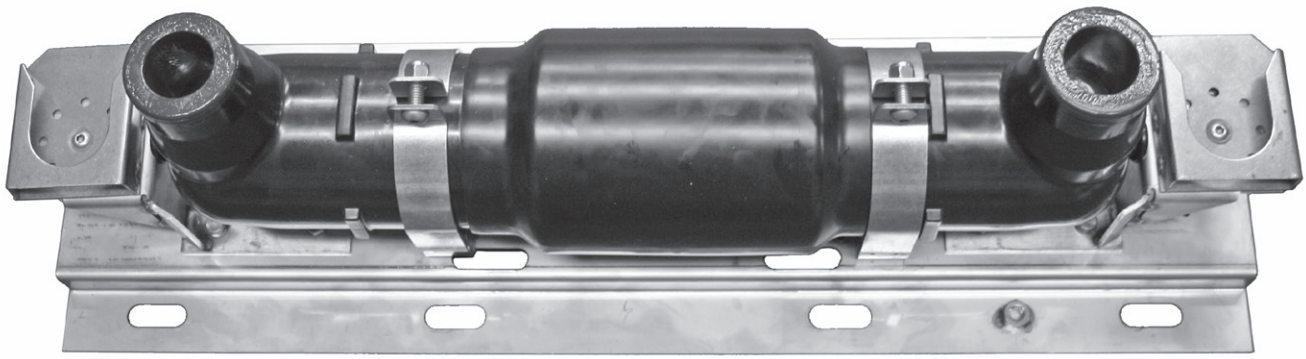
Effective November 2016
Supersedes July 2008 (S240-92-1)

Edison Modular Fuse (EMF) Installation Instructions



Powering Business Worldwide

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Contents

Safety for life

Eaton's Cooper Power series products meet or exceed all applicable industry standards relating to product safety. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton employees involved in product design, manufacture, marketing and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high-voltage lines and equipment and support our "Safety For Life" mission.

Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians, who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

- Is thoroughly familiar with these instructions.
- Is trained in industry-accepted high- and low-voltage safe operating practices and procedures.
- Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
- Is trained in the care and use of protective equipment such as flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Hazard Statement Definitions

This manual may contain four types of hazard statements:

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.

Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

DANGER

Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment.

WARNING

Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage.

WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply may result in death, severe personal injury and equipment damage.

WARNING

Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.

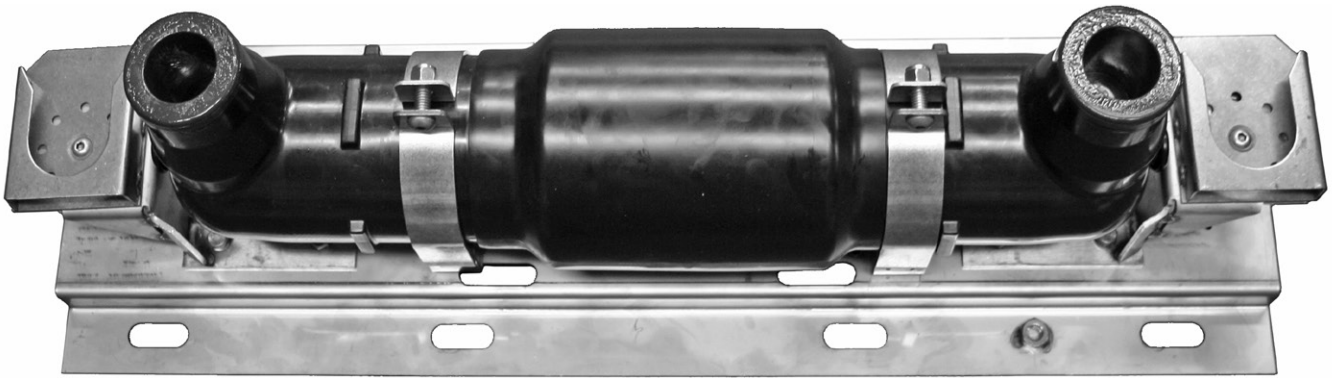


Figure 1. Typical horizontal vault installation, shown with Quick-Release Mounting Clamps, Top-Hat Channel Base, and Rotatable Stand-Off Pockets

Product information

Introduction

Service Information MN132031EN provides instructions for installing and removing the Edison Modular Fuse (EMF).

Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

Additional Information

These instructions cannot cover all details or variations in the equipment, procedures, or process described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. For additional information, contact your Eaton representative.

Acceptance and initial inspection

Each fuse is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the kit and inspect it thoroughly for damage incurred during shipment. If damage is discovered, file a claim with the carrier immediately.

Handling and storage

Be careful during handling and storage of the fuse to minimize the possibility of damage. If the fuse is to be stored for any length of time prior to installation, provide a clean, dry storage area.

Standards

ISO 9001 Certified Quality Management System

Product description

Eaton's Cooper Power series Edison Modular Fuse (EMF) is a completely sealed, full-range, current-limiting fuse designed for dead-front, overhead, underground, or submersible cable distributions systems. Terminal connections consist of a 200 A bushing well, designed to IEEE 386™-2006 standard, permitting the use of 200 A dead-break and load-break bushing inserts and elbows.

Stainless steel base assemblies with optional parking stand and pocket can be used to mount the fuse easily with minimal support structure. Base assemblies can be mounted to vault walls or welded to an existing bracket system.

All mounting assembly material and hardware are made of stainless steel. There are two base types: Standard Channel Base and Top-Hat Channel Base.

There are also two different types of mounting clamps: the Quick-Release and the Bolted Mounting Clamp. If the fuse is securely mounted in the Quick-Release clamp, the fuse can be installed/removed by simply unfastening the mounting buckles.

All mounting assemblies are equipped with a grounding nut.

Table 1. Parts Description

Kit	Item #	Part	Quantity
Channel Base			
Standard Channel Base EMFBRKCB	1	channel base	1
Top-Hat Channel Base EMFBRKHB	2	top-hat base	1
Clamps			
Quick-Release Channel Mounting Clamp EMFBRKQR			
	3	base bracket	2
	4	clamp straps	2
	5	3/8-16 x 1" cap screw	4
	6	3/8" lock washer	4
	7	cotter pin	2
Bolted Channel Mounting Clamp EMFBRKBC			
	8	base bracket	2
	9	3/8-16 X 1" cap screw	6
	10	3/8" lock washer	4
	11	clamp bracket	2
	12	3/8-16 lock nut	2
Pockets			
Rotatable Stand-Off Pocket EMFBRKS1			

Table 1. Parts Description (continued)

Kit	Item #	Part	Quantity
Note: For use with top-hat channel base only.	13	pocket	2
	14	5/16-18 X 1/2″ cap screw	2
	15	detent	2
Extended Stand-Off Channel Bracket with Pocket EMFBRKS3			
	16	stand-off bracket	2
	17	5/16-18 X 3/4″ hex bolt	8
	18	5/16″ lock washer	8
	19	pocket	2
	20	5/16-18 X 1/2″ cap screw	2
	21	detent	2
Foot Brackets			
Note: For use with standard channel base only.			
Adjustable Foot Bracket EMFBRKF1	22	adjustable bracket	2
	23	5/16-18 X 5/8″ hex bolt	8
	24	5/16″ lock washer	8
	25	5/16″ nut	4
	26	foot bracket	2

Assembly and installation

⚠ WARNING

High Voltage. All associated apparatus must be de-energized prior to any hands-on installation or maintenance of this equipment. Failure to do so could result in contact with high voltage, which will cause death or severe personal injury.

Refer to Table 1 for parts description.

Channel bases

The standard channel base (CB) and the top-hat channel base (HB) are compatible with the quick-release clamp (QR), the bolted clamp (BC), and the extended stand-off channel bracket with pocket (S3). The rotatable stand-off pocket (S1) is used with the top-hat base only. The foot bracket (F1) is for use with the standard channel base only. The top-hat channel base is mounted without a foot bracket.

Identify the channel base type. Refer to Figures 2 and 3.

Figure 2. Standard channel base (Item 1)

Figure 3. Top-hat channel base (Item 2)

Clamps

Using the standard channel base (Item 1) or the top-hat channel base (Item 2), attach the clamps to the base. The options include the Quick-Release clamp and the bolted clamp.

Quick-Release clamp option

Note: The Quick-Release Clamp is shipped with a cotter pin for securing the clamp. This is a small part. Locate the cotter pin in the shipping bag and retain for later use.

1. Site the base brackets (Item 3) to the base (Item 1 or 2) for placement. See Figures 4 and 5.
2. Attach the base bracket (Item 3) to the base (Item 1 or 2) with a hex-head wrench using 3/8-16 X 1″ cap screws and 3/8″ lock washers (Items 5 and 6). See Figure 6.

