

**RMD5000
Rackmount Kit
Instructions**

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- Worldwide, visit www.tektronix.com to find contacts in your area.

Service Safety Summary

Only qualified personnel should perform service procedures. Read this Service Safety Summary and the General Safety Summary in the product service manual or the instruction manual.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

To prevent the instrument and rack from falling onto the operator, two or more installers should install the instrument into the rack cabinet. After completing the installation procedure, the installers should verify that the instrument and rack cabinet will not tip forward while the instrument is in the extended position.

Disconnect Power. To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Kit Description

These instructions describe the installation of the rackmount kit to your standard bench-top instrument. The rackmount kit is a collection of parts that, once installed, configure the instrument for mounting in a fixed position into a standard 19-inch equipment rack. (See Table 1.) If you require the instrument to slide in and out of the rack, order the optional slide kit. (See Table 2.)

Products

DPO4000B Series All Serial Numbers

MSO4000B Series All Serial Numbers

MDO4000B Series All Serial Numbers

DPO5000/B Series All Serial Numbers

MSO5000/B Series All Serial Numbers

Kit Parts List

The parts included in this rackmount kit are listed below. (See Table 1.) (See Figure 1 on page 3.)

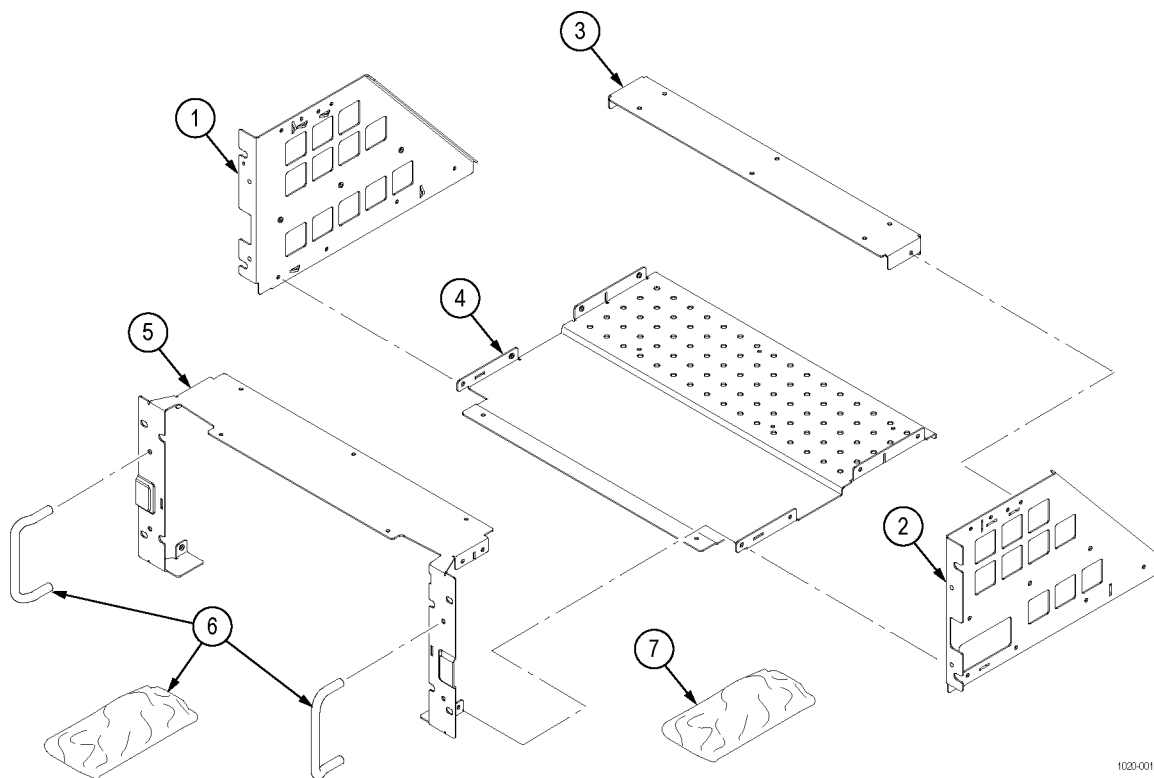
Table 1: RMD5000 Rackmount kit

Item	Quantity	Part number	Description
1	1 each	407-5531-XX	PLATE, MOUNTING; RACKMOUNT LEFT
2	1 each	407-5532-XX	PLATE, MOUNTING; RACKMOUNT RIGHT
3	1 each	407-5534-XX	PLATE, SUPPORT; RACKMOUNT TOP
4	1 each	407-5533-XX	PLATE, SUPPORT; RACKMOUNT BOTTOM
5	1 each	426-2636-XX	PLATE, SUPPORT; RACKMOUNT FRONT
6	1 each	016-2037-XX	HARDWARE KIT
7	1 each	016-2038-XX	COMMON HARDWARE KIT
—	1 each	075-1020-XX	TECH MANUAL: INSTRUCTIONS, RACKMOUNT KIT

Optional Accessories

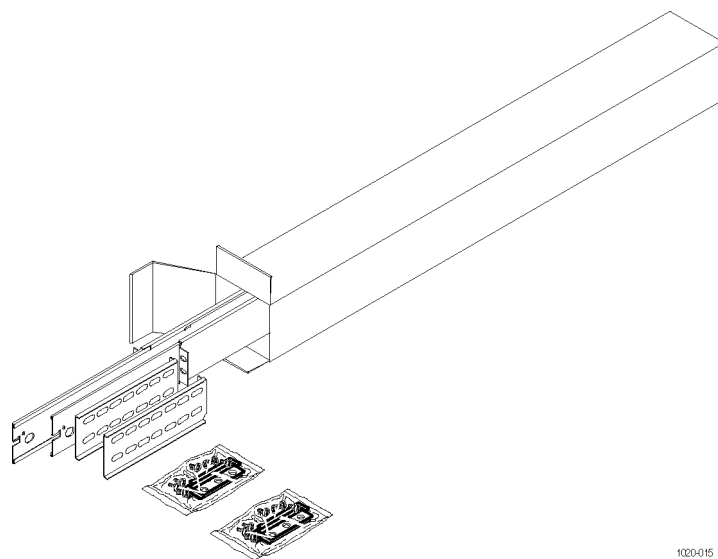
Table 2: Optional Accessories

Part number	Description
351-1095-XX	SLIDE ASSY; PAIR, W/STD HARDWARE KIT AND REAR BRACKET



1020-001

Figure 1: Rackmount kit parts (part appearance may vary)



1020-015

Figure 2: Optional slide assembly kit

Warranted Characteristics

When the instrument is installed according to the instructions in this document, the rack-mounted instrument meets all warranted characteristics listed in the instrument specification except for those listed. (See page 5, *Environmental Requirements*.) Instruments mounted using methods other than those described in these instructions may not meet their warranted characteristics.

