GREAT LAKES
DATA RACKS & CABINETS

EX Cabinet
Installation Instructions



c UL us
LISTED
UL2416

GreatCabinets.com

1.866.879.4522

PREFACE

This manual is provided to prevent service personnel from committing an act that results in the risk of fire, electric shock, or injury to persons. Only trained service personnel should receive, unpack, and assemble the EX Series Enclosure. In addition, only trained service personnel should install equipment in racks.

SAFETY SYMBOLS USED IN THIS MANUAL

This manual provides general safety guidelines to be observed during installation, operation, and maintenance of the EX Series Enclosures.



WARNING: Failure to follow directions in the warning could result in injury to persons or loss of life.



CAUTION: Failure to follow directions in the caution could result in damage to equipment or storage data.

SAFETY CONSIDERATIONS



WARNING: Improper handling and use of the EX Series Enclosures could result in equipment damage, serious injury, or possible death.

Only trained service personnel should be used to remove the rack from the pallet. Also, be sure you have a sufficient number of service personnel. Do not attempt to move racks by yourself.

All wiring and electrical circuits must be in compliance with National and Local electric codes. Only ITE (Information Technology Equipment) bearing the safety compliance mark of a NRTL should be installed inside the EX Series Enclosure. NRTL compliance marks include UL®, C-UL®, CSA®, ETL®, TUV®, and CE.

Be sure to read and follow all individual manufacturer equipment manuals for safety and installation instructions.

Proper spacing is required when installing electrical equipment to avoid electrical shock. Maintain minimum spacing between the accessories and components and the computer rack assembly for safe operation of the equipment when installed in accordance with the National Electric Code ANSI/ NFPA 70-1999.

The ambient temperature operating range for the ES cabinet and accessories is +50 to +95° F (+10 to +35° C).

SERVICE:
EX cabinets should be repaired by personnel trained by Great Lakes, or returned to Great Lakes for repair or replacement. Contact Great Lakes Technical Support at 814.734.7303 or at GreatCabinets.com

EX static weight capacity: 4000 lbs.
EX dynamic weight capacity: 2500 lbs.

WHAT'S INCLUDED

- EX unit (assembled)
- Keys as needed (depending on configuration)
- (50) M6 cage nuts (3/8" square) and M6 screws
- Baying hardware
- Edge grommet
- This user's manual

This user's manual applies to the following pre-configured and applicable configured EX Series Enclosures:

PART NUMBER	HEIGHT in. [mm]	WIDTH in. [mm]	DEPTH in. [mm]	RMU
GL420EX60110	77.76[1975]	23.62[600]	43.31[1100]	42
GL420EX60120	77.76[1975]	23.62[600]	47.24[1200]	42
GL420EX80110	77.76[1975]	31.50[800]	43.31[1100]	42
GL420EX80120	77.76[1975]	31.50[800]	47.24[1200]	42
GL450EX60110	83.01[2108]	23.62[600]	43.31[1100]	45
GL450EX60120	83.01[2108]	23.62[600]	47.24[1200	45
GL450EX80110	83.01[2108]	31.50[800]	43.31[1100]	45
GL450EX80120	83.01[2108]	31.50[800]	47.24[1200	45
GL480EX60110	88.26[2242]	23.62[600]	43.31[1100]	48
GL480EX60120	88.26[2242]	23.62[600]	47.24[1200]	48
GL480EX80110	88.26[2242]	31.50[800]	43.31[1100]	48
GL480EX80120	88.26[2242]	31.50[800]	47.24[1200]	48
GL520EX60110	95.26[2420]	23.62[600]	43.31[1100]	52
GL520EX60120	95.26[2420]	23.62[600]	47.24[1200]	52
GL520EX80110	95.26[2420]	31.50[800]	43.31[1100]	52
GL520EX80120	95.26[2420]	31.50[800]	47.24[1200]	52

INSTALLATION

Receiving, Unpacking, and Removing the EX Series Enclosures from the Pallet

Inspect and report any damage before receiving. Unpack the rack by carefully removing the corrugated carton and corners. Avoid damaging the rack when removing packaging.

WARNING: Only trained service personnel should be used to remove the rack from the pallet. Also, be sure you have a sufficient number of service personnel. Do not attempt to move racks by yourself.

WARNING: Be careful when moving racks before installation. Sudden stops and starts, excessive force, obstructed routes, and uneven floor surfaces may cause the rack to topple over.

Loading Equipment

WARNING: Only install equipment after the EX Series Enclosure has been properly secured. Do not move the EX Series Enclosure assembly while loaded.

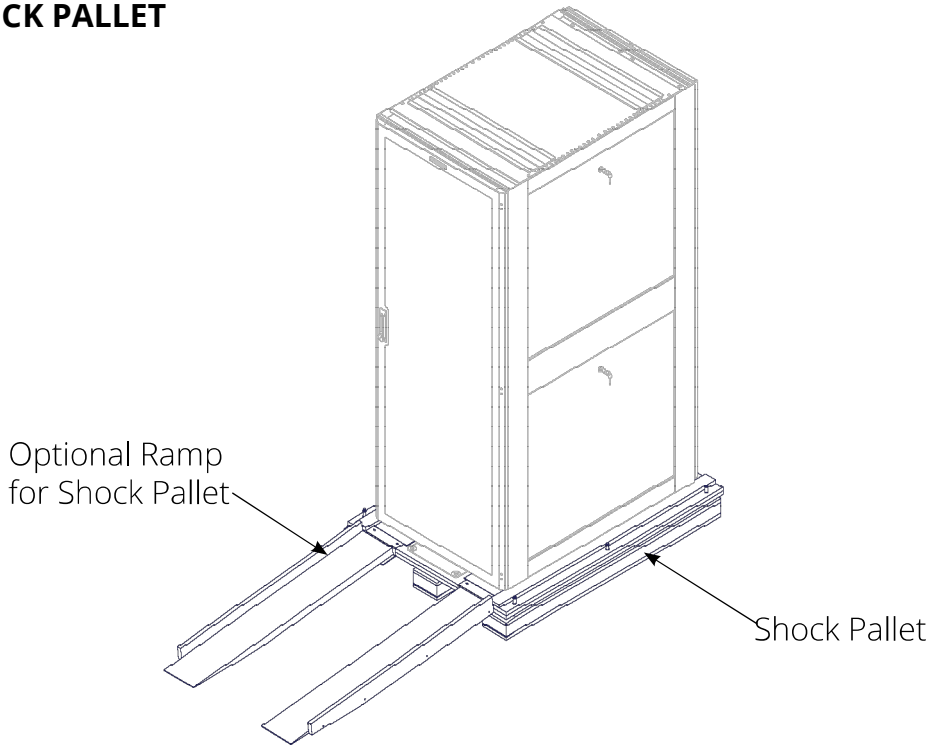
Once in place at the desired/intended location, deploy the leveling feet for maximum stability.

Rated or maximum static load capacity for the EX Series Enclosure is 4000 pounds on the floor or on leveling glides.

Rated or maximum dynamic load capacity of the EX Series Enclosure is 2500 pounds.

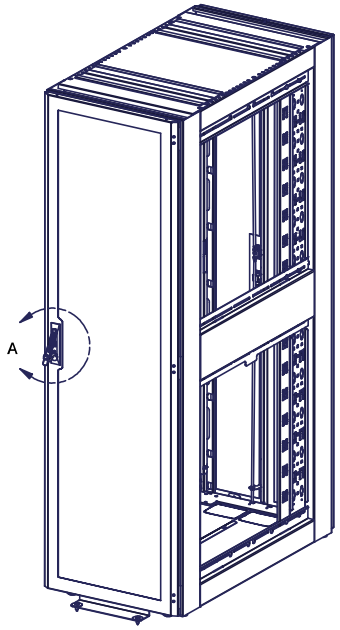
To maintain a uniform distribution of the mechanical load in the EX Series Enclosure, load the heaviest equipment first, at the bottom of the EX Series Enclosure and load the lighter units at the top.

