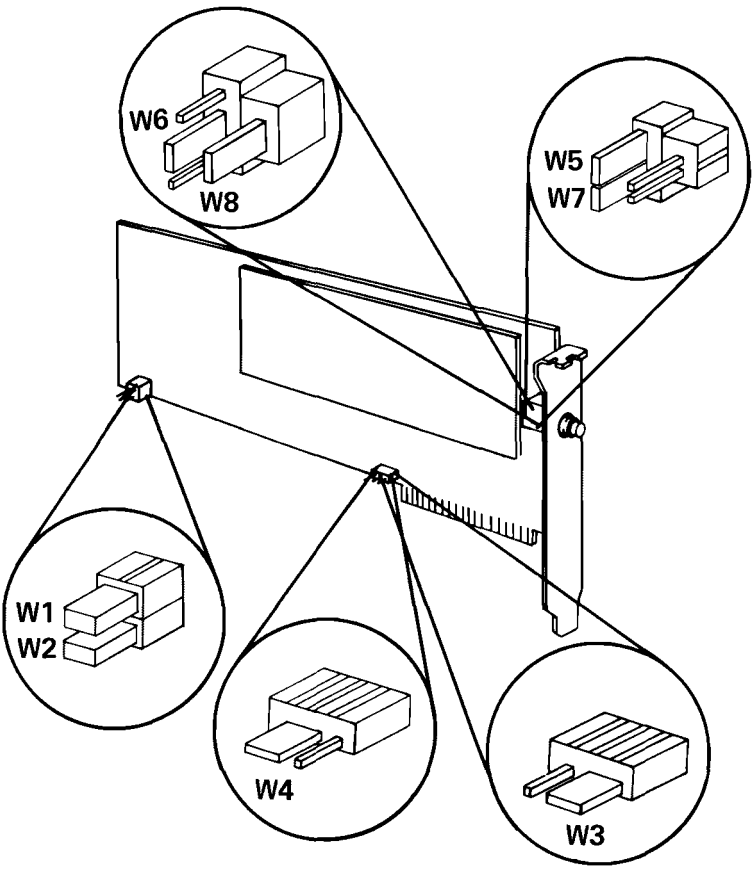
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# Prototype Adapter




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# PC Network Adapter

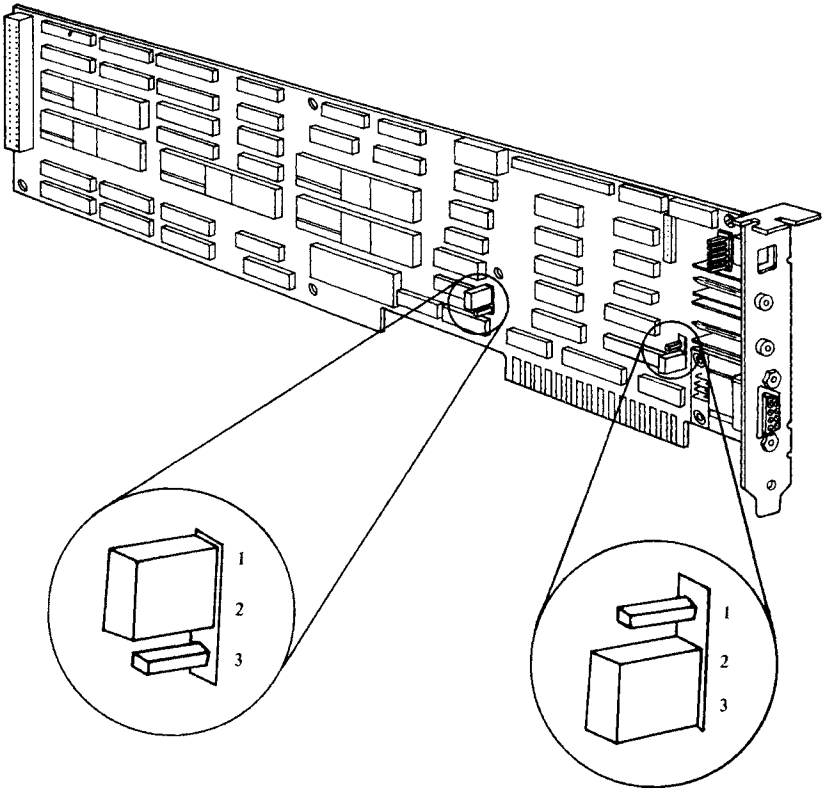




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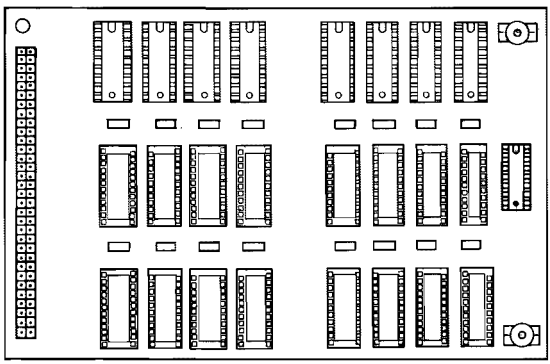
# Notes:


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**Enhanced Graphics Adapter**

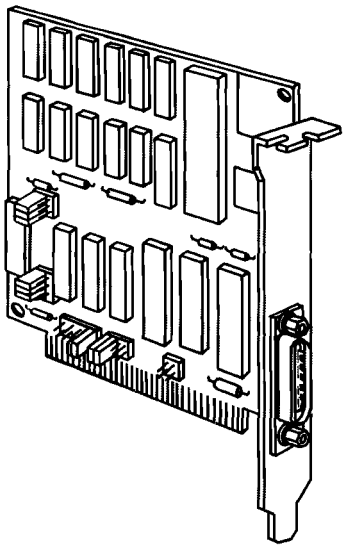

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**Graphics Memory Expansion Card**

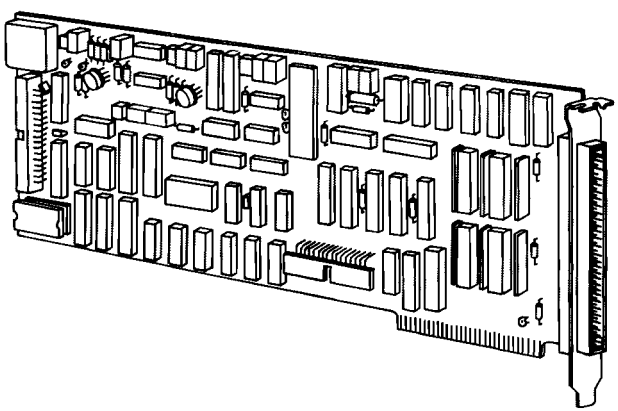

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## General Purpose Interface Bus Adapter



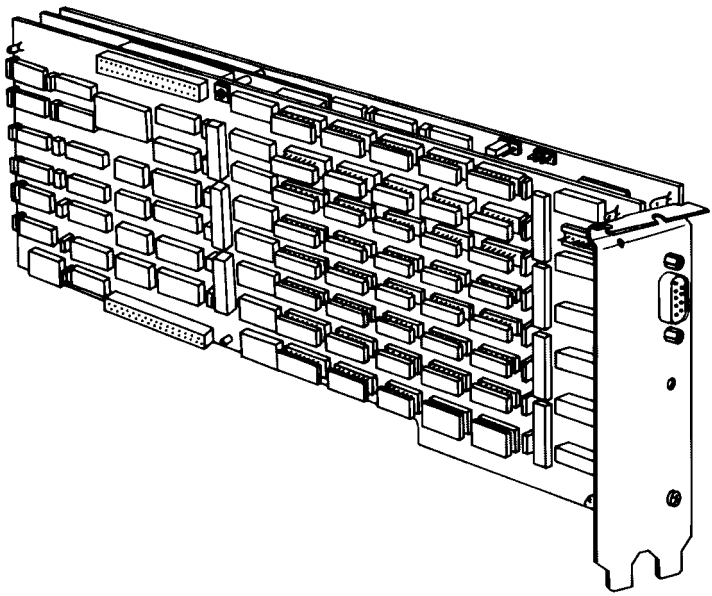
**Note:** See Section 6 for jumper information.

## Data Acquisition Adapter




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**Note:** See Section 6 for jumper information.

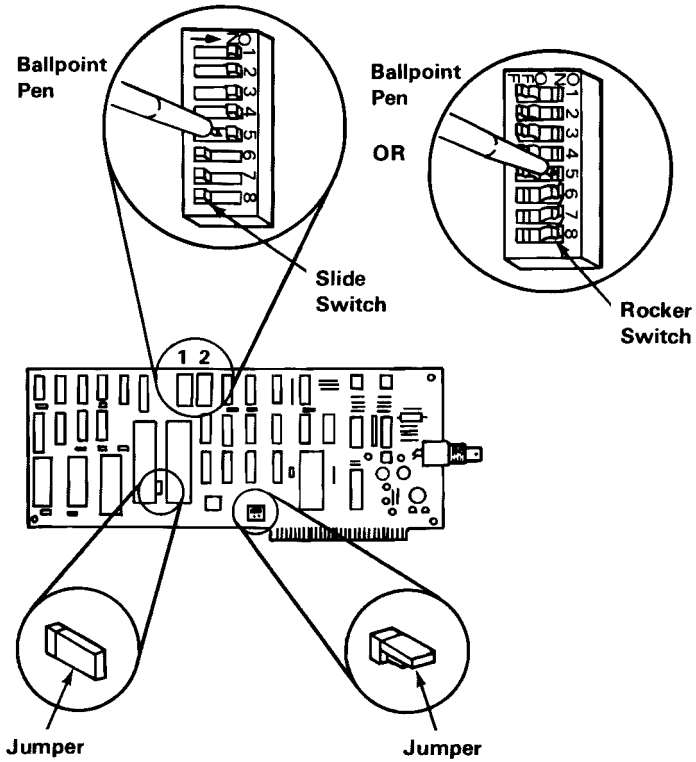


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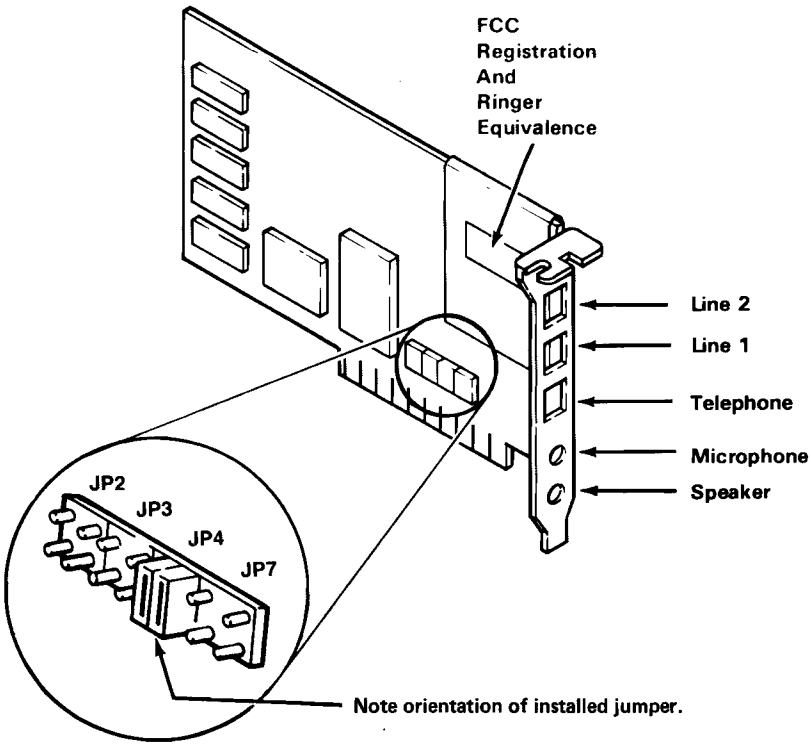
# Cluster Adapter




**Note:** Set a rocker switch by pressing the rocker down to the desired position.


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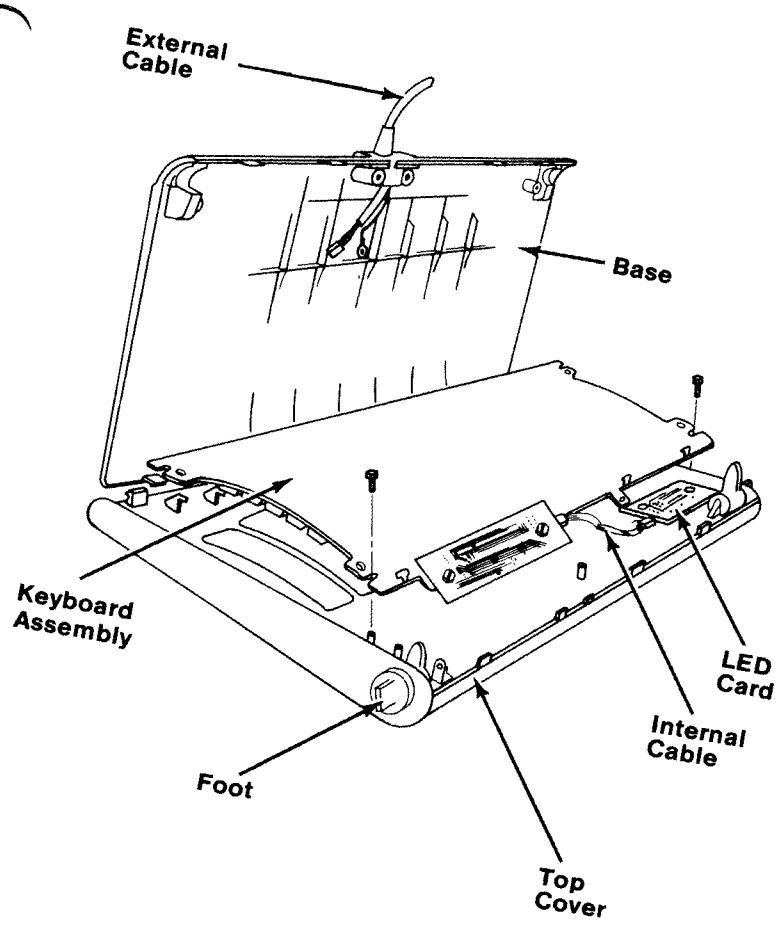
# Voice Communications Adapter




Jumper block is usually set at JP4. It must be installed at an interrupt level that does not conflict with other options.

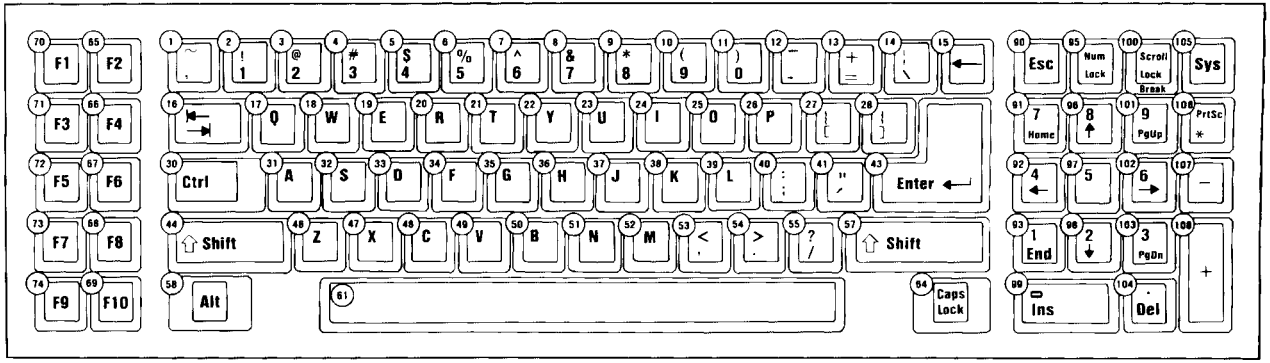

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# Keyboard



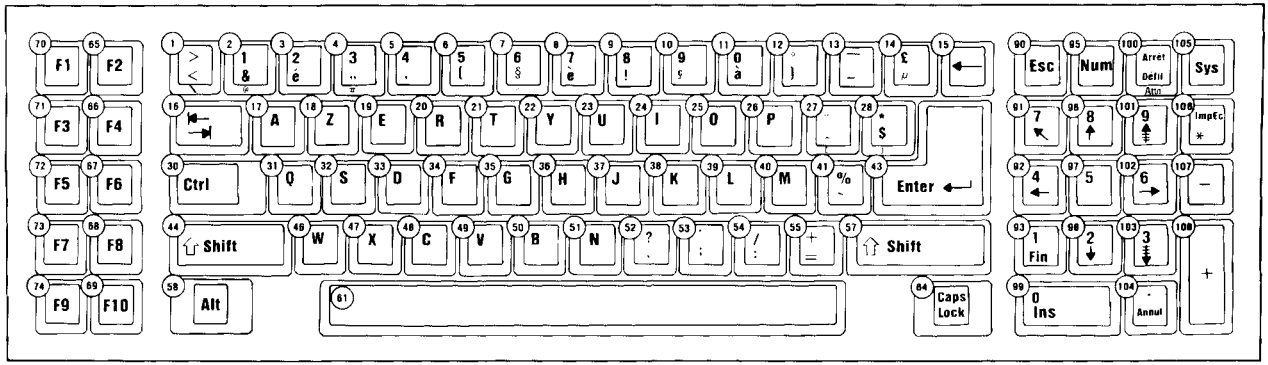



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**The Number to the Upper Left Designates the Key Position in the Parts Catalog (See Section 7)**

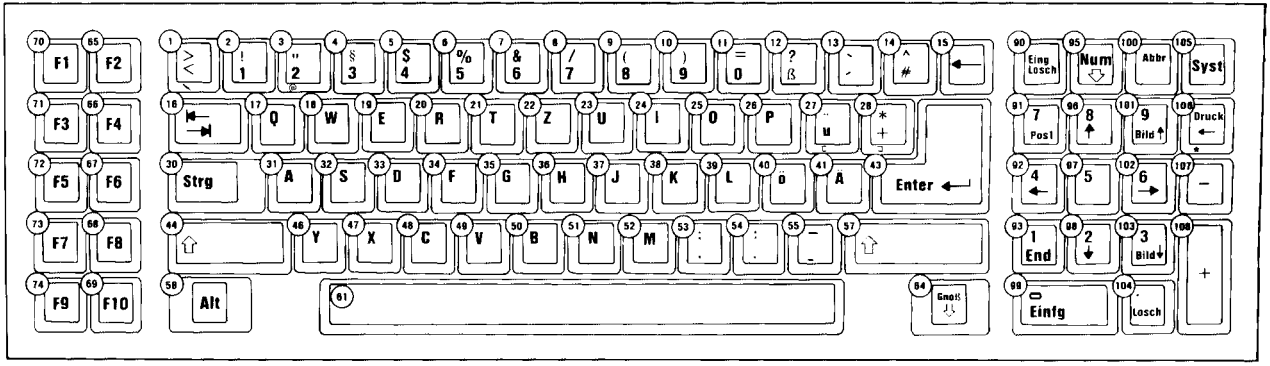
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**The Number to the Upper Left Designates the Key Position in the Parts Catalog (See Section 7)**

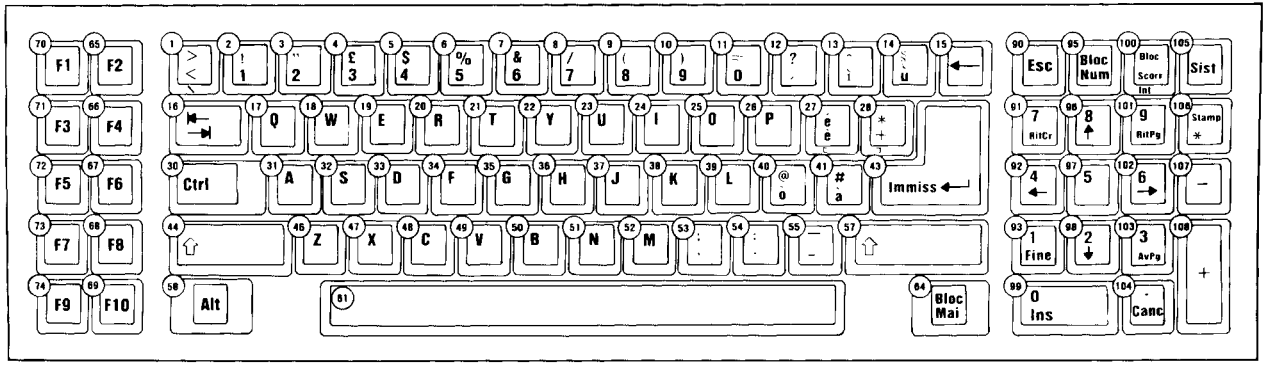


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**The Number to the Upper Left Designates the Key Position in the Parts Catalog (See Section 7)**

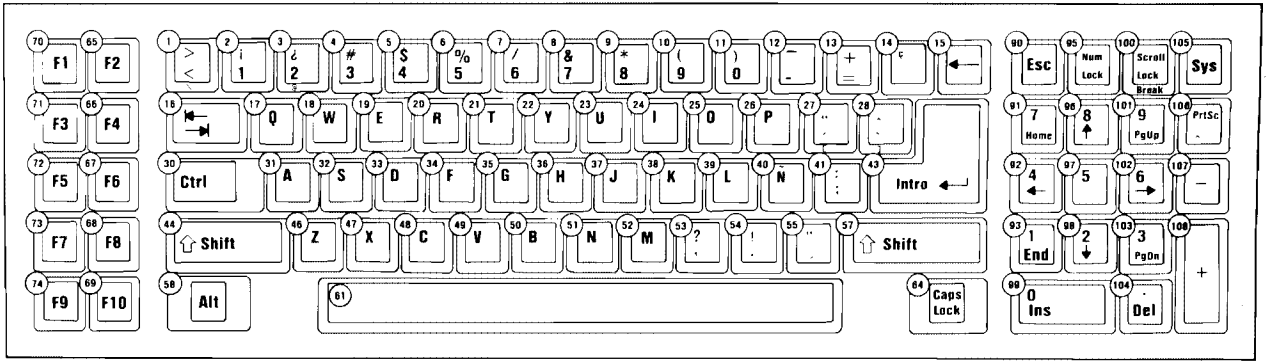
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**The Number to the Upper Left Designates the Key Position in the Parts Catalog (See Section 7)**

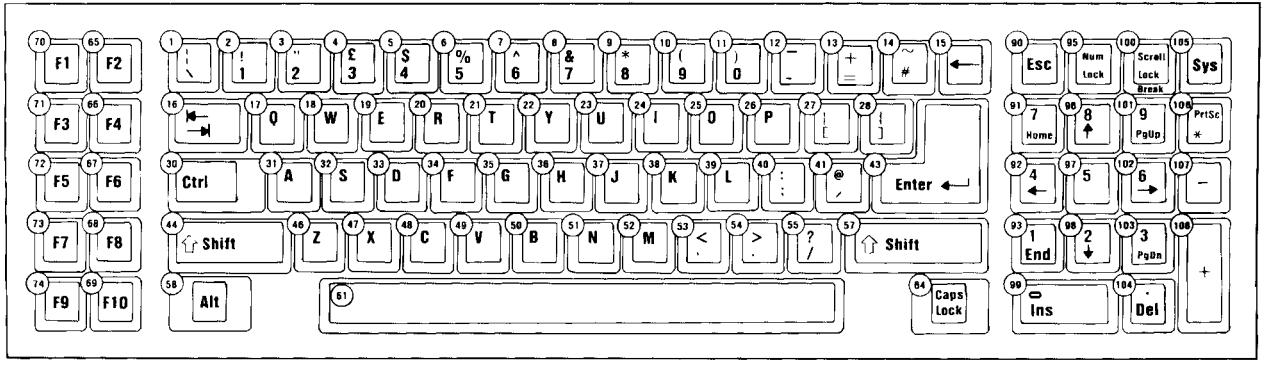


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**The Number to the Upper Left Designates the Key Position in the Parts Catalog (See Section 7)**

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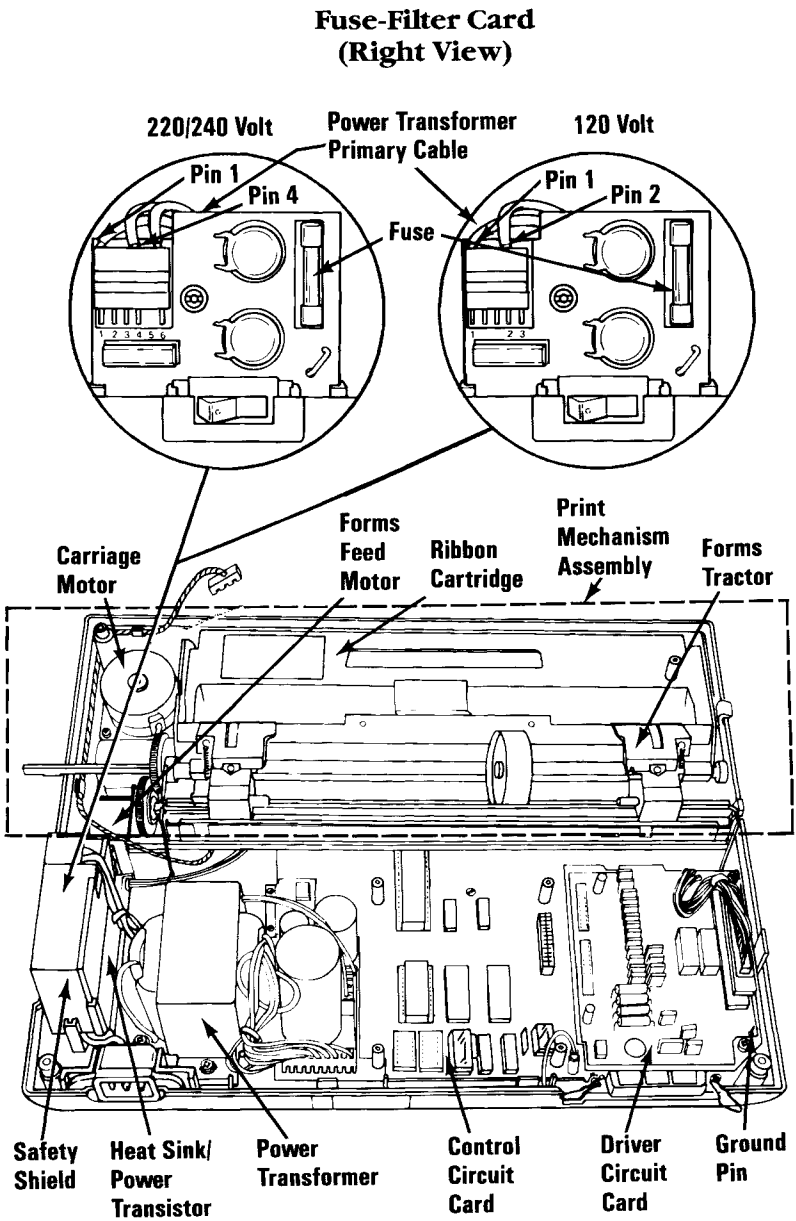



**The Number to the Upper Left Designates the Key Position in the Parts Catalog (See Section 7)**



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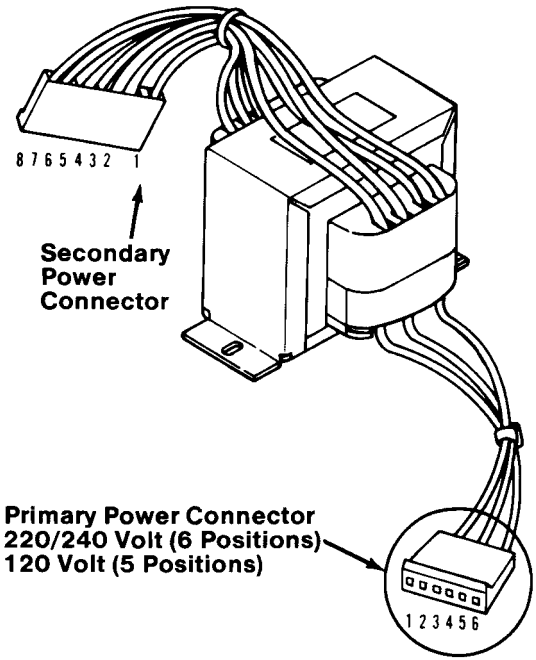
# Rear View






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# Power Transformer Connectors

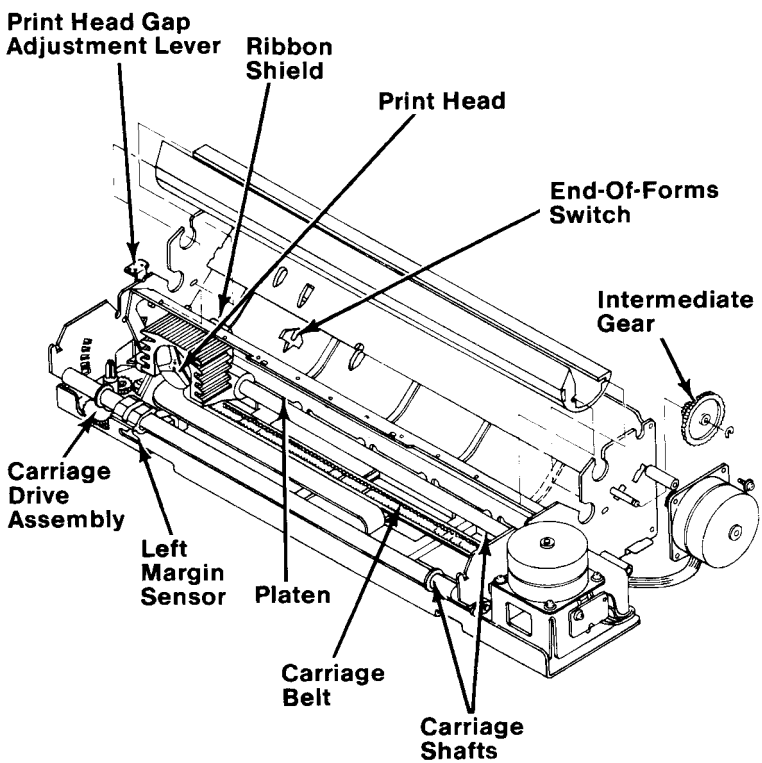



| Power Transformer Connector Wiring | | | | | |
|---|---|---|---|---|---|
| | Primary | | | Secondary | |
| Connector Pin #* | 120 Volt | 220 Volt | 240 Volt | Color | Voltage AC |
| 1 | White | White | White | Gray | 9 |
| 2 | Black | | | Gray | 9 |
| 3 | | | | Orange | 24.2 |
| 4 | | Brown | Orange | Orange | 24.2 |
| 5 | | | | Red | 9.6 |
| 6 | | Orange | Brown | Red | 9.6 |
| 7 | | | | Blue | 16.6 |
| 8 | | | | Blue | 16.6 |

*The connectors have no numbers on them. Use the numbers on the boards for "Connector Pin #." For 120 Volt Primary Connector, Pin #'s 1 and 2 correspond to actual connector positions 1 and 4.


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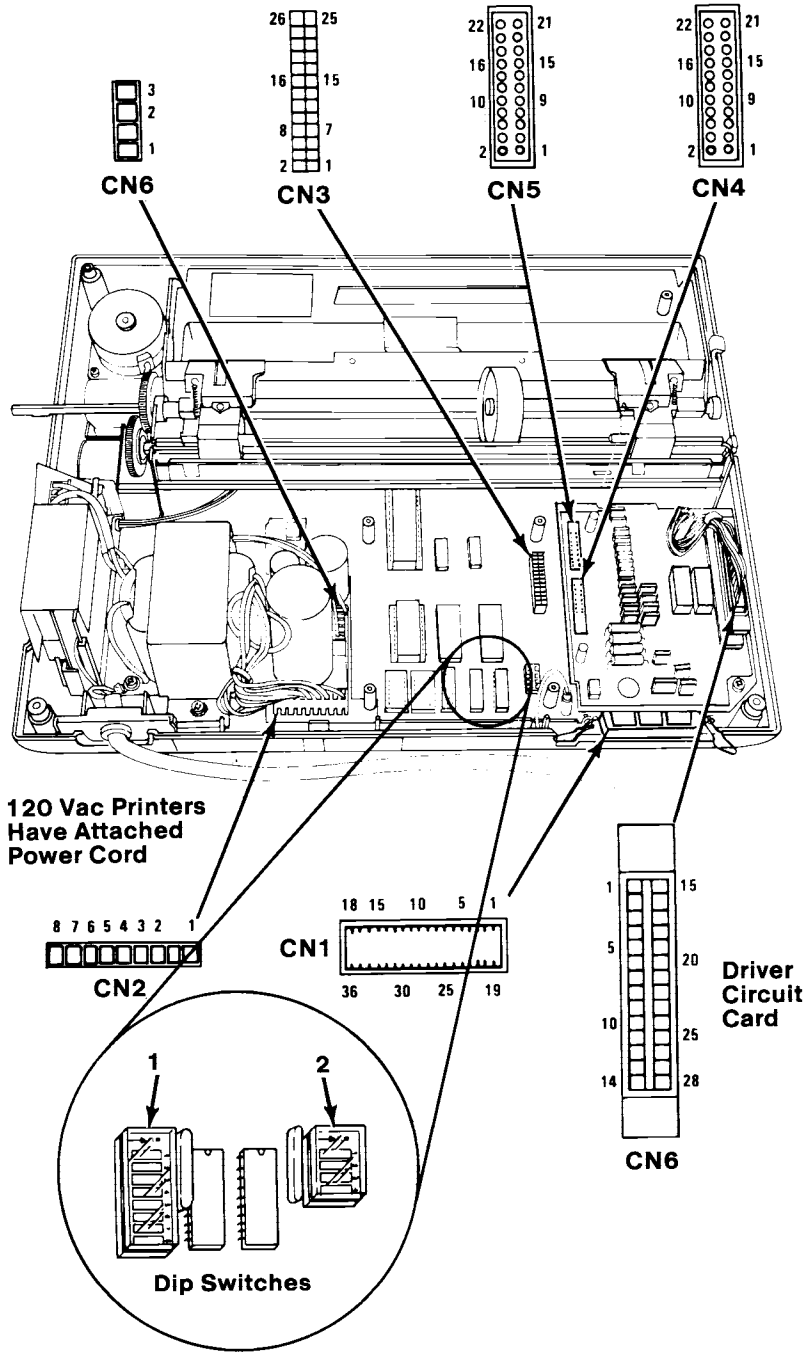
# Print Mechanism Assembly (Front View)





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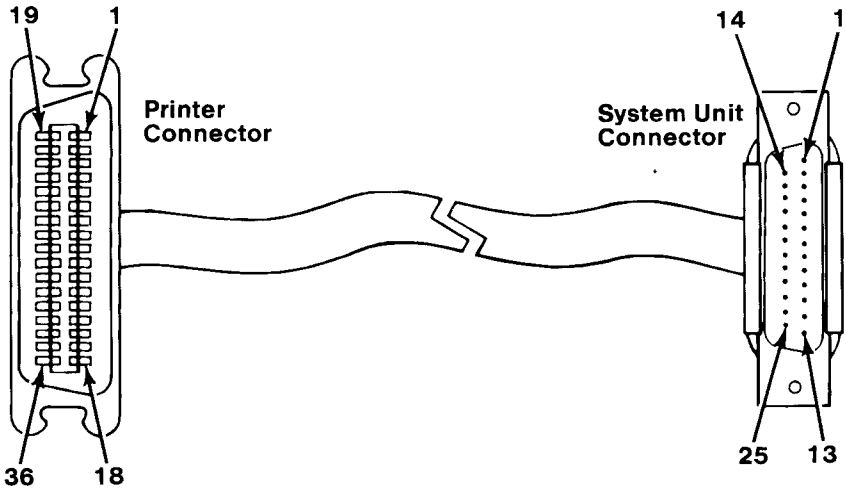
# Printer (Rear View)






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# Printer Signal Cable

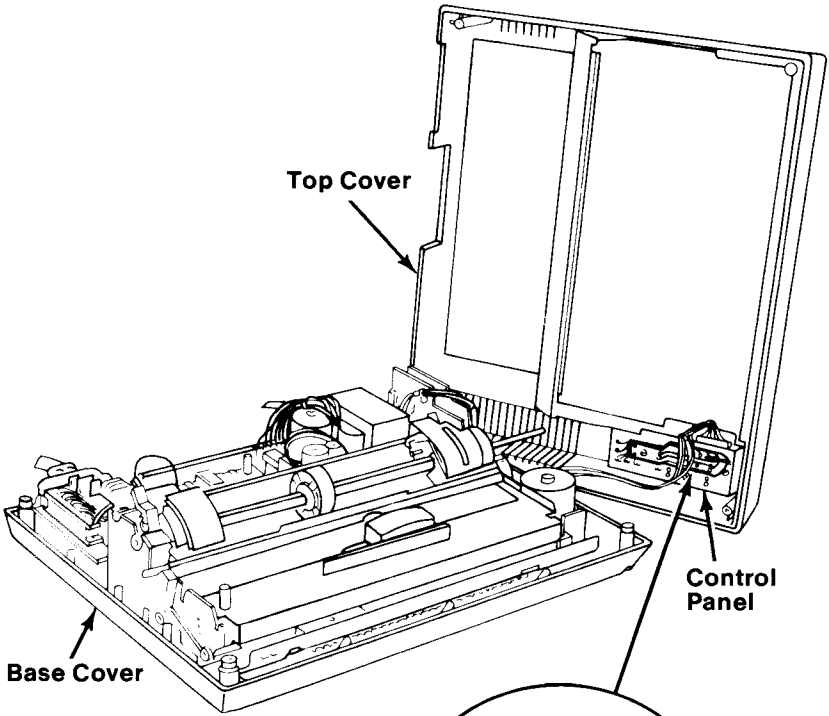


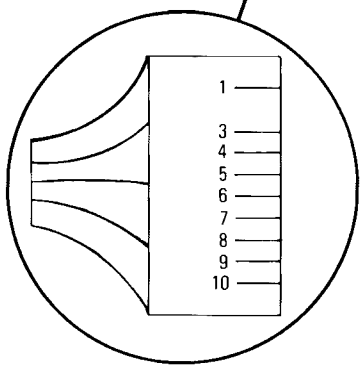

## Printer Signal Cable

| Printer Connector Pin Number | System Unit Connector Pin Number |
|---|---|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| 10 | 10 |
| 11 | 11 |
| 12 | 12 |
| 13 | 13 |
| 14 | 14 |
| 32 | 15 |
| 31 | 16 |
| 36 | 17 |
| 33 | 18 |
| 19 | 19 |
| 21 | 20 |
| 23 | 21 |
| 25 | 22 |
| 27 | 23 |
| 29 | 24 |
| 30 | 25 |


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# Printer (Top View)




Control Panel Connector

| Pin | Name |
|---|---|
| 1 | Online Light |
| 2 | Key |
| 3 | No Paper Light |
| 4 | Ready Light |
| 5 | Online Switch |
| 6 | Forms Feed |
| 7 | Line Feed |
| 8 | Ground |
| 9 | + 12 Vdc |
| 10 | Alarm |

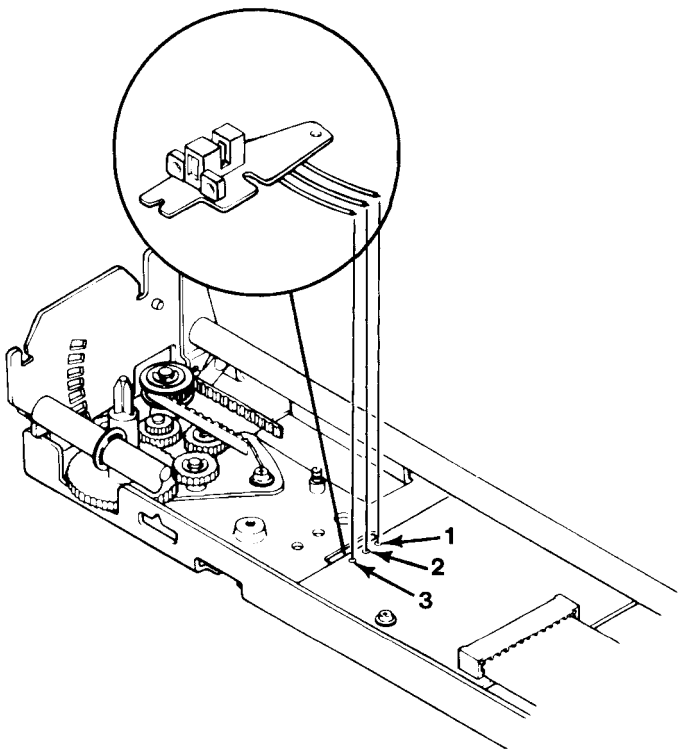


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# Print Head and Cable (Rear View)




# Left Margin Sensor (Front View)

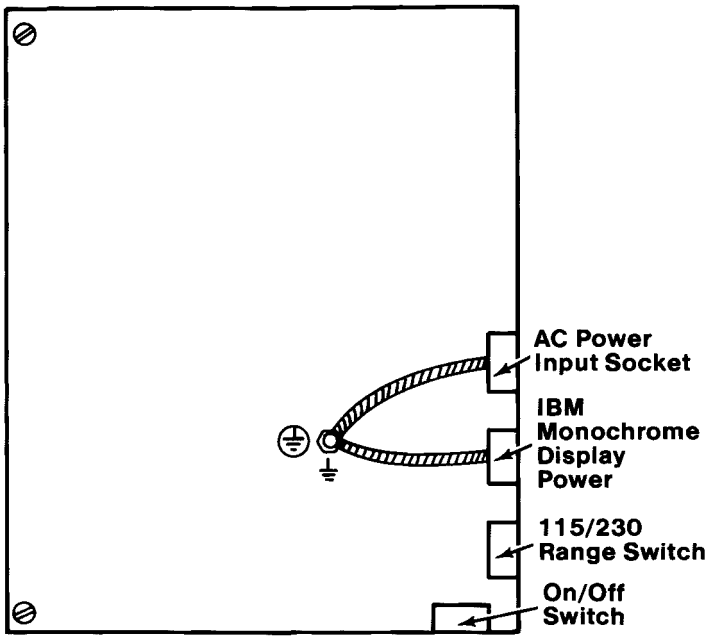


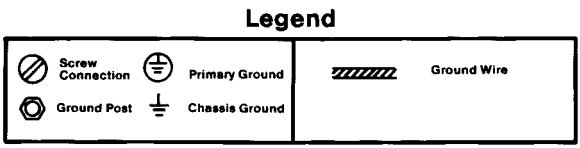


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# Safety Grounds

## System Unit Power Supply



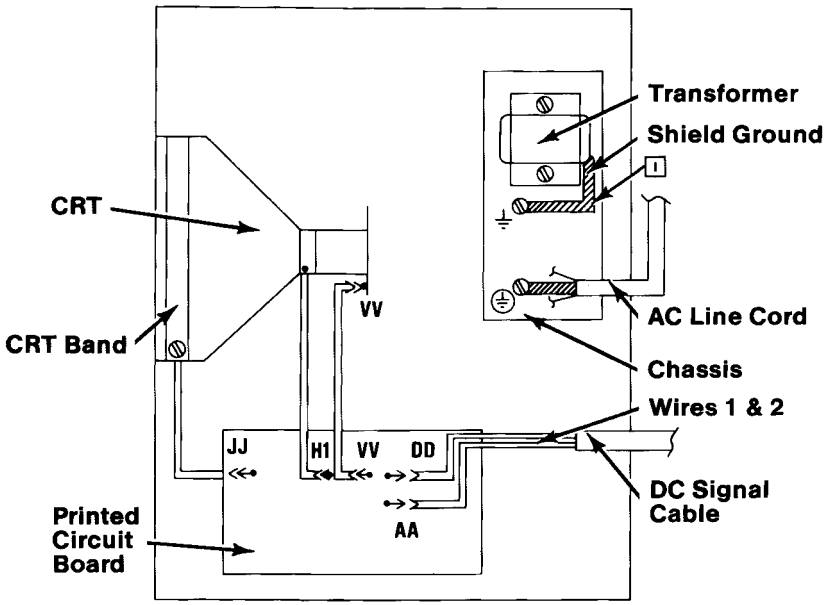





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# IBM Monochrome Display

**Note:** JJ, H1, VV, AA and DD joined printed circuit lands on board.




**IBM Monochrome Display**

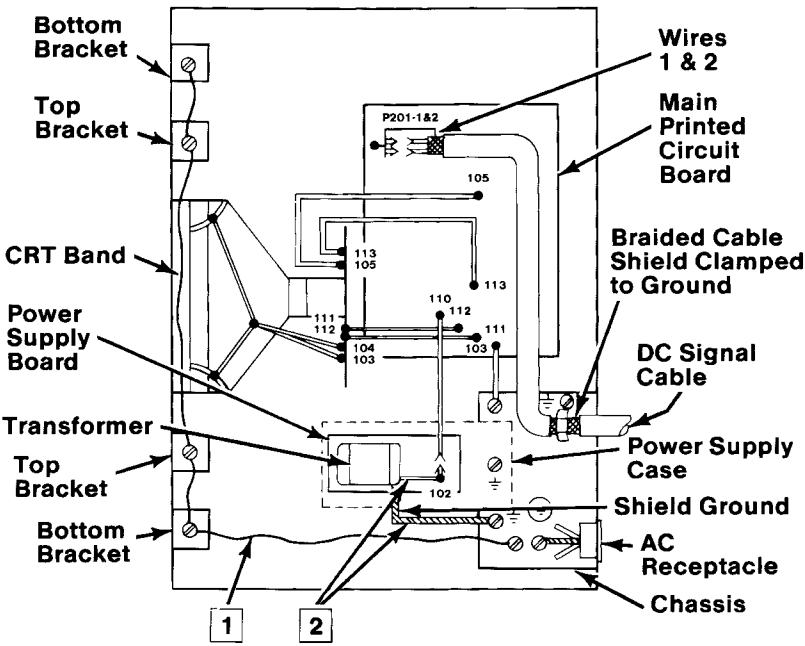
**Legend**

| | |
|---|---|
| Screw Connection | Ground Lead |
| Soldered Connection | Primary Ground |
| Plugged Connection | Chassis Ground |

1 This lead only present on 220/240 Vac machines.


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# IBM Color Display




IBM Color Display

**Legend**

| | |
|---|---|
| Screw Connection | Ground Lead |
| Soldered Connection | Primary Ground |
| Plugged Connection | Chassis Ground |

Note: Points 103, 105, 110, 111, 112, 113, and P201 1 & 2 on main board are joined by printed circuit lands.

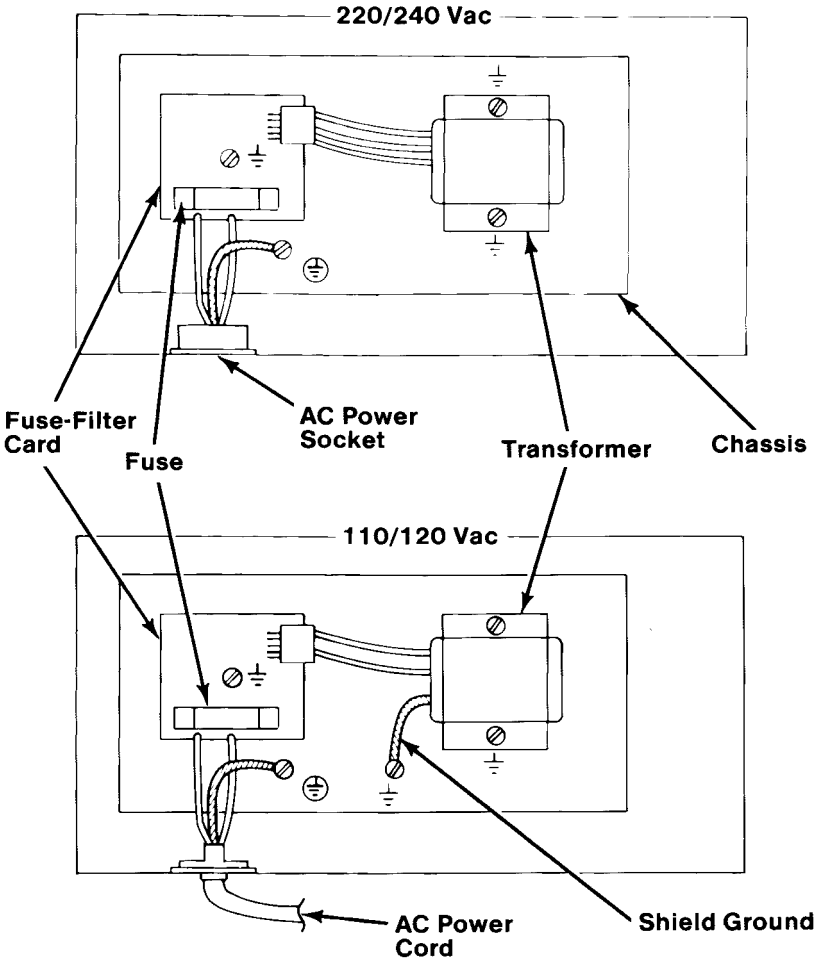
1 Note present on U.S. only displays

2 Present only on model-002 displays



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# IBM Graphics Printer



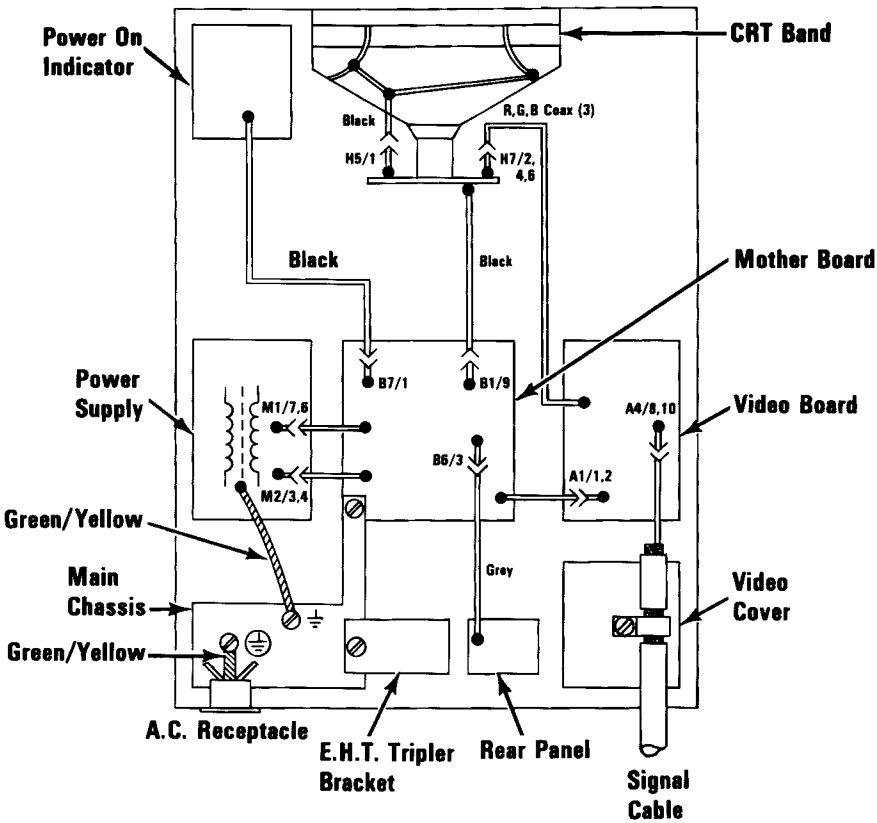

IBM 80 CPS Printer

Legend

| | |
|---|---|
| Screw Connection | Primary Ground |
| Ground Lead | Chassis Ground |


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# IBM Enhanced Color Display




# IBM Enhanced Color Display

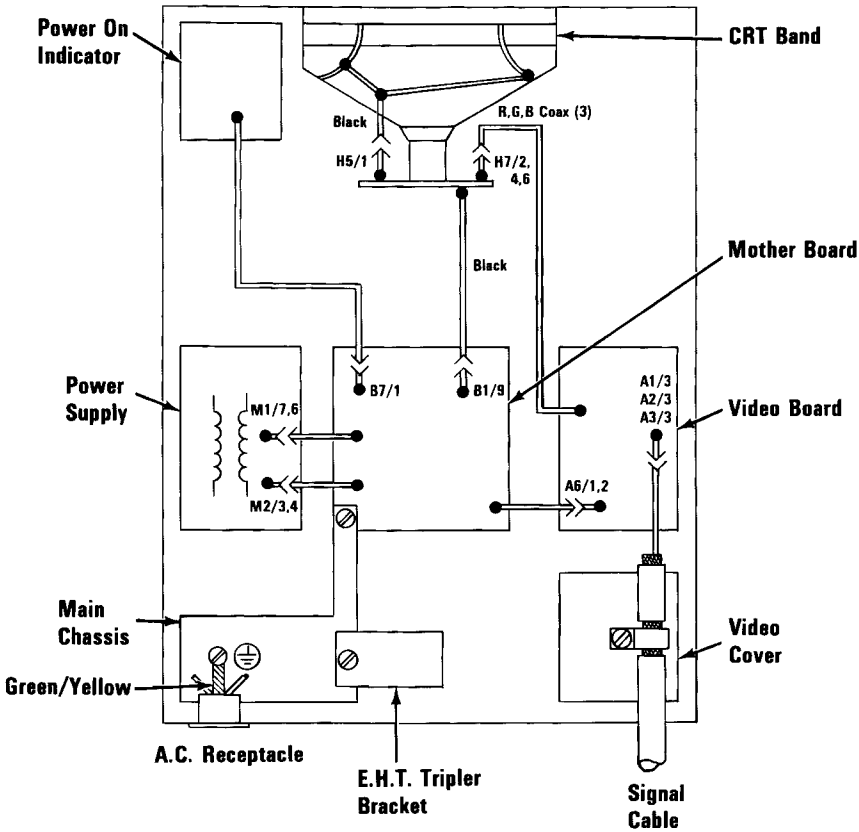
**Legend**

| | |
|---|---|
| Screw Connection | Ground Lead |
| Soldered Connection | Primary Ground |
| Plugged Connection | Chassis Ground |


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# IBM Professional Graphics Display




**Legend**

| | |
|---|---|
| Screw Connection | Ground Lead |
| Soldered Connection | Primary Ground |
| Plugged Connection | Chassis Ground |


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# SECTION 5. REMOVALS, REPLACEMENTS, AND ADJUSTMENTS

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Ribbon Shield Removal 5690 ..... 5-154
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# Introduction

This section describes the removal, replacement, and adjustment procedures for all field replaceable units (FRUs) in the IBM Personal Computer AT. Each procedure is assigned a reference number, which appears to the right of its title. If a step is described in another procedure, the reference number for that procedure is in parentheses at the end of the step. For example:

1. Set the system unit's Power switch to Off.

2. Remove the system unit's cover **(1005)**.

3. Disconnect the speaker connector.

4. Remove the speaker's mounting screw.

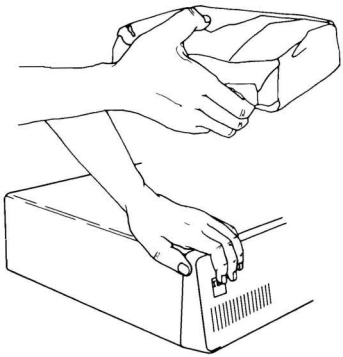
In the example, Step 2 has the reference number **1005**, which means the complete instructions for removing the system unit's cover are in procedure **1005**. The steps after Step 2 are based on the assumption that you followed the specified procedure.



