
Chapter 3. Installing Options

This chapter provides instructions on installing options in your system unit. Use the following considerations when installing options.

Install all of the options at one time to prevent having to repeatedly install and remove the system-unit cover.

Install the SBC options first. Installing these options first will prevent you from having to remove other options to access the SBC.

Use the figures in "General Layout of Components" on page 1-3 to locate components.

Before performing any installation procedures, read the information in "Safety Information" on page F-11 and in "Handling Electrostatic-Discharge-Sensitive Devices" on page F-16.

CAUTION:

- **Always remove the source of power to the system unit before starting any removal or replacement procedures. The electrical power and any backup-power source should be unplugged from the wall outlet or disconnected from its source. To make sure power is removed properly, start each removal or replacement procedure with "Turning Off the Power and Disconnecting Cables."**
- **Depending on the options installed, the system unit could weigh more than one person can lift comfortably. Do not attempt to lift the system unit by yourself. Get another person to help you.**

Attention

Whenever handling electronic components, use precautions to prevent damage from electrostatic discharge. Refer to "Handling Electrostatic-Discharge-Sensitive Devices" on page F-16 for a list of those precautions.

Turning Off the Power and Disconnecting Cables

Use the following procedure to power-down the system unit and disconnect all cables before beginning any removal or replacement procedure. If it is necessary to remove the system unit from its mounting place, use this procedure before removing the system unit.

1. Remove any removable media, such as diskettes, optical discs, or tapes, from the system unit.
2. Turn off the computer and any attached devices.
3. Tag all cables connected to the system unit, or record their respective connectors, to prevent confusing them when they are unplugged.
4. If an internal modem, disconnect the telephone line from the wall outlet and then from the system unit (the line can cause an electrical shock if its number is called).
5. Unplug or disconnect all electrical power cords and any backup-power source. Where applicable, unplug all cables at the outlet first, then at the device.
6. Disconnect all other cables from the system unit.

When reassembling the system unit, reverse these steps.

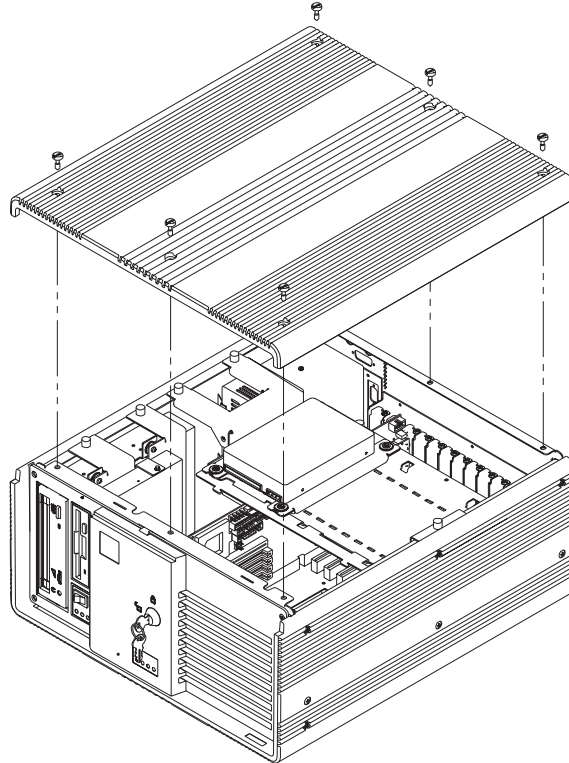
Removing the Cover

In most cases, you do not need to remove the system unit from its mounting to service it. However, if you must, do so before removing the covers.

CAUTION:

The system unit weighs over 40 pounds (19 kilograms). Do not try to hold the system unit while removing the screws; have another person hold it as you remove the screws.

To remove the cover, loosen the six cover screws and lift off the cover, as shown.

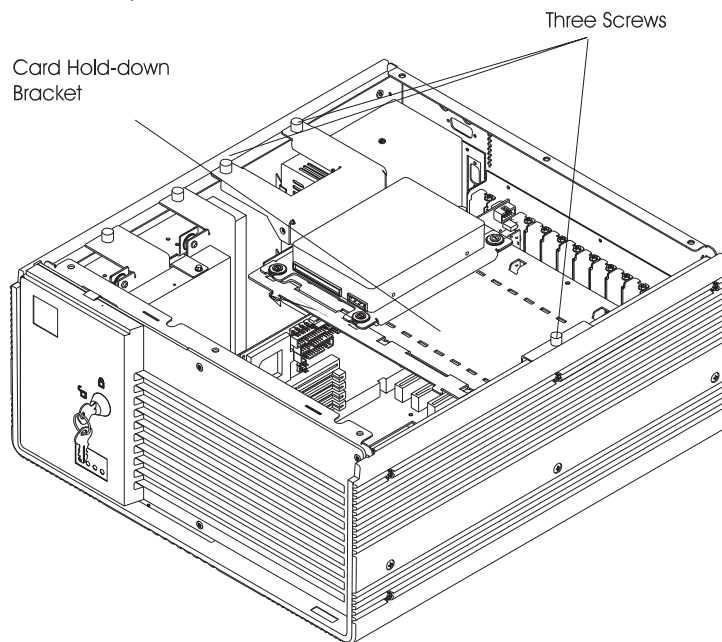


Installing SBC Options

The 7588 Industrial Computer uses a single-board computer as the primary processor and system logic (the SBC is described in Chapter 6, “Single Board Computer”).