See the specifications for your instrument model for tables of the warranted characteristics.

Cooling air enters on the bottom and right sides as shown. (See Figure 3.) You must provide adequate cool air to meet the ambient temperature requirements listed. (See Table 3 on page 5.)

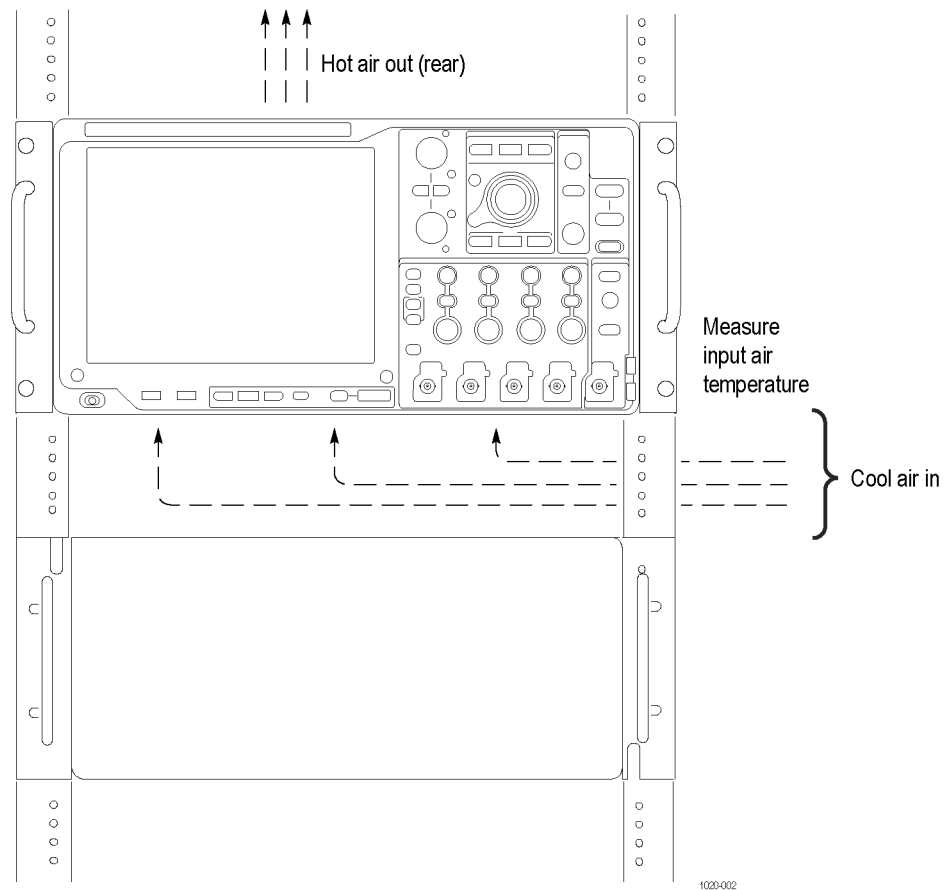


Figure 3: Instrument cooling

Environmental Requirements

The following environmental characteristics supersede those listed in the specifications and performance verification sections of the manual for your instrument.

Table 3: Warranted characteristics

Characteristic	Description
Temperature inside rack cabinet	
Operating	+10 °C to +45 °C (+50 °F to +113 °F)
Nonoperating	-22 °C to +60 °C (-7.6 °F to +140 °F)
Shock	
Operating and nonoperating	20 g, 11 ms, half sine, each axis, 3 drops each