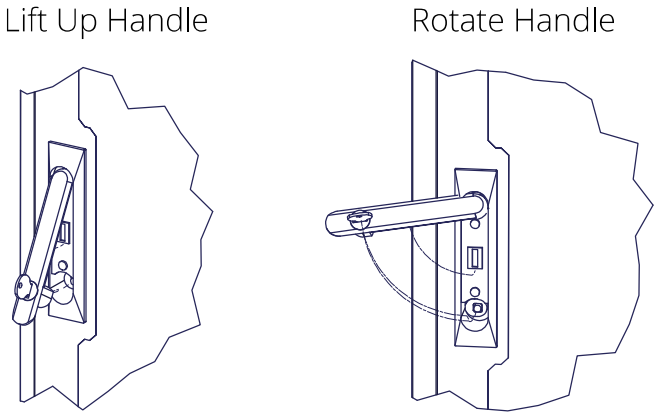
OPTIONAL SHOCK PALLET



OPERATING DOOR HANDLE

The door swing handles have been installed at the manufacturer. No additional assembly is required. To operate the swing handle, lift up at the bottom of the handle then swing the handle to the right to open. The handle must be kept in this position to close the door. Return the handle to the initial position and use the key provided to lock the handle. The lock on the side panels will accept the same key. The swing handles and doors are reversible.

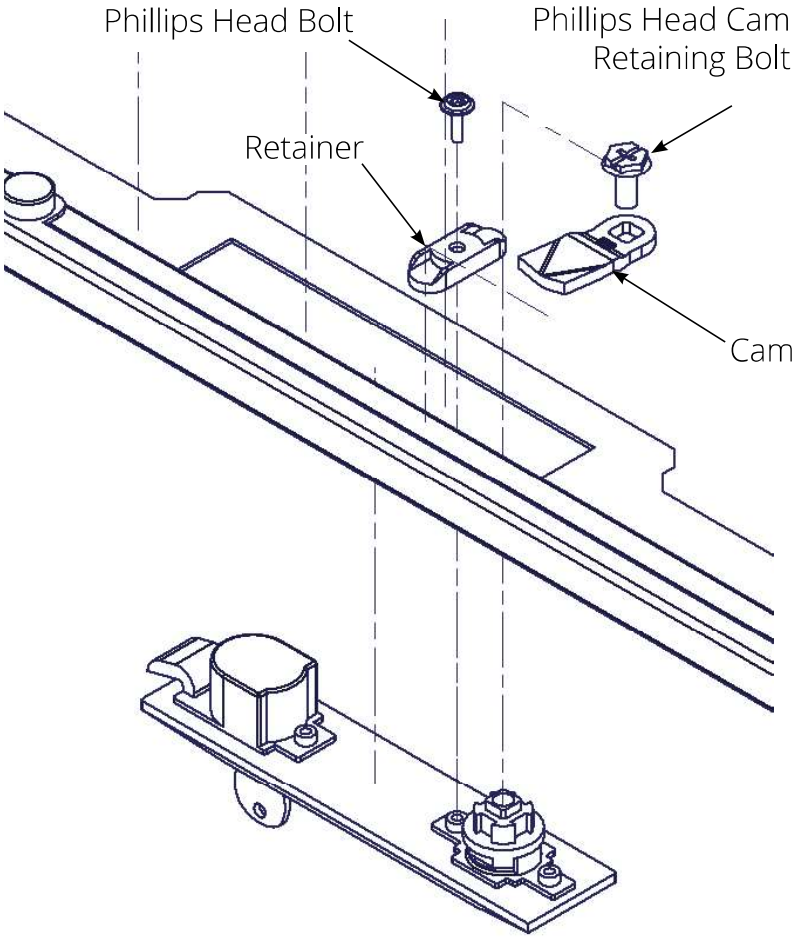




DETAIL A

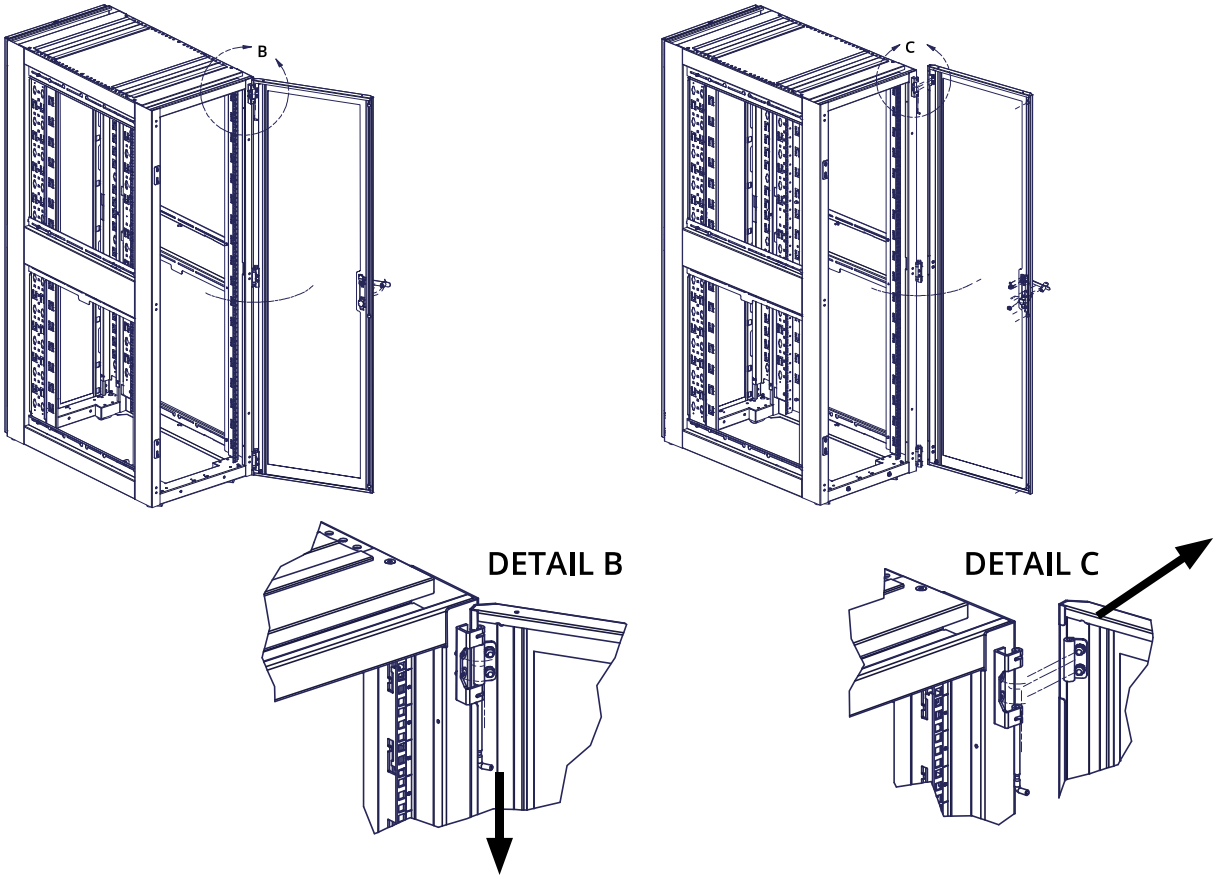
REVERSING THE DOOR HANDLE

Remove the phillips head bolt from the swing handle retainer on the inside of the door. Tilt the handle outwards and lift up to remove it from the door. Remove the phillips head cam retaining bolt. Rotate the cam 180° and re-install can retaining bolt. After reversing the door, reinstall the swing handle by sliding downwards into door and tilting inwards. Re-install swing handle, retainer and phillips head bolt.



