BS Enclosure
Models:
BS-EBF-04-AA & BS-EBF-07-AA

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P/N: IOD-7191 **Date:** February 2026

WARNING

Only personnel that have been trained to install, adjust, service, maintenance or repair (hereinafter, "service") the equipment specified in this manual should service the equipment.

This equipment is not intended for use by persons (including children) with reduced physical, sensory or mental capacities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the equipment.

The manufacturer will not be responsible for any injury or property damage arising from improper supervision, service or service procedures. If you service this unit, you assume responsibility for any injury or property damage which may result. In addition, in jurisdictions that require one or more licenses to service the equipment specified in this manual, only licensed personnel should service the equipment. Improper supervision, installation, adjustment, servicing, maintenance or repair of the equipment specified in this manual, or attempting to install, adjust, service or repair the equipment specified in this manual without proper supervision or training may result in product damage, property damage, personal injury or death.

QUEBEC DISCLOSURE REGARDING AVAILABILITY OF REPLACEMENT PARTS, REPAIR SERVICES AND INFORMATION FOR MAINTENANCE AND REPAIR: Daikin Comfort Technologies Manufacturing, Inc. (Daikin) does not guarantee the availability of (1) replacement parts; (2) repair services; and (3) information necessary to maintain or repair products, within the meaning of section 39.1 of the Consumer Protection Act, CQLR, c P-40.1 and section 79.18 of the Regulation respecting the application of the Consumer Protection Act, CQLR, c P-40.1, r. 3.

AVIS POUR LE QUÉBEC CONCERNANT LA DISPONIBILITÉ DES PIÈCES DE RECHANGE, DES SERVICES DE RÉPARATION ET DES RENSEIGNEMENTS POUR L'ENTRETIEN ET LA RÉPARATION : Daikin Comfort Technologies Manufacturing, Inc. (Daikin) ne garantit pas la disponibilité (1) des pièces de rechange, (2) des services de réparation et (3) des renseignements pour l'entretien et la réparation, au sens de l'article 39.1 de la Loi sur la protection du consommateur, RLRQ c P-40.1 et de l'article 79.18 du Règlement d'application de la Loi sur la protection du consommateur, RLRQ c P-40.1, r 3.

WARNING

Do not bypass safety devices.

CONTENTS

SAFETY CONSIDERATIONS

DANGER

The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.) Do not pierce or burn. Be aware that refrigerants may not contain an odor.

DANGER

Checks to the area: Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.

DANGER

Work Procedure: Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

DANGER

Checking for presence of refrigerant: The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

DANGER

No ignition sources: No person carrying out work in relation to a REFRIGERATION SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

WARNING

Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock or fire.

WARNING

Only qualified personnel must carry out the maintenance, service and repair operations. Every working procedure that affects safety means shall only be carried out by qualified personnel ONLY.

WARNING

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

WARNING

Only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.

WARNING

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand. Have a dry powder or CO2 fire extinguisher adjacent to the hot work area.

WARNING

Checks to electrical devices: Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

WARNING

Checks to the refrigerating equipment: Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance. The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

- **the ventilation machinery and outlets are operating adequately and are not obstructed;**
- **marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;**

WARNING

Presence of fire extinguisher: If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand. Have a dry powder or CO2 fire extinguisher adjacent to the hot work area.

CAUTION

General work area: All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

CAUTION

Ventilated Area: Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere

WARNING

Before doing any type of servicing the unit, disconnect power at the identified isolation devices (terminal blocks of the enclosure and Valve Box) and verify zero voltage at the specified test points before touching internal components. When working near energized conductors, always de-energize and verify absence of voltage before touching terminals.

NOTE: If an intrinsically safe component has failed, it must be replaced. Intrinsically safe components shall not be repaired.

NOTE: For Installation Only in Locations Not Accessible to the General Public.

NOTE: Cabling: Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

CODES & REGULATIONS

This product is designed and manufactured to comply with national, state, & local codes. Installation in accordance with such codes and/or prevailing local codes/regulations is the responsibility of the installer. The manufacturer assumes no responsibility for equipment installed in violation of any codes or regulations.

KIT TABLE

The table below shows which Valve Box Enclosure kit Is applicable to which Valve Box.

Model Name	Applicable BS Model
BS-EBF04-AA	BSF4A54AAVJ
BS-EBF07-AA	BSF6A54AAVJ
	BSF8A54AAVJ

BEFORE INSTALLATION

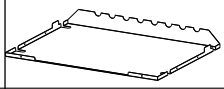
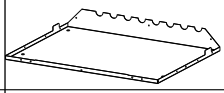
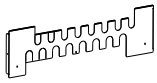
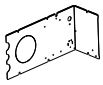
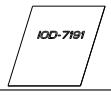
Precautions

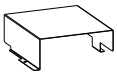
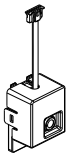
- Must wear PPE to handle the parts which have sharp edges
- Regarding the installation of the Valve Box, refer to the installation manual provided with the Valve Box.
- Hold the Valve Box unit by the hanging brackets (4 points) when opening the box and moving it, and do not lift it holding on to any other part, Especially the refrigerant piping.
- This enclosure kit is made to be assembled around the valve box.

Parts & Accessories

Check that the following parts are included with the branch selector box enclosure kit.

NOTE: Do not throw away any of the parts until installation is complete. Parts are required for installation work. Keep them in a safe place so that they will not get lost. Additionally, ask the customer to keep instructional documents after installation work is complete.

ITEM	NAME	QTY	EXAMPLE SHAPE
1	TOP PANEL	1	
2	BOTTOM PANEL	1	
3	FRONT PANEL	1	
4	LEFT SIDE PANEL	1	
5	RIGHT SIDE PANEL	1	
6	SIDE EXTENSION	2	
7	CONTROL BOX	1	
8	IOM	1	
9	M5 SCREWS	40	
10	M4 SCREWS	6	

ITEM	NAME	QTY	EXAMPLE SHAPE
11	RUBBER CUBES 1"	4	
12	RUBBER CUBES 1/4"	6	
13	GROMMET HORSESHOE	6	
14	SEALING WASHER	6	
15	WIRE CLIP	10	
16	WWIRE CLAMP CLIP	2	
17	GROMMET	1	
18	CONTROL BOX COVER	1	
19	R-32 SENSOR	1	
20	VALVE BOX PCB JUMPER	1	
21	TIE WRAP	1	

PARTS LIST TABLE

INSTALLATION SITE FOR ENCLOSURE

WARNING

Securely install the unit at a location that is capable of withstanding its weight. Inadequate strength may cause the Valve Box to fall, resulting in bodily injury

CAUTION

Leave enough space to perform maintenance on the control box

CAUTION

To prevent video and audio interference, install the Valve Box as well as associated power supply wiring and transmission wiring at least 3.5 ft. (1 m) away from TV's and radios. However, depending on the reception, interference may result even if a minimum distance of 3.5 ft. (1 m) is maintained.

