



ES Series Enclosures

Installation Instructions

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



Instructions for the following Great Lakes Enclosures:
GL480ES-2442, GL790ES-2442, GL790ES-3042, GL790ES-2448,
GL790ES-3048, GL840ES-2442, GL840ES-3042, GL840ES-2448, GL840ES-3048,
GL910ES-2442, GL910ES-2448, GL910ES-3042, GL910ES-3048

WeRackYourWorld.com
1-866-TRY-GLCC (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 ES Enclosures (UL60950 -1/UL2416 ES Series Equipment Cabinet/Rack). In addition, only trained service personnel should install equipment in enclosures.

SAFETY SYMBOLS USED IN THIS MANUAL

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



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

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

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

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 enclosure 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 Enclosure 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

The ES Enclosures 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 werackyourworld.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 enclosures:

Part No.	H	W	D	RMU
GL480ES-2442	48"	24"	42"	24
GL790ES-2442	79"	24"	42"	42
GL790ES-3042	79"	30"	42"	42
GL790ES-2448	79"	24"	48"	42
GL790ES-3048	79"	30"	48"	42
GL840ES-2442	84"	24"	42"	44
GL840ES-3042	84"	30"	42"	44
GL840ES-2448	84"	24"	48"	44
GL840ES-3048	84"	30"	48"	44
GL910ES-2442	91"	24"	42"	48
GL910ES-3042	91"	30"	42"	48
GL910ES-2448	91"	24"	48"	48
GL910ES-3048	91"	30"	48"	48

ES weight capacity: 2000 lbs.

INSTALLATION

Receiving, Unpacking, and Removing the ES Enclosure from the Pallet

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



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



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

Loading Equipment



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

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

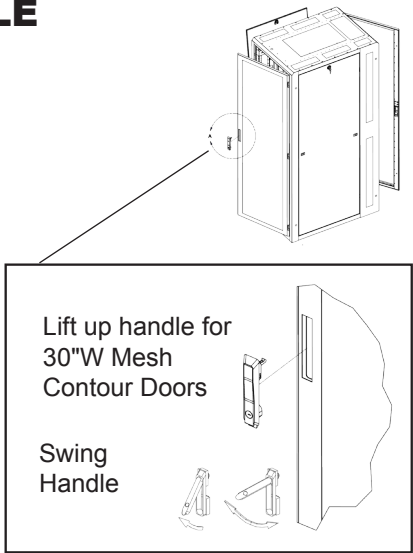
Rated or maximum load capacity for the ES Enclosure is 2000 pounds on the floor or on leveling glides.

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

OPERATING DOOR HANDLE

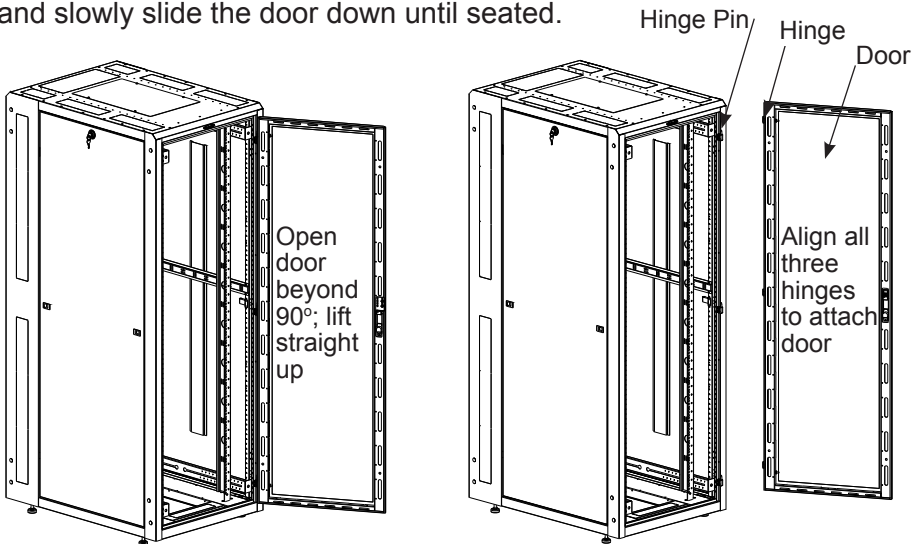
The door swing handles have been installed at the manufacturer. No additional assembly is required. To operate the swing handle, lift up at the bottom of the handle then swing the handle to the right to open. The handle must be kept in this position to close the door. Return the handle to the initial 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.

* All doors use swing handles, except mesh contour doors on 30"W ES Enclosures use lift-up, locking handles. Simply lift up to release. If you are reversing the doors, make sure to switch the latch bracket to the other side.



DOOR REMOVAL AND ATTACHMENT

Before removing the door, pull apart the quick disconnect grounding wires. Open the door beyond 90 degrees, grasp the door with both hands and carefully lift upward. When the door is free of all three hinge pins, pull the door away from the enclosure. To attach the door, align all three hinges of the door to their respective hinge pins on the enclosure and slowly slide the door down until seated.



FIELD REVERSIBLE FRONT & REAR DOORS

The front and rear doors are installed right hand hinge as standard from the manufacturer. Removing the hinges allows you to reverse the door by flipping them over and reinstalling the hinges using the universal mounting holes. Begin both screws, then tighten while maintaining perfect vertical alignment. See detail below. All enclosure frames and doors have provisions to be hinged right or left hand. If the door is reversed, the handle must be taken out, rotated 180°, and installed in the door again. See Operating Handle on page 5.

HINGE MOUNTING

Reversible
Hinge (female)

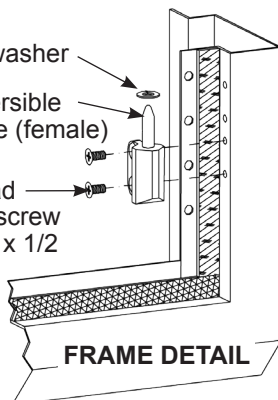
Flat head
phillips screw
10-32 x 1/2



Pivot washer

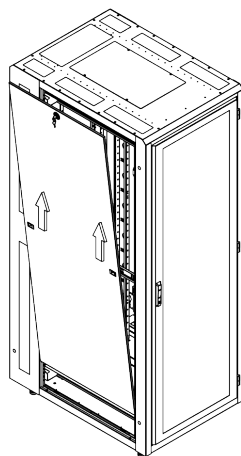
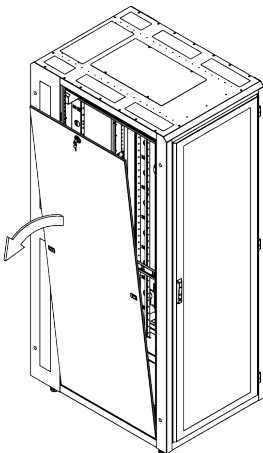
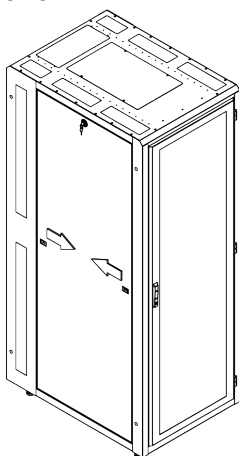
Reversible
Hinge (female)

Flat head
phillips screw
10-32 x 1/2



SIDE PANEL REMOVAL

Before removing the side panels, pull apart the quick disconnect grounding wires. The side panels are secured to the enclosure frame with two quick release latches and a keyed lock. Be sure to unlock the side panel. To remove the side panel, squeeze the quick release latches towards each other. Then 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. Make sure the slots on the side panel engage with the two tabs at the bottom of the frame.