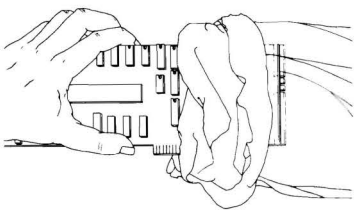
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# Handling Static-Sensitive Devices

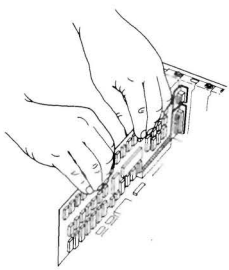
Some of the components that make up the options for your IBM Personal Computer AT can be damaged by electrostatic discharges. To prevent this damage, the options are wrapped in a conductive, anti-static bag; certain precautions must be taken before removing an option from its bag:



Hold the option (still wrapped in its anti-static bag) in one hand and touch a metal part of your system unit with the other hand. This will place your body, the option, and the system unit at the same ground potential, thus preventing an accidental static discharge.



Carefully remove the option from its anti-static bag. Be sure to grasp circuit boards by the edges only; do not touch the component pins or solder joints. Grasp diskette drives by their frames to avoid touching the electronics board. Grasp chips by their narrow ends only, not by their pins.



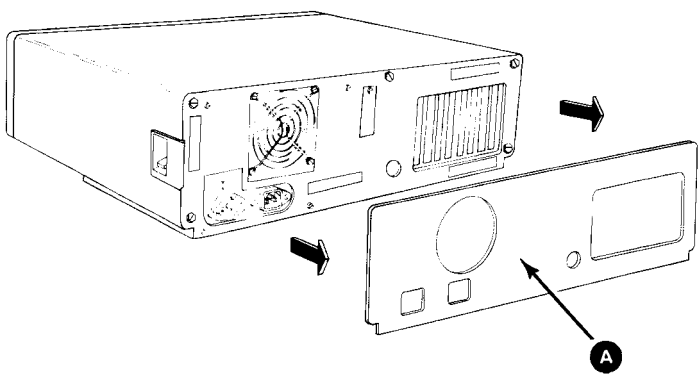
When inserting an option adapter into the system board hold the adapter by its top edge or upper corners.



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## Cover Removal 1005

1. Set the system unit's Power switch to Off.
2. Unplug the power cord from the outlet.
3. Set the Power switch on all external devices to Off (printer, TV, etc.).
4. Disconnect all cables from the system unit.
5. Move all external options away from the system unit.
6. Turn the key to the unlocked position and remove it.
7. Turn the system unit around, as shown.
8. Remove the back panel (A) from the rear of the system unit. The back panel is attached to the system unit by plastic fastener strips.

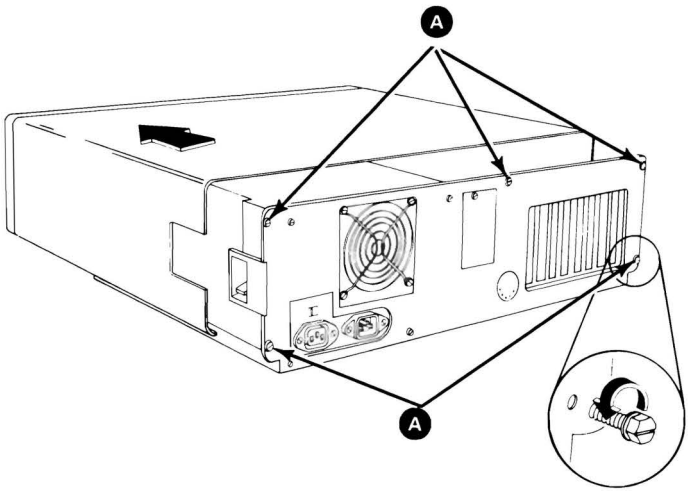




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9. Remove the five cover mounting screws (A) .

10. Slide the cover away from the rear panel until it is clear of the system unit.

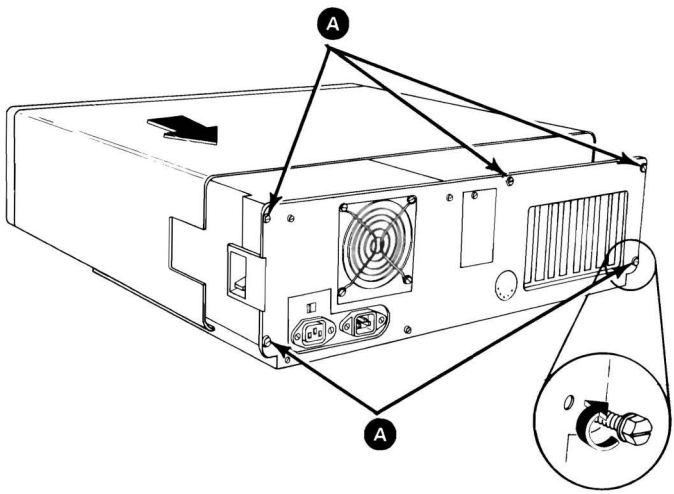




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# Cover Replacement 1006

1. Slide the cover toward the rear of the system unit.
2. Align the screws (A) with the threaded tabs and tighten.
3. Attach the back panel to the rear of the system unit.
4. Connect the cables to the system unit.



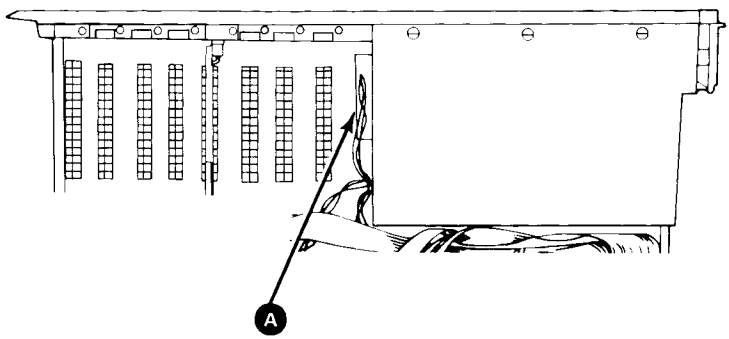


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# Power Supply Removal 1010

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Unplug the power cord from the power supply.
4. Disconnect the system board's power cables by pulling the connectors (A) straight up.

   **Warning:** Do not pull on the wires when disconnecting connectors.





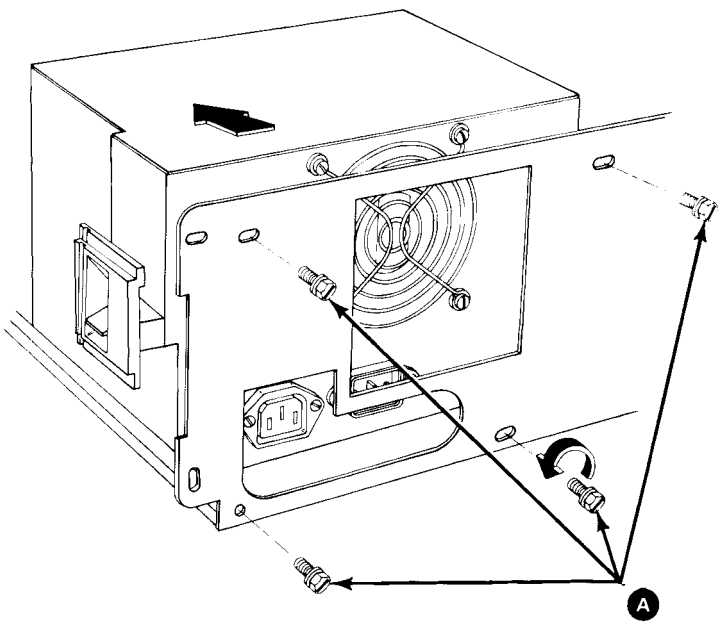
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5. Disconnect the power cables from the fixed disk drive **(5016)** and diskette drive **(4005)**.

   **Note:** If no fixed disk drive is installed in your system unit disconnect the power cable from the power supply load resistor **(1012)**.

6. Remove the power supply's mounting screws (A) .

7. Slide the power supply 13 mm (1/2 inch) to the front, then lift and remove.

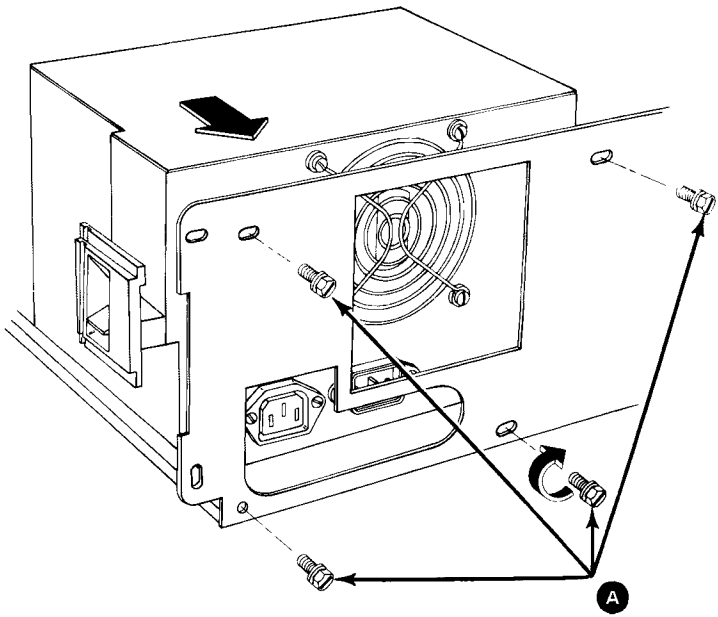




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# Power Supply Replacement 1011

1. Lower the power supply into the system unit.
2. Slide the power supply to the front of the system unit, then to the rear, to engage the lock-down tabs.
3. Install the power supply's mounting screws (A) .





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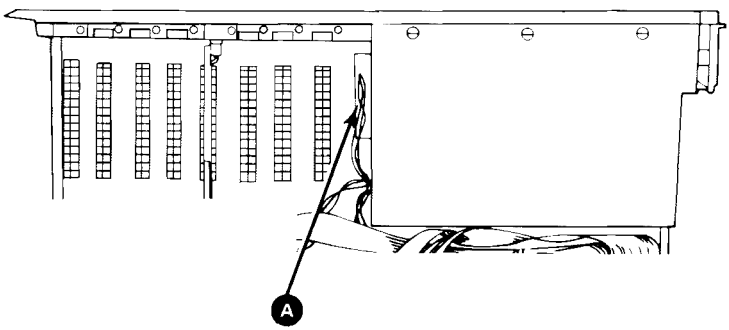
4. Connect the power cables to the fixed disk drive **(5017)** and diskette drive **(4006)**.

   **Note:** If no fixed disk drive is installed in your system connect the power cable to the power supply load resistor **(1013)**.

5. Connect the system board's power cables (A) .

6. Install the system unit's cover **(1006)**.

7. Plug the power cord into the power supply.



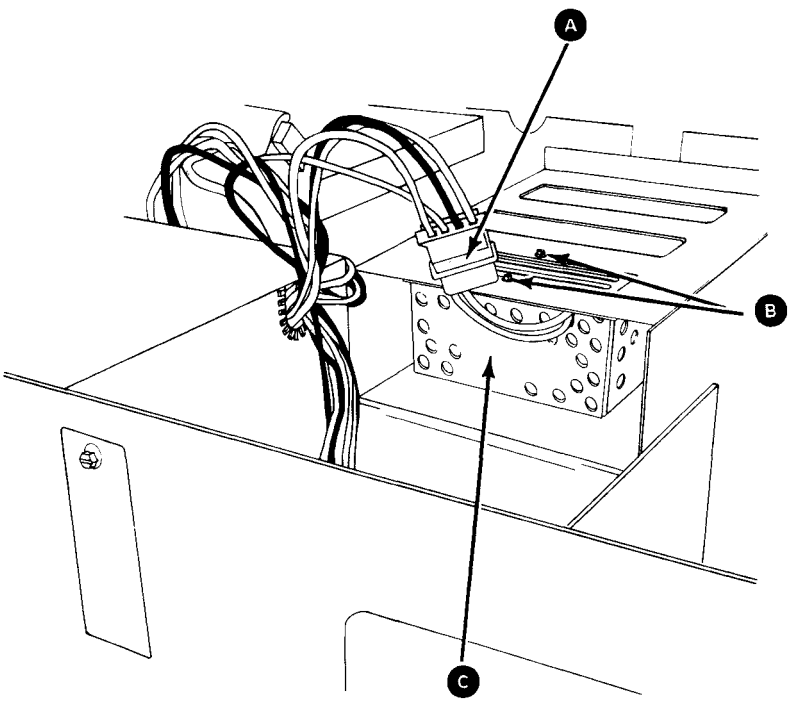


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# Power Supply Load Resistor Removal 1012

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Disconnect the power supply's cable from the load resistor (A) .

   **Warning:** Do not pull on the wires when disconnecting connectors.
4. Remove the load resistor's mounting screws (B) .
5. Remove the power supply load resistor (C) .

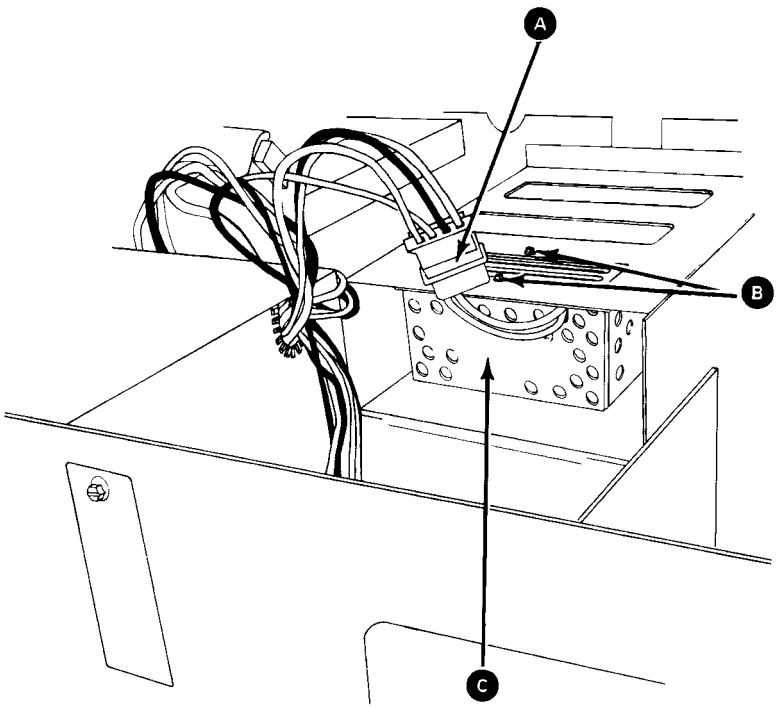




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# Power Supply Load Resistor Replacement 1013

1. Hold the load resistor (C) in place and install the mounting screws (B) .
2. Connect the power supply's cable to the load resistor (A) .
3. Install the system unit's cover **(1006)**.

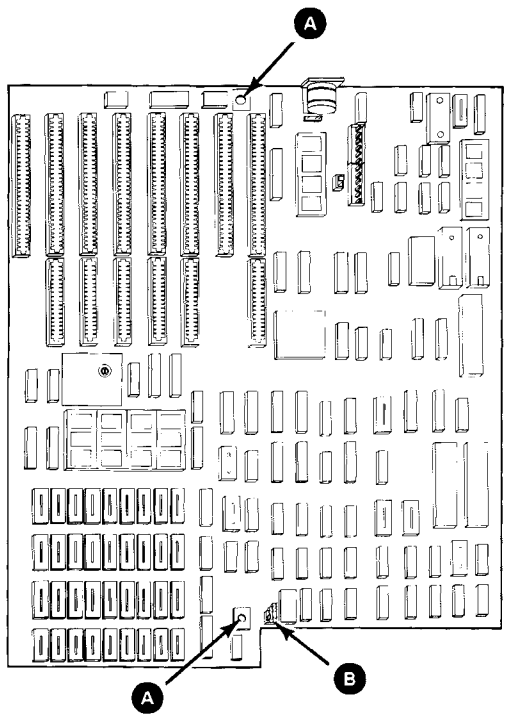





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# System Board Removal 1015

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Make a note of the adapter slot each option adapter is in.
4. Remove all option adapters **(5005)**.
5. Remove the Fixed Disk and Diskette Drive Adapter **(5010)**.
6. Disconnect the system board's power cables **(1010)**.
7. Disconnect the battery cable **(1030)**.
8. Disconnect the control panel cables from the system board (B) .
9. Remove the system board's mounting screws (A) .

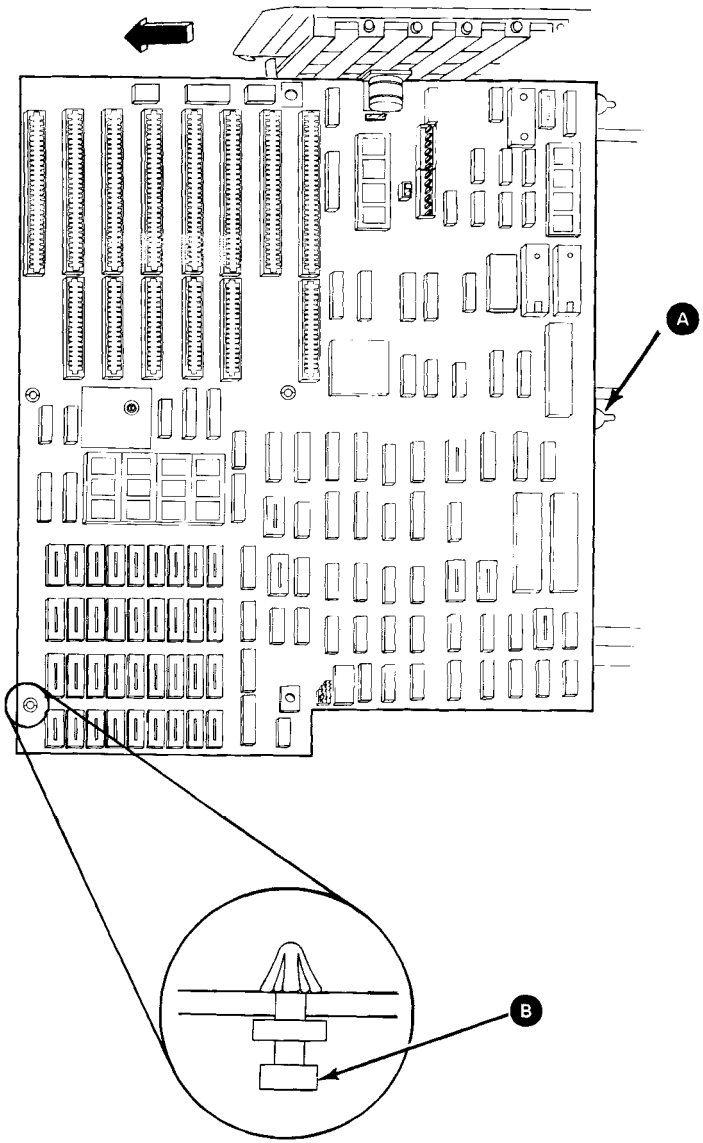




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10. Slide the system board away from the power supply until the standoffs (B) can be lifted from the mounting slots (A)

11. Lift the system board up and out the side of the system unit.




**(Side View)**

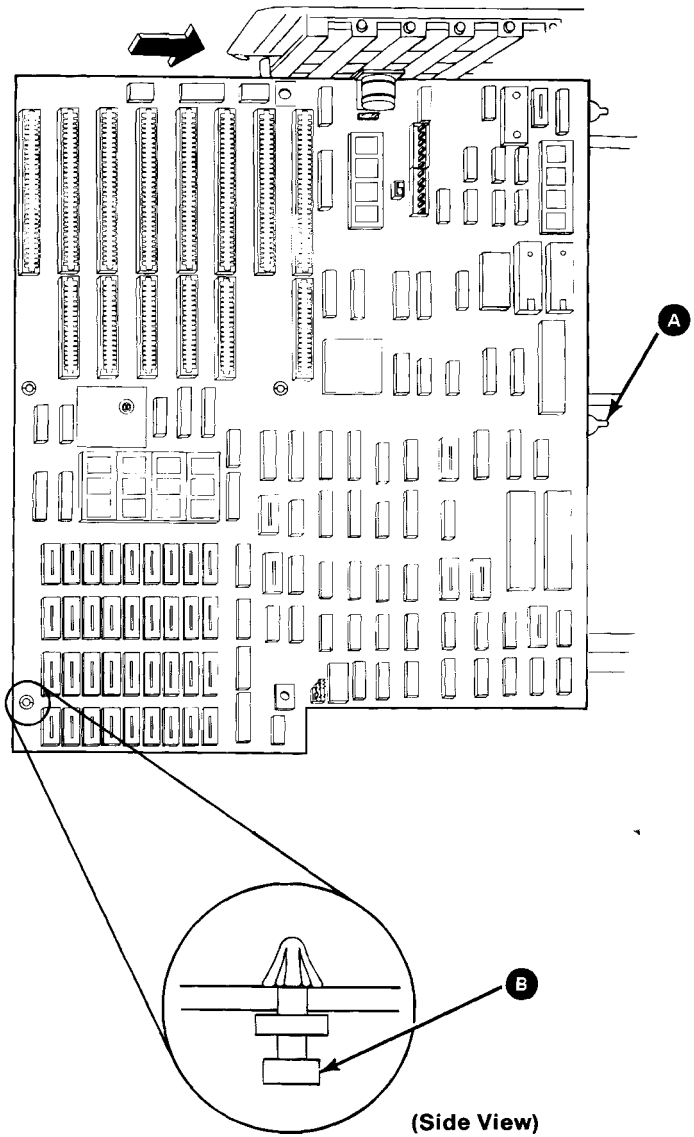


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# System Board Replacement 1016

1. Slide the system board toward the power supply until the standoffs (B) line up with their mounting slots (A) .

2. Lower the system board until the standoffs (B) fit into their mounting slots (A) .





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3. Slide the system board toward the power supply until the mounting screws (A) line up with their holes.

4. Install the system board's mounting screws (A).

5. Connect the control panel cables to the system board (B).

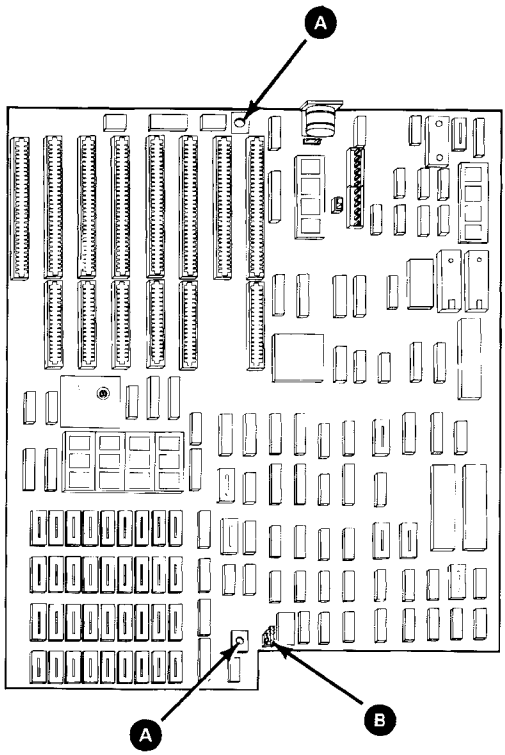
6. Install the option adapters **(5006)**.

7. Install the Fixed Disk and Diskette Drive Adapter **(5011)**.

8. Connect the system board's power cables **(1011)**.

9. Connect the battery cable **(1031)**.

10. Install the system unit's cover **(1006)**.



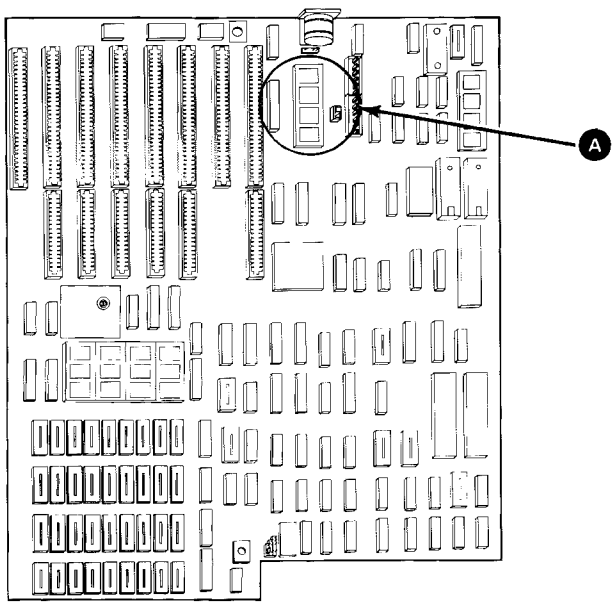


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# Math Coprocessor Removal 1017

**Warning:** The pins on the coprocessor are easily bent. Be careful not to bend the pins when removing the coprocessor. The coprocessor is static sensitive. Maintain personal grounding by touching the system unit frame with one hand while removing the coprocessor.

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Unplug the power supply connectors **(1010)** from the system board and position them out of the way.
4. Find the Math Coprocessor (A) on the system board in the following figure.

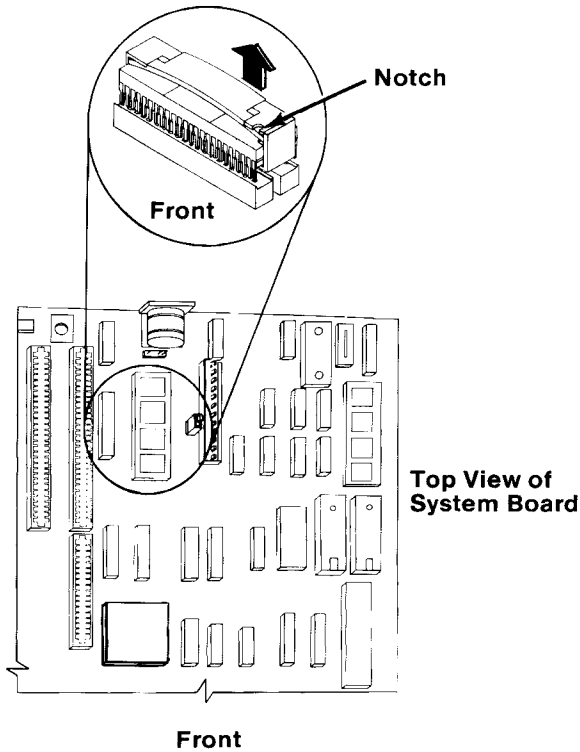



Front


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5. Using a module puller, carefully remove the coprocessor.

6. Remove the safety protector.



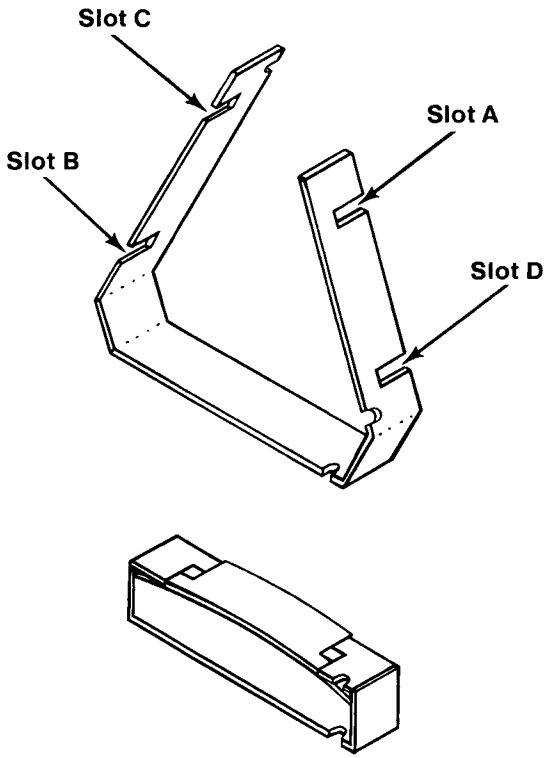


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# Math Coprocessor Replacement 1018

1. Install the safety protector on the coprocessor. Make sure the notches in the safety protector are on the same end as the notch in the coprocessor. The overlapped portions of the safety protector should be on the top of the coprocessor.

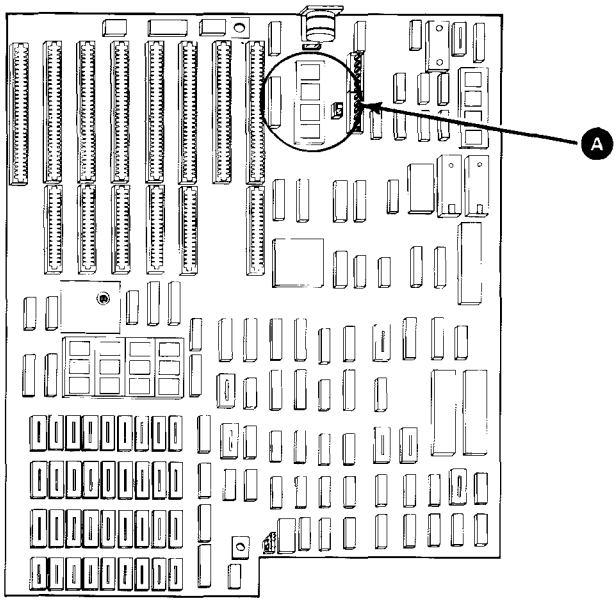
2. Assemble the safety protector as shown by inserting slot A into slot B, and slot C into slot D.





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3. Find the Math Coprocessor connector (A) on the system board in the following figure.




**Front**

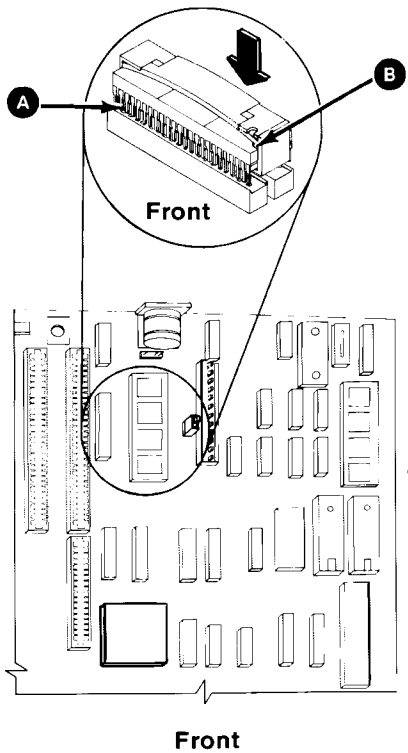


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4. Carefully align the pins (A) on the coprocessor with its connector and firmly press the coprocessor into place. Be sure the notch (B) on the coprocessor lines up with the notch on its connector.

5. Reconnect the power supply connectors **(1011)** to the system board.

6. Replace the system unit's cover **(1006)**.

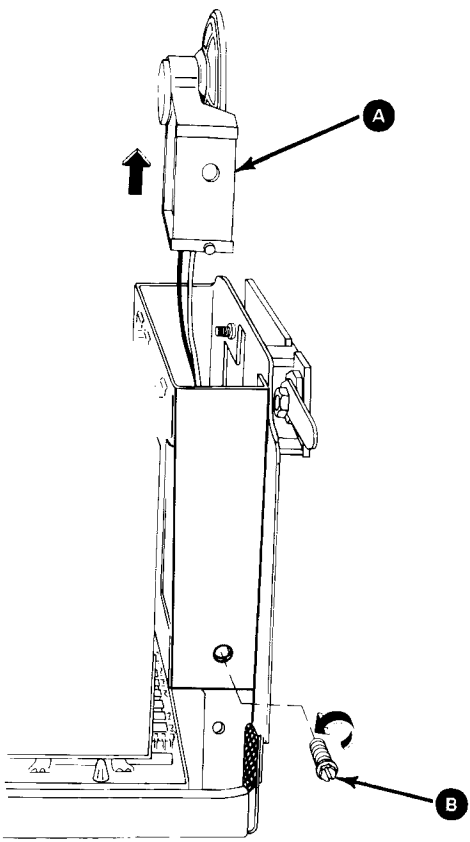




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# Speaker Removal 1020

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Remove the Fixed Disk and Diskette Drive Adapter **(5010)**.
4. If required, remove the option adapters **(5005)** to gain access to the speaker cable .
5. Disconnect the speaker cable .
6. Remove the speaker's mounting screw (B) .
7. Remove the speaker (A) .

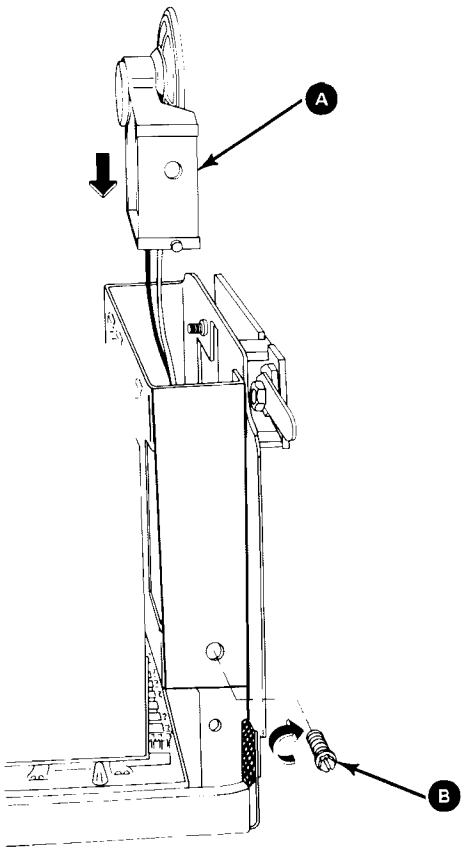





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# Speaker Replacement 1021

1. Hold the speaker (A) in place and install the mounting screw (B).
2. Connect the speaker cable.
3. Install the Fixed Disk and Diskette Drive Adapter **(5011)**.
4. Install any of the option adapters that were removed **(5006)**.
5. Install the system unit's cover **(1006)**.





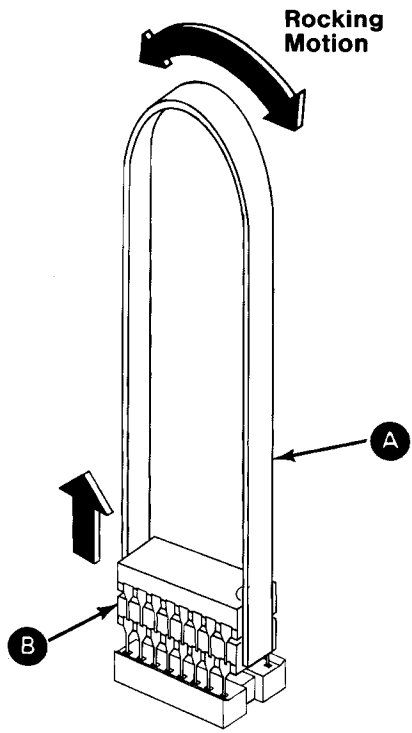
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# System Board Memory Module Removal 1025

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover (**1005**).
3. Remove the option adapters (**5005**).
4. Remove the Fixed Disk and Diskette Drive Adapter (**5010**).
5. Find the failing module (see Section 3).

   **Note:** Depending on the location of the failing module, you may have to remove the system board (**1015**).

6. Grasp the module (B) with the module puller (A) and gently lift one end and then the other, to avoid bending the pins.

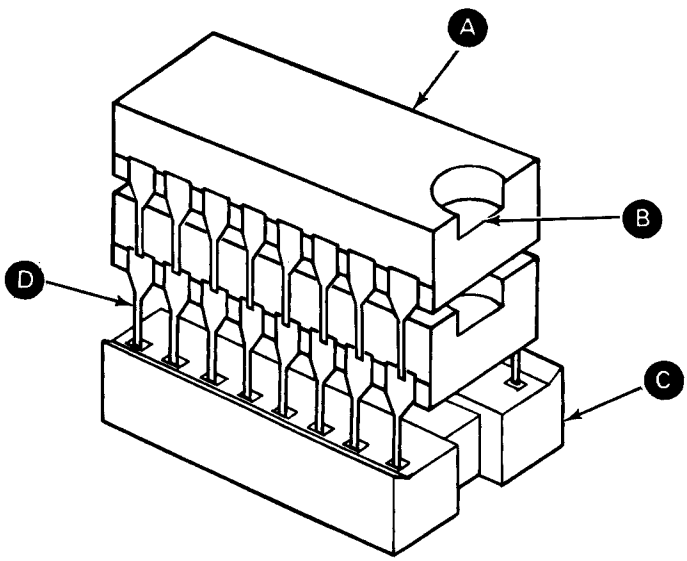




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# System Board Memory Module Replacement 1026

1. Line up the module (A) so the notch (B) faces the same direction as those on other modules.
2. Line up the module pins (D) with the sockets on the connector (C).
3. Gently press the module onto the connector.
4. If the system board was removed, reinstall it (**1016**).
5. Install the option adapters (**5006**).
6. Install the Fixed Disk and Diskette Drive Adapter (**5011**).
7. Install the system unit's cover (**1006**).





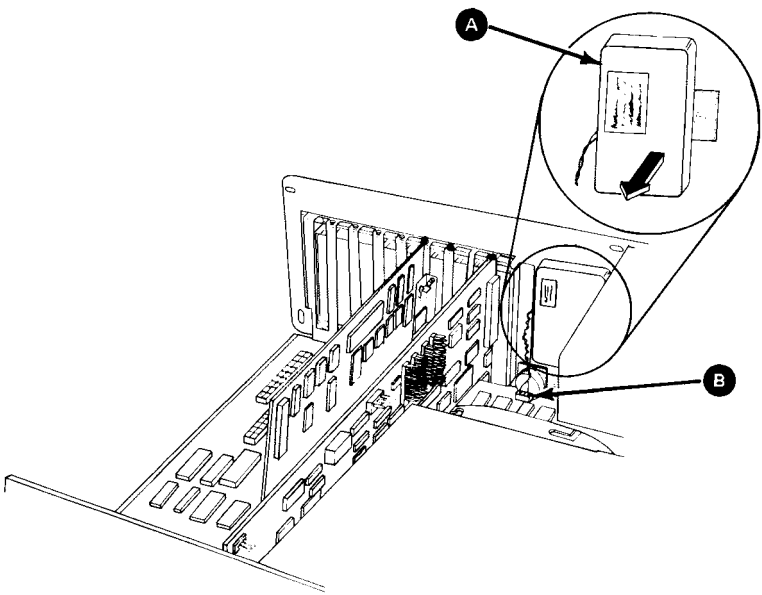
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# Battery Removal 1030

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Disconnect the battery cable (B) from the system board.
4. The battery is attached to the back panel by a plastic fastener strip. Gently pull the battery (A) loose, and out of your system unit.

   **Note:** Early models of the battery may have two screws to attach it to the system unit. Remove these screws; they are no longer needed.

**CAUTION**
Fire, explosion, and severe burn hazard may be caused by the battery. **DO NOT** recharge, disassemble, heat above 212° F, solder directly to the cell, incinerate, or expose battery cell contents to water.



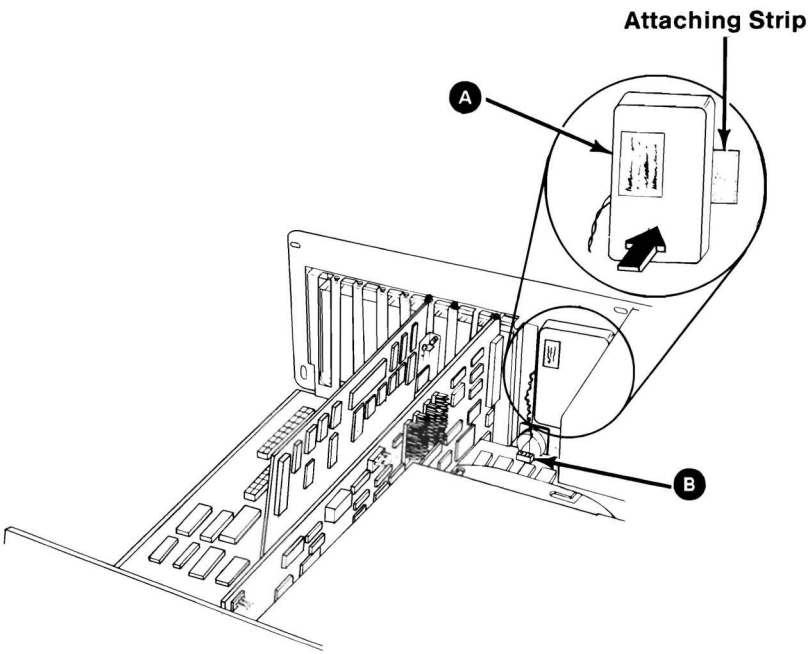


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# Battery Replacement 1031

1. Align the battery attaching strip with it's mounting position and press the battery (A) to secure it.
2. Connect the battery cable (B) to the system board.
3. Install the system unit's cover **(1006)**.
4. Go to Section 6 and do the "Setup" program.

**CAUTION**
Fire, explosion, and severe burn hazard may be caused by the battery. **DO NOT** recharge, disassemble, heat above 212° F, solder directly to the cell, incinerate, or expose battery cell contents to water.

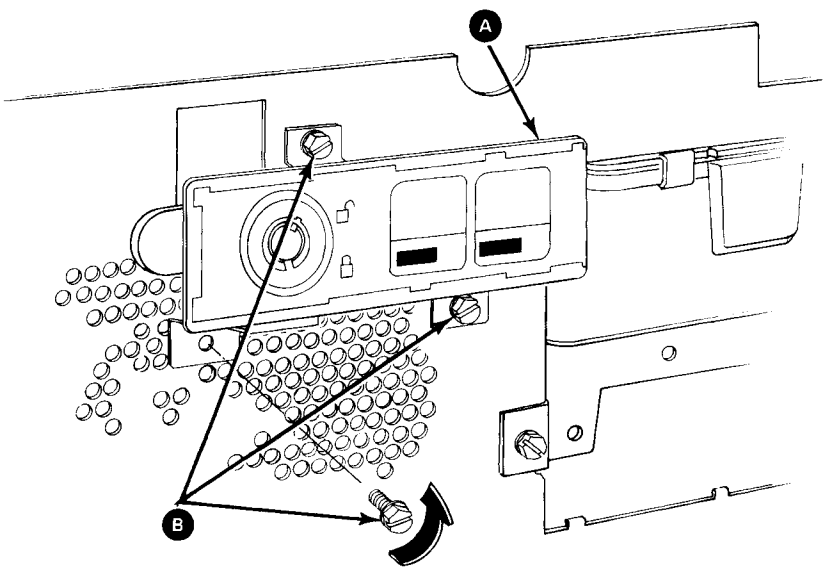




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# Control Panel Removal 1035

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Remove the Fixed Disk and Diskette Drive Adapter **(5010)**.
4. If required, remove the option adapters **(5005)** to gain access to the control panel cables.
5. Disconnect the control panel cables from the system board.
6. Remove the mounting screws (B) and the control panel (A) .

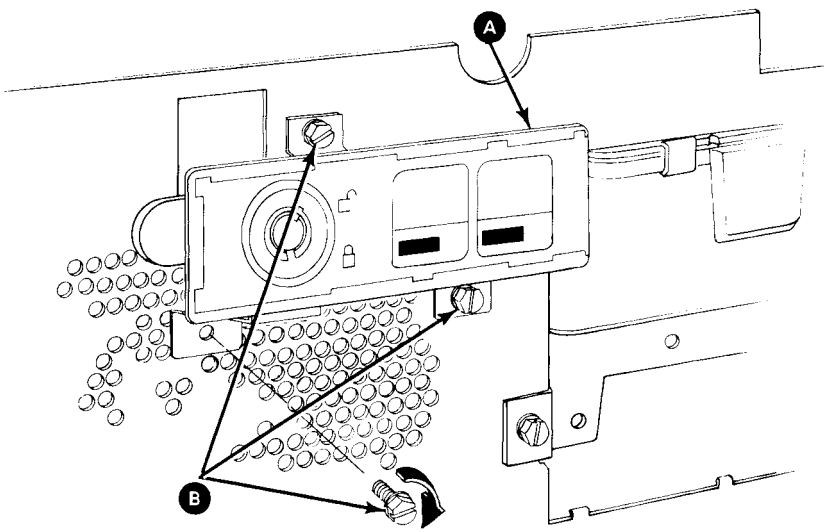




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# Control Panel Replacement 1036

1. Install the control panel (A) and the mounting screws (B) .
2. Connect the control panel cables to the system board.
3. Install the Fixed Disk and Diskette Drive Adapter **(5011)**.
4. Install any of the option adapters that were removed **(5006)**.
5. Install the system unit's cover **(1006)**.

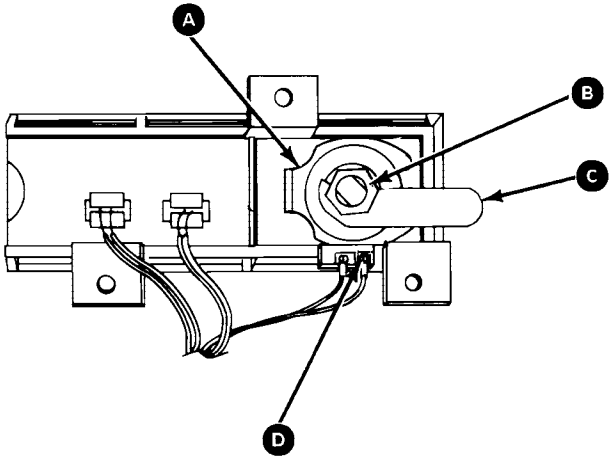




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# Key Lock Removal 1040

1. Remove the control panel **(1035)**.
2. Remove the two screws (D) and position the microswitch away from the control panel.
3. Remove the locknut (B) .
4. Remove the cover latch (C) .
5. Remove the Key Lock mounting clip (A) .
6. Remove the Key Lock.

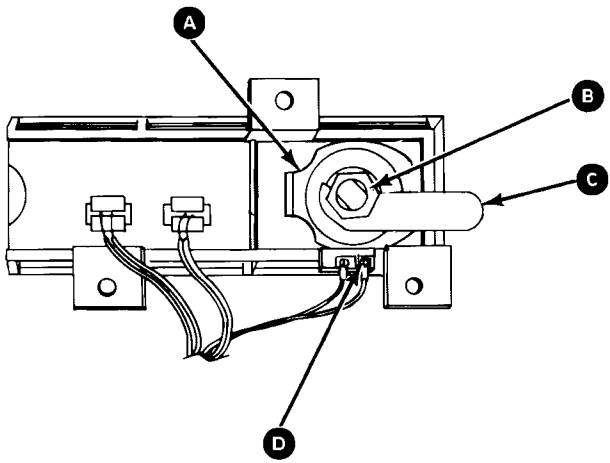




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# Key Lock Replacement 1041

1. Set the Key Lock into the mounting plate.
2. Install the Key Lock's mounting clip (A) .
3. Install the cover latch (C) .
4. Install the locknut (B) .
5. Position the microswitch on the control panel and install the two mounting screws (D) .
6. Install the control panel **(1036)**.



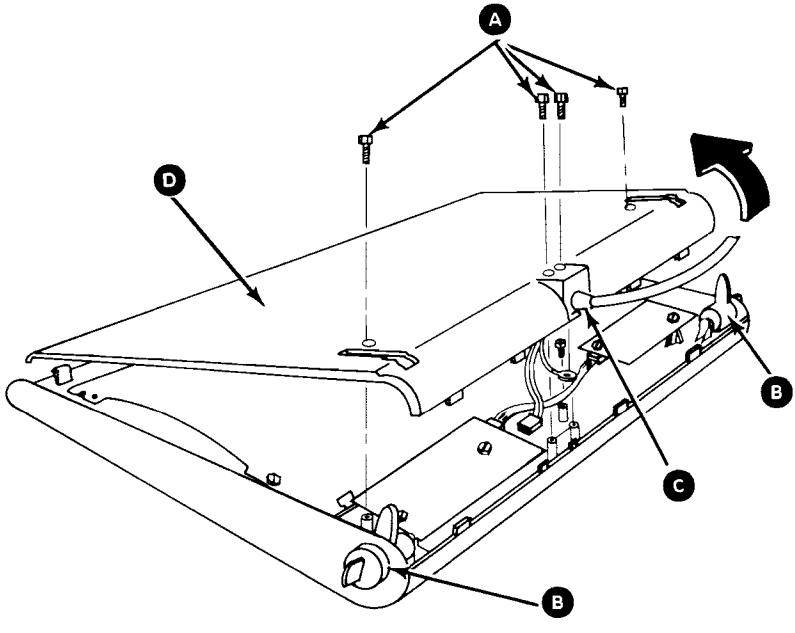


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# Keyboard

## Keyboard Base Removal 2005

1. Set the system unit's Power switch to Off.
2. Disconnect the keyboard cable from the rear of the system unit.
3. Place the keyboard with the base (D) facing up, and remove the four mounting screws (A).
4. Turn the adjustable feet (B) up to clear the base.
5. Raise the base up approximately 51 mm (2 inches) and remove the cable (C) from the keyboard base.
6. Lift the base up and out of the top cover.

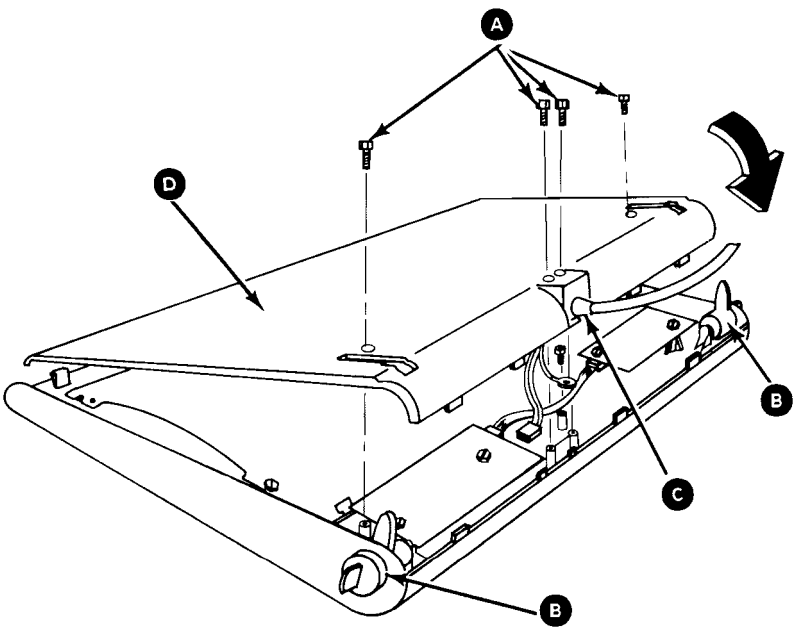





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# Keyboard Base Replacement 2006

1. Turn the adjustable feet (B) up to clear the base.
2. Place the tabs on the front of the base (D) into the locating slots on the top cover and lower the base until it is approximately 51 mm (2 inches) from the cover.
3. Attach the cable (C) to the keyboard base.
4. Lower the base into the top cover.
5. Install the four mounting screws (A) .
6. Connect the keyboard cable to the rear of the system unit.

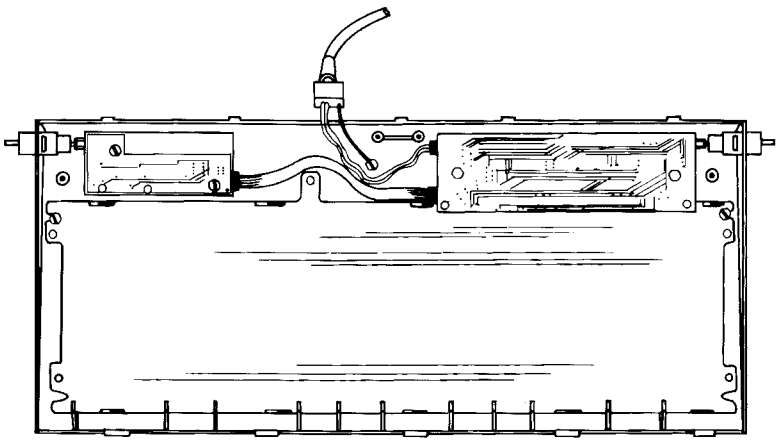




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# Keyboard Top-Cover Removal 2007

1. Remove the keyboard cable **(2010)**.
2. Remove the LED driver card **(2020)**.
3. Remove the keyboard assembly **(2015)**.
4. Remove the keyboard feet **(2025)**.

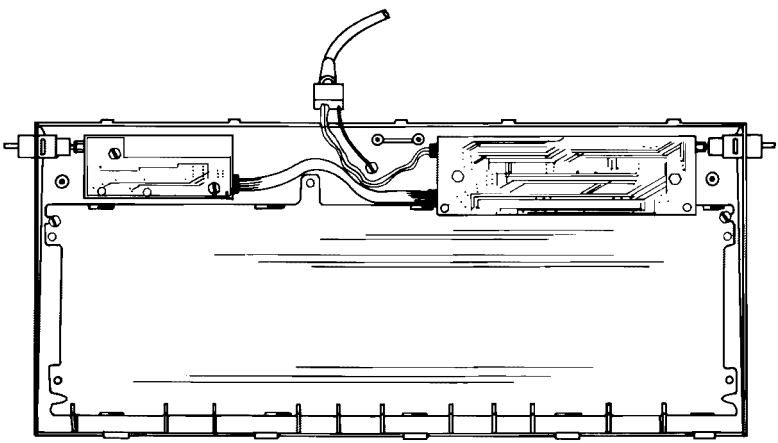




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# Keyboard Top-Cover Replacement 2008

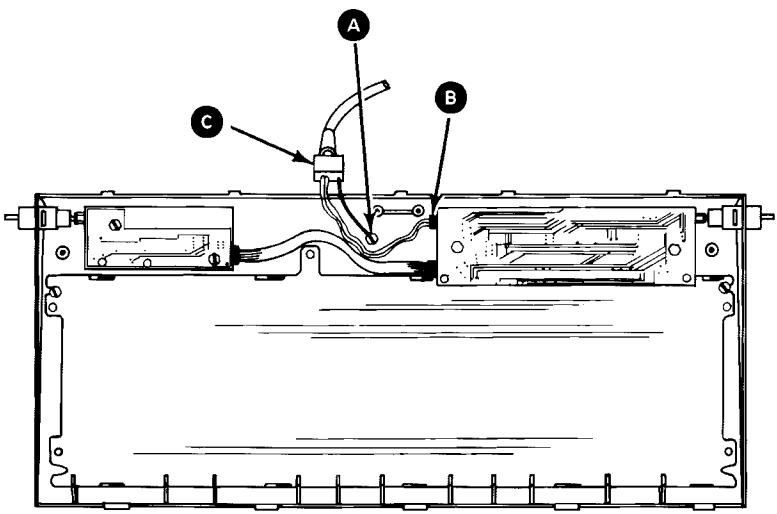
1. Install the keyboard feet **(2026)**.
2. Install the keyboard assembly **(2016)**.
3. Install the keyboard cable **(2011)**.
4. Install the LED driver card **(2021)**.
5. Install the keyboard base **(2006)**.