NOTE: Please refer to the Valve Box Installation Manual for the installation of the Valve Box. To install the Valve Box Enclosure, the following requirements must be met.

Requirements:

- Do not install this equipment in locations subject to standing water, dripping condensation, or direct weather exposure unless additional protection is provided.
- Choose the installation site dimensions according to the instructions in this manual. The clearance dimensions outlined in this manual supersede those in the Valve Box Installation Manual.
- The location must be able to withstand the combined weight of the valve box and enclosure.
- There must be adequate space to perform installation and service work. (Refer to Figures A and B)
- The location must allow an inspection hole to be installed on the control box side. (Refer to Figure A)

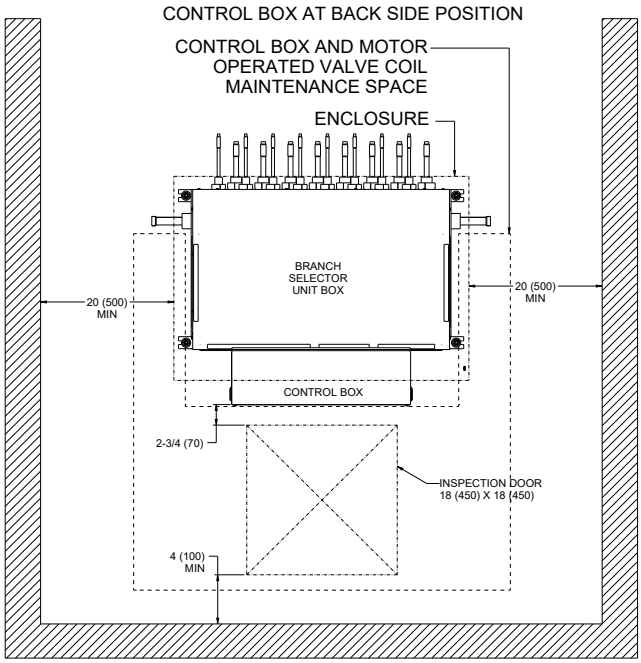


Figure A

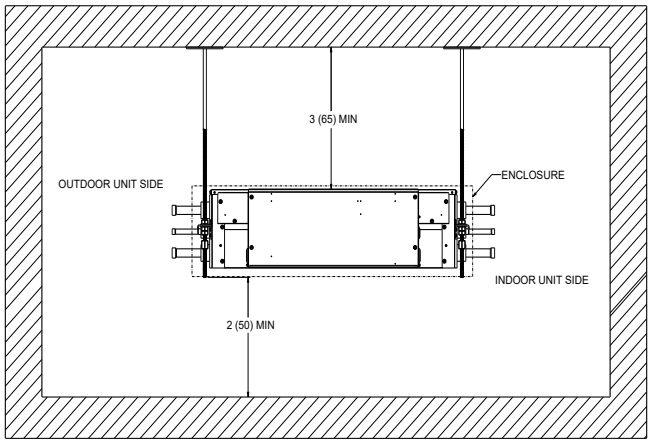


Figure B

- The location must support a separate opening that allows the product to be raised and lowered into place.
- When installing the Enclosure, ensure there is enough clearance above the unit to install the Top Panel (Refer to Fig. F.1).
- The ambient operating temperature of the enclosure is -14°F to 122°F (-10°C to 50°C). Do not apply the product outside these limits.
- The option of changing the location of the control box is NOT available with the enclosure.
- Before installation, visually inspect all parts including Sheet metal, PCBs, harnesses, edge-seals, and gasketing for damage. If any damage is seen, replace the component with new replacement parts. Wire splicing of harnesses is not allowed.

INSTALLATION PREPARATION

NOTE: Support the Enclosure and Valve-box only by the specified rigid hanging rods and brackets.

Piping

IMPORTANT: After installation of the enclosure is complete, the refrigerant piping should be centered within the enclosure's piping outlets with greater than 0.4-in (10 mm) clearance between the enclosure and the copper piping.

- Refer to the Valve Box Installation Manual for proper piping installation instructions.
- Complete piping insulation in accordance with the valve box installation manual.
- Leaked refrigerant gas may travel along the piping between the copper pipe and the insulation; to mitigate this, secure a zip tie (Item 21) around each pipe at the enclosure to seal the insulation to the pipe and keep any leaked gas contained within the enclosure.

Suspension Bolts: For Supporting the Product

IMPORTANT: Follow the installation instructions and spacings for the suspension bolts as described in the appropriate Valve Box installation manual.

- The end of the all-thread rods needs to be a minimum of 1.75-in. past the bottom surface of the Valve Box Enclosure (Refer to Figures C.1, C.2 and C.3).

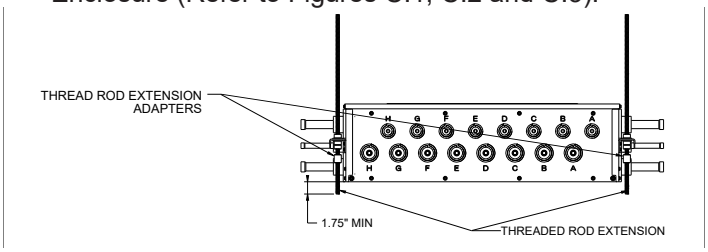


Figure C.1

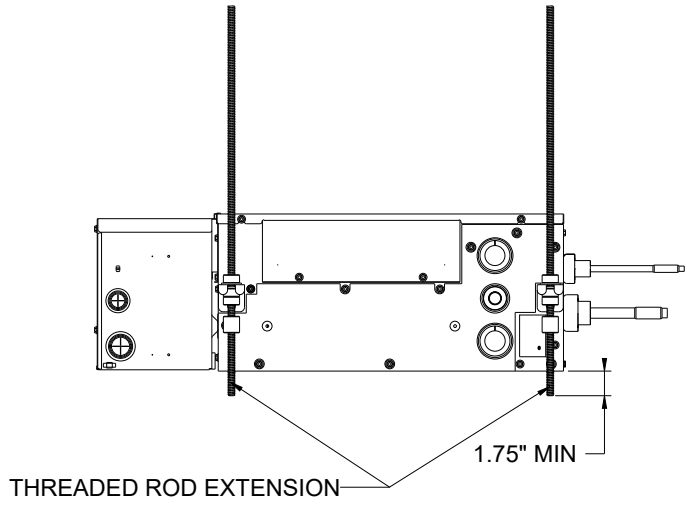


Figure C.2

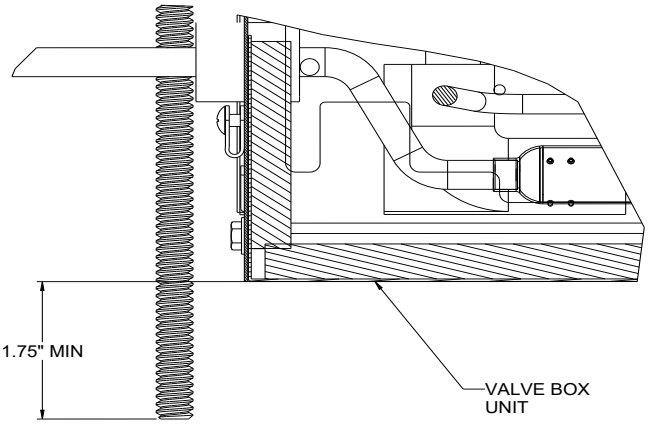


Figure C.3

- If the All-Thread rods are not 1.75-in past the bottom surface of the Valve Box, a rod extension may be used to meet the required dimensions (Refer to Figure D).