If you have options to install on the SBC (such as memory and the PMC video card), continue with the following steps.; otherwise, go to “Installing the Mounting Options” on page 3-12.

1. Remove the cover (refer to page 3-2).
2. Disconnect the signal and power cables from all hard drives (the hard drives do not need to be removed from the card hold-down bracket).
3. Loosen the three thumb screws; then remove the card hold-down bracket and hard drives.



4. Record the position of any adapters that interfere with disconnecting cables from the SBC, and remove those adapters (see “Removing and Replacing Adapters” on page 8-37).
5. Remove the screw that secures the retaining bracket for the SBC to the chassis.
6. Disconnect all cables from the SBC.
7. Pull the cables away from the SBC and carefully lift the SBC out of the system unit. (You might have to rock the SBC slightly from front to rear to loosen it from the connector.)
8. Place the SBC on a flat, clean, static-free surface, with the component-side facing up and the backplane connector toward you. Then continue with “Installing Memory.”

Installing Memory

Adding system memory to your system increases system performance by providing more memory for programs to use. If you have memory to install, continue with the following. Otherwise, go to “Installing a PMC Card” on page 3-7.

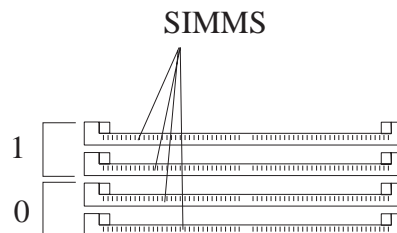
The SBC has four memory connectors that are grouped in two banks. Each connector supports 8-MB, 16-MB, 32-MB, and 64-MB SIMMs that are 60-nanosecond, EDO (non-parity) or fast-page memory (parity).

Memory must be installed in matched pairs (same size, speed, and type). You can increase total system memory by installing additional SIMMs, or by replacing SIMMs with larger capacity SIMMs. The system detects the additional memory automatically as part of POST, and will display a prompt for you to run configuration.

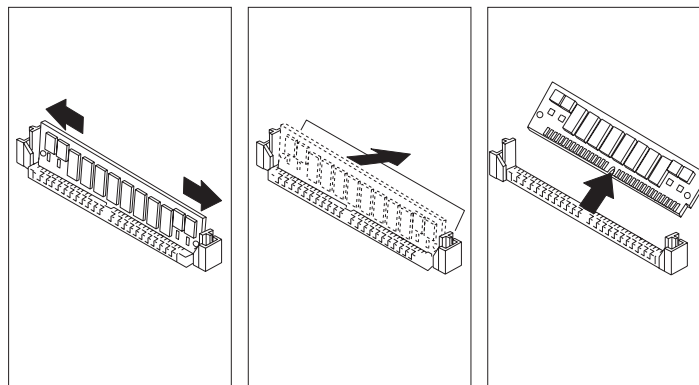
Notes:

1. SIMMs can have a maximum height of 1.0 inch (25.4 millimeters).
2. Install only parity SIMMs.

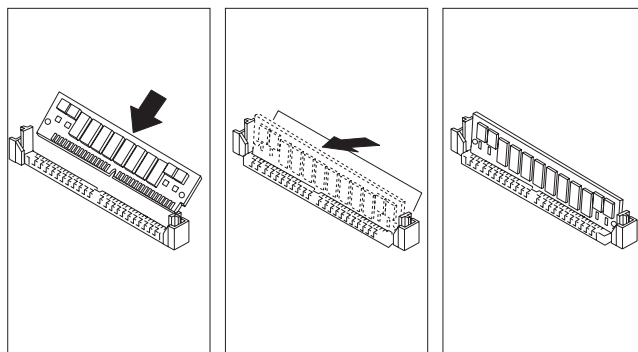
The following figure shows the SIMM banks on the SBC. Memory is installed in matched pairs. The first pair is installed in bank 0; the next pair is installed in bank 1.



1. Place the SBC on a clean, static free work area.
2. If you are not replacing SIMMs, go to step 7. If you are replacing SIMMs with larger capacity modules, continue with the next step.
3. Starting with the top-most populated SIMM connector, push outward against the retaining clips at both ends of the SIMM connector.