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# Keyboard Cable Removal 2010

1. Remove the keyboard base **(2005)**.
2. Remove the ground wire's mounting screw (A) .
3. Disconnect the cable connector (B) .
4. Remove the keyboard cable (C) .

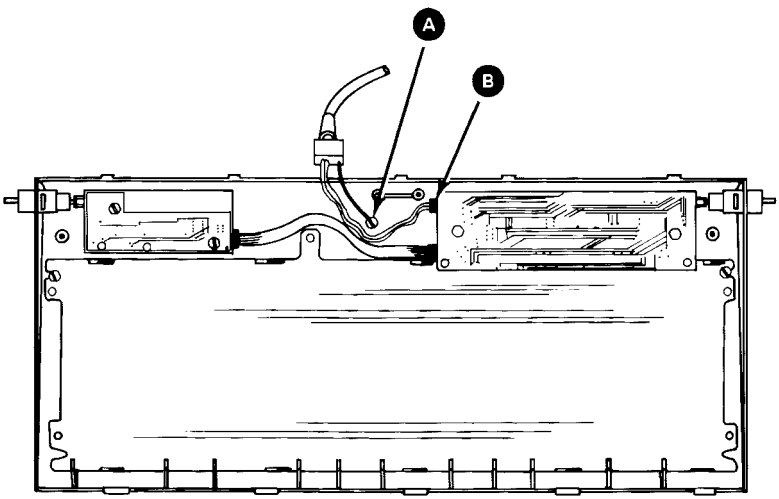





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# Keyboard Cable Replacement 2011

1. Connect the keyboard cable (B) .
2. Install the ground wire's mounting screw (A) .
3. Install the keyboard base **(2006)**.

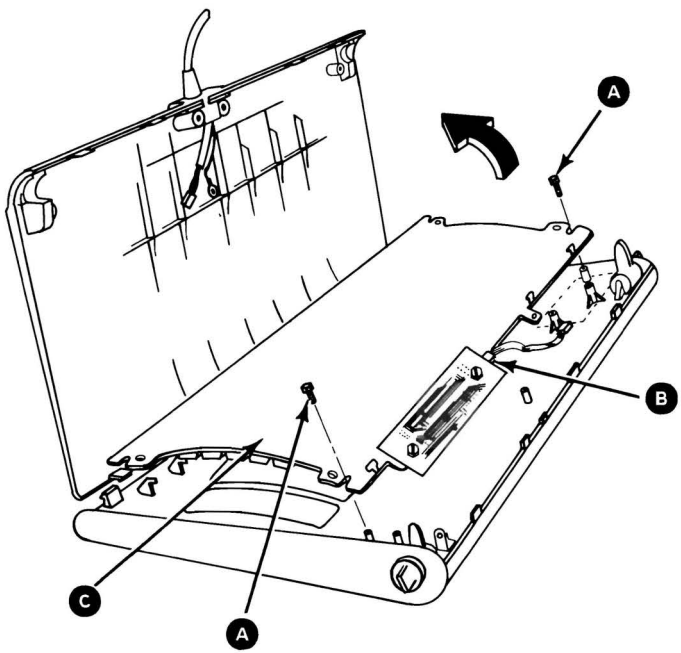




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# Keyboard Assembly Removal 2015

1. Remove the keyboard base **(2005)**.
2. Remove the two mounting screws (A) .
3. Remove the keyboard cable **(2010)**.
4. Disconnect the cable from the keyboard assembly driver board (B) .
5. Lift the rear of the keyboard assembly (C) up and out of the cover.

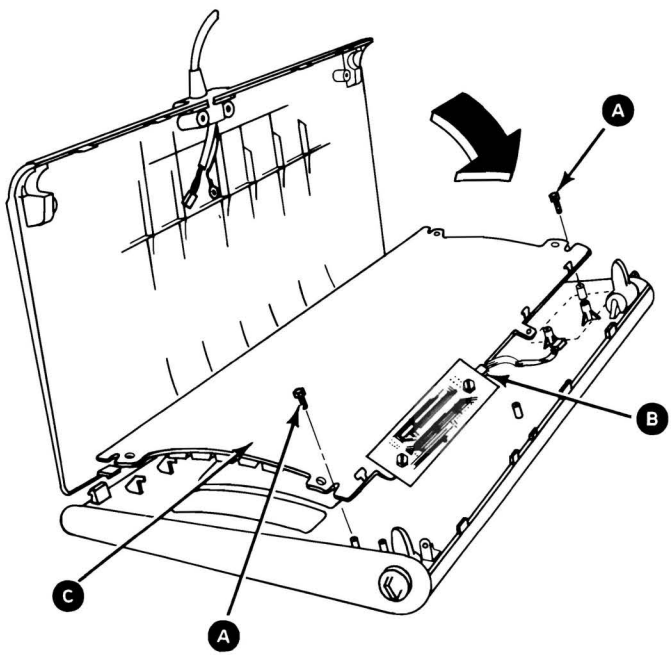





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# Keyboard Assembly Replacement 2016

1. Place the front of the keyboard assembly (C) into the cover.
2. Install the keyboard cable **(2011)**.
3. Connect the cable to the keyboard assembly driver board (B) .
4. Lower the rear of the keyboard assembly into the cover.
5. Center the keyboard assembly left-to-right in the top cover. (Ensure the keybuttons do not bind against the top cover.)
6. Install the two mounting screws (A) .
7. Install the keyboard base **(2006)**.



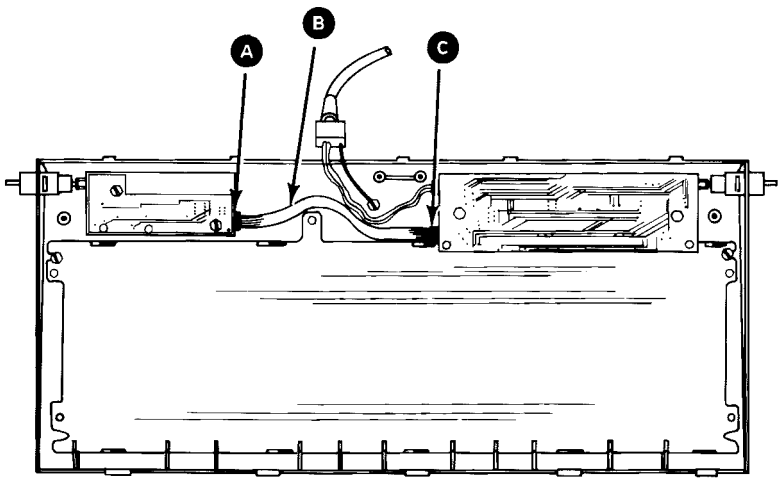


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# Keyboard Internal Cable Removal 2017

1. Remove the keyboard base **(2005)**.

2. Disconnect the internal cable (B) attached to the LED card (A) and the keyboard assembly (C).

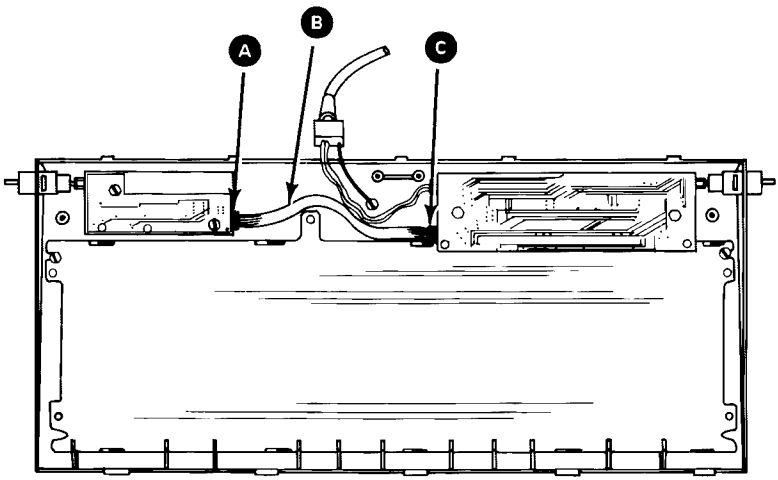




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# Keyboard Internal Cable Replacement 2018

1. Connect the internal cable (B) to the LED card (A) and the keyboard assembly (C).
2. Install the keyboard base **(2006)**.





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# Keyboard LED Driver Card Removal 2020

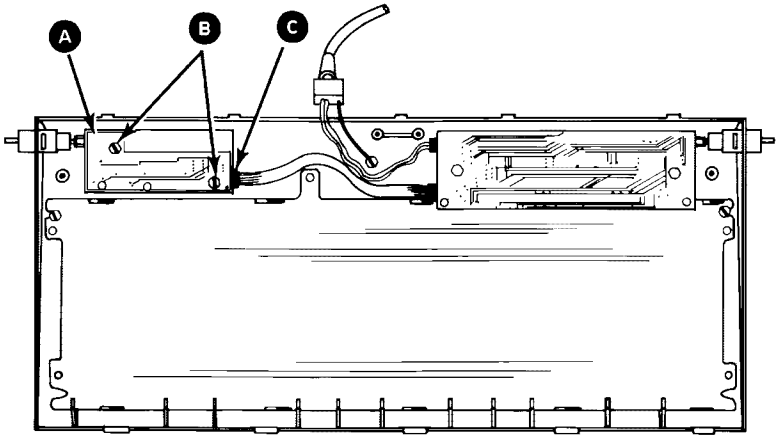
1. Remove the keyboard base **(2005)**.

2. Disconnect the internal cable attached to the LED card (C) .

3. Remove the mounting screws (B) .

   **Warning:** The LED's are positioned in the keyboard top cover. Be careful not to bend or break these when removing the LED driver card.

4. Remove the LED driver card (A) .

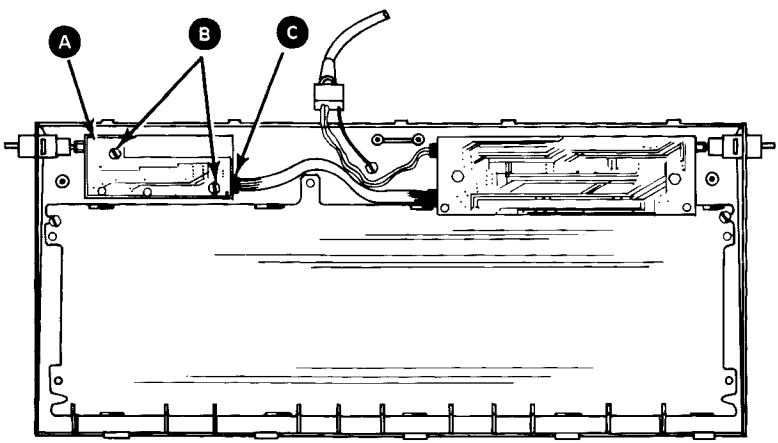




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# Keyboard LED Driver Card Replacement 2021

1. Align the LED's with the keyboard top cover.
2. Set the LED driver card (A) into the top cover.
3. Install the mounting screws (B) .
4. Connect the internal cable to the LED card (C) .
5. Install the keyboard base **(2006)**.

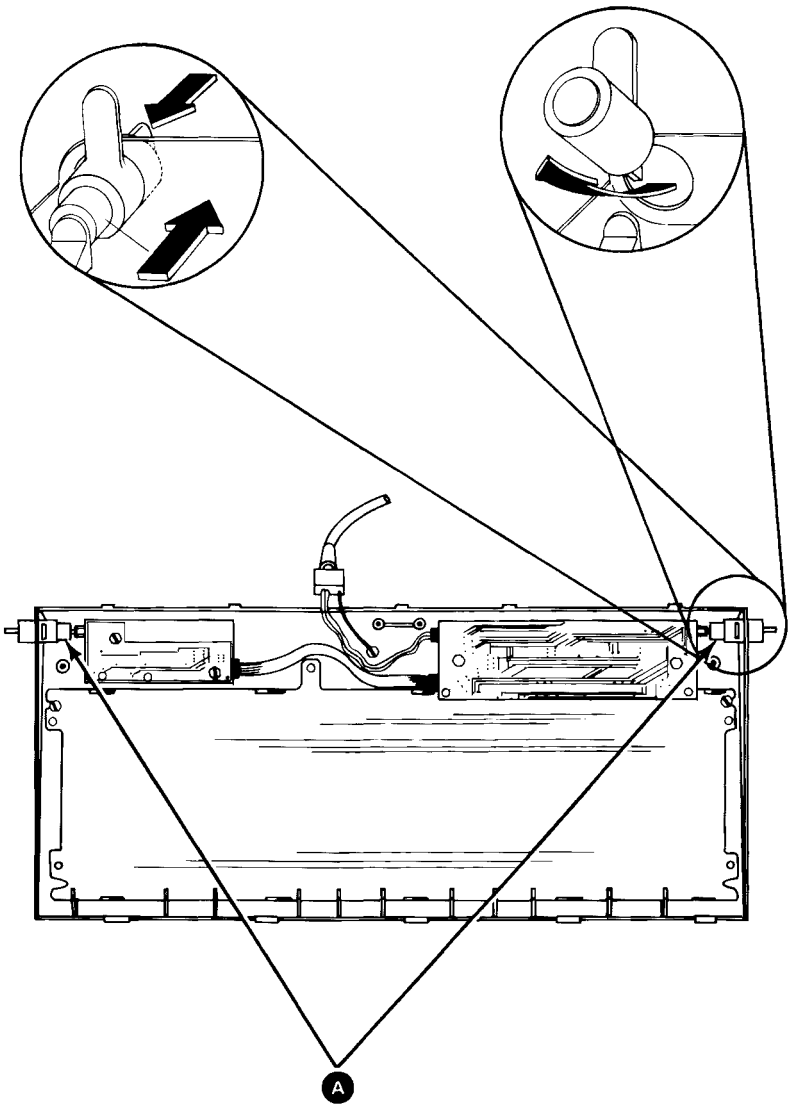




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# Adjustable Keyboard-Feet Removal 2025

1. Remove the keyboard base **(2005)**.
2. Compress the keyboard foot assembly (A) .
3. Move the foot assembly up and out of the keyboard top cover.

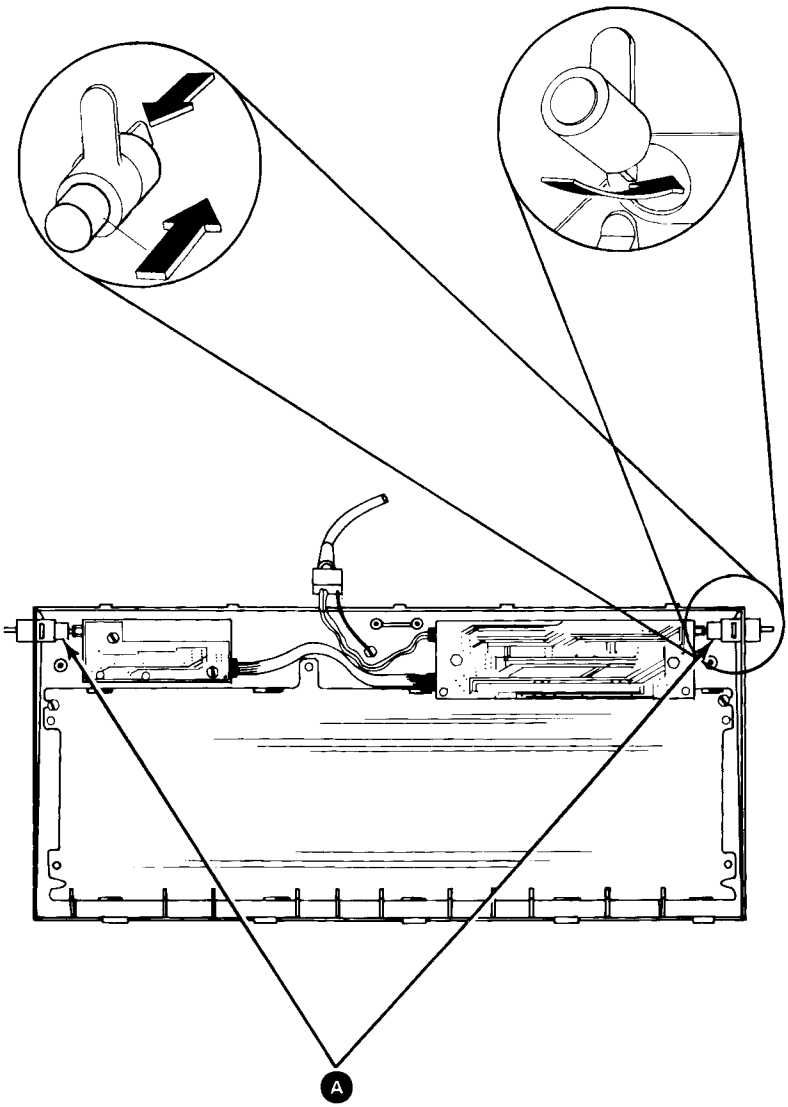





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# Adjustable Keyboard-Feet Replacement 2026

1. Compress the keyboard foot assembly (A) .
2. Insert the foot assembly through the hole in the keyboard top cover.
3. Install the keyboard base **(2006)**.

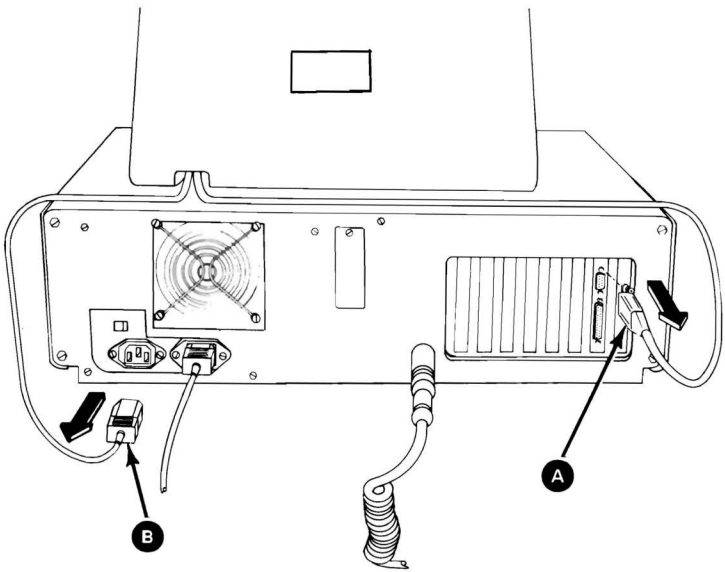




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# IBM Monochrome Display Removal 3005

1. Set the system unit's Power switch to Off.
2. Unplug the display's power cord (B) from the back of the system unit.
3. Disconnect the signal cable (A) from the system unit.



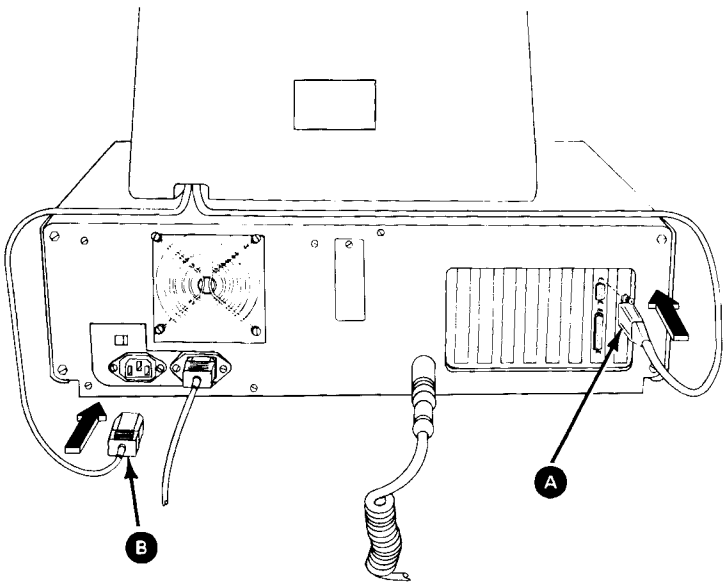



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# IBM Monochrome Display Replacement 3006

1. Connect the display's signal cable (A) to the display adapter.

2. Plug the display's power cord (B) to the rear of the system unit.





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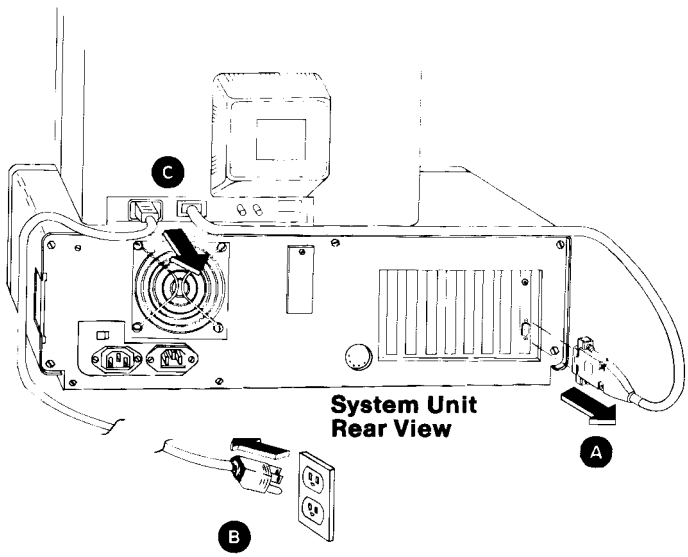
# IBM Color Display Removal 3010

1. Set the Power Switches on the system unit and Color Display to Off.

2. Unplug the display's power cord (B) from the outlet.

3. Disconnect the signal cable (A) from the system unit.

4. Unplug the display's power cord (C) from the rear of the display.

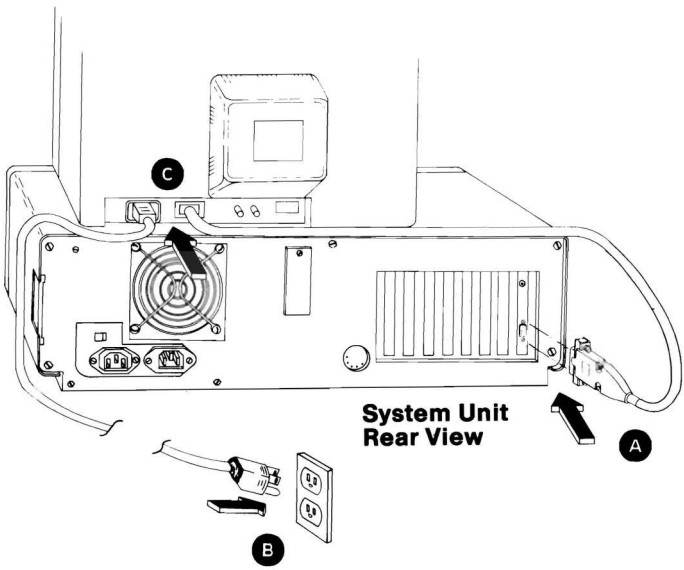




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# IBM Color Display Replacement 3011

1. Connect the display's signal cable (A) to the system unit.
2. Plug the display's power cord (C) into the rear of the display.
3. Plug the display's power cord (B) into the outlet.





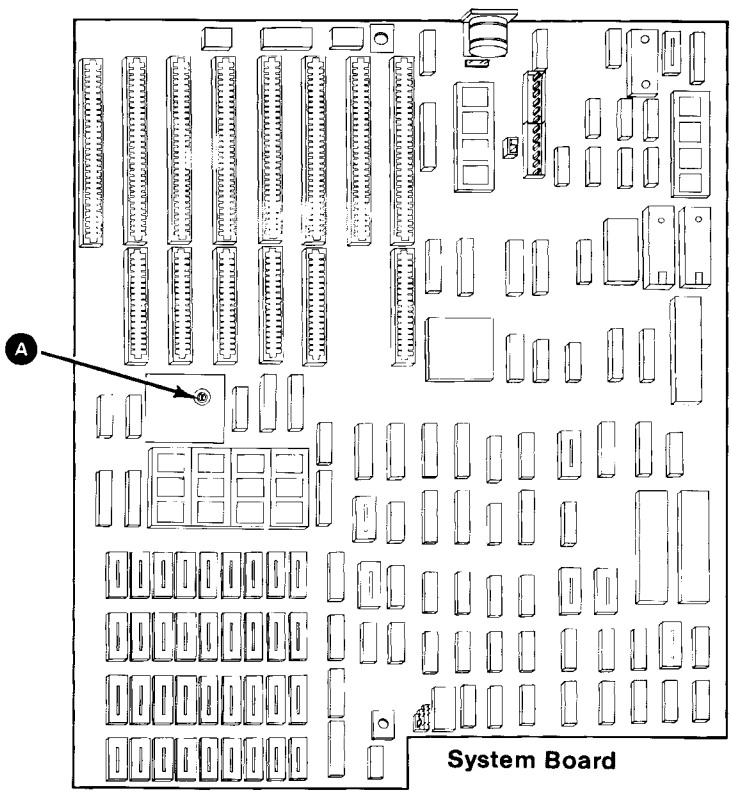
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# Variable Capacitor Adjustment 3020

**Note:** This adjustment is effective for composite displays only.

If your display works correctly, except the color is incorrect or absent, adjust the variable capacitor (A) on the system board as follows:

1. Remove the system unit's cover **(1005)**.
2. Find the variable capacitor adjustment control.
3. Using a small, nonmetallic screwdriver, adjust the variable capacitor in small increments until the correct color returns.
4. Adjust the Tint and Color controls on the display.



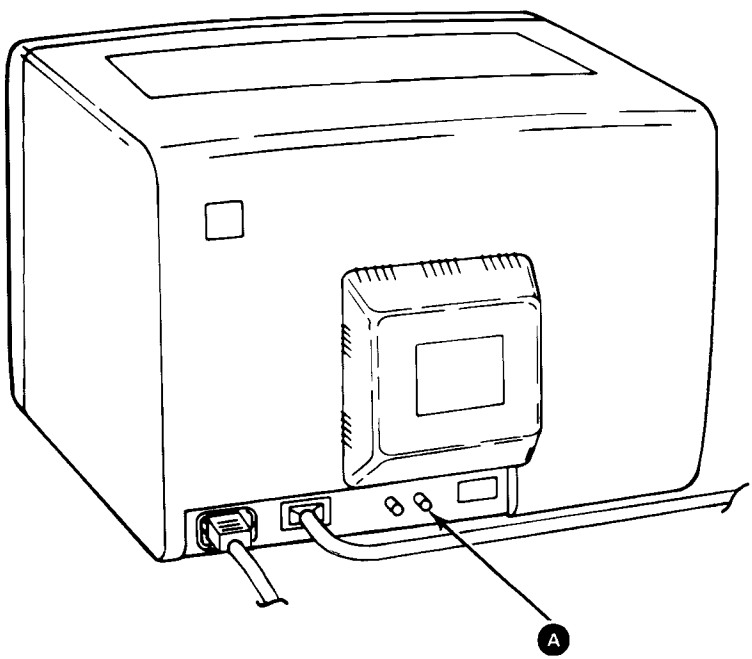


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# Vertical-Hold Adjustment 3025

If your IBM Color Display has a vertical hold problem (image rolling), adjust the Vertical Hold control (A) as follows:

1. Set the Color Display's Power switch to On.
2. Set the system unit's Power switch to On.
3. Wait for the POST to finish.
4. Turn the Vertical Hold control fully clockwise.
5. Turn the Vertical Hold control counterclockwise until the image stops rolling and is steady.

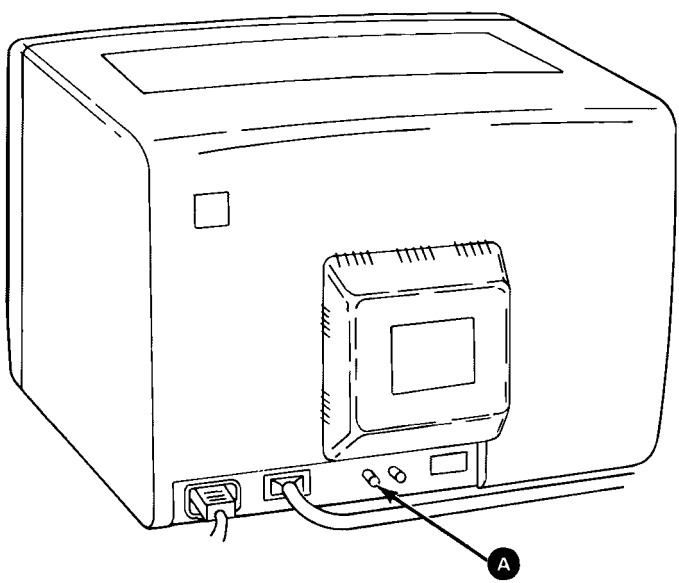




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# Vertical Size Adjustment 3030

1. Set the system unit's Power switch to Off.
2. Set the Color Display's Power Switch to On.
3. Turn the Brightness and Contrast controls fully clockwise.
4. Turn the Vertical Size control (A) fully counterclockwise. A black area appears across the top and bottom of the screen.
5. Turn the Vertical Size control clockwise until both black areas disappear.
6. Adjust the Brightness and Contrast controls for eye comfort.






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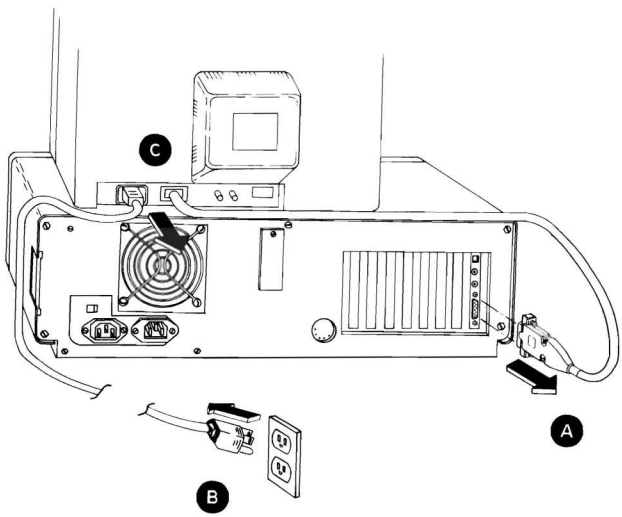
# Enhanced Color Display Removal 3035

1. Set the power switches on the system unit and Enhanced Color Display to Off.

2. Unplug the display's power cord (B) from the outlet.

3. Disconnect the signal cable (A) from the system unit.

4. Unplug the display's power cord (C) from the rear of the display.

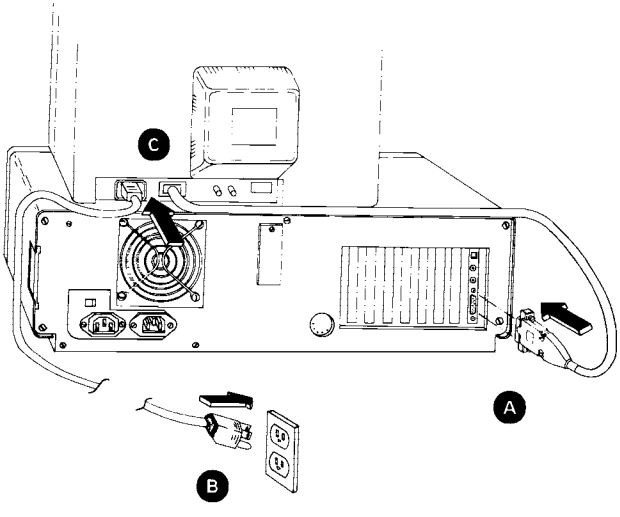




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# Enhanced Color Display Replacement 3040

1. Connect the display's signal cable (A) to the system unit.
2. Plug the display's power cord (C) into the rear of the display.
3. Plug the display's power cord (B) into the outlet.

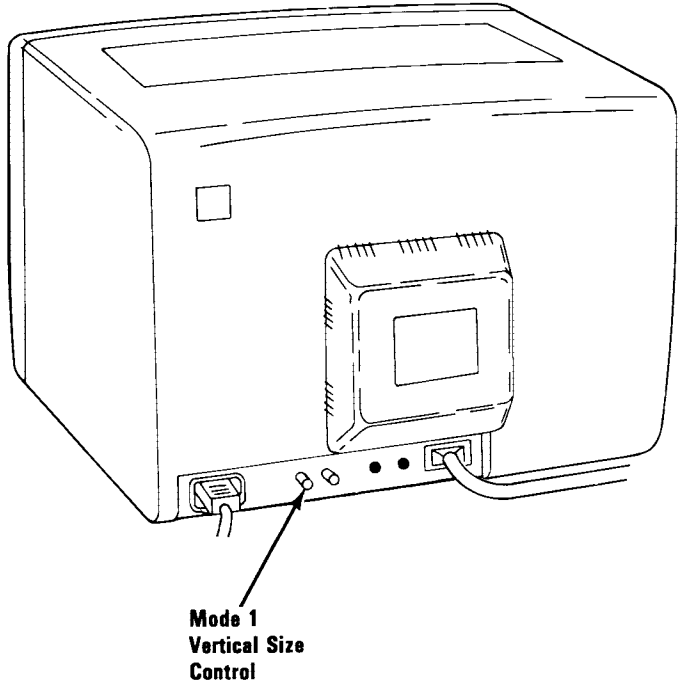




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# Enhanced Color Display Vertical Size Adjustment (Mode 1) 3045

1. Set the system unit's Power switch to Off.
2. Set the Enhanced Color Display's Power switch to On.
3. Turn the Brightness control fully clockwise.
4. Turn the Vertical Size 1 control fully counterclockwise. A black area appear at the top and bottom of the screen.
5. Turn the Vertical Size control clockwise until both black areas disappear.
6. Adjust the Brightness control for eye comfort.



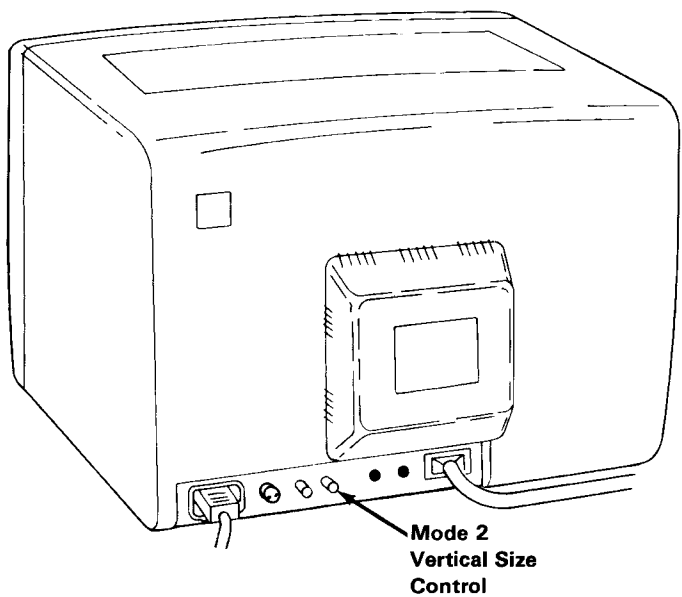


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# Enhanced Color Display Vertical Size Adjustment (Mode 2) 3050

In order to make this adjustment, the display must be connected to an IBM Enhanced Graphics Adapter operating in the Enhanced Color Mode. See Section 6 "System Setup, Jumpers, and Switch Settings".

1. Set the Enhanced Color Display's Power switch to On.
2. Turn the Brightness control fully clockwise.
3. Set the system unit's Power switch to On.
4. Wait for the POST to finish.
5. Adjust the Vertical Size 2 control until the black areas at the top and bottom of the screen are approximately the same size as the black areas at the sides.
6. Adjust the Brightness control for eye comfort.






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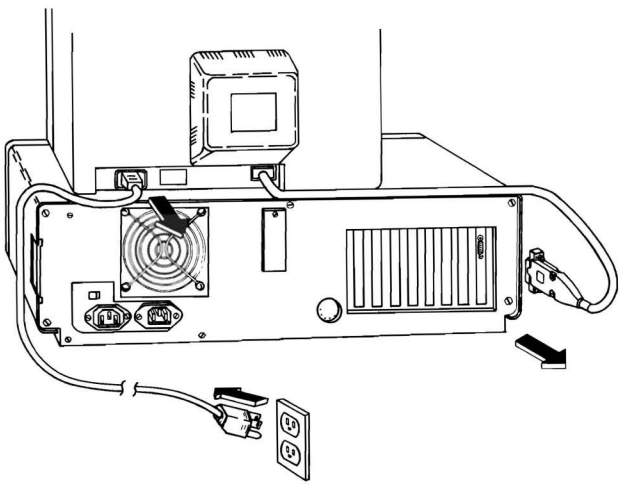
# Professional Graphics Display Removal 3055

1. Set the Power switch on the system unit and the Power control on the display to Off.

2. Unplug the display power cord from the outlet.

3. Disconnect the display signal cable from the Professional Graphics Adapter.

4. Disconnect the power cord from the rear of the display.




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# Professional Graphics Display Replacement 3056

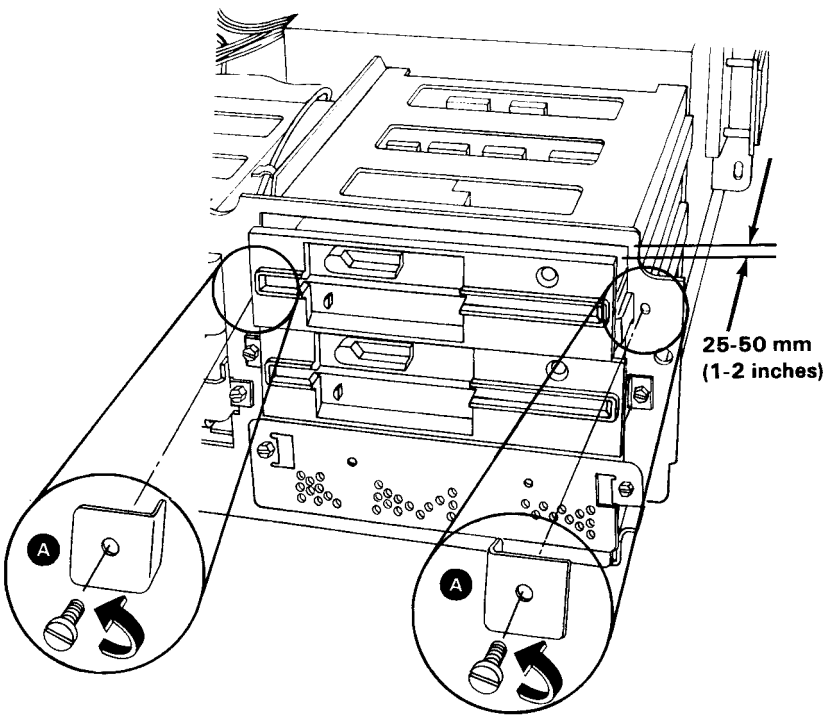
1. Connect the signal cable from the display to the Professional Graphics Adapter.
2. Connect the power cord to the rear of the display.
3. Plug the power cord into the outlet.


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## Diskette Drive Removal 4005

If you have two diskette drives, you may have to remove the diskette drive in the top slot to gain access to the diskette drive connectors in the bottom slot.

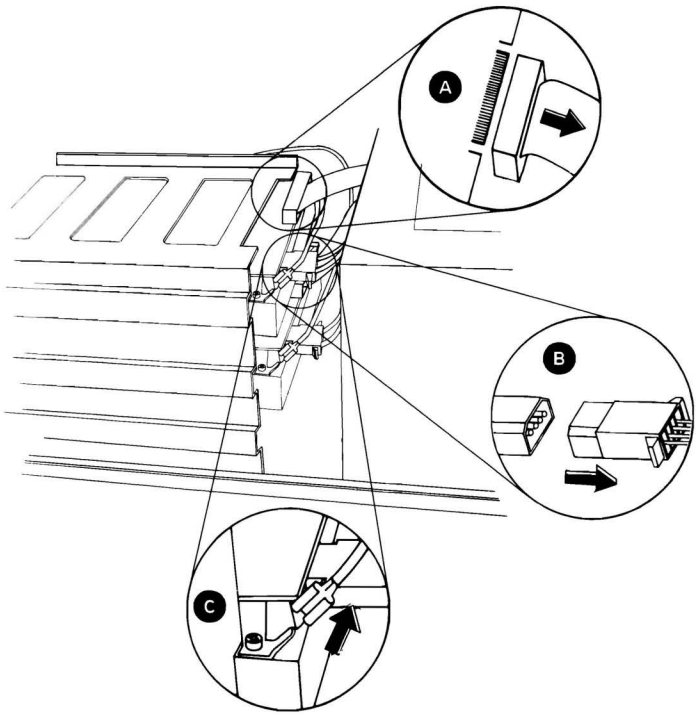
1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Remove the mounting screws and clips (A).
4. Slide the diskette drive approximately 25-50 mm (1-2 inches) toward the front.





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5. Disconnect the diskette drive's power cable (B) .
6. Disconnect the diskette drive's signal cable (A) .
7. Disconnect the diskette drive's ground wire (C) .
8. Slide the diskette drive out through the front of the system unit.





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# Diskette Drive Replacement 4006

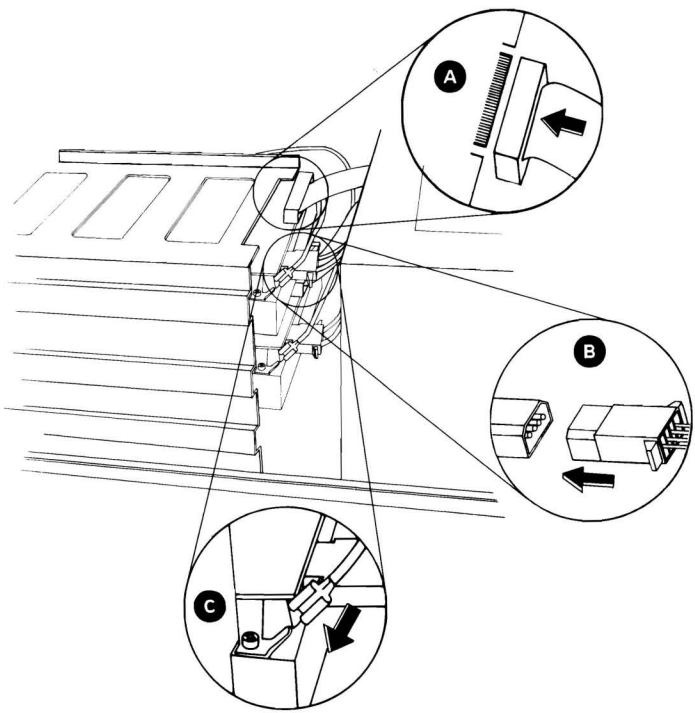
1. Slide the diskette drive into the system unit until the front panel is approximately 25-50 mm (1-2 inches) from the frame.

2. Connect the diskette drive's power cable (B) .

3. Connect the diskette drive's signal cable (A) .

   **Note:** Be sure to align the locating key on the signal cable connector with the locating slot on the diskette drive board.

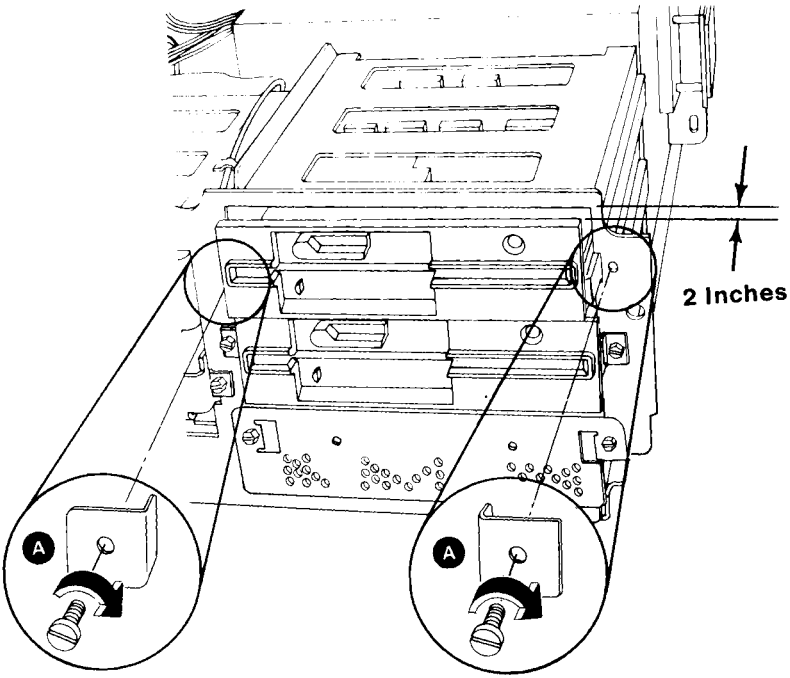
4. Connect the diskette drive's ground wire (C) .





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5. Slide the diskette drive all the way into the system unit.
6. Install the clips and mounting screws (A).
7. Install the system unit's cover **(1006)**.






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# Drive-Motor Speed Adjustment 4008

1. Insert the Advanced Diagnostics diskette into drive A.

2. Set the system unit's Power switch to On.

3. Advance to diagnostic menu 9 (see Section 2).

4. In menu 9, select option **4 (SPEED TEST)**, for the diskette drive you are testing. The drive-motor speed and the adjustment specification appear on the screen.

5. The indicated speed should be within the range displayed on your screen. If it is not, continue on the next page.

```
SPEED IS 1660

SHOULD BE 1640 TO 1695
PRESS ANY KEY TO EXIT

SPEED IS 1660

SHOULD BE 1640 TO 1695
PRESS ANY KEY TO EXIT
```


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6. Set the system unit's Power switch to Off.

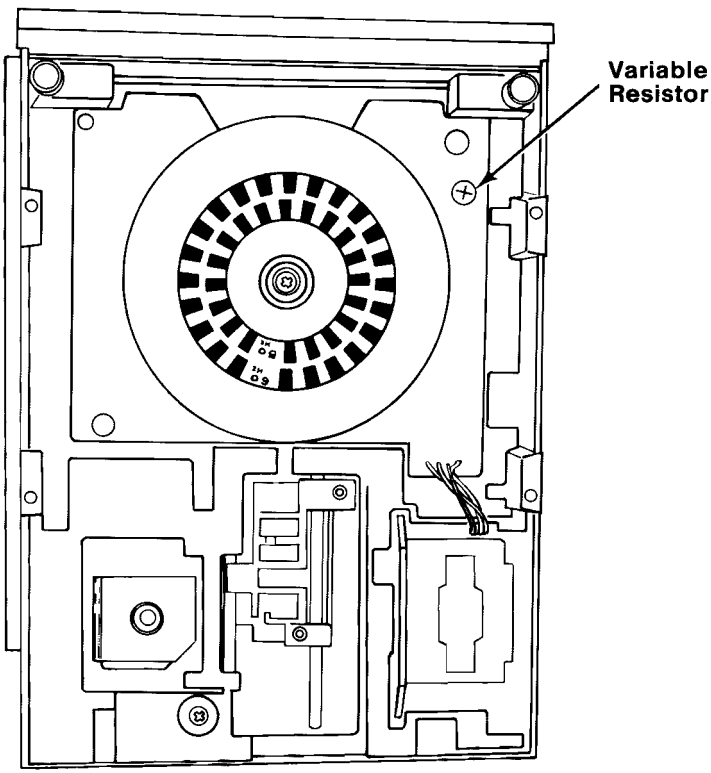
7. Remove the system unit's cover **1005**.

8. Reconnect all cables.

9. Remove the diskette drive's mounting screws and clips **(4005)**.

10. Slide the diskette drive approximately 78 mm (3 inches) toward the front.

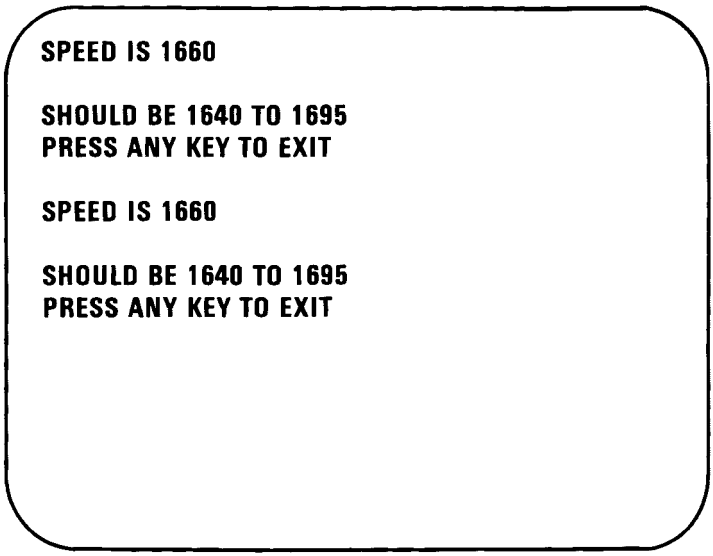
11. The adjustment for the drive-motor speed is a variable resistor on the diskette drive circuit board (on the underside of the diskette drive). To adjust the speed, carefully insert an insulated screwdriver into the resistor's slot.





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12. Turn the screw until the speed shown on the screen is within the required specifications.




13. Set the system unit's Power switch to Off.

14. Unplug the power cord from the outlet.

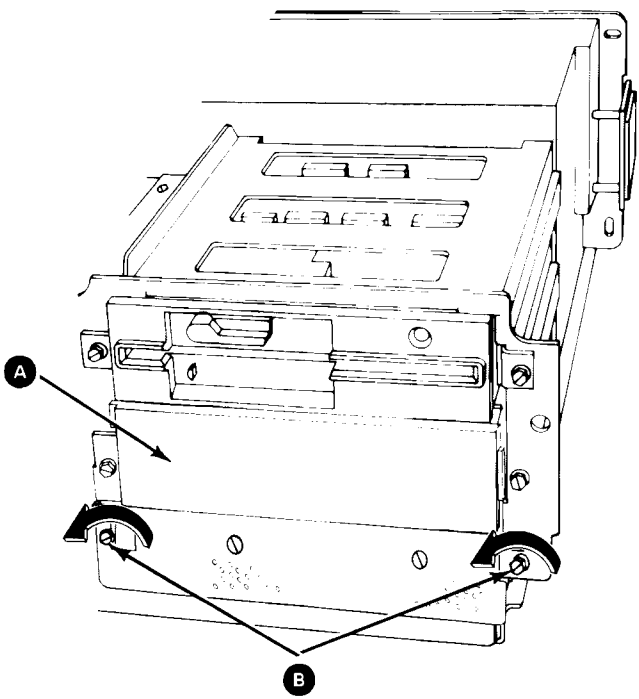
15. Disconnect all cables from the system unit.

16. Replace the system unit's cover **(1006)**.


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# Diskette Drive Cover-Plate Removal 4010

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Remove the mounting screws (B) and cover plate (A).

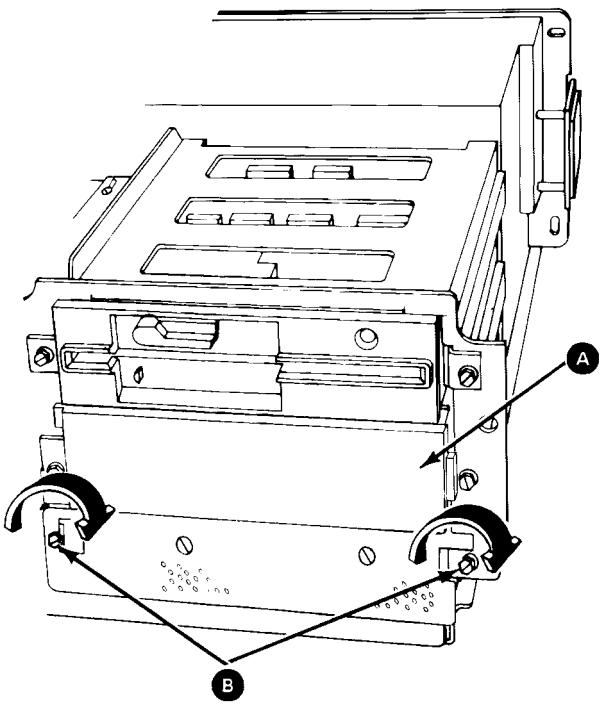




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# Diskette Drive Cover-Plate Replacement 4011

1. Install the cover plate (A) and mounting screws (B) .
2. Install the system unit's cover **(1006)**.



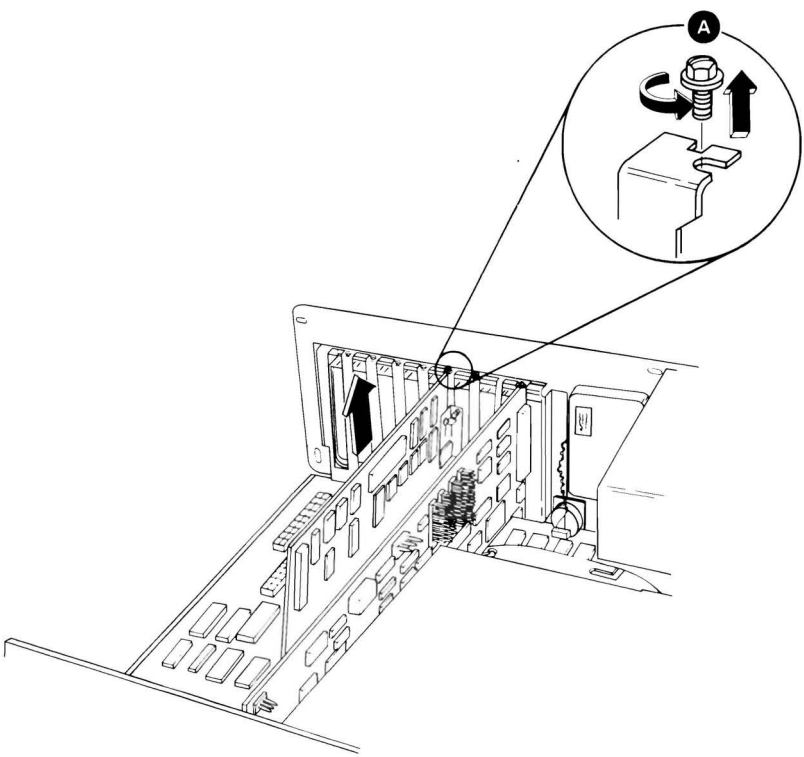


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# Adapters

## Option Adapter Removal 5005

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Make a note of which slot the adapter is in.
4. Remove any cables attached to the adapter.
5. Remove the adapter mounting screw (A) .
6. Grasp the adapter by the top corners and lift straight up.