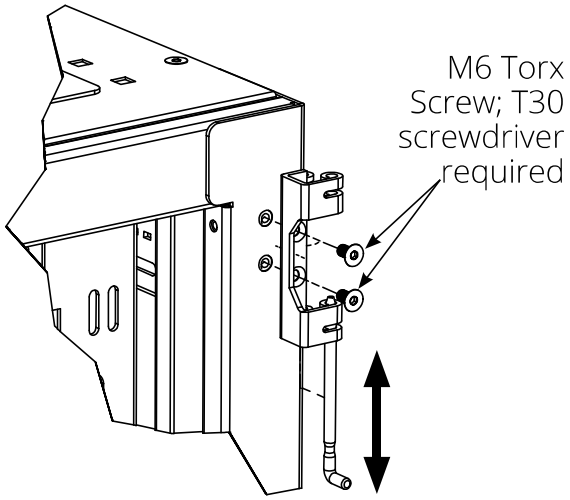
DOOR REMOVAL AND ATTACHMENT

Before removing doors, grounding wires must be disconnected. Open the door beyond 90° then pull on the hinge pins. Carefully pull the door away from the rack to detach the door. To attach the door, align the hinges and slide hinge pins back into the hinge assembly.



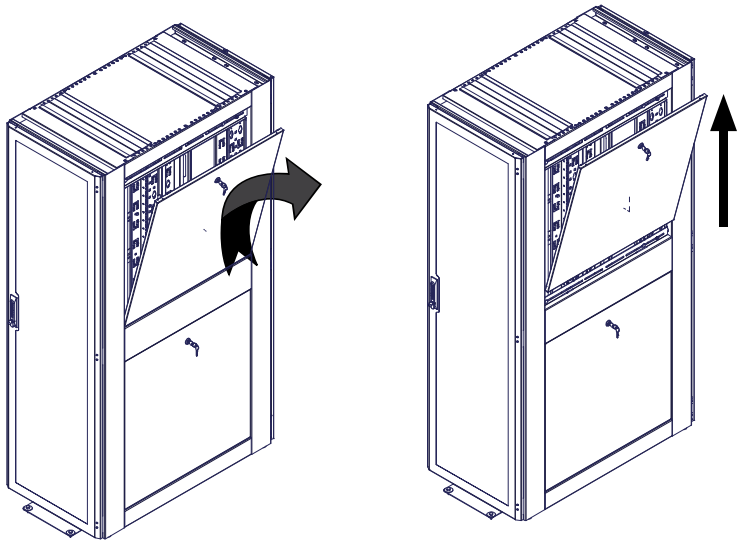
FIELD REVERSIBLE FRONT & REAR DOORS

The front and rear doors are installed right hand hinged from the factory. To change to left hand hinge, follow door removal instructions then remove the torx screws that attach the hinges to the frame. Re-install the hinges on the left side of the frame using the former top right hinge at the bottom left and the former bottom right hinge at the top left. Note that the open end of the hinges are to face the outside of the rack. Also re-install the catch plate to the opposing side with the bend toward the inside of the rack. Once hinges and the catch plate have been re-installed, rotate the door 180° and slide the hinge pins into the assembly. When the door is reversed, the handle must also be rotated 180°; see “Reversing the Door Handle” on page 5.



SIDE PANEL REMOVAL

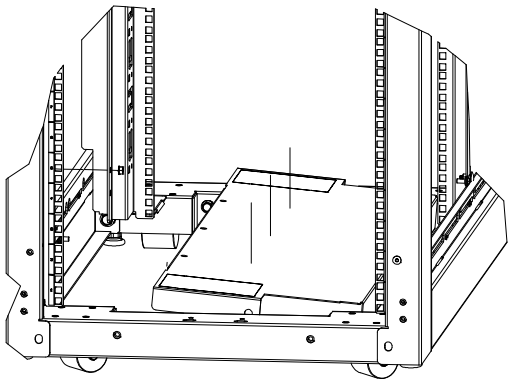
Before removing side panels, grounding wires must be disconnected. The side panels are secured to the rack frame with a keyed lock. To remove the side panel, unlock the panel, tilt the top of the side panel out slightly and lift the side panel up a couple of inches until it is free. To install the side panel, reverse the process and lock the panel. Make sure the slots on the side panel engage with the two tabs at the bottom of the frame.



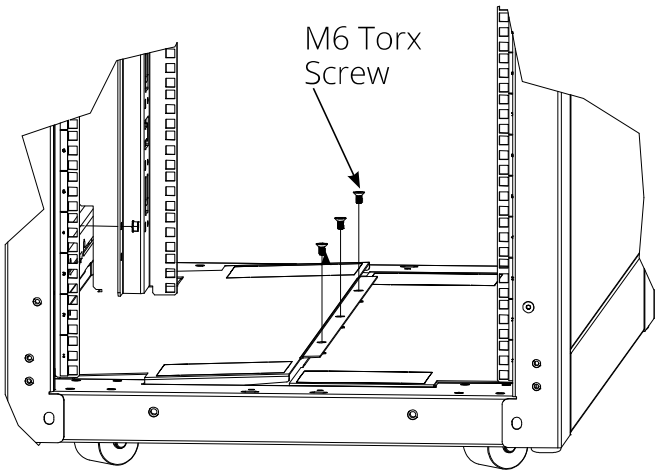
BOTTOM PANEL MOUNTING (OPTIONAL)

The bottom panel is installed at the manufacturer, if ordered with the cabinet. In order to remove, the knockouts front and rear must be removed or the enclosure must be tipped on its side. First remove the (4) M8 bolts behind the knockouts. Secondly remove the 3 M6 Torx screws holding the top panels together. Then tilt and gently lift out the first bottom panel moving it towards the center of the enclosure. Finally tilt and lift out the second bottom panel while moving towards the center of the enclosure.

First Panel

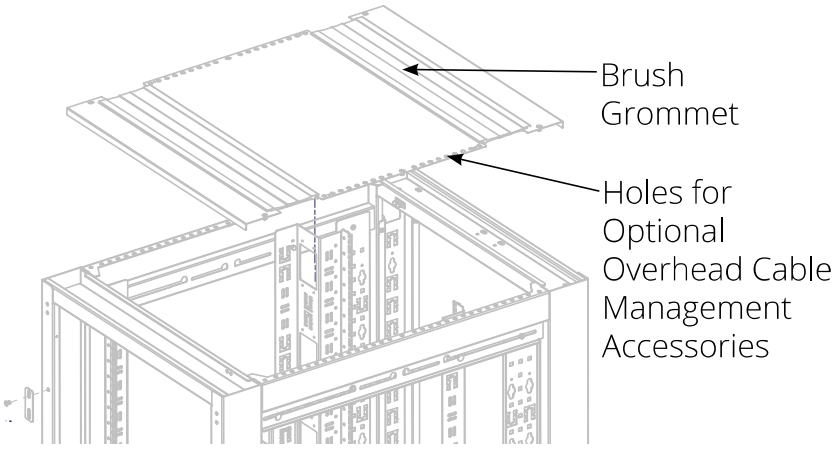


Second Panel



TOP PANEL

The top panel has been installed at the manufacturer. The panel features full length brush grommet that allows for cable pass-thru. Hole patterns along the sides of the top panel accepts optional overhead cable accessories.