4. Rotate the SIMM away from the connector until it is released from the clips.
5. Lift the SIMM out of the connector.
6. Repeat these steps for each SIMM you are removing (they must be replaced in pairs).
7. Align the center key of the new SIMM with the connector (the notch in the SIMM should be to the right). Then insert the SIMM into the connector. The SIMM will seat at an angle.



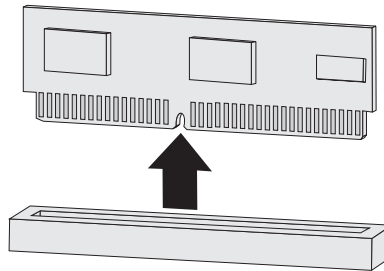
8. Rotate the top of the SIMM until it snaps into the retaining clips, as shown in the previous figure.
9. Repeat these steps for each SIMM. (Remember to install them in matched pairs.)
10. Record the configuration changes in Appendix A, "System Records."
11. Continue with "Installing Cache Memory."

Installing Cache Memory

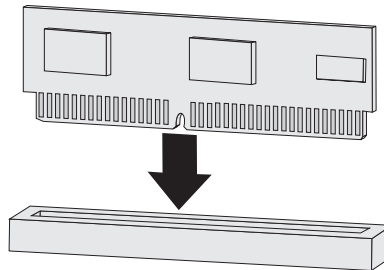
The cache memory module is located on the SBC. Adding cache memory can increase the performance of your system unit. If you are installing a cache memory module, continue with the following. If you are installing a PMC card, go to “Installing a PMC Card” on page 3-7. Otherwise, go to “Reinstalling the SBC” on page 3-7.

One cache memory size is available, 512 KB.

1. Touch the static-protective bag in which the modules were packaged to any unpainted metal surface on the system unit. Then remove the memory modules from the package.
2. Gently pull the top edge of the cache memory module up and out of the connector.



3. Position the new module so the notch on the bottom edge aligns with the notch in the connector.
4. Insert the cache memory module into the connector and push down evenly. Make sure the module is fully seated in the connector.



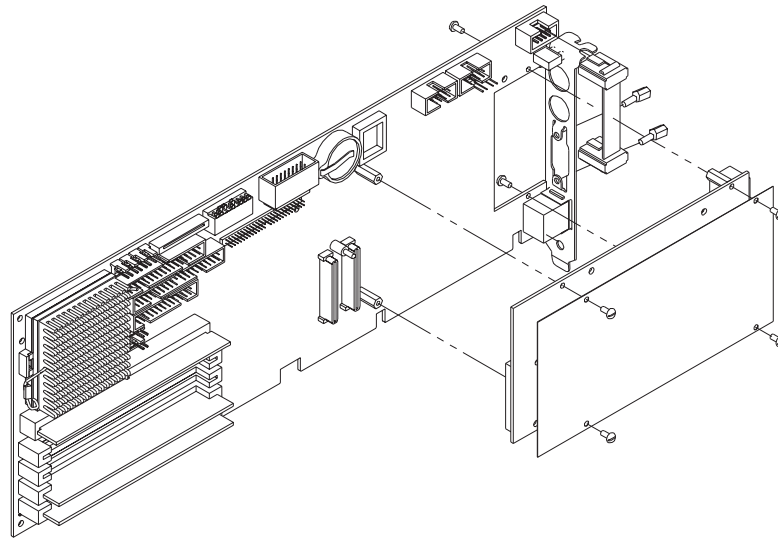
5. Record the size of the cache memory module you just installed in Appendix A, “System Records.”
6. Continue with “Installing a PMC Card” on page 3-7.

Installing a PMC Card

If you are installing a PMC card, continue with the following. Otherwise, go to “Reinstalling the SBC.”

See Chapter 7, “Analog Video PMC Form Factor Card” for information on the PMC video card.

1. Place the SBC on a clean, static-free work area.
2. Remove the retaining bracket from the SBC.
3. Remove the PMC card from the static-free bag.
4. Attach the new retaining bracket and mounting hardware to the SBC.
5. Connect any cables between the PMC card and SBC (refer to the instructions that came with the PMC card).
6. Align the connectors on the PMC card with the connectors on the SBC and press the two cards together.



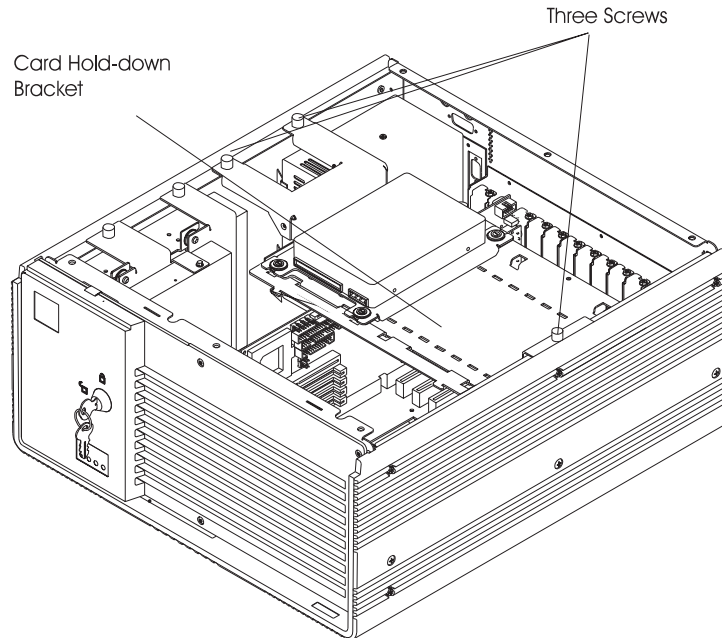
7. Install the four mounting screws.
8. Record the PMC card in Appendix A, “System Records.”
9. Continue with “Reinstalling the SBC.”