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# Option Adapter Replacement 5006

1. Insert the adapter into the same option slot from which it was removed.

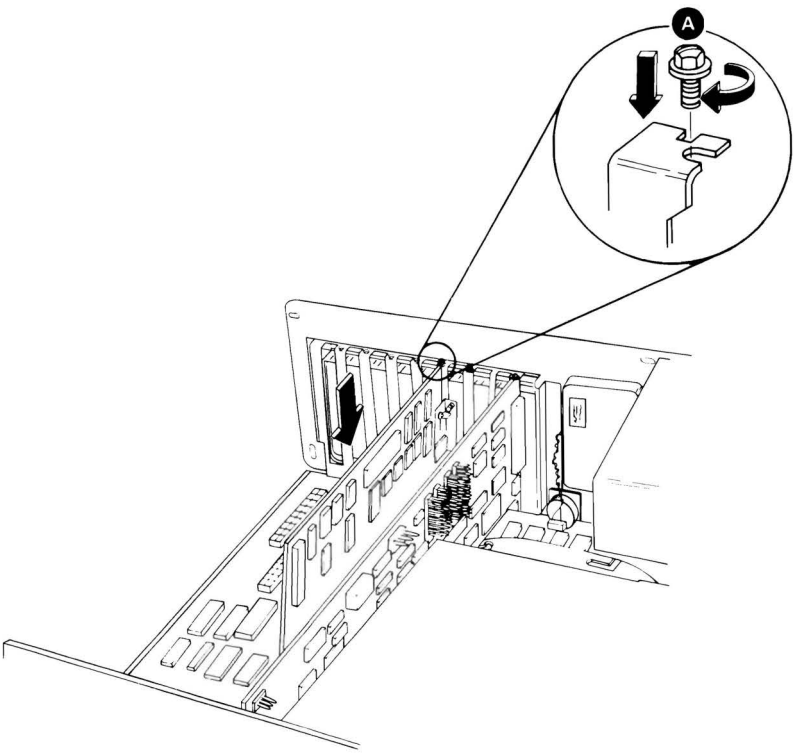
   **Note:** Make any necessary switch or jumper settings before installing the adapter.

2. Press down firmly on the adapter to seat the connector.

3. Install the adapter mounting screw (A) .

4. Install any cables removed from the adapter.

5. Install the system unit's cover **(1006)**.





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# Memory Module Removal 5007

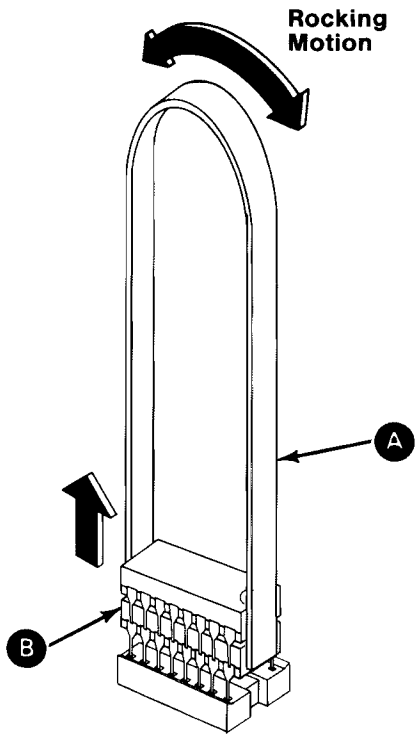
1. Set the system unit's Power switch to Off.

2. Remove the system unit's cover (**1005**).

3. Find the failing memory expansion adapter (see Section 3).

4. Remove the memory expansion adapter (**5005**) and find the failing module (see Section 3).

5. Grasp the module (B) with the module puller (A) and gently lift one end and then the other, to avoid bending the pins.

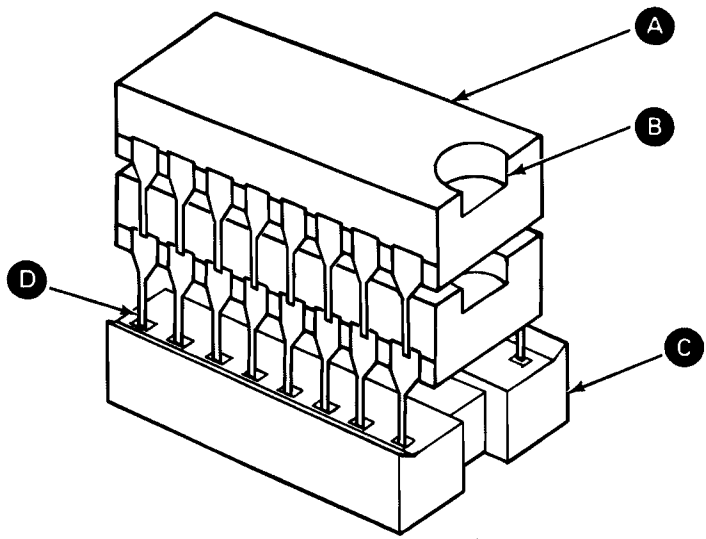





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# Memory Module Replacement 5008

1. Line up the module (A) so the notch (B) faces the same direction as those on other modules.
2. Line up the module pins (D) with the sockets on the connector (C).
3. Gently press the module onto the connector.
4. Install the memory expansion adapter (**5006**).
5. Install the system unit's cover (**1006**).

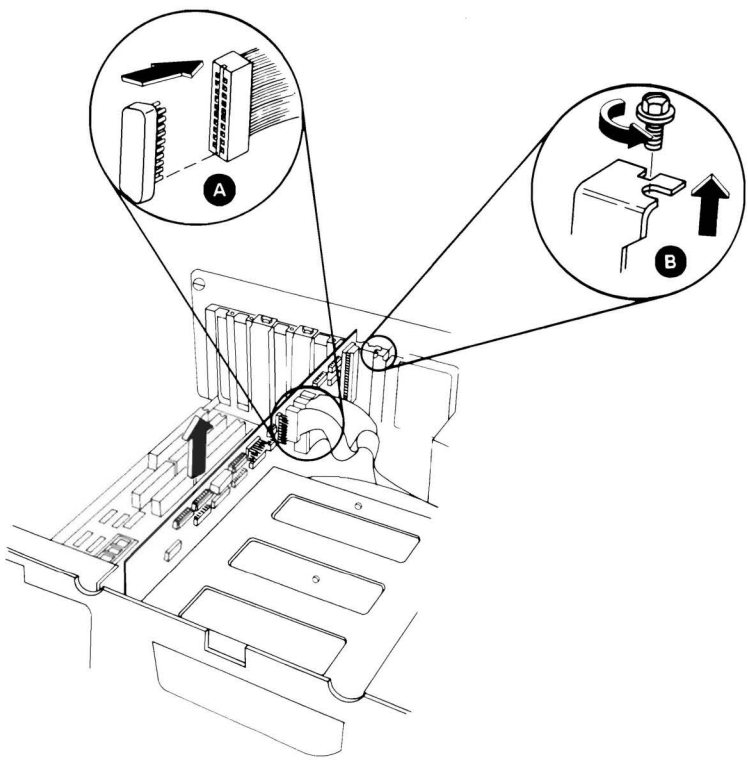



**128Kb Module**


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# Fixed Disk and Diskette Drive Adapter Removal 5010

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Make a note of which slot the adapter is in.
4. Disconnect all cables (A) from the adapter.
5. Remove the Fixed Disk and Diskette Drive Adapter's mounting screw (B) .
6. Grasp the adapter by the top corners and lift straight up.

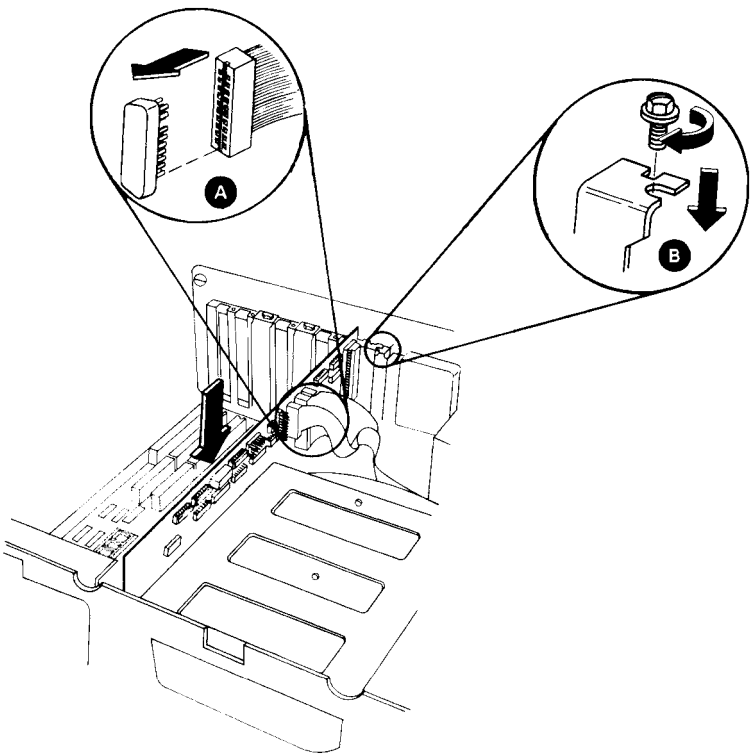




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# Fixed Disk and Diskette Drive Adapter Replacement 5011

1. Insert the Fixed Disk and Diskette Drive Adapter into the same option slot from which it was removed from.
2. Press down on the adapter to seat the connector.
3. Install the adapter's mounting screw (B) .
4. Connect all cables (A) to the adapter.
5. Install the system unit's cover **(1006)**.





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# Graphics Memory Expansion Card Removal 5011A

1. Set the Power switch on the system unit (and expansion unit, if attached) to Off.

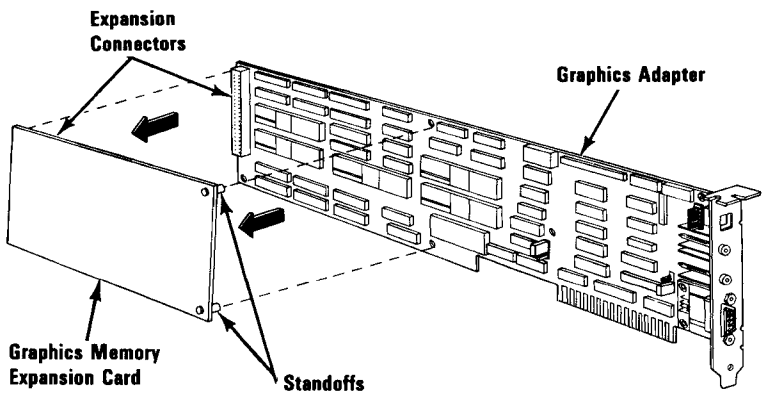
2. Set all external Power switches to Off (printer, display, etc.).

3. Unplug the system unit's (and expansion unit's) power cord from the wall outlet and disconnect all cables from the rear of the system unit.

4. Remove the system unit cover **(1005)**.

5. Remove the Enhanced Graphics Adapter **(5005)**.

6. Remove the Expansion Card by pressing on the ends of the standoffs (on the pin side of the adapter) to release them from the adapter. Then carefully separate the Expansion Card from the adapter.





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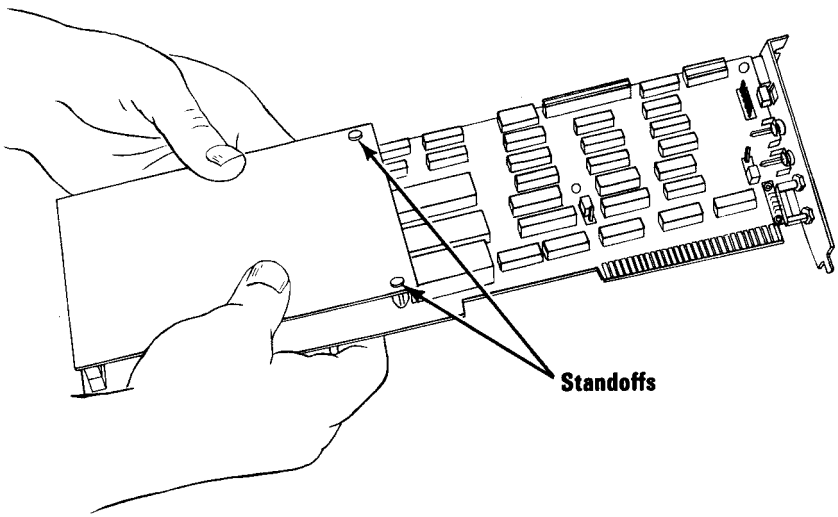
# Graphics Memory Expansion Card Replacement 5011B

1. Align the Expansion Card with the graphics adapter. Pay close attension to the location of the standoffs and expansion connectors.

2. Carefully press the Expansion Card and graphics adapter together.

3. Replace the Enhanced Graphics Adapter **(5006)**.

4. Replace the system unit cover **(1006)**.





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# Graphics Memory Module Removal 5011C

1. Set the Power switch on the system unit (and expansion unit, if attached) to Off.

2. Set all external Power switches to Off (printer, display, etc.).

3. Unplug the system unit's (and expansion unit's) power cord from the wall outlet and disconnect all cables from the rear of the system unit.

4. Remove the system unit cover **(1005)**.

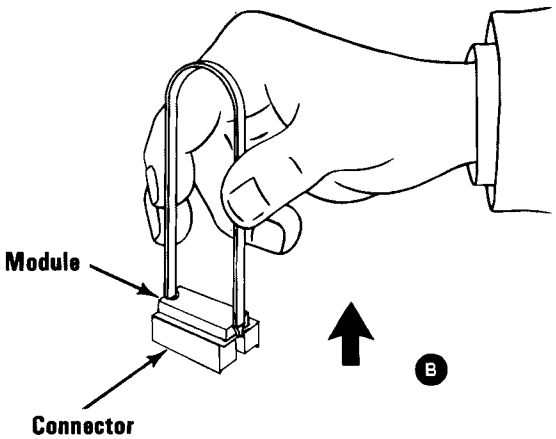
5. Remove the Enhanced Graphics Adapter **(5005)**.

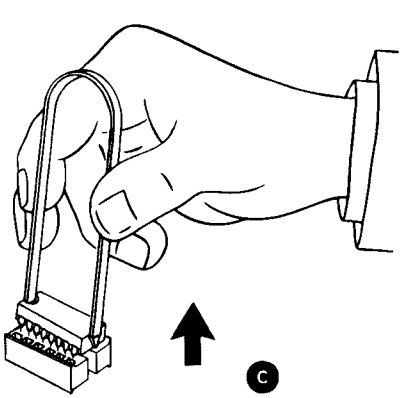
6. Remove the Graphics Memory Expansion Card **(5011A)**

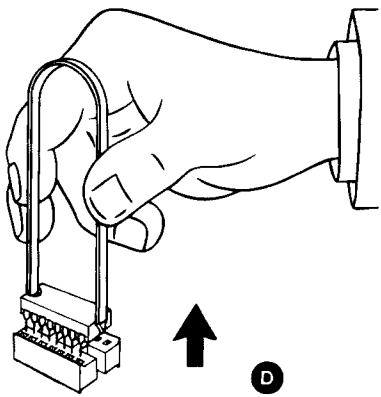
7. Locate the module to be removed.


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8. To separate the module from the connector, Grasp the module as shown in B. Lift in a two step motion, as shown in C and D, to avoid bending pins.





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# Graphics Memory Module Replacement 5011D

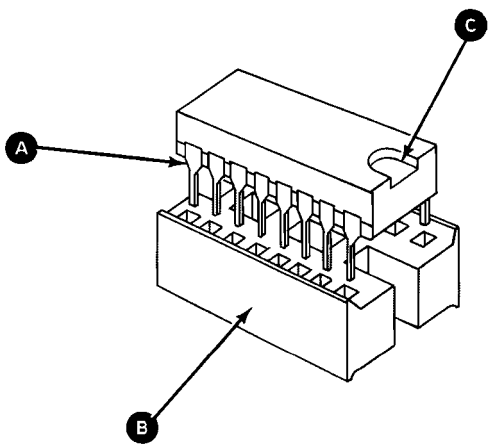
1. Align the module pins (A) with the connector (B) and firmly press the module into place. The notch (C) on the module should face the bottom of the card.

2. Replace the Graphics Memory Expansion Card. **(5011B)**

3. Replace the Enhanced Graphics Adapter **(5006)**.

4. Replace the system unit cover **(1006)**.

   **Warning:** Damage to the module or expansion card may result if the modules are installed incorrectly. The module must be installed with the notch facing the bottom of the card.





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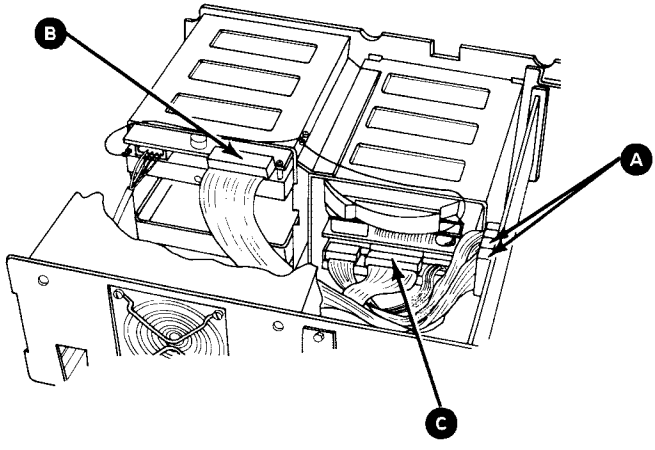
# Notes:


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# Fixed Disk and Diskette Drive Signal Cable

## Fixed Disk and Diskette Drive Signal Cable Removal 5012

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Make a note of where each cable is attached to the Fixed Disk and Diskette Drive Adapter, and to the diskette drives and fixed disk drives installed.
4. Disconnect the cables from the adapter (A), the diskette drives (B), and fixed disk drives (C).
5. Remove the signal cable from the system unit.

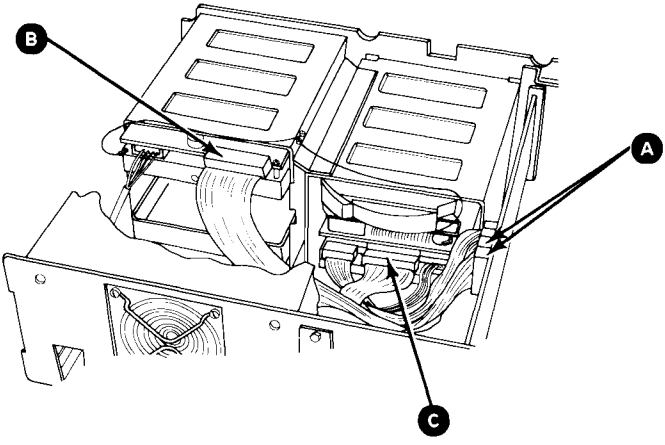




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# Fixed Disk and Diskette Drive Signal Cable Replacement 5013

1. Connect the cables to the Fixed Disk and Diskette Drive Adapter (A) .
2. Connect the cables to the diskette drives (B) and fixed disk drives (C) installed.
3. Install the system unit's cover **(1006)**.



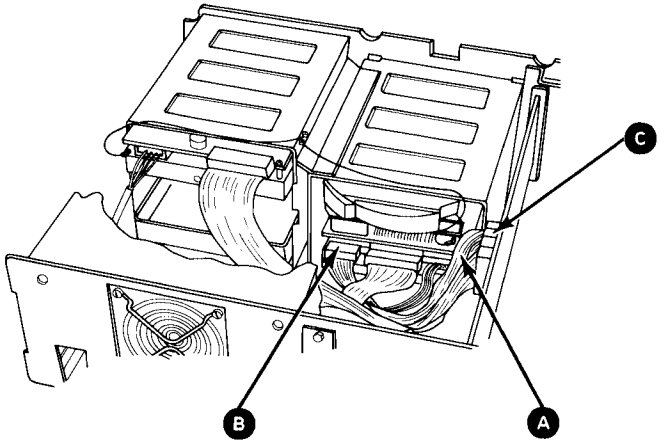


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# Fixed Disk Drive Data Cable

## Fixed Disk Drive Data Cable Removal 5014

1. Set the system unit's Power switch to Off.
2. Remove the system unit's cover **(1005)**.
3. Make a note of where the data cable (A) is attached to the Fixed Disk and Diskette Drive Adapter (C) and the fixed disk drive (B).
4. Disconnect the cable from the adapter and fixed disk drive.
5. Remove the data cable from the system unit.

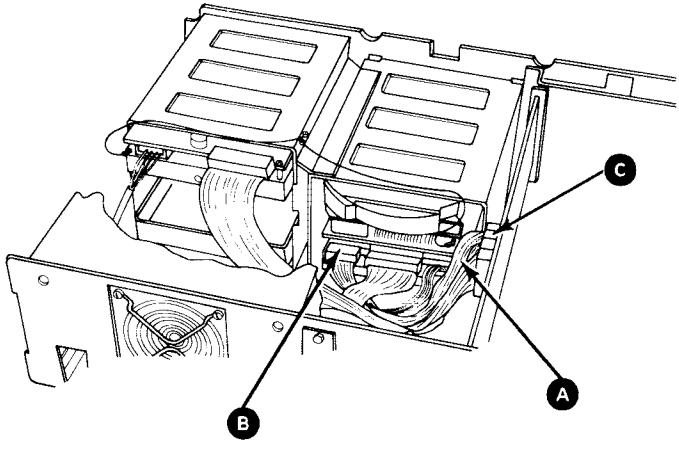




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# Fixed Disk Drive Data Cable Replacement 5015

1. Connect the data cable (A) to the Fixed Disk and Diskette Drive Adapter (C).
2. Connect the data cable to the fixed disk drive (B).
3. Replace the system unit's cover **(1006)**.





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# Fixed Disk Drive

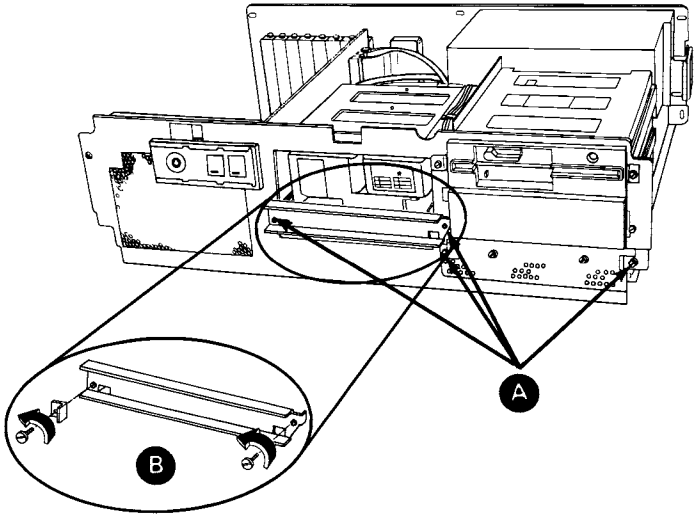
## Fixed Disk Drive Removal 5016

**Warning:** Normal shipping and handling can result in permanent loss of all data and formatting on the fixed disk drive; refer to your DOS manual and backup all information. Before removing the fixed disk drive, perform the "Prepare System For Relocation" function with the Advanced Diagnostics diskette.

If your system has two fixed disk drives and one diskette drive, you may have to remove the diskette drive to gain access to the connectors of the second fixed disk drive.

1. Set the system unit's Power switch to Off.
2. Remove the the system unit's cover **(1005)**.
3. Remove the mounting screws and clips (A) .

   **Note:** A keeper bar (B) may replace the mounting clips for drive C.






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4. If required, remove the diskette drive **(4005)**.

5. Disconnect the fixed disk drive's ground wire (A) .

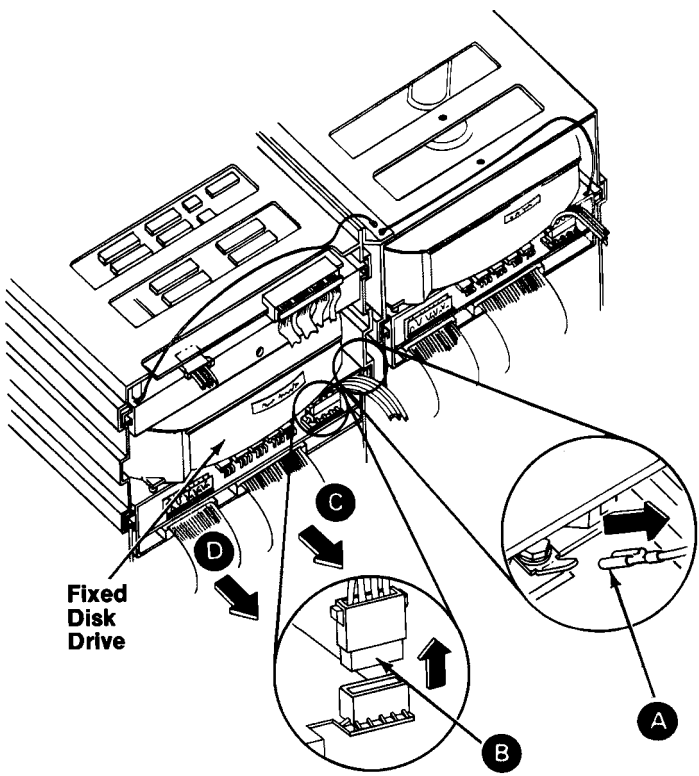
6. Disconnect the fixed disk drive's power cable (B) .

7. Disconnect the fixed disk drive's signal cable (C) .

8. Disconnect the fixed disk drive's data cable (D) .

9. Grasp the fixed disk drive by the frame and slide it toward the front and out of the system unit.

   **Warning:** Do not lift the fixed disk drive by the printed circuit board.

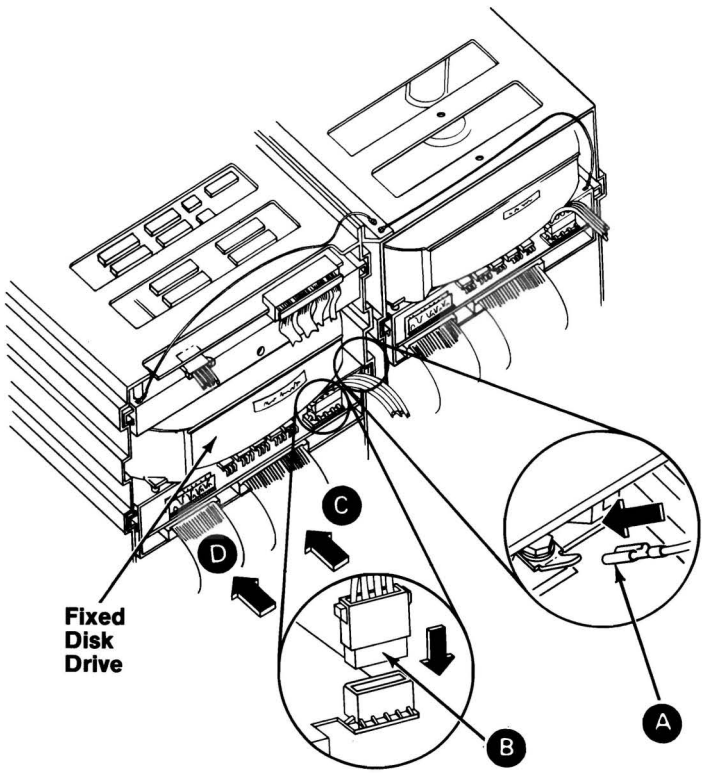




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# Fixed Disk Drive Replacement 5017

1. Grasp the fixed disk drive by the frame and slide it into the system unit.
2. Connect the fixed disk drive's data cable (D) .
3. Connect the fixed disk drive's signal cable (C) .
4. Connect the fixed disk drive's power cable (B) .
5. Connect the fixed disk drive's ground wire (A) .





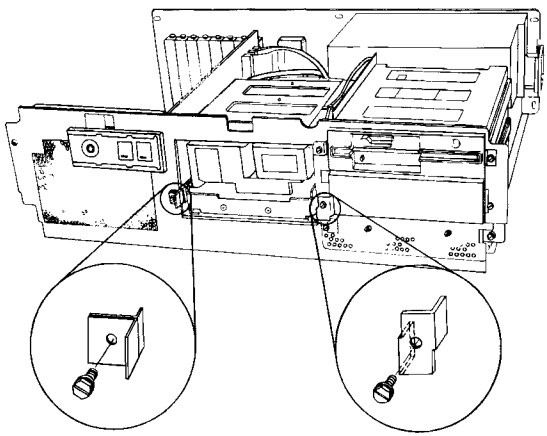
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6. If the diskette drive was removed, reinstall it **(4006)**.

7. Install the mounting screws and clips.

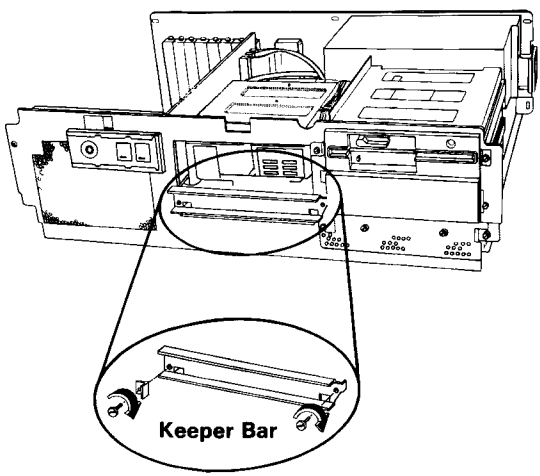
8. Install the keeper bar if present.

9. Install the system unit's cover **(1006)**.



**Mounting Screws and Clips**

**Front View**

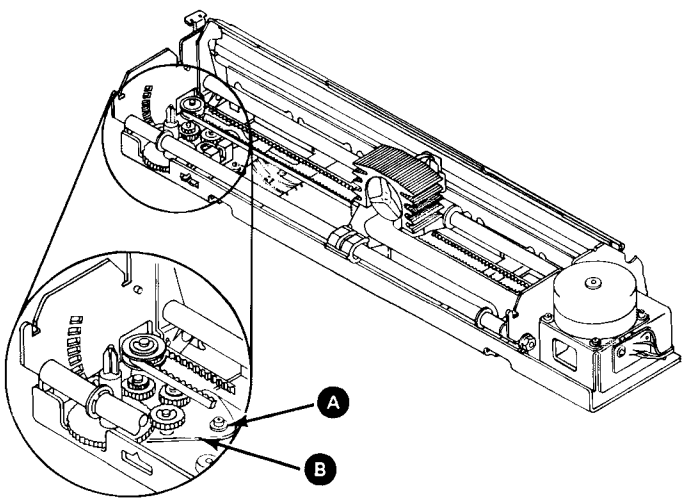




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## Carriage Belt Adjustment 5600

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the ribbon cartridge.
6. Remove the top cover **(5631)**.
7. Loosen the hold-down screw (A) in the carriage drive assembly.
8. Pivot the carriage drive assembly (B) to the left to tighten the belt.

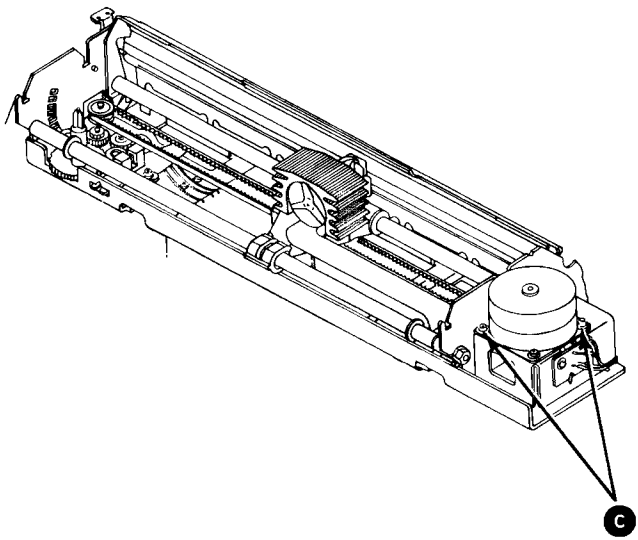





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9. Tighten the hold-down screw.

10. Loosen the screws (C) in the carriage motor mounts.

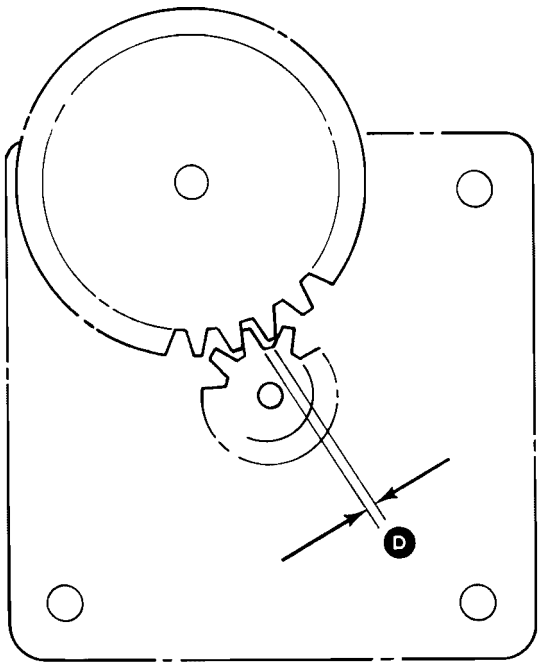




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11. Adjust the carriage motor so the motor and drive gears mesh.

12. Adjust the motor for minimum backlash between the gears (D).



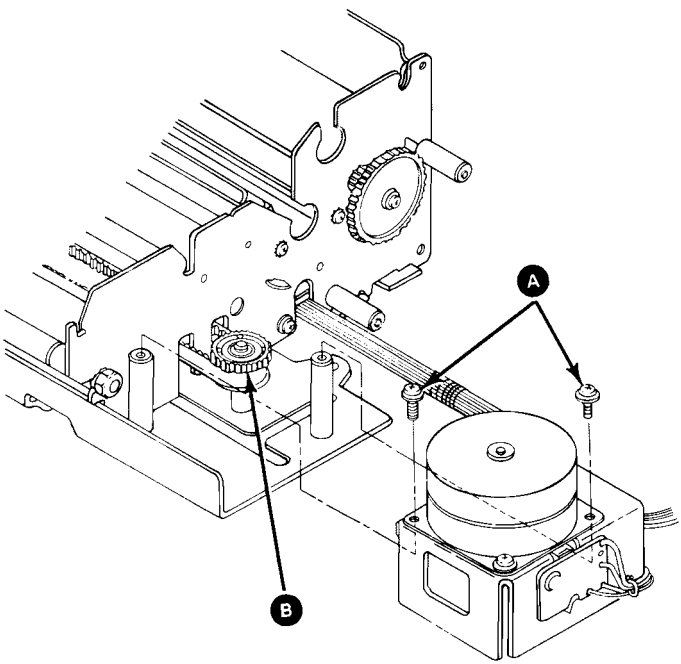

13. Tighten the motor mounting screws.

14. Move the print head back and forth and check that the gear operates without binding.


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# Carriage Belt Removal 5601

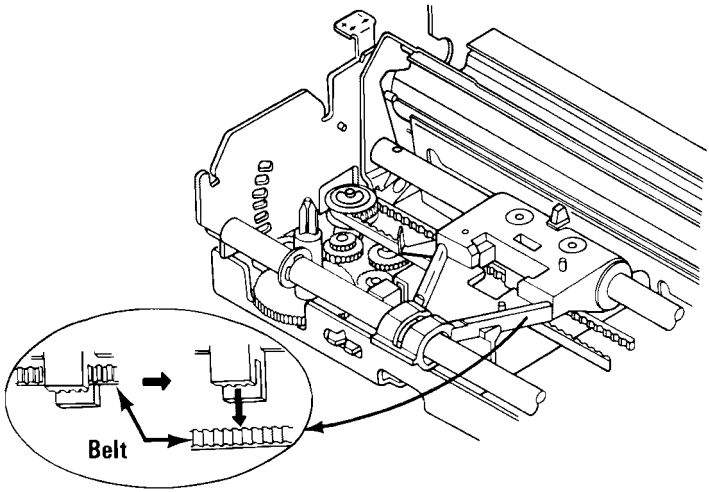
1. Set the printer Power switch to Off; unplug the Power cord from the outlet and disconnect the Printer Cable.
2. Remove all forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the ribbon cartridge.
6. Remove the top cover **(5631)**.
7. Remove the left front and the right rear screws from the carriage motor mounts (A).
8. Lift the motor away from the mounts to expose the belt pulley (B).





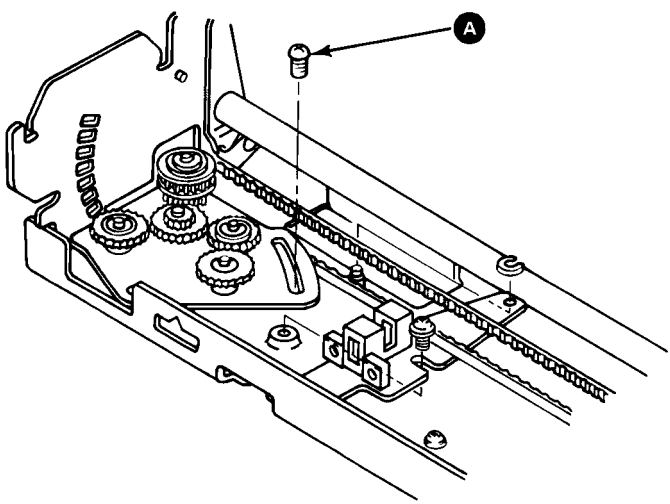
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9. Pull the belt from the clip underneath the print head carriage by pulling down on the belt.




10. Loosen the screw in the slot of the carriage drive assembly (A).

11. Pivot the carriage drive assembly to the right.

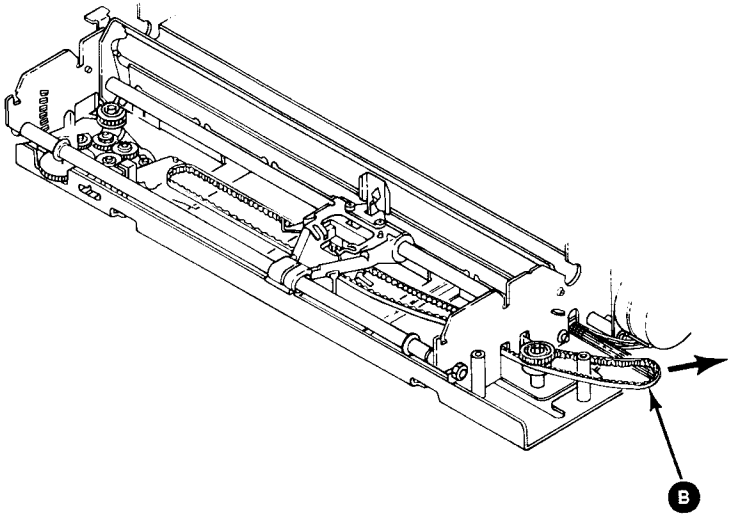





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12. Lift the belt off the pulley at each end.

13. Guide the belt (B) through the opening in the right side of the print mechanism assembly frame.



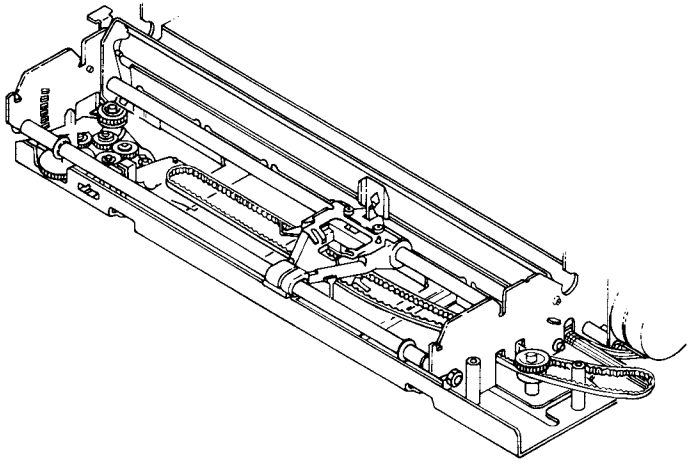


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# Carriage Belt Replacement 5602

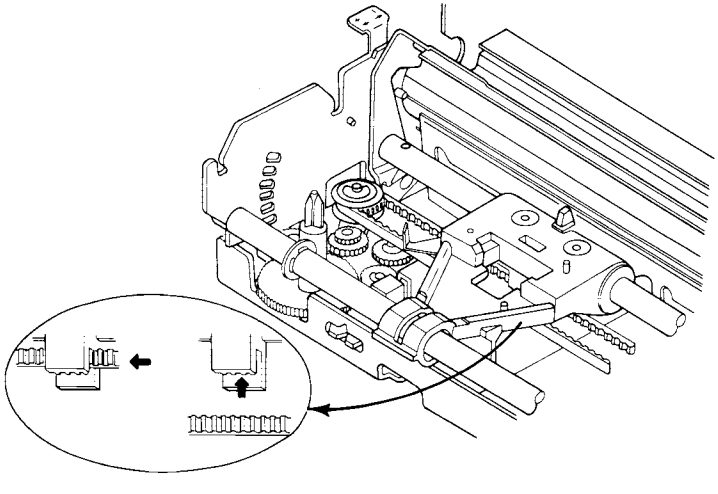
1. Insert the belt through the opening in the right side of the print mechanism assembly.

2. Guide the belt along the base toward the carriage drive assembly.



3. Place the belt onto the pulleys at both ends.

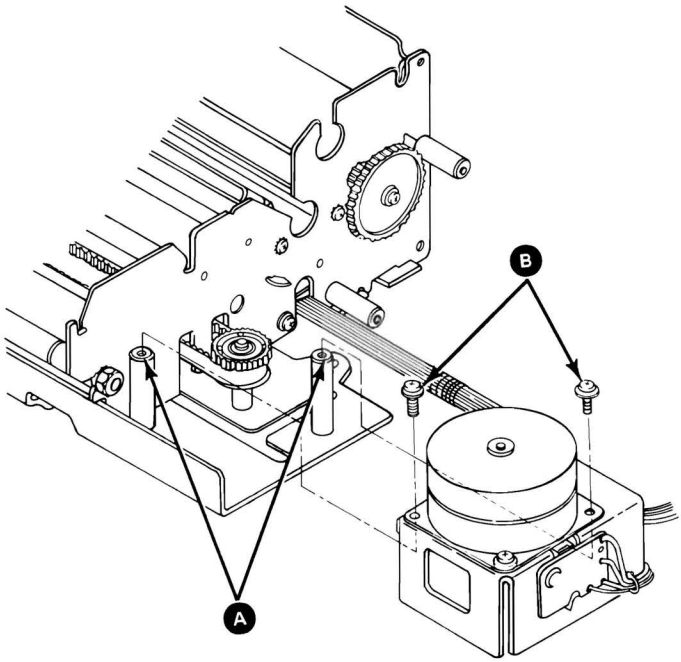
4. Insert the belt into the retaining clip under the print head carriage.




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5. Place the carriage motor onto the motor mounts (A).

6. Insert the screws into the motor base (do not tighten) (B).




7. Adjust the carriage belt **(5600)**.

8. Install the top cover **(5632)**.

9. Install the ribbon cartridge.

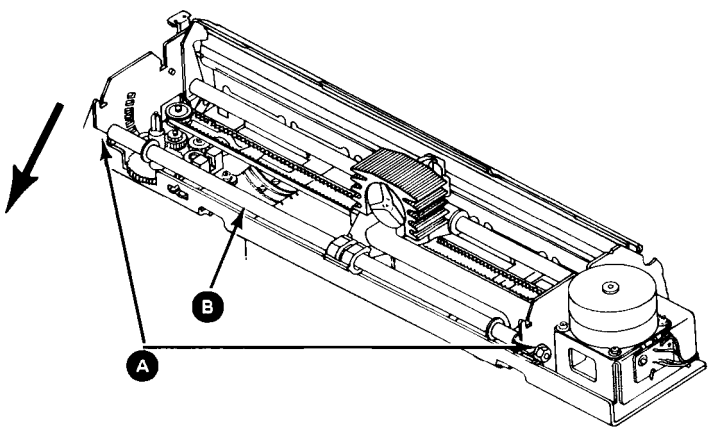
10. Install the access cover **(5630)**.

11. Install the forms rack **(5640)**.


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# Carriage Drive Assembly Removal 5605

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the ribbon cartridge.
6. Remove the top cover **(5631)**.
7. Move the carriage to the right side of the frame.
8. Loosen the nuts (A) on the carriage shaft (B) and pivot the left end of the shaft to the front.



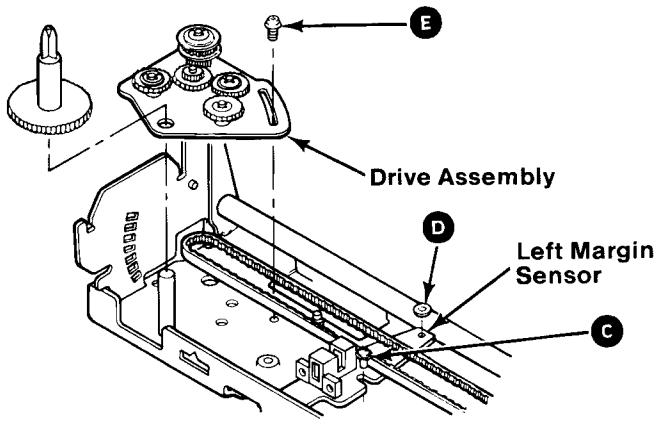


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9. Remove the screw (C) and clamp (D) from the left margin sensor.

10. Remove the carriage drive assembly retaining screw (E).

11. Pivot the carriage drive assembly clockwise, lift the belt off the drive pulley, lift the left margin sensor off the post, and lift the carriage drive assembly from the machine.

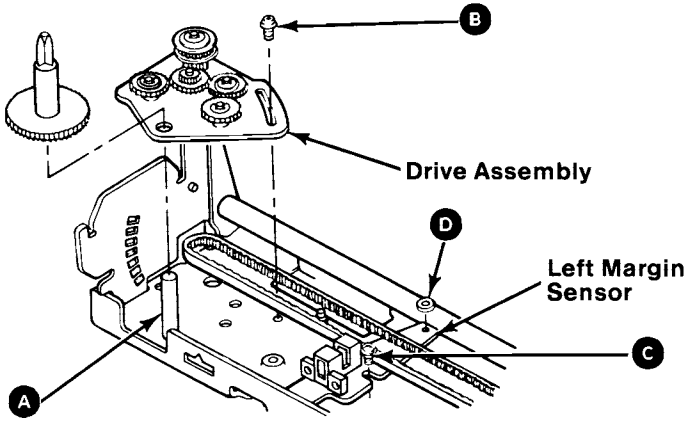




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# Carriage Drive Assembly Replacement 5606

1. Adjust the carriage drive assembly by inserting the post (A) through the pivot hole.
2. Install the carriage drive assembly retaining screw (B).
3. Install the left margin sensor, screw (C), and clip (D).
4. Place the belt over the drive pulley and perform the carriage belt adjustment **(5600)**.

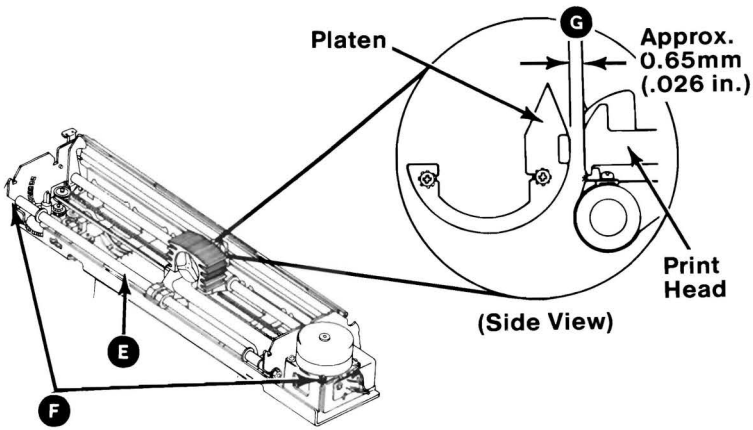





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5. Pivot the carrier shaft (E) into the slots on the frame. Tighten the nuts (F).

6. Check the print head gap (G) and adjust if necessary **(5682)**.




7. Adjust the left margin sensor **(5670)**.

8. Install the top cover **(5632)**.

9. Install the ribbon cartridge.

10. Install the access cover **(5630)**.

11. Install the forms rack **(5640)**.


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# Control Circuit Card Switch Setting 5615

Before replacing the control circuit card, check the printer dual in-line pin (DIP) switch settings. Be sure the problem is not caused by an improper DIP switch setting.

**Note:** The graphics printer Switch No.1-7 must be set for local requirements. This switch selects Table 1 or 2 and is factory set to Off for U.S. English speaking countries.

### Functions and Conditions of Dip Switch No. 1

**Graphics Printer**

| Switch No. | Function | On | Off | Factory Set |
|---|---|---|---|---|
| 11 | Not Applicable | — | — | On |
| 12 | CR | Print Only | Print & Line Feed | On |
| 13 | Buffer Full | Print Only | Print & Line Feed | Off |
| 14 | Cancel Code | Invalid | Valid | Off |
| 15 | Not Applicable | — | — | On |
| 16 | Error Buzzer | Sound | Does Not Sound | On |
| 17 | Character Generator | Table 2 | Table 1 | On |
| 18 | Select in Signal | Fixed Internally | Not Fixed Internally | On |

### Functions and Conditions of Dip Switch No. 2

**Graphics Printer**

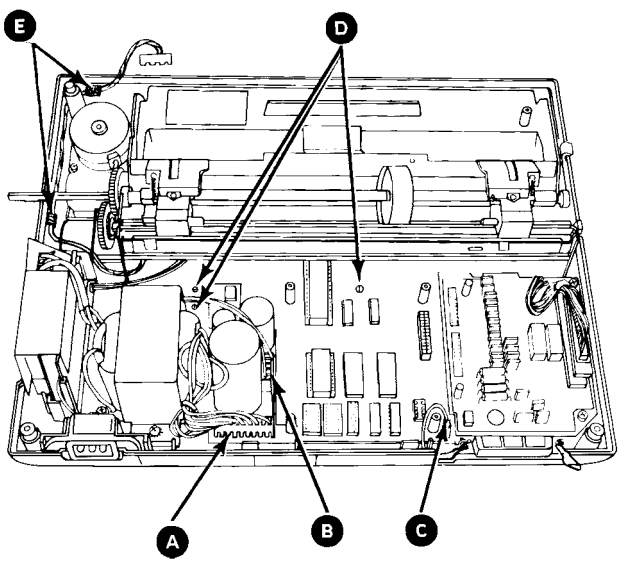
| | | | | |
|---|---|---|---|---|
| 21 | Form Length | 12" 304.8mm | 11" 279.4mm | Off |
| 22 | Line Spacing | 1/8" 3.175mm | 1/6" 4.23mm | Off |
| 23 | Auto Feed XT Signal | Fixed Internally | Not Fixed Internally | Off |
| 24 | 1 in. Skip Over Perforation | Valid | Not Valid | Off |



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# Control Circuit Card Removal 5616

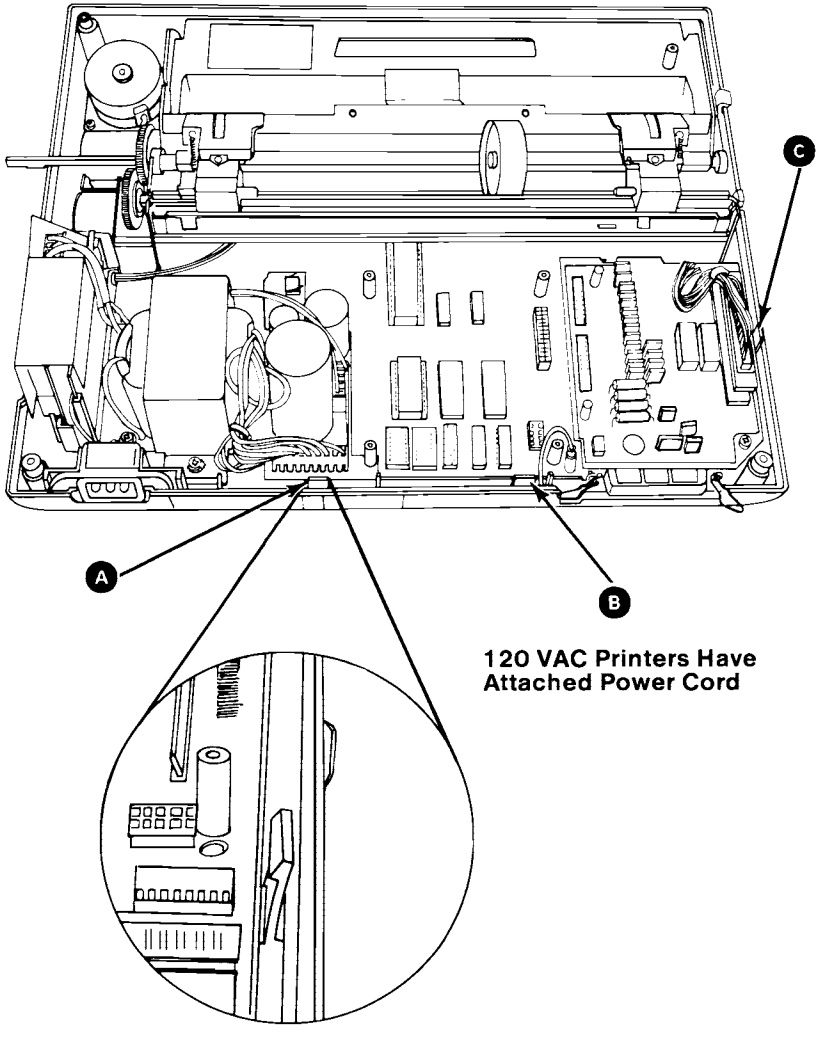
1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5631)**.
6. Remove the driver circuit card **(5620)**.
7. Unplug connector CN2 (A).
8. Unplug connector CN6 (B).
9. Unplug the ground wire (C).
10. Remove the three screws (D).
11. Pull the control panel cable out from under the retaining clips (E).





