

MODEL NUMBER: **RFE-10** RF/EMI SHIELDED ENCLOSURE

Installation Manual

Version 1.0



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Overview

PURPOSE

The purpose of this manual is to provide installation instructions to install The EMC Shop' RFE-8 and RFE-10 products.

GENERAL

RF shielded enclosures are designed to provide a reliable environment to restrict the movement of RF waves for the purpose of security, testing and other applications. In order to maintain the shielding integrity of the enclosure, it is imperative that you read the assembly instructions in their entirety.

QUALITY ASSURANCE

The EMC Shop, LLC carefully inspects all material prior to shipping. Should any damage from shipment and/or handling be identified, please notify the Project Manager immediately.

REQUIRED TOOLS

- Chalk line
- Torque indicating screwdriver (1–100-inch pound)
- T-27 Torx socket screw bits
- T-30 Torx socket screw bits
- #2 & #3 Phillips head bit
- Magnetic bit holder
- 2' framing square
- Industrial step ladder
- "T" braces made of 2" x 4" construction lumber
- 3' level
- 12' tape rule
- Metal piercing awl

RECEIVING MATERIAL

The enclosure material will be shipped to the client in skids. These skids are to be offloaded by the client and transported inside the facility for storing. To avoid damage and/or mishaps, all materials should be stored indoors in a temperature-controlled environment. Please avoid stacking the packages.

Prior to commencing the installation, verify that all parts have arrived in good working condition. Using the supplied bill of materials, check through the complete list of parts. Notify your Project Manager immediately if there are any missing or damaged pieces.



SITE PREPARATION

A working area near the installation location must be available to store and prepare materials prior to and while the installation is in progress. This area should be roughly the size of the enclosure.

The RF shielded enclosure location should be clean and clear of any debris and/or obstructions. All metallic surfaces, including but not limited to conduits, ducts, and pipes, should be isolated or relocated so they will not impose grounding issues and impede the overall performance of the shielded enclosure. The floor where the enclosure will be installed must be clean, free of irregularities and leveled within 1/8" over 10'.

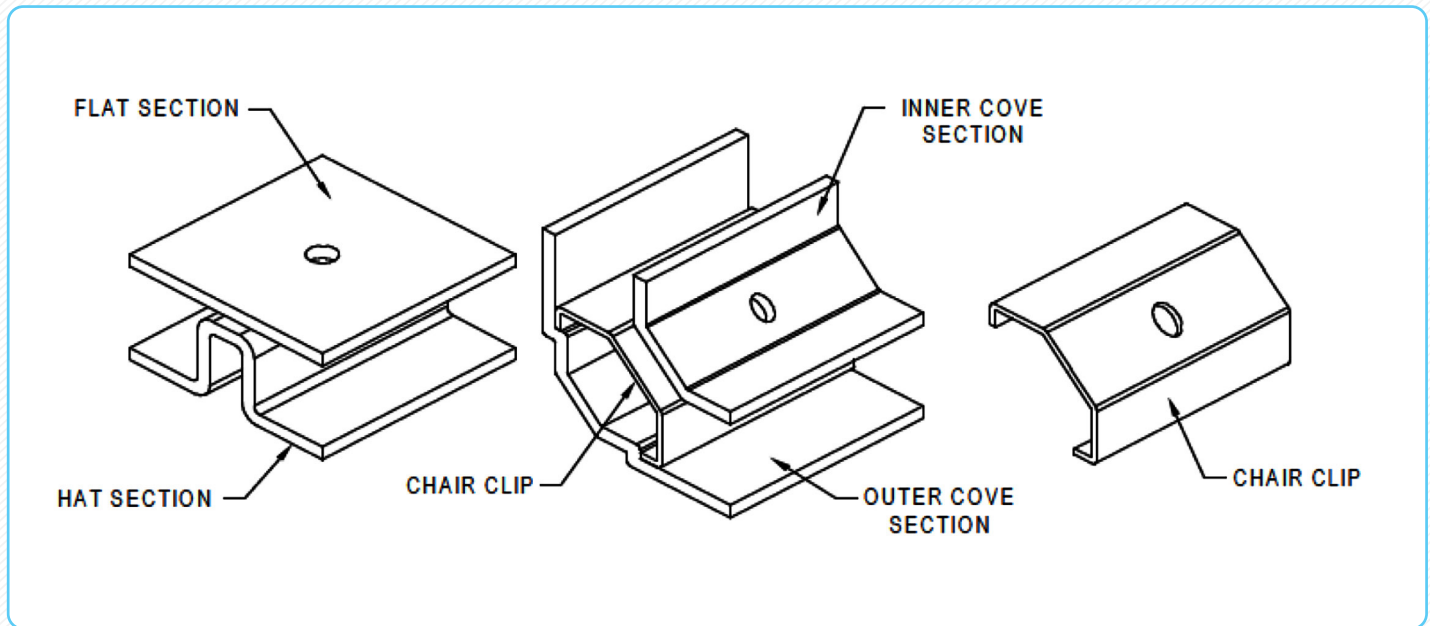
LIST OF MATERIALS

The following is a list of materials provided with the shielded enclosures:

RFE-10 (10' x 10' x 8' high)

Qty.	Item Description
3	24" x 96" rf shielded panel
2	24" x 120" rf shielded panel
7	47-1/4" x 96" rf shielded panel
4	47-1/4" x 120" rf shielded panel
1	23-1/4" x 96" rf shielded panel
8	9' 10-3/4" cove framing (inner and outer) with chair clips and screws
4	7' 10-3/4" cove framing (inner and outer) with chair clips and screws
2	9' 10-3/4" hat and flat framing pan head with screws
2	9' 10-3/4" hat and flat framing counter sunk with screws
8	7' 10-3/4" hat and flat framing with screws
8	Corner caps (inner and outer)
1	12" x 12" bulkhead panel
2	12" x 12" vents
1	50' Bronze wool
1	25' Copper foil
1	900mm x 2150mm RF shielded door, left hinged
1	2 x 32Amp 250 VAC RF power filter
1	Ram board
1	Polyethylene sheet

Installation



FLOOR ASSEMBLY

Step 1: Mark floor area

Using a chalk line, carefully mark out the chamber footprint in accordance with the supplied drawings.

Step 2: Clean and inspect installation area

Ensure the floor is properly swept and any debris or obstructions are removed for the entire footprint.

Step 3: Place the underlayment

First, lay the 6-mil polyethylene sheet down on the floor in the footprint area. Second, lay the ½" thick hardboard leveling layer on top of the polyethylene sheet. All joints should be butted but not overlapping.

Step 4: Prepare panels and framing

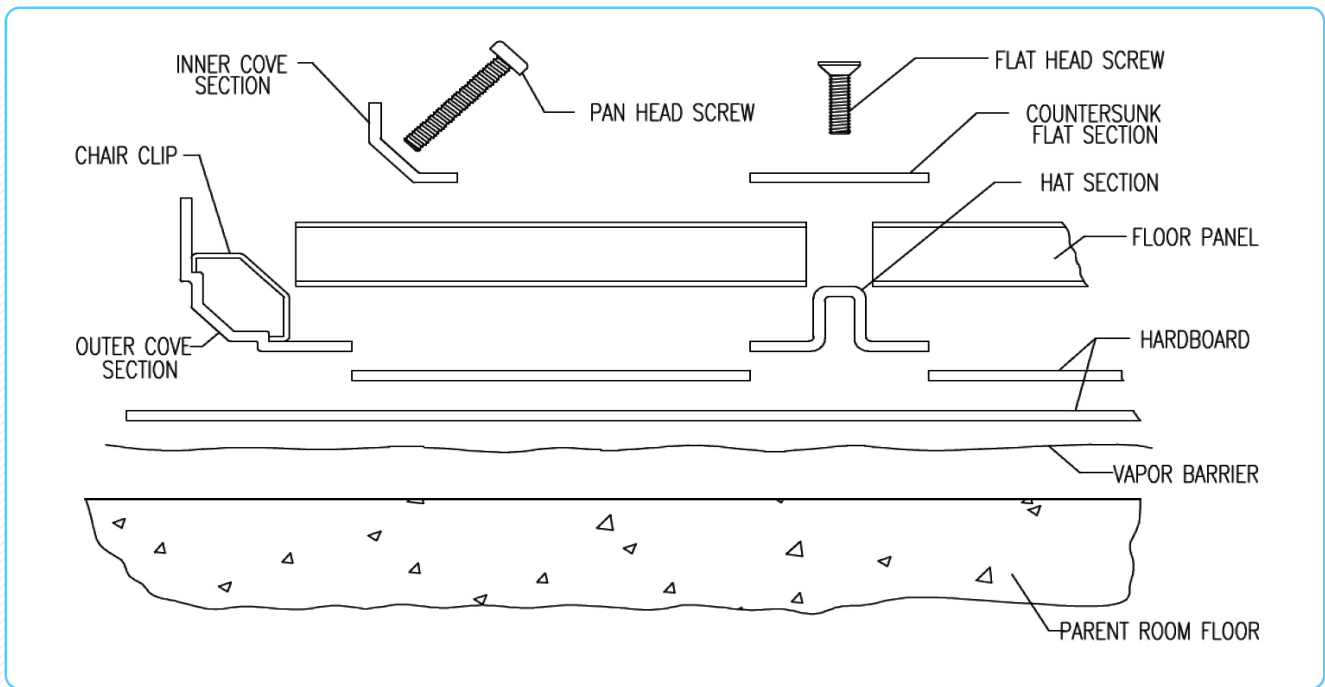
Using an approved cleaning agent, carefully wipe clean all contact surfaces of flat framing sections and edges of panels.