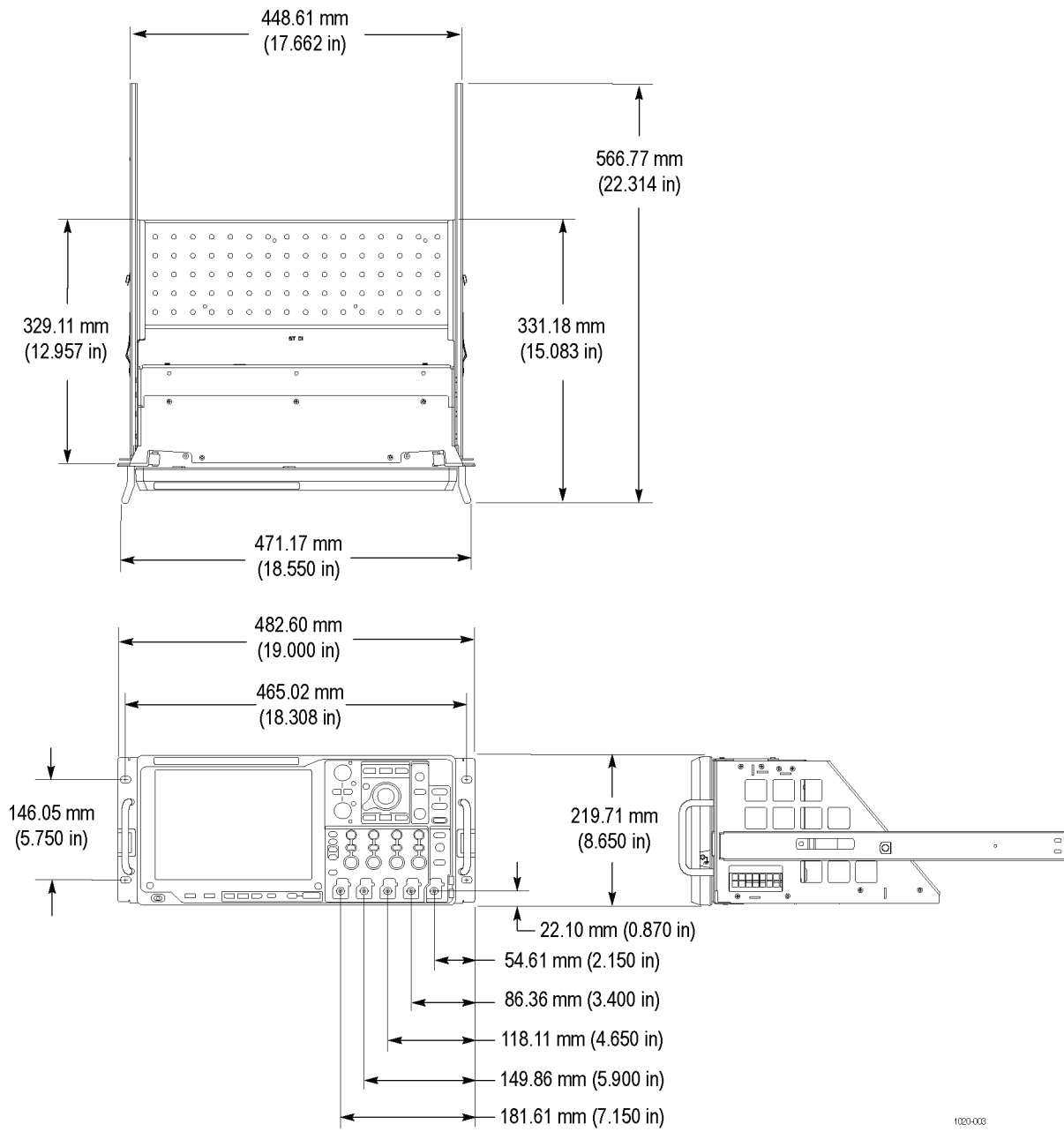
Clearance Requirements

The rack in which the rack adapted instrument is mounted must provide the following clearance requirements:

- A minimum of 8.75 in (222.25 mm) of vertical space
- A minimum width of 17.72 in (450.09 mm) between the left- and right-front rails in the rack
- A minimum depth of 12.75 in (323.85 mm)



CAUTION. *Adhering to these clearance requirements provides the rack-mounted instrument with sufficient clearance for air circulation and accommodation of the power cord and mounting hardware. Failure to provide these clearances can result in overheating and can cause instrument faults or failure.*



1020-003

Figure 4: Instrument with rack adapter installed

Installation Instructions

This section contains the procedures needed to rackmount a DPO4000B, MSO4000B, MDO4000B, DPO5000/B, or MSO5000/B series instrument.

Minimum Tool and Equipment List

The following tools are required to attach the rack-adapter kit hardware, install cabling hardware, and mount the rack-adapted instrument into a standard equipment cabinet. All tools are standard tools that are readily available.

Table 4: Tools required for rackmount installation

Name	Description
Screwdriver handle (magnetic)	Accepts 1/4-inch hexagonal head driver tips
No. 2 Phillips or PoziDriv tip	Phillips or PoziDriv-driver tip for number 2 size screw heads
T-10 TORX tip	TORX-drive tip for T-10 size screw heads (flat-head)
T-15 TORX tip	TORX-drive tip for T-15 size screw heads
T-20 TORX tip	TORX-drive tip for T-20 size screw heads
1/4-inch wrench	Wrench or nut driver can be used to install slides
Torque driver	6.5 in long shaft; accepts 1/4-inch hexagonal head driver tips

These instructions are for qualified service personnel who are familiar with servicing the product. If you need further details for disassembling or reassembling the product, refer to the appropriate product manual. Contact your nearest Tektronix Service Center or Tektronix Factory Service for installation assistance.



WARNING. *To prevent the rackmounted instrument from tipping forward onto the operator, install the instrument so that the operator will be able to access all of its rear-panel connectors without pushing down on the instrument.*

Verify that the rack does not become unstable with the instrument fully extended. Do not leave the instrument extended when finished accessing the rear panel.



WARNING. *To avoid electric shock, disconnect the power cord from the mains power before removing the cover. Failure to do so could result in personal injury or death.*

Remove

Equipment Required: Screwdriver handle with T-15 tip.

This procedure prepares the instrument for installation of the rackmount parts.

NOTE. Retain all parts removed from the instrument for later use. Some of those parts will be reinstalled as you perform this rack conversion; store the remainder in case reconversion to a standard instrument configuration is desired at a later time.

1. Disconnect the power cord from the rear of the instrument.
2. Remove the four T-15 TORX screws that secure the rear cover to the front case assembly. (See Figure 5.)
3. Remove the rear cover.

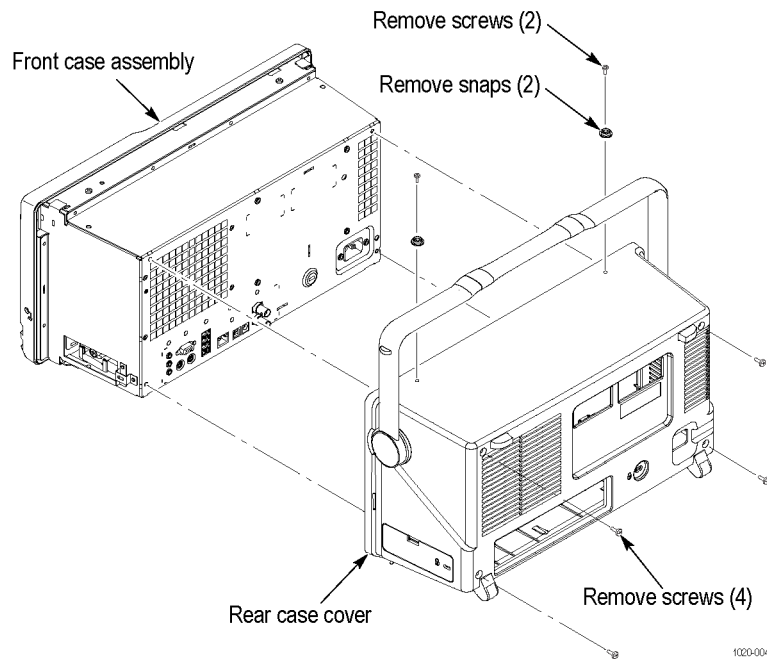


Figure 5: Removing the rear case cover

Install

This section describes mounting the rackmount parts to the instrument.

Equipment Required: Torque driver with T-15 and T-20 tips.

- 1. Assemble the left and right mounting plates to the bottom support plate using six 6-32 x 0.250 inch pan head T-15 TORX-drive screws tightened to 8 in-lb. (See Figure 6.)

NOTE. The bottom support plate has holes to facilitate mounting optional accessories. You can use screws or nylon straps to mount accessories.