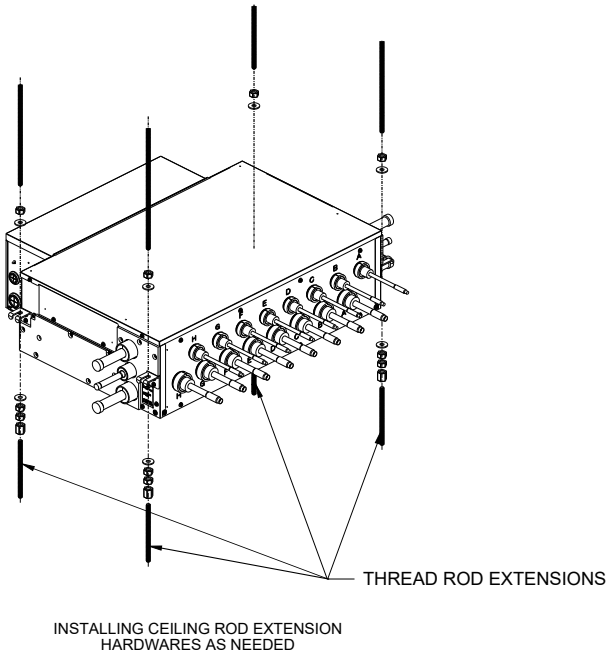


Figure D

STOP: Please refer to the pre-installation checklist at the end of the IOM before moving to the installation instructions.

ENCLOSURE INSTALLATION

Requirements:

- Enclosure installation begins only after the valve box installation is complete and meets the requirements specified in the previous section.
- The enclosure assembly sequence must follow the order specified in these instructions.
- Unless otherwise indicated, use factory-provided fasteners (item 10) For all fastener locations.
- Unless otherwise indicated, tighten fasteners to 25 lb-in. Do not over-torque or under-torque.

PRECAUTION

To remove knock out holes:

- Open the slit holes with a cutting nippers or similar tool.
- Open an appropriate hole as needed.
- After cutting the slit holes, it is recommended to remove burrs in the slit holes

1. Top and Bottom Panel

1.1 Remove the adhesive liner and attach the 1/4-inch rubber pads (Item No.12) to the top of the Valve Box at each of the 4 corners. (As indicated in Figure E.1)

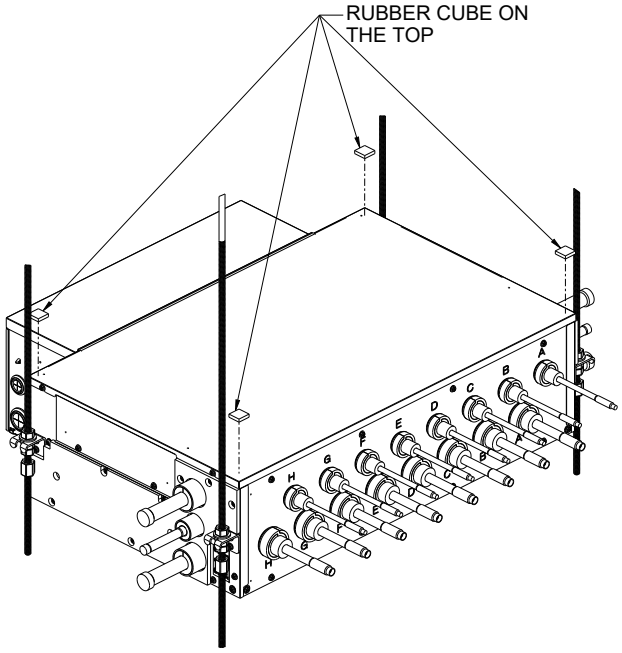


Figure E.1
installing to 1/4" rubber cubes

1.2 Remove the adhesive liner and attach the 1-inch rubber pads (item 11) to the bottom of the branch selector unit. (As indicated in Figure E.2)

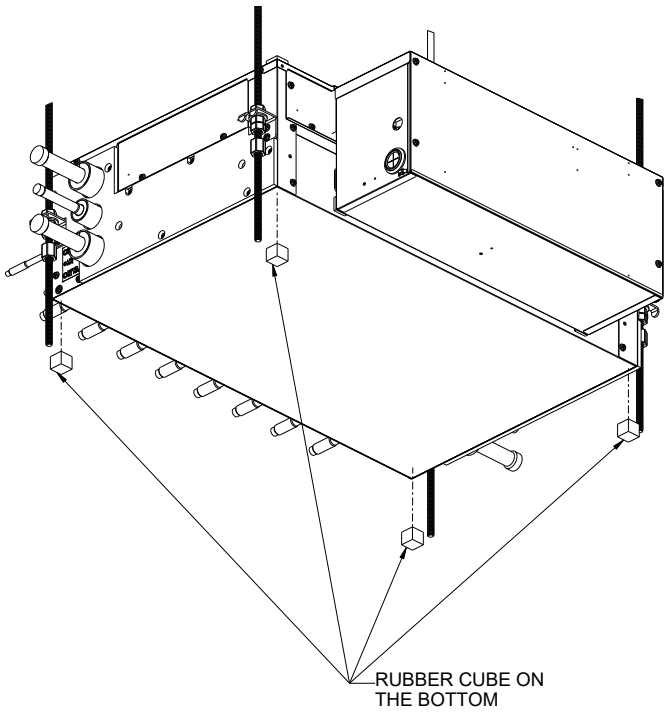


Figure E.2
installing bottom 1" rubber cubes

NOTE: Rubber blocks are positional aids used only for initial alignment and reseating of the lower panel; the Enclosure and Valve-box must be structurally supported by their mounting brackets and the common structure, not by the blocks.

