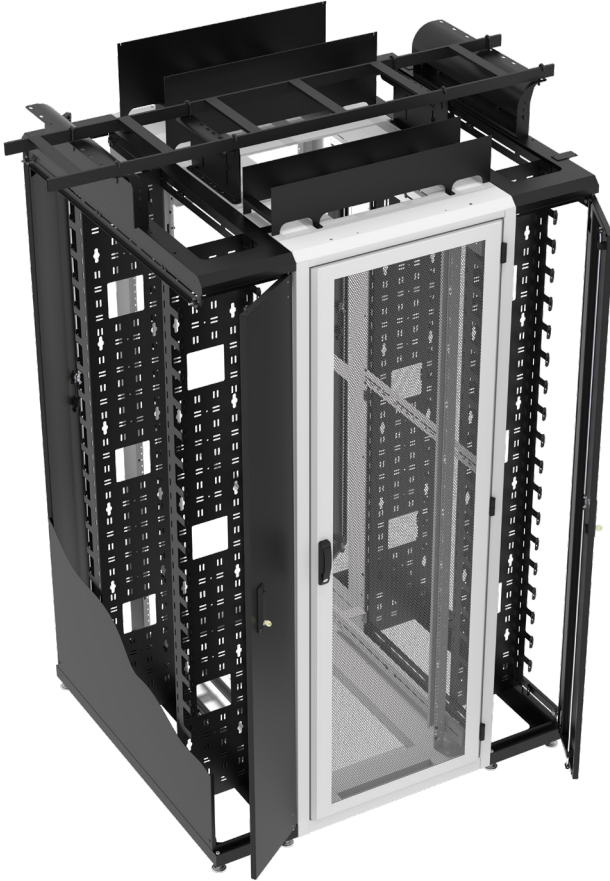




ES Series Cabinets Installation Instructions

(UL60950-1/UL2416 ES Equipment Cabinet/Rack)



Instructions apply to all ES cabinets.
See page 4 for a complete list.

GreatCabinets.com

1.866.879.4522

TABLE OF CONTENTS

What's included.....	4
Installation warnings.....	5
Doors.....	6
Door handles.....	8
Side panels.....	10
Caster and levelers.....	11
Top and bottom panels.....	12
Mounting rails.....	13
PDU brackets, standard.....	14
OPTIONAL accessories	
PDU brackets, specialty.....	16
Cable management fingers.....	19
Front to rear cable trough.....	19
Vertical cable manager.....	20
Cable bar kits.....	21
Top cable trough.....	23
Ladder rack brackets.....	24
External cable manager/side car.....	25
Brush grommet rail kit.....	26
Brush grommet for cable pass-thru.....	27
Air manager.....	28
Exhaust chimney.....	30
Baffle kits.....	31
Networking/Ganging.....	32
Grounding/Copper bus bar.....	33

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 ES cabinets (UL60950 -1/UL2416 ES Series Equipment Cabinet/Rack). In addition, only trained service personnel should install equipment in cabinets.

SAFETY SYMBOLS USED IN THIS MANUAL

This manual provides general safety guidelines to be observed during installation, operation, and maintenance of the ES cabinet.



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 ES cabinet could result in equipment damage, serious injury, or possible death.

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

Only UL® Listed ITE (Information Technology Equipment) units should be installed inside the ES cabinet.

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 cabinet 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).

The non-operating temperature is -4 to +140° F (-20 to +60° C).

SERVICE

ES 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

WHAT'S INCLUDED

- ES unit (assembled)
- Keys as needed (depending on configuration)
- (50) M6 cage nuts (3/8" square) and M6 screws (#10-32 tapped rails available, must be specified at time of order)
- This user's manual

This user's manual applies to the following Great Lakes ES cabinets:

Part No.	RMU	H	W	D
GL980ES-3248 ²	52	98"	32"	48"
GL980ES-3048 ²	52	98"	30"	48"
GL980ES-3042 ²	52	98"	30"	42"
GL980ES-2448 ¹	52	98"	24"	48"
GL980ES-2442 ¹	52	98"	24"	42"
GL910ES-3048 ²	48	91"	30"	48"
GL910ES-3042 ²	48	91"	30"	42"
GL910ES-2448 ¹	48	91"	24"	48"
GL910ES-2442 ¹	48	91"	24"	42"
GL840ES-3248 ²	44	84"	32"	48"
GL840ES-3242 ²	44	84"	32"	42"
GL840ES-3048 ²	44	84"	30"	48"
GL840ES-3042 ²	44	84"	30"	42"
GL840ES-2448 ¹	44	84"	24"	48"
GL840ES-2442 ¹	44	84"	24"	42"
GL790ES-3048 ²	42	79"	30"	48"
GL790ES-3042 ²	42	79"	30"	42"
GL790ES-2448 ¹	42	79"	24"	48"
GL790ES-2442 ¹	42	79"	24"	42"
GL480ES-2442 ¹	24	48"	24"	42"

¹ Weight capacity of 24"W ES cabinet: 2000 lbs.; 3300 lbs. with HD Kit. HD Kit can only be factory installed. Must be specified at the time the cabinet is ordered.

² Weight capacity of 30/32"W ES cabinet: 3300 lbs.

INSTALLATION

Receiving, Unpacking, and Removing the ES cabinet from the shipping pallet

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



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



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

Loading Equipment



WARNING: Only install equipment after the ES cabinet has been properly secured. Do not move the ES cabinet assembly while loaded.

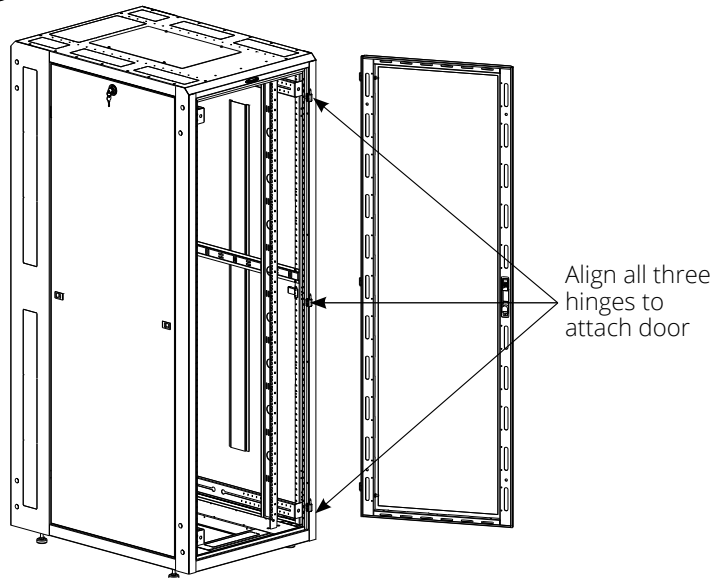
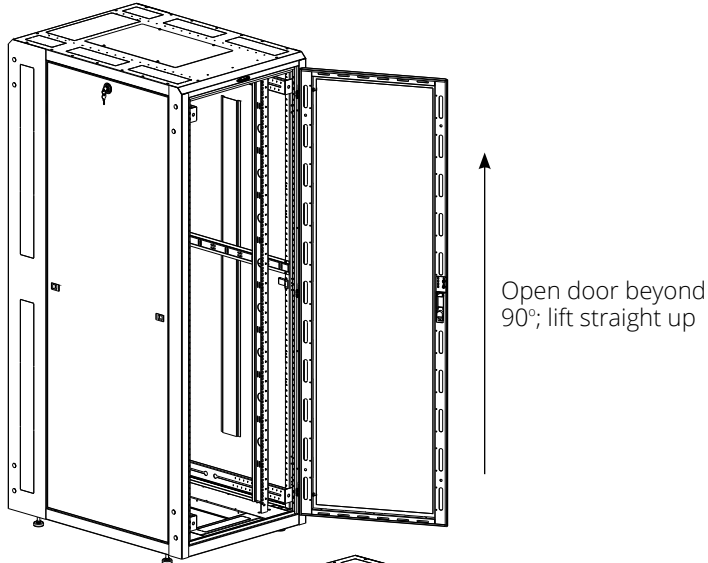
Once in place at the desired/intended location, deploy the leveling feet for maximum stability.

Rated or maximum load capacity for the ES cabinet is 2000 pounds (for 24"W cabinet; 3300 lbs. with HD Kit installed) or 3300 lbs. (for 30/32"W cabinet) on the floor or on leveling glides.

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

DOORS

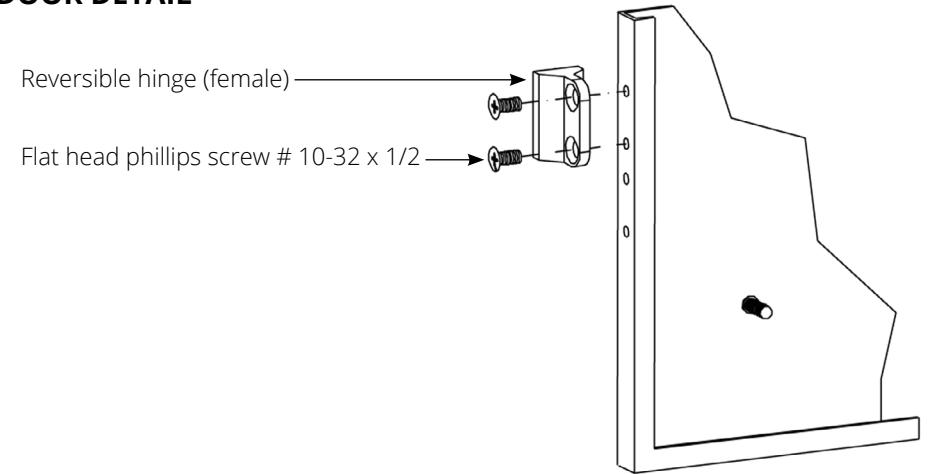
- **BEFORE REMOVING,**
pull apart the quick-disconnect grounding wires
- **TO REMOVE,**
open the door beyond 90°, grasp the door with both hands and lift upward, when the door is free of all three hinge pins, pull the door away from the cabinet
- **TO ATTACH,**
align all three hinges of the door to their respective hinge pins on the cabinet and slowly slide the door down until seated



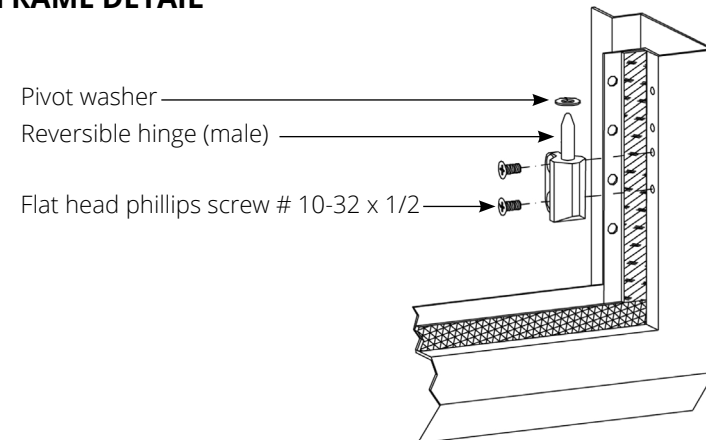
REVERSING THE DOOR

- Front and rear doors are installed right-hand hinge as standard from the manufacturer
- **TO REVERSE,**
 - Remove hinges and handle from door
 - Rotate door 180°
 - Reinstall hinges and handle after rotating both 180° (see page 8)