CASTER AND LEVELING FEET MOUNTING

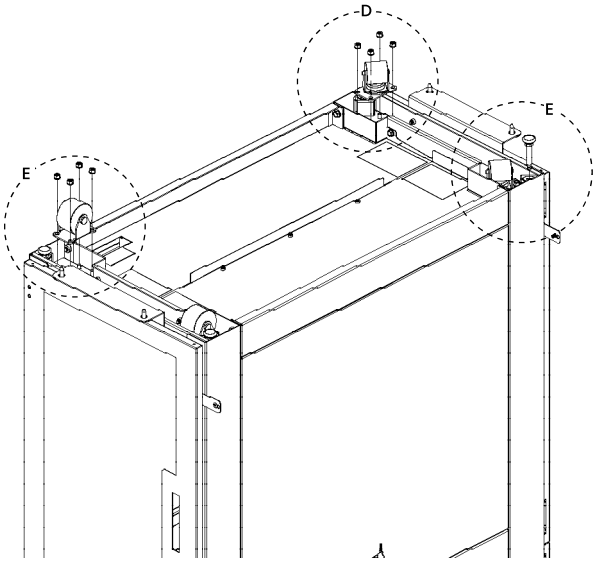
CAUTION

- To install casters the rack must be tipped onto its side. The rack can be very heavy, several people will be required in this process. Please practice safe lifting techniques.
- DO NOT lay the rack on its front or back, this may damage the door hinges.
- Removing doors and sides will help reduce the weight of the rack.
- Before tipping, remove the side panels to prevent damage to the locks and latches.

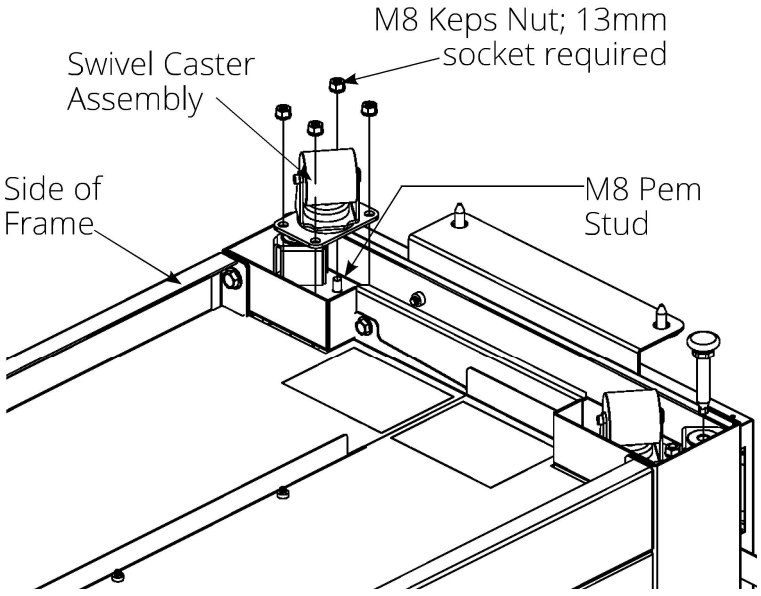
FIELD INSTALLATION OF CASTERS

1. To install casters, the rack must first be tipped over onto/laid on its side.
2. Swivel casters install on the front of the rack. The caster plate features 4 holes; align the holes over the M8 pem studs that are located on the frame corner; secure with M8 keps nut and tighten to 18 ft-lb.; see **Detail D**.
3. Fixed casters install on the rear of the rack and are installed in the same manner as the front swivel casters. Repeat step 3; see **Detail E**.

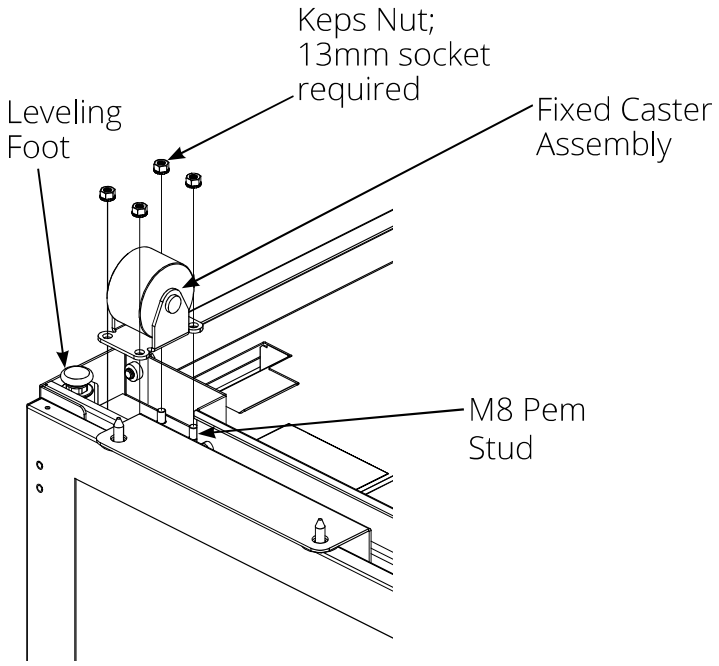
Be sure to install swivel casters on the front of the cabinet and fixed casters on the rear.



Detail D - Swivel Caster;
Install on Front of Cabinet



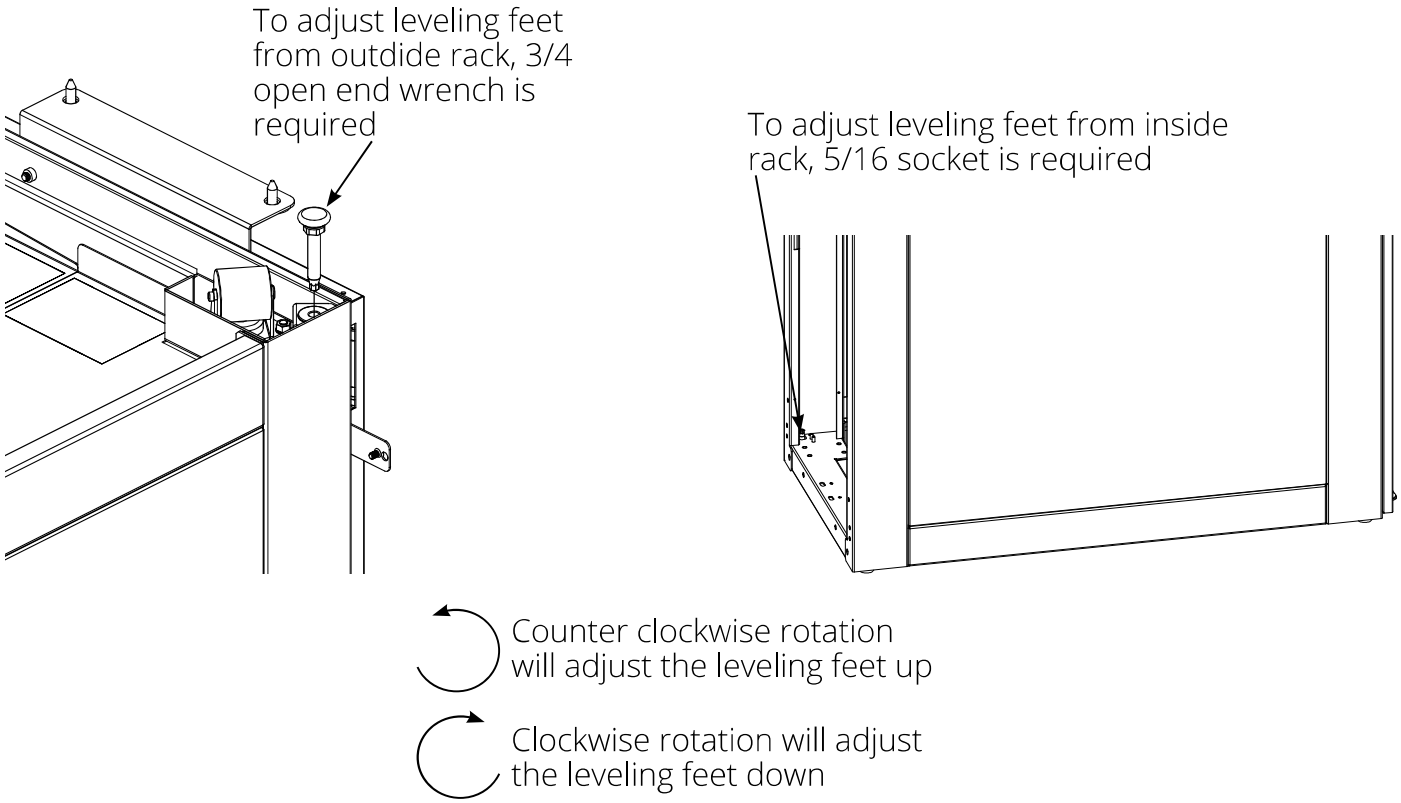
Detail E - Fixed Caster;
Install on Rear of Cabinet