Step 5: Install floor panels and framing

Lay hat sections and floor panels on top of the underlayment as depicted in the drawings. Then, place and fasten flat framing sections to the hat framing section. This step should result in the framing assembly, both the hat and flat section, causing a sandwich effect with the panels.

After verifying the floor dimensions match the drawings and the floor is square, continue to place the cove assemblies around the entire floor perimeter.

NOTE: All screws should be tightened to 80-inch pounds.

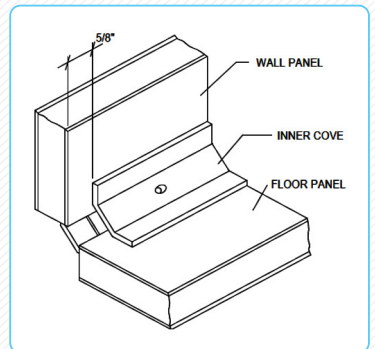


WALL ASSEMBLY

Upon completion of the complete floor assembly described above, proceed with the following steps for the wall assembly. The wall assembly should begin at the far corner wall.

Step 1: Install corner panels

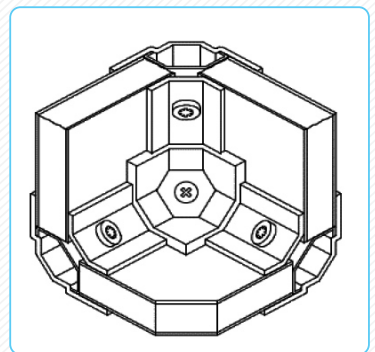
Loosely fasten cove assembly together on far corner while leaving a gap of approximately 1" with chair clips centered on vertical joints. Then, place a panel edge in this 1" gap until it rests on the chair clip. Align the panel corner with the floor panel corner and check for levelness. With the panel level and confirmed in the proper location, fasten the first 6 screws. Install the second corner panel and tighten 16 screws.



Repeat the directions above to complete all four corners of the enclosure. Once all corner panels are in place, install the inner corner cap over the inner cove and the outer corner cap over the outer cove. Loosely tighten the corner caps and check for proper fit. Once the corner caps fit nicely, tighten screw to 80-inch pounds.

Step 2: Complete wall assembly

Reference drawings for specific panel placement. To complete the wall assembly, locate panels and hats and flats for the most distant wall. Starting at one end, loosely attach a vertical hat and flat assembly to a corner panel (hat and flat should rest on the cove edges). Next place a wall panel in the gap between the inner and outer cove. Slide the panel into the hat and flat assembly. Check the panel for levelness, when good, tighten all inner and outer cove and hat and flat screws. Repeat this process for all walls.



DOOR PANEL ASSEMBLY

Once all the wall panels are in place and the screws tightened, verify that the opening is level and plumb. Loosely attached a vertical hat and flat framing assembly to the hinge side of the panel. Then, plumb the door on the hinge side and tighten the screws in the hat and flat.

CEILING ASSEMBLY

Step 1: Install first corner panel

Loosely attach an inner and outer cove assembly at one corner end wall. Using a "T" brace or panel lifting device, lift a ceiling panel to the cove assembly. Shift the panel into the cove assembly, check for squareness and tighten cove screws.

Step 2: Install remaining panels

Continue with the ceiling assembly using "T" braces to support the panels while installing hat and flat framing sections between panels.