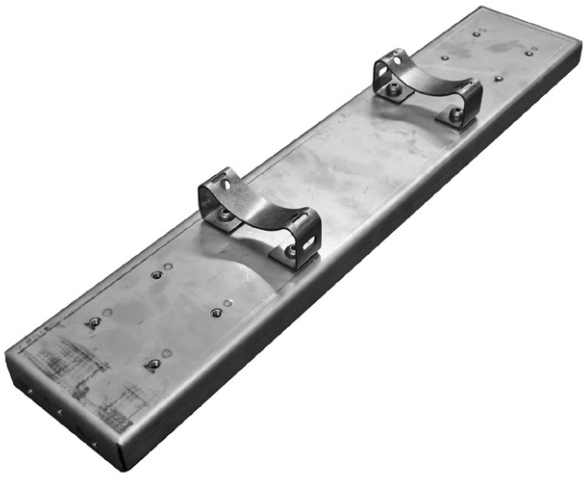


Figure 4. Base bracket placement on standard channel base

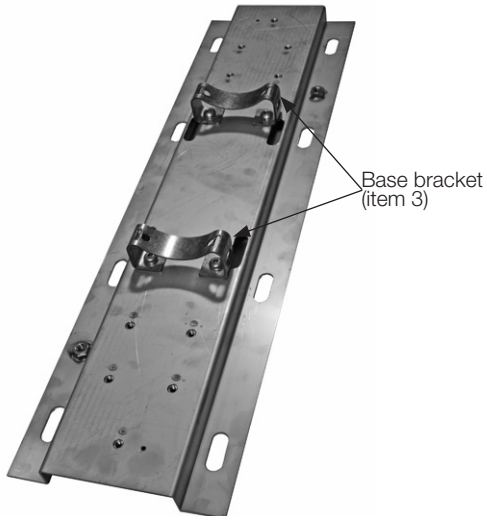


Figure 5. Base bracket placement on top-hat channel base

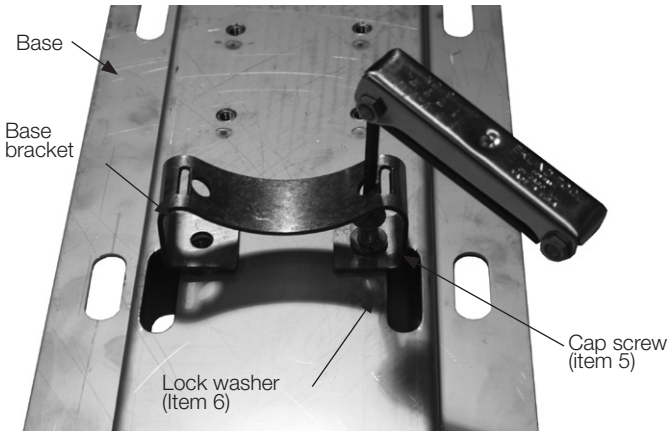


Figure 6. Installing base bracket (top-hat channel base shown)

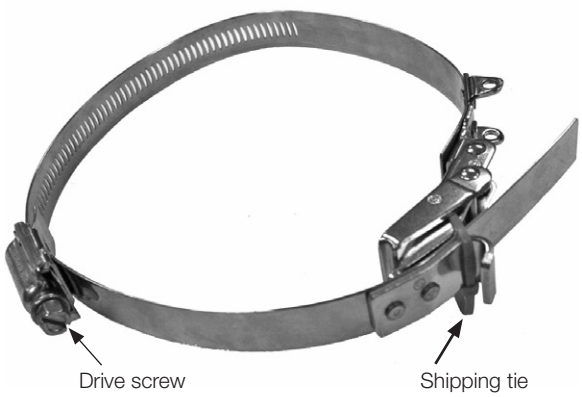


Figure 7. Clamp straps

3. Remove the plastic shipping tie from the clamp straps (Item 4). See Figure 7.
4. Separate the clamp strap sections by unscrewing the drive screw until the sections release. See Figures 7 and 8.

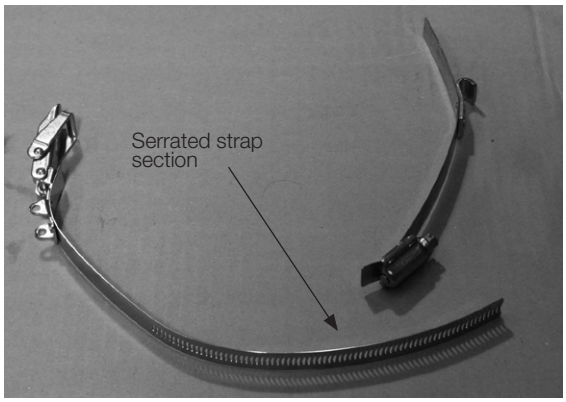


Figure 8. Clamp strap sections

5. Feed the serrated section of the clamp strap through the slots in the base bracket. Begin feeding the strap in the slot by the solid side of the bracket. The strap exits on the side of the bracket with the extra slot. See Figures 8 and 9.

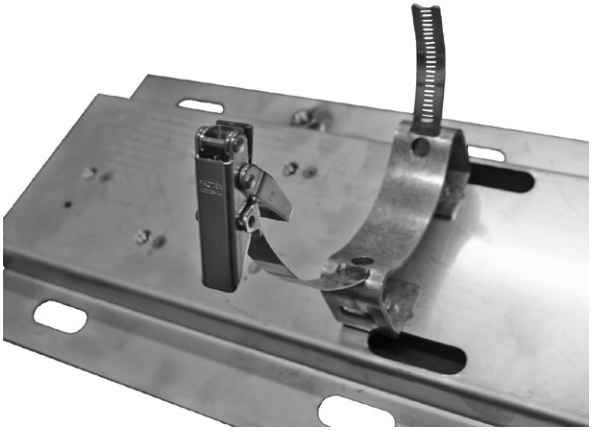


Figure 9. Clamp strap in base bracket

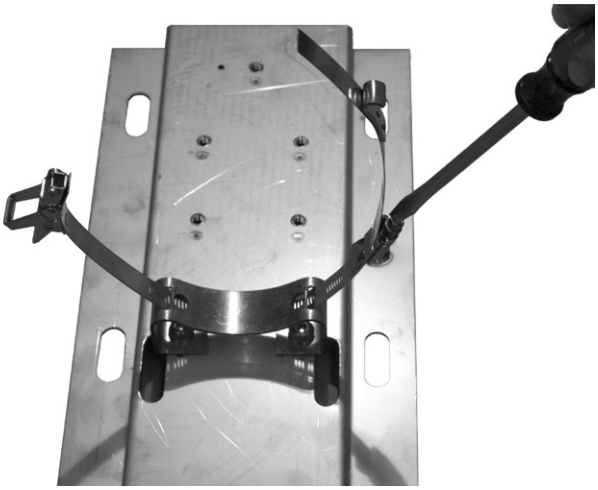


Figure 10. Connecting straps at drive screw

6. Reconnect the clamp straps at the drive-screw: Thread serrated strap into the smooth strap at the drive screw; Tighten the drive screw just until engaged. The drive screw is tightened in a later step. See Figure 10.
7. Repeat assembly for the second set of base bracket and clamp straps. See Figure 11.

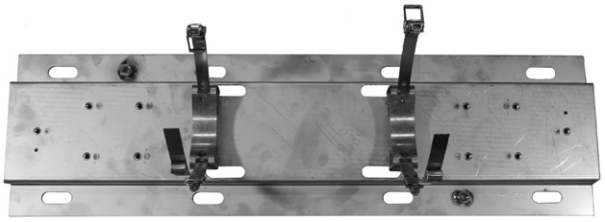


Figure 11. Quick release brackets on base

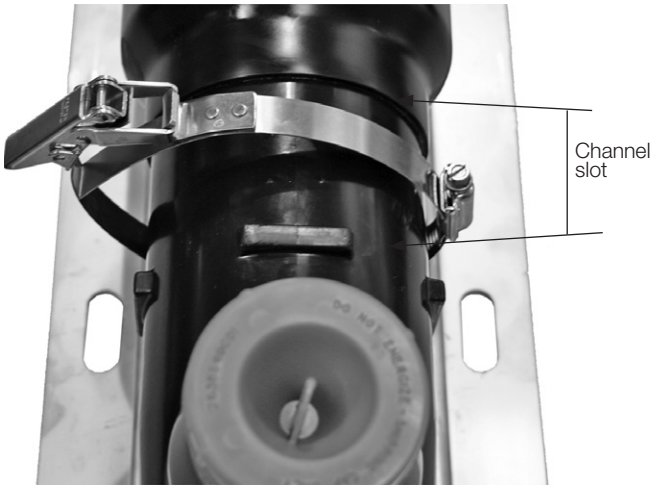


Figure 12. Clamping fuse

Note: If either of the pocket options is used, assemble the pocket onto the base before installing the fuse. Refer to the Pocket Brackets section of this manual.