DOOR DETAIL



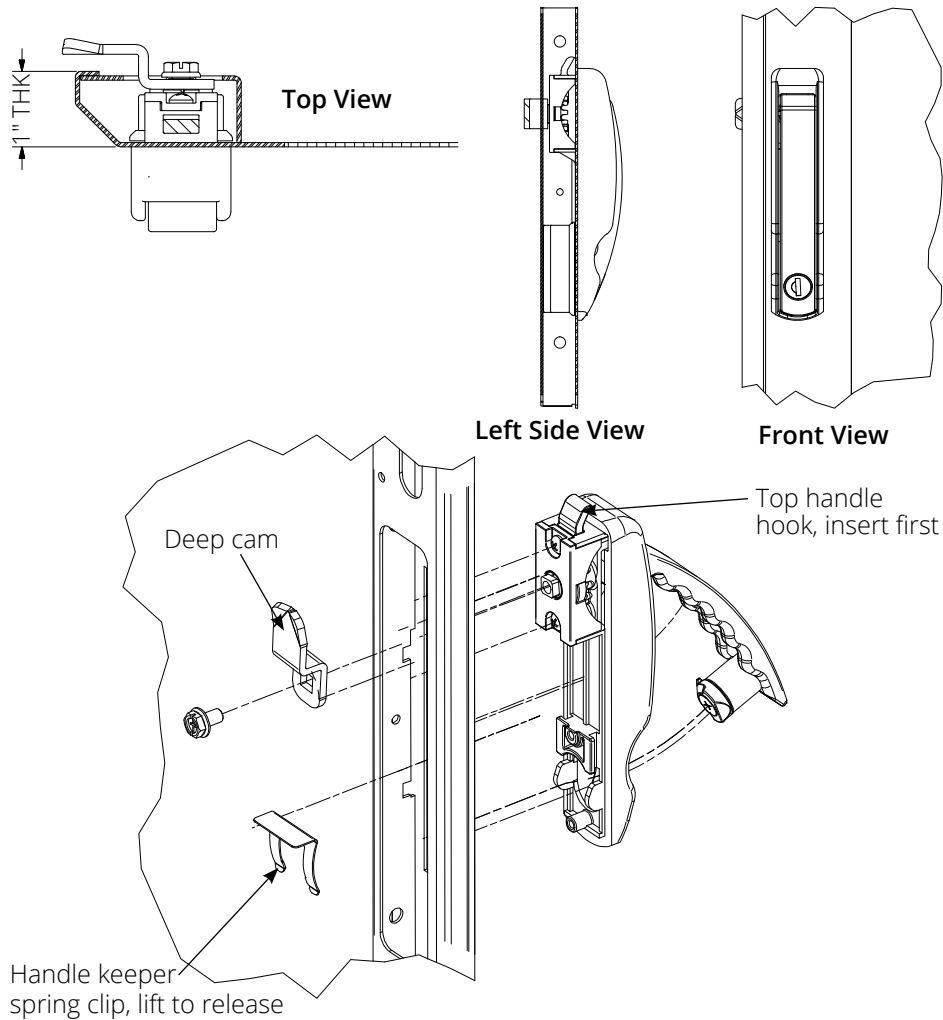
FRAME DETAIL



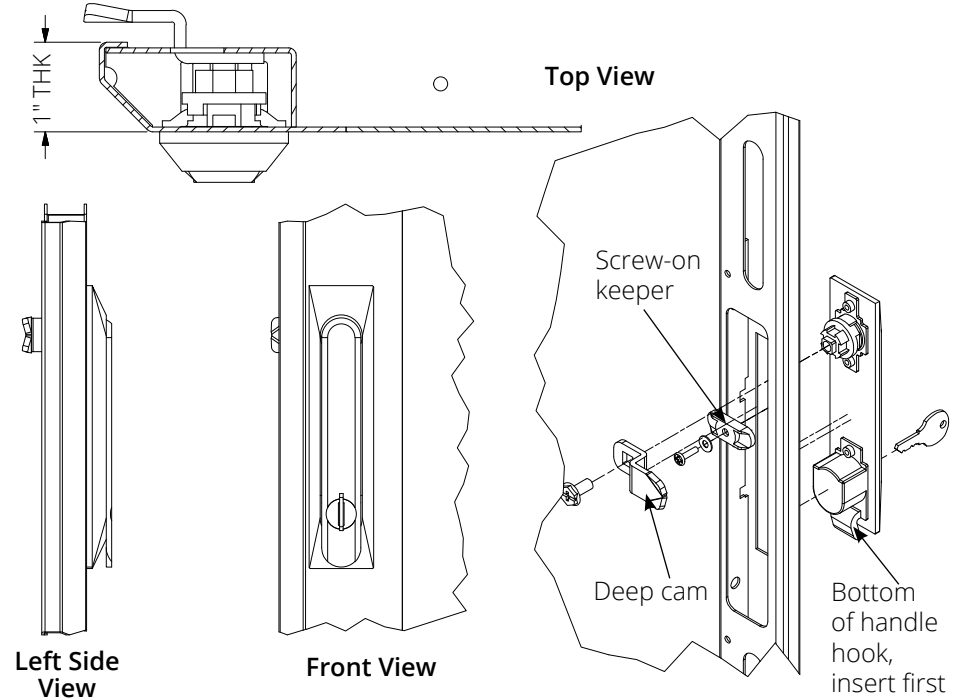
DOOR HANDLES

- Mesh contour doors come standard with a locking lever handle (see install below)
- The lever handle on mesh contour doors can be interchanged with a swing handle (see install, page 9)
- All other doors (mesh, steel, plexi, etc.) come standard with a locking swing handle (see install, page 9); swing handles cannot be interchanged with a lever handle
- If a handle is ordered separately, the handle can be swapped in the field. When interchanging the door handle, additional hardware may be required (and will ship with the handle)

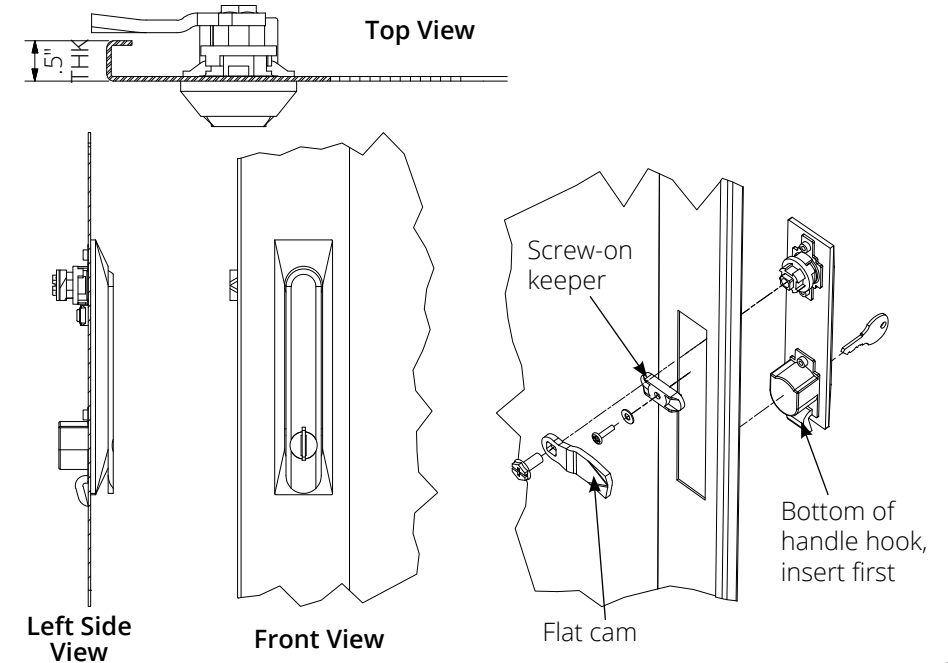
ASSEMBLY OF LEVER HANDLE ON MESH CONTOUR DOORS



Assembly of swing handle on mesh contour doors

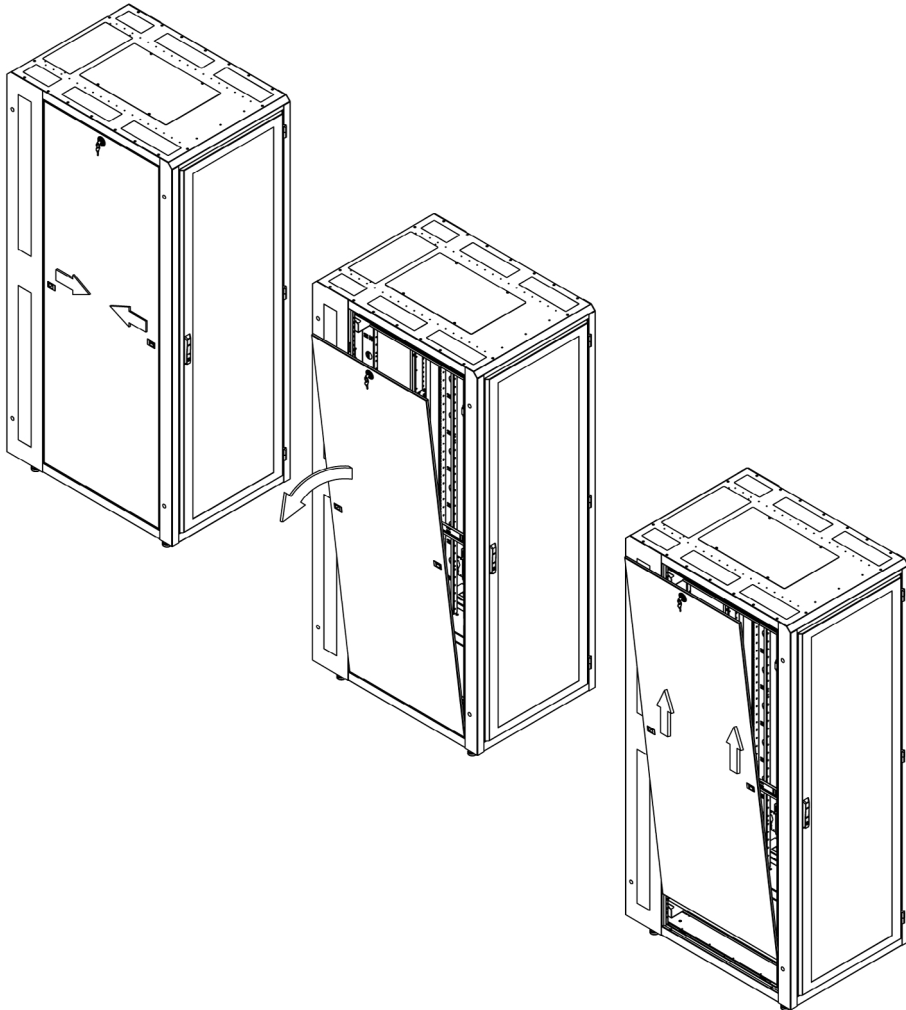


ASSEMBLY OF SWING HANDLE ON STANDARD MESH, STEEL, PLEXI AND PERIMETER VENTED DOORS



SIDE PANELS

- **BEFORE REMOVING,**
pull apart the quick-disconnect grounding wires and unlock the side panel
- **TO REMOVE**
 - Squeeze the quick-release latches toward each other
 - Tilt the top of the side panel out slightly
 - Lift the side panel up a couple of inches until it is free from the two tabs at the bottom of the cabinet frame
- **TO INSTALL**
 - Engage the side panel with the two tabs at the bottom of the frame
 - Push the panel fully into the frame
 - Ensure quick-release latches engage with slots on the side of the frame