Reinstalling the SBC

1. Reinstall the SBC and reconnect all internal cables.
2. Reinstall any adapters that were removed into the same slots from which they were removed.
3. Continue with “Installing Adapters.”

Installing Adapters

1. Remove the cover (refer to page 3-2).
2. Disconnect the power and signal cables from the hard disk drives.
3. Loosen the three screws completely; then remove the hard disk drives and hold-down bracket.



4. Refer to the instructions that came with the adapter to determine if the adapter must be installed in a specific slot (PCI slot 2 is not bus-master capable).
5. Record the location of any adapters that are in the way; then remove them.
6. Touch the static-protective bag in which the adapter is packaged to any unpainted metal surface on the system unit. Then, remove the adapter from the bag.
7. Refer to the instructions that came with the adapter to determine switch settings, jumper positions, or other special setup and handling.
8. Install the adapter in the system unit.
 - a. Grasp the adapter at the front and rear.
 - b. Align the adapter with the front and rear adapter guides and slide it into the guides (some adapters do not extend to the front adapter guide).
 - c. Press the adapter firmly to seat it completely in the connector. Full-length adapters slide into the latch on the front adapter guide.
 - d. Install and tighten the screw on the adapter-retaining bracket.
9. Record the adapter information and location in Appendix A, "System Records."
10. Reinstall any adapters you removed (make sure to install them in the original locations).
11. Continue with "Installing the Card Hold-Down Spacers."

Installing the Card Hold-Down Spacers

The 7588 Industrial Computer has a card hold-down bracket to keep the adapters in their slots in case of shock or vibration. The bracket, together with the hold-down spacers, is designed to hold standard sizes of cards in the connectors.

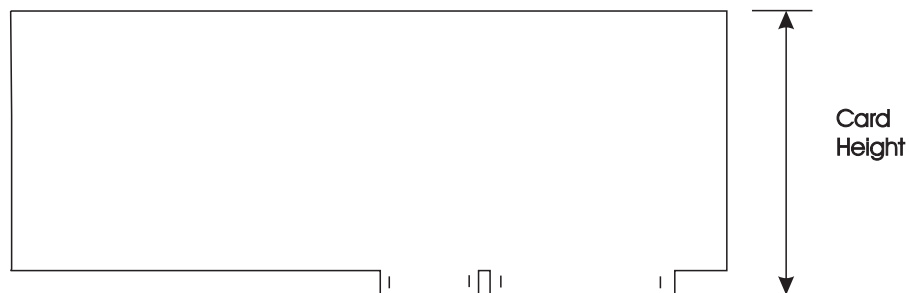
The hold-down spacers, consisting of plastic spacers and rubber pads, are included in the ship group and should be installed with each adapter, especially in environments where the system unit is subjected to constant shock and vibration.

Holes in the card hold-down bracket correspond to each expansion slot in the system unit. The holes are numbered according to the expansion slot; the holes for the PCI adapters are identified with an "A" next to the number.

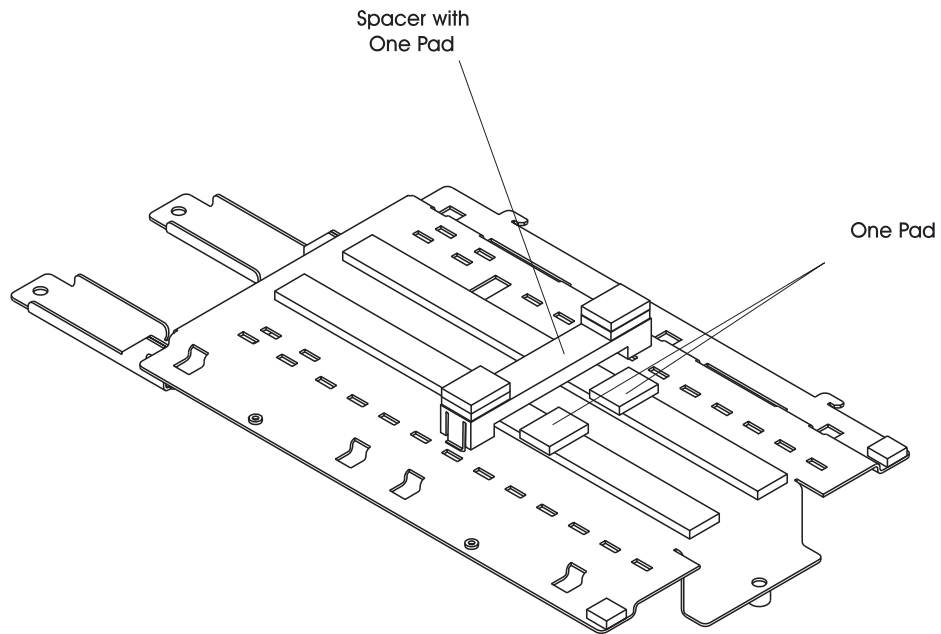
Adapters are manufactured in many different sizes. The following table shows the number of pads to use for each card size and whether the card size requires a spacer.