1.3 Install the top panel (Item 1) by tilting the top panel diagonally between the ceiling rods, aligning the ceiling rods in the 4 cut-outs of the top panel. (Refer to Figure F.1)

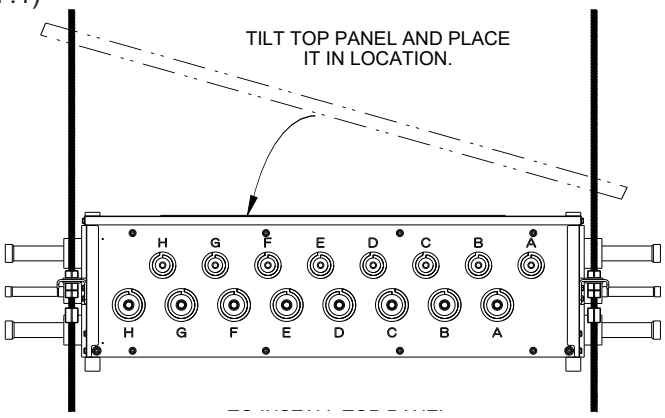


Figure F.1
to install top panel, tilt top panel, align with ceiling rod, straighten and place it in location.

1.4 Install the Horsehoe Grommets (item 13) in the indicated spaces on the top panel around the ceiling rods by pushing them into designated grooves on the panel. (Refer to Figure F.2)

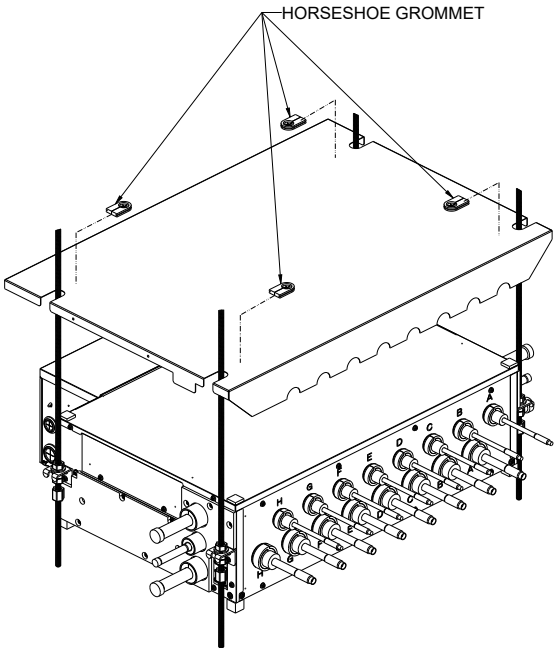


FIGURE F.2
INSTALL HORSESHOE GROMMETS

1.5 Install the bottom panel (Item 2) by aligning the 4 cut outs in the bottom panel with the ends of the 4 thread rods and bringing the panel into contact with the rubber cubes installed to the bottom of the Valve Box (Refer to Figure F.3)

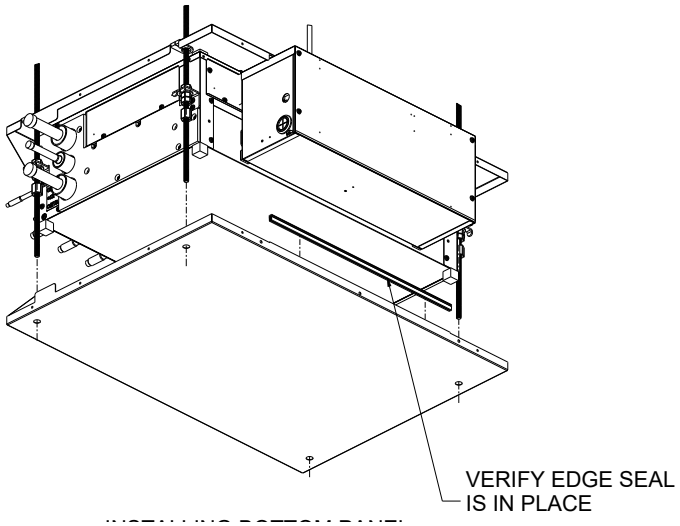


FIGURE F.3
TO INSTALLING BOTTOM PANEL

1.6 Remove the adhesive protection liner from each sealing washer (item 12) and place a washer over each threaded rod hole with the adhesive side against the bottom panel. (Refer to Figure F.4)

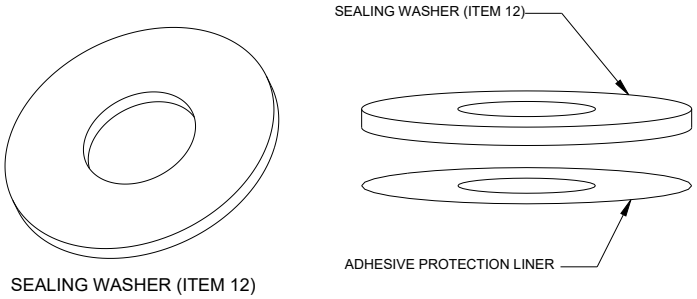


FIGURE F.4
REMOVING SEALING WASHER LINER

1.7 Use the appropriate field provided washer and nut components to secure the bottom panel of the enclosure to the bottom of the Valve Box. (Refer to Figure. F.5)

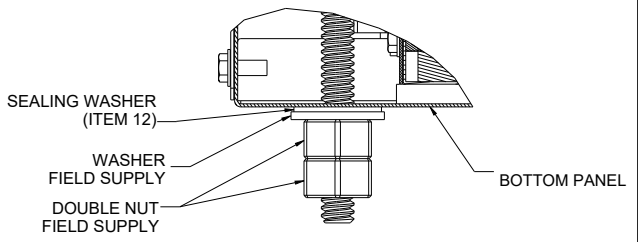


FIGURE F.5
WASHER-NUT INSTALLATION (X4 LOCATIONS)

1.8 After installation, use a level to confirm the bottom panel is level and adjust as needed.

1.9 Installation of the top and bottom panels is complete and should match the depiction in Figure F.6.

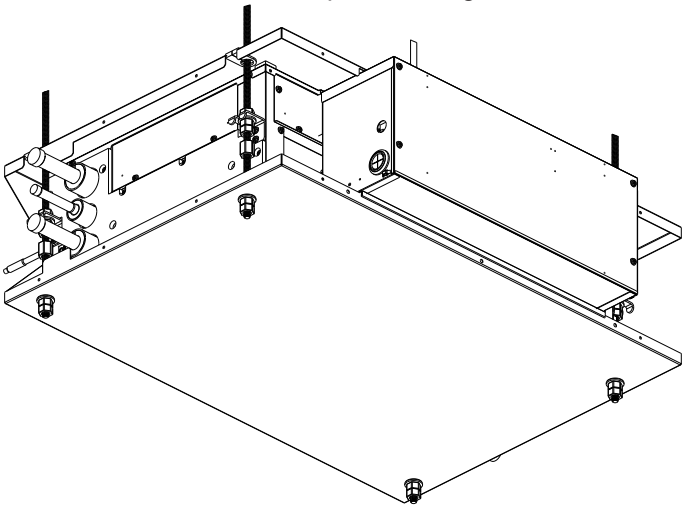


FIGURE F.6
INSTALLED BOTTOM PANEL

2. FRONT AND SIDE EXTENSION PANELS

IMPORTANT: FOR BS-EBF07-AA WHEN THE ENCLOSURE WILL BE USED FOR AN 8-PORT VALVE BOX (BSF8) MODEL, THE KNOCKOUTS ON THE FRONT PANEL (ITEM 3) MUST BE REMOVED. (REFER TO FIGURE G.1)**