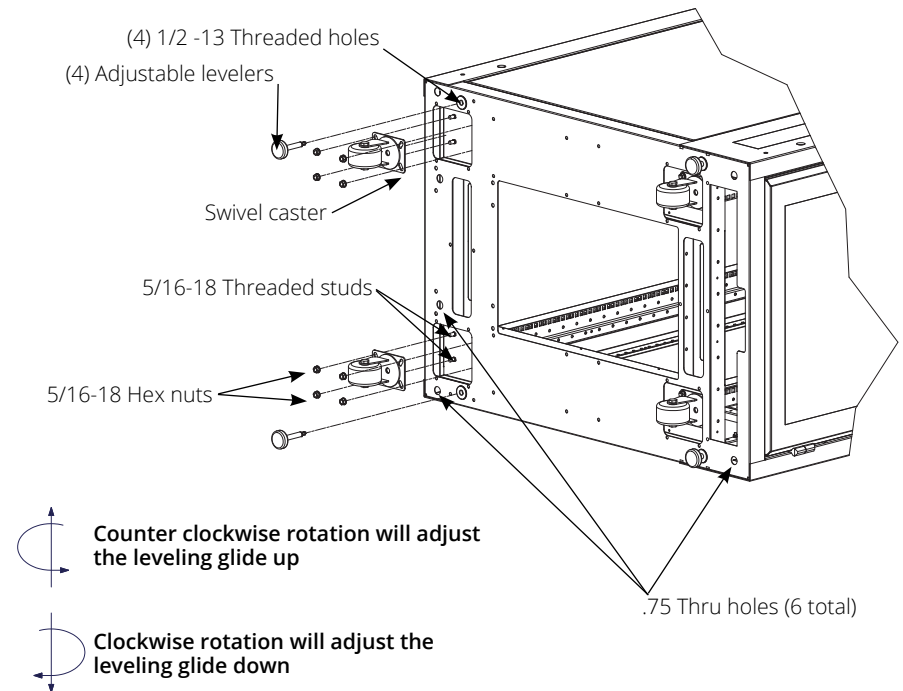


CASTER AND LEVELER MOUNTING



CAUTION

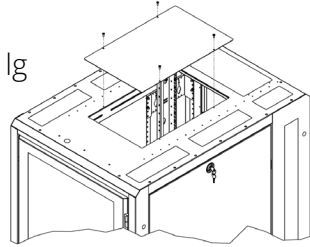
- To install casters or levelers, the cabinet must be tipped onto its side. The cabinet can be very heavy; several people will be required in this process. Please practice safe lifting techniques.
- **DO NOT** lay the cabinet on its front or back, this may damage the door hinges.
- Before tipping, remove the side panels and doors to reduce cabinet weight and avoid damage to handles.
- **TO INSTALL**
 - Place cabinet on its side
 - Pass a plate caster over four threaded studs located in one of the recessed areas in the bottom of the cabinet
 - Thread (1) 5/16-18 hex nut onto each stud and tighten with a 1/2" socket or nut driver
 - Repeat the above steps for the three remaining casters
 - Install leveling glides (7209-HD) at this time if they were ordered with the cabinet



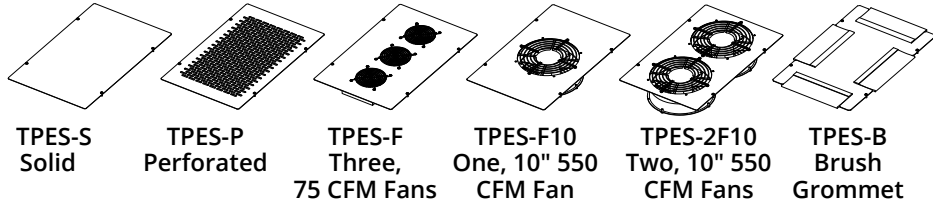
TOP & BOTTOM PANELS

TOP PANEL

- Top panel is installed at the manufacturer
- **TO REMOVE**, unscrew the four #10-32 x 1/2" lg screws, lift off the top panel
- **TO INSTALL**, insert four #10-32 x 1/2" lg screws

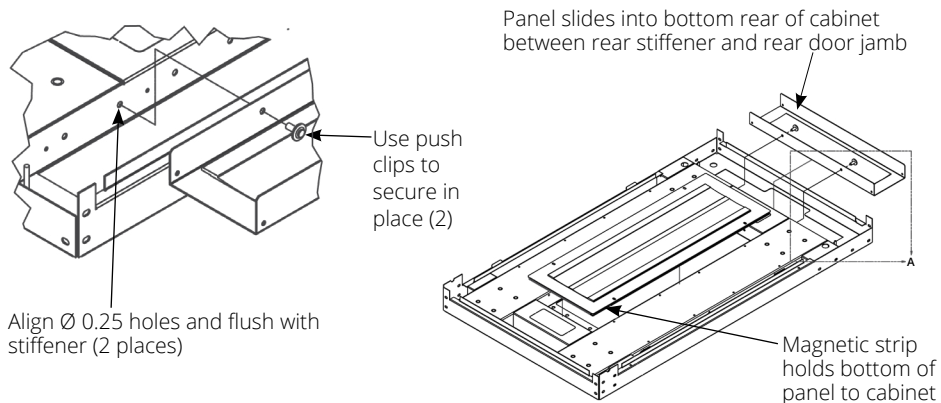


6 top panel options



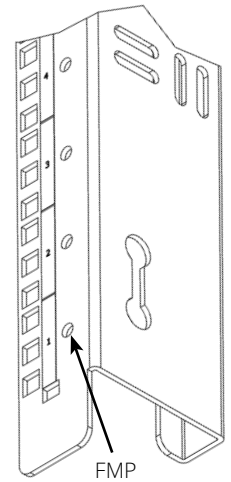
BOTTOM PANEL

- Bottom Panel (brush grommet and solid) is installed at the manufacturer if ordered with the cabinet
- Panels come in two sections: one for the large center opening and one for the rear opening
- **TO INSTALL**
 - Center section: Lay the large bottom panel over the opening center section in the bottom of the cabinet with the magnetic strip should face the bottom of the cabinet
 - Rear section: Align the holes in the rear bottom panel with holes in the rear of the cabinet; secure with push-button rivets
 - If cinch straps are installed in the bottom of the cabinet, straps must be removed before installing rear bottom panel



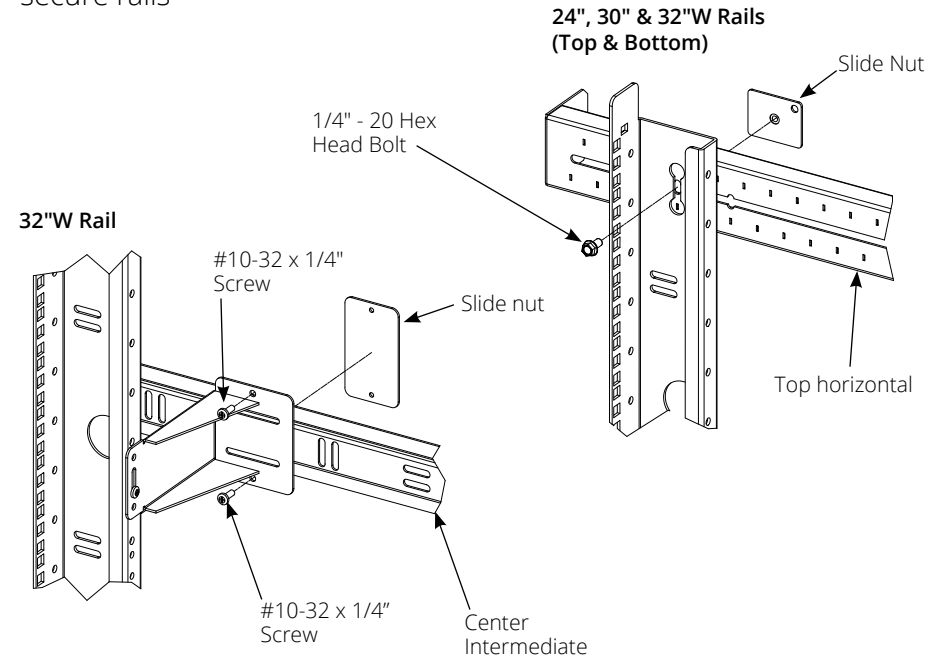
MOUNTING RAILS

- Two pairs of 12 gauge steel, powder coated vertical mounting rails for 19" EIA 310-E equipment are installed in each cabinet
- 30 and 32"W ES cabinet can be configured to 23" EIA mounting with an optional replacement bracket set
- Universal 3/8" sq. (M6) rails are standard; Tapped #10-32 rails are available and will be installed if specified at time of order
- Rack Mount Units (RMU) are marked on all rails
- Flexible Mounting Profile (FMP), round cable pass through holes, and vertical and horizontal cable tie down slots can be found on all rails



RAIL ADJUSTMENT

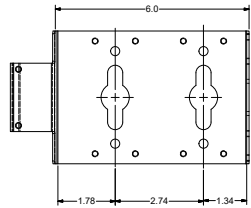
- Do **NOT** attempt to adjust rails once equipment has been loaded
- Rails are attached using a sliding nut plate and a 1/4" -20 hex head bolt
- **TO ADJUST**, loosen the top and bottom bolts on the horizontals with a 3/8" drive socket
- 32"W cabinets feature a center intermediate, loosen the screw on the intermediate bracket
- Slide rails to appropriate placement and tighten all hardware to secure rails



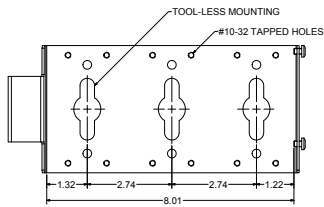
PDU BRACKETS

STANDARD PDU BRACKETS TO MOUNT VERTICAL CABLE TROUGH & PDUs

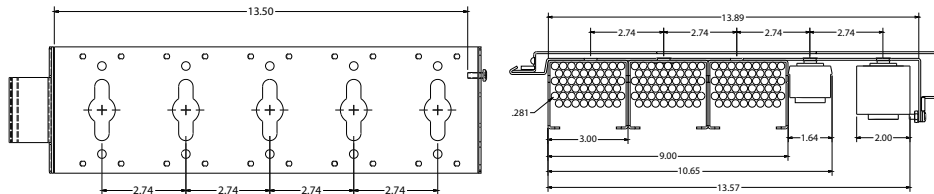
- Power strip brackets (one set in each rear corner) are standard and ship with vertical space of 61.25" between brackets
- Brackets accept a wide range of Power Distribution Units (PDUs) and Great Lakes vertical cable troughs (VCT) and vertical cable bars (VCB)
- The size of the PDU will determine how many can be mounted on the brackets; figures below show usable mounting space of brackets
- Brackets may need to be vertically adjusted to accept PDUs