Note: Do not install the spacer and pads for card sizes less than 3.7 inches. These adapters are too short for the bracket to work effectively; however, these adapters generally have less mass and are less likely to be affected by vibration and shock.

Card Height (inches/millimeters)	Spacer Required	Number of Additional Pads Needed	
4.8/121.8	No	0	standard <i>tall</i> card
4.7/119.3	No	1	
4.6/116.8	No	2	
4.5/114.2	No	3	
4.4/111.7	No	4	
4.3/109.1	No	5	
4.2/106.6	Yes	0	standard <i>short</i> card
4.1/104.1	Yes	1	
4.0/101.5	Yes	2	
3.9/98.9	Yes	3	
3.8/96.4	Yes	4	
3.7/93.9	Yes	5	



1. Install the spacer and pads as shown in the following figure.



2. Reinstall the card hold-down bracket and hard drive.
3. Continue with "Installing an Internal Hard Drive."

Installing an Internal Hard Drive

Important

Not all hard drives meet the rigorous requirements for industrial-usage rating that makes up the working environment of the 7588 Industrial Computer. Before installing any drive that is not purchased specifically for use in a 7588 Industrial Computer, be sure the drive meets all environmental conditions to which it might be subjected. Refer to “Hard Disk Drive Jumper Settings” on page C-2 for more information.

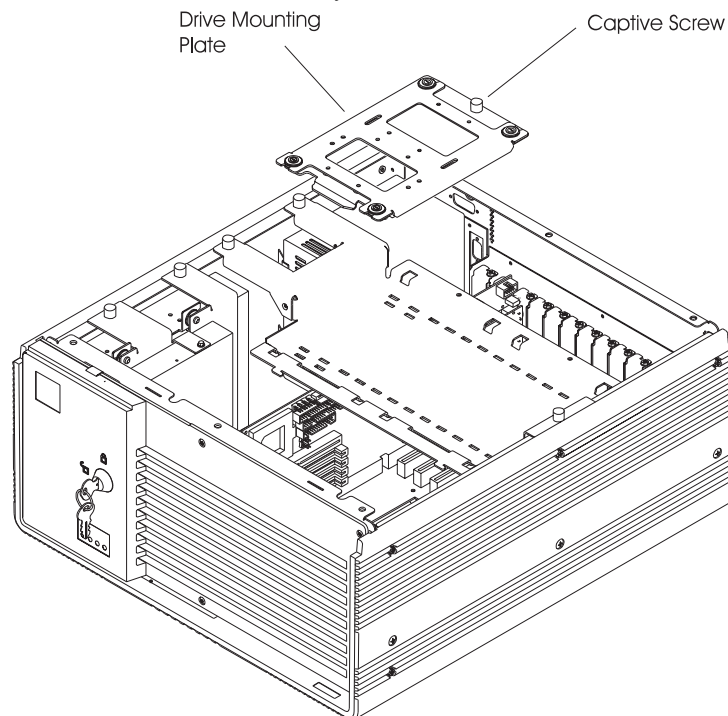
Read the instructions that came with the drive to determine any special instructions.

- Adding or changing drive mounting hardware
- Installing or changing drive installation hardware
- Setting jumpers or switches
- Removing or installing a terminator (SCSI drives only)
- Setting a unique drive ID (SCSI drives only)

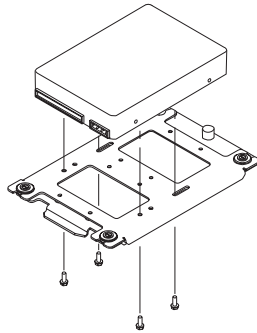
Note: When updating your configuration (“Using the Configuration/Setup Utility Program” on page 4-6), be sure that a hard drive is included as a startup device under **Start Options**; otherwise, you will not be able to boot your computer from the hard drive.

In addition, if your hard drive cannot run in the high-performance mode (the default IDE-mode selection), be sure to switch to compatible mode.