8. Place the EMF fuse on the base brackets. Align the clamp straps with the channel slots around the smallest diameter sections of the fuse. See Figures 12 and 13.

   Note: The channel base and clamps assembly can be mounted in the installation before securing the fuse into the assembly.

9. Engage the clamp straps into the buckles and close the buckles. See Figure 12.
10. Tighten the drive screws on each clamp to conform the clamp around the fuse. See Figure 13.
11. Insert the cotter pins (Item 7) through the buckles and spread the ends to secure in place. See Figure 14.

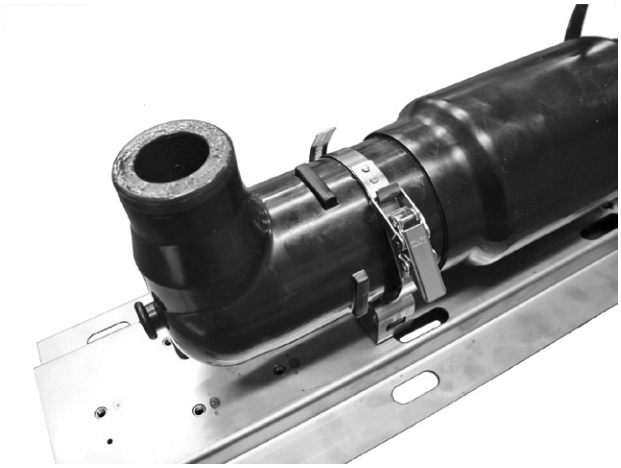


Figure 13. Tighten clamp

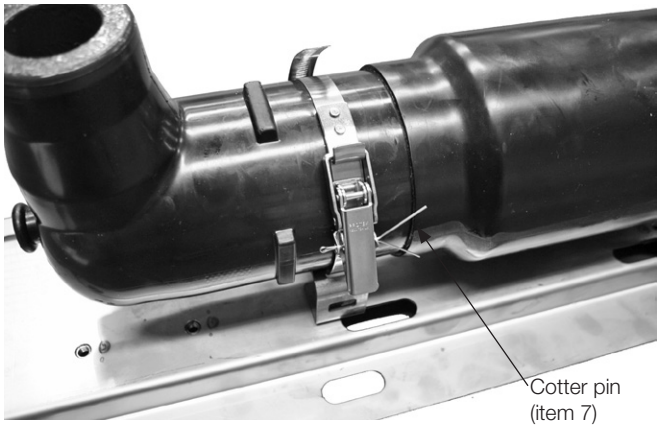


Figure 14. Closed quick-release clamp

Bolted clamp option

1. Site the base brackets (Item 8) to the base (Item 1 or 2) for placement. See Figures 15 and 16.

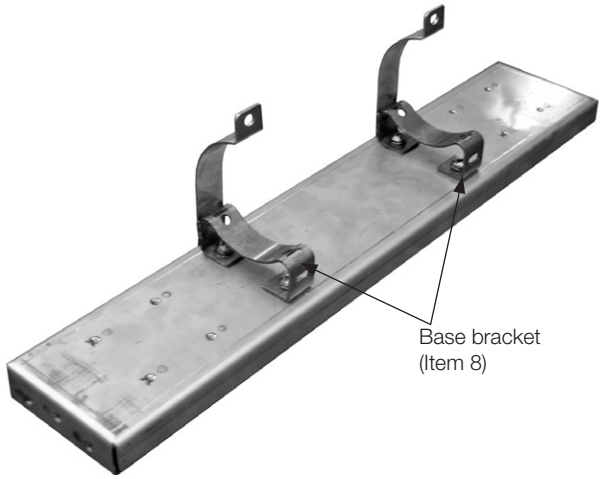


Figure 15. Base bracket placement on standard channel base

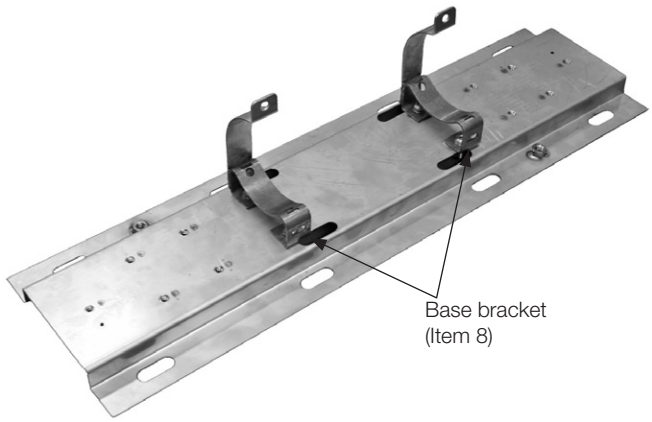


Figure 16. Base bracket placement on top-hat channel base

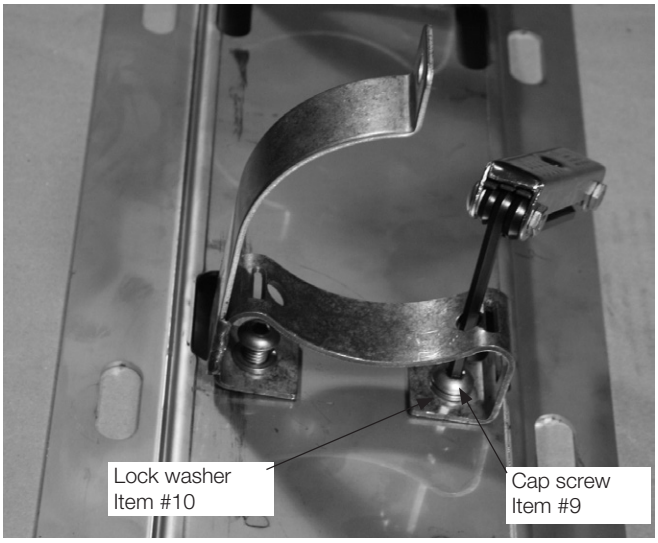


Figure 17. Bolted clamp base bracket

2. Attach the base bracket (Item 8) to the base (Item 1 or 2) with a hex-head wrench using 3/8-16 X 1″ cap screws and 3/8″ lock washers (Items 9 and 10). See Figure 17.
3. Insert the removable clamp strap into the outer slot of the base bracket. See Figure 18.
4. Repeat assembly for the second set of base bracket and clamp straps.

Note: If either of the pocket options is used, assemble the pocket onto the base before installing the fuse. Refer to the Pocket Brackets section of this manual.

Figure 18. Bolted clamp

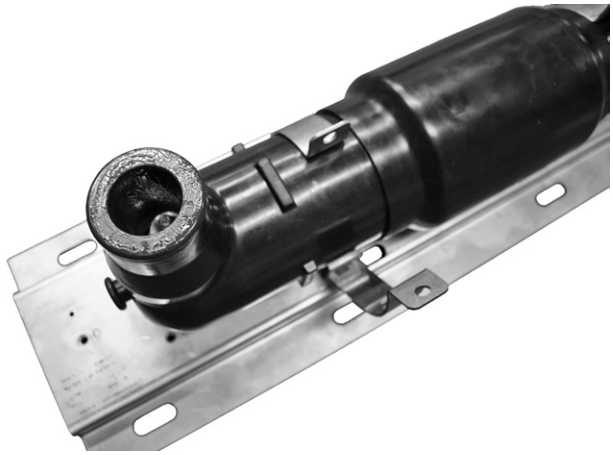


Figure 19. EMS fuse in bolted channel mounting clamp

5. Place the EMF fuse to rest on the base brackets. Align the clamp straps with the channel slots around the smallest diameter sections of the fuse. See Figure 19.

Note: The channel base and clamps assembly can be mounted in the installation before securing the fuse into the assembly.