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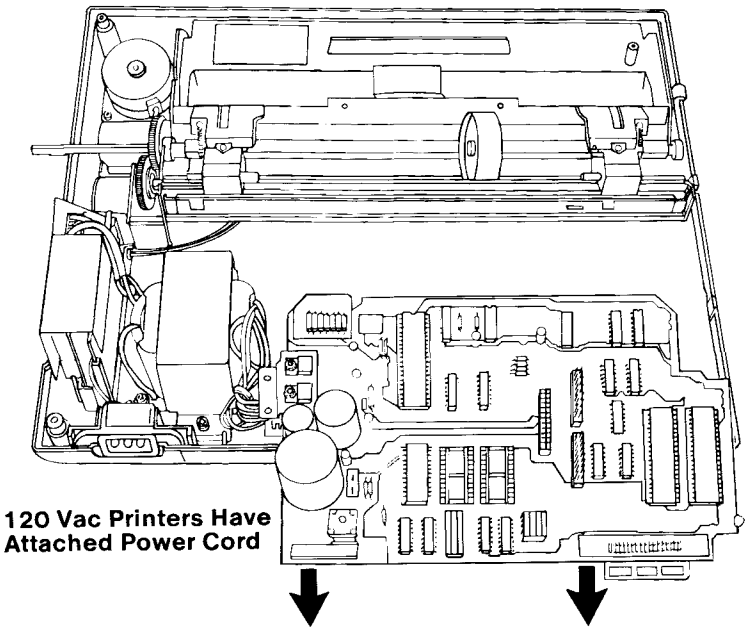
12. Press the three tabs A , B , and C and lift the card clear of the tabs.






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13. Lift the control circuit card to clear the six posts. Carefully pull the control circuit card away from the print mechanism assembly.

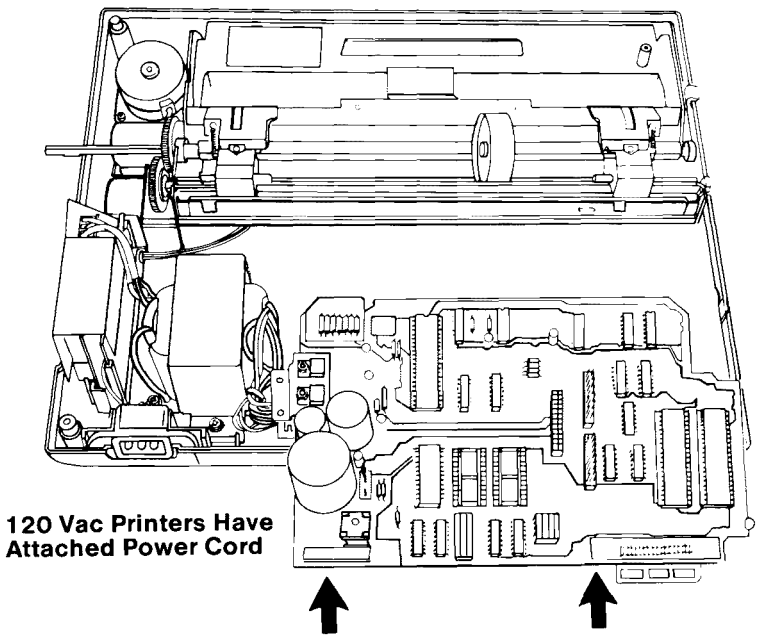




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# Control Circuit Card Replacement 5617

1. Guide the control circuit card into the open area behind the print mechanism assembly.





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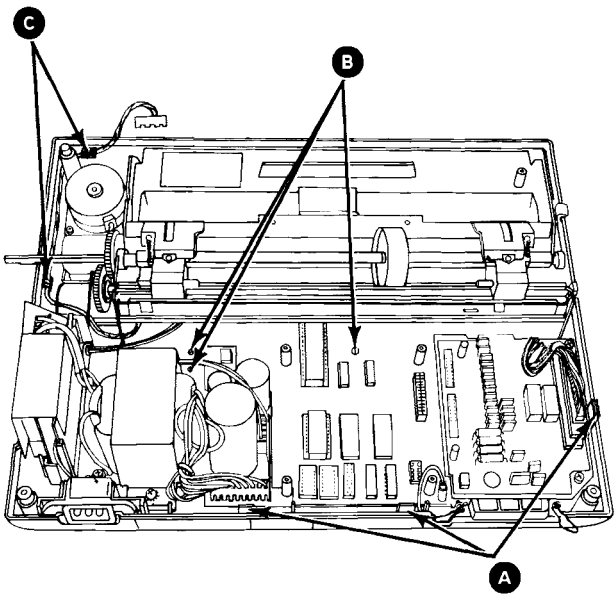
2. Align the six holes in the control circuit card with the six posts in the base cover.

3. Lower the control circuit card onto the base cover and snap the three retaining tabs (A) into place.

4. Install the 3 hold-down screws (B).

5. Guide the control panel cable along the right side of the base cover and around to the front.

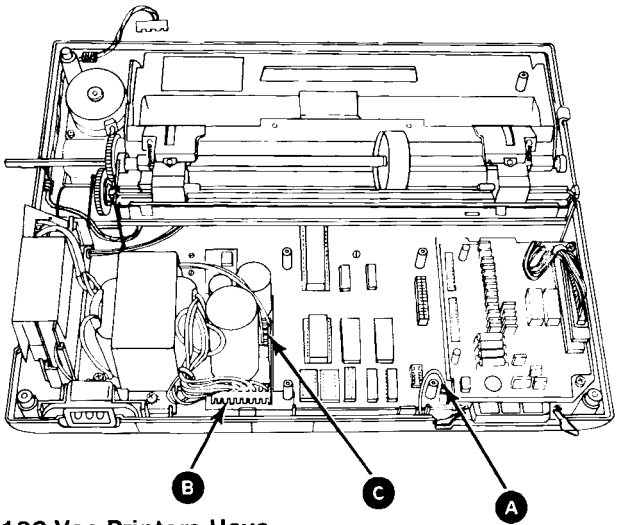
6. Place the control panel cable under the two retaining clips (C).





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7. Connect the ground wire (A).
8. Install connector CN2 (B).
9. Install connector CN6 (C).



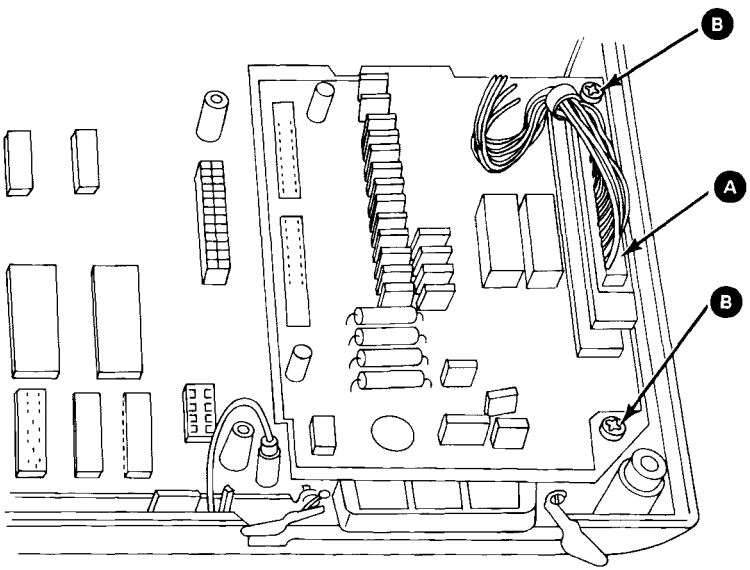

**120 Vac Printers Have Attached Power Cord**

10. Install the driver circuit card **(5621)**.
11. Install the top cover **(5632)**.
12. Install the access cover **(5630)**.
13. Install the forms rack **(5640)**.


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# Driver Circuit Card Removal 5620

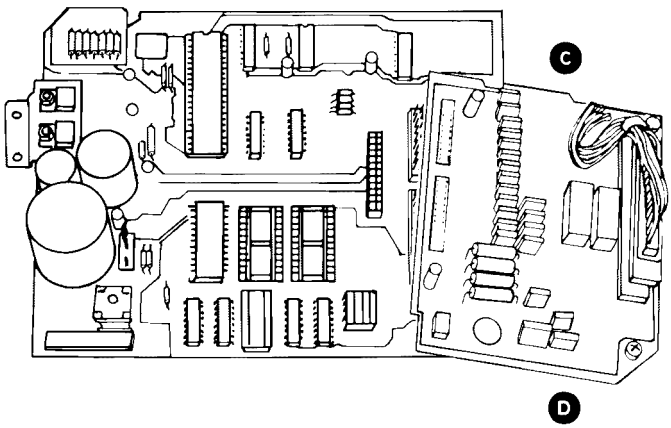
1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5631)**.
6. Unplug connector CN6 (A).
7. Remove the two screws (B).





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8. Disconnect the driver circuit card from the control circuit card at CN4 and CN5. Lift at C, then at D.





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# Driver Circuit Card Replacement 5621

1. Align the two connectors CN4 and CN5 (A) on the bottom of the driver circuit card with connectors CN4 and CN5 on the control circuit card.

   **Warning:** CN4 and CN5 are not keyed. Verify proper alignment before turning power on to the unit, to prevent circuit card damage.

2. Connect the driver circuit card to the control circuit card by pressing down firmly on the connectors. Be sure to guide connector CN6 cable into the slot on the left front edge of the driver circuit card.

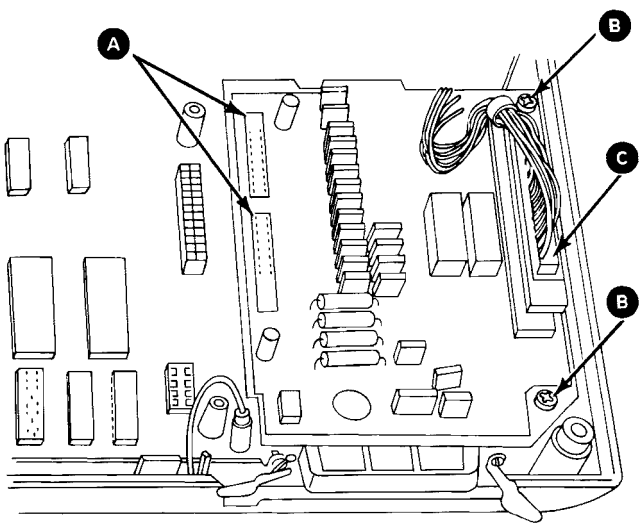
3. Install the two screws (B).

4. Install connector CN6 (C).

5. Install the top cover **(5632)**.

6. Install the access cover **(5630)**.

7. Install the forms rack **(5640)**.

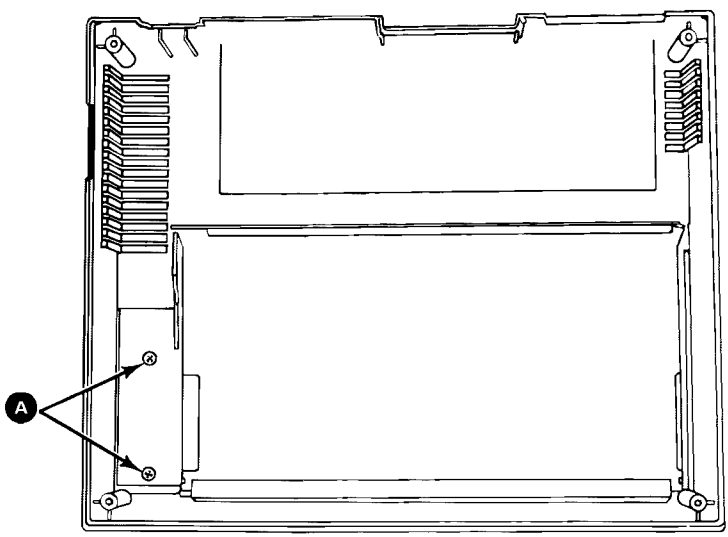




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# Control Panel Removal 5625

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5631)**.
6. Invert the top cover.
7. Remove the two screws (A) from the underside of the top cover.
8. Lift the control panel from the top cover.

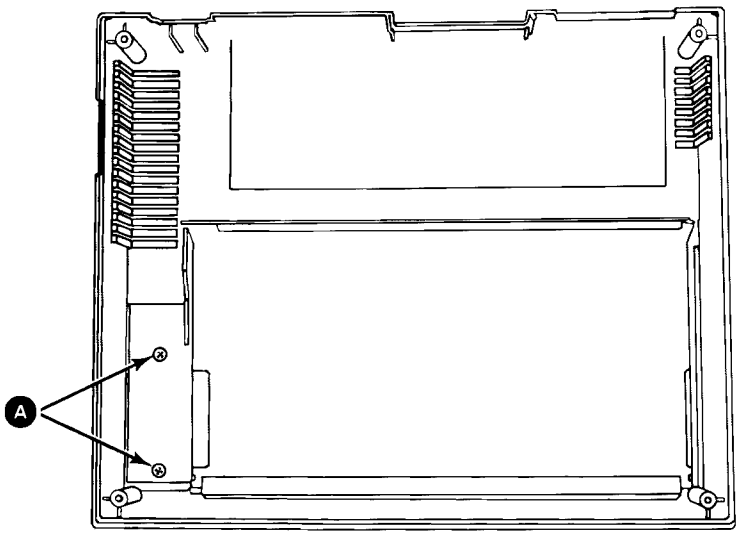




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# Control Panel Replacement 5626

1. Insert the control panel into the top cover.
2. Install the two screws (A).
3. Install the top cover **(5632)**.
4. Install the access cover **(5630)**.
5. Install the forms rack **(5640)**.

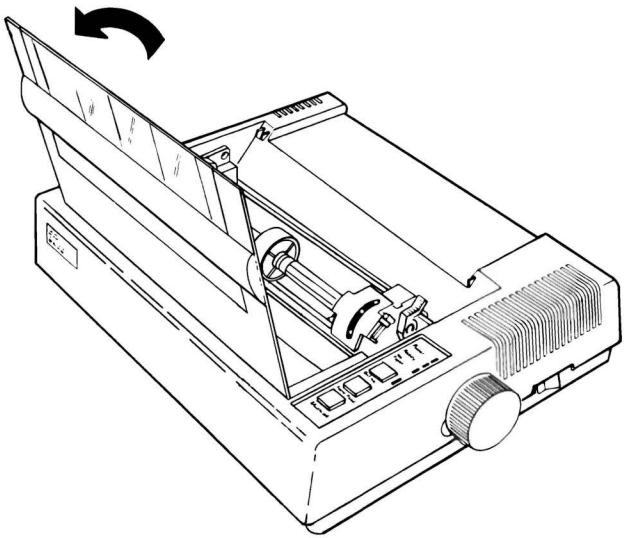




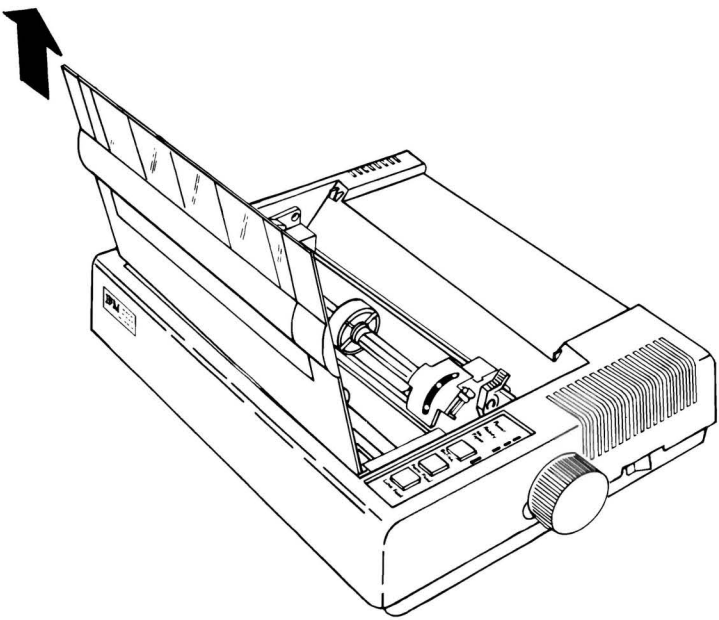
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# Access Cover Removal 5630

1. Raise the access cover.



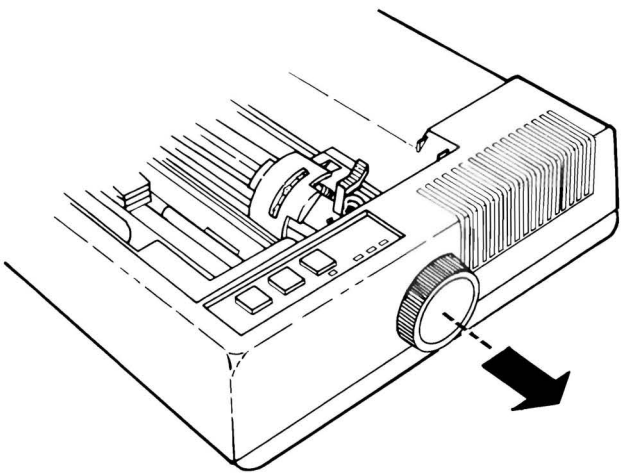
2. Lift the cover from the base as shown.




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# Top Cover Removal 5631

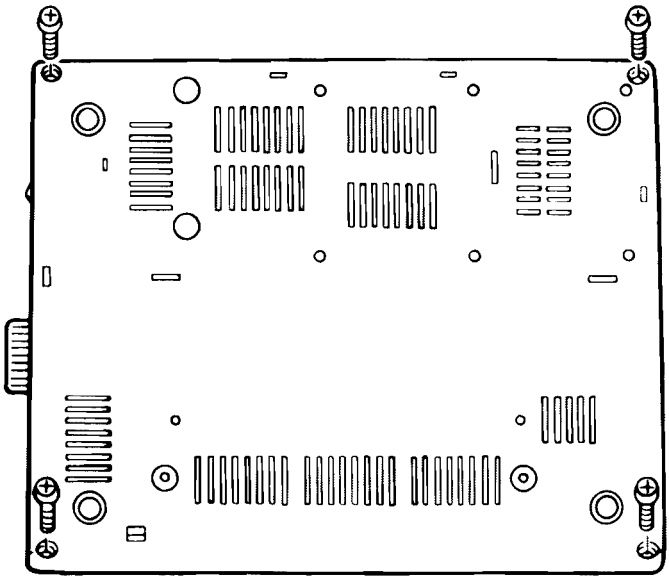
1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Pull the forms feed knob from the shaft using a steady, firm pull.




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6. Turn the printer upside down and place on a smooth surface.

7. Using a Phillips screwdriver, completely loosen the four screws in the corners of the base.

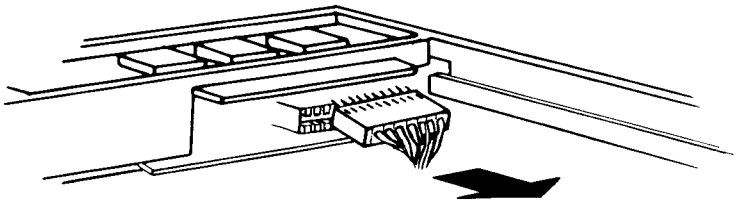


8. Turn the printer right-side up.

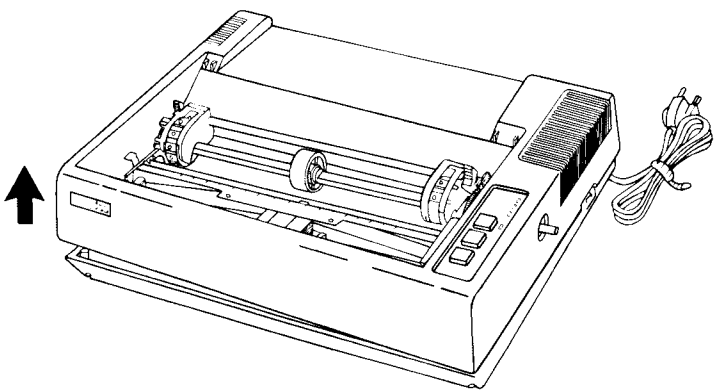
**CAUTION**
Be sure to grasp both the printer and the base cover.


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9. Pull the control panel cable from the control panel in the top cover.



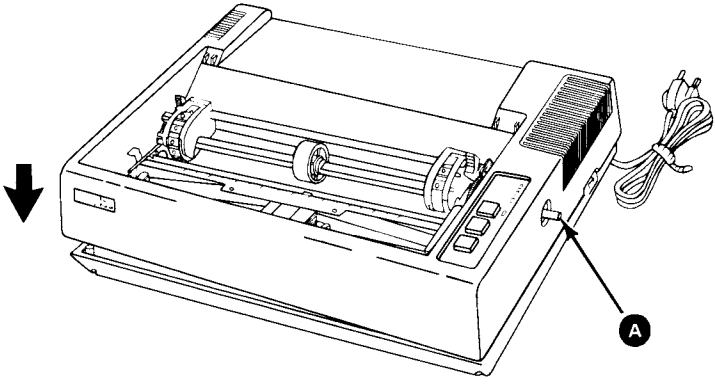
10. Lift the top cover away from the base cover. Lift the left side first. Then slide the top cover to the right to clear the forms feed shaft.



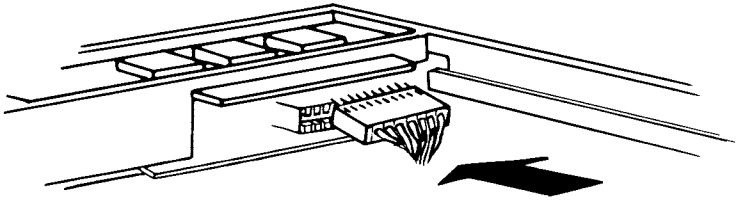

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# Top Cover Replacement 5632

1. Insert the forms feed shaft through the opening (A) in the top cover and lower the top cover onto the base cover.



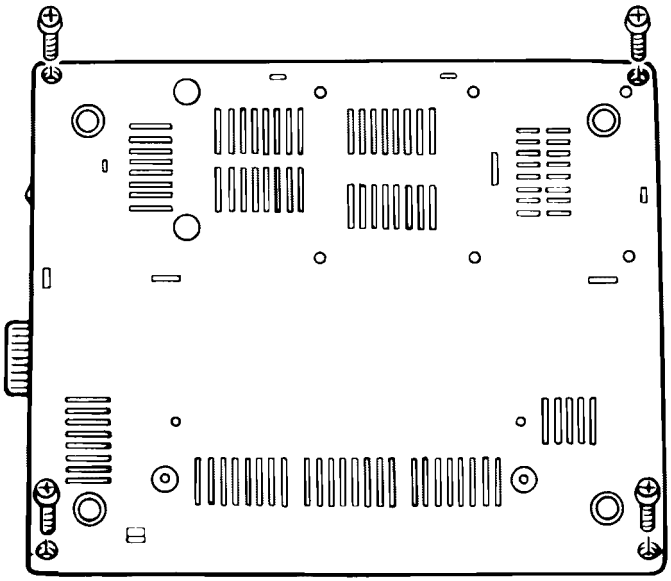

2. Connect the control panel cable to the control panel.




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3. Turn the printer upside down.

4. Install the four screws.



5. Turn the printer right-side up.

6. Install the forms feed knob **(5635)**.

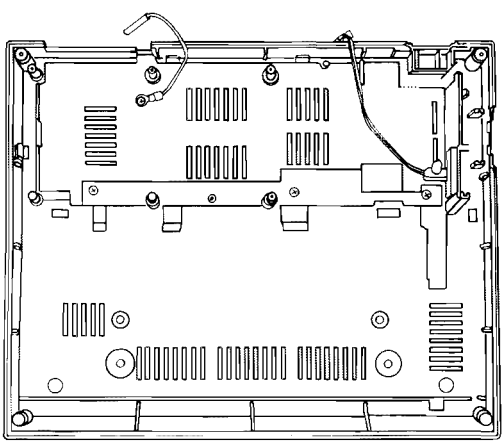
7. Install the access cover **(5630)**.

8. Install the forms rack **(5640)**.


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# Base Cover Removal 5633

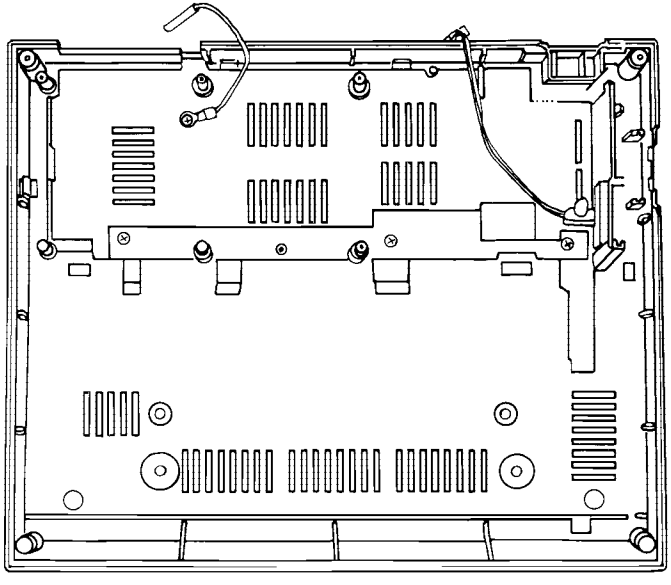
1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5631)**.
6. Remove the power transformer **(5675)** or **(5678)**.
7. Remove the fuse-filter card/Power cord **(5655)**.
8. Remove the driver circuit card **(5620)**.
9. Remove the control circuit card **(5616)**.
10. Remove the print mechanism assembly **(5685)**.
11. Remove the heat sink/power transistor assembly **(5660)**.
12. The base cover is now completely detached from the other FRUs.




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# Base Cover Replacement 5634

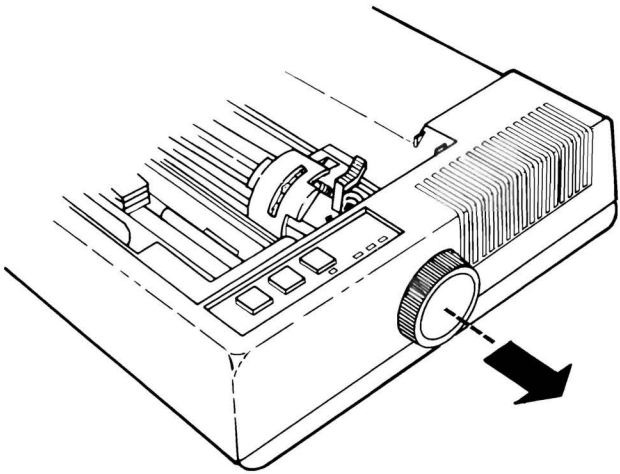
1. Set the base cover on your work surface.
2. Install the heat sink/power transistor assembly **(5661)**.
3. Install the print mechanism assembly **(5686)**.
4. Install the control circuit card **(5617)**.
5. Install the driver circuit card **(5621)**.
6. Install the fuse-filter card/Power cord **(5656)**.
7. Install the power transformer **(5676)** or **(5679)**.
8. Install the top cover **(5632)**.
9. Install the access cover **(5630)**.
10. Install the forms rack **(5640)**.




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# Forms Feed Knob Removal 5635

Pull the forms feed knob from the shaft using a steady, firm pull.

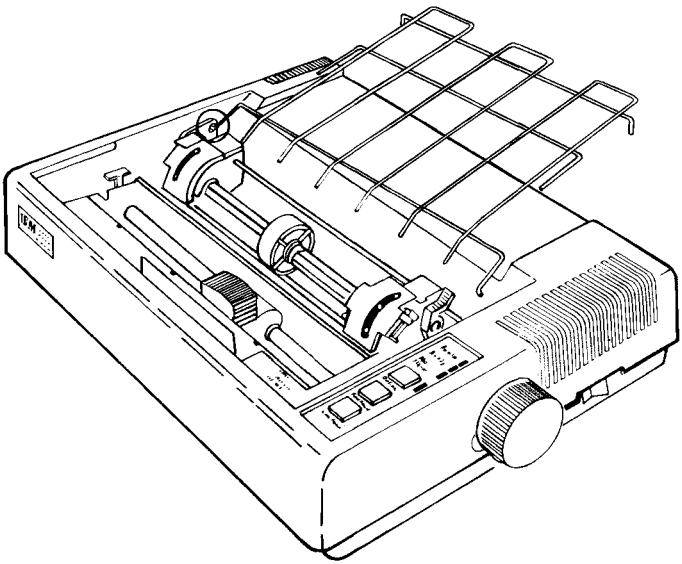




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# Forms Rack Removal 5640

1. Remove the forms.
2. Compress the rack on one side to unhook the rack from the printer frame.
3. Lift the rack away from the frame.

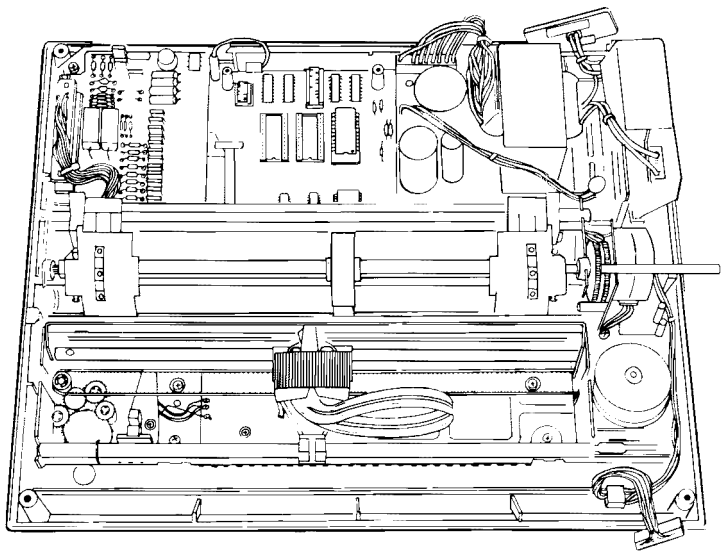




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# Forms Tractors Removal 5645

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5631)**.




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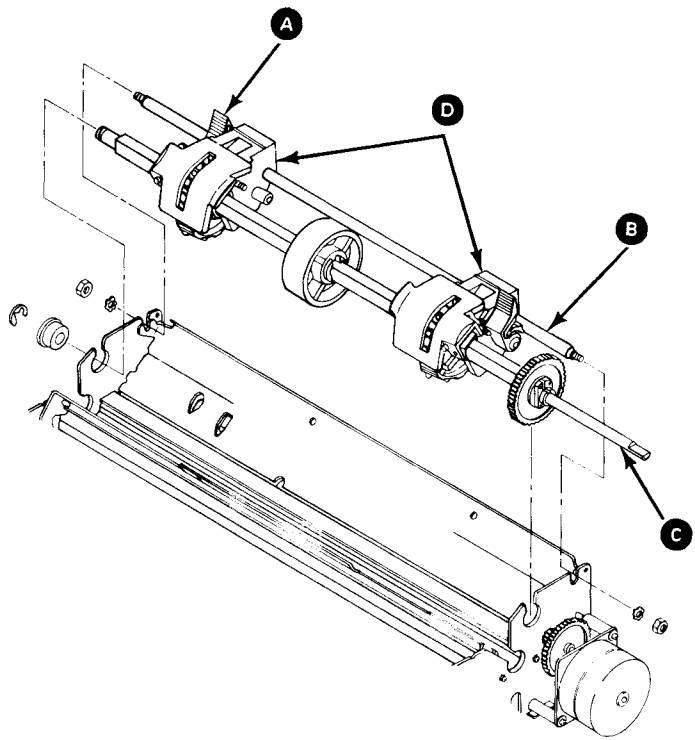
6. Rotate the lock levers (A) forward (released position).

7. Loosen the nuts on the ends of the tractor support shaft (B).

8. Remove the retaining clip on the left end of the guide shaft (C) and slide the bushings to the outside of the frame.

9. Lift the guide shaft, the support shaft and the forms tractors from the machine.

10. Slide the forms tractors (D) off the shafts.

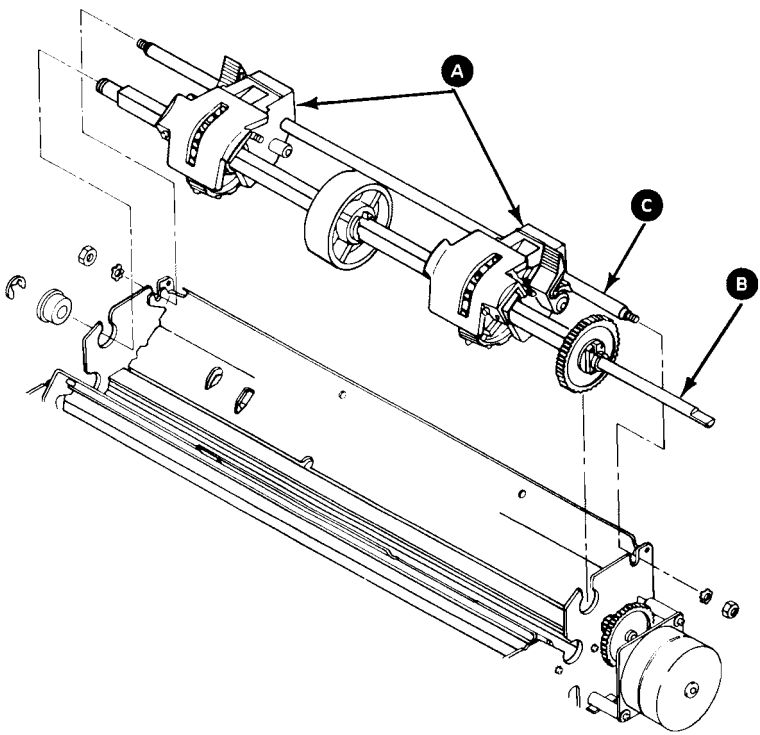




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# Forms Tractors Replacement 5646

1. Slide the forms tractors (A) onto the guide shaft (B) and the support shaft (C).
2. Place the guide shaft and the support shaft into the slots on the frame.
3. Slide the bushings on the guide shaft into the frame and replace the retaining clip on the left end of the shaft.
4. Tighten the retaining nuts on the ends of the support shaft.
5. Install the top cover **(5632)**.
6. Install the access cover **(5630)**.
7. Install the forms rack **(5640)**.






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# Fuse Removal 5650

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the printer cable.

2. Remove the forms.

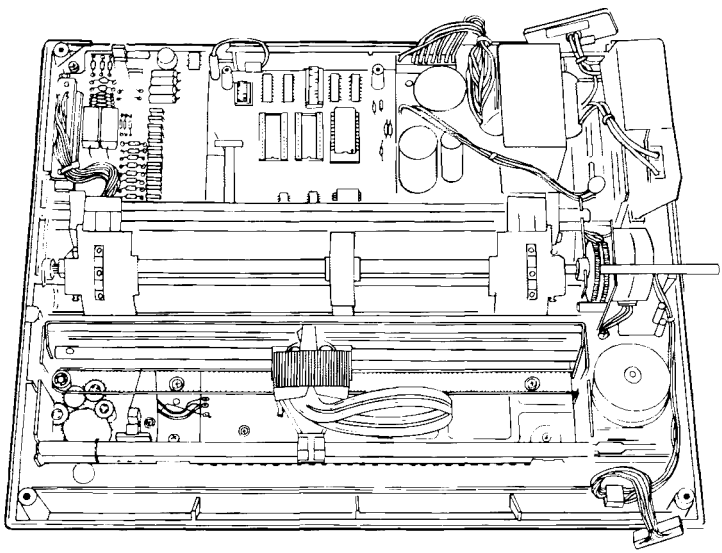
3. Remove the forms rack **(5640)**.

4. Remove the access cover **(5630)**.

5. Remove the top cover **(5631)**.

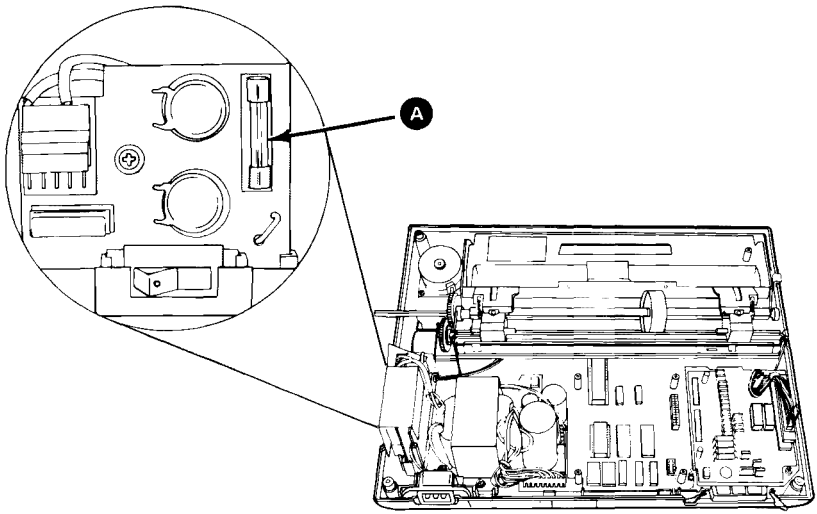
> **DANGER**
> **STATIC VOLTAGE MAY BE PRESENT ON THE FUSE-FILTER CARD. USE CAUTION IN THIS AREA.**

6. Remove the safety shield on the fuse-filter card **(5695)**.




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7. Pull the fuse (A) from the holder.





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# Fuse-Filter Card/AC Socket Removal 220/240 Volt 5653

1. Set the printer Power switch to Off. Unplug the printer Power cord from the outlet and disconnect the printer cable.

2. Remove all forms.

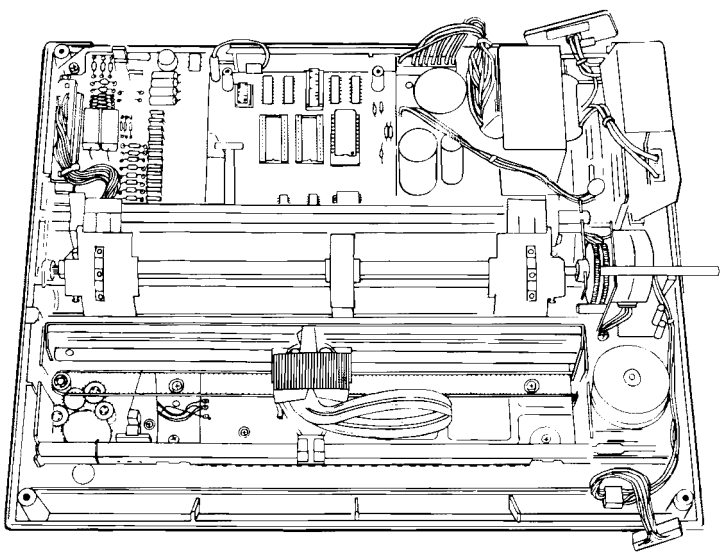
3. Remove the forms rack **(5640)**.

4. Remove the access cover **(5630)**.

5. Remove the top cover **(5631)**.

**DANGER**
**STATIC VOLTAGE MAY BE PRESENT ON THE FUSE-FILTER CARD. USE CAUTION IN THIS AREA.**

6. Remove the safety shield from the fuse-filter card assembly **(5695)**.




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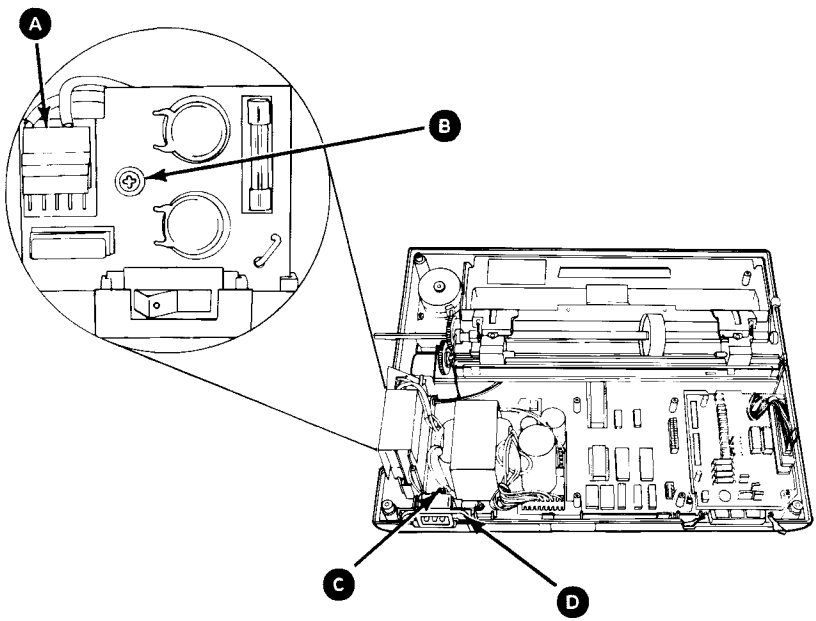
7. Remove transformer primary connector (A) from the fuse-filter card.

8. Remove screw (B) from the center of the fuse-filter card.

9. Remove screw (C) from the ground wire of the AC socket.

10. Lift AC socket (D) from the slot in the base cover.

11. Lift the fuse-filter card from the slot in the base cover.

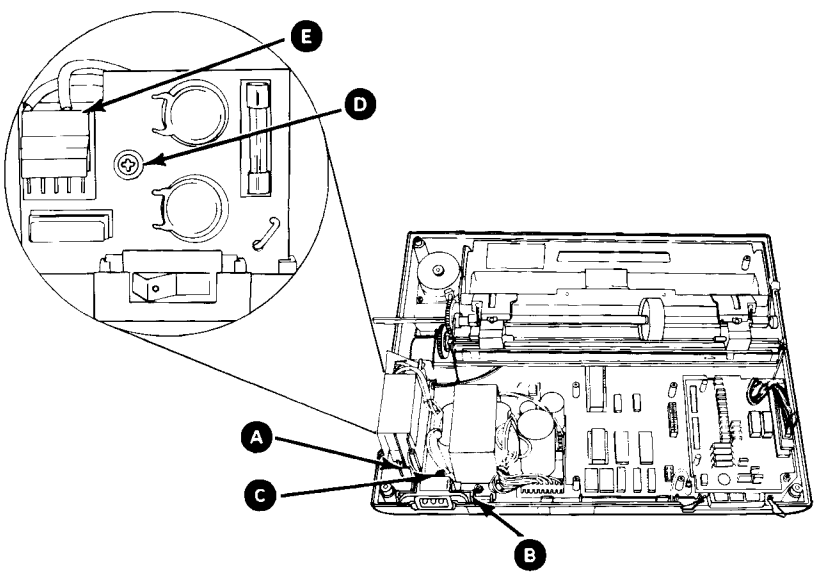




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# Fuse-Filter Card/AC Socket Replacement 220/240 Volt 5654

1. Insert the fuse-filter card into slot (A) in the base cover.
2. Insert the AC socket into slot (B) in the base cover.
3. Install screw (C) into the ground wire of the AC socket.
4. Install screw (D) in the center of the fuse-filter card.
5. Connect transformer primary (E) to the fuse-filter card.
6. Install the safety shield onto the fuse-filter card **(5696)**.
7. Install the top cover **(5632)**.
8. Install the access cover **(5630)**.
9. Install the forms rack **(5640)**.





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# Fuse-Filter Card/Power Cord Removal—120 Volt 5655

1. Set the printer Power switch to Off. Unplug the printer Power cord from the outlet and disconnect the Printer Cable.

2. Remove the forms.

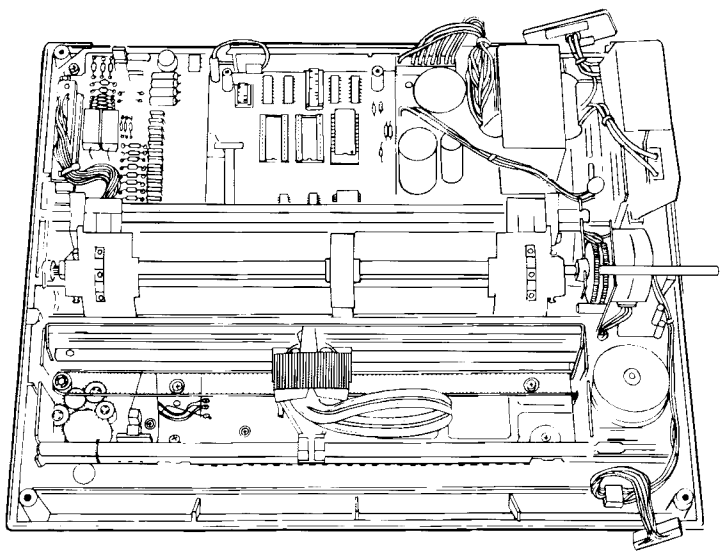
3. Remove the forms rack **(5640)**.

4. Remove the access cover **(5630)**.

5. Remove the top cover **(5631)**.

> **DANGER**
> **STATIC VOLTAGE MAY BE PRESENT ON THE FUSE-FILTER CARD. USE CAUTION IN THIS AREA.**

6. Remove the safety shield from the fuse-filter card assembly **(5695)**.





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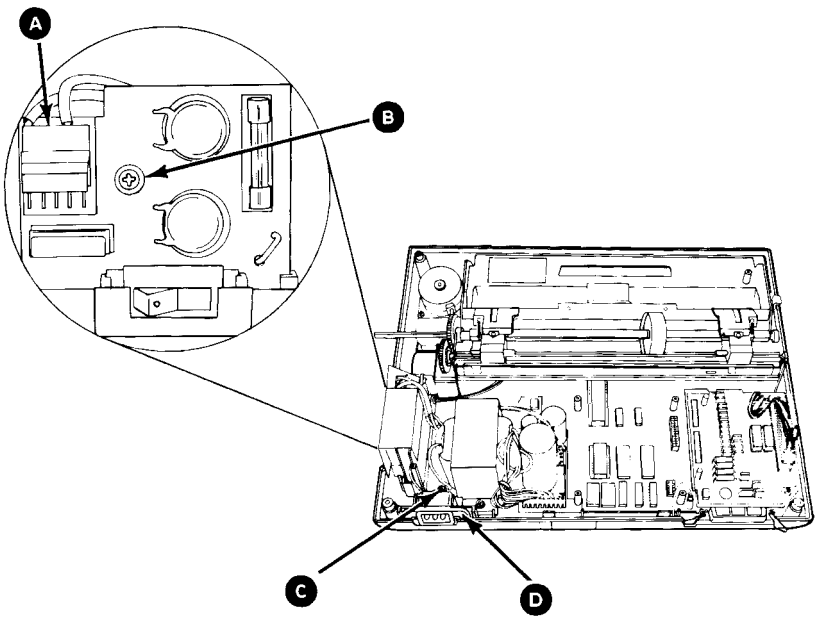
7. Remove the transformer primary connector (A) from the fuse-filter card.

8. Remove the screw (B) from the center of the fuse-filter card.

9. Remove the screw (C) from the ground terminal of the printer Power cord.

10. Lift the strain relief (D) from the slot in the base cover.

11. Lift the fuse-filter card from the slot in the base cover.

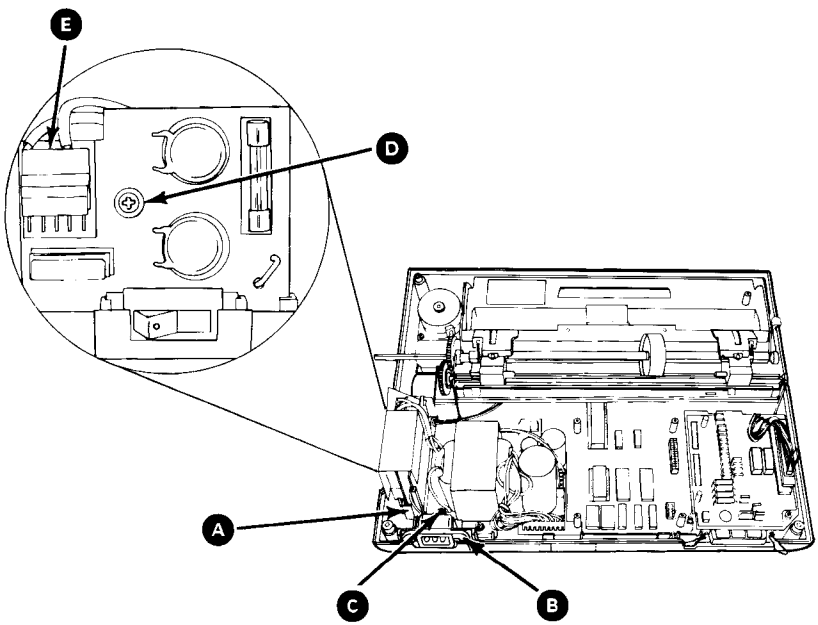




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# Fuse-Filter Card/Power Cord Replacement—120 Volt 5656

1. Insert the fuse-filter card into the slot (A) in the base cover.
2. Insert the strain relief into the slot (B) in the base cover.
3. Install the screw (C) into the ground terminal of the Power cord.
4. Install the screw (D) in the center of the fuse-filter card.
5. Connect the transformer primary (E) to the fuse-filter card.






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6. Install the safety shield onto the fuse-filter card **(5696)**.

7. Install the top cover **(5632)**.

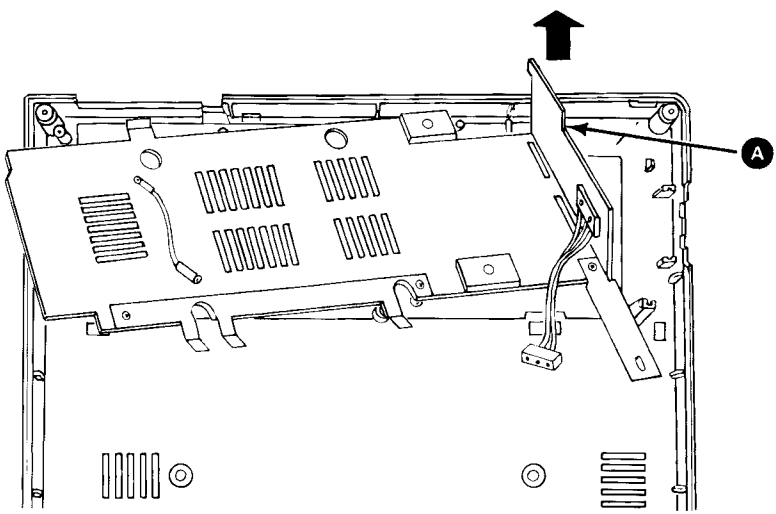
8. Install the access cover **(5630)**.

9. Install the forms rack **(5640)**.


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# Heat Sink/Power Transistor Assembly Removal 5660

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5632)**.
6. Remove the power transformer **(5675)** or **(5678)**.
7. Remove the fuse-filter card/power cord **(5655)**.
8. Remove the driver circuit card **(5620)**.
9. Remove the control circuit card **(5616)**.
10. Remove the print mechanism assembly **(5685)**.
11. Lift the heat sink assembly (A) from the base cover.

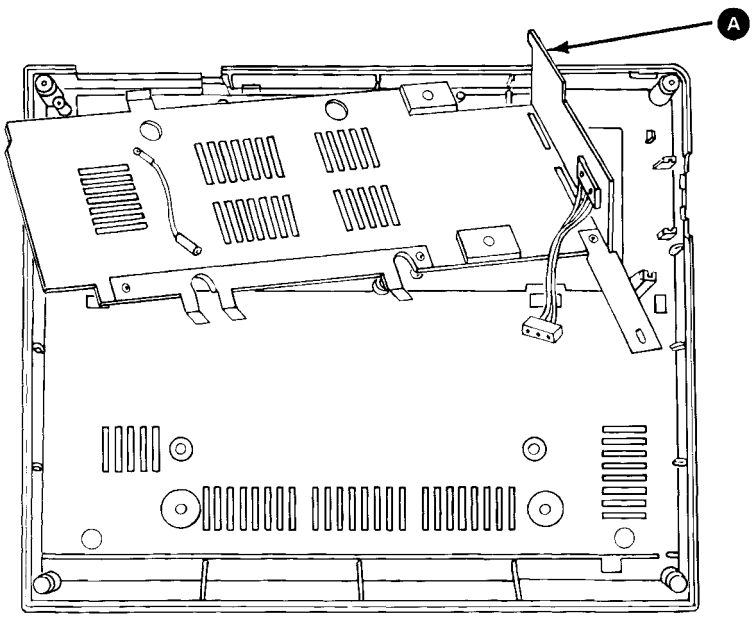




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# Heat Sink/Power Transistor Assembly Replacement 5661

1. Position the heat sink/power transistor assembly Ⓐ onto the base cover.
2. Install the print mechanism assembly **(5686)**.
3. Install the control circuit card **(5617)**.
4. Install the driver circuit card **(5621)**.
5. Install the fuse-filter card/power cord **(5656)**.
6. Install the power transformer **(5676)** or **(5679)**.
7. Install the top cover **(5632)**.
8. Install the access cover **(5630)**.
9. Install the forms rack **(5640)**.

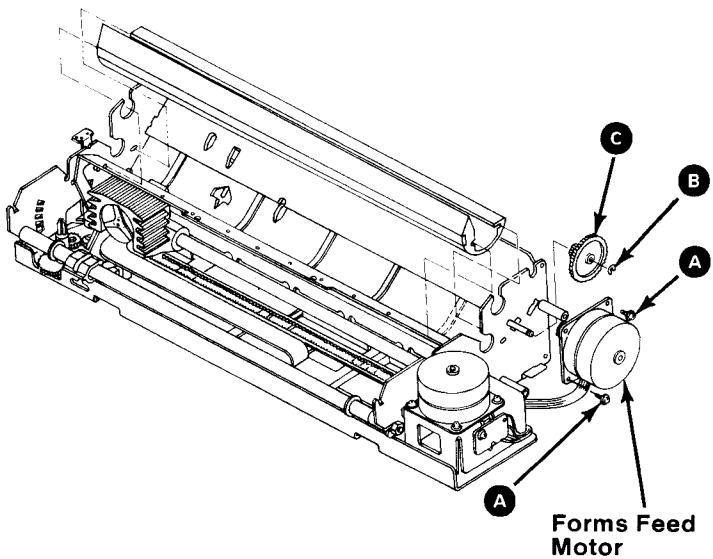




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# Intermediate Gear Removal 5665

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove all forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5631)**.
6. Remove the two screws (A) from the forms feed motor mounts.
7. Remove the intermediate gear retaining clip (B).
8. Slide the intermediate gear (C) off the shaft.