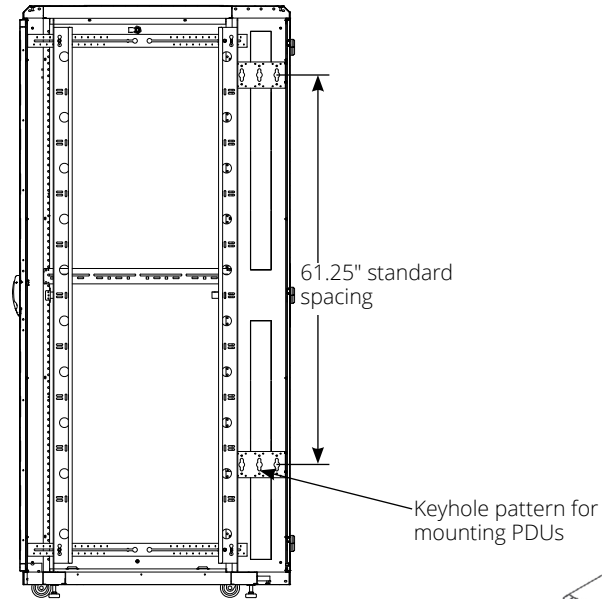
40"D Bracket



42"D Bracket



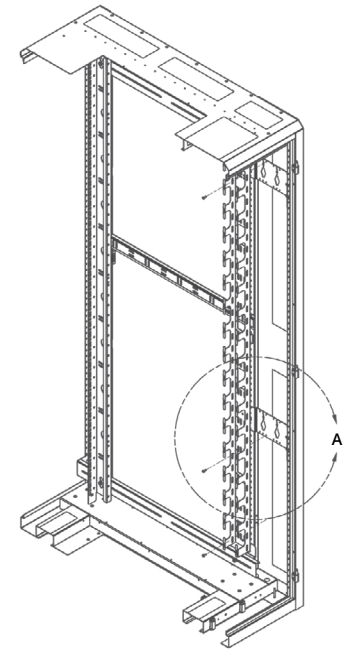
48"D Bracket



DETAIL A

Brackets are vertically adjustable along flange

#10-32 Screw



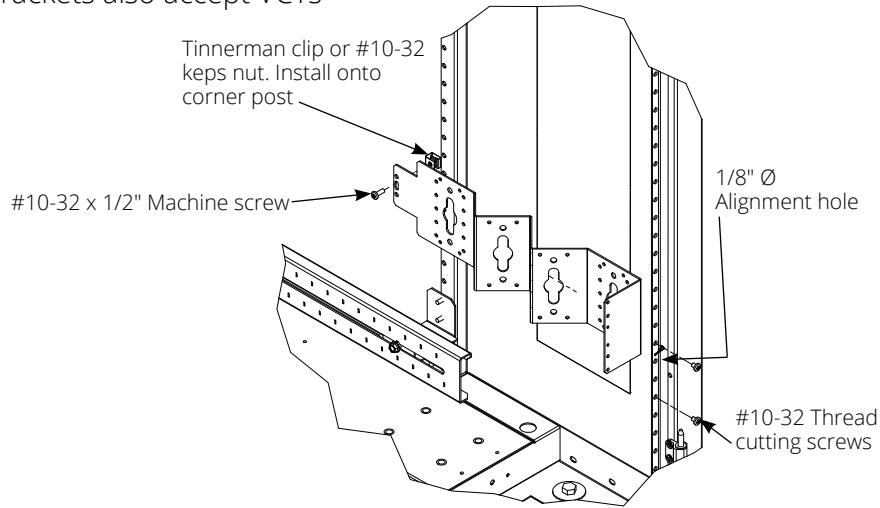
POWER

When using power distribution units (PDUs), each PDU should be connected to a committed 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.

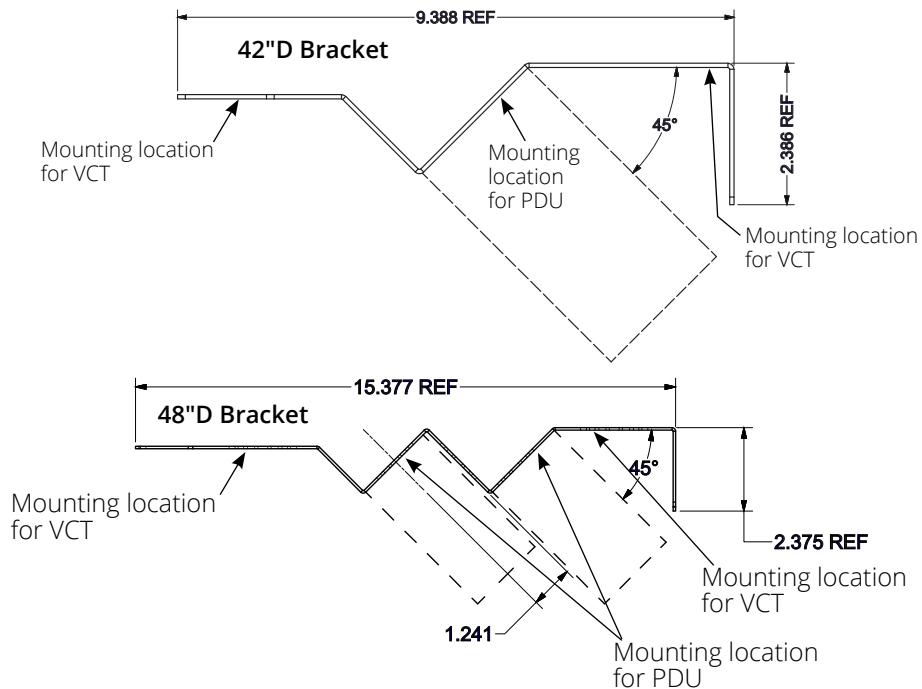
Part No.	Description	Compatible ES
VERTICAL CABLE TROUGH		
VCT-91	76"H x 3"W x 2.5"D VCT	91"H ES sizes
VCT-91C	Cover for VCT-91	91"H ES sizes
VCT-84	68"H x 3"W x 2.5"D VCT	84"H ES sizes
VCT-84C	Cover for VCT-84	84"H ES sizes
VCT-79	62"H x 3"W x 2.5"D VCT	79"H ES sizes
VCT-79C	Cover for VCT-79	79"H ES sizes

PSBKES-A BRACKETS

- Standard PDU brackets in the 30/32"W cabinets can be replaced with PSBKES-A
- Brackets allow PDUs to be mounted at an angle toward the rear of the cabinet
- Brackets also accept VCTs



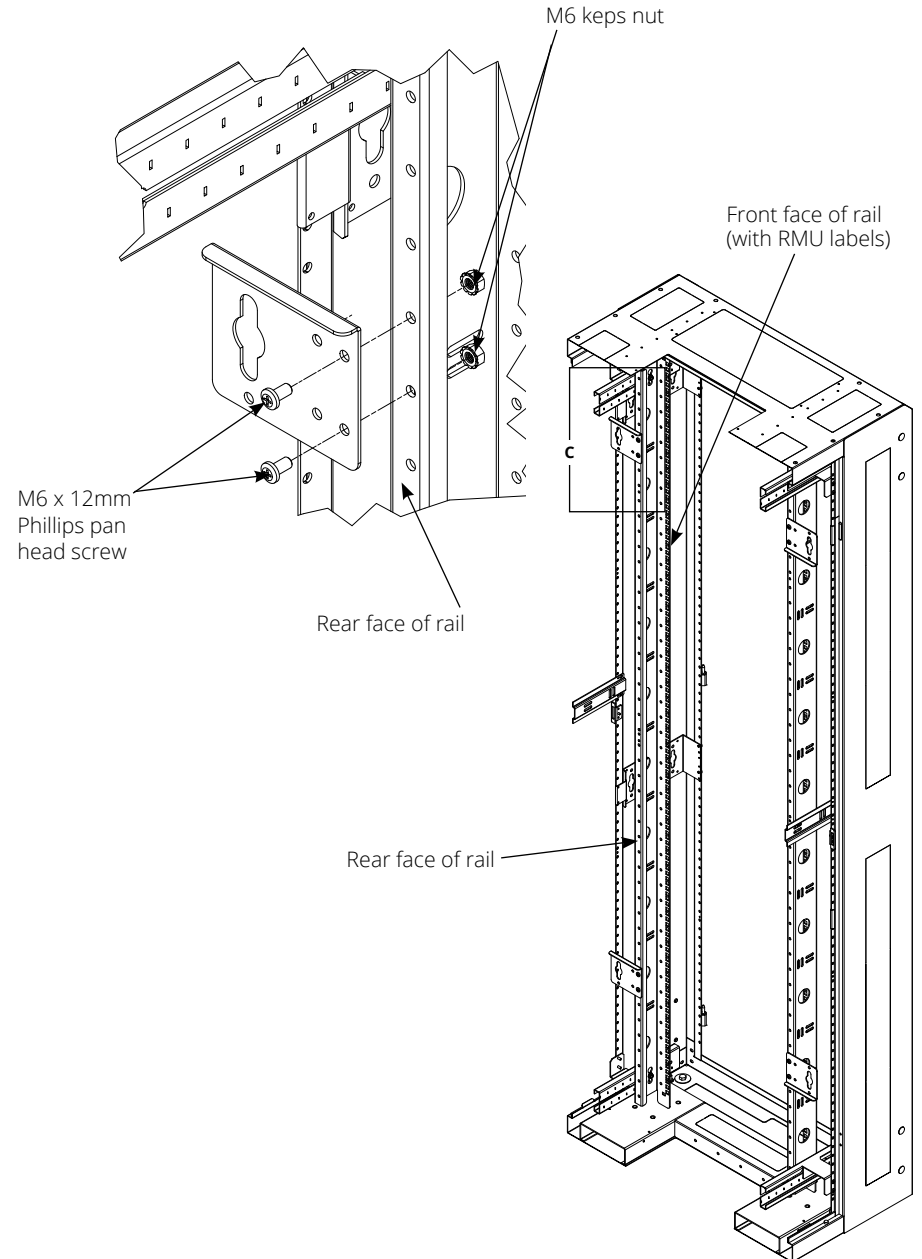
42" AND 48"D BRACKETS INSTALLATION IS IDENTICAL



PSBKES-R-30 BRACKETS

- PDU Rail Brackets for 30/32"W cabinets allow the button mount of a single PDU along the mounting rail
- The height of the PDU will determine where to position the brackets along the rail

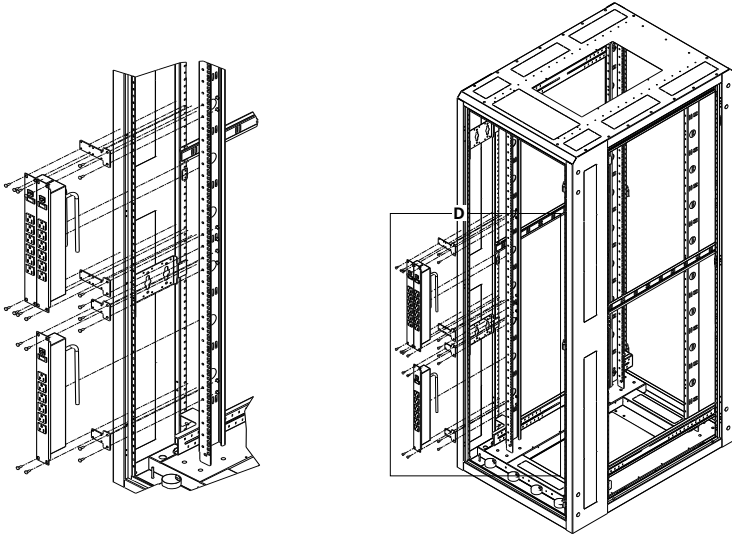
Detail C



ZR BRACKETS

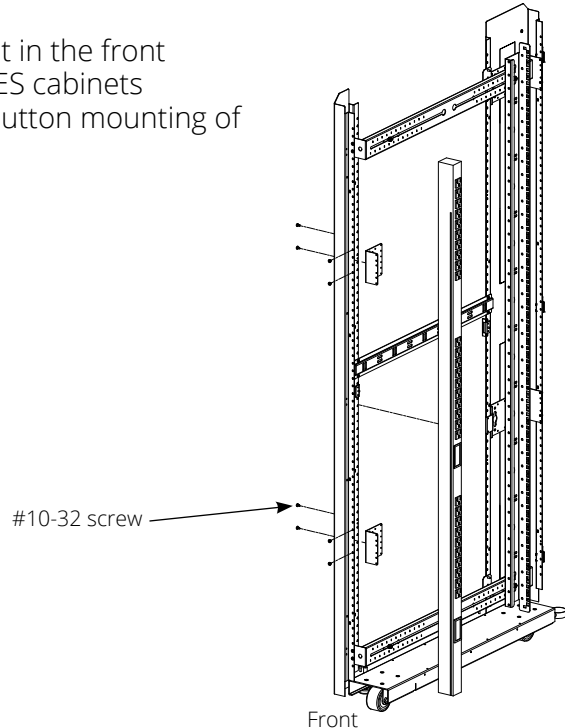
- ZR1 and ZR2 brackets fit in 30/32"W ES cabinets and allow for "0" RMU mounting of 19" rack mount power strip units or other 1 or 2 RMU equipment (such as patch panels)
- Install the bracket onto the rail or post toward the side panel; ensure you have 18.31" between the inner holes for 19" mounting