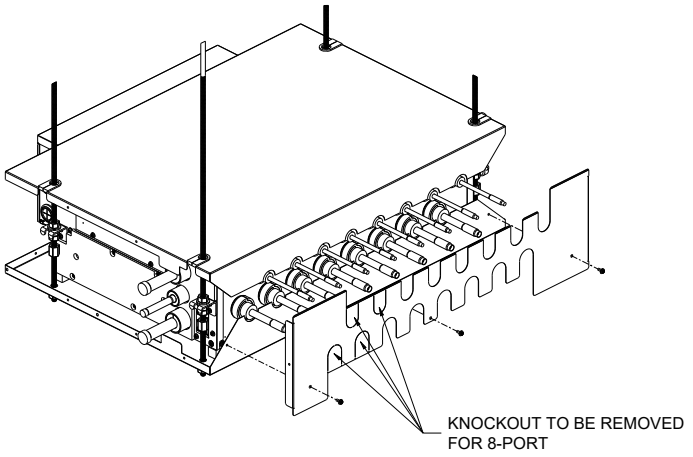


FIGURE G.1
INSTALLING FRONT PANEL

2.1 Install the front panel (Item 3) by maneuvering the panel between the pipes of the BSB, aligning the front panel with the Valve Box pipes and the top and bottom panel. Fasten it with screws in the provided locations. (Refer to Figure G.1 & G.2)

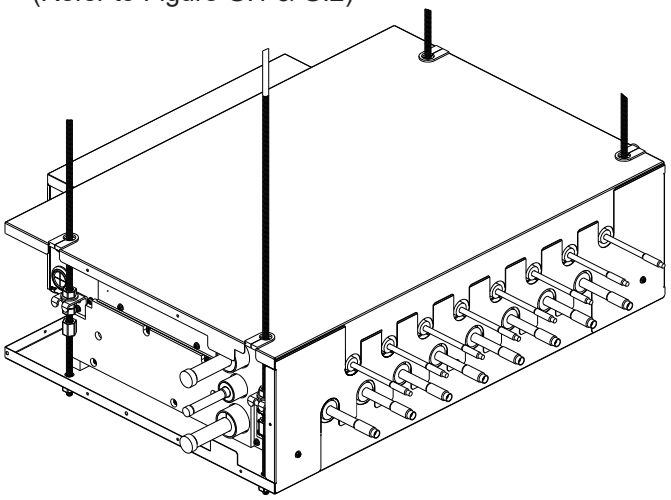


FIGURE G.2
INSTALLED FRONT PANEL

2.2 Install the 2 side extensions panels (Item 6) on the left and right sides of the enclosure. Fasten them with x2 M5 screws (Item 9) in the provided locations. (Refer to Figures G.3 and G.4)

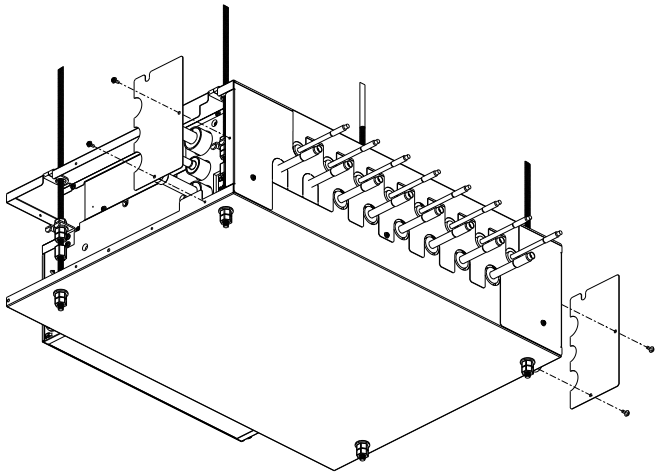


FIGURE G.3
INSTALLING SIDE EXTENSION PANELS

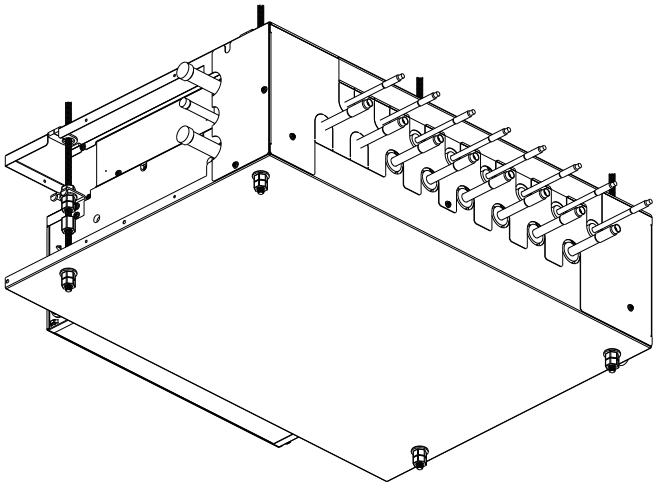


FIGURE G.4
INSTALLED SIDE EXTENSION PANELS

3. R32 SENSOR PANEL AND R32 SENSOR

⚠ WARNING

NON-APPROVED SENSOR LOCATIONS, ORIENTATIONS, OR WIRING CHANGES MAY INVALIDATE LEAK-DETECTION PERFORMANCE AND REGULATORY COMPLIANCE.

FUNCTION: The mitigation system is a stationary device that detects the presence of R-32 refrigerant above 25% LFL using refrigerant sensors and then initiates mitigation actions. The mitigation system's primary function is to reduce the concentration of leaked R-32 refrigerant to prevent serious safety hazards.

TRANSMISSION OF SIGNAL: Signal from the sensor is transmitted to the control system.

OPERATION: Once the R32 sensor detects refrigerant, a signal is sent to the Valve Box control system which

shuts off all the vales and the compressor to mitigate leak. Next the controls system will turn on the fan to ventilate the refrigerant leak out of the system until the sensor no longer detects refrigerant less than the threshold of detection. After the sensor determines the refrigerant levels are less than the threshold, the sensor runs a 15-second timer before reading the refrigerant levels again. After the15-second timer, it takes another reading to confirm the refrigerant levels have not risen above the previously indicated level. Once the sensor determines the levels have not risen, a signal engages to turn off the fan.