6. Bolt the clamp straps using 3/8-16 X 1″ cap screw and 3/8-16 lock nut (Items 9 and 12). See Figures 20 and 21.

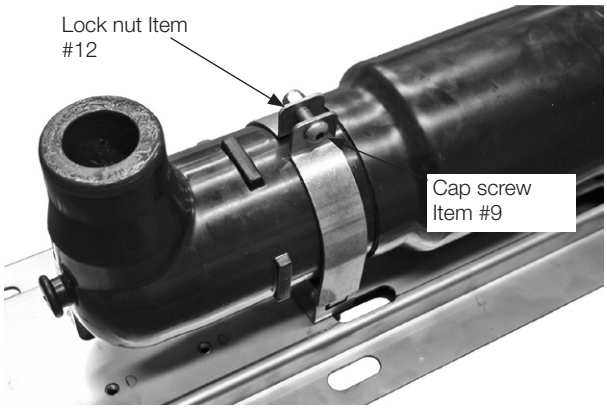


Figure 20. Bolted clamp straps

Figure 21. EMF fuse in bolted mounting on channel base

Pocket brackets

Rotatable Stand-Off Pocket Option

1. Insert a detent (Item 15) into small hole at each end of the channel base. Refer to Figure 22.
2. Attach pocket (Item 13) to the base at the centered boss nut using 5/16-18 X 1/2" cap screw (Item 14). Refer to Figures 22 and 23.

Note: Finger tighten only. Tighten screw during installation after preferred positioning is determined.

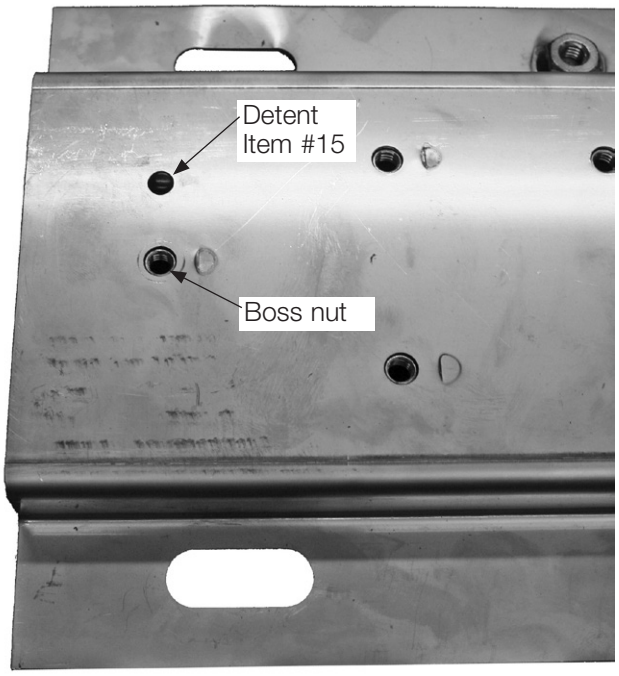


Figure 22. Pocket mounting location

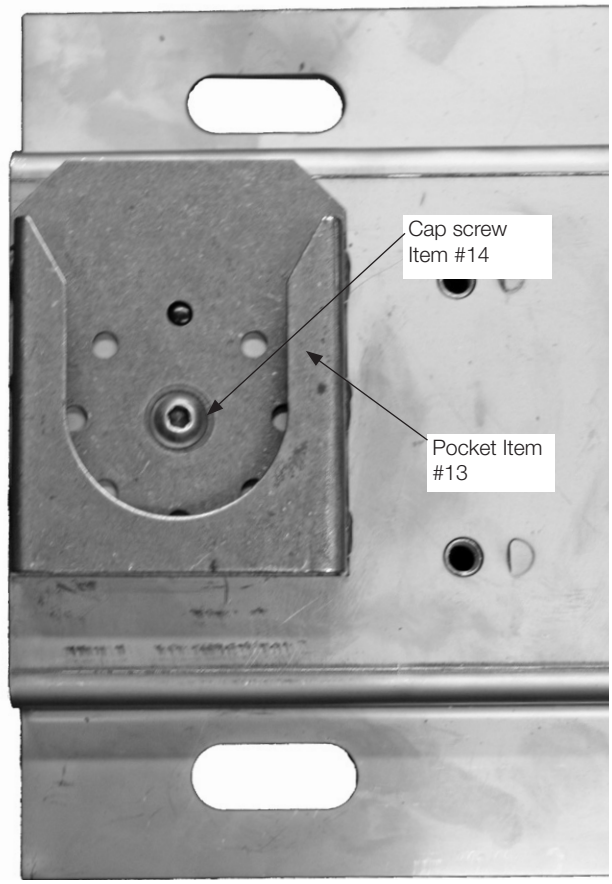


Figure 23. Stand-off pocket

Extended stand-off channel bracket with pocket option

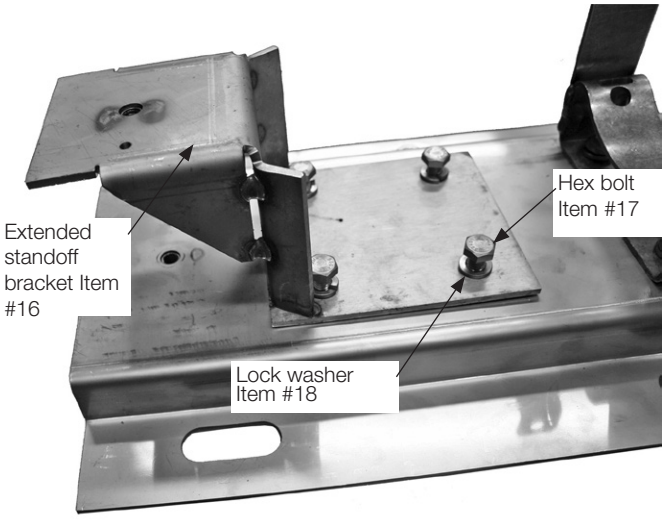


Figure 24. Boss nuts for mounting stand-off bracket

1. Attach the extended stand-off bracket (Item 16) to the channel base at the four squared boss nuts using 5/16-18 X 3/4″ hex bolt and 5/16″ lock washer (Items 17 and 18). Refer to Figures 24 and 25.
2. Insert a detent (Item 21) into small hole at each end of the stand-off bracket. Refer to Figure 25.

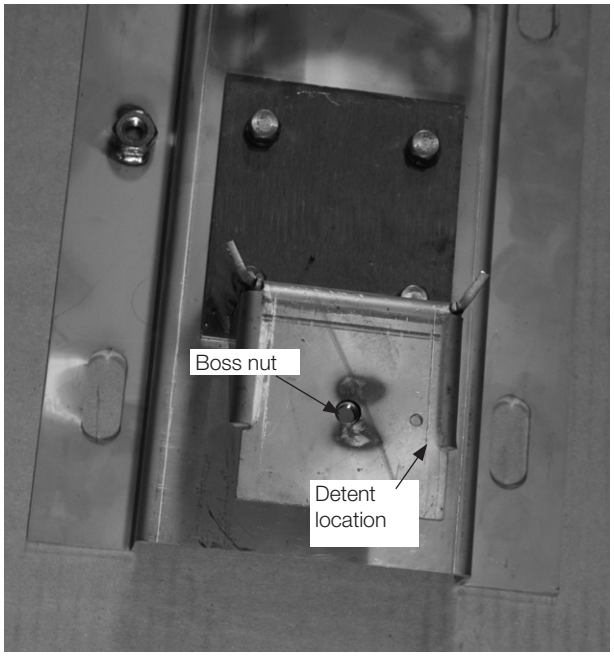


Figure 25. Pocket mounting location

3. Attach pocket (Item 19) to the stand-off bracket at the centered boss nut using 5/16-18 X 1/2″ cap screw (Item 20). Refer to Figures 25 and 26.

   Note: Finger tighten only. Tighten screw during installation after preferred positioning is determined.

Note: When installing the fuse, proceed carefully. The fuse will fit snugly between the stand-off brackets.

Figure 26. Top-hat base assembled with extended stand-off channel bracket with pocket and bolted clamps

Adjustable foot bracket option

The adjustable foot allows the base to be mounted at different angles to the mounting structure. The adjustable foot bracket is used with the standard channel base only.

1. Assemble the adjustable bracket (Item 22) to the foot bracket (Item 26) using 5/16-18 X 5/8" hex-head bolts, 5/16" lock washers, and 5/16" nut (Items 23, 24, and 25). Refer to Figure 27.