Detail D



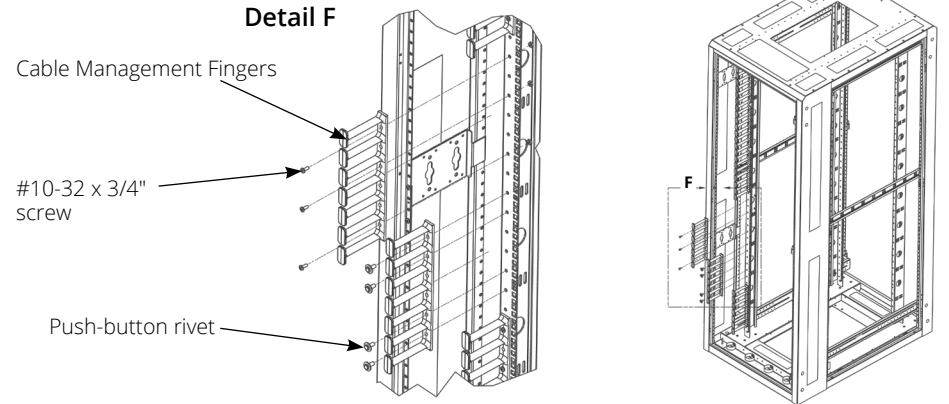
PSBKESF

- PSBKESF brackets fit in the front corner of 30/32"W ES cabinets
- Brackets allow for button mounting of 1 PDU



CABLE MANAGEMENT FINGERS

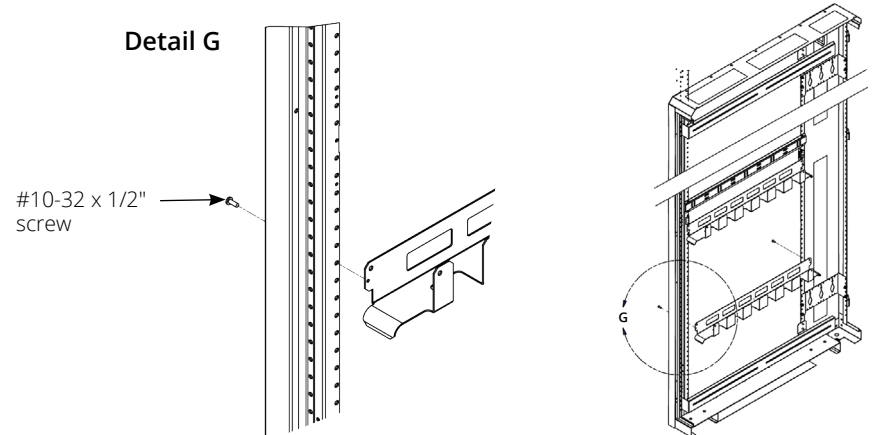
- Fingers install on the front or rear face of any rail
- If installing on front rails, rails must be recessed 4.5" to accommodate 4"D fingers or recessed 7.5" to accommodate 7"D fingers
- It is recommended that each set of fingers is installed using 3 points of attachment (with push-button rivets or screws and nuts)



Part No.	Description	Compatible ES
FINGERS		
CM-47	4" X 7 RMU, single finger section	All ES sizes
ESC-K12	4" x 7 RMU, set of 12 finger sections	All ES sizes
CM-77	7" X 7 RMU, single finger section	All ES sizes
ESC-K12-7	7" x 7 RMU, set of 12 finger sections	All ES sizes

FRONT-TO-REAR CABLE TROUGH

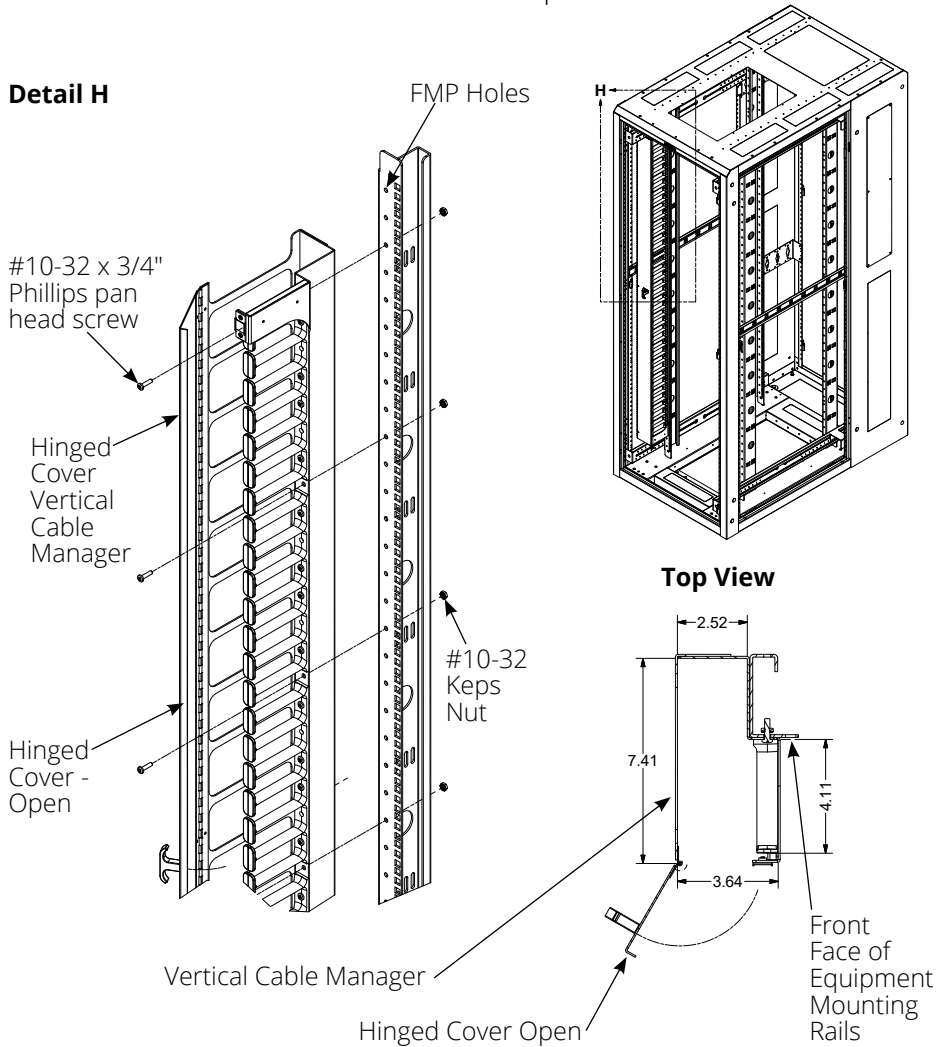
- HCM-D36 fits in 30/32"W cabinets and mounts to side panel flange
- Side panel must be removed first
- Troughs cannot be installed once cabinets are ganged



HINGED COVER VERTICAL CABLE MANAGER

- Hinged Vertical Cable Manager (VCMK) mounts to the Flexible Mounting Profile (FMP) of mounting rails
- VCMK can be installed on left, right, front or rear rails
- If installed on front rails, rails must be recessed 9 1/8" for proper hinge clearance
- Secure the VCMK with a minimum of 3 points of attachment

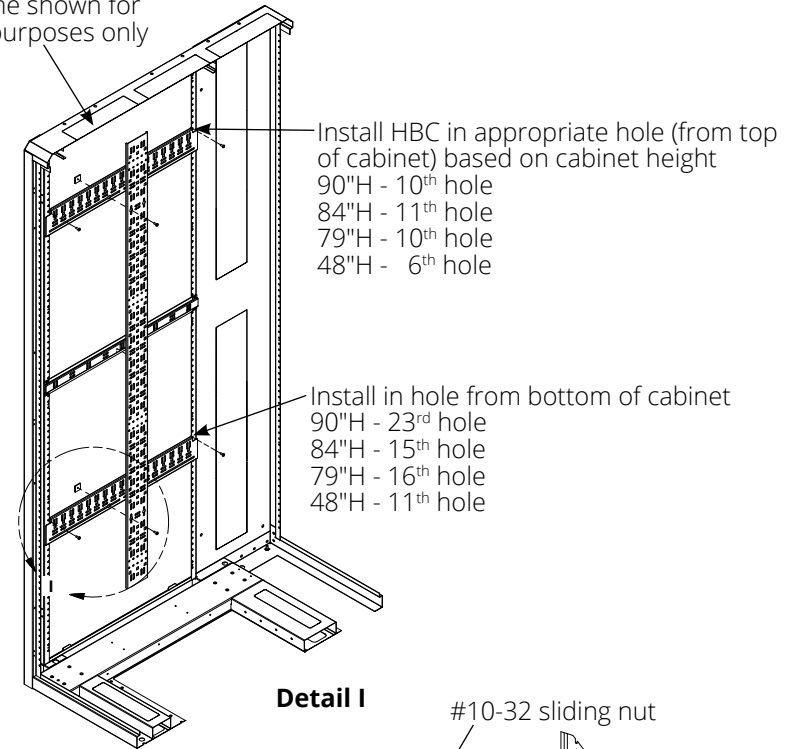
Detail H



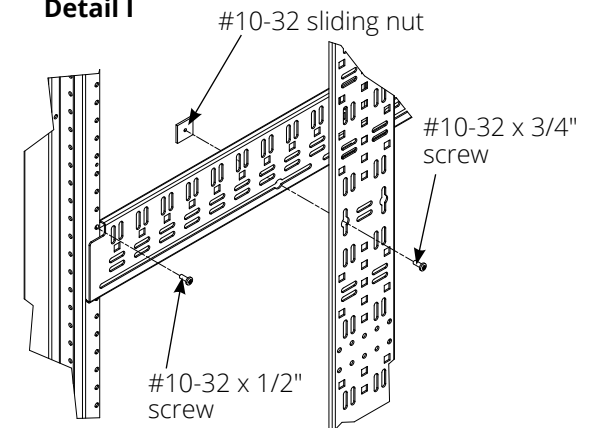
CABLE BAR KITS

- Vertical cable bar kits include two horizontal cable bars (HCB) and one vertical cable bar (VCB)
- Single VCB and HCB are available
- If ordering a single HCB it can be installed alone (without a VCB), or in conjunction with a kit
- If ordering a single VCB it can only mount when at least two horizontal bars are already installed
- Refer to Detail A for installation

Partial frame shown for assembly purposes only



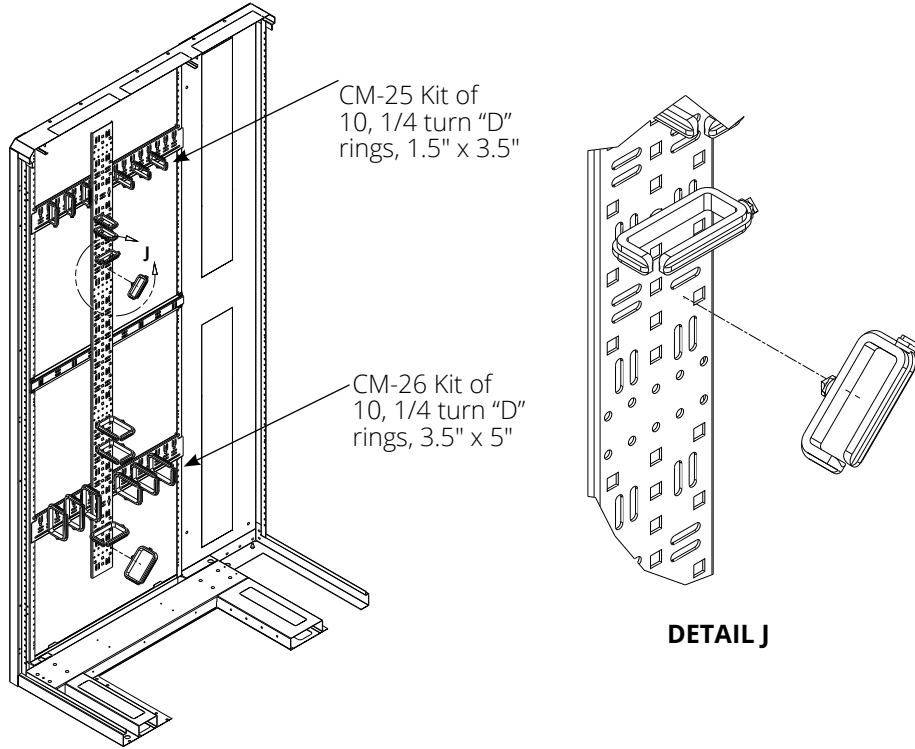
Detail I



Part No.	Description	Compatible ES
VERTICAL CABLE MANAGER		
VCM-91K	75.25"H x 3.78"W x 7.5"D VCM	30/32"W ES sizes
VCM-84K	70"H x 3.78"W x 7.5"D VCM	30/32"W ES sizes
VCM-79K	63"H x 3.78"W x 7.5"D VCM	30/32"W ES sizes