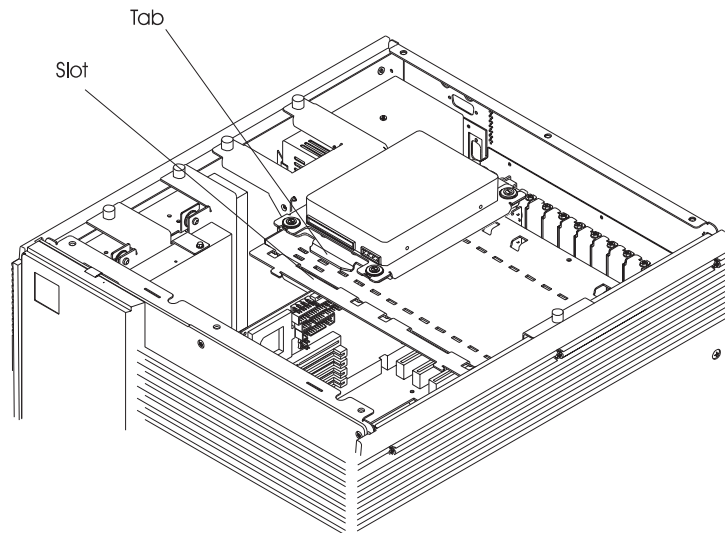
1. Remove the cover (refer to page 3-2).
2. Loosen the captive screw on an empty drive-mounting plate. Tilt the rear of the drive-mounting plate up; then lift the plate to the rear and out of the system unit.



3. Use the screws supplied with the drive to mount the hard drive to the drive-mounting plate. The connectors on the drive face the front of the system unit.



4. Connect the power and signal cables to the new drive (the cable connectors are keyed and connect only one way).
5. Insert the tab on the drive-mounting plate into the slot in the card hold-down bracket, then tilt the plate into place.



6. Tighten the captive screw.
7. Record the drive information in Appendix A, "System Records."
8. Reinstall the covers; then continue with "Installing the Mounting Options."

Installing the Mounting Options

CAUTION:

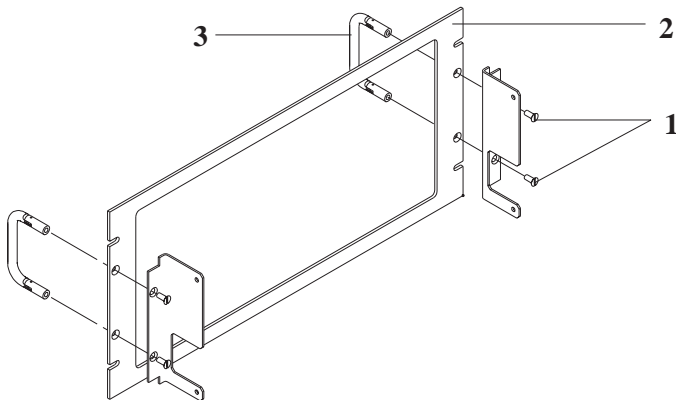
The 7588 Industrial Computer weighs more than 40 pounds (19 kilograms). Have another person help you lift the system unit.

If you are not installing the system unit in any type of mounting, go to Chapter 4, "Operating and Configuring Your System Unit." Otherwise, go to the instructions for the type of hardware to install (refer to the following list).

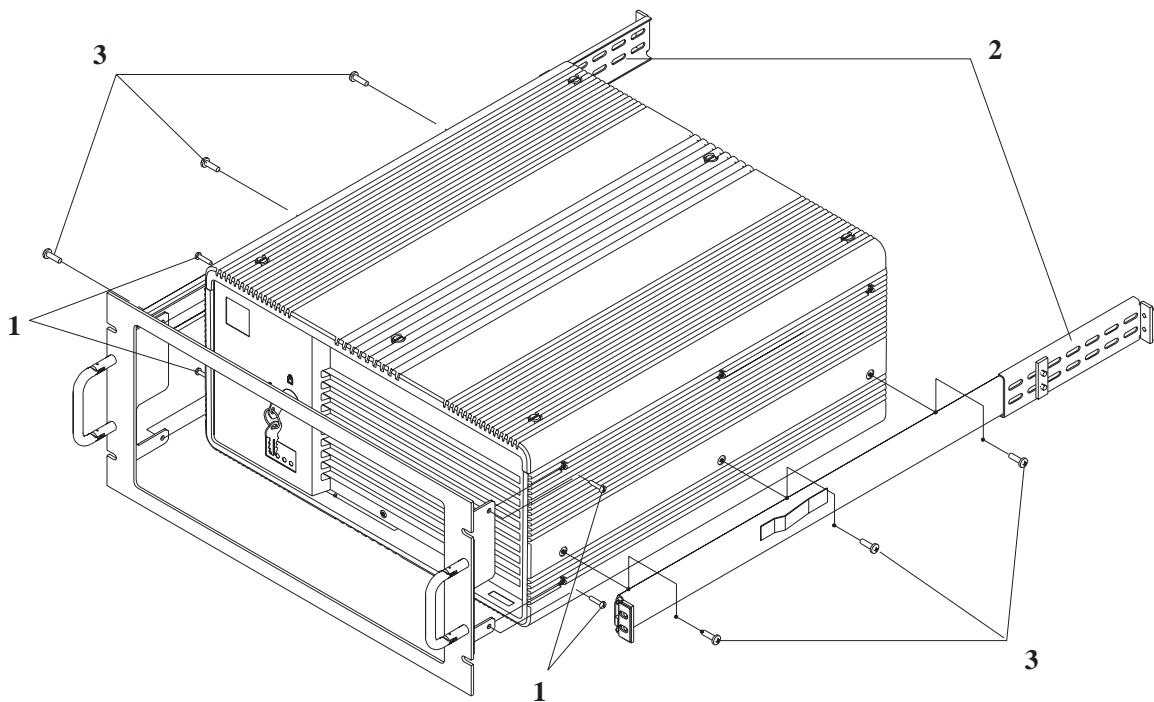
- For the rack-mount option, go to "Installing the Rack-Mount Option" on page 3-13.
- For the floor-stand option, go to "Installing the Floor-Stand Option" on page 3-14.
- For the panel-mount option, go to "Installing the Panel-Mount Option" on page 3-15.