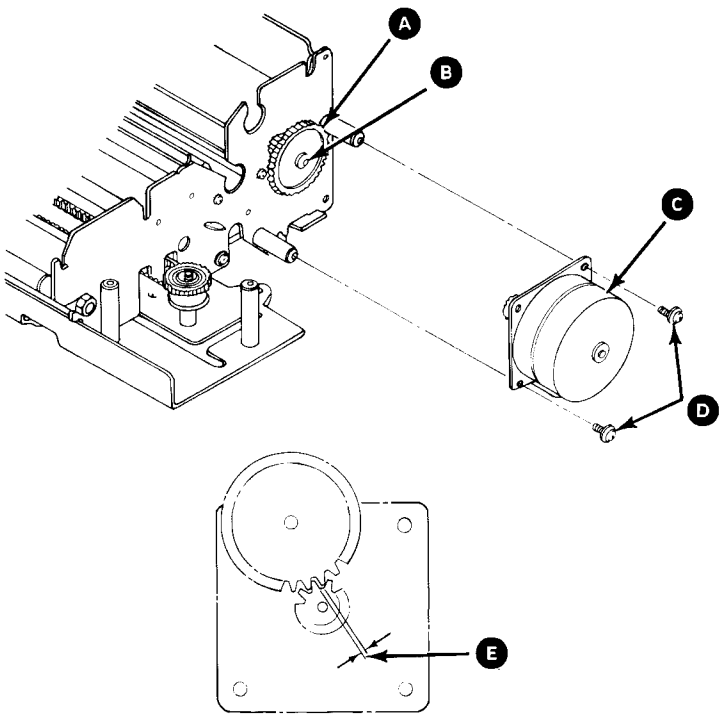




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# Intermediate Gear Replacement 5666

1. Slide the intermediate gear (A) onto the shaft.
2. Install the retaining clip (B).
3. Install the forms feed motor (C) onto the mounts.
4. Install the two screws (D) but do not tighten.
5. Adjust the motor to mesh so the gears have minimum backlash (E) and no binds.
6. Tighten the two screws.
7. Install the top cover **(5632)**.
8. Install the access cover **(5630)**.
9. Install the forms rack **(5640)**.

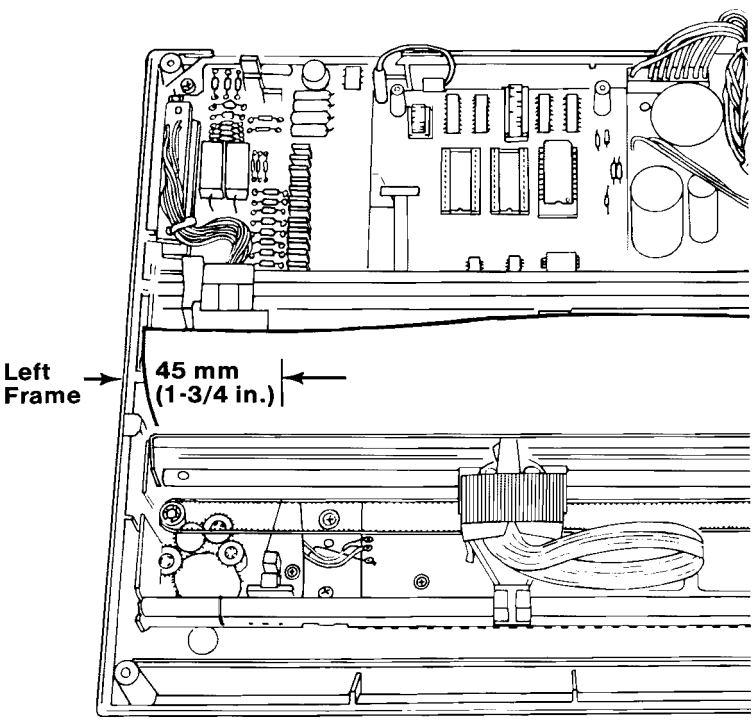




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# Left Margin Sensor Adjustment 5670

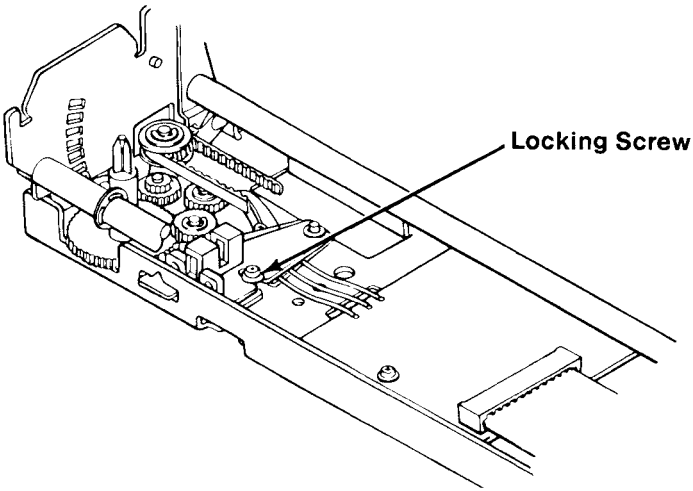
1. Set the printer Power switch to Off; unplug the the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5631)**.
6. Remove the ribbon cartridge.
7. Insert a sheet of paper into the printer. Position the paper to the left frame.
8. Measure 45 mm (1-3/4 in.) from the left frame and mark the position on the paper.





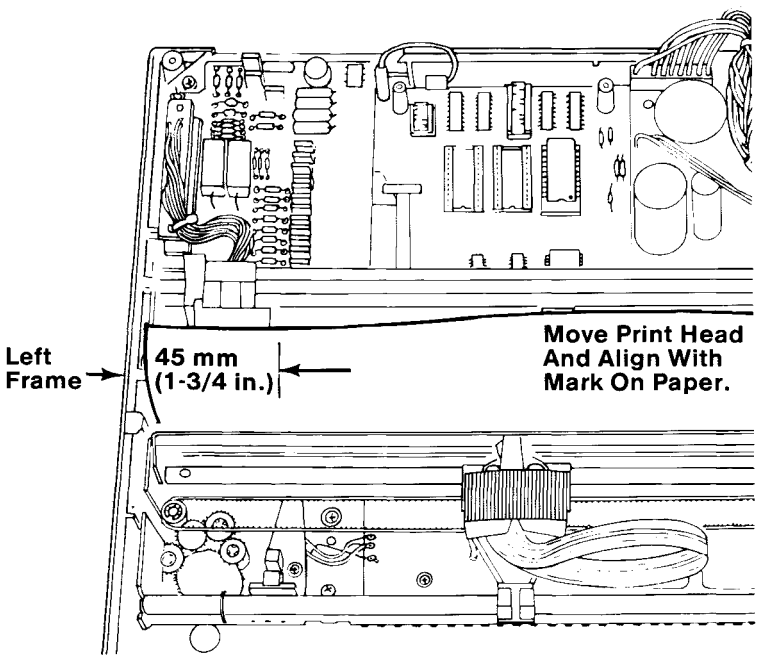
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9. Loosen the left margin sensor locking screw.




10. Plug the printer Power cord into the outlet. Set the printer Power switch to On.

11. Move the print head manually and align it with the 45 mm (1-3/4 in.) mark on the paper.



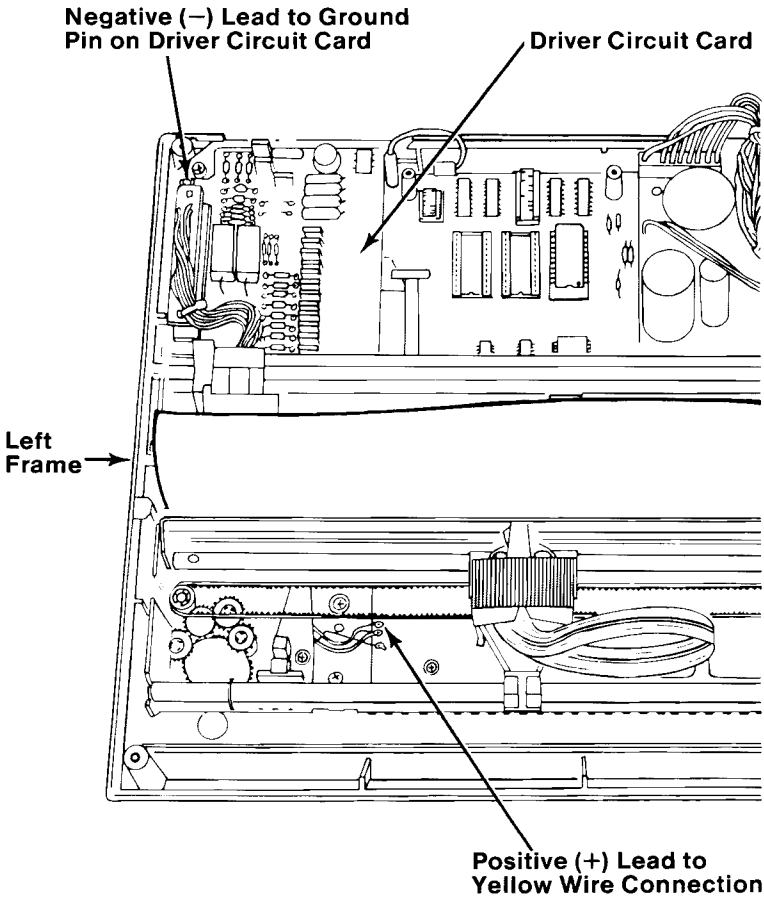


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12. Set your multimeter to the 12 Vdc scale.

13. Place the negative (-) lead of the meter on the ground pin of the driver circuit card.

14. Place the positive (+) lead of the meter on the yellow wire solder connection on the left margin sensor.





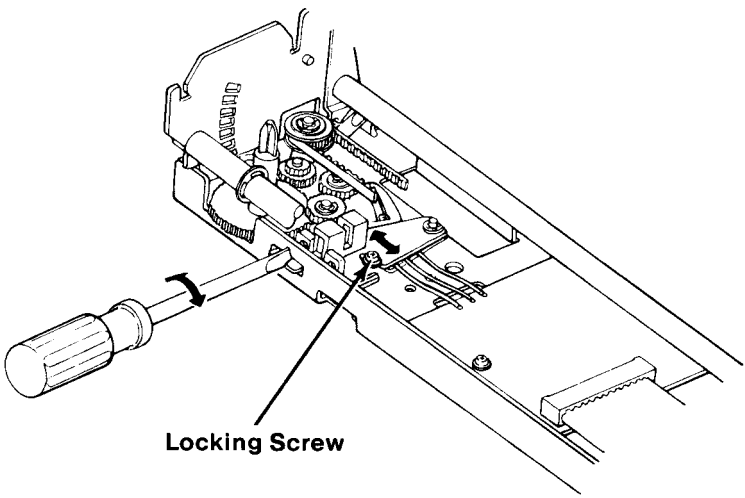
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15. Move the left margin sensor to the left until the voltage reading on the meter is a down level (approximately 0 Vdc).

16. Move the left margin sensor to the right until the voltage on the meter is an up level (approximately 5 Vdc).

    **Note:** If the voltage reading on the meter stays at a down level, move the head one position to the left and repeat steps 15 and 16.

17. Tighten the left margin locking screw.



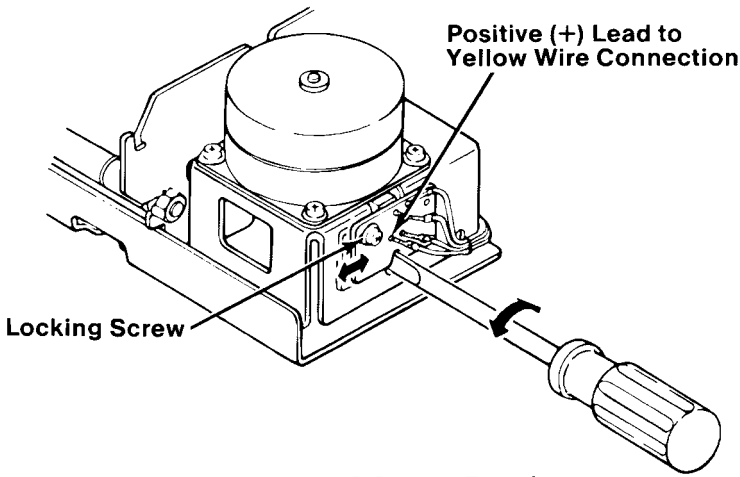


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18. Place the positive (+) lead of the meter on the yellow wire solder connection on the printer timing (PTS) board.

19. Loosen the printer timing sensor board locking screw.

20. Move the printer timing sensor board either way until the voltage reading is an up level (approximately 5 Vdc).




**Adjustment of PTS Sensor Board**

21. Perform the following steps:

    a. Move the print head slightly to the left. The voltage reading should drop to a down level (approximately 0 Vdc). Do not allow the print head to step to the next detented position.

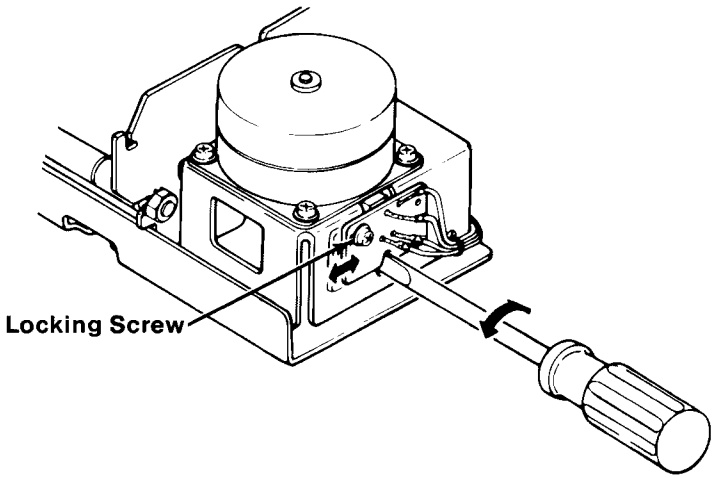

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b. Move the print head slightly to the right. The voltage reading should drop to a down level (approximately 0 Vdc).

> **Note:** It is very important that the amount of pressure exerted on the print head be equal in either direction when the meter drops to the down level, without causing the print head to jump to the next detented position.


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22. Tighten the printer timing sensor locking screw and recheck step 21. Align if necessary.




23. Run the "Printer Off-line Diagnostic Test" and observe the speed in both directions.

24. If the buzzer sounds, the printer timing sensor board is set incorrectly. Repeat the procedure starting at step 18.

25. If the speed is different between forward and reverse printing, perform the following steps.

    a. Place the positive (+) lead of the voltage meter on the yellow wire solder connection on the printer timing sensor board.
    b. Loosen the printer timing sensor board locking screw.
    c. Move the printer timing sensor board until another up level location is observed and repeat the procedure from step 21.

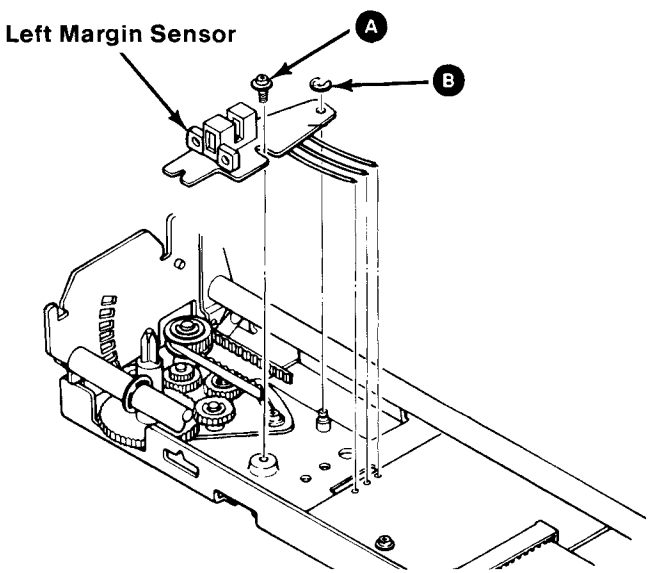
26. If it is the same speed in both directions, the adjustment is complete.



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# Left Margin Sensor Removal 5671

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove the forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the ribbon cartridge.
6. Remove the top cover **(5631)**.
7. Move the carriage to the right frame.
8. Remove the retaining screw (A) and the retaining clip (B).
9. Unsolder the three wires from the left margin sensor.
10. Lift the left margin sensor from the printer.

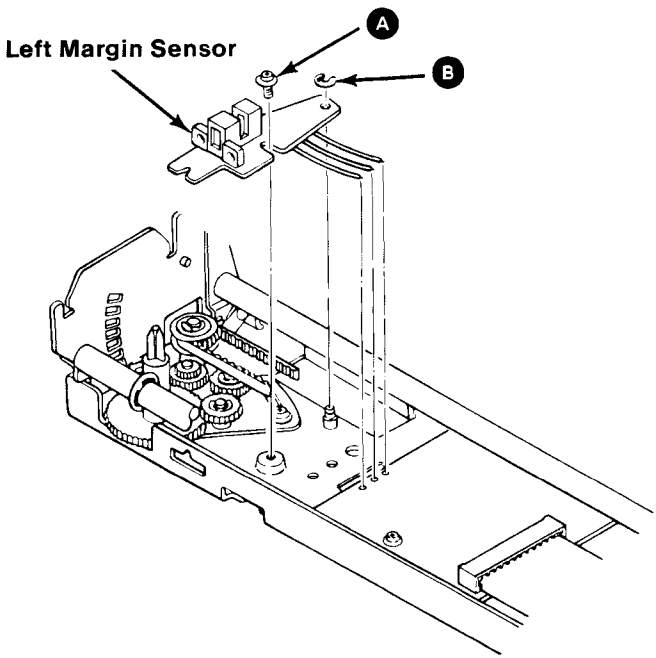




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# Left Margin Sensor Replacement 5672

1. Solder the three wires from the terminal board to the left margin sensor.
2. Place the left margin sensor pivot hole over the post.
3. Install the retaining screw (A) and the retaining clip (B).
4. Adjust the left margin sensor **(5670)**.
5. Install the top cover **(5632)**.
6. Install the ribbon cartridge.
7. Install the access cover **(5630)**.
8. Install the forms rack **(5640)**.





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# Power Transformer Removal 220/240 Volt 5675

1. Set the printer Power switch to Off. Unplug the printer Power cord from the outlet and disconnect the printer cable.

2. Remove all forms.

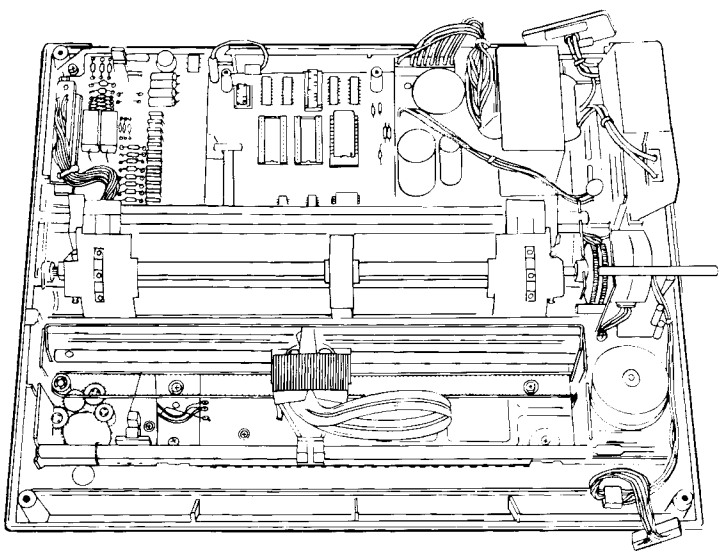
3. Remove the forms rack **(5640)**.

4. Remove the access cover **(5630)**.

5. Remove the top cover **(5631)**.

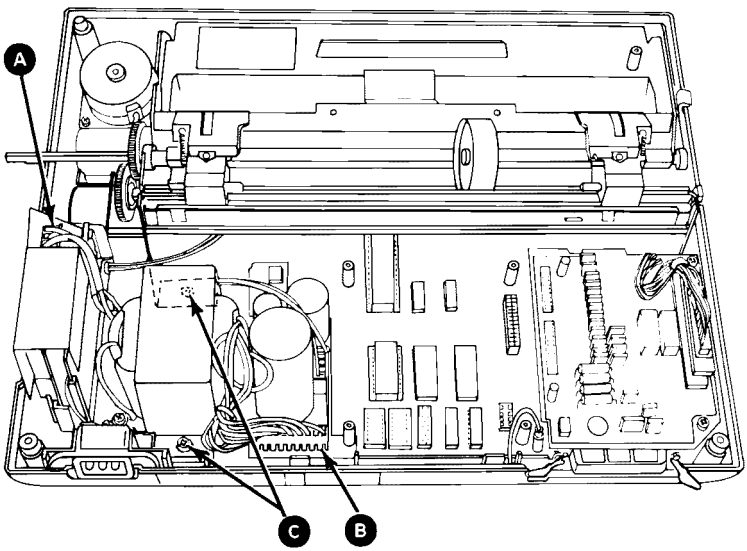
> **DANGER**
> **STATIC VOLTAGE MAY BE PRESENT ON THE FUSE-FILTER CARD. USE CAUTION IN THIS AREA.**

6. Remove the safety shield **(5695)**.




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7. Unplug connector (A) from the fuse-filter card.
8. Unplug connector (B) from the control circuit card.
9. Remove two screws (C) from the base of the transformer.
10. Lift the transformer from the base.

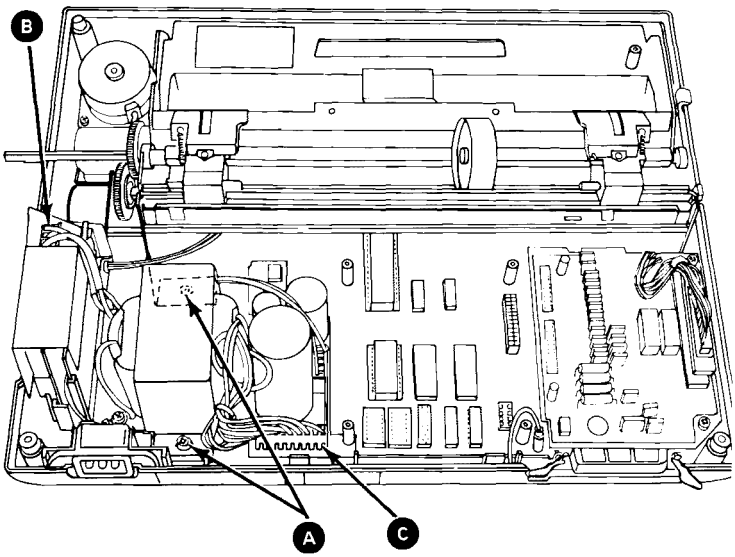




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# Power Transformer Replacement 220/240 volt 5676

1. Place the transformer on the base in the area next to the fuse-filter card (note the positioning of the two connectors).
2. Install two base mounting screws (A).
3. Plug connector (B) into the fuse-filter card.
4. Plug connector (C) into the control circuit card.




5. Install the safety shield **(5696)**.
6. Install the top cover **(5632)**.
7. Install the access cover **(5630)**.
8. Install the forms rack **(5640)**.

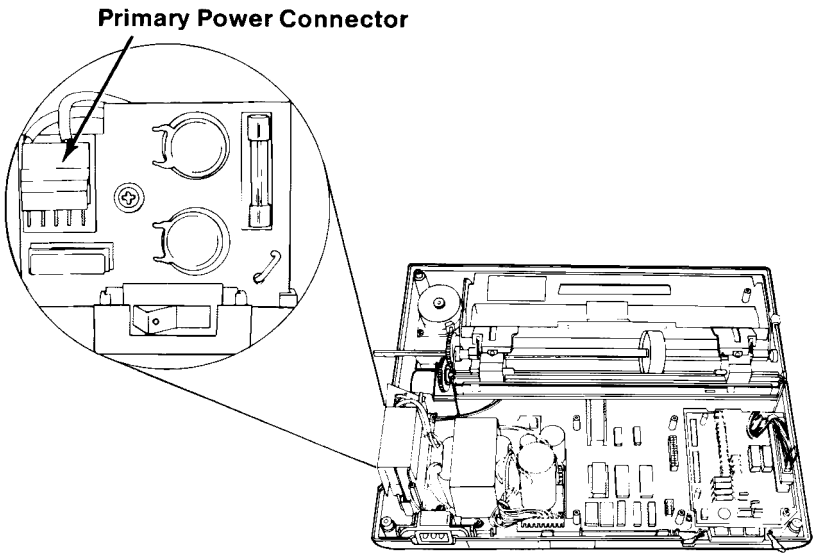

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# Power Transformer 220/240 Volt Primary Power Connector Wiring Check 5677

Before replacing the Power Transformer, check the new one for proper wiring.

A 220 Volt transformer must have a White wire in Primary Power Connector pin 1 and a Brown wire in pin 4. The Orange wire is stored in pin 6.

For 240 Volt installations, the Primary Power Connector must have a White wire in pin 1 and an Orange wire in pin 4. The Brown wire is stored in connector pin 6.





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# Power Transformer Removal 120 Volt 5678

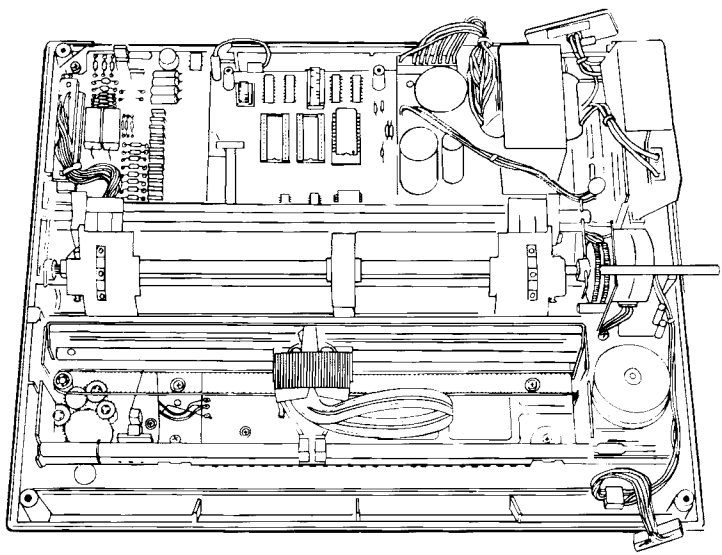
1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.

2. Remove all forms.

3. Remove the forms rack **(5640)**.

4. Remove the access cover **(5630)**.

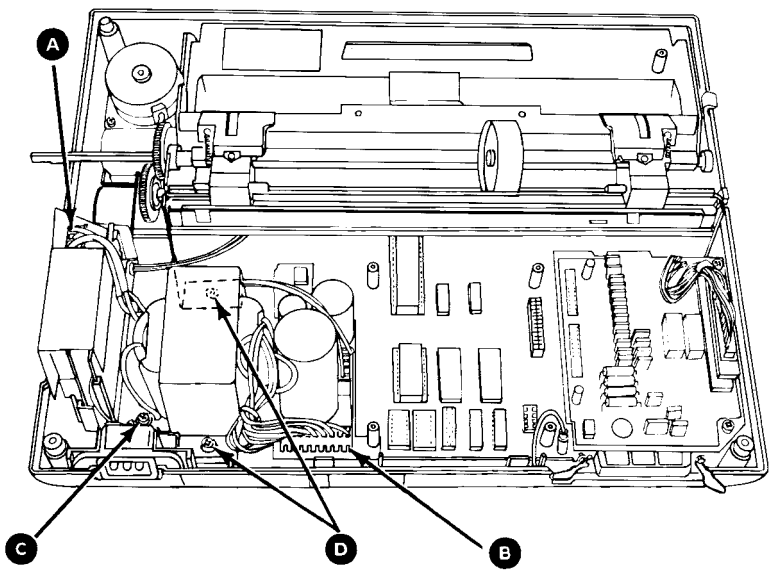
5. Remove the top cover **(5631)**.




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**DANGER**
**STATIC VOLTAGE MAY BE PRESENT ON THE FUSE-FILTER CARD. USE CAUTION IN THIS AREA.**

6. Unplug connector (A) from the fuse-filter card.
7. Unplug connector (B) from the control circuit card.
8. Remove the screw (C) from the transformer ground wire.
9. Remove the two screws (D) from the base of the transformer.
10. Lift the transformer from the base.

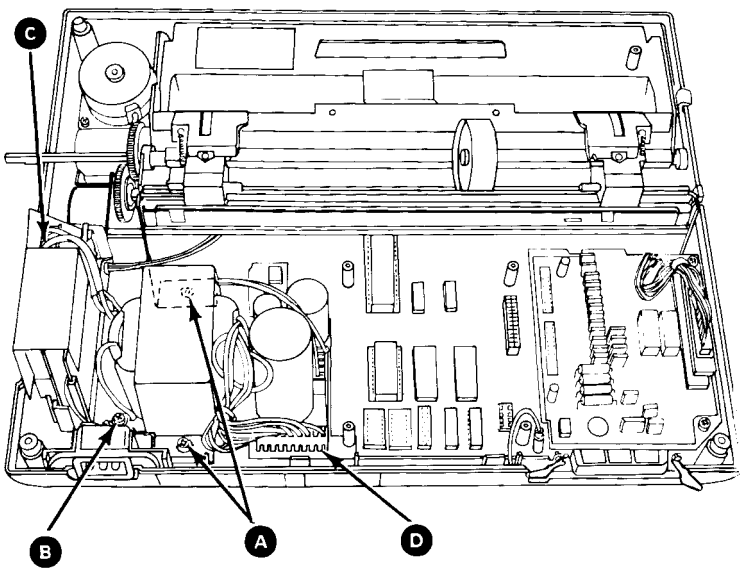




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# Power Transformer Replacement 120 Volt 5679

1. Place the transformer on the base in the area next to the fuse-filter card (note positioning of the two connectors).
2. Install the two base mounting screws (A).
3. Install the screw into the ground wire (B).
4. Plug connector (C) into the fuse-filter card.
5. Plug connector (D) into the control circuit card.

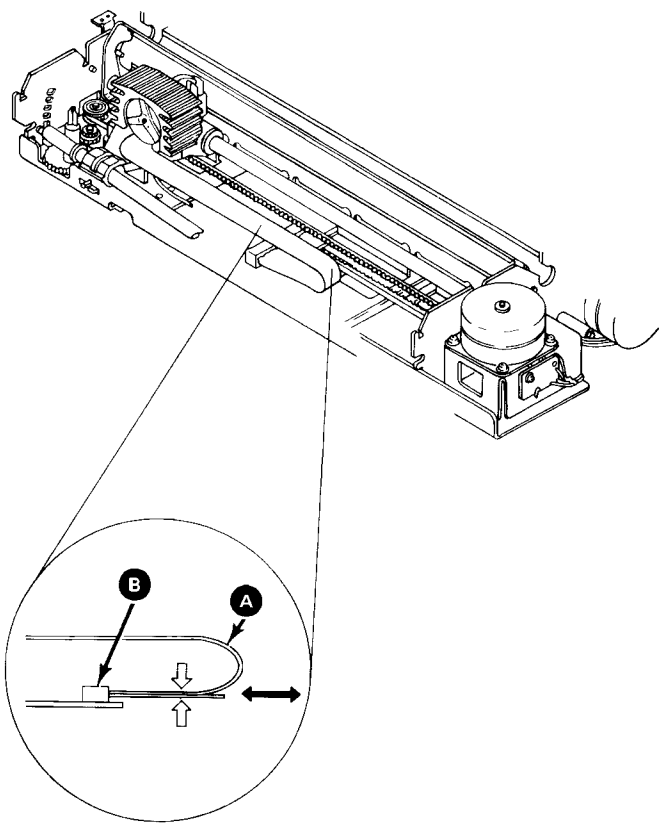



6. Install the top cover **(5632)**.
7. Install the access cover **(5630)**.
8. Install the forms rack **(5640)**.


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# Print Head Removal 5680

1. Set the printer Power switch to Off. Unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove all forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the ribbon cartridge.
6. Remove the top cover **(5631)**.
7. Pull the print head cable (A) from connector (B).

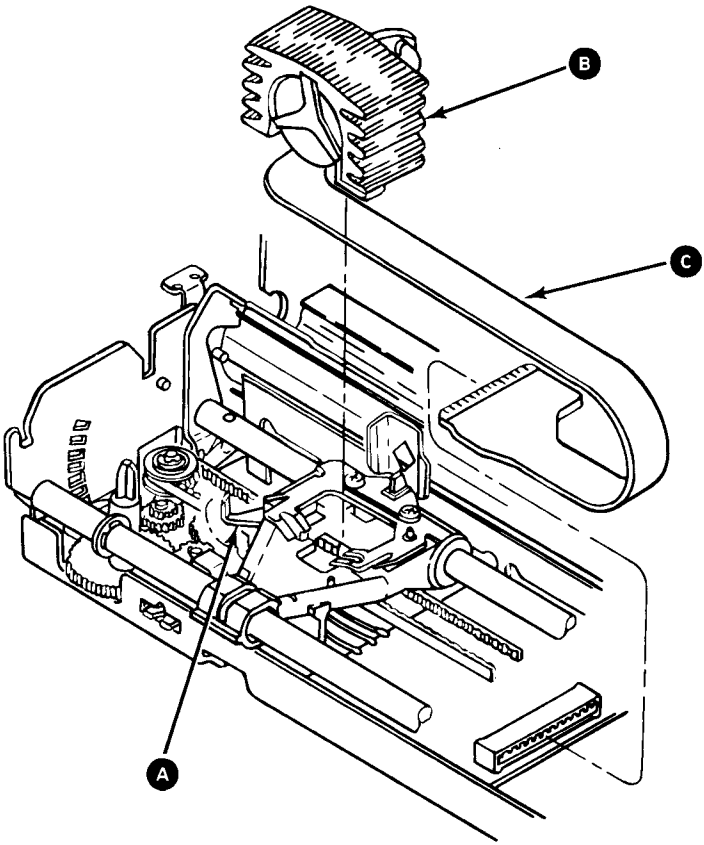




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8. Pivot the print head lock lever (A) clockwise.

9. Lift the print head (B) and cable (C) from the carriage.

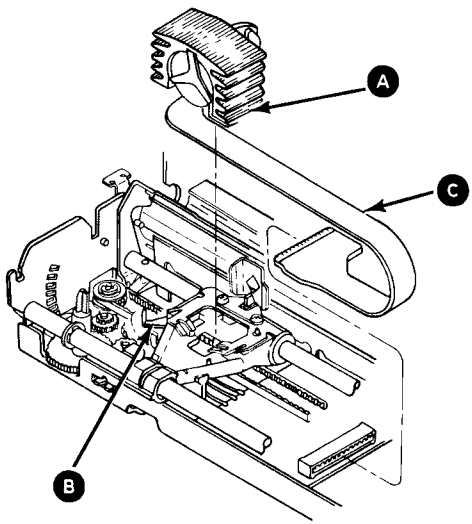




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# Print Head Replacement 5681

1. Insert the feet (A) on the print head into the opening on the carriage.
2. Pivot the lock lever (B) counterclockwise while pressing down on the print head.
3. Connect the print head cable (C) at the connector.
4. Install the top cover **(5632)**.
5. Install the ribbon cartridge.
6. Install the access cover **(5630)**.
7. Install the forms rack **(5640)**.




**Note:** Broken wires may be the result of other problems. If a print head has been replaced because of a broken wire, perform the steps on the next page to prevent damaging the newly installed print head.


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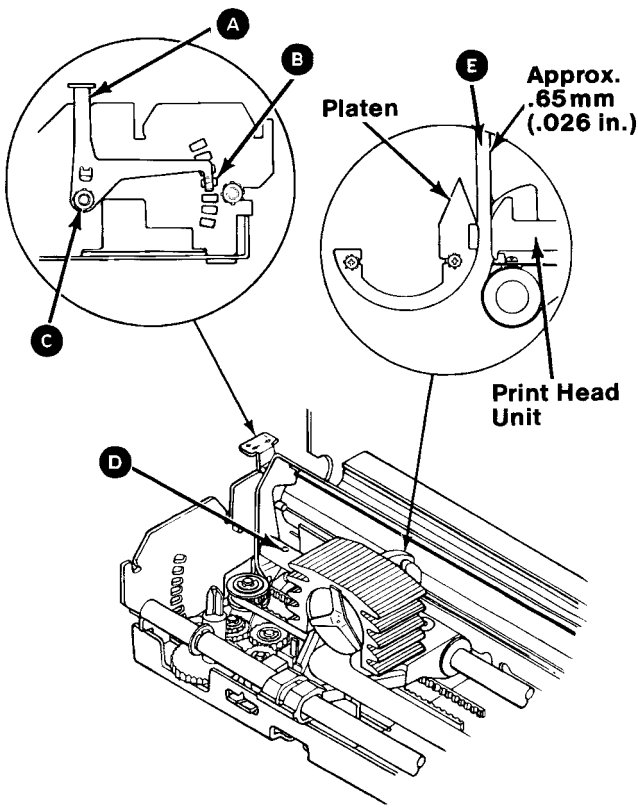
1. Remove the top cover. Disconnect CN6 on the driver control card. Check for 22 ohms resistance between pin CN6-10 (male end) and pins CN6-1 through 9. Replace the print mechanism assembly if there are any shorts or opens.

2. Set the Power switch to On. Check for +24 Vdc at pins CN6-1 through 9 on driver card (use ground pin for common lead). If any pin has +24 Vdc, replace the control cards. If all pins read 0 Vdc, set the power switch to Off and connect CN6. The print head circuitry is functional.


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# Print Head Gap Adjustment 5682

1. Remove the print mechanism assembly **(5685)**.
2. Set the print head gap adjusting lever (A) to the fourth position (B).
3. Loosen the nut (C).
4. Rotate the carriage shaft (D) to obtain a gap of .65 mm (0.26 in.) between the print head and the platen (E).
5. Tighten the nut (C).
6. Install the print mechanism assembly **(5686)**.

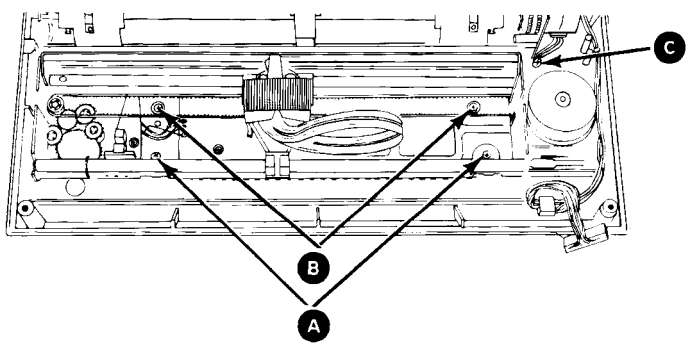




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# Print Mechanism Assembly Removal 5685

1. Set the printer Power switch to Off. Unplug the printer Power cord from the outlet and disconnect the printer cable.
2. Remove all forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the ribbon cartridge.
6. Remove the top cover **(5631)**.
7. Remove the driver circuit card **(5620)**.
8. Remove the control circuit card **(5616)**.
9. Remove the two screws (A) from the base of the Print Mechanism assembly.
10. Remove the shipping screws (B) if installed.
11. Remove the screw (C) from the ground strap.
12. Lift the print mechanism assembly from the base cover.

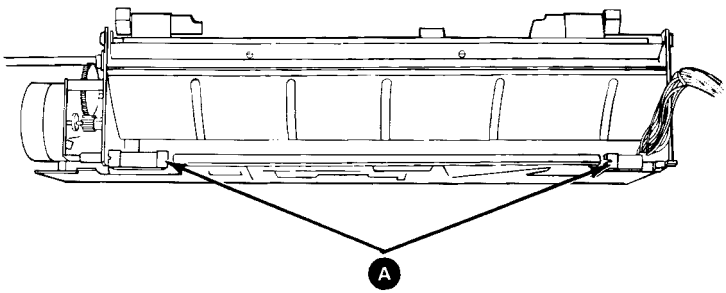




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# Print Mechanism Assembly Replacement 5686

1. Verify that the rubber grommets (A) are in the position shown.




(Rear View)

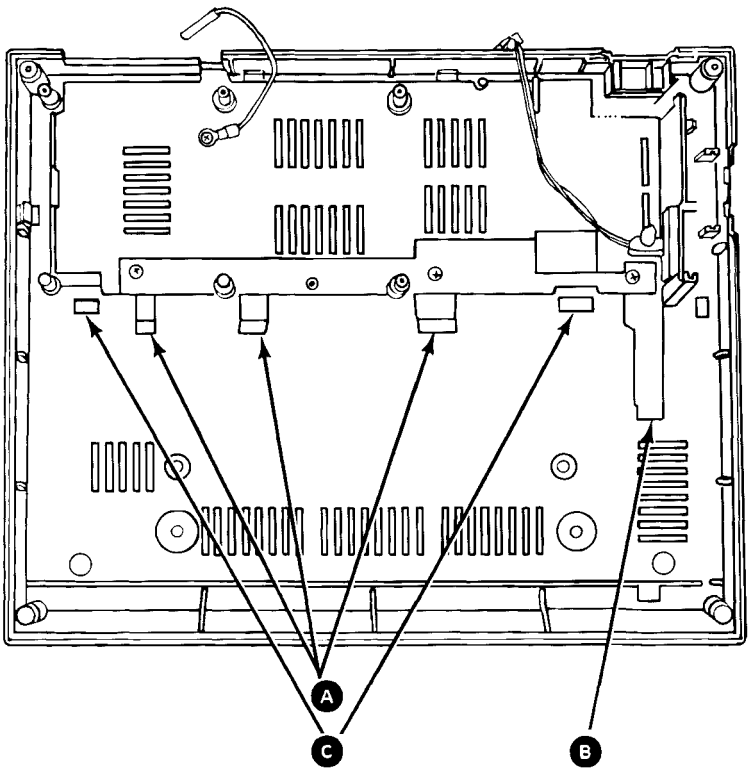


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2. Place the print mechanism assembly on the base cover.

3. Slide the print mechanism assembly toward the rear over the three grounding tabs (A) and under the ground strap (B).

4. Place the rubber grommets around the plastic stops (C).

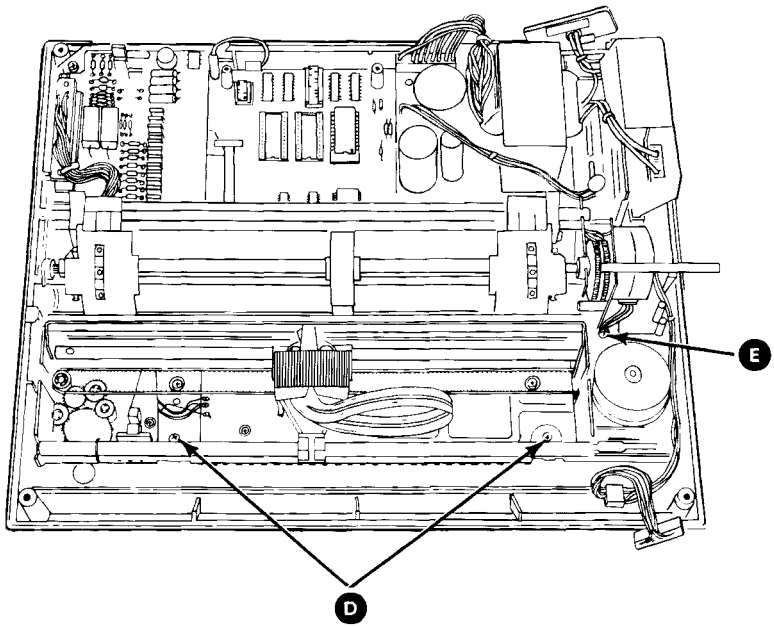




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5. Install the two screws (D).

6. Install the screw (E) in the ground strap.




7. Install the control circuit card **(5617)**.

8. Install the driver circuit card **(5621)**.

9. Install the top cover **(5632)**.

10. Install the ribbon cartridge.

11. Install the access cover **(5630)**.

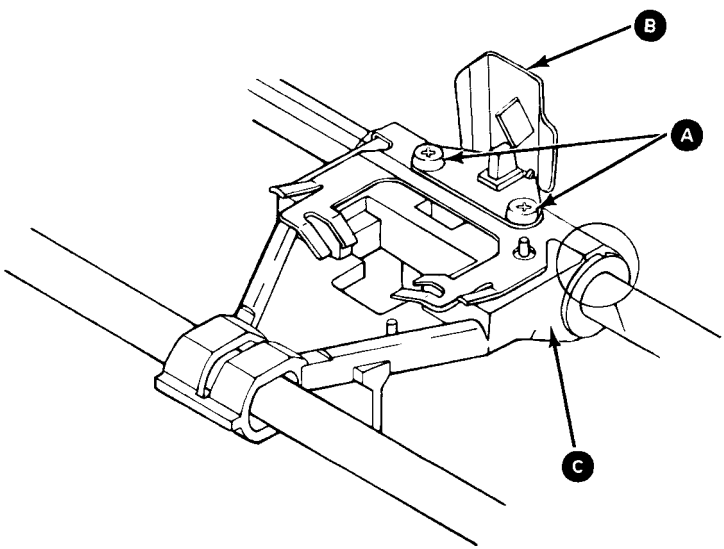
12. Install the forms rack **(5640)**.



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# Ribbon Shield Removal 5690

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove all forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the ribbon cartridge.
6. Remove the top cover **(5631)**.
7. Remove the print head **(5680)**.
8. Remove the two screws (A) at the base of the ribbon shield (B).
9. Lift the shield straight up from the carriage (C).



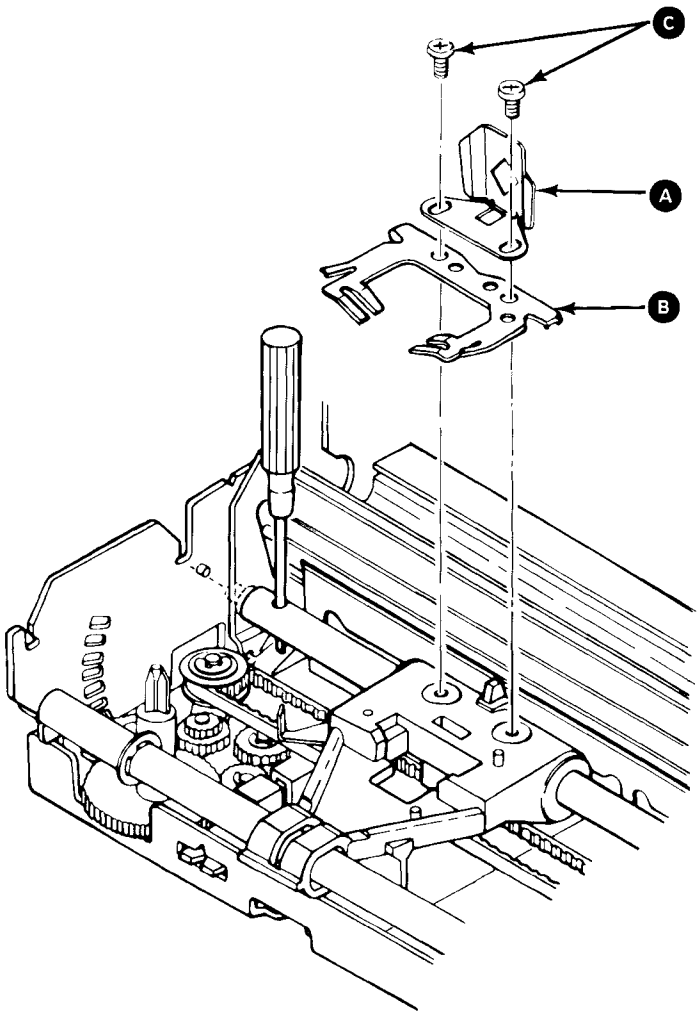


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# Ribbon Shield Replacement 5691

1. Position the shield (A) and the plate (B) on the print head carriage.

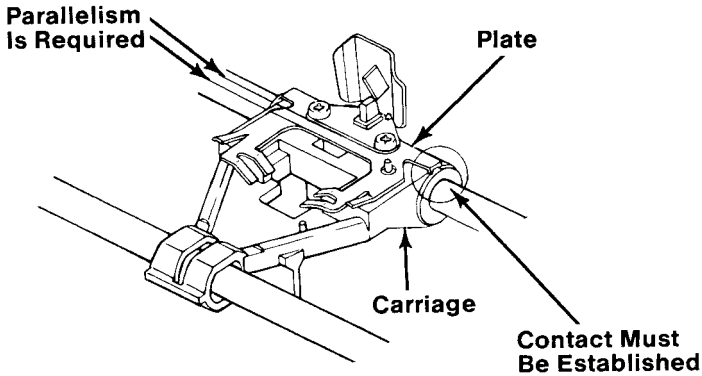
2. Insert the screws (C). (Do not tighten.)

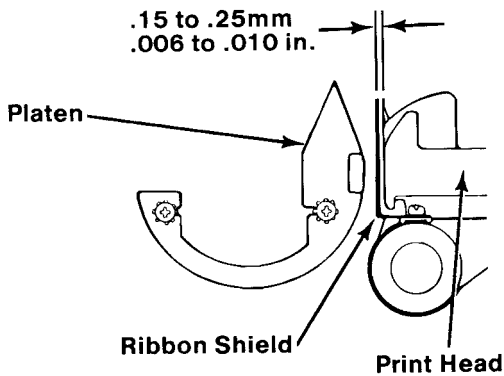





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3. Position the shield and the plate as shown. Tighten the screws.




4. Install the print head **(5681)**.
5. Install the top cover **(5632)**.
6. Install the ribbon cartridge.
7. Install the access cover **(5630)**.
8. Install the forms rack **(5640)**.

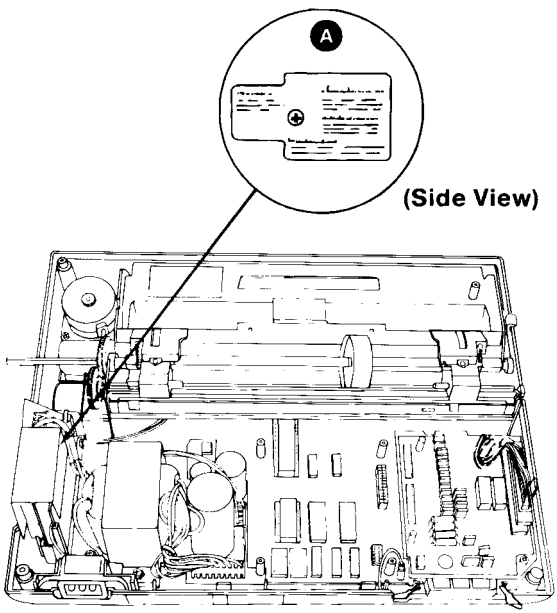

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# Safety Shield Removal 5695

1. Set the printer Power switch to Off; unplug the printer Power cord from the outlet and disconnect the Printer Cable.
2. Remove all forms.
3. Remove the forms rack **(5640)**.
4. Remove the access cover **(5630)**.
5. Remove the top cover **(5631)**.

> **DANGER**
> **STATIC VOLTAGE MAY BE PRESENT ON THE FUSE-FILTER CARD. USE CAUTION IN THIS AREA.**

6. Loosen the screw (A).
7. Lift the safety shield from the fuse-filter card.



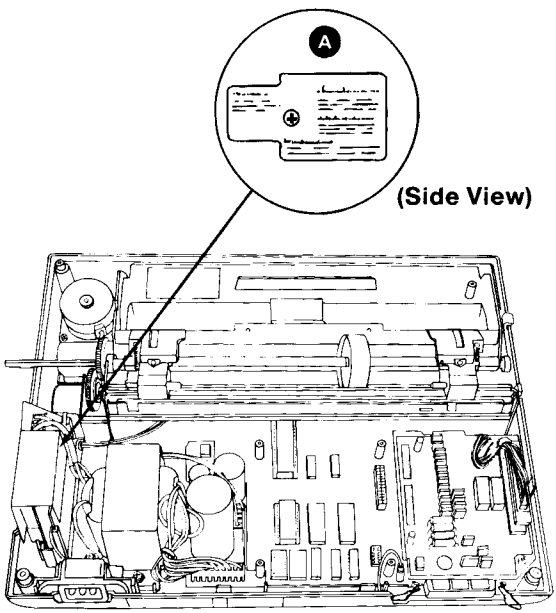



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# Safety Shield Replacement 5696

**DANGER**
**STATIC VOLTAGE MAY BE PRESENT ON THE FUSE-FILTER CARD. USE CAUTION IN THIS AREA.**

1. Position the safety shield on the fuse-filter card.
2. Tighten the screw (A).
3. Install the top cover **(5632)**.
4. Install the access cover **(5630)**.
5. Install the forms rack **(5640)**.





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# SECTION 6. SYSTEM SETUP, JUMPERS, AND SWITCH SETTINGS

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# System Setup

The Setup program is on the Advanced Diagnostics diskette. You need to know what options are installed in your system unit to run the Setup program.

1. Remove the system unit's cover (see Section 5).

2. Make a list of the option adapters installed in your system.

3. Look at the labels on the front of the fixed disk drives and make a note of the type of drives installed.

4. Look at the front bezel of the diskette drive and make a note of the type of drive installed. (The bezel of a double-sided diskette drive has an asterisk; the bezel of a high-capacity diskette drive is not marked.)

5. Turn to "Jumpers" and ensure the jumpers in your system are installed correctly.

6. Turn to "Switch Settings" and ensure all switches are set correctly.

   **Note:** If you receive an error code, troubleshoot any error indications other than 16X first. If the only error code you receive is 16X, and you cannot correct the Setup program using the instructions on the following page, go to page Start 3-10.

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1. Insert the Advanced Diagnostics diskette into drive A.

2. Set the system unit's Power switch to On.

   The Setup program will prompt you for the following information:

| | |
|---|---|
| **Time** | Allows you to set or change the time. |
| **Date** | Allows you to set or change the date. |
| **Diskette Drives** | Select the number and type (high capacity or double sided) installed. |
| **Fixed Disk Drives** | Select the number and type installed. |
| **Memory** | Select the amount of base and expansion memory installed. |
| **Display** | Set the primary display if 2 display adapters are installed. |

**Note:** If Menu 2 - Select an Option appears after the POST, select option **4 (SETUP)** and verify that the options are correctly set.

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# Incompatible Adapters

Certain option adapters conflict with each other when used in the same system. The following adapters should not be installed together in your system unit:

- Synchronous Data Link Control (SDLC)
- Alternate Binary Synchronous Communications (Alt. BSC).