¼ TURN "D" RINGS FOR USE WITH CABLE BARS

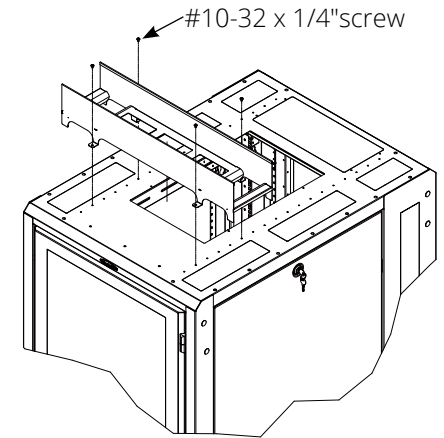
- All cable bars are designed with a square hole pattern to accept optional ¼ turn "D" rings
- Refer to Detail B for installation of "D" rings



Part No.	Description	Compatible ES
CABLE BARS		
VCB-9136	75"H x 4"W VCB Kit	91"H ES sizes
VCB-8436	68"H x 4"W VCB Kit	84"H ES sizes
VCB-7936	62"H x 4"W VCB Kit	79"H ES sizes
VCB-91	75"H x 4"W single VCB	91"H ES sizes
VCB-84	68"H x 4"W single VCB	84"H ES sizes
VCB-79	62"H x 4"W single VCB	79"H ES sizes
HCB-36	29.5"H x 4"W single HCB	All ES sizes
CM-25	¼ turn "D" rings 1.5" x 3.5", set of 10	All ES sizes
CM-26	¼ turn "D" rings 3.5" x 5", set of 10	All ES sizes

TOP CABLE TROUGH

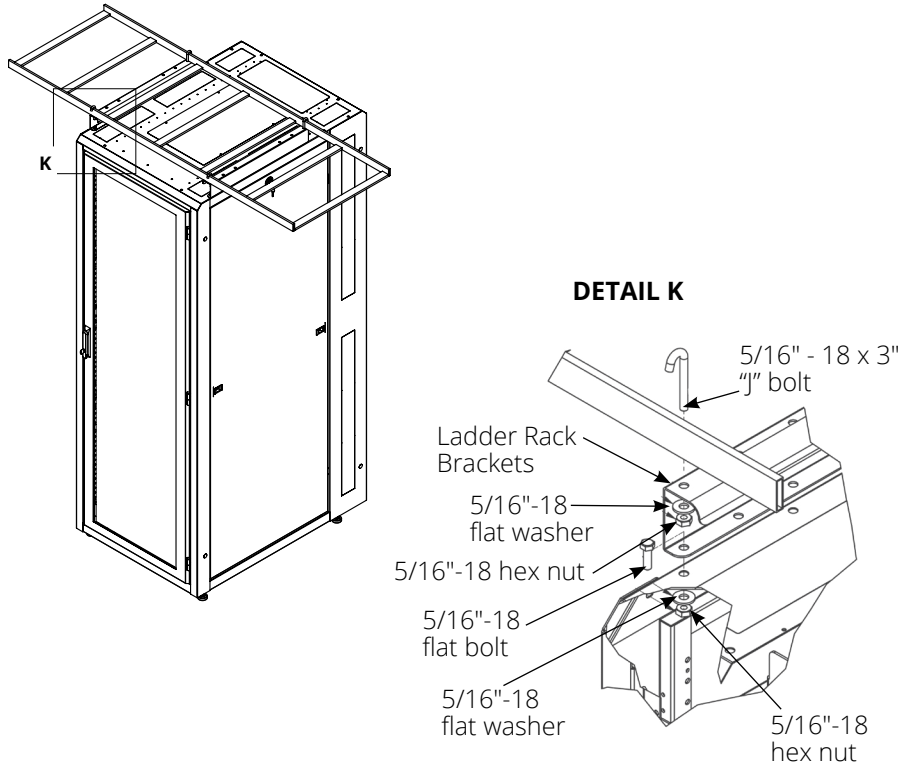
- The top cable trough (TCT) ships assembled but not installed on the cabinet
- Place the TCT where cable routing is required
- Install using #10-32 screws
- Optional TCT end caps are available when TCT is at the end of a row



Part No.	Description	Compatible ES
TOP CABLE TROUGH		
TCT32HD	12"W x 6"D x 32"L trough	32"W ES
TCT30HD	12"W x 6"D x 30"L trough	30"W ES
TCT24HD	12"W x 6"D x 24"L trough	24"W ES
TCT1206EC	End cap assembly	Use with TCTHD
TCT32	6.5"W x 4"D x 32"L trough	32"W ES
TCT30	6.5"W x 4"D x 30"L trough	30"W ES
TCT30EC	End cap assembly	Use with TCT30, TCT32
TCT24	6.5"W x 4"D x 24"L trough	24"W ES
TCT24EC	End cap assembly	Use with TCT24

LADDER RACK BRACKETS

- Each ladder rack bracket part number is a single ladder rack bracket with installation hardware; two brackets are required per cabinet
- Once two brackets are installed, ladder rack can be attached
- Height adjustable brackets can be used when different height cabinets require ladder rack across the row
- Fixed height brackets can be used when all cabinets in a row are the same height (detail shows fixed height bracket installed)



Part No.	Description	Compatible ES
----------	-------------	---------------

LADDER RACK BRACKET, FIXED HEIGHT

LRB-12	3" LRB supports 12"W ladder rack	All ES sizes
LRB-24	3" LRB supports 12-24"W ladder	All ES sizes

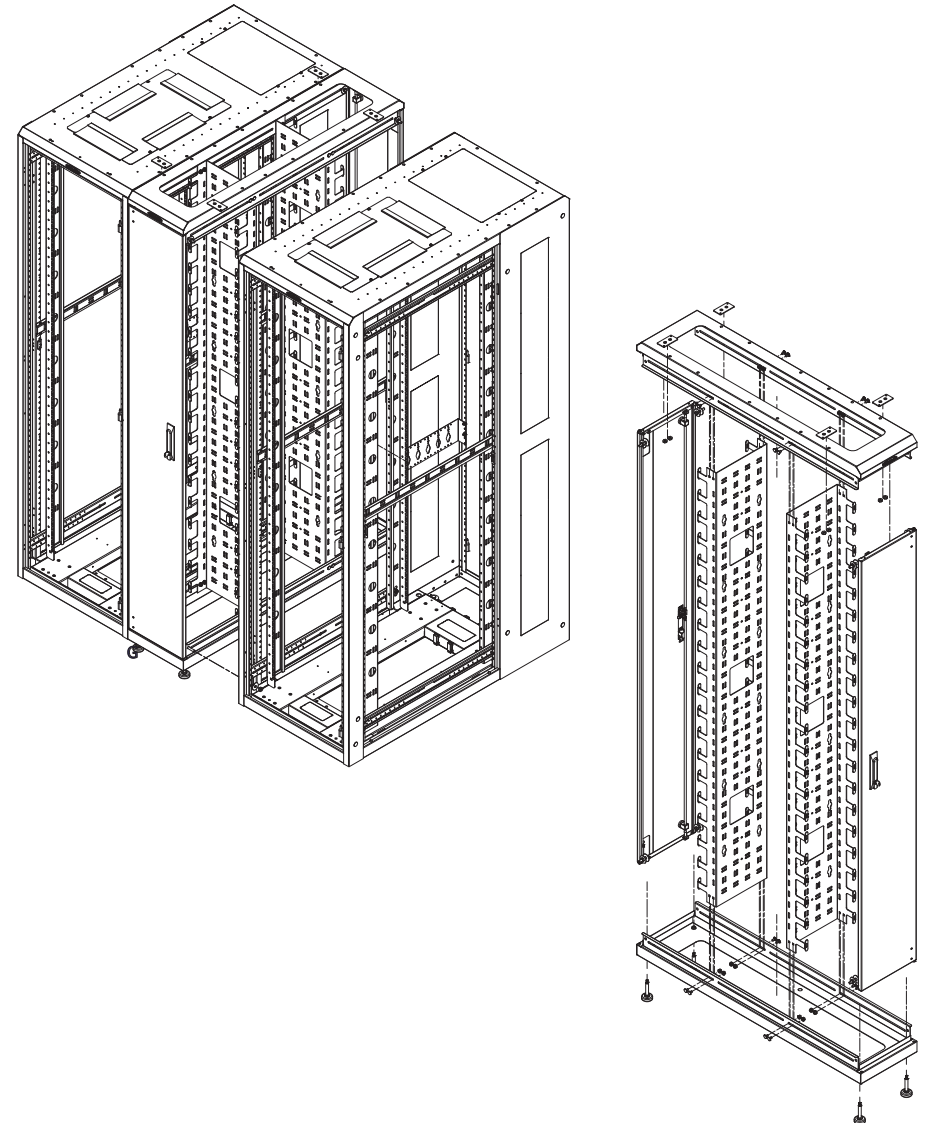
Part No.	Description	Compatible ES
----------	-------------	---------------

LADDER RACK BRACKET, ADJUSTABLE HEIGHT

LRB-12A1	6-11.5" LRB supports 12"W ladder	All ES sizes
LRB-12A2	14-24" LRB supports 12"W ladder	All ES sizes
LRB-24A1	6-11.5" LRB supports 12-24"W ladder	All ES sizes
LRB-24A2	14-24" LRB supports 12-24"W ladder	All ES sizes

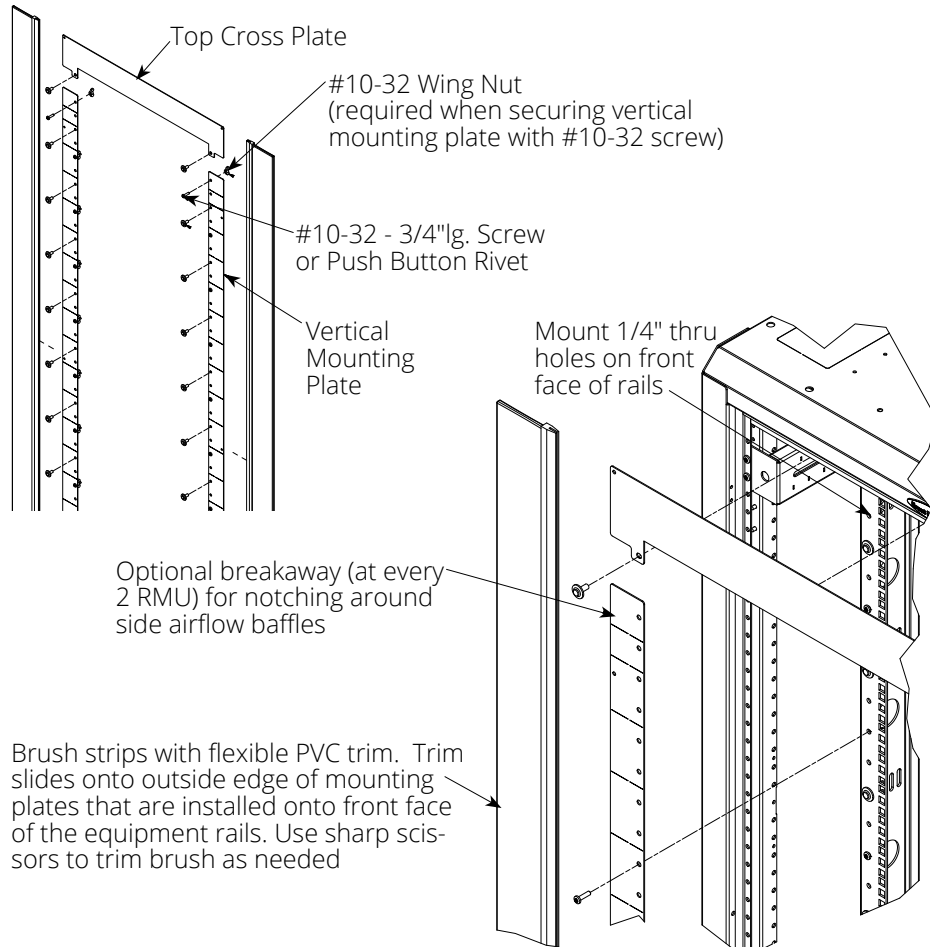
EXTERNAL CABLE MANAGER/SIDE CAR

- Side car can be mounted between two cabinets or mounted on a single cabinet at the end of a row
- Features include two vertical troughs, fingers, and attachment points for cable tie and cinch straps
- Available in 6 and 12" widths for 79, 84, and 91"H cabinets
- For complete external cable manager installation instructions, visit GreatCabinets.com/Drawings