Leveling Feet Adjustment

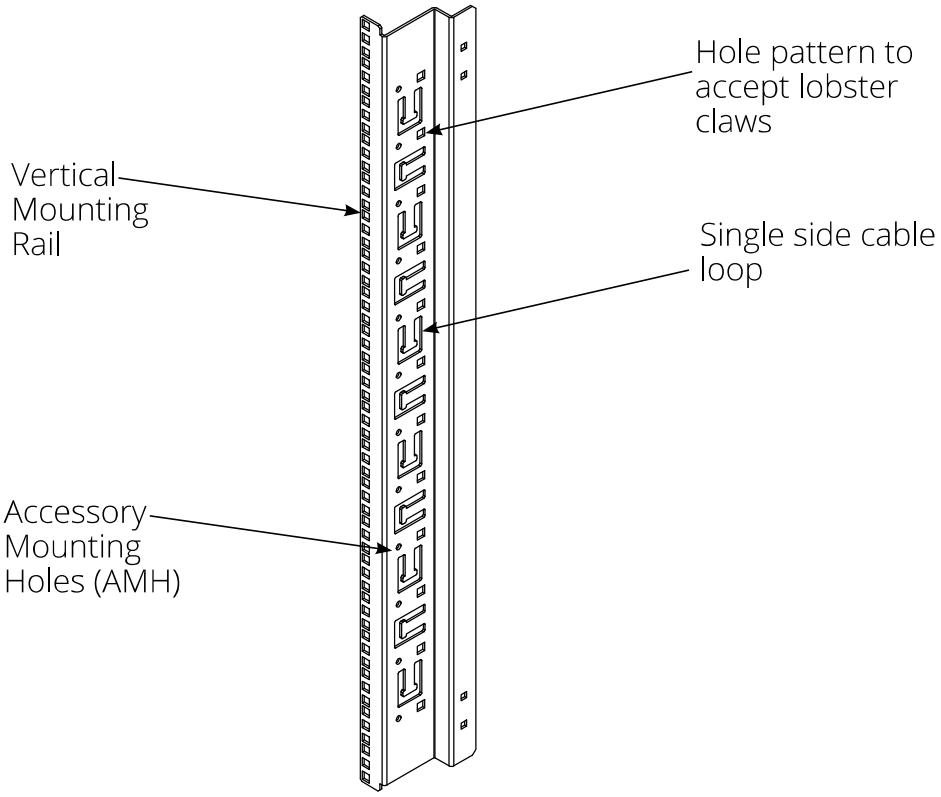
Leveling feet are preinstalled at the factory. They are easily accessible in the front and rear of the rack frame. To adjust the leveling feet from inside the rack, a 5/16 socket is required. Leveling feet can also be adjusted from beneath the rack with a 3/4 open end wrench.

Detail F - Leveling Feet



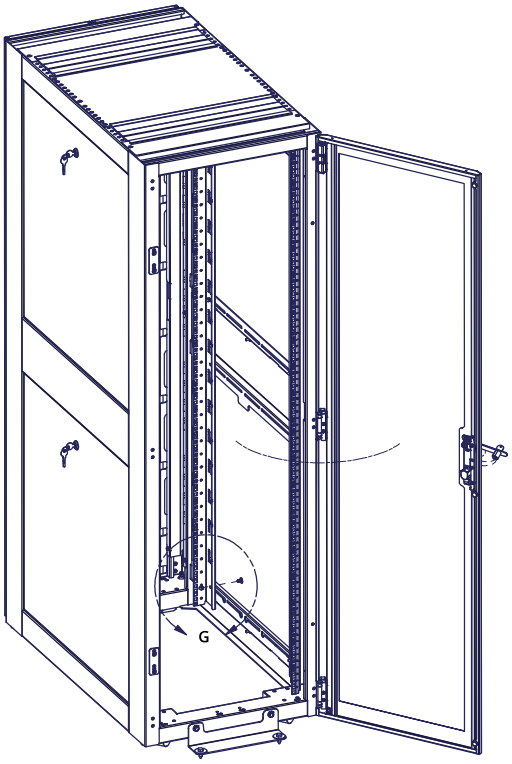
MOUNTING RAILS

The vertical mounting rails (each rack has two pairs, 12 ga. steel, powder coated rails), come installed with all standard frames at 19" EIA 310-E. Universal cage nut rails (M6) are standard. Rack Mount Units (RU) are marked on the front and rear of the rails for easy equipment mounting. Accessory Mounting Holes (AMH) and vertical cable tie down slots can be found on side of rails.

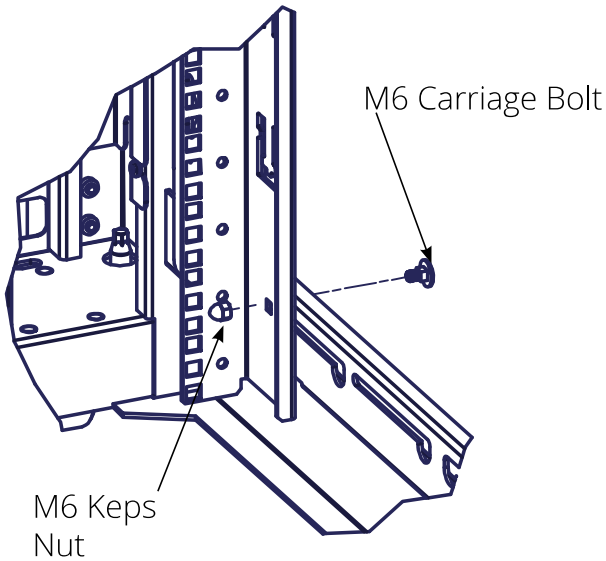


RAIL ADJUSTMENT

Rails are attached using an M6 carriage bolt and M6 keps nut. By loosening the top bottom and middle bolts using a 10mm drive socket, the rails can be adjusted infinitely from front to back. **Do NOT attempt to adjust rails once equipment has been loaded.**