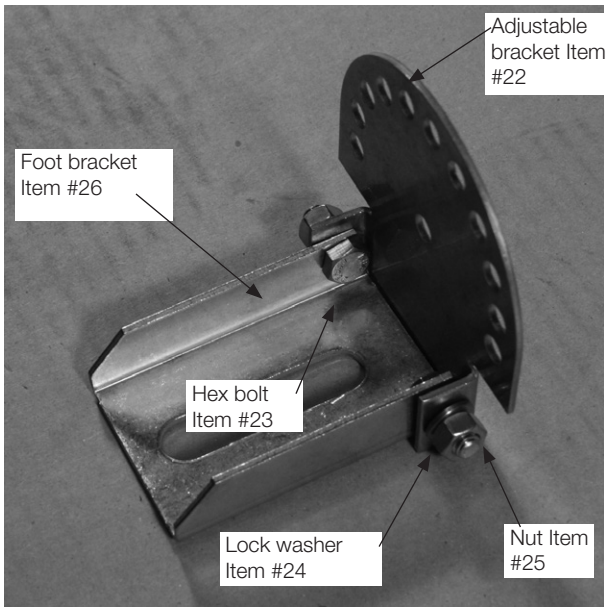


Figure 27. Assembled adjustable foot bracket

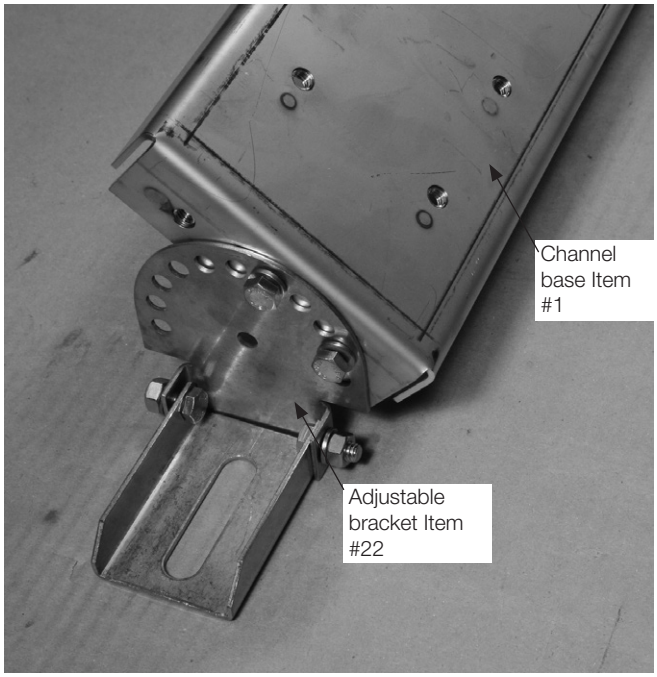


Figure 28. Adjustable foot bracket on standard channel base

2. Attach the adjustable bracket (Item 22) to the standard channel base (Item 1) using 5/16-18 X 5/8" hex-head bolts, 5/16" lock washers, and 5/16" nut (Items 23, 24, and 25). Attach the bracket to the side of the base at the center hole and either the left or the right hole on the base. On the adjustable bracket, any of the holes along the perimeter can be used for positioning the foot.) Refer to Figure 28.

Installation

Figures 29 through 34 show typical installations of the EMF fuse. Figure 29 displays a typical horizontal installation; Figure 30 shows a typical vertical installation. Mount as typical installations or as specified by the utility.

1. Attach the mounting assembly to the wall or other support structure.

   A. For the standard base, mount the assembly using the holes on the foot bracket, making sure necessary clearances are maintained. The bracket has provisions for 5/16" mounting hardware.

Note: Mounting hardware is not supplied with the mounting assembly.

   B. For the top-hat base, mount the assembly using the mounting holes along the edge of the base, making sure necessary clearances are maintained. The mounting assembly has provisions for 1/2" mounting hardware.

Note: Mounting hardware is not supplied with the mounting assembly.

2. Install the 200 A dead-break or load-break inserts and elbows as specified by the manufacturer.
3. The extended stand-off channel bracket can be rotated by 90˚ increments to fit specified configuration: Loosen the four mounting bolts that attach the bracket to the channel base; reposition the bracket; and tighten the mounting bolts.
4. The standoff pockets can also be rotated to fit the specified configuration: Loosen the mounting screw; rotate the pocket to the desired angle; and tighten the screw.

Note: The mounting assembly can be grounded to the grounding nut or as specified by the utility.