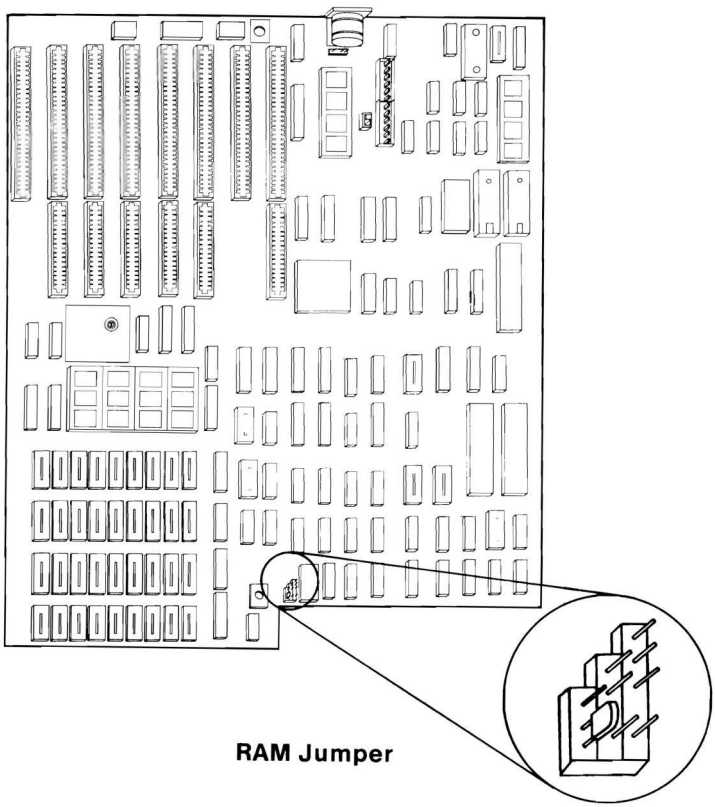

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# Jumpers

## System Board

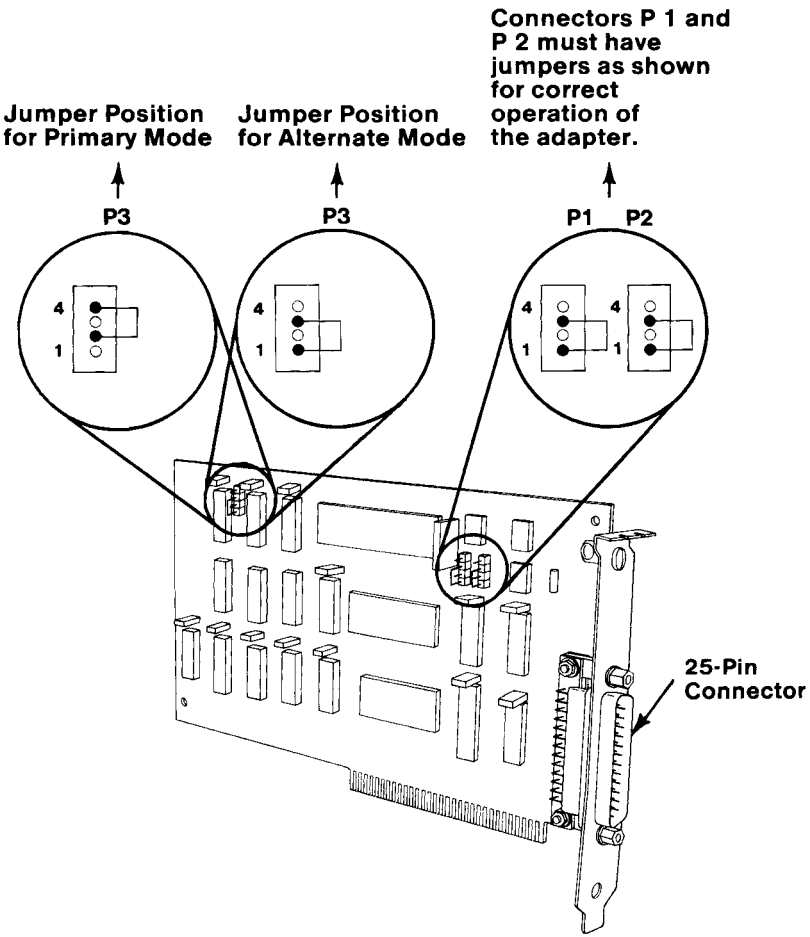


RAM Jumper



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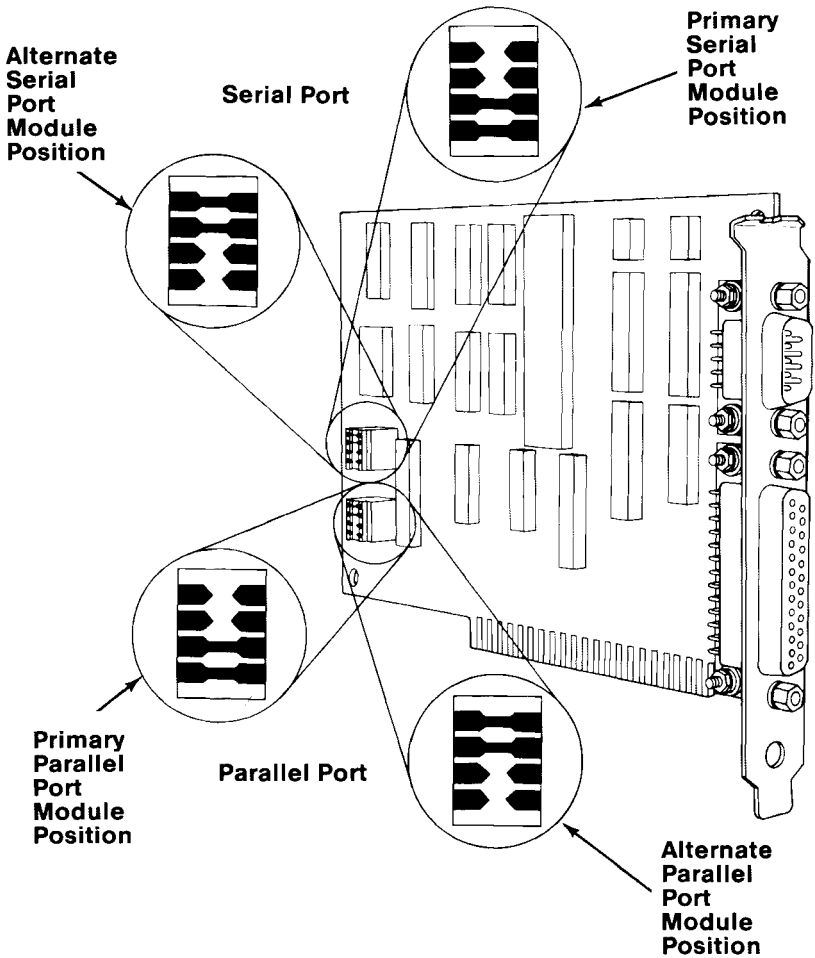
# Binary Synchronous Communications Adapter





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# Serial/Parallel Adapter

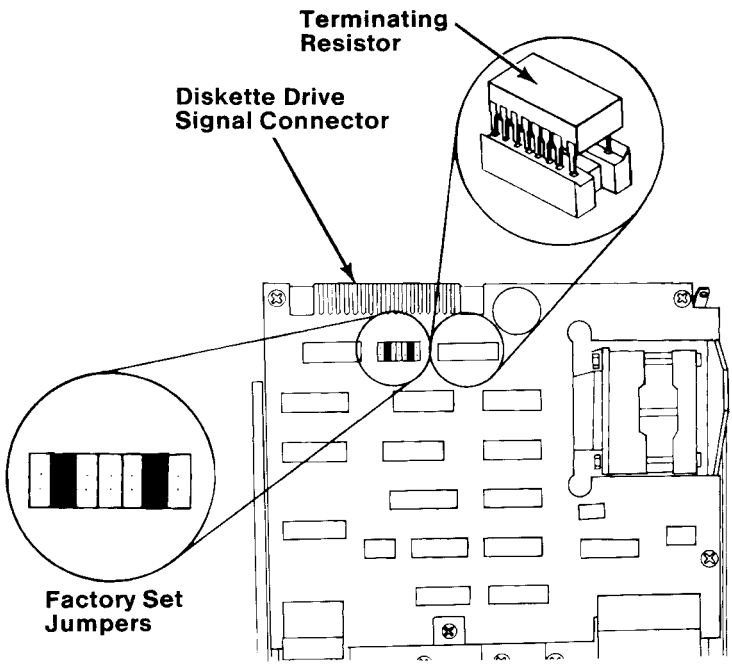




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# Diskette Drive

- The terminating resistor must be installed on drive A (top unit).
- In a system unit with two diskette drives, remove the terminating resistor from drive B (bottom unit) for proper operation.
- The diskette drive end of the signal cable is attached to diskette drive A.

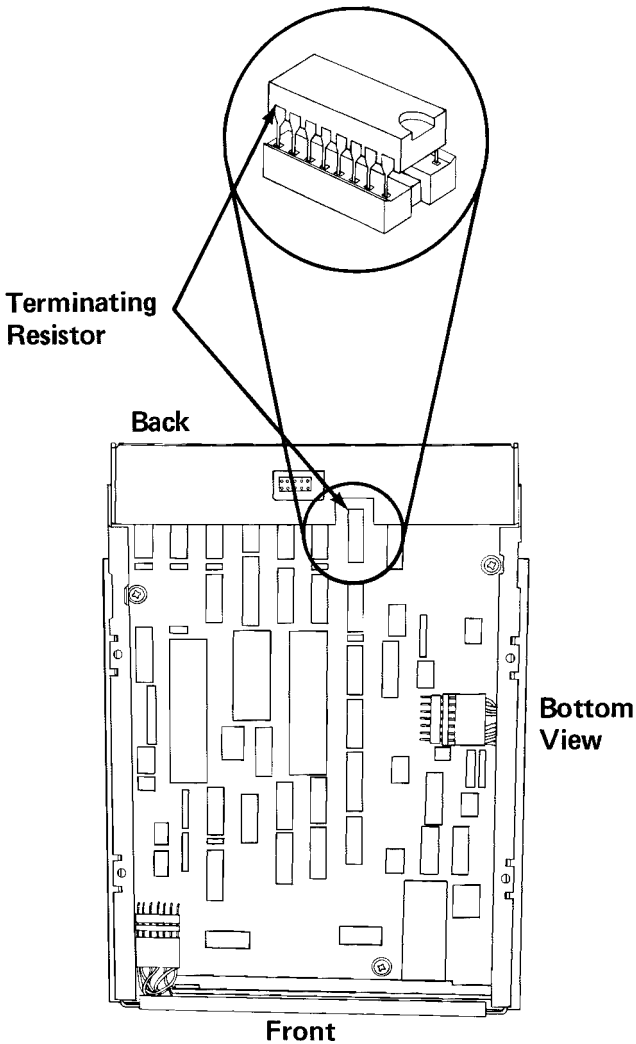



Top View


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# Fixed Disk Drive

- The terminating resistor must be installed on fixed disk drive C (left unit).
- In a system unit with two fixed disk drives, remove the terminating resistor from fixed disk drive D (right unit) for proper operation.

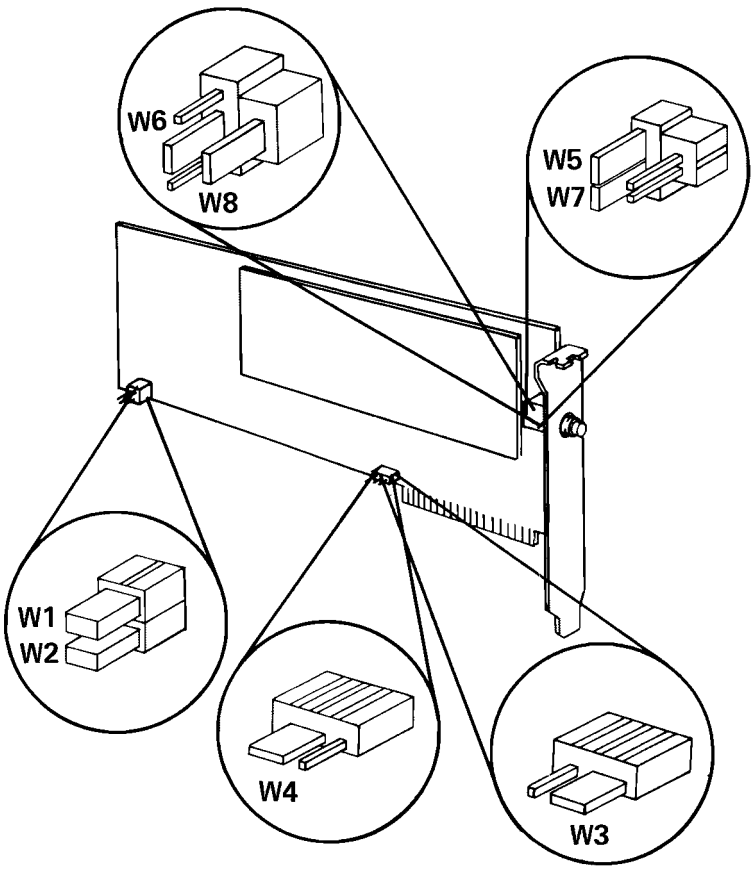




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# PC Network Adapter

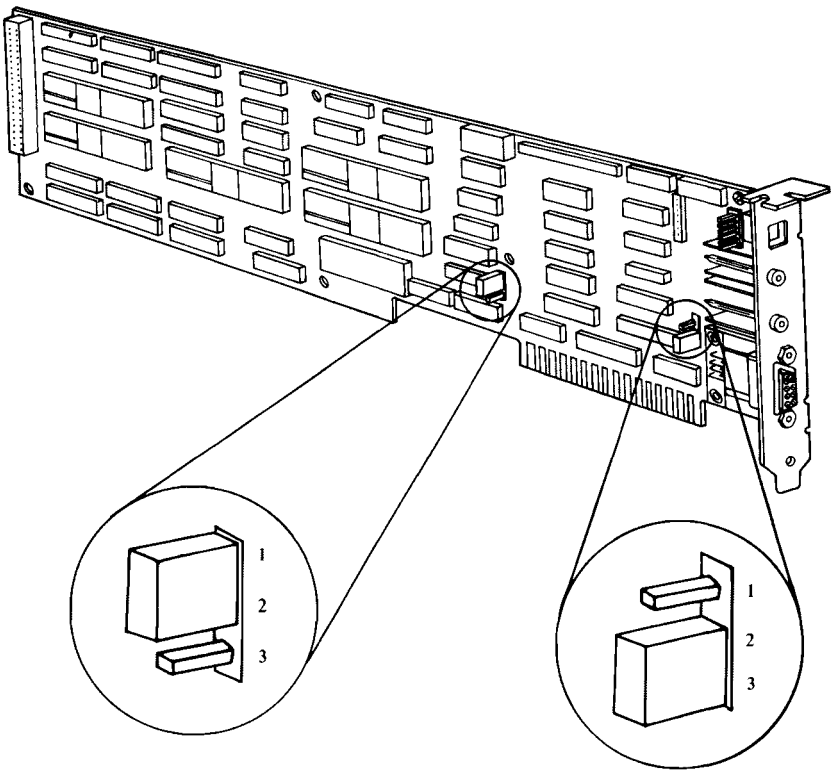
| | |
|---|---|
| **W1** | Automatic IPL |
| **W2** | Reserved |
| **W3** | Sets adapter to use Interrupt Level 2 |
| **W4** | Sets adapter to use Interrupt Level 3 |
| **W5 & W7** | Sets adapter as alternate adapter |
| **W6** | Sets adapter as primary adapter |
| **W8** | Enables ROM on adapter |





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# Enhanced Graphics Adapter




| Display | P1 | P3 |
|---|---|---|
| IBM Color Display or IBM Monochrome Display | 2 & 3 | 1 & 2 |
| IBM Enhanced Color Display | 1 & 2 | 1 & 2 |

**Warning:** Damage to the graphics adapter, the display, or both may result if these jumpers are not in the correct position.

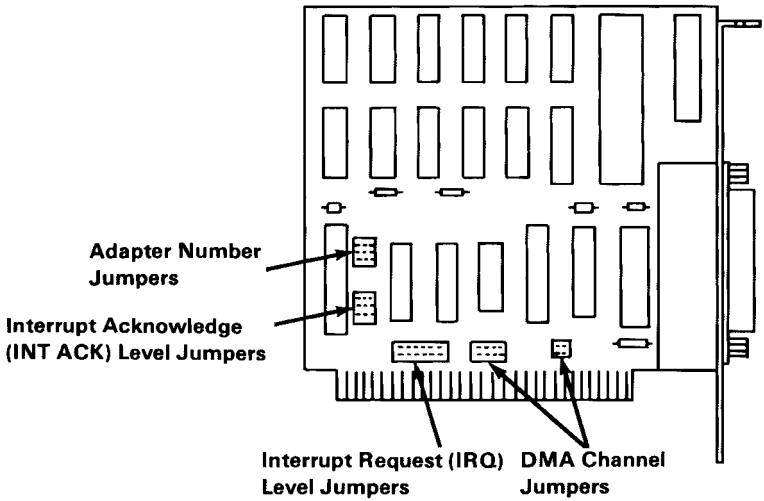

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# Notes:


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# General Purpose Interface Bus Adapter

The GPIB adapter (shown below) has four groups of jumper pins.





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# Adapter Number

All GPIB adapters that are installed in the same system have a different adapter number selected.

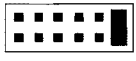
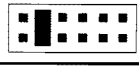
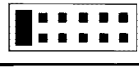
| Adapter Number | Jumper Positions |
|---|---|
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |



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## Interrupt Request (IRQ) Level

The GPIB adapter can share its IRQ level with other adapters that can use shared interrupts.

| Interrupt Request Level | Jumper Positions |
|---|---|
| 7 |  |
| 6 |  |
| 5 |  |
| 4 |  |
| 3 |  |
| 2 |  |


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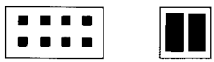
# Interrupt Acknowledge (INT ACK) Level

The interrupt acknowledge (INT ACK) and interrupt request (IRQ) levels must be the same.

| INT ACK Level | Jumper Positions |
|---|---|
| 7 |  |
| 6 |  |
| 5 |  |
| 4 |  |
| 3 |  |
| 2 |  |


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# Direct-Memory Access (DMA) Channel

| DMA Channel | Jumper Positions |
|---|---|
| 1 |  |
| 2 |  |
| 3 |  |


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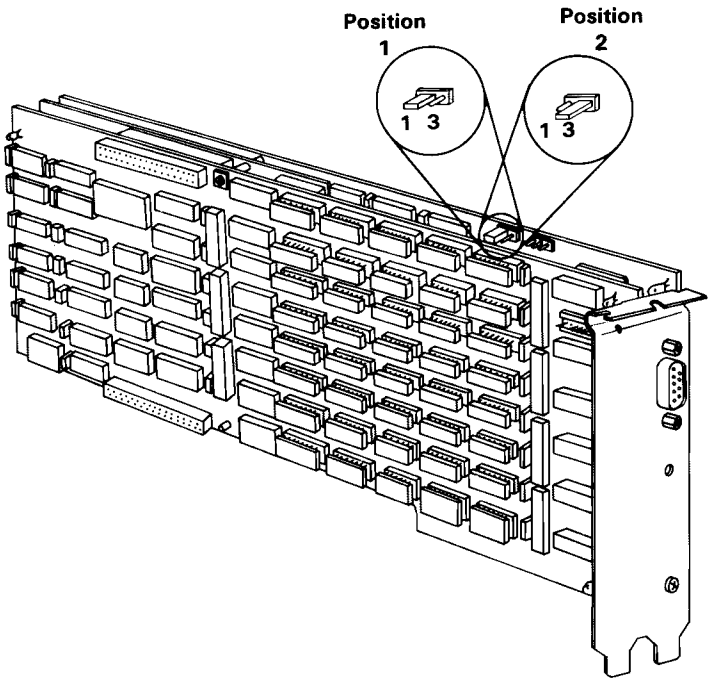
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# Professional Graphics Controller

The diagram below shows the location of the Emulator Enable/Disable Jumper on the Professional Graphics Controller.

When installed in position 1, the emulator jumper allows the Professional Graphics Controller to also function like an IBM Color/Graphics Monitor Adapter.

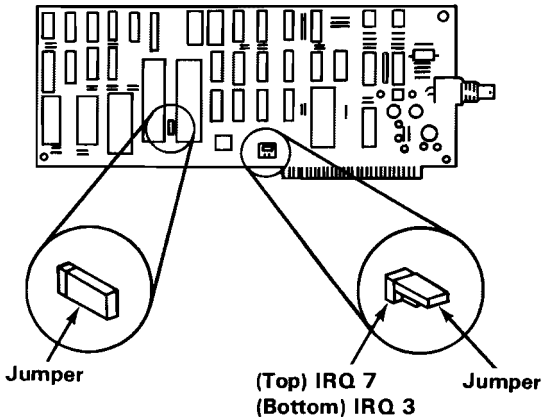
If there is an IBM Color/Graphics Adapter installed in the system, the emulator jumper must be in position 2.





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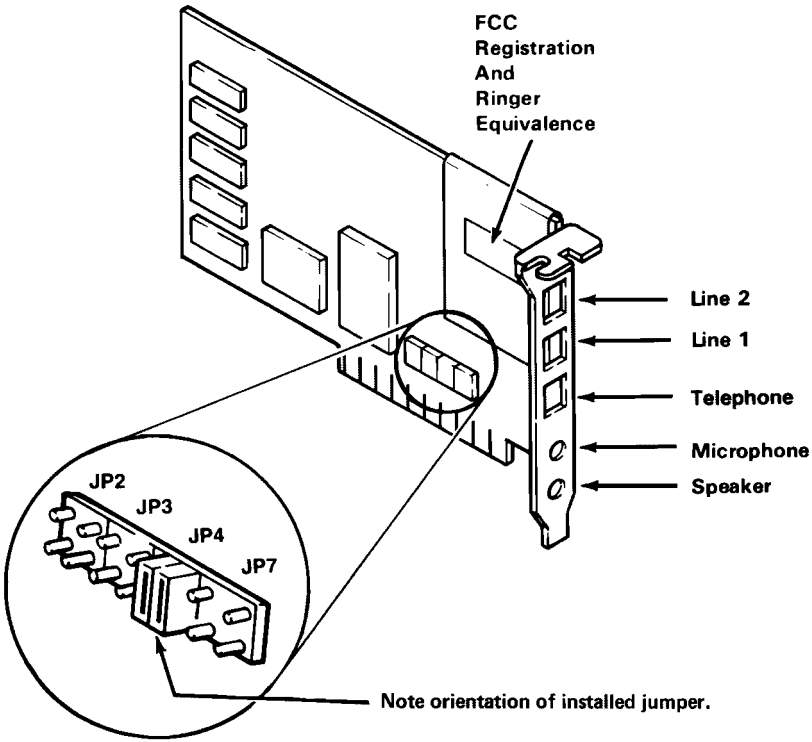
# Cluster Adapter





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# Voice Communications Adapter Jumper Settings



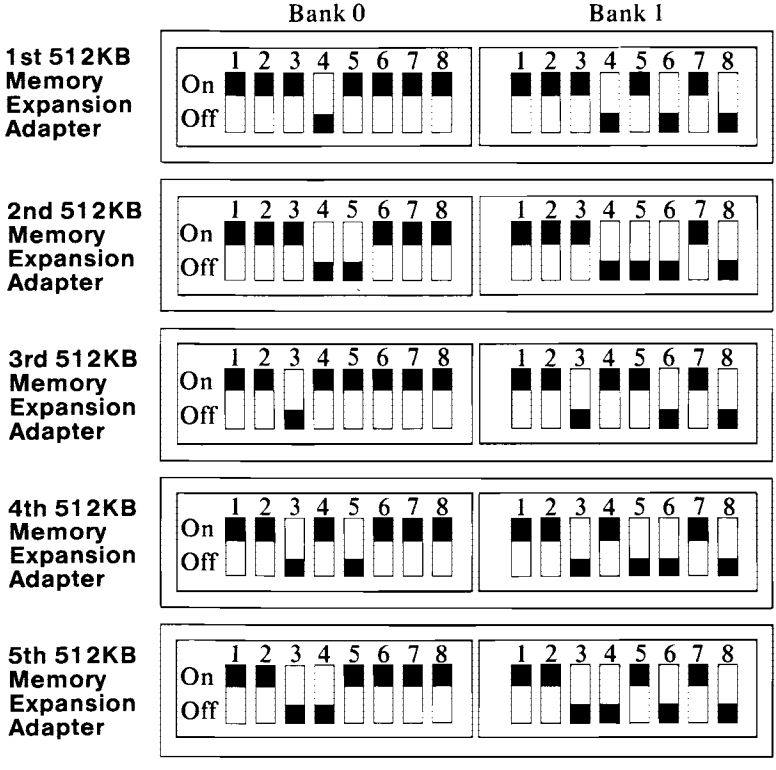

Jumper block is usually set at JP4. It must be installed at an interrupt level that does not conflict with other options.


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# Switch Settings

## 512Kb Memory Expansion Adapter

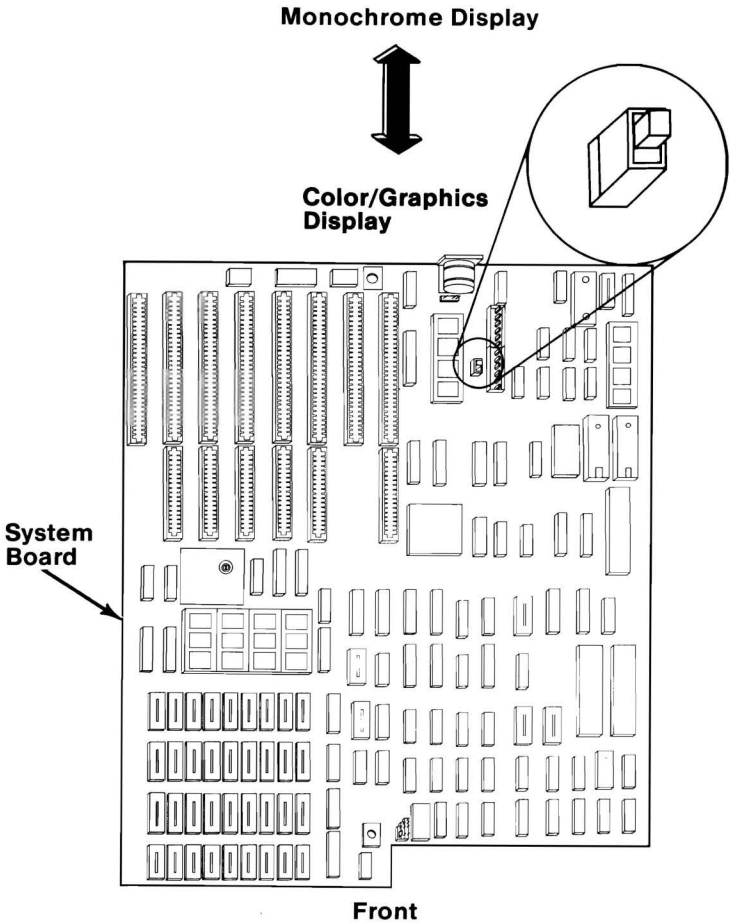
The settings of the switches reflect the number of 512Kb Memory Expansion Adapters installed (128Kb adapters have no switch settings). Use the information on this page and set the memory switches in your system.





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# System Board Video Switch



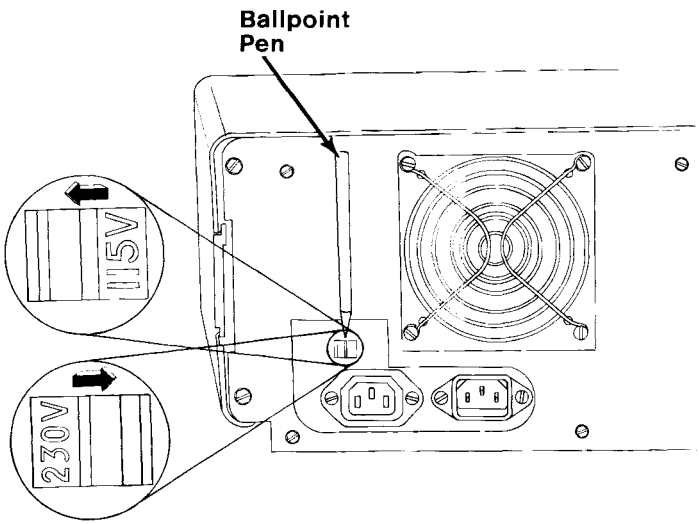


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# Input Voltage Requirements

The 115/230 Vac selector switch at the rear of the system unit's power supply must be set for the voltage present at the outlet.

| Switch Position | Voltage Range |
|---|---|
| 115 Vac | 100 to 125 Vac |
| 230 Vac | 200 to 240 Vac |





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# Notes:


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# Enhanced Graphics Adapter Switch Settings

**TABLE 1**

Use these Switch Settings if the **Enhanced Graphics Adapter** is the **ONLY** display adapter you have installed in your system.

| SW1 | SW2 | SW3 | SW4 | Type of Display Attached and Initial Mode Selection* |
|---|---|---|---|---|
| Off | Off | On | Off | Monochrome |
| On | Off | Off | On | Color (40x25) |
| Off | Off | Off | On | Color (80x25) |
| On | On | On | Off | Enhanced Color (in Normal Color Mode) |
| Off | On | On | Off | Enhanced Color (in Enhanced Color Mode) |

***Note:** Mode Selection can be changed by programming


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## TABLE 2

Use these Switch Settings if the Enhanced Graphics Adapter and the IBM Monochrome Display And Printer Adapter are **BOTH** installed in your system, and the **Enhanced Graphics Adapter** is the **Primary** Display Adapter.

| **Switch Settings** | | | | **Type of Display Attached and Initial Mode Selection** | |
|---|---|---|---|---|---|
| **SW1** | **SW2** | **SW3** | **SW4** | **Enhanced Graphics Adapter** | **Monochrome And Printer Adapter** |
| On | Off | Off | On | Color (40x25) | Monochrome or None |
| Off | Off | Off | On | Color (80x25) | Monochrome or None |
| On | On | On | Off | Enhanced Color (in Normal Color Mode) | Monochrome or None |
| Off | On | On | Off | Enhanced Color (in Enhanced Color Mode) | Monochrome or None |


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## TABLE 3

Use these Switch Settings if the Enhanced Graphics Adapter and the IBM Monochrome Display And Printer Adapter are **BOTH** installed in your system, and the **Monochrome Display And Printer Adapter** is the **Primary** Display Adapter.

| Switch Settings | | | | Type of Display Attached and Initial Mode Selection | |
|---|---|---|---|---|---|
| **SW1** | **SW2** | **SW3** | **SW4** | **Enhanced Graphics Adapter** | **Monochrome And Printer Adapter** |
| Off | On | On | On | None | Monochrome |
| On | On | On | On | Color (40x25) | Monochrome |
| Off | On | On | On | Color (80x25) | Monochrome |
| On | Off | On | On | Enhanced Color (in Normal Color Mode) | Monochrome |
| Off | Off | On | On | Enhanced Color (in Enhanced Color Mode) | Monochrome |


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## TABLE 4

Use these Switch Settings if the Enhanced Graphics Adapter and the IBM Color Graphics/Adapter are **BOTH** installed in your system, and the **Enhanced Graphics Adapter** is the **Primary** Display Adapter.

| Switch Settings | | | | Type of Display Attached to: | |
|---|---|---|---|---|---|
| **SW1** | **SW2** | **SW3** | **SW4** | **Enhanced Graphics Adapter** | **Color/Graphics Adapter** |
| Off | Off | On | Off | Monochrome | None |
| On | Off | On | Off | Monochrome | Color (40x25) |
| Off | Off | On | Off | Monochrome | Color (80x25) |


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## TABLE 5

Use these Switch Settings if the Enhanced Graphics Adapter and the IBM Color/Graphics Adapter are **BOTH** installed in your system, and the **Color/Graphics Adapter** is the **Primary** Display Adapter.

> **Note:** A monochrome display is the only display that may be attached to the Enhanced Graphics Adapter.

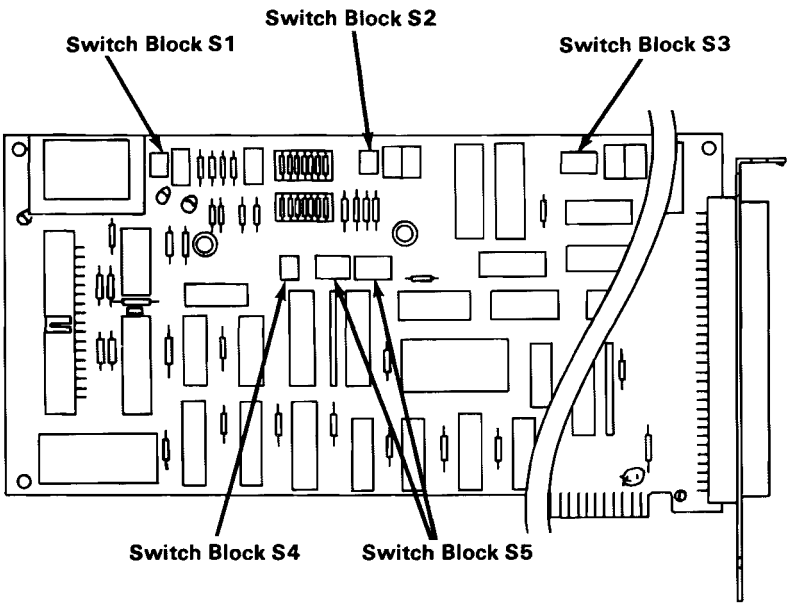
| Switch Settings | | | | Type of Display Attached to: | |
|---|---|---|---|---|---|
| **SW1** | **SW2** | **SW3** | **SW4** | **Enhanced Graphics Adapter** | **Color/Graphics Adapter** |
| On | On | Off | On | Monochrome or None | Color (40x25) |
| Off | On | Off | On | Monochrome or None | Color (80x25) |


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# Data Acquisition and Control Adapter

On the Data Acquisition adapter shown below, there are five groups of switches.





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## Analog Output Range (D/A) Channel 0

**Switch Block S1**

| Output Range | Switch Settings |
|---|---|
| -5 to +5 Volts |  |
| -10 to +10 Volts |  |
| 0 to +10 Volts |  |

**Note:** Only the switch settings shown may be used for this switch block.

## Analog Output Range (D/A) Channel 1

**Switch Block S2**

| Output Range | Switch Settings |
|---|---|
| -5 to +5 Volts |  |
| -10 to +10 Volts |  |
| 0 to +10 Volts |  |

**Note:** Only the switch settings shown may be used for this switch block.


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## Analog Input Range (A/D)

**Switch Block S3**

| Input Range | Switch Settings |
|---|---|
| -5 to +5 Volts |  |
| -10 to +10 Volts |  |
| 0 to +10 Volts |  |

**Note:** Only the switch settings shown may be used for this switch block.

## Adapter Number

All IBM Data Acquisition Adapters that are installed in the same system must have their own adapter number selected.

**Switch Block S4**

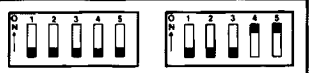
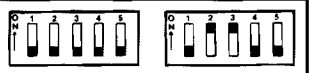
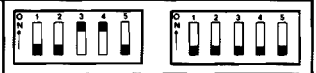
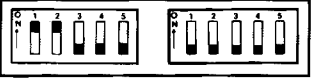
| Adapter Number | Switch Positions |
|---|---|
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |


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## Interrupt Request Level (IRQ)

The Data Acquisition Adapter can share its IRQ level with other adapters that can use shared interrupts.

### Switch Block S5

| IRQ Level | Switch Settings |
|---|---|
| 7 |  |
| 6 |  |
| 5 |  |
| 4 |  |
| 3 |  |

**Note:** Only the switch settings shown may be used for this switch block.


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# Notes:

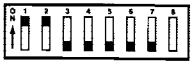
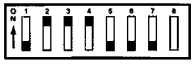
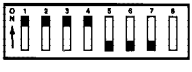
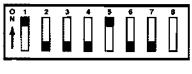
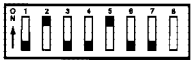
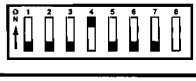
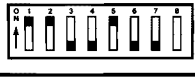


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# Cluster Adapter Switch Settings

The following figure shows the settings for switches 1 through 6 of Switch Block 1 for station addresses 0 to 21.

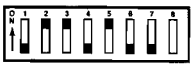
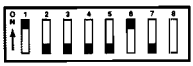
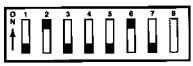
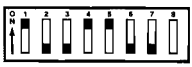
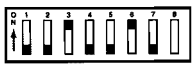
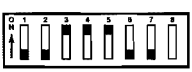
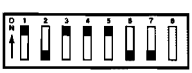
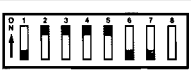
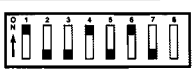
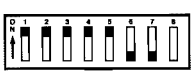
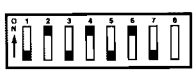
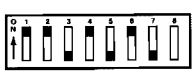
Position 7 of Switch Block 1 is always set to Off.

| Station Address | Switch Block 1 | Station Address | Switch Block 1 |
|---|---|---|---|
| 0 |  | 11 |  |
| 1 |  | 12 |  |
| 2 |  | 13 |  |
| 3 |  | 14 |  |
| 4 |  | 15 |  |
| 5 |  | 16 |  |
| 6 |  | 17 |  |
| 7 |  | 18 |  |
| 8 |  | 19 |  |
| 9 |  | 20 |  |
| 10 |  | 21 |  |



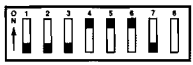
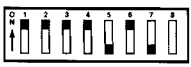
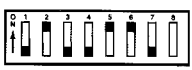
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The following figure shows the settings for switches 1 through 6 of Switch Block 1 for station addresses 22 to 43.

| Station Address | Switch Block 1 | Station Address | Switch Block 1 |
|---|---|---|---|
| 22 |  | 33 |  |
| 23 |  | 34 |  |
| 24 |  | 35 |  |
| 25 |  | 36 |  |
| 26 |  | 37 |  |
| 27 |  | 38 |  |
| 28 |  | 39 |  |
| 29 |  | 40 |  |
| 30 |  | 41 |  |
| 31 |  | 42 |  |
| 32 |  | 43 |  |


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The following figure shows the settings for switches 1 through 6 of Switch Block 1 for station addresses 44 to 63.

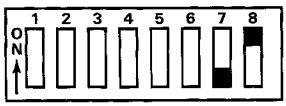
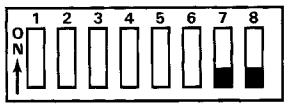
| Station Address | Switch Block 1 | Station Address | Switch Block 1 |
|---|---|---|---|
| 44 |  | 55 |  |
| 45 |  | 56 |  |
| 46 |  | 57 |  |
| 47 |  | 58 |  |
| 48 |  | 59 |  |
| 49 |  | 60 |  |
| 50 |  | 61 |  |
| 51 |  | 62 |  |
| 52 |  | 63 |  |
| 53 |  | | |
| 54 |  | | |


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The following shows the switch setting for switch 8 of Switch Block 1.

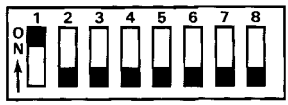
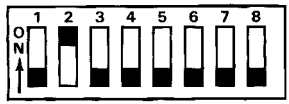
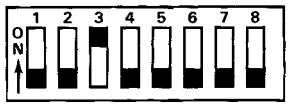
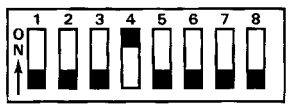
With switch 8 of Switch Block 1 set to On, the Personal Computer will request an IPL from another station on the Cluster. This request delays the POST test completion by 30 seconds.

The recommended switch setting is IPL Off.

| | |
|---|---|
| **Remote IPL ON: Switch Block 1, Switch 8** |   |
| **Remote IPL OFF: Switch Block 1, Switch 8** |   |


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The following figure shows the settings for switches 1 through 4 of Switch Block 2 for adapter numbers 1 through 4.

| | |
|---|---|
| **Select Adapter 1:**<br>**Switch Block 2, Switch 1** |  |
| **Select Adapter 2:**<br>**Switch Block 2, Switch 2** |  |
| **Select Adapter 3:**<br>**Switch Block 2, Switch 3** |  |
| **Select Adapter 4:**<br>**Switch Block 2, Switch 4** |  |

Switches 5 through 8 of Switch Block 2 are always set to Off.

**Note:** If one Cluster Adapter is installed, it must be set as adapter number one. Each additional adapter must have a different Cluster Adapter number.


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# Notes:


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# SECTION 7. PARTS CATALOG

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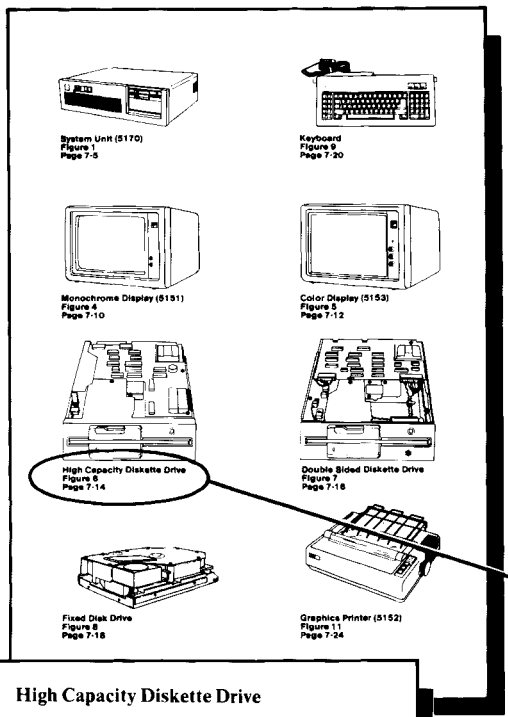
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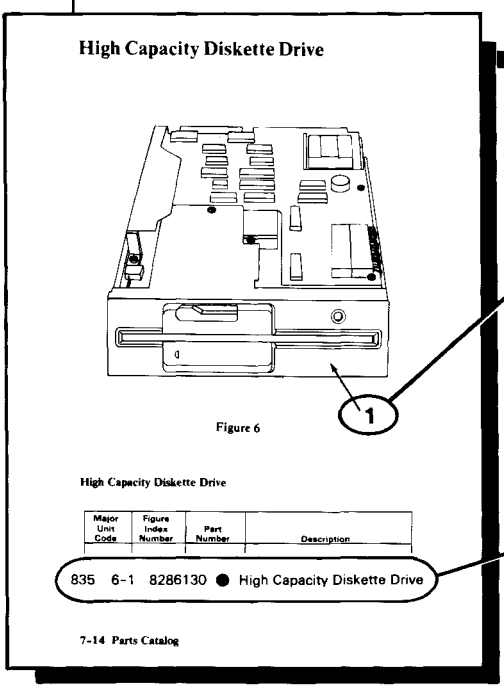

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# How To Use This Parts Catalog




1

**Turn to the visual index then locate, by illustration, the assembly containing the part.**




2

**Turn to the page for that assembly. Then locate the part visually.**

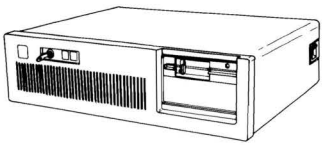
3

**Using the index number shown with the part, refer to the accompanying listing to obtain major unit code, part number and description.**

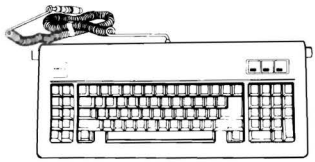


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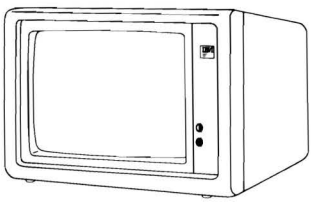
# Visual Index



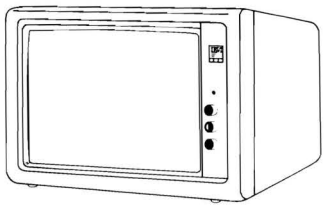
System Unit (5170)
Figure 1
Page 7-5



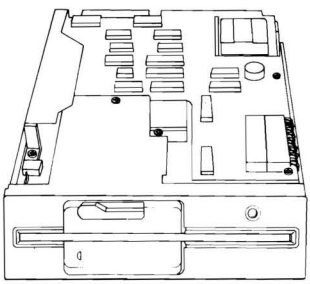
Keyboard
Figure 9
Page 7-20



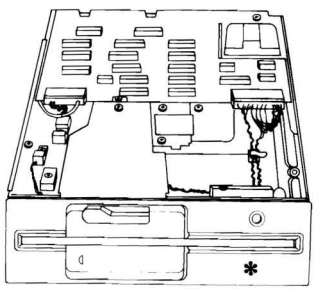
Monochrome Display (5151)
Figure 4
Page 7-10



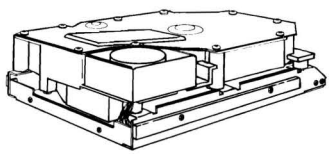
Color Display (5153)
Figure 5
Page 7-12



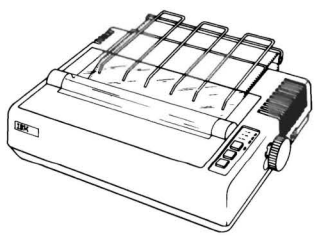
High Capacity Diskette Drive
Figure 6
Page 7-14



Double Sided Diskette Drive
Figure 7
Page 7-16



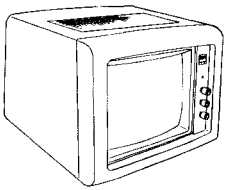
Fixed Disk Drive
Figure 8
Page 7-18



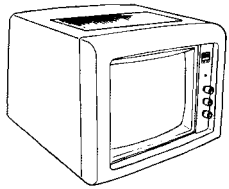
Graphics Printer (5152)
Figure 11
Page 7-24



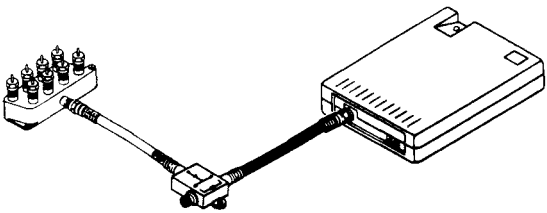
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**Enhanced Color Display**
**Figure 5.1**
**Page 7-14**



**Professional Graphics Display**
**Figure 5.2**
**Page 7-14.2**



**PC Network**
**Figure 11**
**Page 7-30**

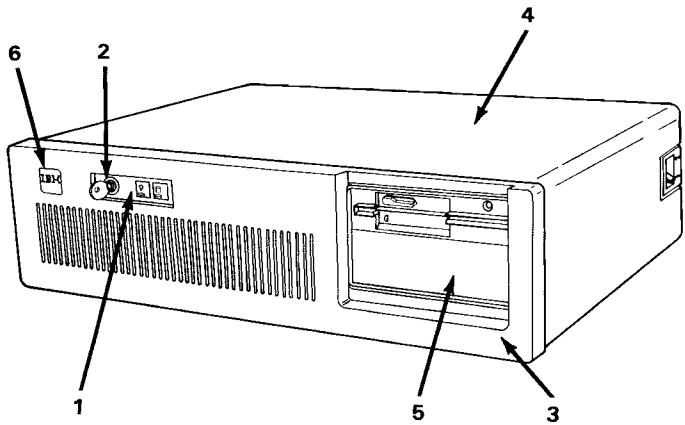

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# Notes:


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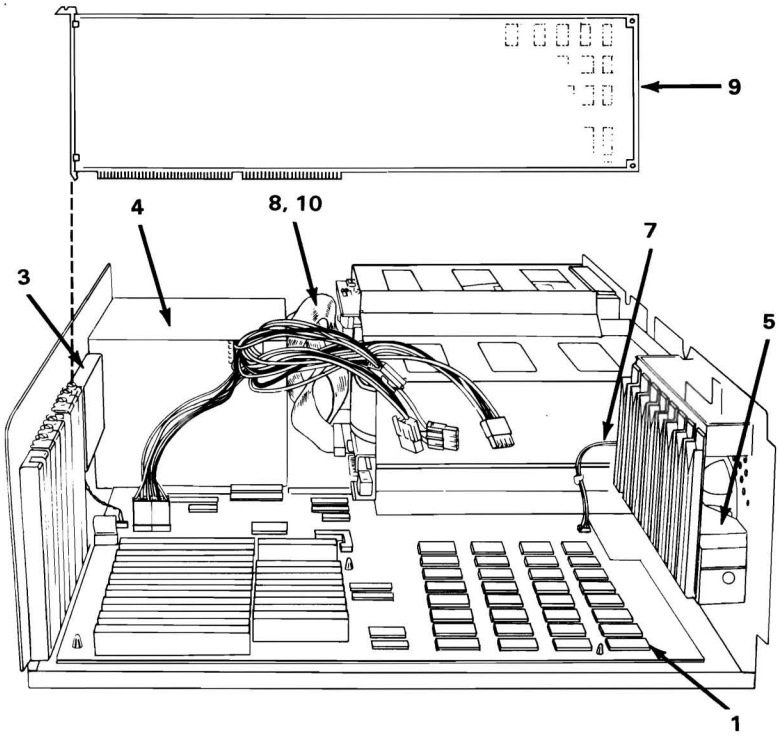
# System Unit (5170)

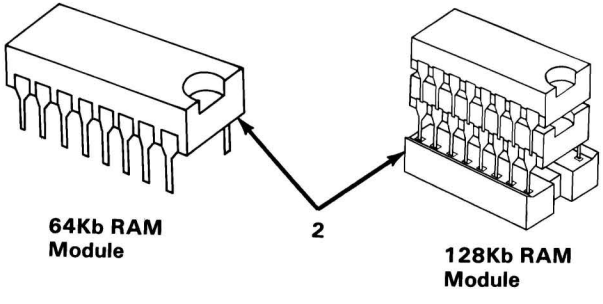


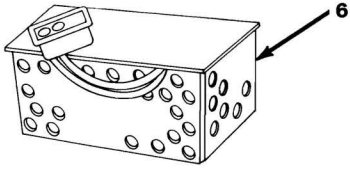

| Major Unit Code | Index No. | Part Number | Description |
|---|---|---|---|
| 000 | 1 | 8286133 | Control Panel Assembly |
| 000 | 2 | 8286117 | Key Lock Assembly |
| 000 | 3 | 8286134 | Front Bezel |
| 000 | 4 | 8286119 | Cover |
| 000 | 5 | 8286114 | Blank Bezel |
| 000 | | 8286169 | Back Panel |
| 000 | 6 | 8286137 | Label/Logo Kit<br>- Consisting of -<br>Nameplate<br>Logo (Front)<br>Logo Spring<br>Identification Label |


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# System Unit (5170)





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## System Unit (5170)

| Major Unit Code | Index No. | Part Number | Description |
|---|---|---|---|
| 311 | 1 | 6480170 | System Board-Type 1, 256Kb-512Kb (Populated to 256Kb) |
| 311 | 1 | 6480072 | System Board-Type 2, 512Kb |
| 321 | 2 | 8286168 | 64Kb RAM Module AT (Qty.1) |
| 321 | 2 | 8286139 | 128Kb RAM Module (Qty.1) |
| 321 | 2 | 6480008 | 256Kb RAM Module (Qty.1) |
| 600 | 3 | 8286121 | Battery |
| 600 | 4 | 8286122 | Power Supply |
| 000 | 5 | 8529143 | Speaker Assembly |
| 600 | 6 | 8286123 | Power Supply Load Resistor |
| 000 | 7 | 8286118 | Control Panel Cable |
| 866 | 8 | 8286129 | Fixed Disk Drive Data Cable |
| 327 | 9 | 8286125 | Fixed Disk and Diskette Drive Adapter |
| 866 | 10 | 8286124 | Fixed Disk and Diskette Drive Signal Cable |
| | | | Misc. Parts Kit |
| | | 8286132 | - Consisting of - |
| | | | Access Plate |
| | | | Blank Bracket |
| | | | Bracket Keeper |
| | | | Board Clip |
| | | | Drive Ground Strap |
| | | | Retainer Clip |
| 001 | | 8286135 | Plastic Wares Kit AT |
| | | | - Consisting of - |
| | | | System Board Clip |
| | | | System Unit Foot Pad |
| | | | Keyboard Foot Pad |
| | | | Keyboard Lens Insert |
| | | | Keyboard Foot Spring |
| | | | Radio Frequency Interference Gasket |
| | | | Adapter Support Bracket |
| | | | Bezel Keeper |
| | | 8286136 | Screw Hardware Kit |
| | | | - Consisting of - |
| | | | Screw (Self-Tap) |
| | | | Screw (System Unit) |
| | | | Star Washer, Lock Washer |
| | | | Screw (2-56), Screw (Panel) |
| | | | Screw (Cover), Screw (Hex) |
| | | | Hex Nut (2-56) |
| | | | Screw (6-32) |
| | | | Nut (4-40), Screw (4-40) |
| | | | Screw (Head Bind) |


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# System Unit (5170)