Servicing: The sensor transmits a signal that will populate an error code on the controls system. In the event of a refrigerant leak, the remote controller connected to the Valve Box where the leak occurred will display the error code “A0-20”, while other indoor units connected to the same outdoor unit will display “U9-01.”
After confirming these error codes, please proceed with the following steps to replace the R32 sensor:

1. Turn off the Valve Box power
2. Replace the R32 sensor
3. Turn on the Valve Box power and confirm the controller displays CH-20 error code.
4. Change the outdoor unit field setting 2-23 from 0 to 1 (refer to the Valve Box installation manual for instructions to change the field setting)

To address the error, please replace the sensor.

IMPORTANT:

• The Left Side Panel will provide a connection interface for the R32 Sensor.

• Use only the approved sensor fastener types and lengths; do not substitute longer or different fasteners that could protrude further through the service panel.

• Do not change the sensor location or wiring from the instructions in the IOM; non-approved locations or wiring deviations can invalidate leak-detection performance and safety compliance.

3.1 Install the Control Box (Item 7) on to the outside surface of the Left Panel (Item 4) using (x4) M5 screws (Item 9). (Refer to Figure M.1)

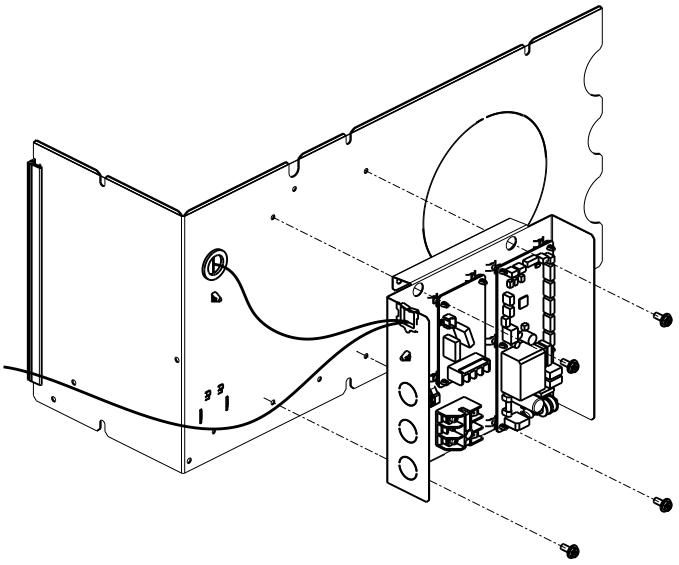


Figure M.1
assemble r-32 panel (assemble control box)

NOTE: Refer to Figure M.2 for the following instructions

3.2 Assemble the R32 Sensor (Item 19) to the inside surface Left Side Panel (Item 4) using an M4 screw (Item 10); be cautious of the fastener extruding through the Left Side Panel during assembly.

3.3 Verify the Edge Seal is fully seated between the notches on the panel.

3.4 Insert the Grommet (Item 17) into the Panel, ensuring the panel rests within the groove of the grommet.

3.5 Insert the Wire Clamp Clip (Item 16) into the Panel until the clip locks into place. Gently pull back on the clip to confirm it is properly seated.

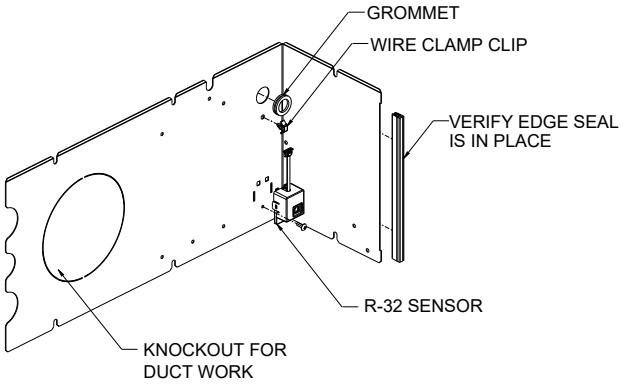


Figure M.2
assemble r-32 panel

NOTE: Refer to Figure M.3 for the following instructions

3.6 Remove the adhesive liner from the 1/4” Rubber Cube (Item 12) and place it on the outside surface of the Left Side Panel, aligning the cube hole with the M4 sensor screw. The adhesive side of the cube must be against the sheet-metal panel, covering the exterior extrusion of the M4 screw.

3.7 Route the R32 wire harness from the Control Box through the grommet on the R32 Sensor Panel. Ensure the harness passes through from the exterior side of the panel.

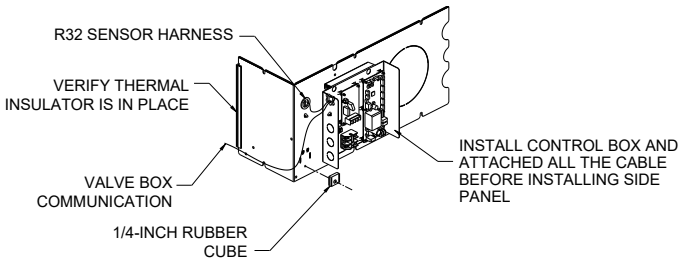


Figure M.3
ASSEMBLE R-32 PANEL (ASSEMBLE CONTROL BOX)

NOTE: Refer to Figure M.4 for the following instructions
3.8 Connect the R32 wire harness to the R32 Sensor by pushing the connectors together until they “click.” Verify the connector is fully seated by gently pulling back on the harness, taking care not to damage the connector locking feature.
3.9 Fix the harness to the Panel using the wire clip and a tie wrap (item 18).

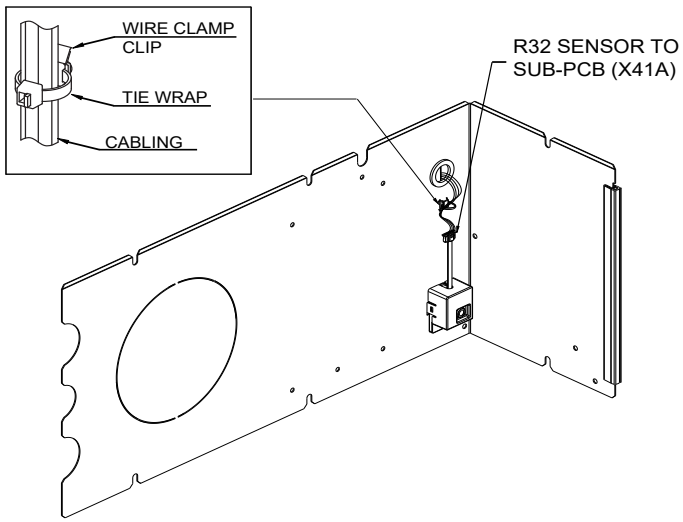


Figure M.4
assemble r-32 panel (r-32 sensor wire harness)

STOP: Before moving on, please verify that the Control Box and the R32 Sensor are assembled to the Left Panel.