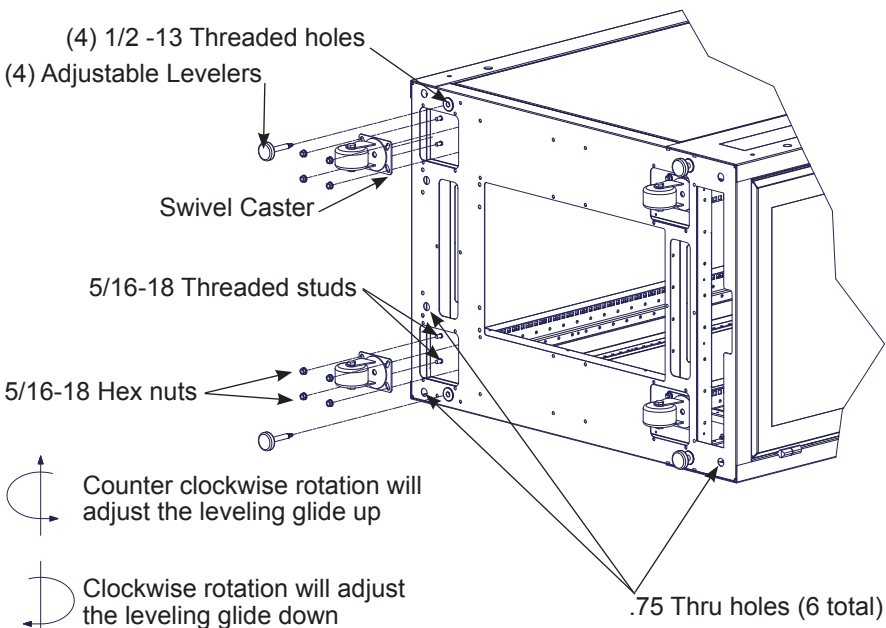


CASTER AND LEVELER MOUNTING



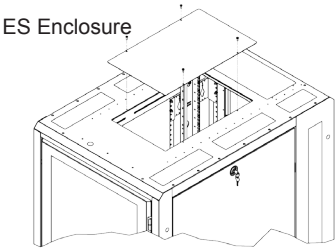
CAUTION

- To install casters or levelers the enclosure must be tipped onto its side. The enclosure can be very heavy, several people will be required in this process. Please practice safe lifting techniques.
 - DO NOT lay the enclosure on its front or back, this may damage the door hinges.
 - Removing doors and sides will help reduce the weight of the enclosure.
 - Before tipping, remove the side panels to prevent damage to the locks and latches.
1. To install casters, the enclosure must first be tipped over onto/laid on its side.
 2. Pass a plate caster over four threaded studs located in one of the recessed areas in the bottom of the enclosure.
 3. Thread (1) 5/16-18 hex nut onto each stud and tighten with a 1/2" socket or nut driver.
 4. Repeat steps 2 and 3 for the three remaining casters.
 5. Install leveling glides (7209-N) at this time if they were ordered with the enclosure.

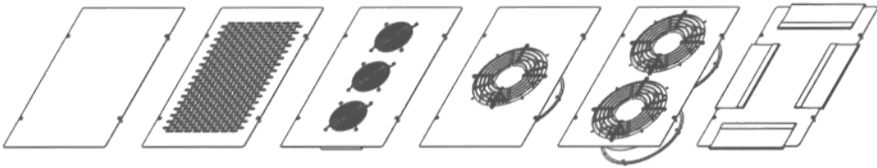


TOP PANEL MOUNTING

The top panel of the enclosure is installed at the manufacturer. Removing the top panel can be done by removing the four #10-32 x 1/2" lg screws. Then simply lift the top panel out or off.



There are 6 top panel options for ES Enclosures:

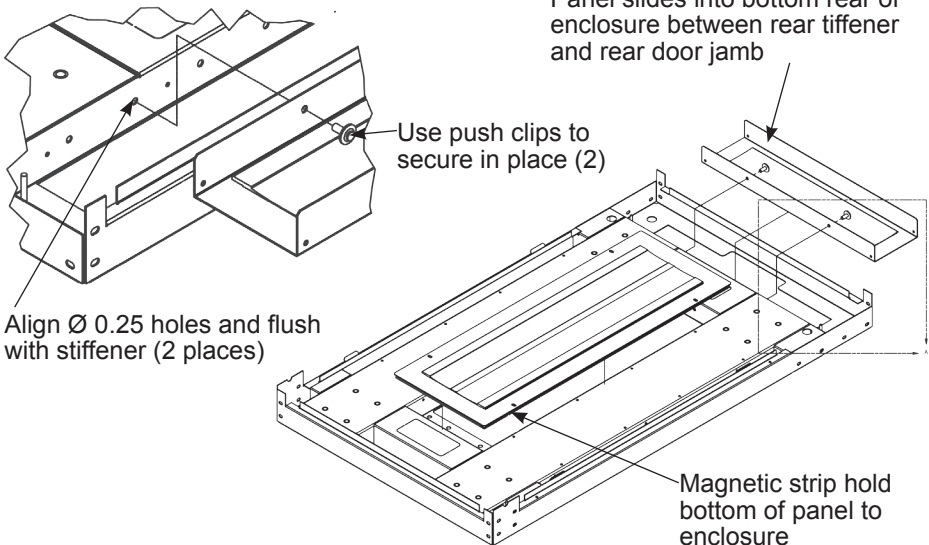


TPES-S	TPES-P	TPES-F	TPES-F10	TPES-2F10	TPES-B
Solid	Perforated	Three, 75 CFM Fans	One, 10" 550 CFM Fan	Two, 10" 550 CFM Fans	Brush Grommet

BOTTOM PANEL

Bottom Panels (brush grommet and solid) for the ES series comes in two sections. One for the middle opening and one for the rear. Once you have unpacked the large "flat" rectangular middle section, place it in the bottom of the enclosure with the magnetic strip down. To install the rear bottom panel, first remove the cinch straps from the enclosure. Find the push-in fasteners (2) in the hardware bag, line up the holes in the bracket with the rear opening of the enclosures and attach.

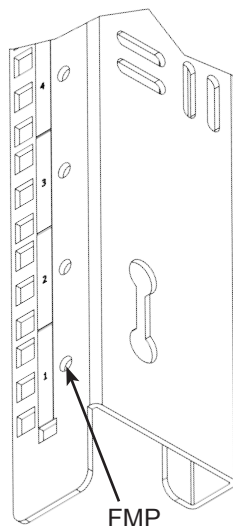
DETAIL 2 / REVERSE SIDE



MOUNTING RAILS

The vertical mounting rails (each enclosure has two pairs, 12 ga. steel, powder coated rails), come installed with all standard frames at 19" EIA 310-E. The 30"W ES enclosure can be configured to 23" EIA mounting with an optional replacement bracket set. Universal cage nut rails (M6) are standard. Tapped #10-32 rails are available. (Must be specified at time of order.)

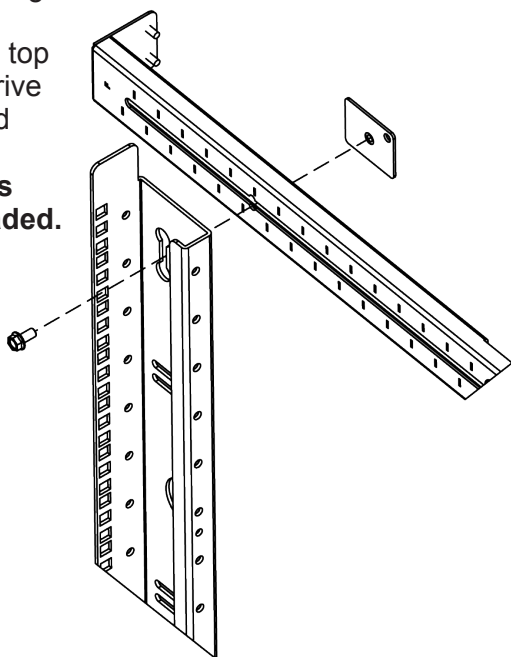
Rack Mount Units (RMU) are marked on rails for easy equipment mounting. Flexible Mounting Profile (FMP), round cable pass through holes, and vertical and horizontal cable tie down slots can be found on side of rails.



RAIL ADJUSTMENT

ES Series Rails are attached using a sliding nut plate and a 1/4 -20 hex head bolt. By loosening the top and bottom bolts using a 3/8" drive socket, the rails can be adjusted infinitely front and back.