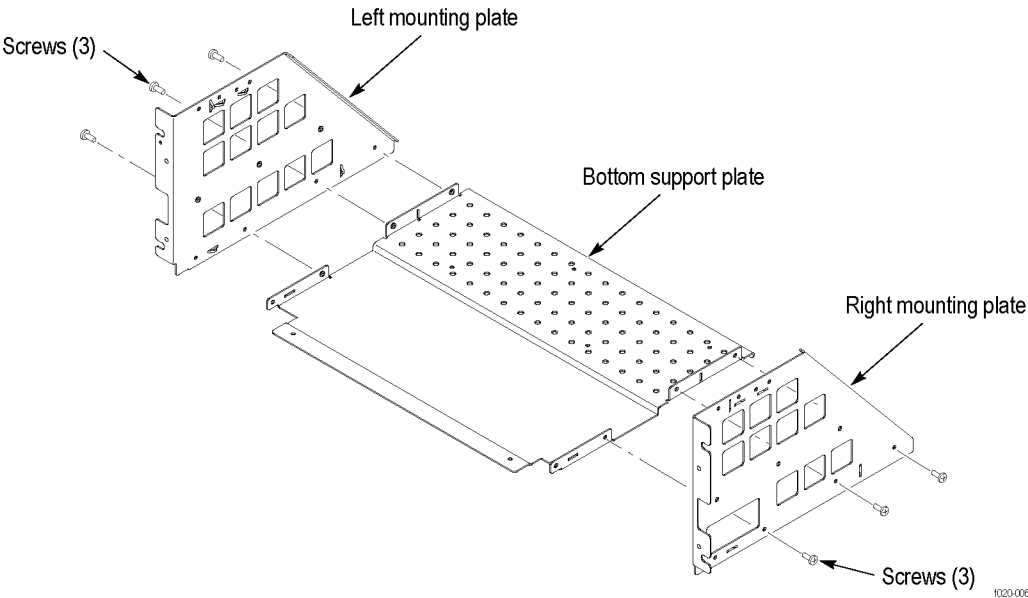


Figure 6: Assembling the left and right mounting plates

2. Fasten the front support plate to the left and right mounting plates with six 6-32 x 0.250 inch pan head T-15 TORX-drive screws, lining up the dimples in the back support plate with the slots in the mounting plates. (See Figure 7.) Tighten screws to 8 in-lb.

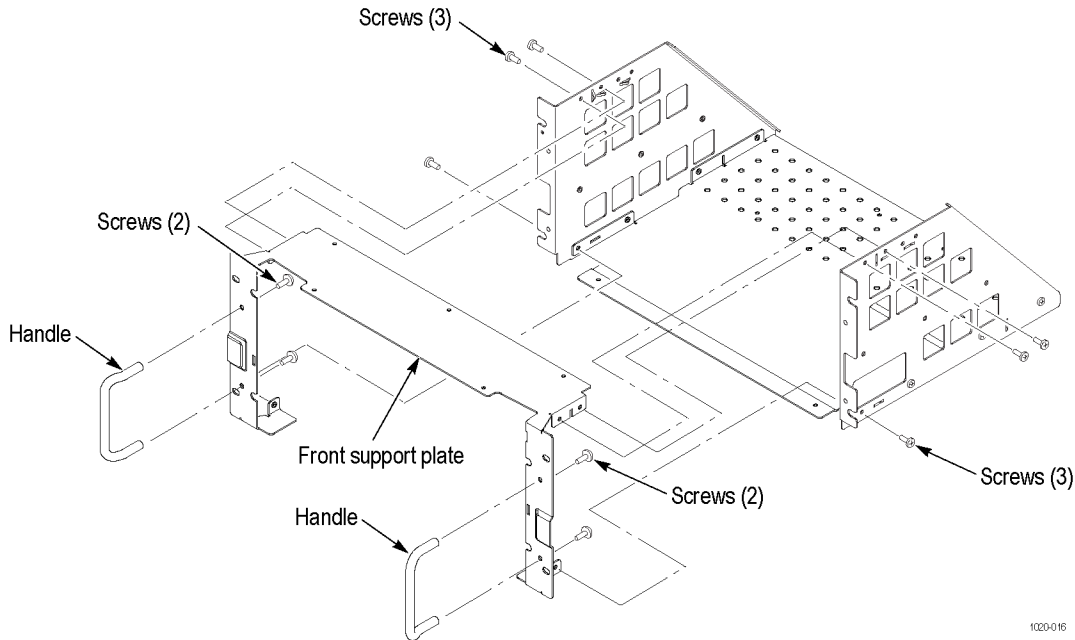


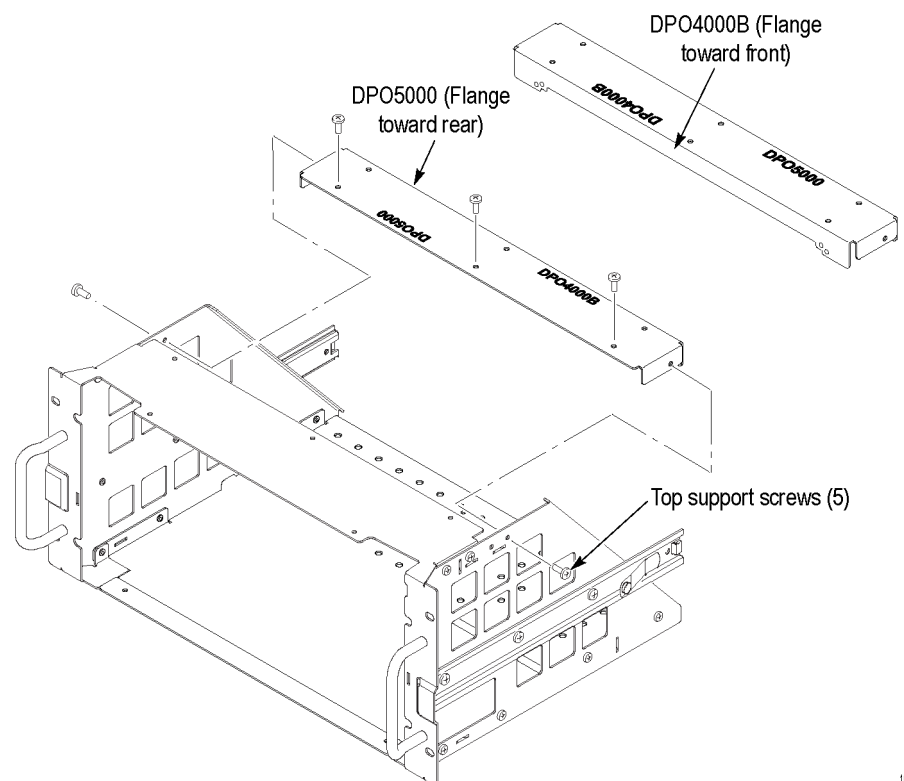
Figure 7: Assembling the rackmount front support plate

3. Install the two handles using four 10-32 x 0.25 inch pan head T-20 TORX-drive screws tightened to 16 in-lb. Handles should curve towards the sides of the instrument.

4. Install the top support plate; note the orientation for the different instruments: (See Figure 8.)

For MDO/MSO/DPO4000B instruments, install the top support plate with the flange toward the front of the enclosure so that the “DPO4000B” stamping on the plate is visible.