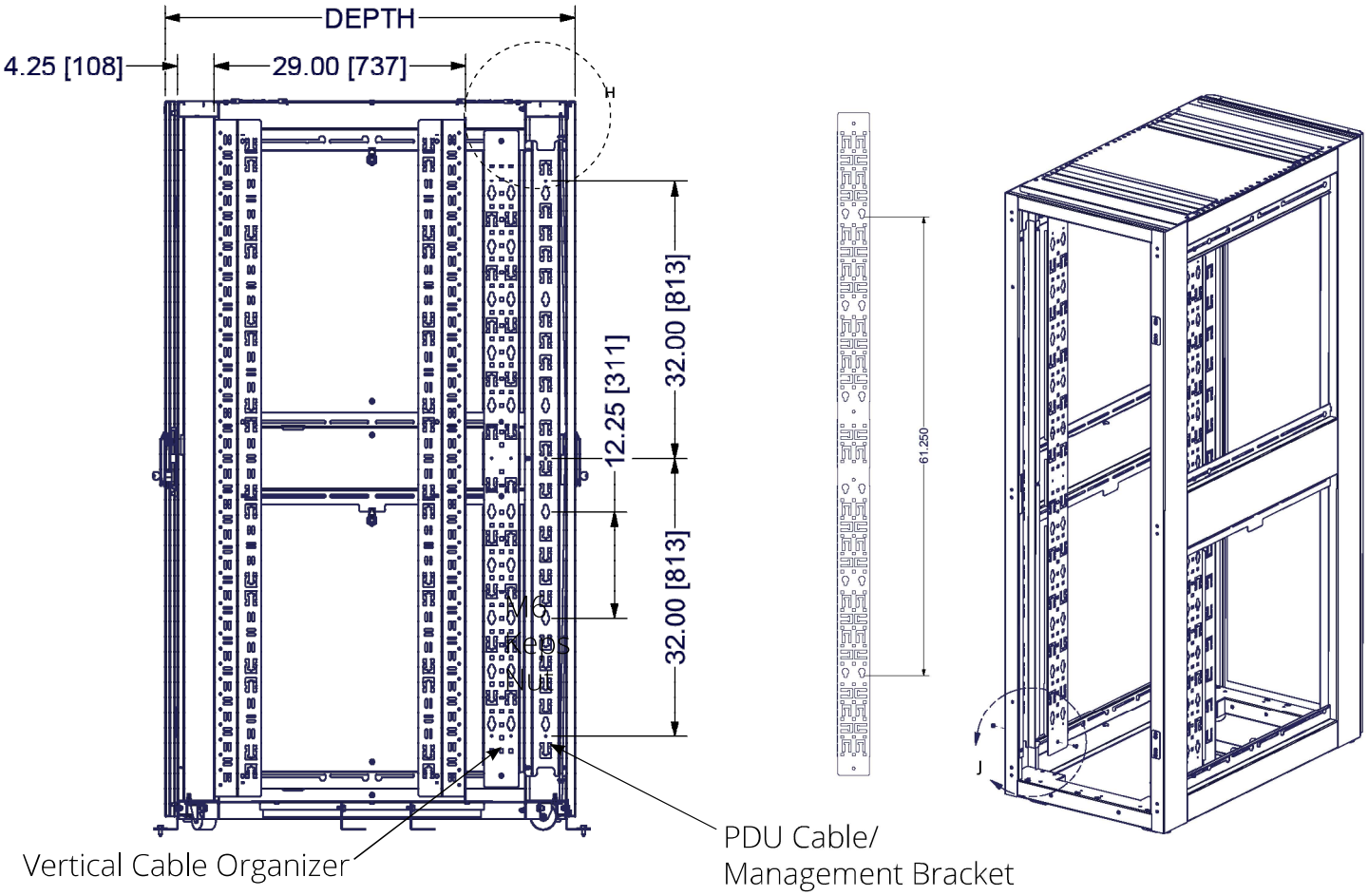
Detail G

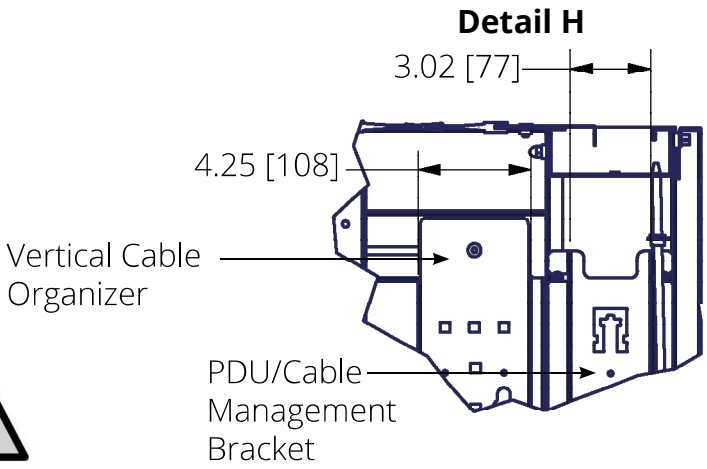


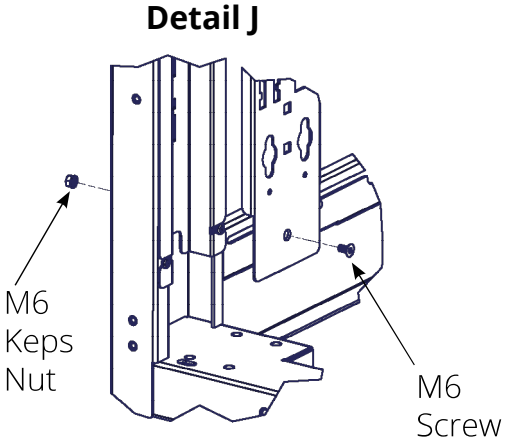
PDU/CABLE MANAGEMENT BRACKETS

The cabinet ships from the manufacturer with a PDU/Cable Management Bracket installed in each rear corner. This PDU/Cable Management Bar is stationary and secured to the cabinet frame. Keyhole cutouts along the bracket accept button mounting of PDUs.

The cabinet ships with a Vertical Cable Organizer installed on each side of the cabinet. The organizer is secured to the cabinet at the top, center, and bottom rack horizontal. Keyhole cutouts along the bar accept button mounting of PDUs. The square hole pattern accepts “D” rings, lobster claws, and a variety of other cable management.







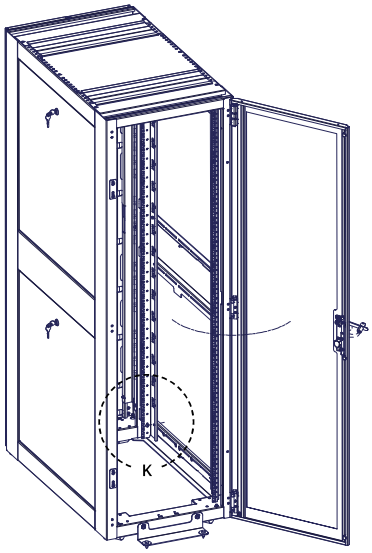
POWER

When using power distribution units (PDUs), each PDU should be connected to a dedicated branch circuit that is rated for the continuous load of all the equipment connected. When not using a PDU, each piece of equipment should be connected to a dedicated branch circuit.

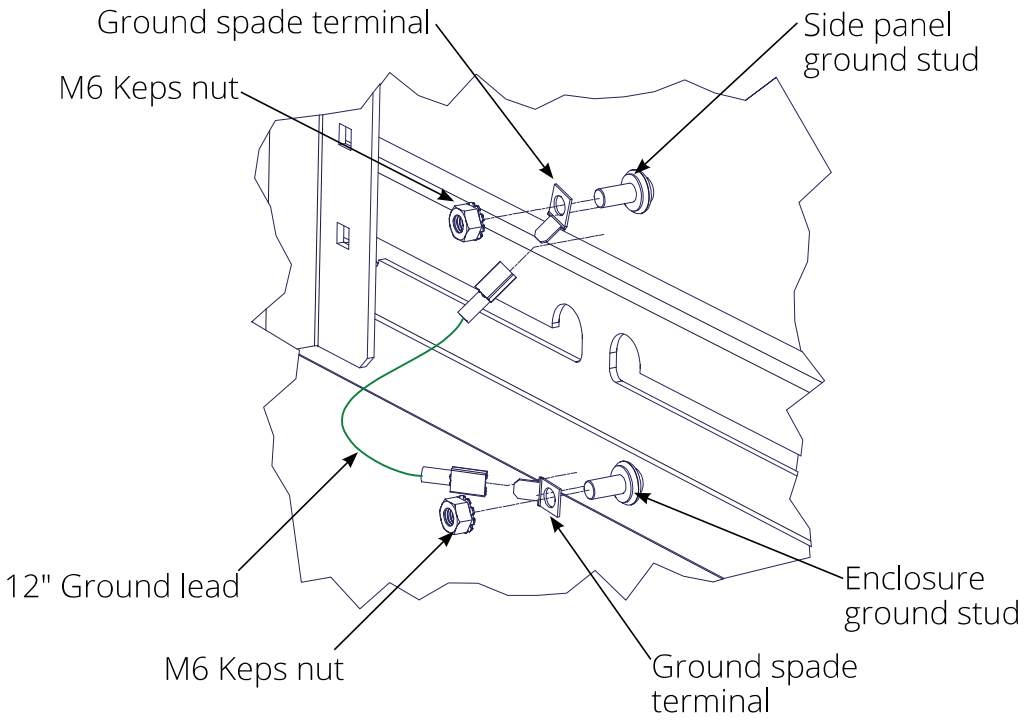
GROUNDING

Protective grounding studs are provided along with quick disconnect grounding jumper wires that electrically bond the enclosure doors and sides to the enclosure frame. Before removing doors and side panels, pull apart the grounding wires.