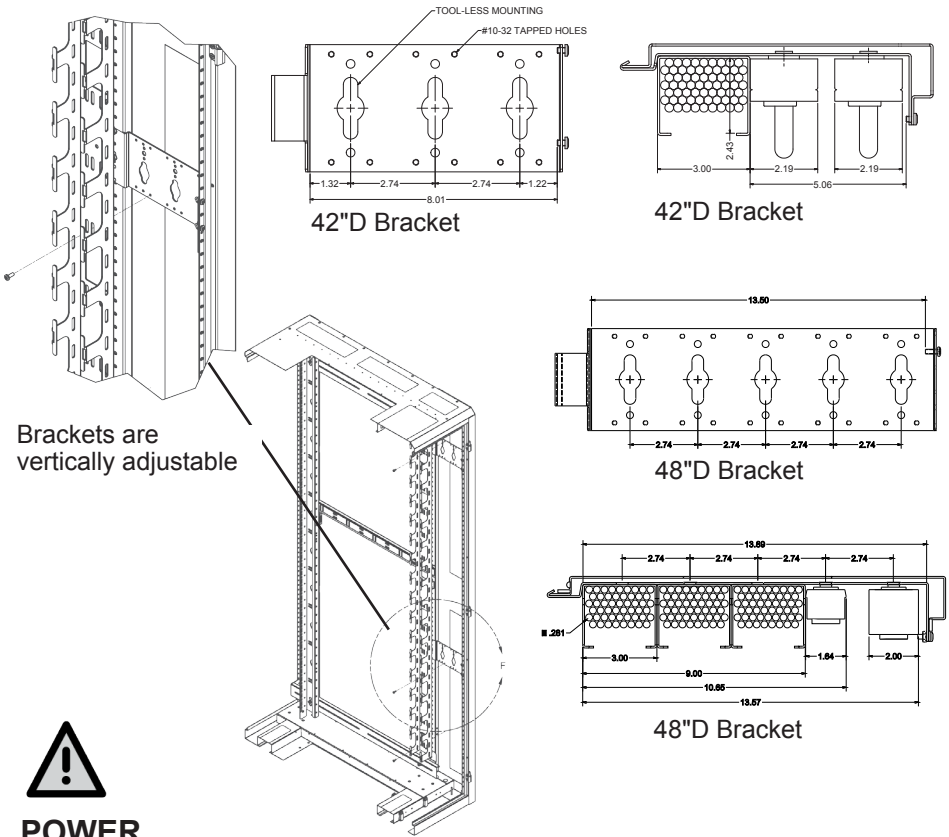
Do NOT attempt to adjust rails once equipment has been loaded.



OPTIONAL ACCESSORIES

VERTICAL CABLE TROUGH & PDU MOUNTING

The ES enclosures come with a universal power strip bracket set in both rear corners. These bracket sets will accept a wide range of Power Distribution Units (PDUs) and will also accept vertical cable troughs. The VCT-79, VCT-84 and VCT-91(3"W x 2.572"D) are ES enclosure vertical cable troughs. The figures below show the bracket and the usable mounting space in 42"D and 48"D enclosures. The size of the PDU will determine how many of them you will be able to place on the brackets. Keep in mind the VCT-** are 3"W. The location of the button mounting will also need to be taken into consideration when placing your PDUs.



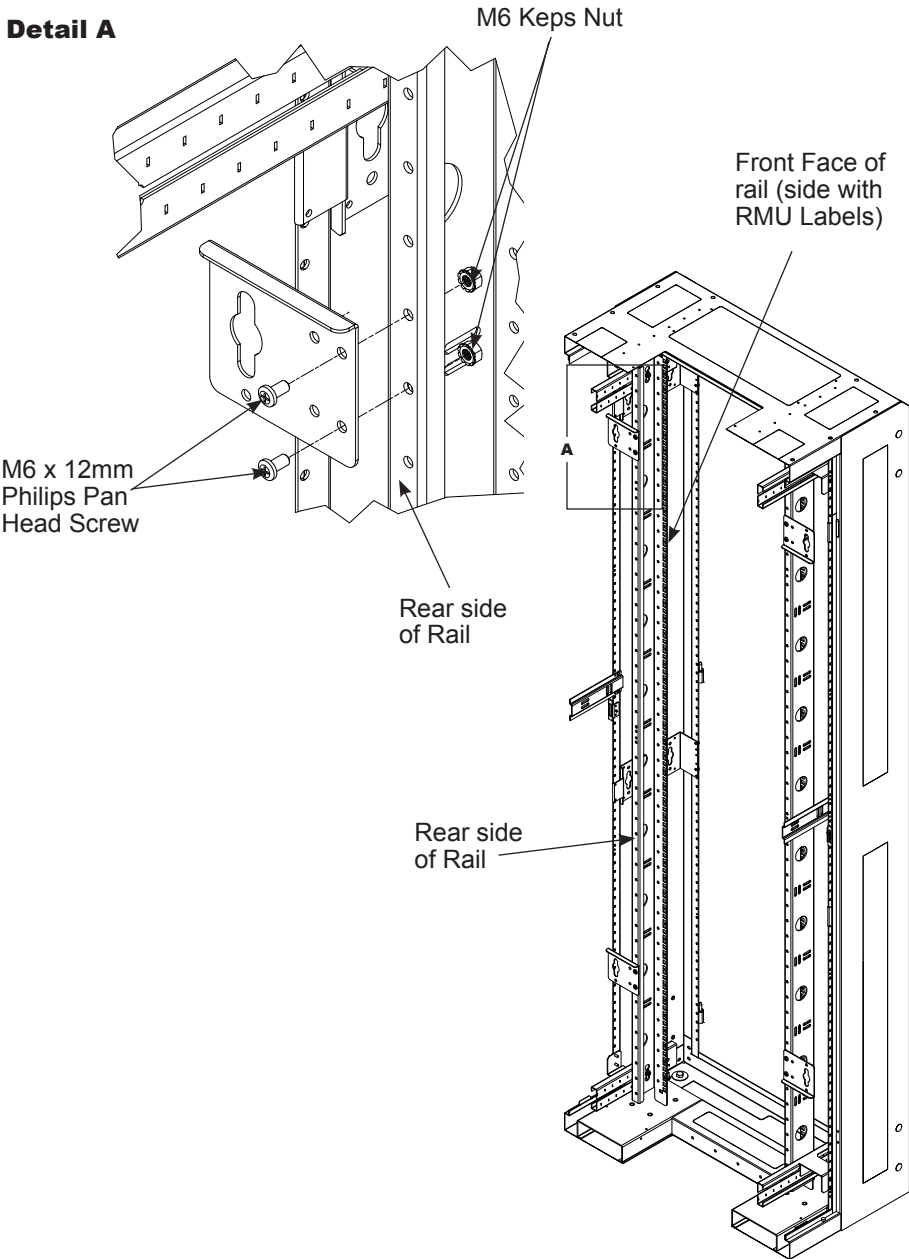
POWER

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.

PSB30ESR FOR 30"W ENCLOSURES

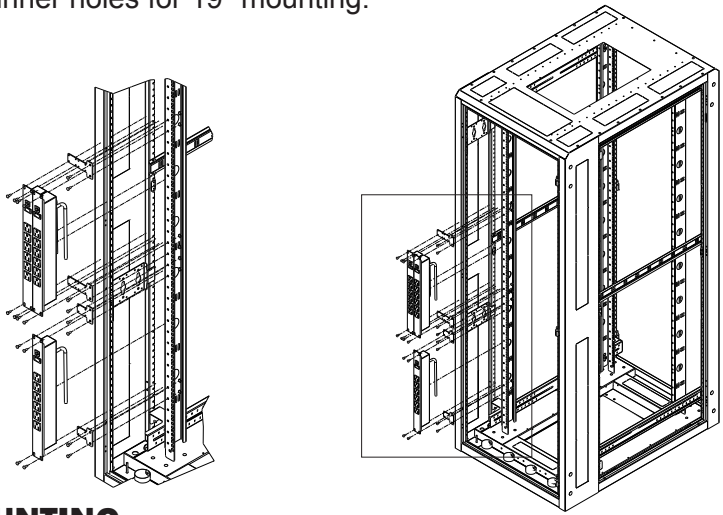
PDU Brackets for 30"W Enclosures allow the button mount of a single PDU along the mounting rail. See detail A for mounting the bracket to the rear side of the mounting rail. The height of the PDU to be installed will determine where to position the brackets along the rail.