For MSO/DPO5000/B instruments, install the top support plate with the flange toward the back of the enclosure.



1020-007

Figure 8: Installing the top support plate

5. Install the instrument into the rackmount enclosure using six 6-32 x 0.250 inch flat-head T-15 TORX-drive screws tightened to 8 in-lb. (See Figure 9.)

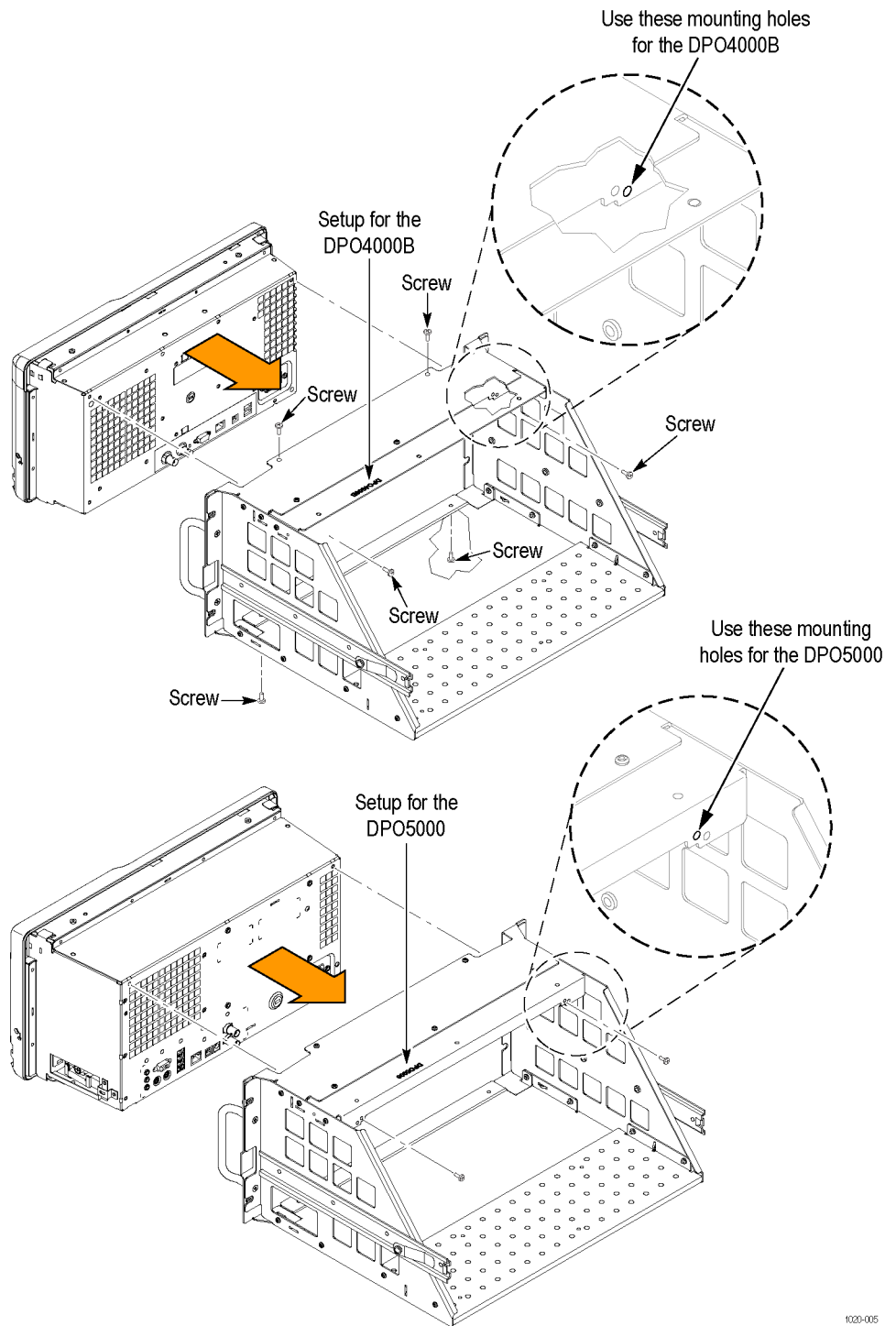


Figure 9: Installing the instrument in the enclosure

This completes the installation of the standard rack-adapter hardware included in this kit. The instrument is now ready to mount in a fixed location, to the front rails of a standard instrument rack.

To mount the instrument in a fixed location, proceed to *Finishing the Installation*. (See page 21, *Finishing the Installation*.)

If you require the instrument to slide in and out of the instrument rack, order the optional slide assembly kit and use the instructions that follow. (See page 14, *Mount the Track Hardware (Optional)*.)

**Mount the Track Hardware
(Optional)**

Install the optional slide assembly kit as follows:

1. Remove the front section of each of the two tracks. (See Figure 10.)

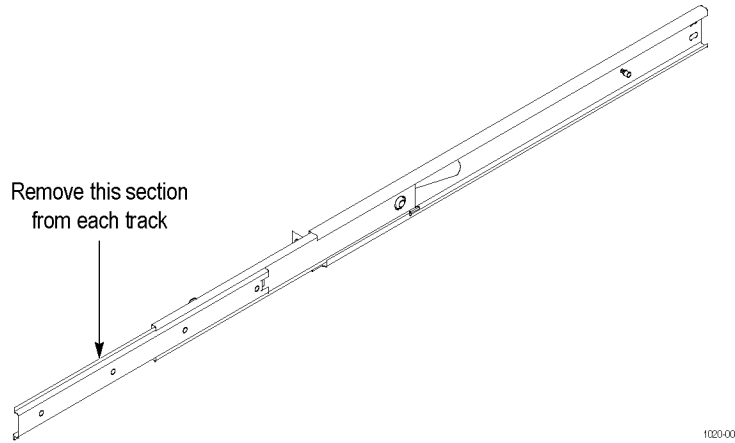


Figure 10: Preparing the tracks for mounting

2. Install the front left- and right-side track sections on the instrument using four 6-32 x 0.250 inch pan head T-15 TORX-drive screws tightened to 8 in-lb. (See Figure 11.)