Installing the Rack-Mount Option

1. Assemble the front-plate assembly by pushing the flat-head screws (1) through the plate (2) and into the handles (3) as shown.



2. Assemble the front-plate assembly onto the system unit with the notches in the mounting bracket toward the bottom.
3. Secure the front-plate assembly to the system unit using the four pan-head screws (1) supplied with the rack-mount kit.

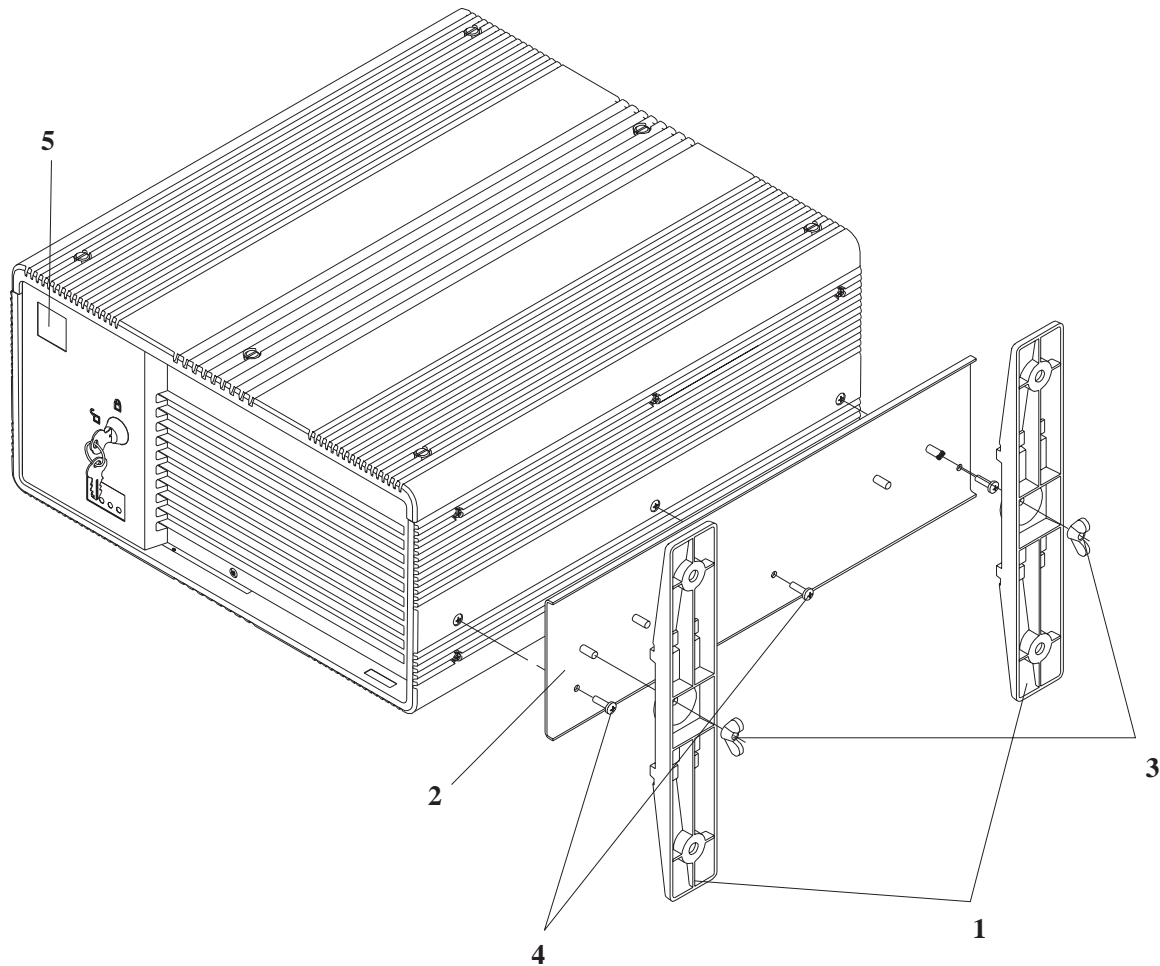


4. Using the instructions provided with the rail kit, install the rack-mount rails (2) onto the system unit using the supplied screws (3).