Detail A



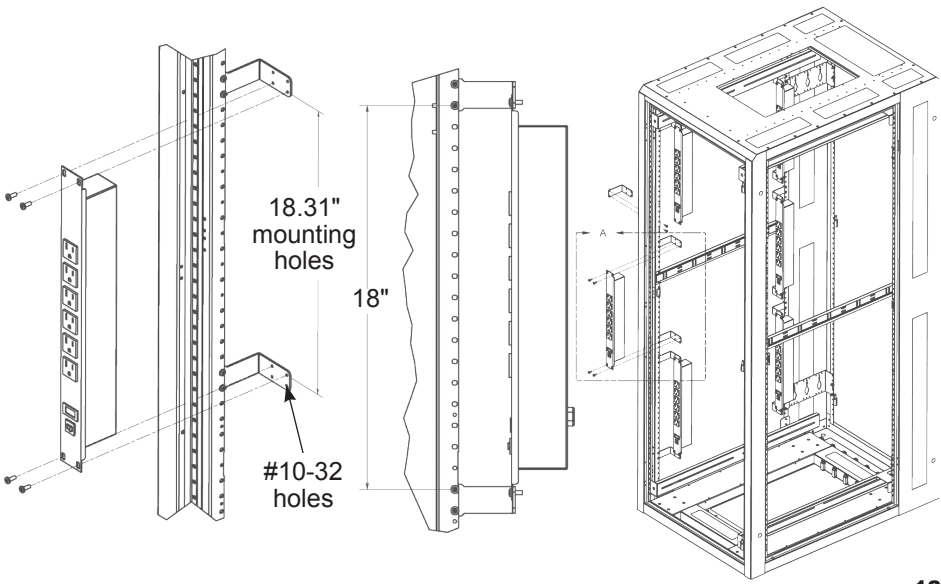
ZERO RMU MOUNTING, ZR1 & ZR2

Both ZR bracket kits fit in the 30"W ES enclosures. These 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. It is important to ensure you have 18.31" between the inner holes for 19" mounting.



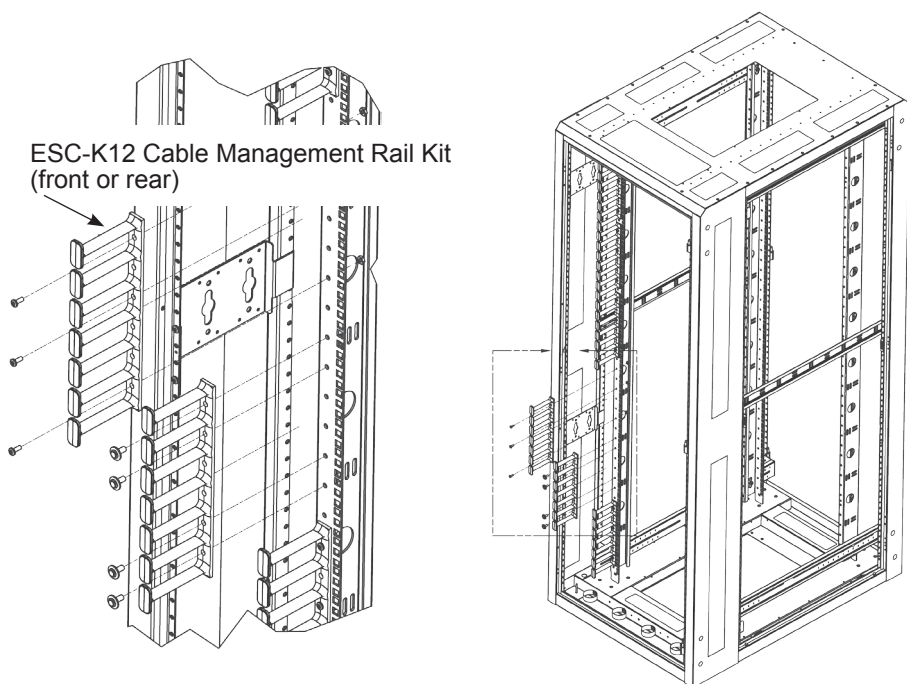
PDU1 MOUNTING

PDU1 Mounting Brackets fit in 30"W ES enclosures. These allow for "0" RMU mounting of 19" rack mount power strip units or other 1 RMU equipment (such as patch panels). You can mount up to twelve (12), 1 RMU pieces of equipment this way. Install the bracket into the side panel flange. Make sure you have 18.31" between the inner holes.

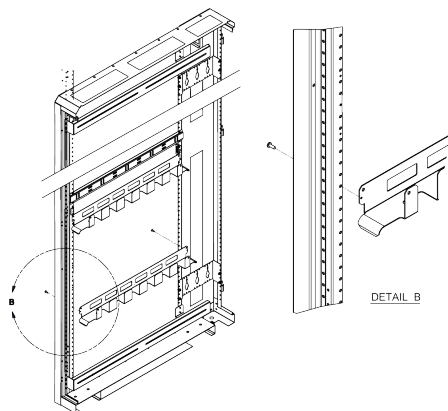


PLASTIC CABLE MANAGEMENT FINGERS

The CM-47 is a single section of 7 RMU "fingers" that mount to the Flexible Mounting Profile (FMP) of enclosure rails. The ESC-K12 is a kit of 12 sections and the ENC-K24 is a kit of 24 sections. Fingers can be installed on the front or rear rails, but front rails must be recessed 4.5" for proper installation. It is recommended that each CM-47 be installed using 3 points of attachments.