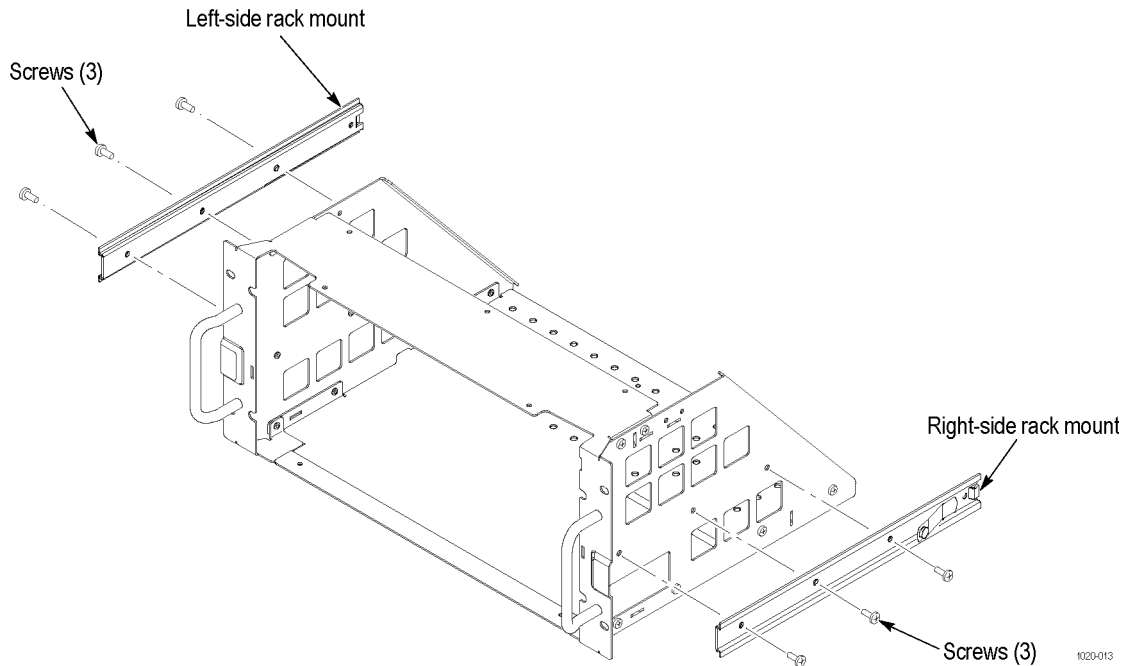

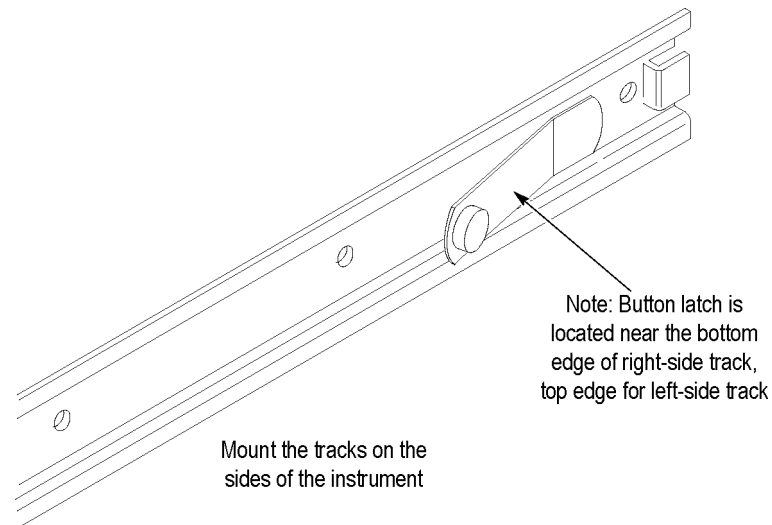


Figure 11: Installing the left- and right-side track sections

 **WARNING.** To ensure that the rackmount track locks, make sure the track button latches are oriented correctly: the right-side latch is located toward the bottom of the rackmount panel and the left-side latch is located toward the top of the rackmount panel. (See Figure 12.) If the button latches are not oriented correctly the instrument could slide from the rack, which could cause personal injury or damage to the instrument.



1020-009

Figure 12: Track orientation

This completes the installation of the slide hardware to the instrument. To complete the installation, proceed to: *Rackmount the Rack-Adapted Instrument*. (See page 16.)

Rackmount the Rack-Adapted Instrument

This procedure assembles and installs the slide-out tracks in the equipment rack, and then installs the rack-adapted instrument in the rack.

The slide-out tracks permit the rack-adapted instrument to be extended out of the rack for rear-panel and connector maintenance without removing the instrument from the rack.



WARNING. *To prevent the rackmounted instrument from tipping forward onto the operator, install the instrument so that the operator will be able to access all of its rear devices without pushing down on the instrument.*

Verify that the rack does not become unstable with the instrument fully extended. Do not leave the instrument extended when finished accessing the rear panel.

Install Track Assembly and Instrument into the Rack

Equipment Required: One screwdriver handle, one number two PoziDriv tip, and one torque driver.

NOTE. *The rack hardware kit contains hardware for mounting the instrument in several configurations. Not all of the hardware in the kit will be needed.*

A standard equipment rack has rails with universal hole spacing. If you use a rack with other than universal hole spacing, you may have to drill additional mounting holes in the rack.