4. LEFT-SIDE AND RIGHT-SIDE PANELS

IMPORTANT:
• THE LEFT-SIDE AND RIGHT-SIDE PANELS (ITEMS 4 AND 5) PROVIDE THE CONNECTION INTERFACE FOR FIELD VENTILATION. BEFORE INSTALLING THESE SIDE PANELS TO THE ENCLOSURE, AS PER FIELD DESIGN, REMOVE THE REQUIRED KNOCKOUTS.
• IT IS RECOMMENDED TO INSTALL AND SEAL THE APPROPRIATELY SIZED, FIELD-SUPPLIED STARTING COLLAR TO THE PANEL BEFORE SECURING THE PANEL TO THE ENCLOSURE. THIS WILL SIMPLIFY INSTALLATION OF THE FIELD-SUPPLIED VENTILATION DUCTING AFTER THE ENCLOSURE IS FULLY ASSEMBLED.

4.1 Install the Left Panel with the Control Box and R32 Sensor assembled by placing it over the side flanges of the top and bottom panels on the Left side of the Enclosure, then secure it at each indicated location. Ensure the edge seal is correctly seated. (Refer to Figs. M.5 and M.6)

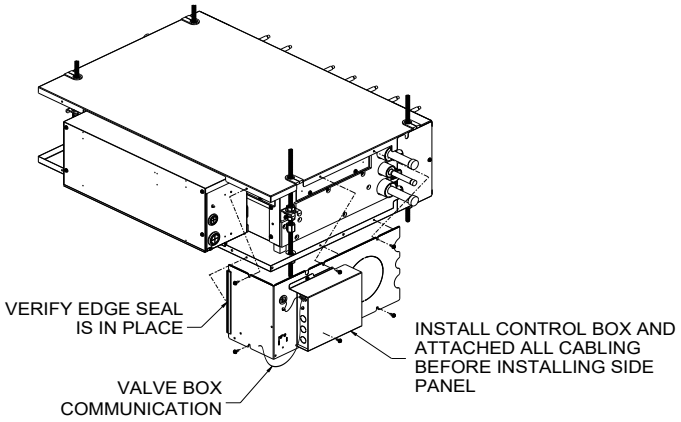


Figure M.5
INSTALLING LEFT-SIDE PRE-ASSEMBELED R-32 PANEL

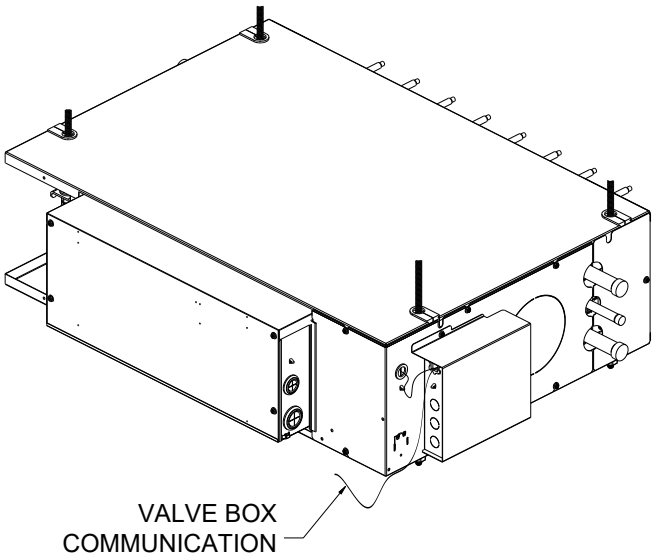


Figure M.6
INSTALLED LEFT-SIDE PRE-ASSEMBLED R-32 PANEL

4.2 Install the Right Panel by placing it over the side flanges of the top and bottom panels, then secure it at each indicated location. Ensure the edge seal is correctly seated. (Refer to Figs. M.7 and M.8)

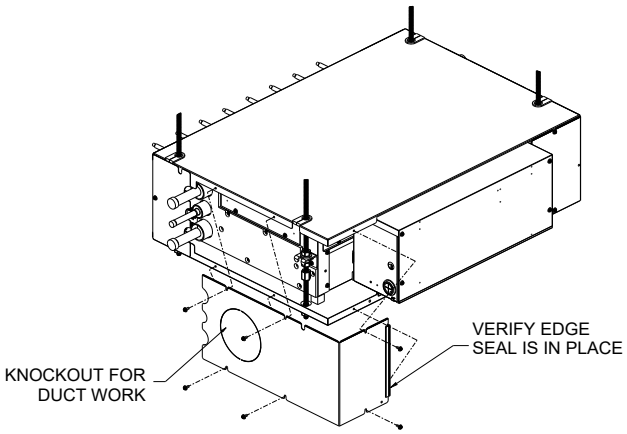


Figure M.7
INSTALLING RIGHT SIDE PANEL

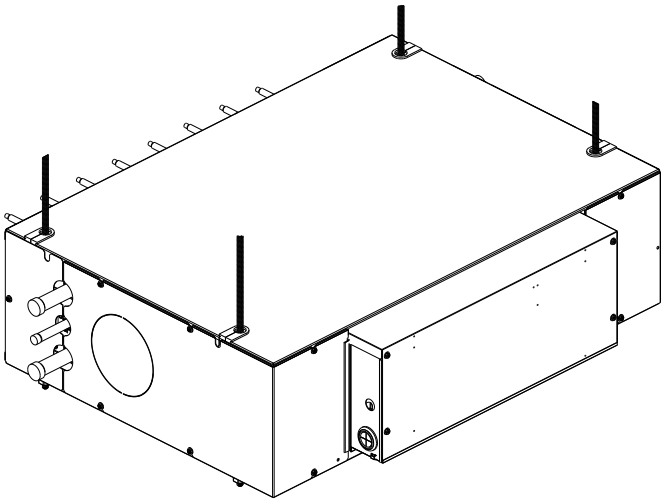


Figure M.8
INSTALLED RIGHT SIDE PANEL

4.3 Ensure no screw holes are left without screws.

STOP: Before moving on, please refer to the installation/ assembly checklist at the end of the iom.

ELECTRICAL WIRING

WARNING

Do not deviate from these requirements outlined for field wiring.

WARNING

Wire the ventilation fan load exactly as shown and do not exceed the relay's rated load.

CAUTION

Observe precautions for handling electrostatic sensitive devices.

Wiring connections – control box left-side panel

WARNING

Use qualified personnel and follow all applicable local/national electrical codes.

WARNING

Turn OFF all power supplies and verify the circuit is de-energized before making any wiring connections.

WARNING

Make sure the LEDs on the PCBs inside the Valve Box control box is turned off before connecting any wire harnesses to the PCBs. Once the power is shut off, the LEDs may take up to 2 hours to turn off.

WARNING

DO NOT turn on the power supply (branch switch, branch overcurrent circuit breaker) until all the work is finished.