Installing the Floor-Stand Option

1. Assemble the floor-stand assembly by placing the feet (1) onto the plate (2) using the thumb screws (3). Install the feet on the studs closest to the end to provide more stability.

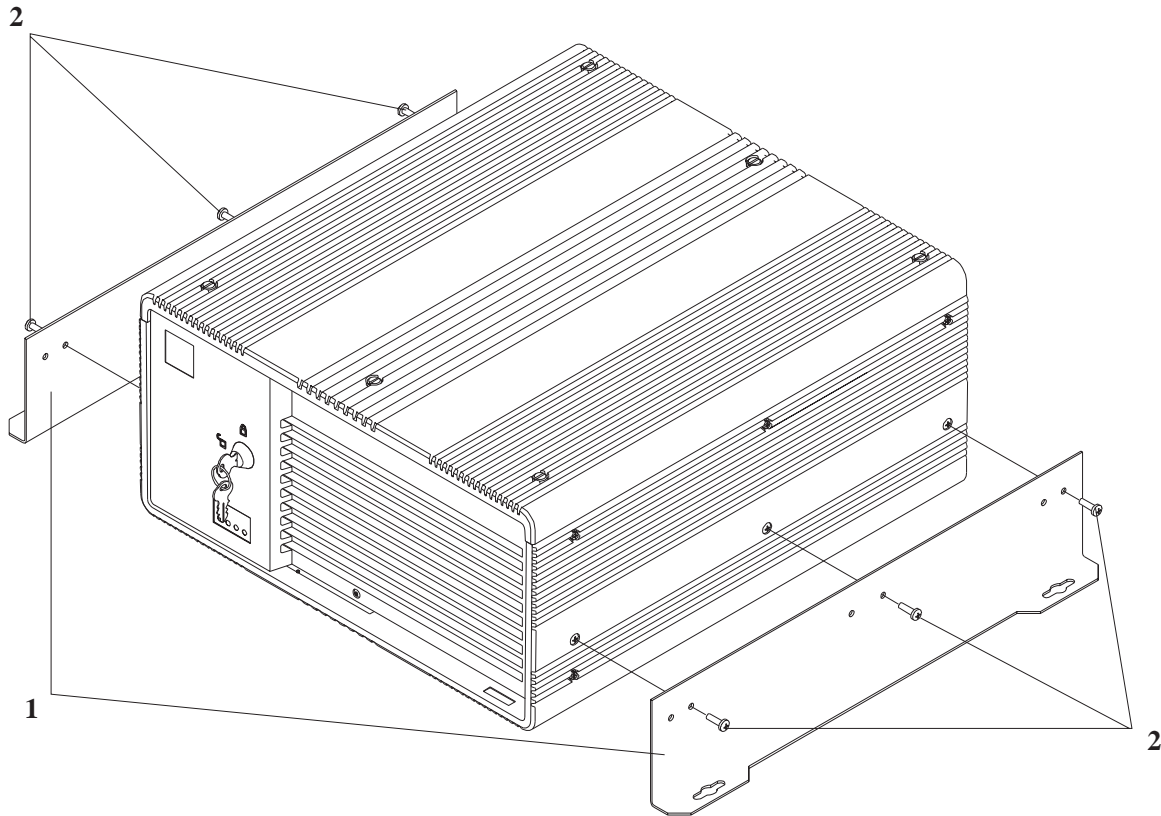
Note: The mounting plate has four studs for mounting the feet, two studs in the front and two studs in the back. When systems are being placed next to each other, the feet can be staggered to allow the systems to be closer together.



2. Lay the 7588 Industrial Computer on its side with the bottom of the unit supported 6 inches (150 millimeters) off the floor.
3. Install the foot assembly onto the system unit using the three screws (4) supplied with the kit.
4. Make sure that the orientation of the plate centers the feet on the system unit, and then stand the unit upright.
5. Replace the logo (5).

Installing the Panel-Mount Option

1. Install the panel-mount rails (1) to the sides of the system unit using the six screws (2) in the holes as shown.



2. Make sure that the panel where you install the 7588 Industrial Computer meets all applicable safety codes for that location. The panel must be at least a 12-gauge (2.67 millimeters/.105 inch) steel panel, and the mounting screw must be at least an M5 pan-head screw.