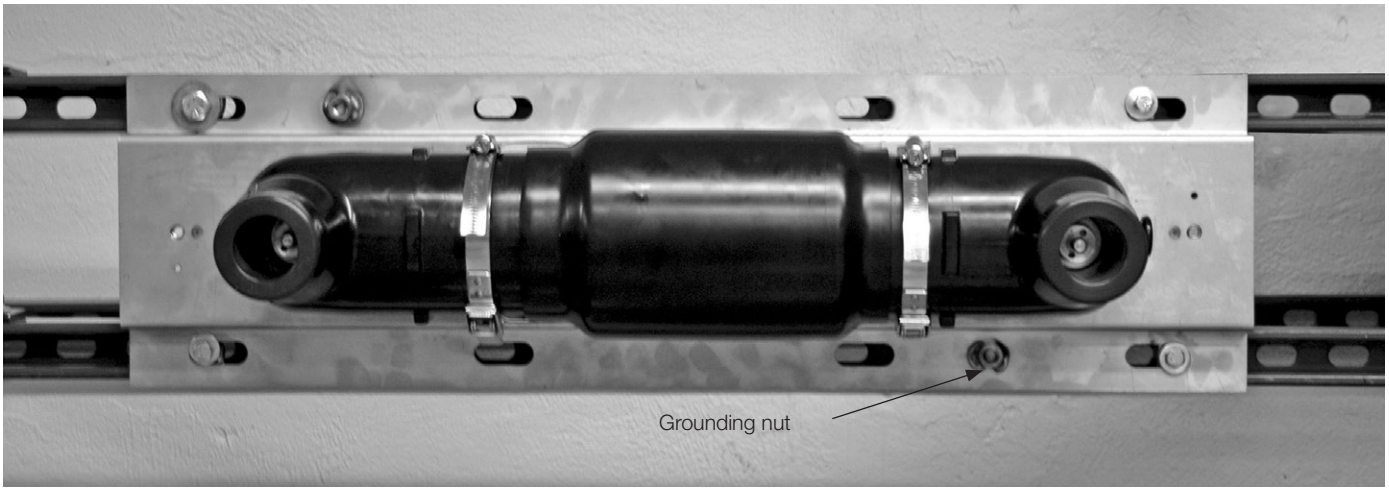


Figure 29. Typical top-hat channel mounting

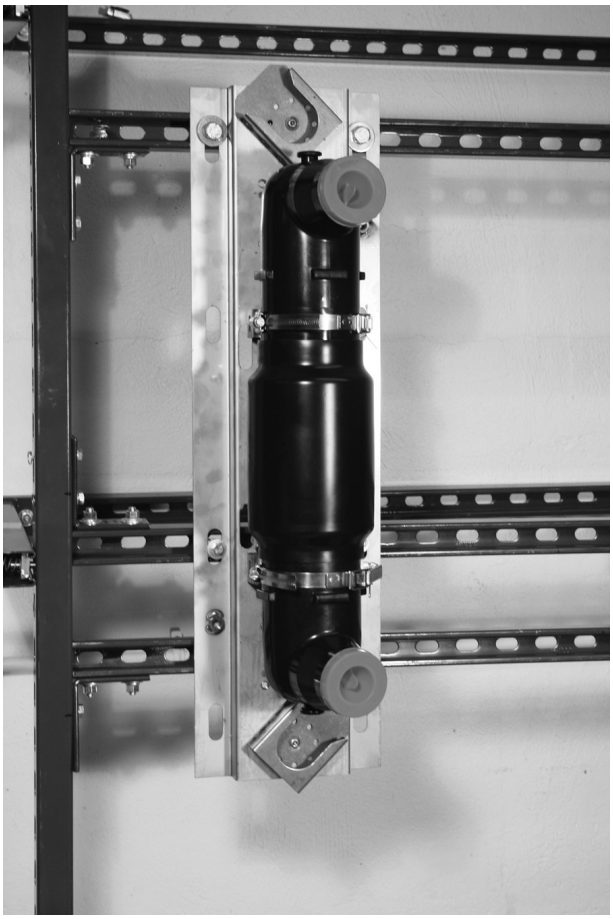


Figure 30. Typical mounting with EMF fuse

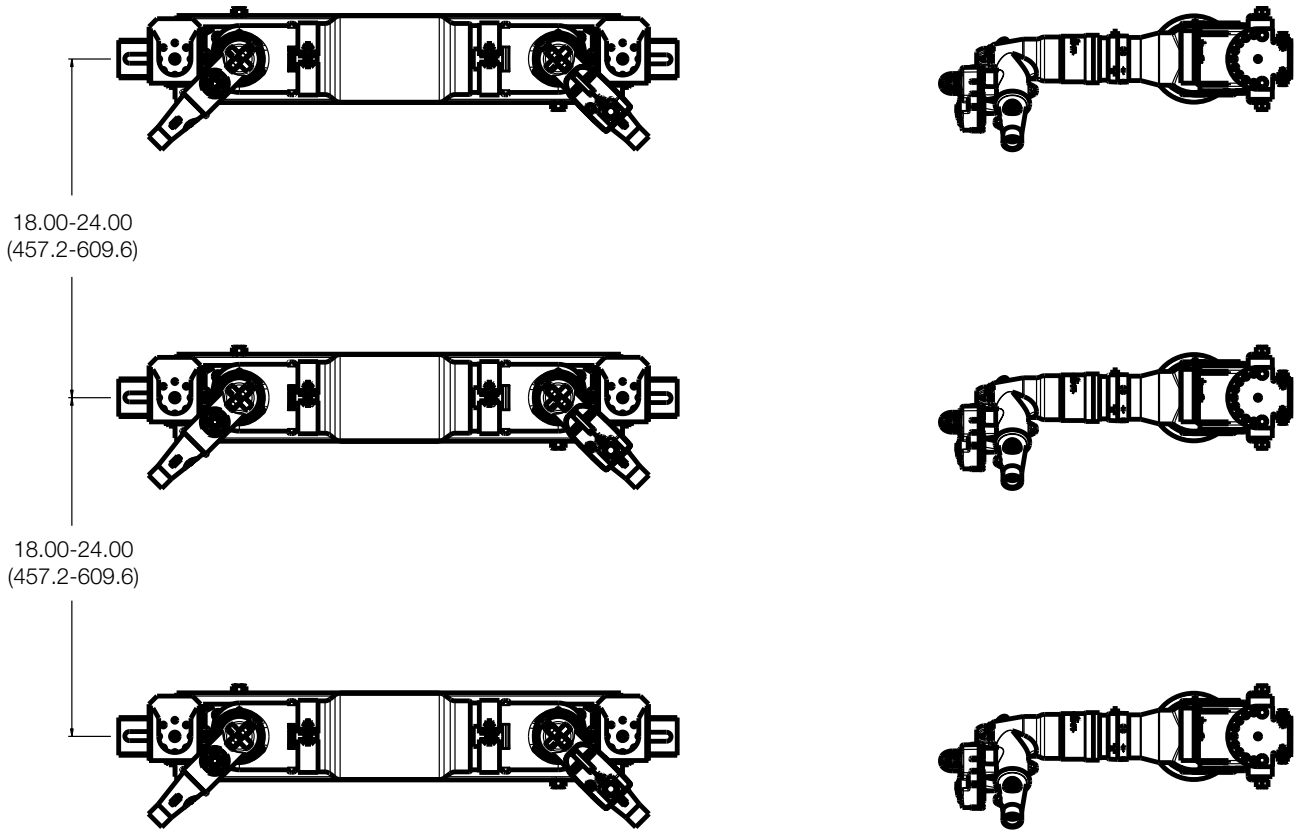


Figure 31. Typical horizontal vault installation (using Standard Channel base)

Note: Grounding nut located on all EMF fuse mounting assemblies.

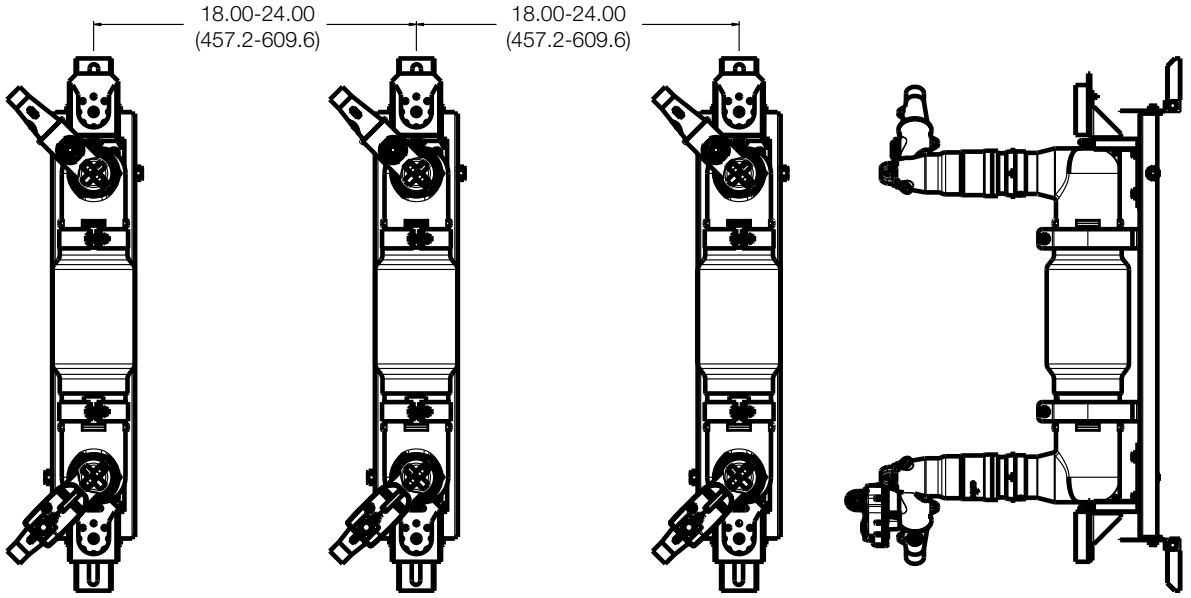


Figure 32. Typical vertical vault installation (using Standard Channel base)

Note: Grounding nut located on all EMF fuse mounting brackets

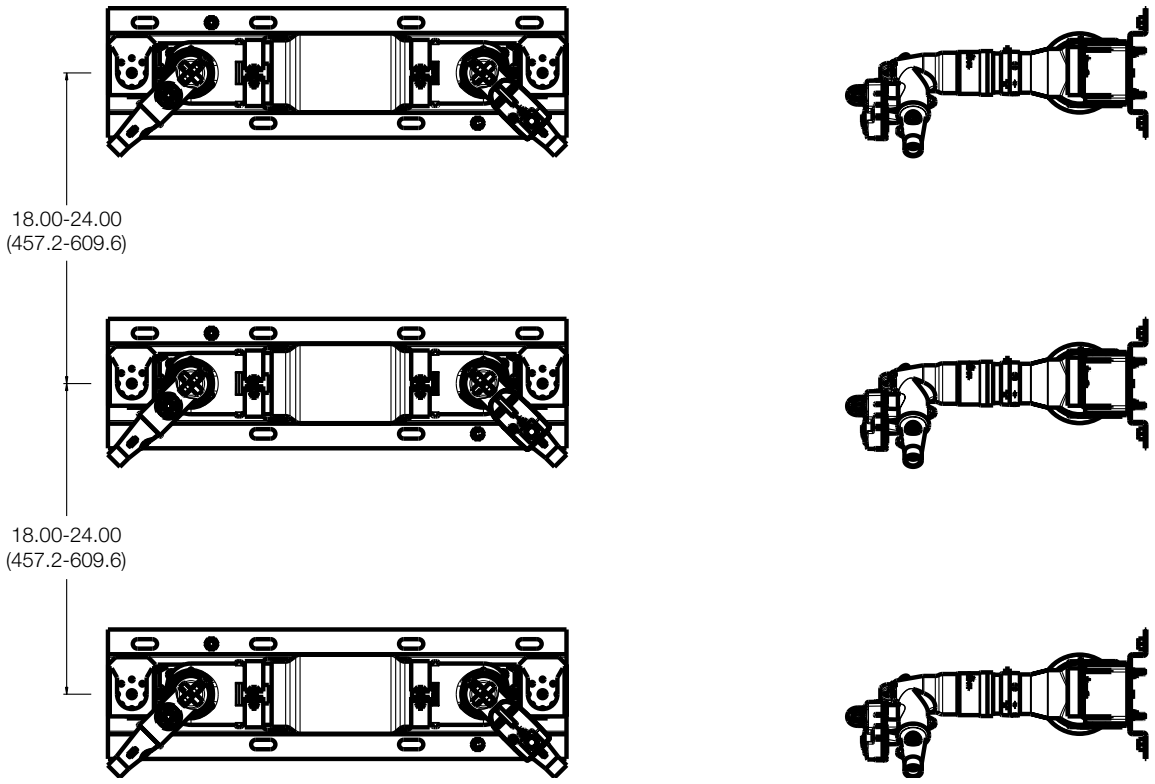


Figure 33. Typical horizontal vault installation (using Top-Hat Channel base)

Note: Grounding nut located on all EMF fuse mounting assemblies.