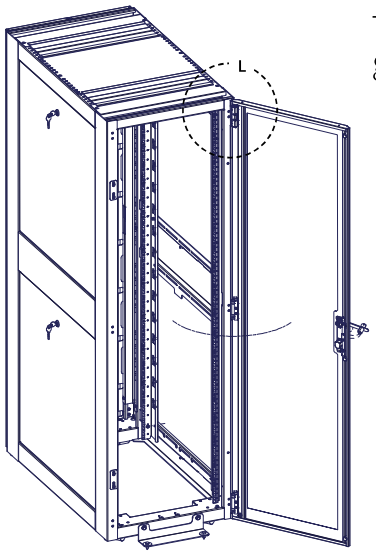
GROUNDING WIRE FROM ENCLOSURE TO SIDE PANEL



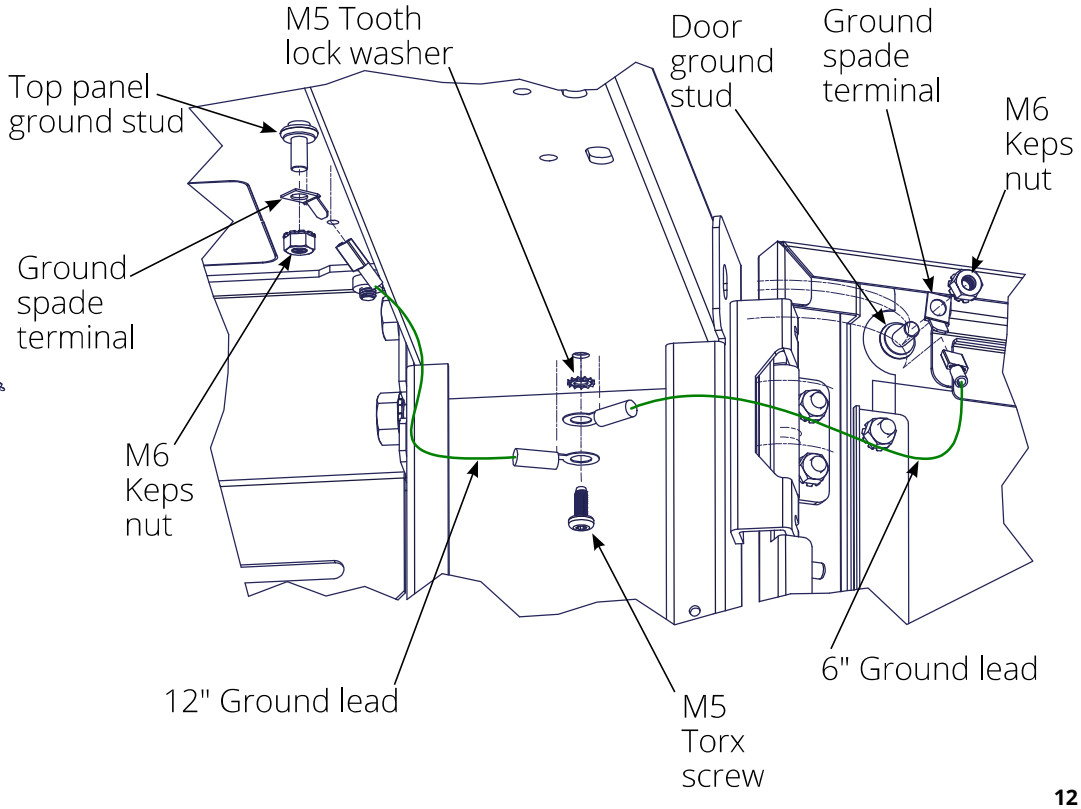
Detail K



GROUNDING WIRE FROM ENCLOSURE TO TOP PANEL AND DOOR



Detail L



PROTECTIVE GROUNDING

Protective grounding studs are provided along with grounding jumper wires that electrically bond the enclosure doors to the enclosure frame.

WARNING: To avoid injury to persons or loss of life, ground each enclosure individually to the dedicated branch circuit ground.

Connecting Main Protective Grounding Stud to the Dedicated Branch Circuit Ground

Connect the dedicated branch circuit ground connector to the main protective grounding stud located inside at the bottom rear of the enclosure frame using a listed ring or closed-loop terminal.

Connecting Main Protective Grounding Stud to the Protective Bonding Conductors

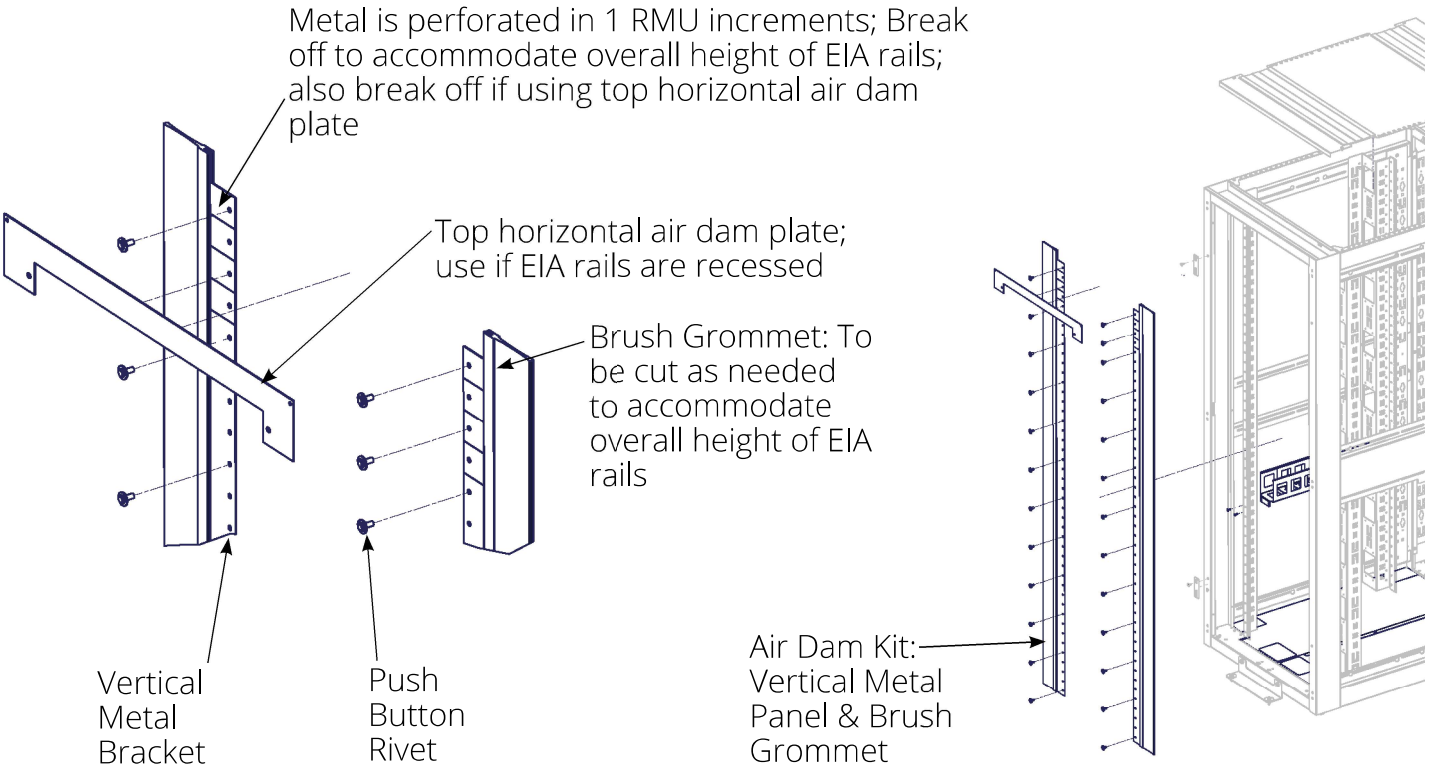
Connect the rear doors to the main protective grounding studs located inside at the bottom and top rear of the enclosure chassis using a listed ring or closed-loop terminal. Connect the front door to the grounding stud located inside at the bottom front of the enclosure frame using a listed ring or closed-loop terminal.