BRUSH GROMMET RAIL KIT

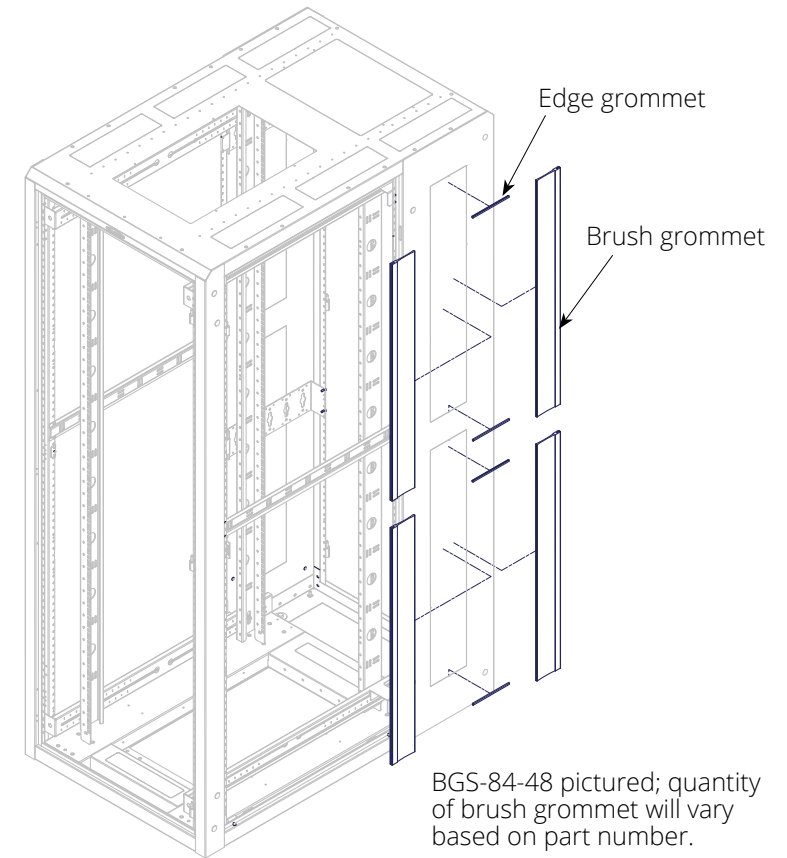
- Brush grommet rail kit (BGRK) is best installed before any equipment is installed in the cabinet



Part No.	Description	Compatible ES
BRUSH GROMMET RAIL KIT		
Rail-height metal strip and brush grommet installs along FMP; extends from the rail to side panel to prevent air recirculation while allowing cable pass-thru		
BGRK-91-30	Brush grommet rail kit	91"H x 30"W ES sizes
BGRK-91-24	Brush grommet rail kit	91"H x 24"W ES sizes
BGRK-84-32	Brush grommet rail kit	84"H x 32"W ES sizes
BGRK-84-30	Brush grommet rail kit	84"H x 30"W ES sizes
BGRK-84-24	Brush grommet rail kit	84"H x 24"W ES sizes
BGRK-79-30	Brush grommet rail kit	79"H x 30"W ES sizes
BGRK-79-24	Brush grommet rail kit	79"H x 24"W ES sizes

BRUSH GROMMET FOR CABLE PASS THRU

- Brush grommet covers cabinet knockouts while allowing cable pass-thru and prevents air recirculation
- Line the knockout with supplied edge grommet
- Insert brush grommet



Part No.	Description	Compatible ES
BRUSH GROMMET FOR CABLE PASS THRU		
BGT	Six top cabinet knockouts	30/32"W ES sizes
TP48ESBB	Top chimney knockout	48"D ES sizes
TP42ESBB	Top chimney knockout	42"D ES sizes
BGS-91-48	Two side cabinet knockouts	91"H x 48"D ES sizes
BGS-91	Two side cabinet knockouts	91"H x 42"D ES sizes
BGS-84-48	Two side cabinet knockouts	84"H x 48"D ES sizes
BGS-84	Two side cabinet knockouts	84"H x 42"D ES sizes
BGS-79-48	Two side cabinet knockouts	79"H x 48"D ES sizes
BGS-79	Two side cabinet knockouts	79"H x 42"D ES sizes

AIR MANAGER & FAN TRAY

IMPORTANT

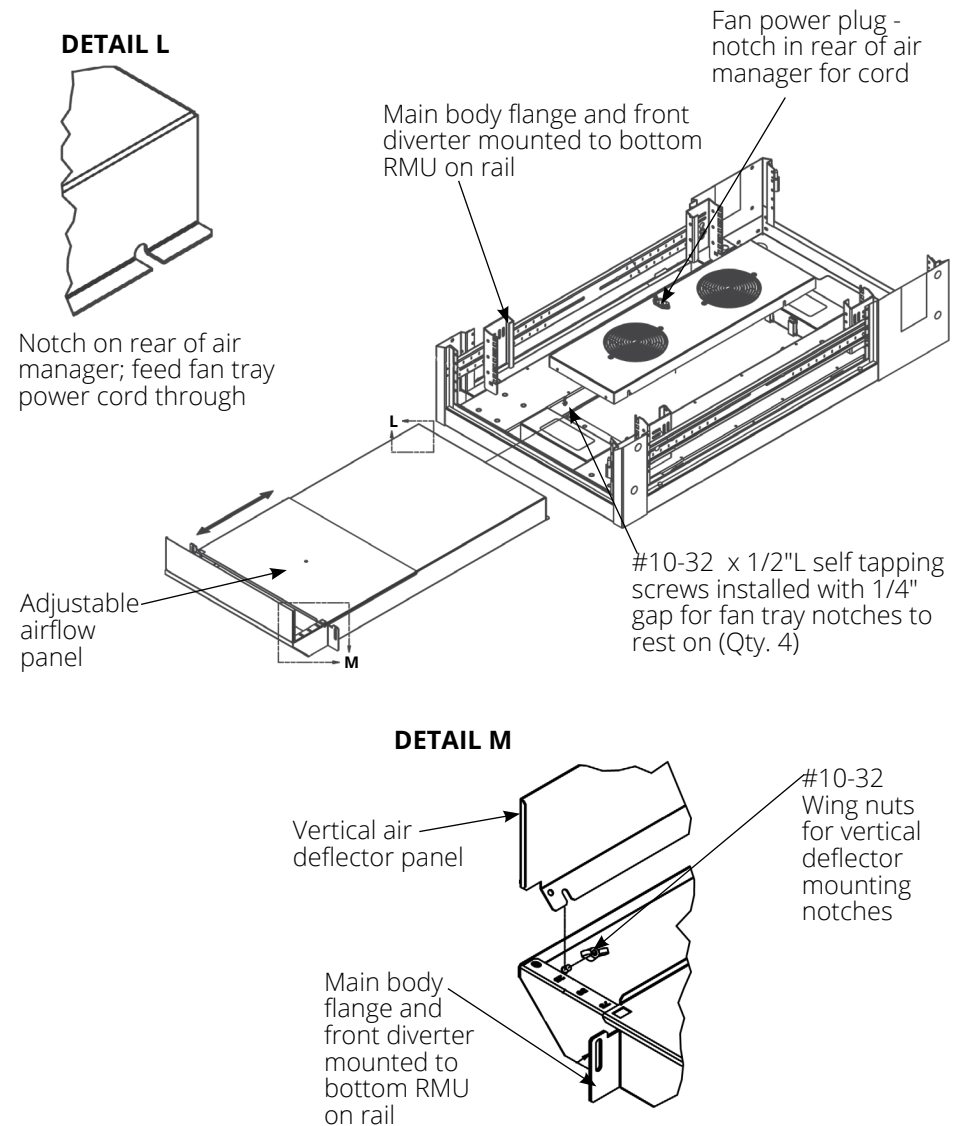
- If using the optional fan tray with the air manager, install fan tray first
- Standard air manager will use the bottom one RMU of the cabinet for installation
- High flow air manager will use the bottom two RMU of the cabinet for installation

FAN TRAY

- Remove cinch straps (if installed) from rear of cabinet
- Install four (4) #10-32 x 1/2" screws in the middle center of the ES cabinet; do not insert fully
- Rest the fan tray on the #10-32 screws
- Plug in the power cord and ensure that it goes through the small notch of the Air Manager

AIR MANAGER

- Place the air manager in the bottom of the ES cabinet and secure to the mounting rails
- Use the supplied wing nuts to attached the vertical air deflector to the air manager
- After installation, the amount of under floor airflow can be adjusted by sliding the adjustable panel notch of the Air Manager



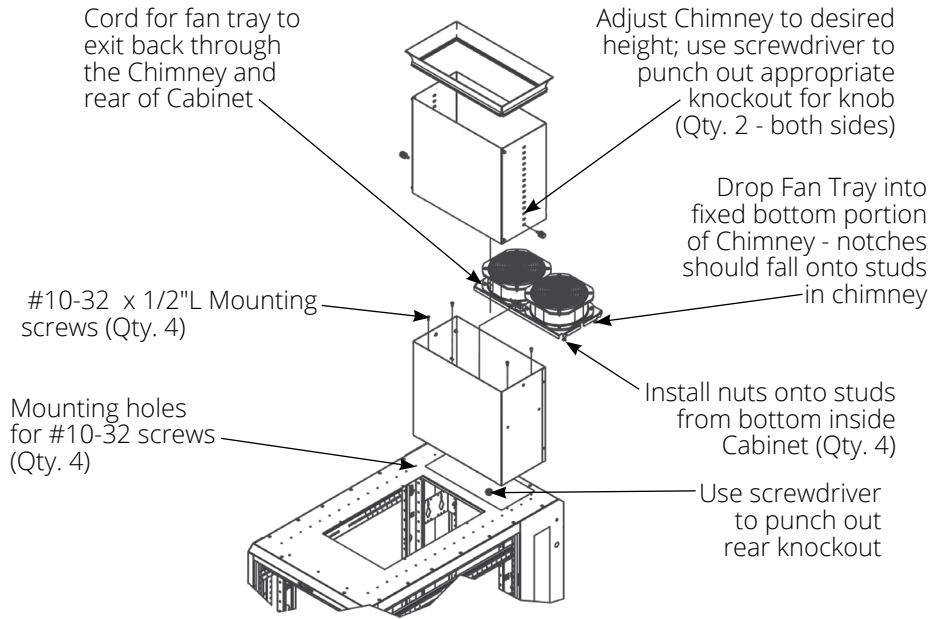
Part No.	Description	Compatible ES
AIR MANAGER		
AM-HFES	High flow air manager, 2 RMU	All ES sizes
AM-HFFTES30	High flow fan tray, 940 CFM	30/32"W ES sizes
AM-HFFTES24	High flow fan tray, 940 CFM	24"W ES sizes
AM-ES	Air manager, 1 RMU	All ES sizes
AM-FTES30	Fan tray, 600 CFM	30/32"W ES sizes
AM-FTES24	Fan tray, 600 CFM	24"W ES sizes