HCM-D36ES MOUNTING - 30"W ES SERIES

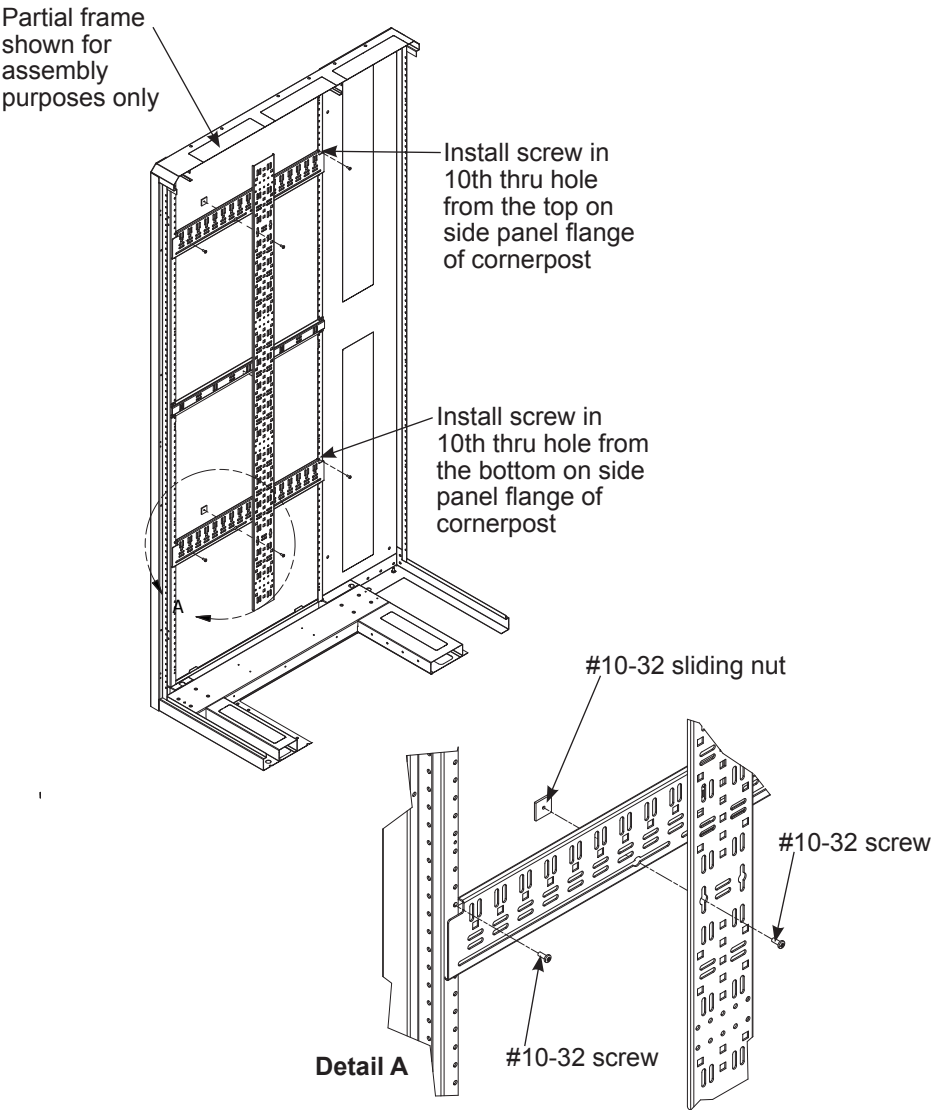


HCM-D36ES are horizontal cable troughs that can be used in 30"W ES enclosures. If these parts are ordered with the enclosure, they are pre-installed. If you need to move the trough, please do so before ganging enclosures. These troughs are installed between the side panel and the 19" rack mount rails. Side panel will have to be removed before installation. (See detail.)

Cable Management Bar Kits

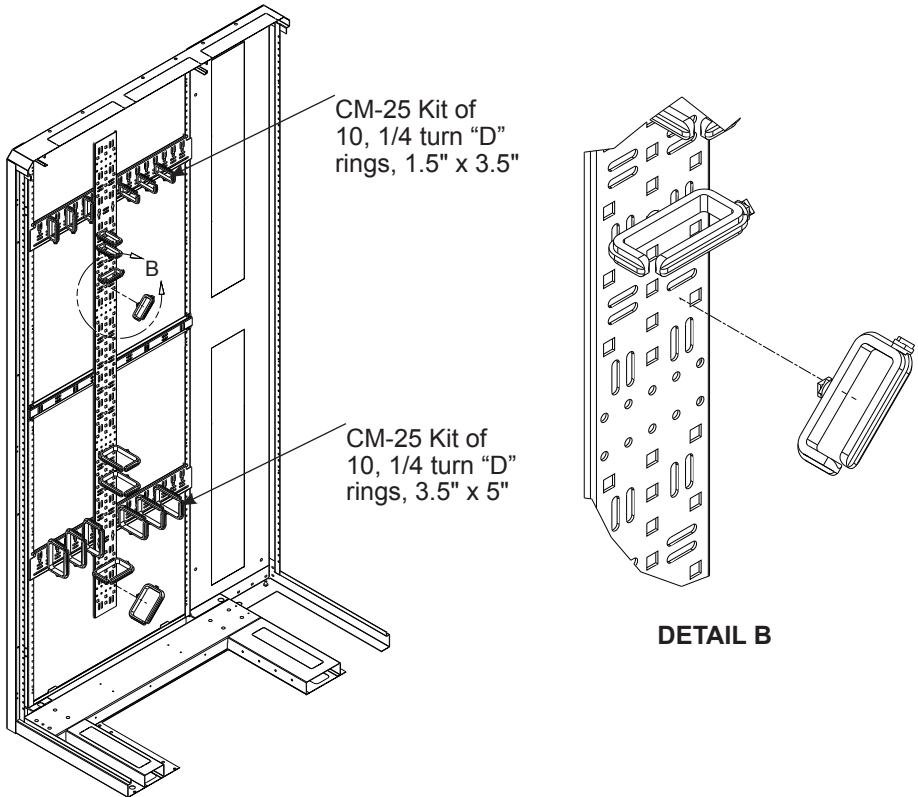
Vertical cable management bar kits include two horizontal cable bars and one vertical cable bar. When ordered with an enclosure, these kits will come pre-installed. Cable bars run independently from 19" mounting rails and are infinitely adjustable front to back.

Single vertical and horizontal cable bars are also available. Additional horizontal bars can be installed alone (without a vertical bar), or in conjunction with a kit. Additional vertical bars can only mount when at least two horizontal bars are already installed. Refer to Detail A for installation of horizontal and vertical bars.



Cable Management Bar Kits (continued)

All cable management bars are designed with a square hole pattern that is able to accept optional ¼ turn “D” rings. There are two sizes of “D” rings, both available in kits of 10. Actual location of “D” rings may vary based on customer desired location for installation. Refer to Detail B for installation of “D” rings.



Available Cable Management Bar Kits and Ring Kits include:

VCB-4836	Cable Management Bar Kit for 48"H ES enclosure
VCB-7836	Cable Management Bar Kit for 79"H ES enclosure
VCB-8436	Cable Management Bar Kit for 84"H ES enclosure
VCB-9136	Cable Management Bar Kit for 91"H ES enclosure

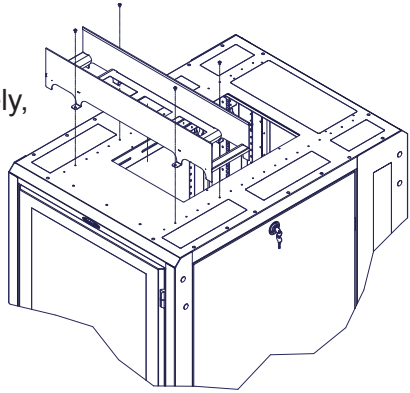
VCB-78	Vertical Cable Bar for 79"H ES enclosure
VCB-84	Single Vertical Cable Bar for 84"H ES enclosure*
VCB-91	Single Vertical Cable Bar for 91"H ES enclosure*
HCB-36	Single Horizontal Cable bar for ES enclosures

CM-25	Kit of 10 x ¼ turn “D” rings, 1.5" x 3.5"
CM-26	Kit of 10 x ¼ turn “D” rings, 3.5" x 5"

*Note: Single vertical bars can only be installed when at least two horizontal bars are installed

OVERHEAD CABLE TROUGH

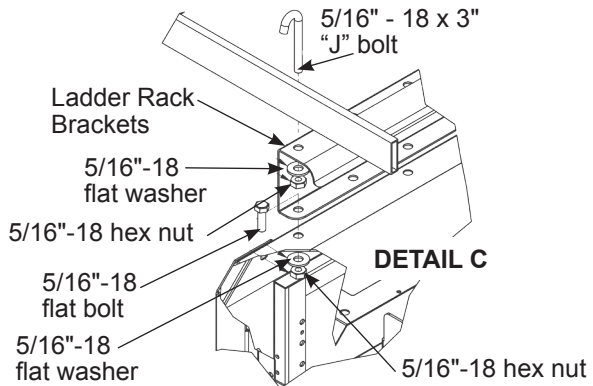
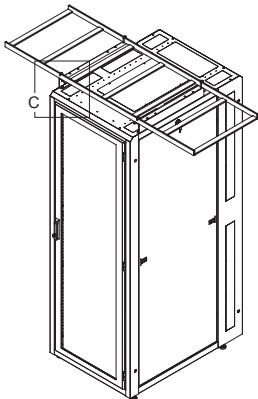
When ordered with the enclosure, the overhead cable trough ships assembled, but not installed. When ordered separately, the trough will still ship assembled. The top of the ES enclosure has a variety of mounting holes. Place the trough where you require cable routing. For 24"W enclosures, use the TCT24; for 30"W enclosures, use the TCT30.