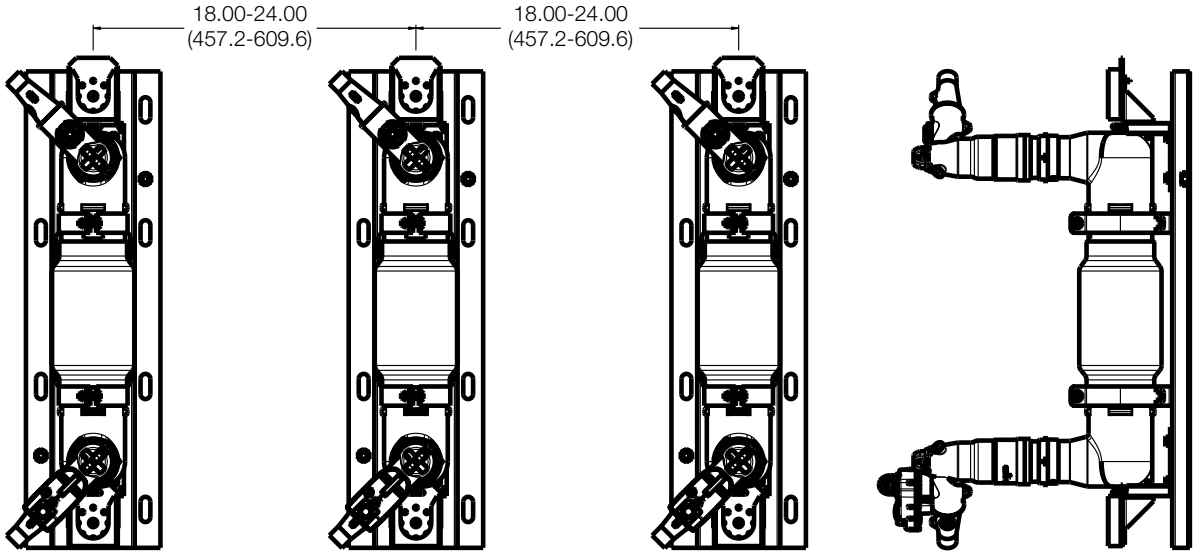


Figure 34. Typical vertical vault installation (using Top-Hat Channel base)

Note: Grounding nut located on all EMF fuse mounting assemblies.

EMF Fuse replacement

⚠ WARNING

High Voltage. All associated apparatus must be de-energized prior to any hands-on installation or maintenance of this equipment. Failure to do so could result in contact with high voltage, which will cause death or severe personal injury.

When the Edison Modular Fuse operates, it can be replaced without removing the entire mounting assembly. Follow the appropriate steps when removing the fuse and re-fusing.

1. De-energize the system using the approved safety procedures.
2. Place the elbows in the pockets using the approved safety procedures.

⚠ CAUTION

Personal Injury. The fuse is not secure when the clamps are released. Support the fuse during the replacement procedure. Failure to do so may result in personal injury.

3. Remove the old fuse.

   For the quick-release clamps, remove the cotter pin, release buckle, and remove the fuse. Refer to Figure 35.

   For the bolted clamps, loosen and remove the bolt and remove the fuse. Refer to Figure 36.

4. Replace with a new EMF fuse and secure per the installation instructions.

Figure 35. Closed quick-release clamp

Figure 36. Bolted clamp straps

Well-adapter replacement

The EMF fuse has a thread adapter in each well for system connection. The EMF fuse adapter is available for replacement. The adapter is removed and installed using an EMF fuse socket attached to a standard 5/16" hex wrench.

⚠ WARNING

High Voltage. All associated apparatus must be de-energized prior to any hands-on installation or maintenance of this equipment. Failure to do so could result in contact with high voltage, which will cause death or severe personal injury.

1. De-energize the system using the approved safety procedures.
2. Disconnect both sides of the fuse.

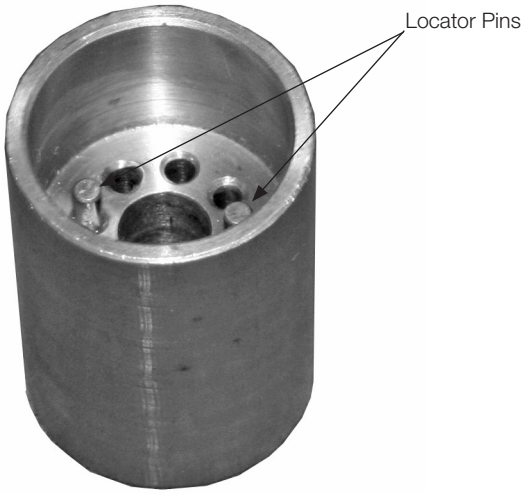


Figure 37. Socket and locator pins

3. Attach the socket to the wrench and align the locator pins toward the fuse. Refer to Figure 37.
4. Engage the adapter with the socket; gently rotate the socket as needed to engage the locator pins. Refer to Figure 38.
5. Turn the socket counter-clockwise to remove the well adapter. Refer to Figure 39.
6. Attach the new well adapter to the socket. The 3/8-16 system side attaches to the socket. The 5/8-11 side screws into the fuse.
7. Using the socket, screw the well adapter into the fuse; torque to 20 N•m (15 ft•lbs). Refer to Figure 40.
8. Unscrew the socket from the adapter.