EXHAUST CHIMNEY

- BEFORE INSTALL, remove rear top cabinet knockout
- Place assembled chimney on top of cabinet
- Attach chimney from inside of the cabinet; use four #10-32 screws

FAN TRAY

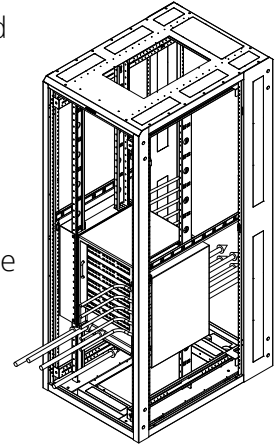
- Place fan onto fixed portion of the chimney, ensuring cord is hanging through the chimney and into the cabinet
- Fan will rest on the four studs on the inside wall of the chimney
- Secure from inside of the cabinet; use four #10-32 wing nuts



Part No.	Description	Compatible ES
EXHAUST CHIMNEY		
GL-ECHF-48-1832	High flow chimney, 18-32"	48"D ES sizes
GL-ECHF-48-3246	High flow chimney, 32-46"	48"D ES sizes
GL-ECHFFT48	High flow fan tray, 2260 CFM	48"D ES sizes
GL-EC-48-1832	Chimney, 18-32"	48"D ES sizes
GL-EC-48-3246	Chimney, 32-46"	48"D ES sizes
GL-ECFT48	Fan tray, 1200 CFM	48"D ES sizes
GL-EC-42-1832	Chimney, 18-32"	42"D ES sizes
GL-EC-42-3246	Chimney, 32-46"	42"D ES sizes
GL-ECFT42	Fan tray, 1200 CFM	42"D ES sizes

BAFFLE KITS

- Baffle Kits create proper airflow for switches and side-to-side airflow equipment, as suggested by manufacturers such as CISCO
- Cool air is channeled into the equipment along the right side
- Exhaust air is directed out along the left side of the equipment
- Kits are tool-less and easily attach to rails outside of the EIA mounting profile
- For complete baffle kit installation instructions, visit GreatCabinets.com/Drawings
- The chart below shows which baffle kits accommodate various CISCO switches



CISCO® Switches	GREAT LAKES CABINET AND BAFFLE KIT	CISCO® RECOMMENDED CLEARANCE					
		CISCO® EQUIPMENT DIMENSIONS	CISCO RECOMMENDED CLEARANCE		RACK INSTALL (NO SIDE PANELS)		
7000 9500 6500	ES Cabinets	ES Baffle Kit	RMU	D"	" Distance from chassis to inside of cabinet	" Distance between racks	" Distance from chassis to wall
7018¹	N/A	N/A	25	33.1	11.0	6.0	11.0
7010²	30/32"W x 48"D	N/A	21	33.1	N/A	N/A	N/A
7009	N/A	N/A	14	24.1	11.0	6.0	11.0
7004³	N/A	N/A	7	24.0	11.0	6.0	11.0
9513	30/32"W x 42/48"D	ESSAB14D	14	28.0	6.0	12.0	6.0
9509⁴	30/32"W x 42/48"D	ESSAB14	14	18.4	2.5	6.0	2.5
6513(-E)	30/32"W x 42/48"D	ESSAB19	19	18.1	6.0	12.0	6.0
6509(-E)	30/32"W x 42/48"D	ESSAB14	14	18.1	6.0	12.0	6.0
6506(-E)	30/32"W x 42/48"D	ESSAB11	11	18.1	6.0	12.0	6.0

¹ Four post mounting is required with a rail placement of 24".

² The 7010 has front to rear airflow; no left or right side clearance is required; when installed in a cabinet, 5.00" rear clearance is required

³ The 7004 requires 11.00" clearance on the right side only; exhaust exits from the rear, no rear clearance required.

⁴ An additional 0.75" of height is required for rail mount brackets; brackets can be removed after chassis is installed. NOTE: It is important to read and understand CISCO installation guides that are associated with each switch.

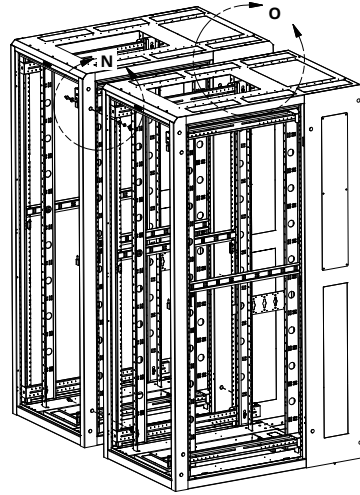
Although equipment may physically fit into a Great Lakes cabinet, with or without brackets, customers must also review and comply with the equipment manufacturer's installation and other requirements. For example, the E and ES cabinets, when in an open frame configuration, can physically support the installation of a Cisco 7018 Series switch; however, the E and ES cabinet frame designs do not provide the airflow space clearance required by Cisco. For more information, please contact your Great Lakes representative or call 1.866.879.4522

When any equipment or accessory is installed in a Great Lakes product, the installation procedures, recommendations and product warranty requirements of the equipment manufacturer must be followed. Great Lakes will not be responsible for any losses or claims arising from a customer's installation of electrical, electronic or other third party products in any Great Lakes cabinet, unless caused solely by a written configuration prepared by Great Lakes for that customer or by a configuration provided by Great Lakes' website, any configuration relies on complete and accurate information from the customer.

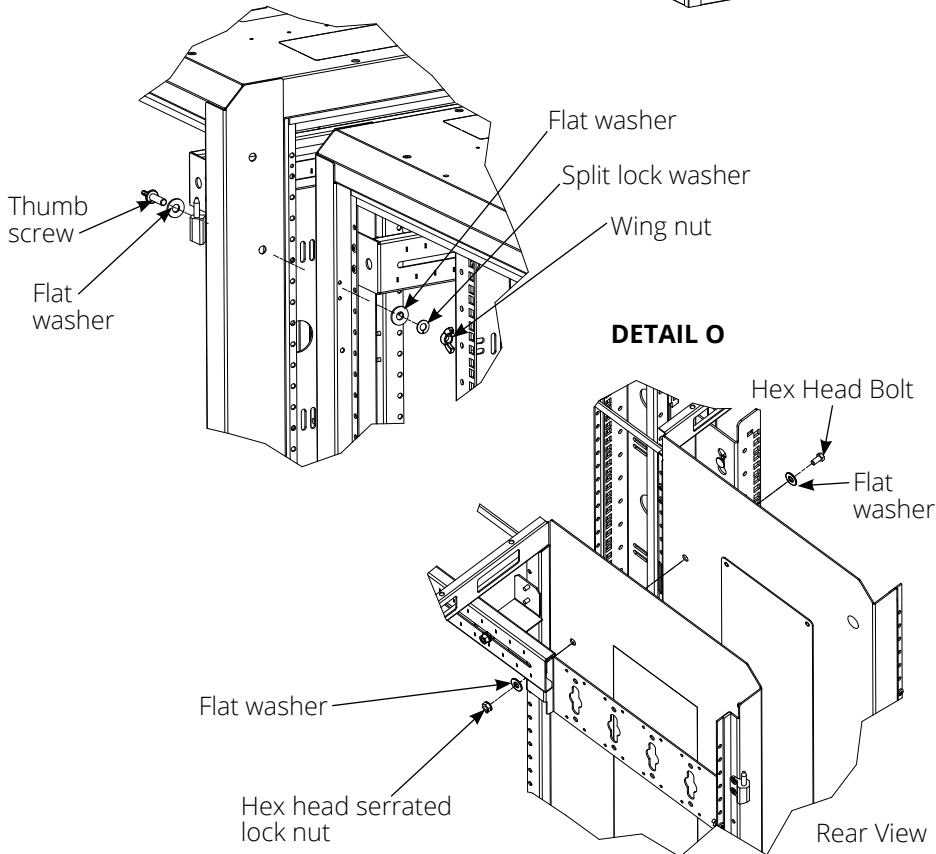
NETWORKING/GANGING

BEFORE INSTALL, remove plastic hole plug from cabinet frame

- Align the networking thru holes of two cabinets
- Install hardware as shown

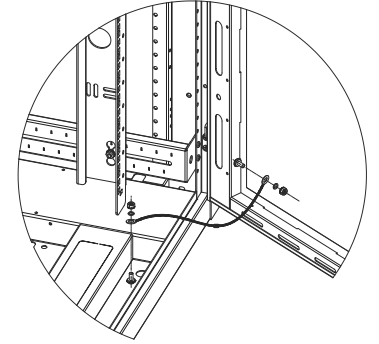


DETAIL N



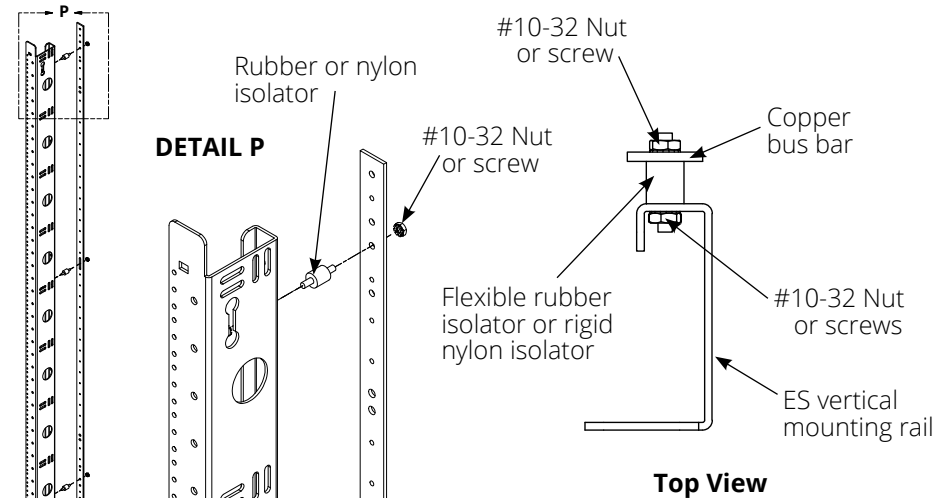
GROUNDING

- Protective grounding studs are provided along with quick disconnect jumper wires that electrically bond the cabinet doors and sides to the cabinet frame
- Before removing doors and side panels, pull apart the grounding wires
- **NOTE:** grounding the cabinet does not mean the EIA equipment in the cabinet is grounded



COPPER BUS BARS

- To ground EIA equipment, it must be connected to a copper bus bar
- The bus bar can be installed using rubber isolators/#10-32 nuts or nylon isolators/#10-32 screws; both hardware options are included with the bus bar



Part No.	Description	Compatible Cabinet
COPPER BUS BARS		
CBB-19	19" mounting	All cabinets
CBB-48	43.5"L bar	48"H ES
CBB-72	66"L bar	All 79/84"H sizes
CBB-78	76"L bar	All 91"H sizes

PROTECTIVE GROUNDING

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



WARNING: To avoid injury to persons or loss of life, ground each cabinet 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 cabinet 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 cabinet 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 cabinet 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. If these parts need to be bonded to the protective earthing terminal, do so in accordance with *Article 250 of the National Electric Code*.



GREAT LAKES
DATA RACKS & CABINETS

Thank you
for your
business!



ETSI Associate Member

FORM: #MS - 5.02-29, REV 7