LADDER RACK BRACKET

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

- LRB-12A1 One Height Adjustable Bracket (6.5"-11.5")
 to support 12"W ladder rack;
- LRB-12A2 One Height Adjustable Bracket (14"-24")
 to support 12"W ladder rack
- LRB-24A1 One Height Adjustable Bracket (6.5"-11.5")
 to support 12-24"W ladder rack
- LRB-24A2 One Height Adjustable Bracket (14"-24")
 to support 12-24"W ladder rack
- LRB-12 One Fixed Height Bracket (3")
 to support 12"W ladder rack
- LRB-24 One Fixed Height Bracket (3")
 to support 12-24"W ladder rack

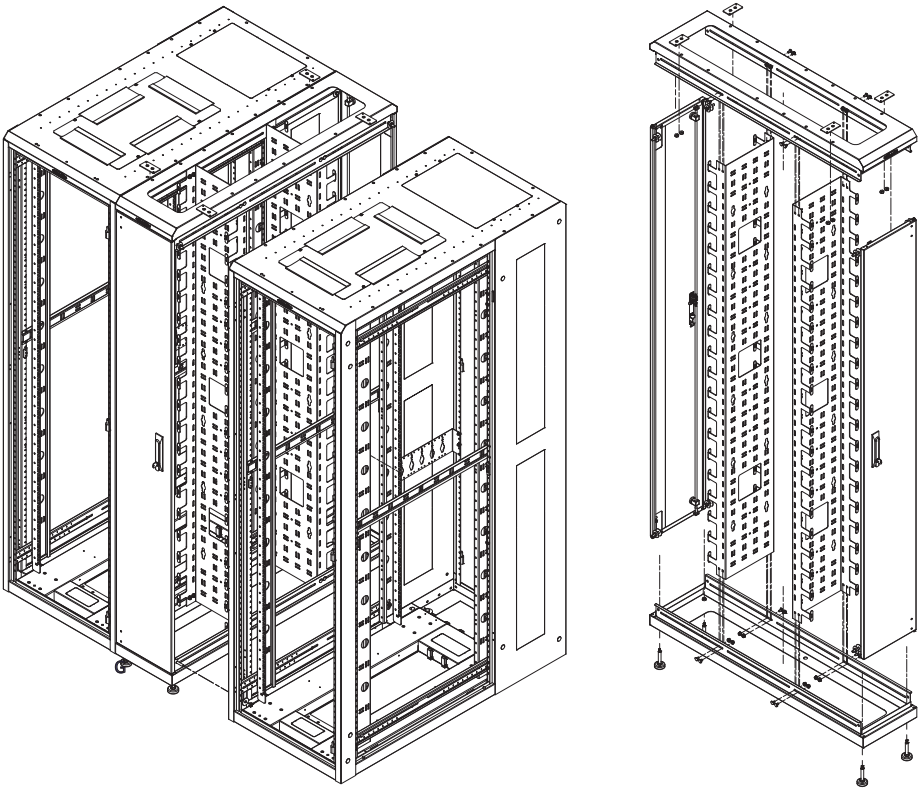


EXTERNAL CABLE MANAGER/SIDE CAR - ES SERIES

The side car is an external cable manager for 84"H enclosures. It can be mounted between two enclosures or mounted on a single enclosure. The side car has two vertical troughs, "fingers," and attachment points for cable ties and cinch straps. For complete side car installation instructions, visit werackyourworld.com/drawings/

Available side cars include:

- SC68442 External Cable Manager, 84"H x 6"W x 42"D, for use with 84"H x 42"D ES Enclosures
- SC68448 External Cable Manager, 84"H x 6"W x 48"D, for use with 84"H x 48"D ES Enclosures
- SC128442 External Cable Manager, 84"H x 12"W x 42"D; for use with 84"H x 42"D ES Enclosures
- SC128448 External Cable Manager, 84"H x 12"W x 48"D; for use with 84"H x 48"D ES Enclosures
- SCP8442 End Panel for External Cable Manager; for use with an 84"H x 42"D end-of-row enclosure
- SCP8448 End Panel for External Cable Manager; for use with an 84"H x 48"D end-of-row enclosure



AIR MANAGER & FAN TRAY

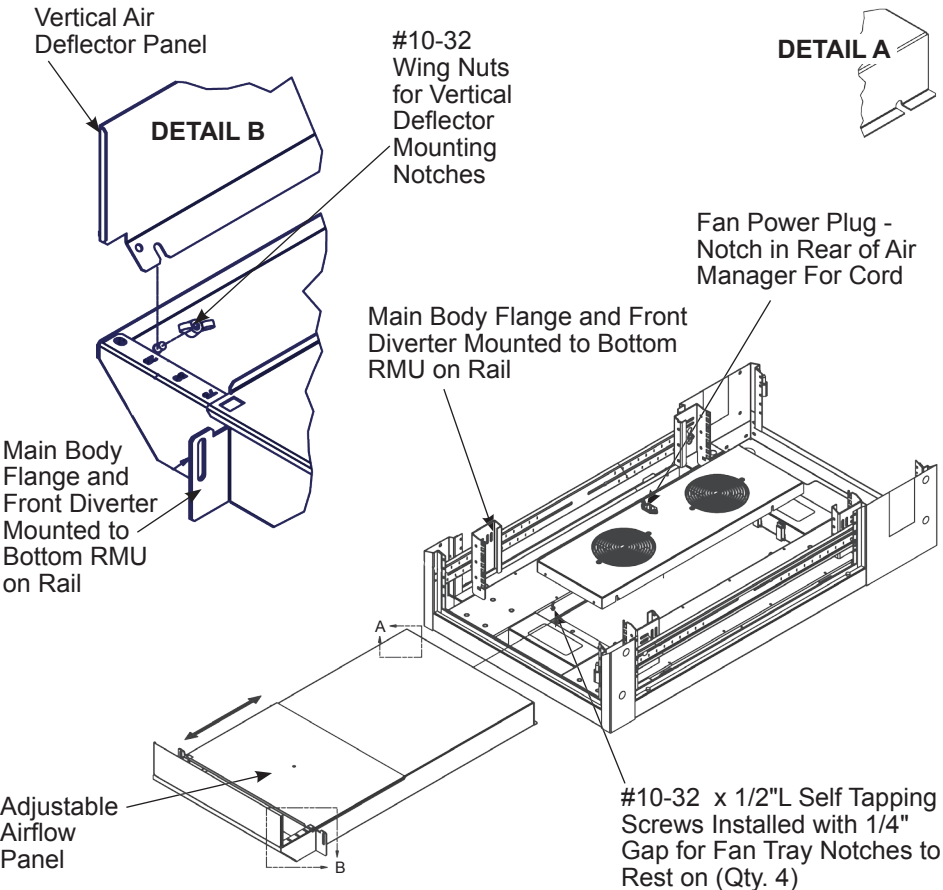
IMPORTANT: If you are installing the optional fan tray, please install before the air manager. The Standard Air Manager will take up the first RMU in the bottom of your enclosure and the High Flow Air Manager will take up the first two RMU.

INSTALLATION OF FAN TRAY

Install four (4) #10-32 x 1/2" screws in the middle center of the ES enclosure. Make sure to remove the cinch straps from the middle rear. Place 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. (see detail "A").

INSTALLATION OF AIR MANAGER

Place the Air Manager in the bottom of your ES enclosure, attach using two cage nuts per side. Use the wing nuts to secure the vertical air deflector (Detail B). After you have installed the Air Manager, you can change the amount of airflow by sliding the adjustable panel.