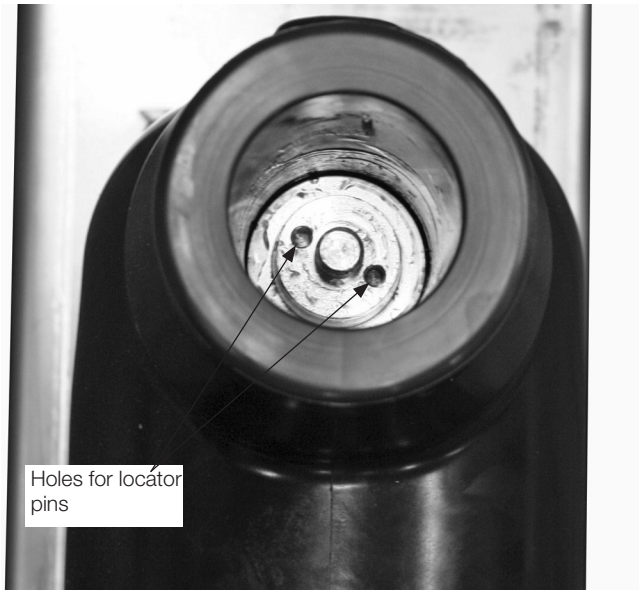


Figure 38. Well adapter in fuse

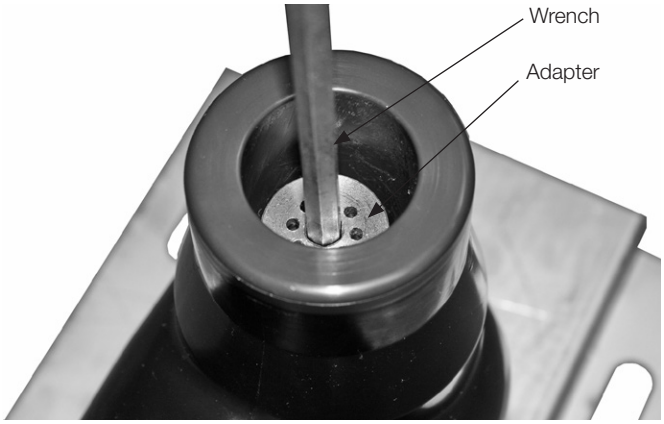
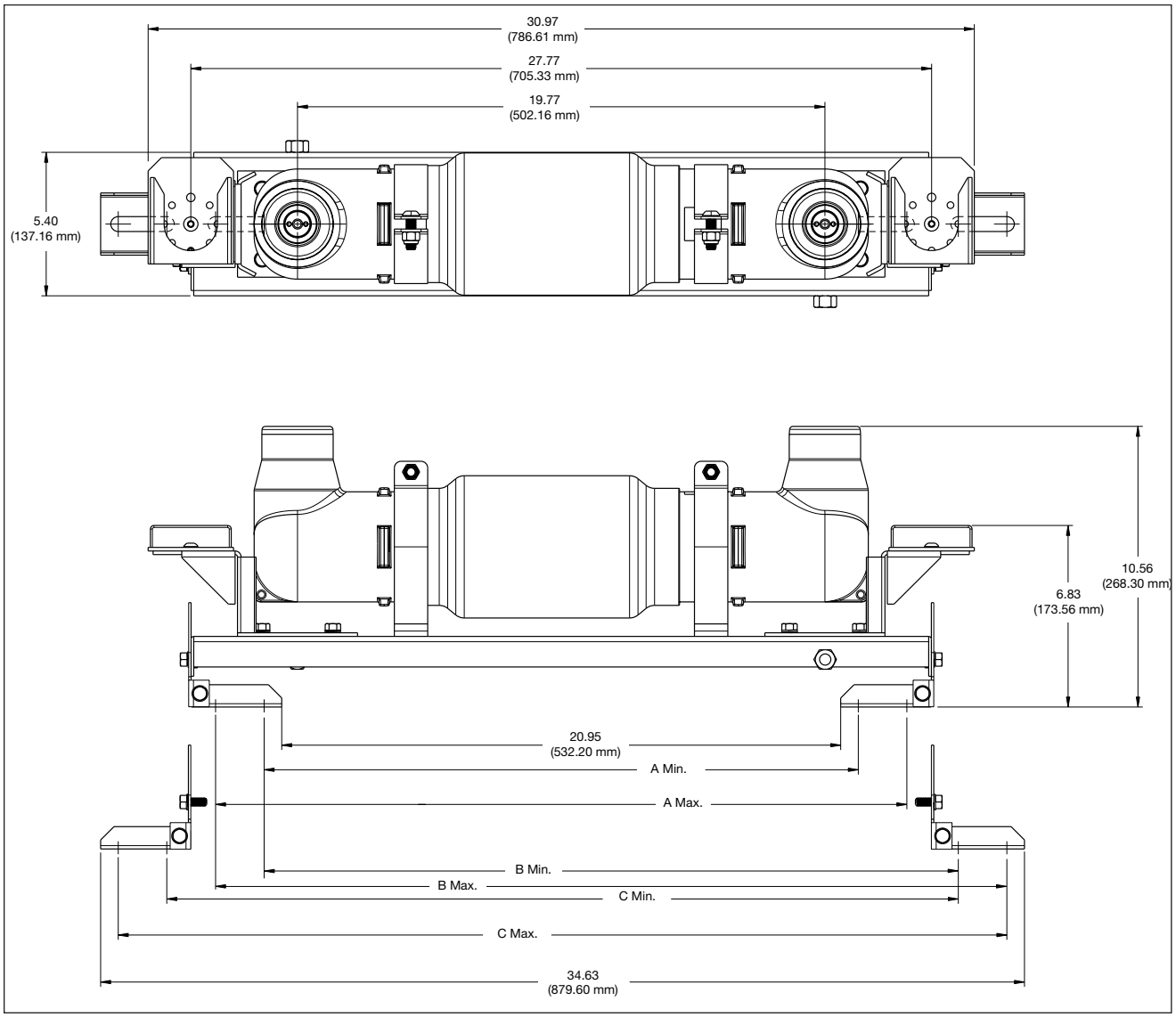


Figure 39. Turning well adapter with socket on wrench

Figure 40. Fuse with well adapter removed

Dimensional drawings



Mounting options

Option	Length in.	Length mm
A min.	22.77	565.73
A max.	25.91	658.18
B min.	25.97	659.64
B max.	29.61	752.09
C min.	29.67	753.62
C max.	33.10	846.07

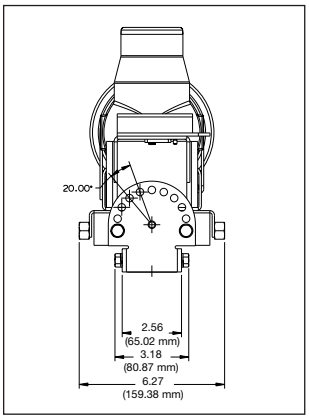
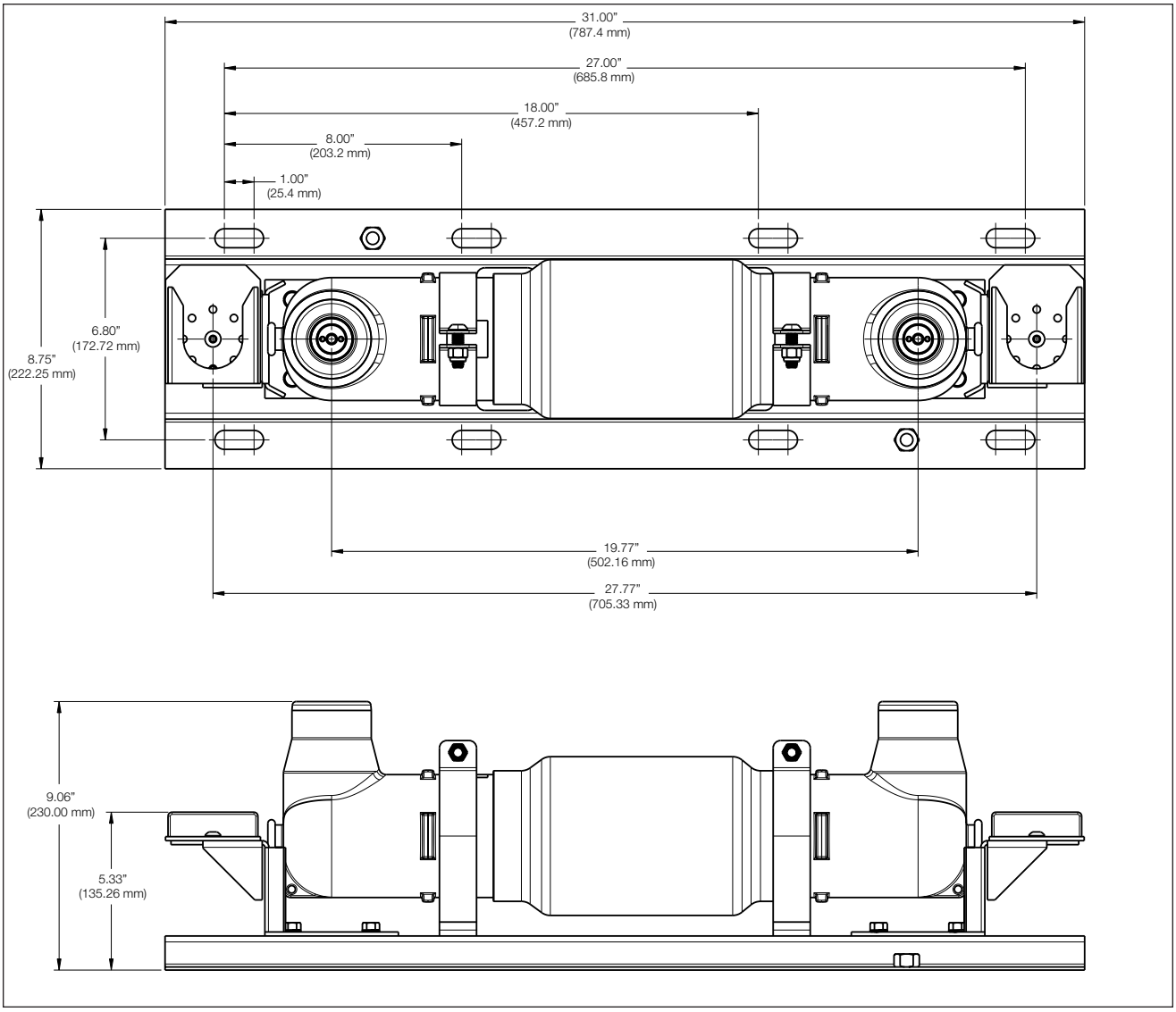


Figure 41. Standard channel base CB, clamp BC, pocket brackets S3, and foot F1



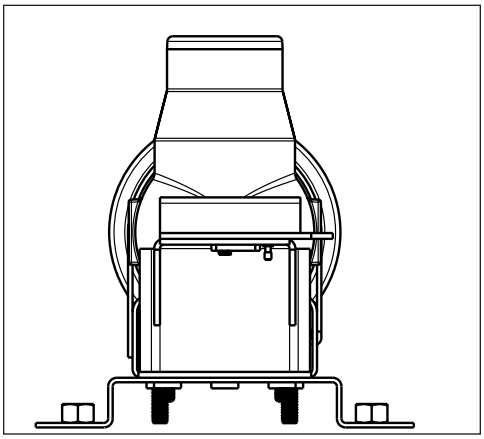


Figure 42. Top-hat channel base HB

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Printed in USA
Publication No. MN132031EN / Rev. 00
November 2016

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