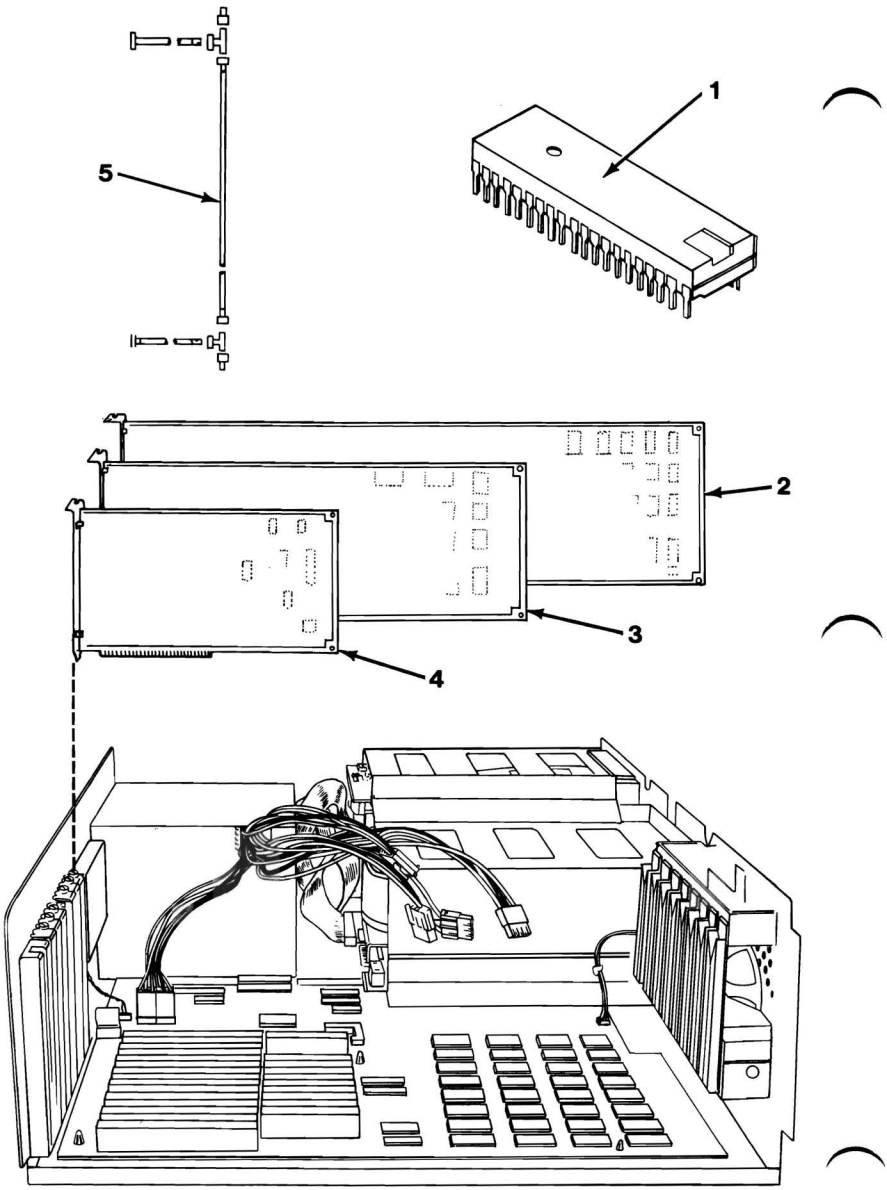



**Figure 3**


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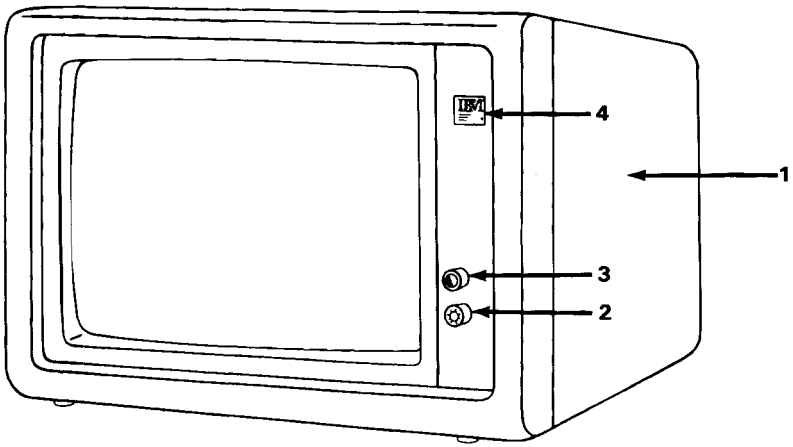
| Major Unit Code | Index No. | Part Number | Description |
|---|---|---|---|
| | | | - Optional Parts - |
| 326 | 3-1 | 8286127 | 80287 Math Coprocessor |
| 306 | 3-2 | 8286115 | 512Kb Memory Expansion Adapter |
| 304 | 3-2 | 8286116 | 128Kb Memory Expansion Adapter |
| 350 | 3-2 | 8286138 | Prototype Adapter |
| 106 | 3-2 | 8286098 | Binary Synchronous Communications (BSC) Adapter |
| 102 | 3-2 | 8286099 | Synchronous Data Link Control (SDLC) Communications Adapter |
| 307 | 3-2 | 8529148 | Monochrome Display and Printer Adapter |
| 309 | 3-2 | 8529146 | Color/Graphics Monitor Adapter |
| 110 | 3-2 | 6323472 | Cluster Adapter |
| | 3-5 | 6323575 | Cluster Cable Kit |
| 115 | 3-2 | 8286171 | PC Network Adapter |
| 115 | | 8286172 | PC Network Adapter Cable |
| 344 | 3-2 | 8654215 | Enhanced Graphics Adapter |
| 345 | | 6323468 | Graphics Memory Expansion Card (Does not include memory modules) |
| 346 | | 8654219 | Graphics Memory Module (Qty. 1) |
| 333 | 3-2 | 6181765 | Professional Graphics Controller |
| 332 | | 6181772 | Professional Graphics Memory Module (Qty.1) |
| | | 6133787* | Controller Processor Card |
| | | 6133788* | Controller Emulator Card |
| | | 6133789* | Controller Memory Card |
| | | 6133790* | 8088 Processor |
| | | 6133791* | 32Kb ROM |
| | | 6133792* | 32Kb ROM |
| | | 6323410* | Digital-Analog Converter |
| | | 6323412* | Misc. Hardware kit |
| 330 | 3-2 | 6181770 | GPIB Adapter |
| 331 | 3-2 | 6181768 | Data Acquisition Adapter |
| 568 | 3-2 | 2684438 | Voice Communications Adapter |
| 322 | 3-3 | 8286147 | Serial/Parallel Adapter |
| | | 8286170 | Serial Adapter Cable |
| 322 | | 8286194 | Serial Adapter Connector |
| 315 | 3-4 | 8529151 | Game Control Adapter |

* Restricted Availability



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# Monochrome Display (5151)





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| Major Unit Code | Figure Index Number | Number | Part Description |
|---|---|---|---|
| 200 | 4-1 | 8529171 | Display Assembly 120 Volt |
| 200 | 4-1 | 8529209 | Display Assembly 220/240 Volt |
| 200 | 4-2 | 8529177 | Brightness Knob |
| 200 | 4-3 | 8529178 | Contrast Knob |
| 200 | 4-4 | 8529179* | Logo/Label Kit 120 Volt |
| | | 8654205* | Logo/Label Kit 220/240 Volt |
| | | | - Consisting of - |
| | | | Front Name Plate |
| | | | FCC Label |
| | | | Label-Caution |
| | | | Rear Name Plate |
| | | 8529229* | Front Panel |
| | | 8529230* | Back Cover |
| | | 8529231* | Upper Cover Plug |
| | | 8529232* | Foot |
| | | 8529176* | Power Cord Holder |
| | | 8529173* | Signal Cable |
| | | 8529235* | Transformer 120 Volt |
| | | 8654206* | Transformer 220/240 Volt |
| | | 8529237* | Control Support |
| | | 8529236* | Transformer Support |
| | | 8529175* | Fuse 0.75 Amp for 120 Volt |
| | | 8654204* | Fuse 0.5 Amp for 220/240 Volt |
| | | 8529233* | Analog Card |
| | | 8529234* | PC Card |
| | | 8529174* | Power Cord 120 Volt |
| | | 8654203* | Power Cord 220/240 Volt |
| | | 8529180* | Display Misc. Hardware Kit |
| | | | - Consisting of - |
| | | | Display CRT Mounting Screw |
| | | | Display Transformer Screw |
| | | | Display CRT Mounting Support |
| | | | Display CRT Bracket to Front Panel |
| | | | Display Transformer Support Front Panel |
| | | | Display Rubber Bushing Screw |
| | | | Display Rubber Bushing Nut |
| | | | Display Cable Restraint Screw |
| | | | Display Star Washer |

*Restricted availability


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# Color Display (5153)

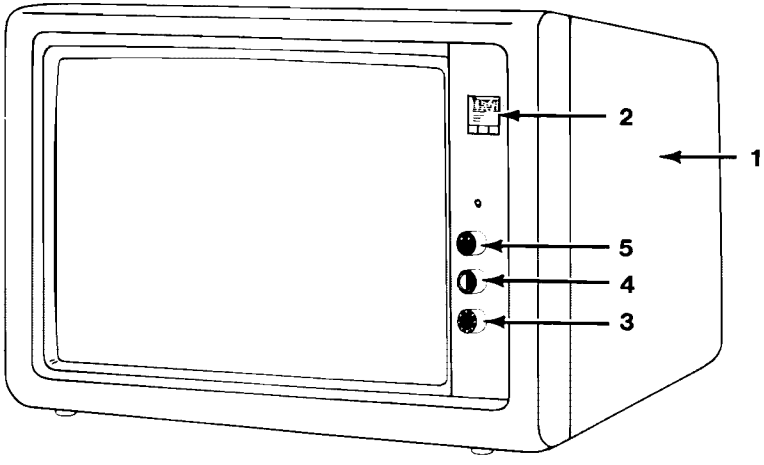


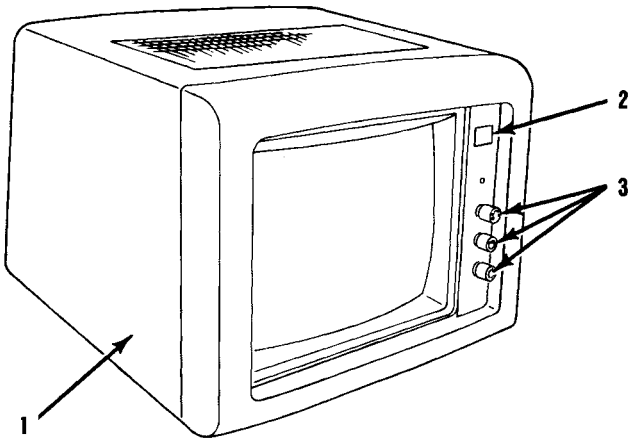

Figure 5


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| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 202 | 4-1 | 8529227 | Display Assembly |
| 202 | 4-1 | 8654214 | Display Assembly model-002 |
| 202 | 4-2 | 8529339 | Logo/Label Kit |
| 202 | 4-3 | 8529287 | Brightness Knob |
| 202 | 4-4 | 8529288 | Contrast Knob |
| 202 | 4-5 | 8529289 | Power On/Off Knob |
| 202 | 4-6 | | Power Cord** |
| | | 8529285* | Front Cover with Top, Bottom, and Power Supply Brackets |
| | | 8529286* | Rear Cover |
| | | 8529323* | P.C. Board/Flyback Transformer Focus Pack/Horizontal Drive Transistor/Chassis |
| | | 8654222* | P.C. Board/Flyback Transformer control assembly model-002 |
| | | 6135903* | Degaussing Coil |
| | | 8529338* | Control Assembly |
| | | 8654224* | Control Assembly model-002 |
| | | 8654276* | Power On Indicator |
| | | 8529291* | Power Supply Assembly |
| | | 8654221* | Power Supply Assembly model-002 |
| | | 8529290* | CRT and Yoke |
| | | 8529324* | CRT Board and Shield Cable |
| | | 8529334* | Signal Cable |
| | | 8529336* | Power Receptacle/Line Filter Assembly |
| | | 8654223* | Power Receptacle/Line Filter Assembly model-002 |
| | | 8529335* | Vertical Size Pot Shaft Extension |
| | | 8529337* | Vertical Hold Pot Shaft Extension |
| | | 8529327* | Miscellaneous Hardware Kit<br>- Consisting of -<br>Driver Board Shield<br>Driver Board Shield Retainers<br>Signal Cord Strain Relief<br>Power Supply Screws<br>CRT Mounting Screws<br>Control Assembly Screws<br>P.C. Board Chassis Mounting Screws<br>Rear Cover Screws and Washers<br>Cover Screw Plugs<br>Degaussing Coil Wire Ties |
| | | 6937192* | Packing Material Kit |
| | | | *Restricted availability |
| | | | **See Power Cord Parts list for the proper power cord certified for your country. |


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# Enhanced Color Display (5154)





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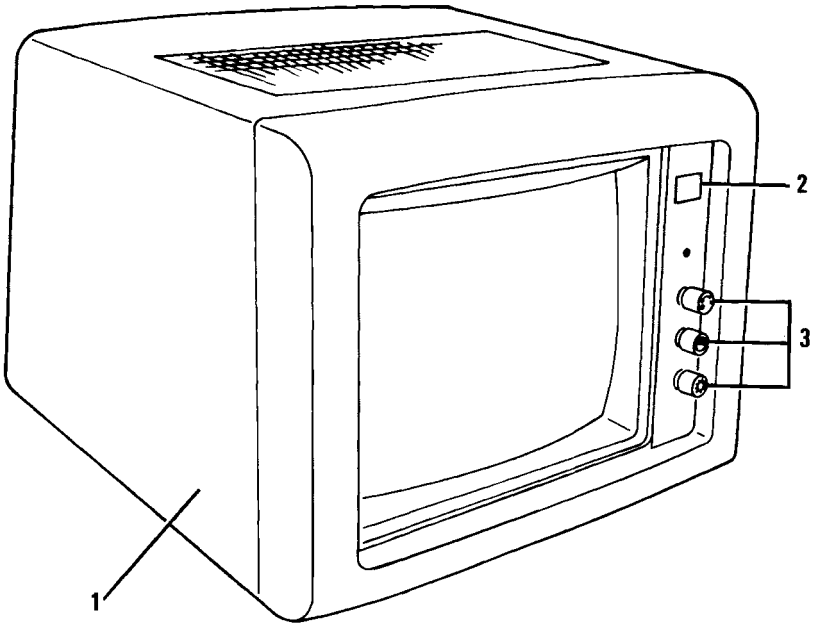
# Enhanced Color Display (5154)

| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 205 | 5.1-1 | 6321035 | Display Assembly Model 001 |
| | | 6321049 | Display Assembly Model 002 |
| | | 6321036 | Display Assembly Model 003 |
| | 5.1-2 | 6321061 | Logo and Label Kit<br>-Consisting of-<br>Back Logo<br>Bottom Cover Warning Labels (Five Languages) |
| | 5.1-3 | 6321056 | Knob and Cover Cap Kit<br>-Consisting of-<br>On/Off Knob (1)<br>Contrast Knob (1)<br>Brightness Knob (1)<br>Cover Cap (2)<br>Rear Knob (2) |
| | | 6323319 | Rubber Feet Kit<br>-Consisting of-<br>Rubber Feet (4)<br>Washers (4)<br>Screws (4) |
| | | 6321050* | Front Cover |
| | | 6321051* | Rear Cover |
| | | 6321052* | Main P.C. Board Assembly / Chassis / CRT Drive Card |
| | | 6321053* | Power Supply with Cover |
| | | 6321054* | Video Amp. Assembly / RGB Cable and Connector |
| | | 6321055* | Front Control Assembly |
| | | 6321057* | Power On Indicator |
| | | 6321058* | Rear Control Panel Assembly / Strain Relief |
| | | 6321059* | Signal Cable |
| | | 6135903* | Degaussing Coil |
| | | 6321064* | Miscellaneous Hardware Kit<br>-Consisting of-<br>CRT Rubber Mounting Washers (4)<br>Plastic Drive Board Shield (1)<br>Plastic Shield Retainers (2) |
| | | | CRT and Deflection Yoke Assembly with Wires / Ground Band / CRT Warning Label |
| | | 6321060* | Model 001 / Model 002 |
| | | 6321063* | Model 003 |
| | | | * Restricted Availability<br>** See Power Cord Parts List for proper power cord for your country. |


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# Professional Graphics Display (5175)





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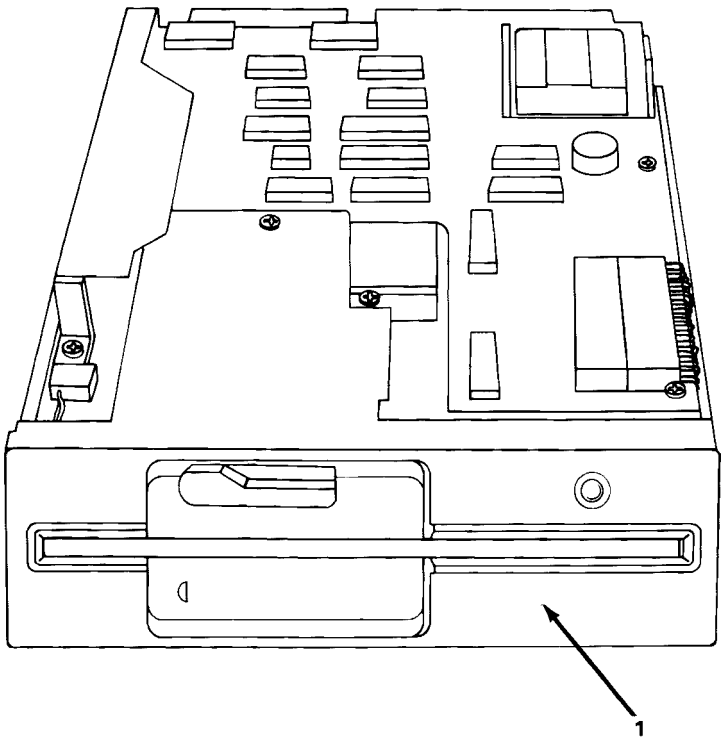
| Major Unit Code | Index No. | Part Number | Description |
|---|---|---|---|
| 204 | 1 | 6181764 | Display assembly (Domestic U.S.) |
| | 1 | 6181766* | Display assembly (Southern Hemisphere) |
| | 1 | 6171767* | Display assembly (Northern Hemisphere) |
| | 1 | 6133988* | Display assembly (South America) |
| 204 | | 8529158** | Power cord (U.S.) |
| | | 6321050* | Front cover |
| | | 6321051* | Rear cover |
| | | 6133989* | Main PCB assembly/chassis/crt drive card |
| | | 6133990* | Power supply/with cover |
| | | 6133991* | Video AMP assembly/RGB Cable & Connector |
| | | 6133992* | Front control assembly |
| | 3 | 6133993 | Cover caps (2) & knob set (3 front) |
| | | 6321057* | Power on indicator |
| | | 6133994* | Signal cable |
| | | 6133995* | CRT & deflection yoke assembly with wires/tubes, warning labels (GND band) (northern hemisphere) |
| | | 6133996* | CRT & deflection yoke assembly with wires/tubes, warning labels (GND band) (southern hemisphere) |
| | 2 | 6133997 | Logo & label kit<br>-Consisting of-<br>Front IBM name plate<br>Back IBM name plate<br>Warning bottom cover labels |
| | | 6323319 | Rubber feet kit |
| | | 6321064* | Miscellaneous hardware kit<br>-Consisting of-<br>CRT mounting rubber washers<br>Plastic board shield<br>Shield retainers, plastic type |
| | | 6133998* | Rating label model 002 |
| | | 6133999* | Rating label model 003 |
| | | 6134000* | Rating label model 004 |

* Restricted availability.
** See Power Cord parts list for proper power cord for your country.


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# High Capacity Diskette Drive





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## High Capacity Diskette Drive

| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 835 | 6-1 | 8286130 | High Capacity Diskette Drive |
| 866 | 8-2 | 8286124 | Fixed Disk and Diskette Drive Signal Cable |


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# Double Sided Diskette Drive

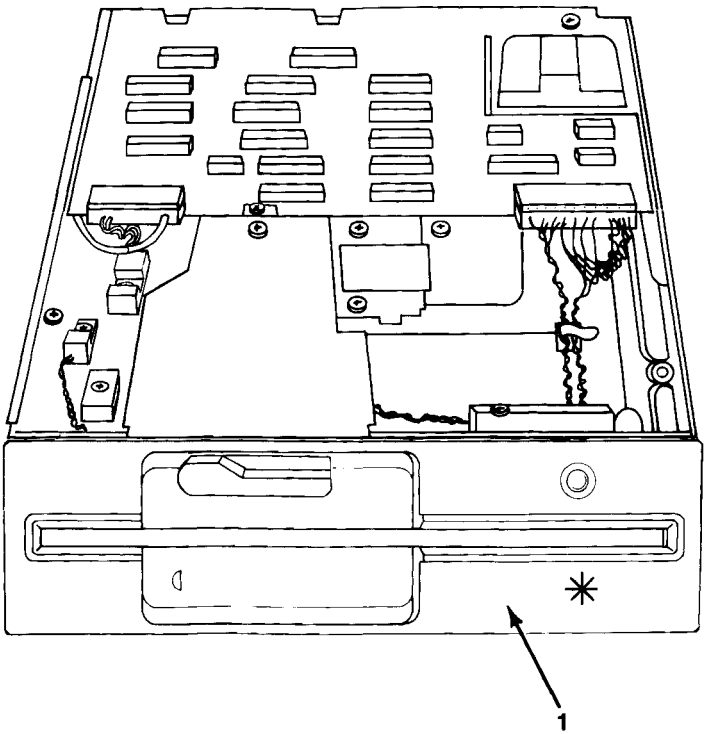



Figure 7


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## Double Sided Diskette Drive

| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 875 | 7-1 | 8286131 | Double Sided Diskette Drive |
| 866 | 8-2 | 8286124 | Fixed Disk and Diskette Drive Signal Cable |


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# Fixed Disk Drive

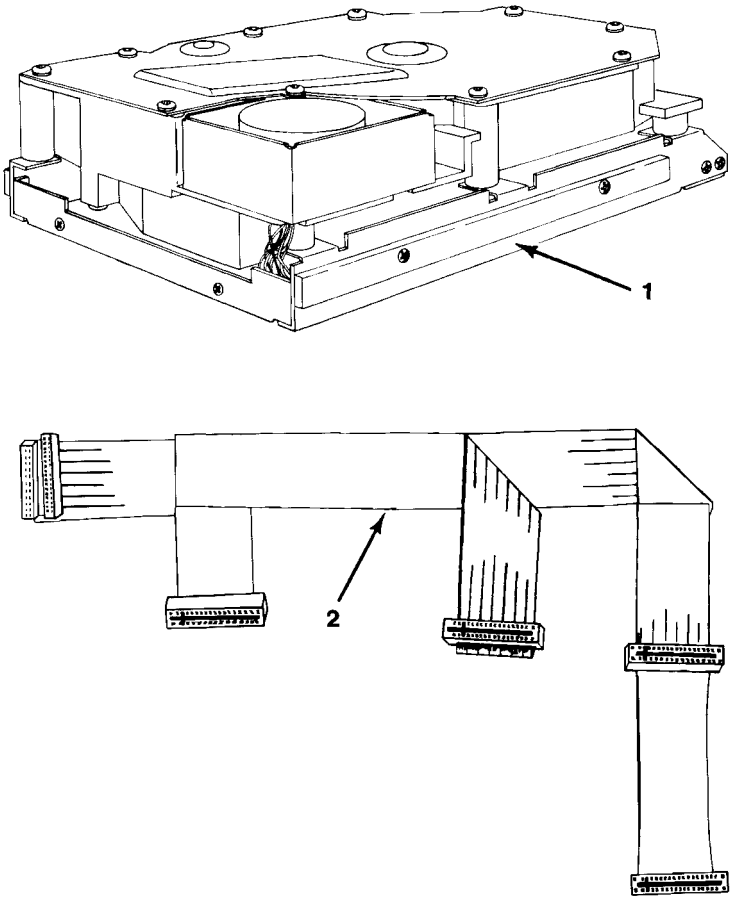



Figure 8


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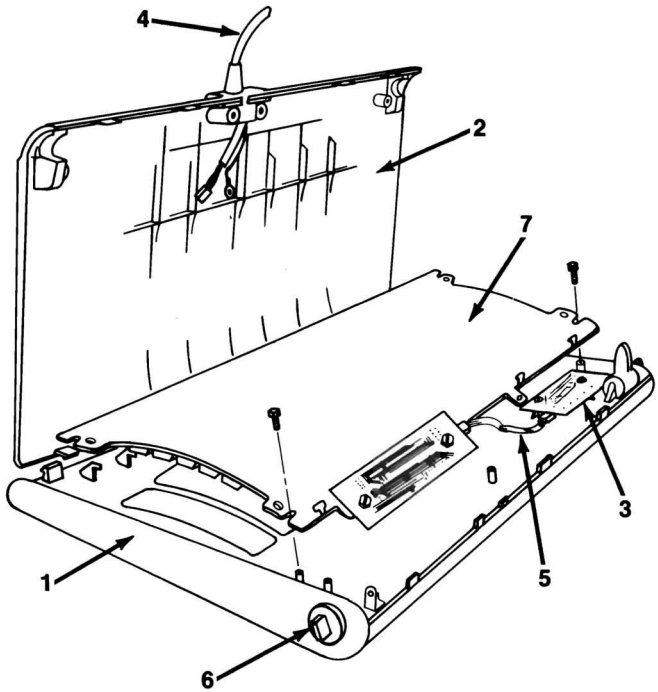
## Fixed Disk Drive

| Major Unit Code | Index No. | Part Number | Description |
|---|---|---|---|
| 866 | 1 | 8286128 | Fixed Disk Drive 20MB |
| 867 | 1 | 8286216 | Fixed Disk Drive 30MB |
| 866 | 2 | 8286124 | Fixed Disk and Diskette Drive Signal Cable |
| 866 | 3 | 8286129 | Fixed Disk Drive Data Cable |
| 866 | | 6489949 | Fixed Disk Keeper Bar |

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# Keyboard




| Major Unit Code | Index No. | Part Number | Description |
|---|---|---|---|
| 040 | | 8286165 | Keyboard Complete USA (Includes Figure Index Numbers 9-1 through 9-7) |
| 040 | 1 | 8286142 | Top Cover |
| 040 | 2 | 8286143 | Base |
| 040 | 3 | 8286144 | LED Card |
| 040 | 4 | 8286146 | External Cable |
| 040 | 5 | 8286145 | Internal Cable |
| 040 | 6 | 8286141 | Adjustable Foot (Adjustable Foot Spring included in Misc. Parts Kit for System Unit) |
| 040 | 7 | 8286140 | Keyboard Subassembly USA |
| 040 | 7 | 8286160 | Keyboard Subassembly France |
| 040 | 7 | 8286161 | Keyboard Subassembly Italy |
| 040 | 7 | 8286162 | Keyboard Subassembly Germany |
| 040 | 7 | 8286163 | Keyboard Subassembly Spain |
| 040 | 7 | 8286164 | Keyboard Subassembly United Kingdom |

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# Keybutton Part Numbers

## (Major Unit Code 040)

| Key Location | Part Number | Description | | Key Location | Part Number | Description |
|---|---|---|---|---|---|---|
| 1 | 1642306 | ~/' | | 46 | 2658860 | Z |
| 2 | 1761460 | !/1 | | 47 | 2658861 | X |
| 3 | 1642308 | @/2 | | 48 | 2658862 | C |
| 4 | 1642309 | #/3 | | 49 | 2658863 | V |
| 5 | 1642342 | $/4 | | 50 | 2658864 | B |
| 6 | 1642343 | %/5 | | 51 | 2658865 | N |
| 7 | 4496183 | ^/6 | | 52 | 2658866 | M |
| 8 | 2658824 | &/7 | | 53 | 1864026 | </, |
| 9 | 2658825 | */8 | | 54 | 1864027 | >/. |
| 10 | 2658826 | (/9 | | 55 | 2658869 | ?/ / |
| 11 | 2658827 | )/0 | | 57 | 6111189 | ⇧ |
| 12 | 1761515 | _/- | | 58 | 1762744 | Alt |
| 13 | 2658829 | +/= | | 61 | N/A | Space Bar |
| 14 | 5997221 | ¦/\ | | 64 | 8310423 | Caps Lock |
| 15 | 5997176 | ← | | 65 | 4584721 | F2 |
| 16 | 8310421 | \|←/→\| | | 66 | 4584723 | F4 |
| 17 | 2658832 | Q | | 67 | 4584725 | F6 |
| 18 | 2658833 | W | | 68 | 4584727 | F8 |
| 19 | 2658834 | E | | 69 | 4584729 | F10 |
| 20 | 2658835 | R | | 70 | 4584720 | F1 |
| 21 | 2658836 | T | | 71 | 4584722 | F3 |
| 22 | 2658837 | Y | | 72 | 4584724 | F5 |
| 23 | 2658838 | U | | 73 | 4584726 | F7 |
| 24 | 2658839 | I | | 74 | 4584728 | F9 |
| 25 | 2658840 | O | | 90 | 4584714 | Esc |
| 26 | 2658841 | P | | 91 | 4584732 | 7/Home |
| 27 | 4585286 | {/[ | | 92 | 6111212 | 4/← |
| 28 | 8310418 | }/] | | 93 | 4584737 | 1/End |
| 30 | 8310420 | Ctrl | | 95 | 8310426 | Num Lock |
| 31 | 2658846 | A | | 96 | 6111213 | 8/↑ |
| 32 | 2658847 | S | | 97 | 2658892 | 5 |
| 33 | 2658848 | D | | 98 | 6111215 | 2/↓ |
| 34 | 2658849 | F | | 99 | 8310424 | 0/Ins |
| 35 | 2658850 | G | | 100 | 8310427 | Scroll Lock |
| 36 | 2658851 | H | | 101 | 4584734 | 9/PgUp |
| 37 | 2658852 | J | | 102 | 6111214 | 6/→ |
| 38 | 2658853 | K | | 103 | 4584739 | 3/PgDn |
| 39 | 2658854 | L | | 104 | 8310425 | Del |
| 40 | 2658855 | :/; | | 105 | 8543584 | Sys |
| 41 | 4584779 | "/ / | | 106 | 4584718 | PrtSc |
| 43 | 1435031 | ↵ | | 107 | 8310448 | - |
| 44 | 6111188 | ⇧ | | 108 | 8310429 | + |

**Part numbers for complete keybutton sets are on the next page.**



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# Keyboard (Keybutton Kits)

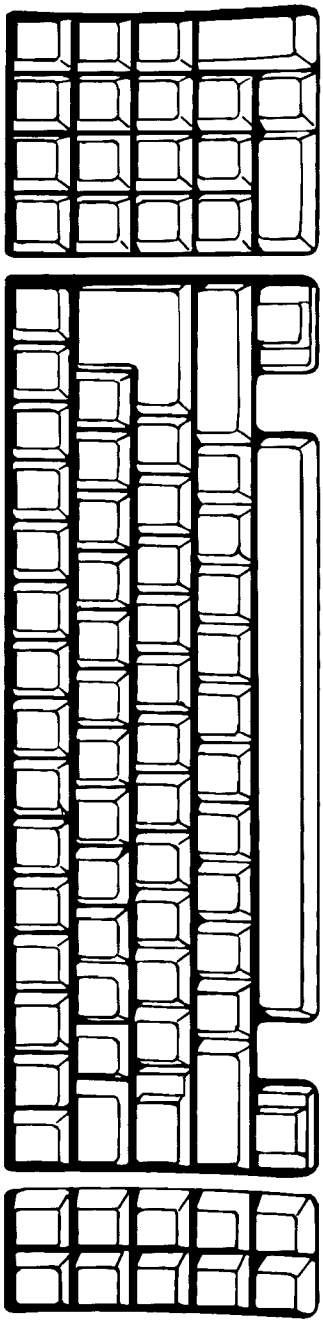


Figure 10


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## Keybutton Kits

| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 040 | 10-1 | 8286153 | Keybutton Kit USA |
| 040 | 10-1 | 8286154 | Keybutton Kit France |
| 040 | 10-1 | 8286155 | Keybutton Kit Italy |
| 040 | 10-1 | 8286156 | Keybutton Kit Germany |
| 040 | 10-1 | 8286157 | Keybutton Kit Spain |
| 040 | 10-1 | 8286158 | Keybutton Kit United Kingdom |
| | | | **Note:** Keybutton Kit contains a complete set of keybuttons (spacebar not included). |



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# Graphics Printer (5152)

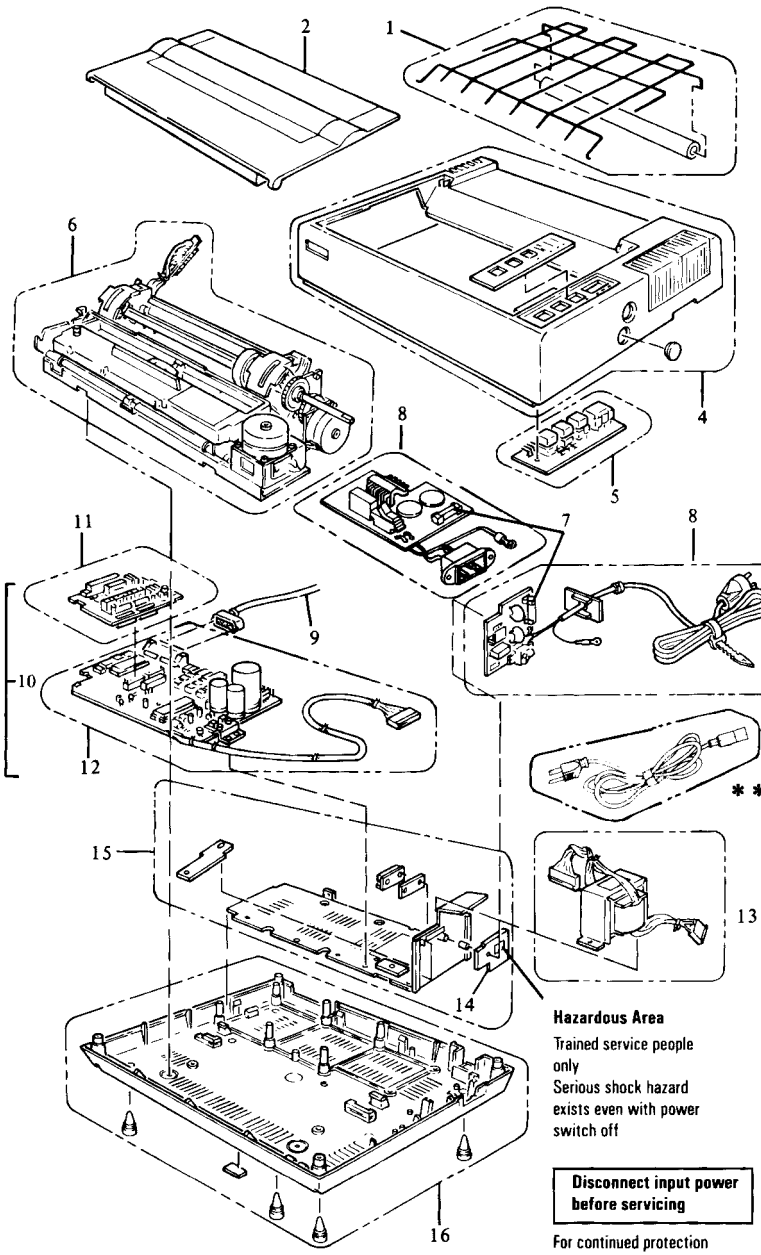



**Figure 11**


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| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 554 | 11-1 | 8529191 | Forms Rack |
| 000 | 11-2 | 8529185 | Access Cover |
| 000 | 11-3 | 8529186 | Label Kit<br>- Consisting of -<br>Control Panel Label<br>Nameplate—Front<br>Nameplate—Rear<br>Warning Label Bottom<br>Label—FCC<br>Warning Label—Safety Shield<br>1 ea. 120,220,240 Label—Rear |
| 000 | 11-4 | 8529182 | Top Cover |
| 000 | 11-5 | 8529184 | Control Panel |
| 551 | 11-6 | 8529198 | Print Mechanism Assembly |
| 600 | 11-7 | 8529220 | Fuse-2A for 120 Volt |
| 600 | 11-7 | 8529278 | Fuse-315mA for 220/240 Volt |
| 600 | 11-8 | 8529187 | Fuse-Filter Card/ Power Cord Assembly for 120 Volt |
| 600 | 11-8 | 8529279 | Fuse-Filter Card/ AC Socket for 220/240 Volt |
| 551 | 11-9 | 8529214 | Printer Cable |
| 318 | 11-10 | 8529268 | Control Cards<br>-Consisting of- |
| 318 | 11-11 | 8529221* | Driver Card |
| 318 | 11-12 | 8529276* | Logic Card |
| 600 | 11-13 | 8529196 | Power Transformer 120 Volt |
| 600 | 11-13 | 8654236 | Power Transformer 220 Volt |
| 600 | 11-13 | 8529277 | Power Transformer 240 Volt |
| 600 | 11-14 | 8529215 | Safety Shield |
| 600 | 11-15 | 8529217 | Heat Sink/Power Transistor |
| 000 | 11-16 | 8529181 | Base Assembly |

*Restricted availability

**See Power Cord Parts list for the proper power cord certified for your country.



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# Graphics Printer (5152)

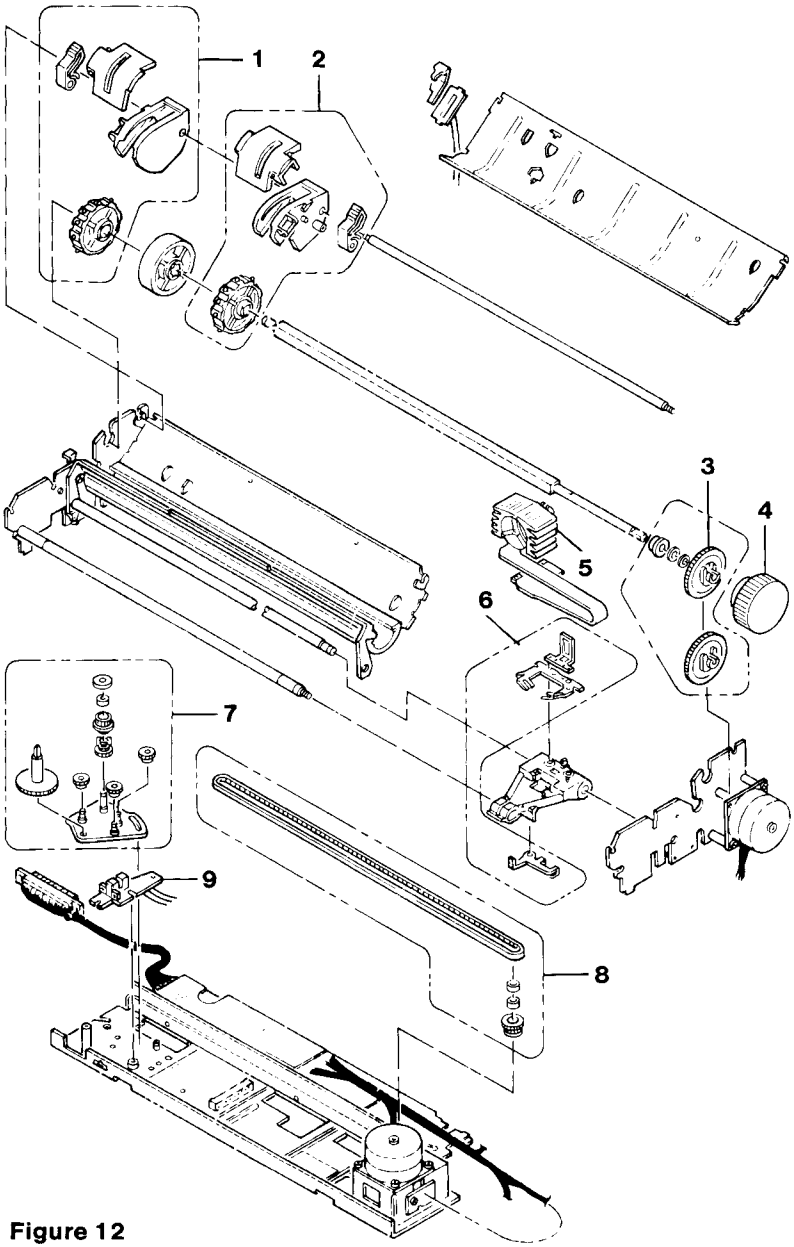



Figure 12


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| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 550 | 12-1 | 8529188 | Forms Tractor Assembly, Left |
| 550 | 12-2 | 8529216 | Forms Tractor Assembly, Right |
| 550 | 12-3 | 8529194 | Intermediate Gear |
| 550 | 12-4 | 8529193 | Forms Feed Knob |
| 551 | 12-5 | 8529183 | Print Head |
| 551 | 12-6 | 8529192 | Ribbon Shield |
| 551 | 12-7 | 8529195 | Carriage Drive Assembly |
| 551 | 12-8 | 8529190 | Carriage Belt |
| 551 | 12-9 | 8529189 | Left Margin Assembly |
| 000 | | 8529200 | Printer Misc. Hardware<br>- Consisting of -<br>Plane Washers<br>C.T.P. Screws<br>Retaining Rings, Type E<br>CP Screws with OW<br>Cup Screws<br>Spacers<br>Outside Toothed Lock Washers<br>Cup Screws (Binding Head)<br>Hexagon Nuts<br>CB Screws |
| 000 | | 8529218 | Printer Misc. Springs<br>-Consisting of-<br>Spring Pin<br>Leaf Spring<br>PE Lever Spring<br>Headlock Lever Spring<br>Scale Spring, Left<br>Scale Spring, Right<br>Paper Holding Cover Spring |
| 000 | | 8529219 | Printer Misc. Parts<br>- Consisting of -<br>Board Spacing<br>Paper Guide Roller<br>Grommet<br>Rubber Bumper A<br>Rubber Bumper B<br>Wire Band |



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# Power Cords

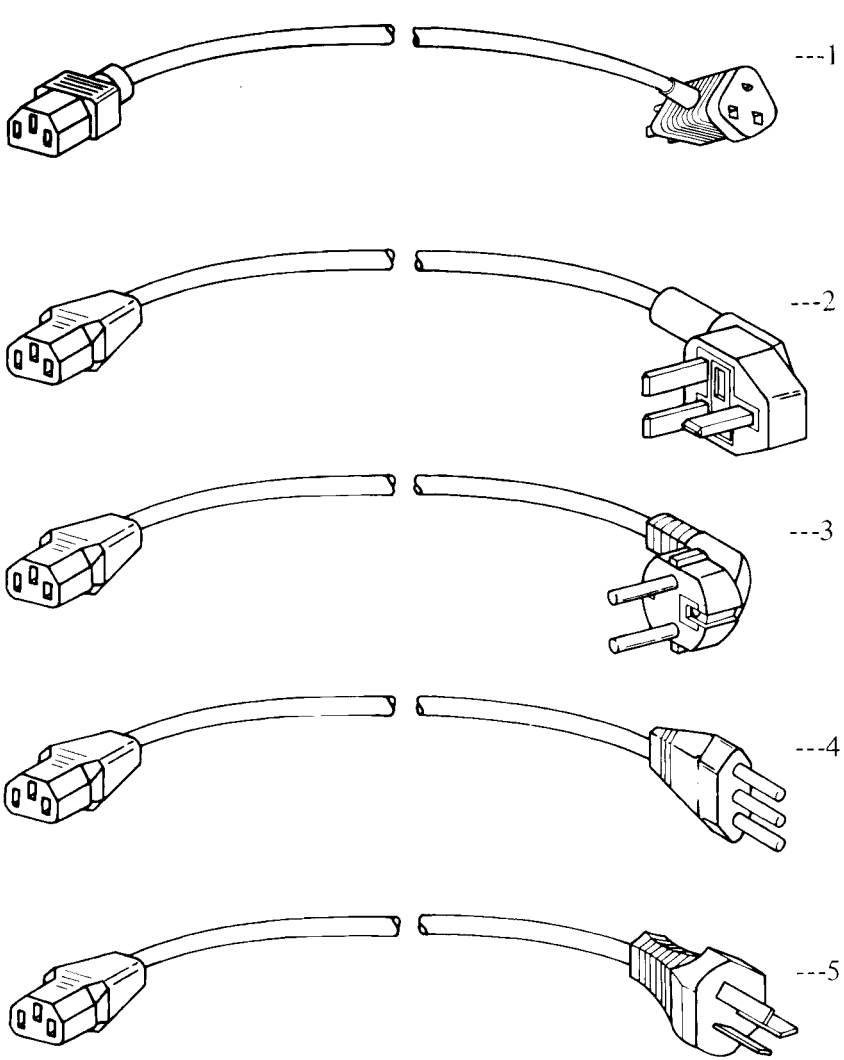



**Figure 13**

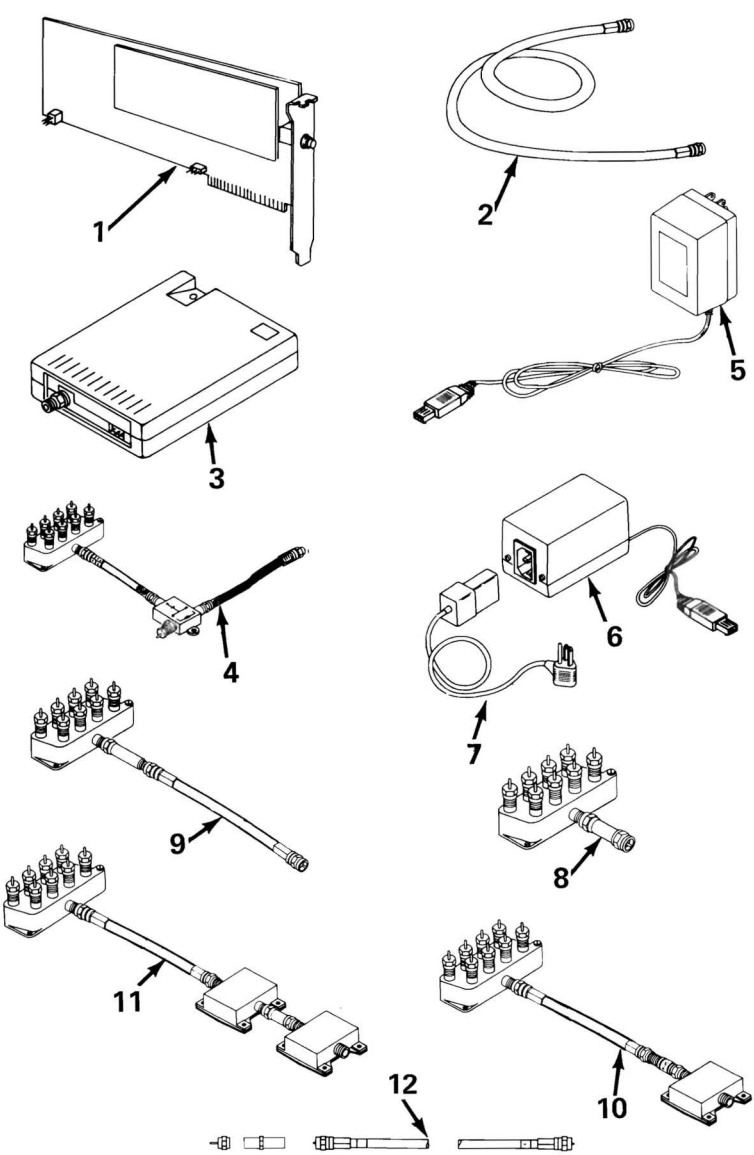

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## Power Cords

| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 600 | 13-1 | 8286120 | Power Cord U.S.*<br>Power Cord Venezuela*<br>Power Cord Colombia* |
| 600 | 13-2 | 8529341 | Power Cord U.K.*<br>Power Cord Hong Kong*<br>Power Cord Singapore* |
| 600 | 13-3 | 8529281 | Power Cord Germany*<br>Power Cord France*<br>Power Cord Spain* |
| 600 | 13-4 | 8529282 | Power Cord Italy* |
| 600 | 13-5 | 8529284 | Power Cord Australia*<br>Power Cord New Zealand* |
| | | | * Use only the proper power cord certified for use in your country. |


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# PC Network (5178)





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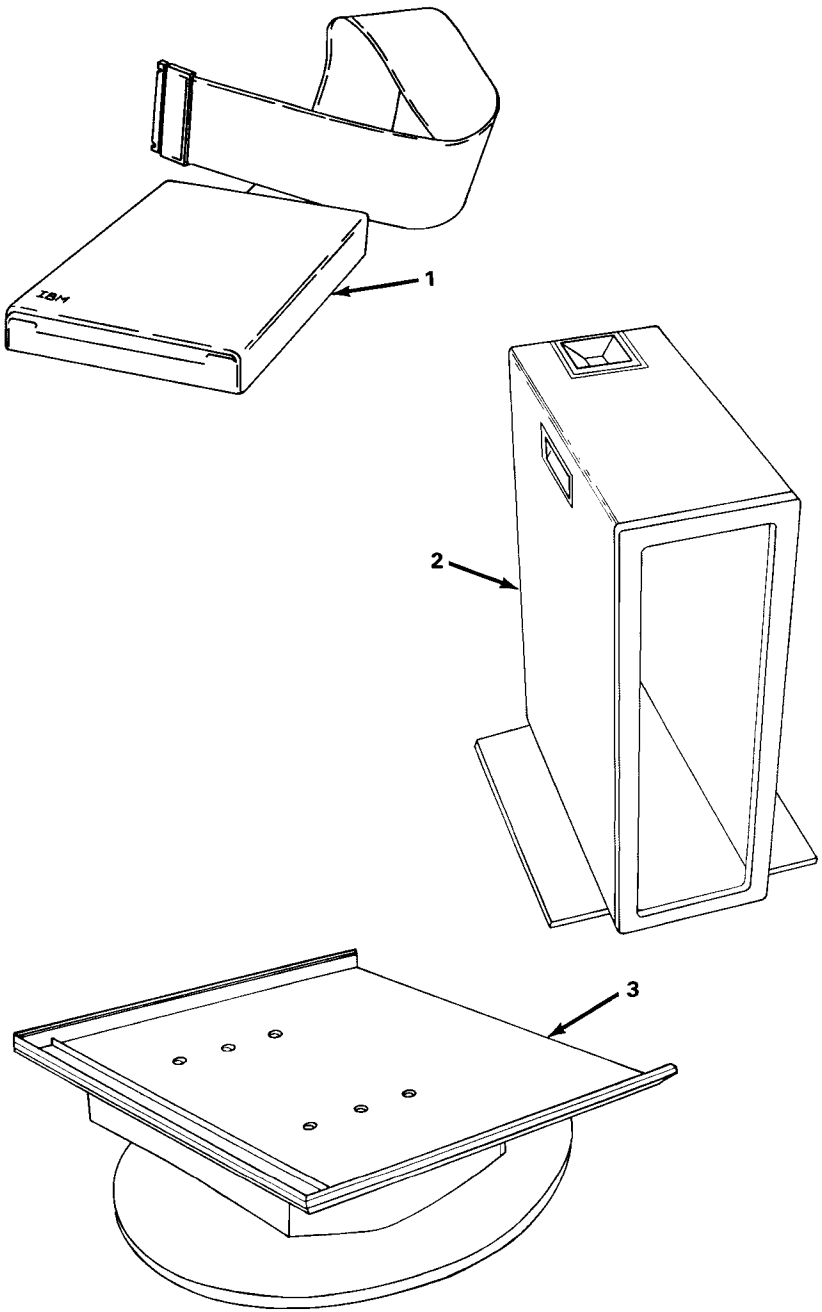
# PC Network (5178)

| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 115 | 1 | 8286171 | PC Network Adapter |
| 115 | 2 | 8286172 | PC Network Adapter Cable |
| 116 | 3 | 8286173 | Translator Assembly |
| 116 | 4 | 8286174 | Connection Hardware Assembly |
| 116 | | 8286175 | Spare Parts Kit<br>-Consisting of-<br>Wrenches,7/16-9/16 (2)<br>30Db Attenuator<br>Labels - A<br>Label Kit Assembly |
| 116 | 5 | 8286176 | PC Network 120v Transformer |
| 116 | 6 | 8286177 | PC Network 230v Transformer |
| 116 | 7 | | Power Cord* |
| 116 | 8 | 8286178 | Base Expander |
| 116 | 9 | 8286179 | Short Distance Kit |
| 116 | 10 | 8286180 | Medium Distance Kit |
| 116 | 11 | 8286181 | Long Distance Kit |
| 116 | 12 | 8286182 | Cable, 7.62 M (25 Ft) |
| 116 | 12 | 8286183 | Cable, 15.24 M (50 Ft) |
| 116 | 12 | 8286184 | Cable, 30.48 M (100 Ft) |
| 116 | 12 | 8286185 | Cable, 60.96 M (200 Ft) |

*See Power Cord parts list for proper power cord certified for your country.


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# Miscellaneous





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# Miscellaneous

| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| | 1 | 6181769 | Data Acquistion Distribution Panel |
| 001 | 2 | 8286195 | Floor Stand |
| 001 | | 8286196* | Front Trim Bezel |
| 001 | | 8286197* | Back Panel |
| 001 | | 8286198* | Rails |
| 001 | 3 | 8286199 | Display Stand |
| 001 | | 8286200* | Bottom Platter |
| 001 | | 8286201* | Top Platter |
| 001 | | 8286202* | Back Skirt |
| | | | * Restricted Availability |


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# Notes:

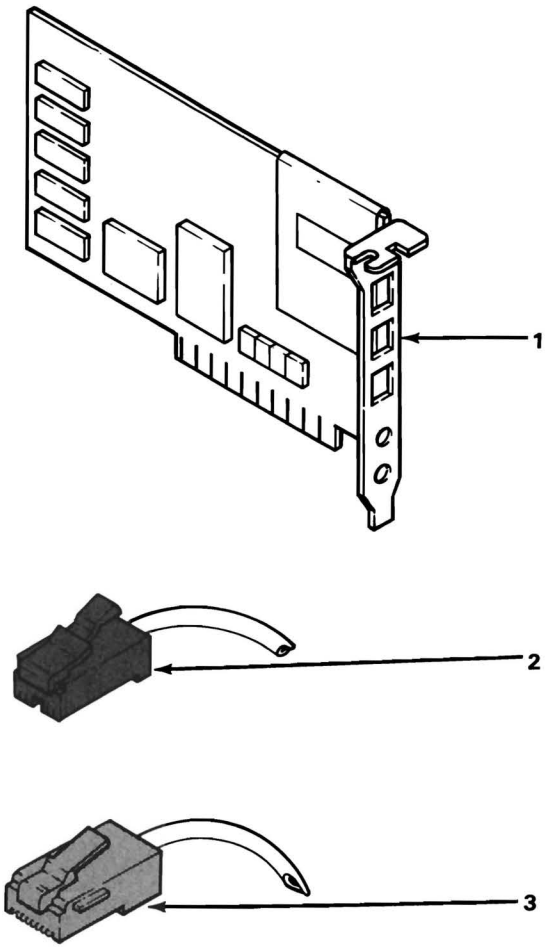

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# Notes:



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# Voice Communications Adapter





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# Voice Communications Adapter

| Major Unit Code | Figure Index Number | Part Number | Description |
|---|---|---|---|
| 568 | 1 | 2684438 | Voice Communications Adapter |
| 568 | 2 | 2684462 | Notched Black Telephone Cable |
| 568 | 2 | 2684487 | Notched White Telephone Cable |
| 568 | 3 | 2684509 | Tabbed Black Phone Line Cable |
| 568 | 3 | 2684514 | Tabbed White Phone Line Cable |


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# Notes:


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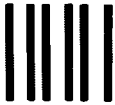
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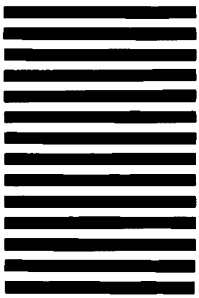
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