Parts Not Bonded to Protective Earthing Terminal

The following parts are not effectively bonded to the protective earthing terminal: rails and front to back rail horizontals; and cable/PDU brackets. If these parts need to be bonded to the protective earthing terminal, do so in accordance with Article 250 of the National Electric Code.

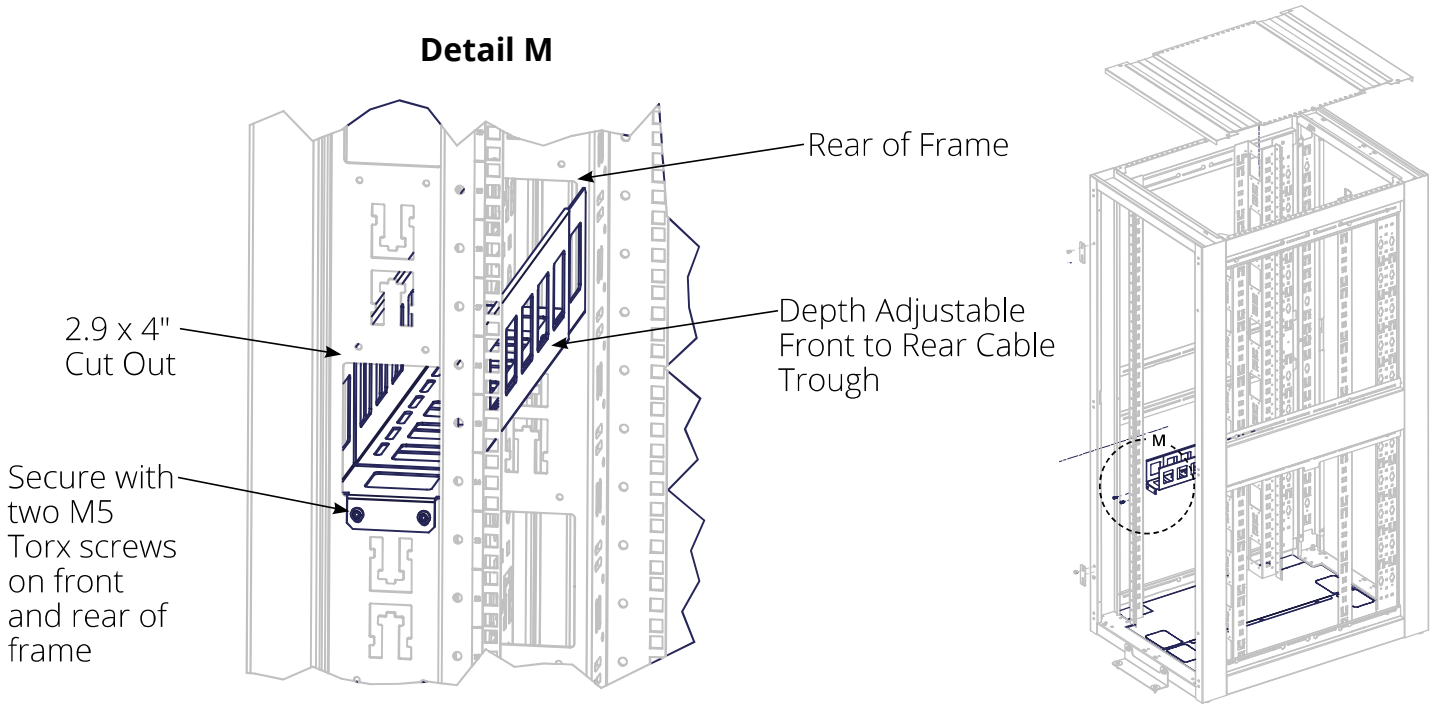
AIR DAM

The air dam kit installs along the accessory mounting holes (AMH) of the front rails of 800mmW cabinets. The air dam prevents recirculation and bypass airflow. The kit consists of a vertical metal panel with brush grommet along the length of the panel. The vertical metal panel secures to the AMH with push button rivets.



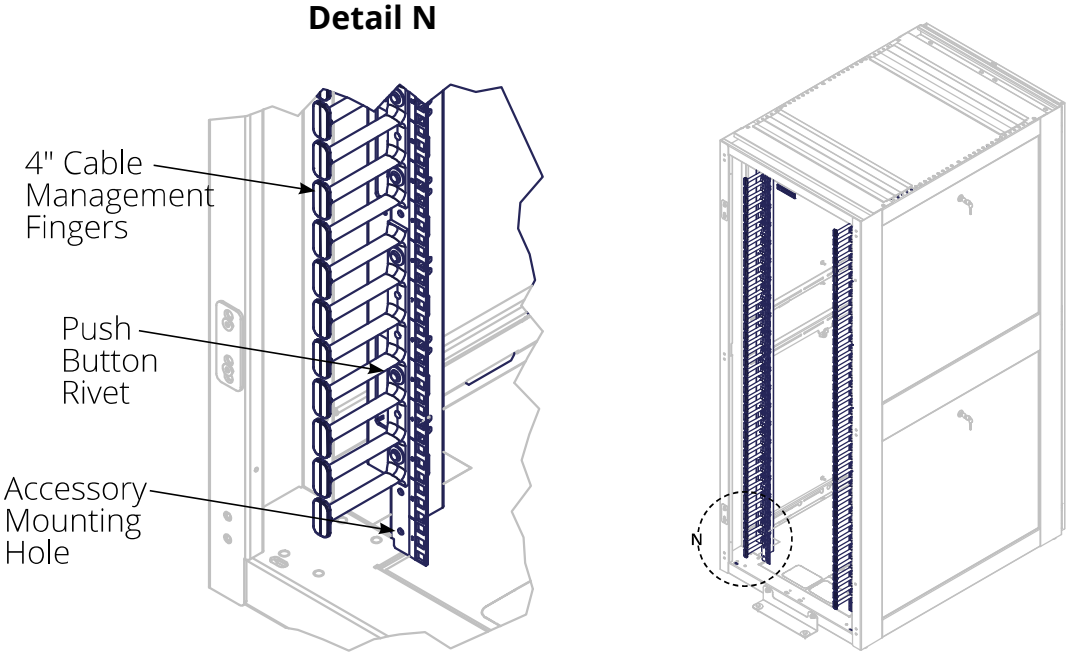
FRONT TO REAR CABLE TROUGH

The depth adjustable front to rear cable trough installs between the 2.9 x 4 cutouts along the front and rear of 800mmW cabinets.



CABLE MANAGEMENT FINGERS

Cable management fingers install in the accessory mounting holes (AMH) of front and rear rails in 800mmW cabinets. If installing fingers on the front rails, rails must be recessed to accommodate fingers. Fingers should be secured with a minimum of three rivets per 7 RMU section of fingers.



NOTES:

GREAT LAKES
DATA RACKS & CABINETS

Thank you for your business!