1. Assemble the slide-out track:
 - a. Measure the distance between the front and rear rail of the equipment rack.

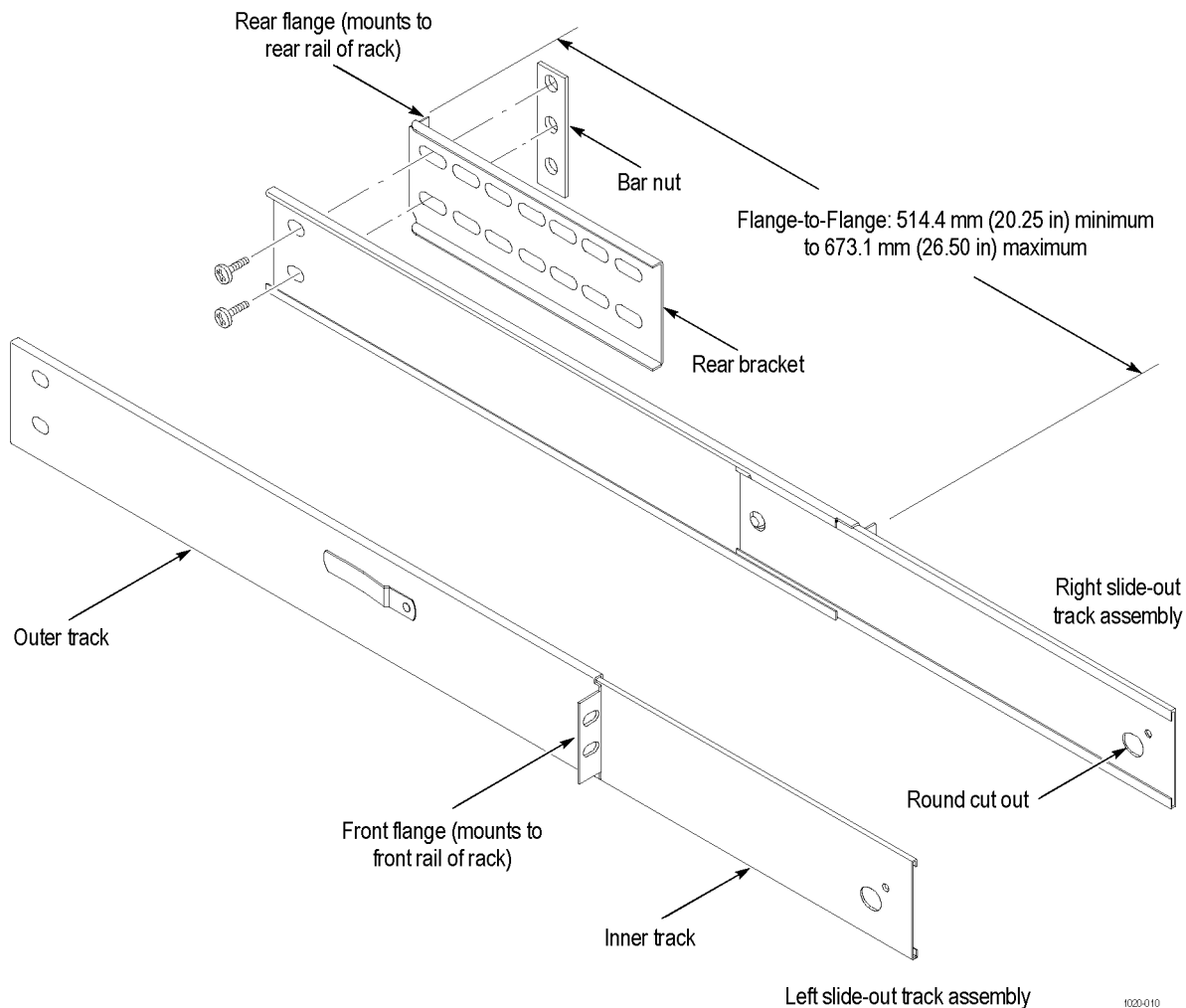
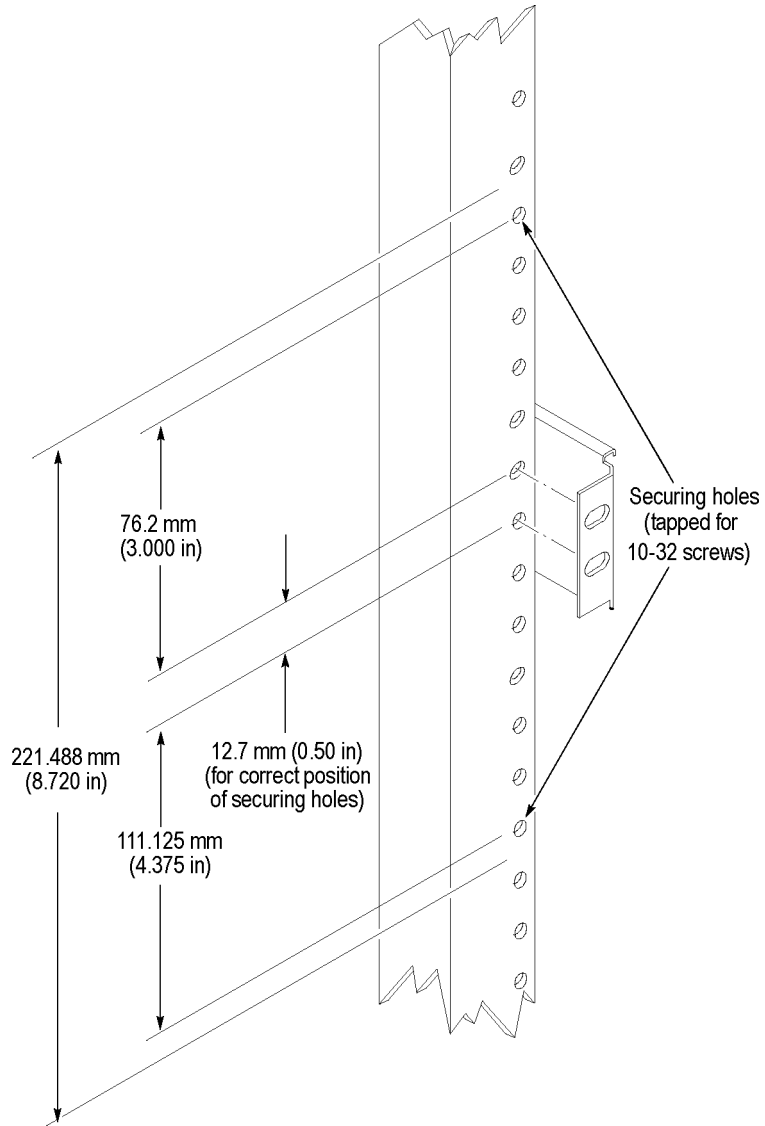


Figure 13: Slide-out track assemblies

- b.** Align the rear bracket to the right slide-out track as shown. (See Figure 13.) Note that the rear bracket has multiple pairs of mount-through holes. When aligning the bracket and track, be sure to select a pair of holes that mount the rear bracket so that the flange-to-flange distance matches the distance between the front rail and rear rail measured in step a.
- c.** Using a screwdriver with a number two Pozidriv tip, secure the rear bracket to the right slide-out track using two screws (10-32) and a bar nut as illustrated. Leave the screws loose so that the overall length of the slide-out track assembly can be adjusted when installing it in the rack.
- d.** Repeat steps b and c to assemble the left slide-out track assembly.

2. Mount the slide-out track assemblies, using the slide drawer hardware listed in the kit parts list:
 - a. Select the mounting position in rack: Select two 0.5 inch-spaced holes in the front rail. Verify that the 4.36 inch and 10.500 inch clearances exist relative to those mounting holes. (See Figure 14.)



1020-011

Figure 14: Vertical clearances for rack installation (left-front rail shown)

b. Select the mounting method according to rack type:

To mount the slide-out tracks with their front and rear flanges outside of the front and rear rails, use the mounting method A shown when doing substep c. (See Figure 15.) Add a bar nut to the installation only if the rails have untapped holes.

To mount with front and rear flanges inside of rails, use the mounting method B. This mounting method assumes untapped holes.