INSTALLATION VERIFICATION

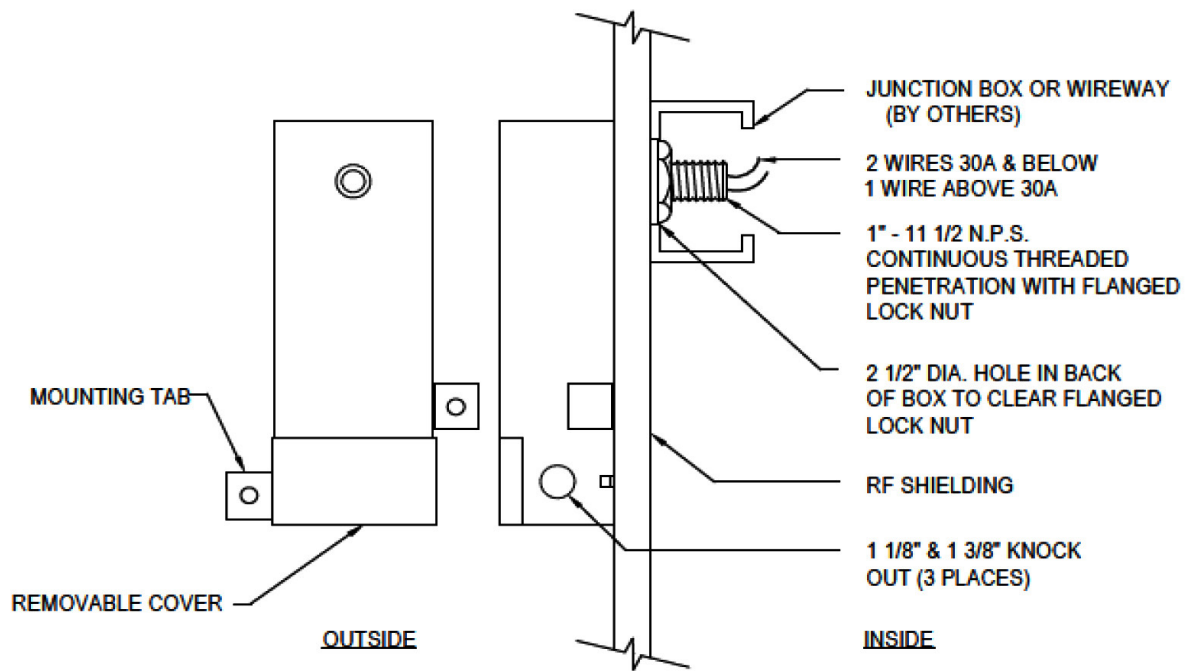
Once the enclosure is installed, perform an inspection to ensure the following criteria have been properly addressed:

- The spacing between the framing members does not exceed 1/16"
- No panel edges are visible
- There are no overlapping framing members
- No metal objects or materials are contacting the exterior of the enclosure
- All screws have been tightened to 80-inch pounds of torque
- Door is properly aligned

ELECTRICAL

All electrical power and communication lines must be appropriately filtered to enter or leave the shielded enclosure.

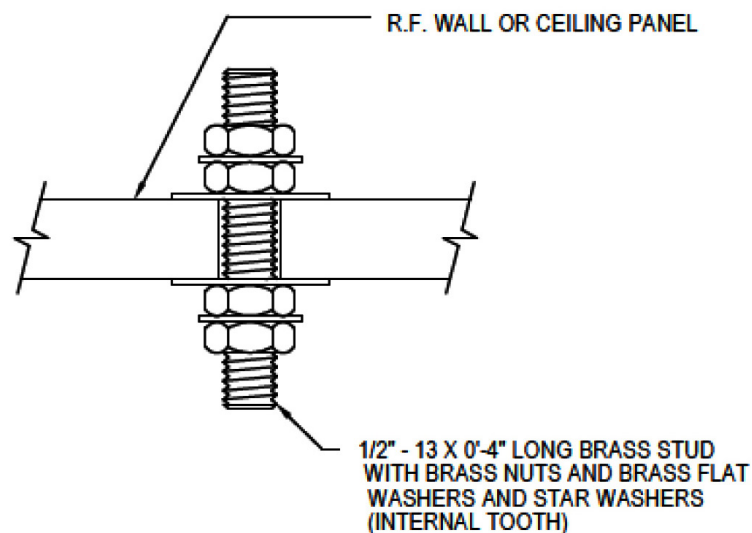
To install the supplied filter(s), a 1-5/16" diameter hole will need to be cut into the panel. Clean the periphery of the hole, the 1" threaded pipe on the filter and the bronze flanged lock nut. Insert the threaded pipe through the hole and secure the filter with the flanged lock nut. To maintain the shielding integrity, ensure the flanged lock nut is properly tightened.



A brass ground stud is provided with the RF shielded enclosure. Prior to installing the ground stud, clean the periphery of the hole, the ground stud, and the washers. This ground stud should be installed near the filters.

There should only be a single ground point per enclosure to avoid ground loops. It is recommended that a 4/0 or heavier solid insulated wire be used. A dedicated ground rod should be used. Do not use the building structural steel as a ground.

For the installation of conduits, junction boxes and other electrical distribution material, utilize only a #8 x 5/8" long sheet metal screw. It is extremely important not to puncture through or pierce both sides of the shielding panels. If this occurs, please contact your AP Representative to discuss how to rectify the issue.



GROUND STUD DETAIL

Heating, ventilating, and air-conditioning systems can be used with the shielded enclosure. Honeycomb waveguide air vents are supplied with each room to provide an air passage while maintaining the shielding integrity.

An external flange is provided with the honeycomb waveguide air vent to connect duct work. A non-metallic connector must be used between the flange and ducts as duct work should not be directly connected to the shielded enclosure. It is imperative that NO metallic material be in contact with the exterior of the shielded enclosure. Any attachments to the panels should be made with #8 x 5/8" sheet metal screws.