Available Air Manager and Fan Trays include:

AM-HFES	High Flow Air Manager Assembly for ES Enclosures
AM-HFFTES24	High Flow Air Manager Fan Tray for 24"W Enclosures, 940 CFM
AM-HFFTES30	High Flow Air Manager Fan Tray for 30"W Enclosures, 940 CFM
AM-ES	Air Manager Assembly for ES Enclosures
AM-FTES24	Air Manager Fan Tray for 24"W Enclosures, 600 CFM
AM-FTES30	Air Manager Fan Tray for 30"W Enclosures, 600 CFM

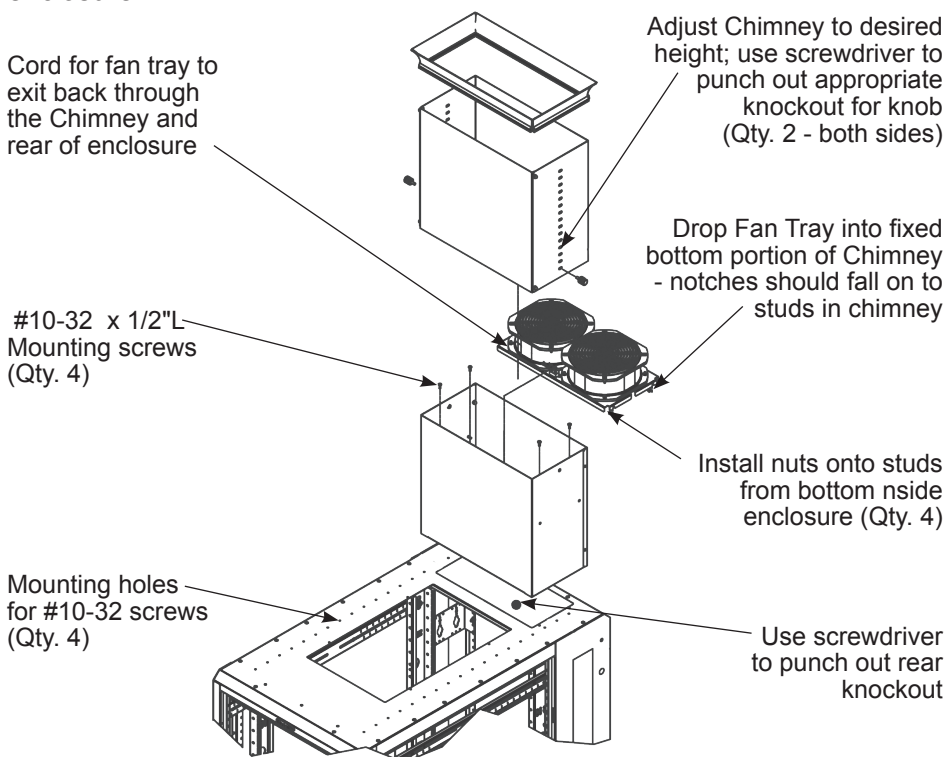
EXHAUST CHIMNEY & FAN TRAY

INSTALLATION OF ADJUSTABLE EXHAUST CHIMNEY

Before installation, remove the rear, top knockout from the enclosure. Place assembled chimney on top and attach from the inside using #10-32 screws. Raise the outer section so the seal touches the ceiling.

INSTALLATION OF FAN TRAY

Place fan tray onto fixed portion of the chimney, ensuring cord is hanging through the chimney and into the enclosure. The fan will rest on four studs. Secure the fan with #10-32 nuts from the inside of the enclosure.



A flexible duct chimney is also available. Visit WeRackYourWorld.com for more information.

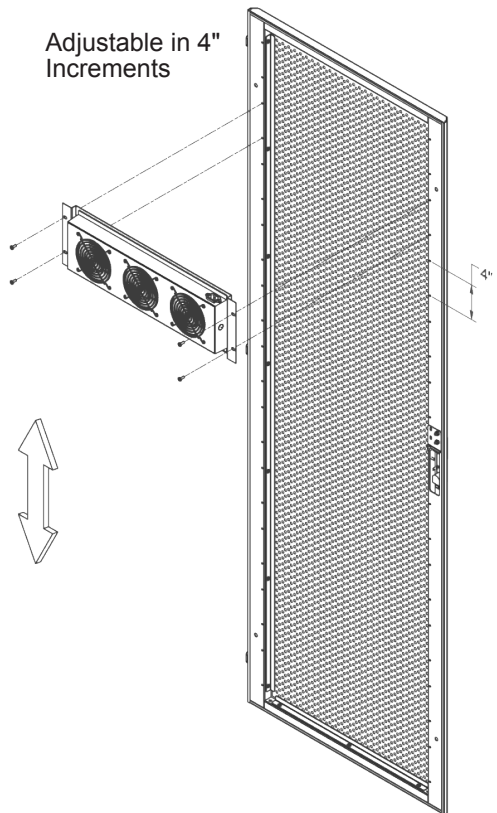
EXHAUST CHIMNEY & FAN TRAY (CONTINUED)

Available Chimney and Fan Trays include:

GL-ECHF-48-1832	High Flow Chimney for 48"D enclosure with an adjustable range of 18" to 32"
GL-ECHF-48-3246	High Flow Chimney for 48"D enclosure with an adjustable range of 32" to 46"
GL-ECHFFT48	High Flow Fan Tray for 48"D enclosure, 2260 CFM
GL-EC-48-1832	Chimney for 48"D enclosure with an adjustable range of 18" to 32"
GL-EC-48-3246	Chimney for 48"D enclosure with an adjustable range of 32" to 46"
GL-ECFT48	Fan Tray for 48"D enclosure, 1200 CFM
GL-EC-42-1832	Chimney for 42"D enclosure with an adjustable range of 18" to 32"
GL-EC-42-3246	Chimney for 42"D enclosure with an adjustable range of 32" to 46"
GL-ECFT42	Fan Tray for 42"D enclosure, 1200 CFM

MESH CONTOUR DOOR

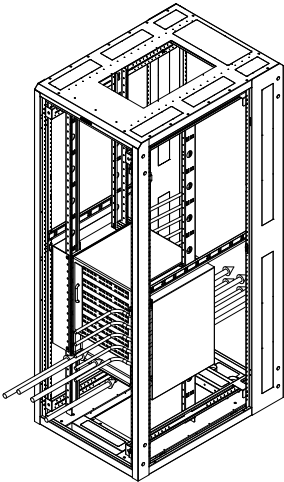
The mesh contour door for 24"W enclosures will accept a two (2) hole fan assembly, (7217LE2). The mesh contour door for 30" enclosures will accept a three (3) hole fan assembly (7217LE3). Both of these fan assemblies simply need to be attached to the door using the supplied #10-32 hardware. The fans should be placed where you need to alleviate a hot spot.



BAFFLE KITS

Baffle Kits can be installed in ES Enclosures and Great Lakes EN Enclosures (visit werackyourworld.com for installation instructions). While this user’s manual is specific to ES enclosures, please note that the chart and following information also references EN Enclosures.

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 and 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. Kits are unique to ES and EN enclosures, creating the perfect fit between switch and enclosure.



Recommended Great Lakes Enclosure			Great Lakes Baffle Kit Part No.	
	EN Series Enclosure	ES Series Enclosure	EN Baffle Kit	ES Baffle Kit
7000 Series				
7018 ¹	40"W x 48"D	N/A	ENSAB25	N/A
7010 ²	32/40"W x 48"D	30"W x 48"D	N/A	N/A
7009	40"W x 48"D	N/A	ENSAB14A	N/A
7004 ³	40"W x 48"D	N/A	ENSAB7A	N/A
9500 Series				
9513	32"W x 42/48"D	30"W x 42/48"D	ENSAB14D	ESSAB14D
9509 ⁴	32"W x 42/48"D	30"W x 42/48"D	ENSAB14	ESSAB14
6500 Series				
6513(-E)	32"W x 42/48"D	30"W x 42/48"D	ENSAB19	ESSAB19
6509(-E)	32"W x 42/48"D	30"W x 42/48"D	ENSAB14	ESSAB14
6506(-E)	32"W x 42/48"D	30"W x 42/48"D	ENSAB11	ESSAB11

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

CHOOSING YOUR BAFFLE KIT & ENCLOSURE

Based on your switch/equipment, choose the appropriate EN or ES enclosure. Take into consideration your cable management, cooling, and power needs; each enclosure addresses these needs in different ways. Baffle Kit part numbers are specific to ES or EN Enclosures.

The chart below shows which kits accommodate various CISCO switches. Other brands of side-to-side airflow equipment can also be mounted. To determine the correct enclosure and baffle kit, compare physical equipment dimensions to what is listed.

For detailed instructions on how to install your baffle kit, please refer to the instructions provided with your baffle kit. These instructions are also available at werackyourworld.com

Although equipment may physically fit into a Great Lakes enclosure, 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 Series Enclosures, when in an open frame configuration, can physically support the installation of a Cisco 7018 Series switch; however, the E and ES Series Enclosure frame designs do not provide the airflow space clearance required by Cisco.

Great Lakes' EN (Enhanced Networking) Series of enclosures is designed to support the installation of Cisco switches and other side-to-side airflow equipment. The EN Series has the airflow space clearances that are currently required and has accessories (including baffle kits) that are designed to support proper operational conditions. For more information, please contact your Great Lakes representative or call 1-866-TRY-GLCC.