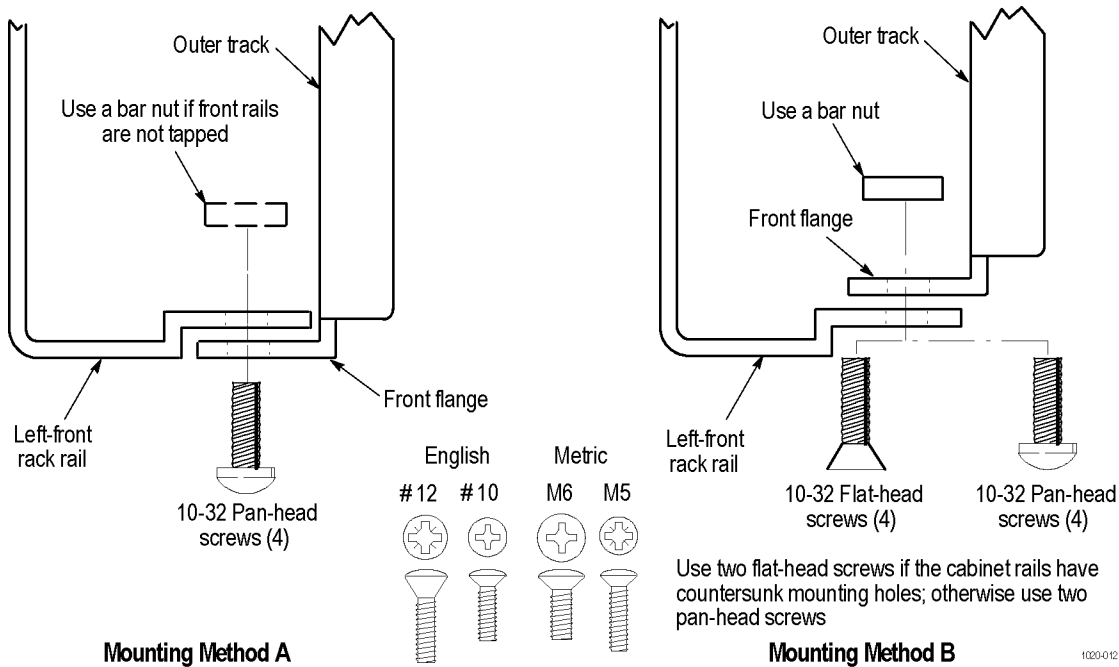


Figure 15: Installing slide-out track assemblies in rack (top view)

c. Install in rack: Using the method and hardware determined from substep b, secure the right slide-out track assembly to its front and rear rails. The screws should be lightly seated so mounting can be adjusted later.

- d. Fix the length of the slide-out track assembly: Tighten the screws left loose in step 1, substep c, applying 28 inch-lb of torque, to fix the front to rear flange spacing of the slide-out track assembly.
 - e. Mount the left slide-out track assembly: Repeat substeps c through d to mount the left slide-out track assembly.
3. Mount the instrument in the rack:



WARNING. *To prevent the instrument from tipping or dropping onto the installers, two or more people should install this instrument into the rack cabinet.*

After completing the installation procedure, the installers should verify that the instrument and rack cabinet will not tip forward while the instrument is in the extended position.

- a. Install the instrument:

Working from the front of the rack, slide the inner track of each slide-out track assembly until it extends out the front of the rack. Continue to slide them out until they lock.

Insert the left and right tracks that extend from the rear of the instrument into the ends of the tracks just extended. Make sure the tracks mounted on the instrument slip inside the inner tracks extended earlier.

Slide the instrument backward until it stops.

Push to release the button latches, located on the outside of each track, and continue to slide the instrument all the way into the cabinet.

- b. Level the rackmounted instrument:

Tighten the four screws that were left loose at the rear of the rack when you did step 2, substep c, and then pull the instrument partially out of the rack.

Be sure that the four screws that were left loose at the front of the rack are loose enough to allow the slide-out track assemblies to seek their normal positions.

Retighten the four screws and push the instrument all the way into the rack. If the tracks do not slide smoothly, readjust the level using the method just detailed.

When leveling is completed, tighten the 10-32 screws using 28 inch-lb of torque.

Finishing the Installation

If you intend to mount the instrument to the rack without slides, use this procedure to complete your installation. If you mounted the slide track kit to the instrument, you should also perform this step to secure the instrument to the rack.



WARNING. To prevent the rack-mounted instrument from sliding forward and causing personal injury or instrument damage, always secure the instrument to the rack if the rack is moved (for example, if the rack is repositioned or relocated to another room).

Secure the instrument to the rack using four 10-32 x 0.625 in screws and rectangular washer spacers as shown. (See Figure 16.)

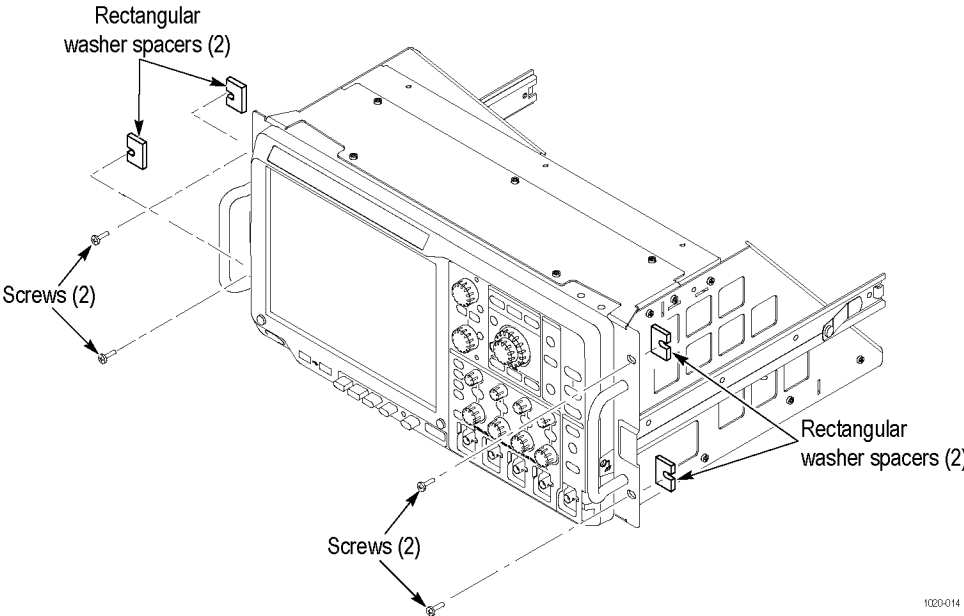


Figure 16: Securing the instrument to the rack

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