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 enclosure, 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.

CISCO Equipment Dimensions		CISCO Recommended Clearances		
		Cabinet Installation	Rack Installation (No Side Panels)	
RMU	Depth	Distance from chassis to inside of cabinet	Distance between racks	Distance from chassis to wall
25	33.1"	11.00"	6.00"	11.00"
21	33.1"	N/A	N/A	N/A
14	24.10"	11.00"	6.00"	11.00"
7	24.00"	11.00"	6.00"	11.00"
14	28.00"	6.00"	12.00"	6.00"
14	18.40"	2.50"	6.00"	2.50"
19	18.10"	6.00"	12.00"	6.00"
14	18.10"	6.00"	12.00"	6.00"
11	18.10"	6.00"	12.00"	6.00"

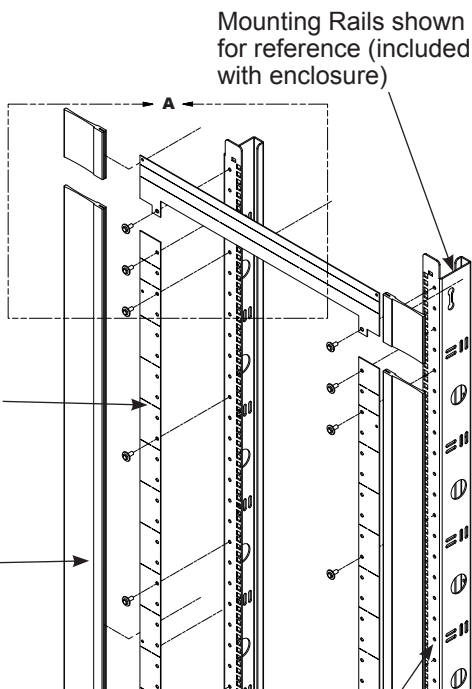
³ The 7004 requires 11.00" clearance on the right side only; exhaust exits from the rear, no rear clearance required. ⁴An additional 0.75" of height is required for rail mount brackets; brackets can be removed after chassis is installed. NOTE: It is important to read and understand CISCO installation guides that are associated with each switch.

BRUSH GROMMET KIT

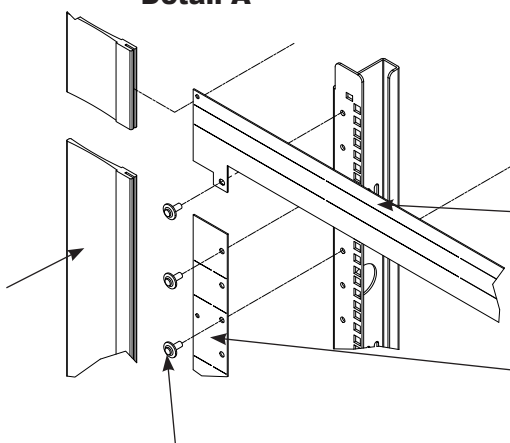
The brush grommet kit is best installed before any equipment is installed in the enclosure. Please refer to Detail A for mounting and hardware usage.

Optional breakaway (at every 2 RMU) for notching around side airflow baffles. Use sharp scissors to trim brush as needed.

Brush Strips. Flexible PVC, trim slides onto outside edge of mounting plates that are installed onto front face of the equipment rails



Detail A



Tool-less Hardware push/pull nylon rivet or #10-32 screw and wing nut (both rivets and screws are provided)

Top Cross Plate; When installing in 79" enclosure, break off top section of plate; when installing in a 78" enclosure, break off top 2 sections of plate

Vertical Brush Strip Mtg. Plates; When installing brush kit in 78" or 79" enclosure, break off bottom 2 sections of plate

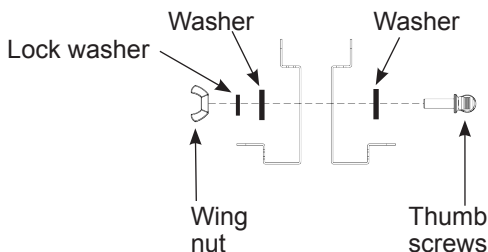
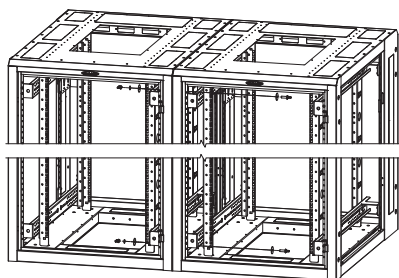
Available Brush Grommet Kits re as follows:

- BGRK24 Kit for 24"W x 79" and 84"H ES enclosures
- BGRK30 Kit for 30"W x 79" and 84"H ES enclosures
- BGRK91-24 Kit for 24"W x 91"H ES enclosures
- BGRK91-30 Kit for 30"W x 91"H ES enclosures

NETWORKING/ GANGING

Enclosures can be networked using the following networking/ganging kits:

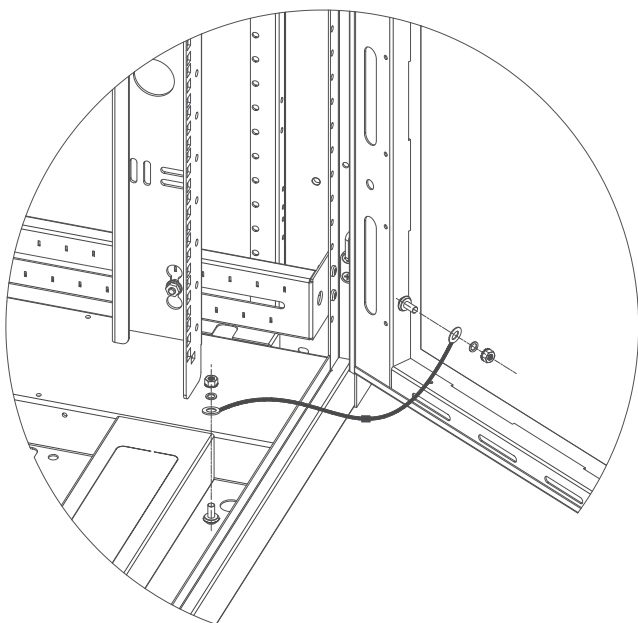
- G101ES Networking/Ganging Kit to gang two ES Enclosures
- G101EN2ES Networking/Ganging Kit to gang an EN Enclosure to an ES Enclosures



GROUNDING

GROUNDING KIT, GR101

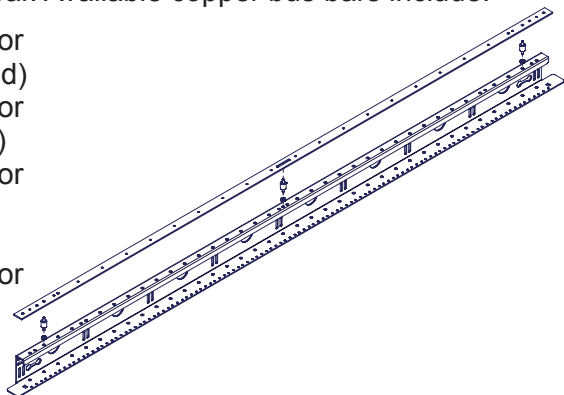
Protective grounding studs are provided along with quick disconnect grounding jumper wires that electrically bond the enclosure doors and sides to the enclosure frame. Before removing doors and side panels, pull apart the grounding wires.



COPPER BUS BARS

It is important to note that grounding the enclosure does not ground the equipment mounted within it. In order for any individual devices and components mounted within an enclosure to be grounded, they must be connected to a copper bus bar. Available copper bus bars include:

- CBB-19 Copper Bus Bar for 19" rack mounting (Isolated)
- CBB-48 Copper Bus Bar for 48"H enclosures (Isolated)
- CBB-72 Copper Bus Bar for 79" and 84"H enclosures (Isolated)
- CBB-78 Copper Bus Bar for 91" enclosures (Isolated)



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. 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
CASE & CABINET



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your
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