IMPORTANT:

- **Do not pull directly on exposed conductors when installing or removing wiring; always grip the insulation or connector body to avoid damaging terminations.**
- **For wire harness using Plenum rated sleeving, confirm that the protective sleeve covers the required length of harness. DO NOT leave exposed sections where coverage is required.**
- **When installing strain-relief devices (e.g., tie-wraps, wire clips), tighten only enough to secure the harness. Avoid excessive tightening that compresses or cuts into insulation. Damage to insulation can lead to damage of wiring.**
- **Route harnesses away from any hazards that could damage the wire and insulation (e.g., sharp edges, exposed leads, hot or vibrating surfaces).**
- **Do not force wire harnesses into sharp bends; route the wire harness in a way so the wiring does not experience any tensile force.**
- **DO NOT route High Voltage and Low Voltage cabling along the same path. Doing so can create electric noise and can interrupt safety and operation signals.**
- **After the wiring work is complete, use sealer (field supplied) to seal closed wires through holes. (Entry by small animals, etc. can cause a malfunction. No opening should exceed 4mm x 4mm spacing.)**
- **Make sure to ground the ventilation system (fan and/or damper). Grounding resistance should be according to applicable local buildings and national codes.**

NOTE: Become familiar with and refer to Figure N.1 for the Electrical Wiring Instructions

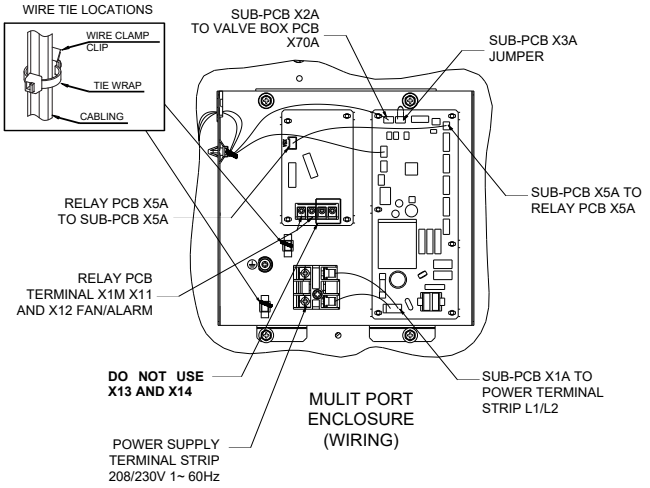


Figure N.1

SUB-PCB (X2A) connected to Valve Box PCB (X70A)

1. Locate the harness connected to X2A on the Sub-PCB.
2. Locate the mating connector X70A on the Valve Box PCB. (Refer to Figure N.2 for BSF4** Valve Box installation and Figure N.3 for BSF6**/BSF8** Valve Box installation)
3. Align the connector/keying and fully insert the plug into the mating connector on the Valve Box PCB until it is fully seated and “clicks” into place.
4. Confirm the harness is routed as shown and is not pinched or under tension.

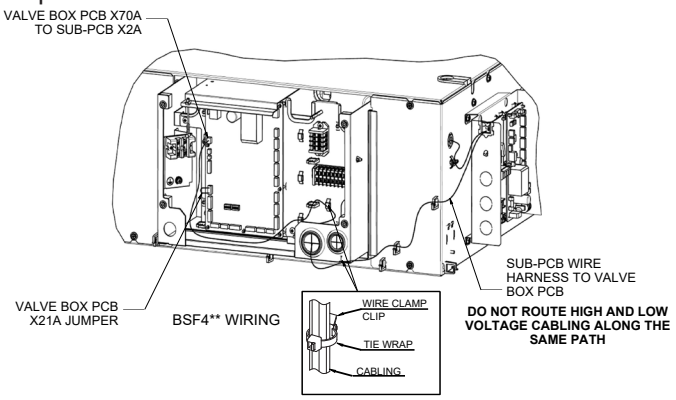


Figure N.2
BSF4 Wiring**

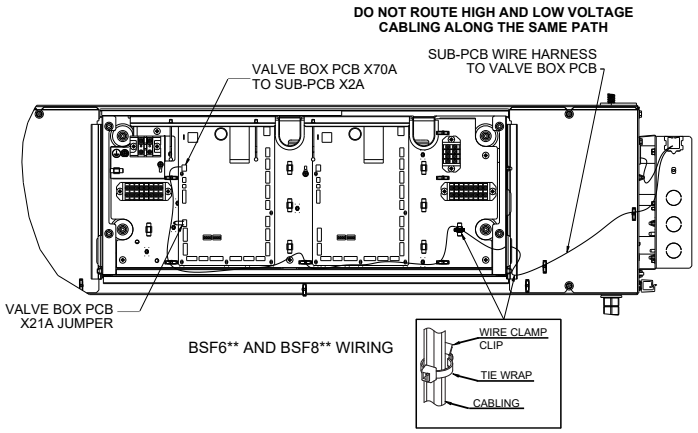


Figure N.3
BSF6** and BSF8** Wiring

Jumper (Item 20) connected to Valve Box PCB (X21A)

1. Locate the Valve Box PCB connector header X21A. (Refer to Figure N.2 for BSF4** Valve Box installation and Figure N.3 for BSF6**/BSF8** Valve Box installation)
2. Install Jumper (Item 20) onto X21A so it is fully seated over the correct pins inserting the Jumper until it is fully seated and “clicks” into place.
3. Verify the jumper is secure and cannot be removed without intentional force.

208/230V Power Supply connected to Enclosure Power Terminal Strip (L1/L2) via Sub-PCB (X1A)

IMPORTANT: follow electric wiring work as described in the valve box installation instructions.

- This enclosure is designed to share the same field power supply with the Valve Box, but a separate supply circuit can be used if required by field application. If a separate supply circuit will be used, the circuit protection must follow Table-1.

Model	MOP	Power Supply Wiring Size
BS-EBF04-AA	15 A	Wiring size and length must comply with local codes
BS-EBF07-AA		

Table 1

- A separate circuit and overcurrent protective device are required for the field provided ventilation fan, and the installation and electrical wiring work for the fan should follow the applicable manufacturer’s installation instructions.

- All electrical wiring work must be carried out by qualified personnel and must follow the instructions in the applicable valve box installation manual. Compliance with local building codes and national electrical codes is the responsibility of the installer.
- When 2 wires are connected to a single terminal, connect them so that the rear sides of the crimp contacts face each other. Also, make sure the thinner wire is on top, securing the 2 wires simultaneously to the resin hook using the included clamp. (Refer to Figures N.1, N.4, and N.6)
- Use copper conductors only.
- Locate the 3 knockouts on the side of the Enclosure Control Box. (Refer to Figure N.4)
- Only crimp-style terminal with insulating sleeves should be used. Refer to Figure N.5)

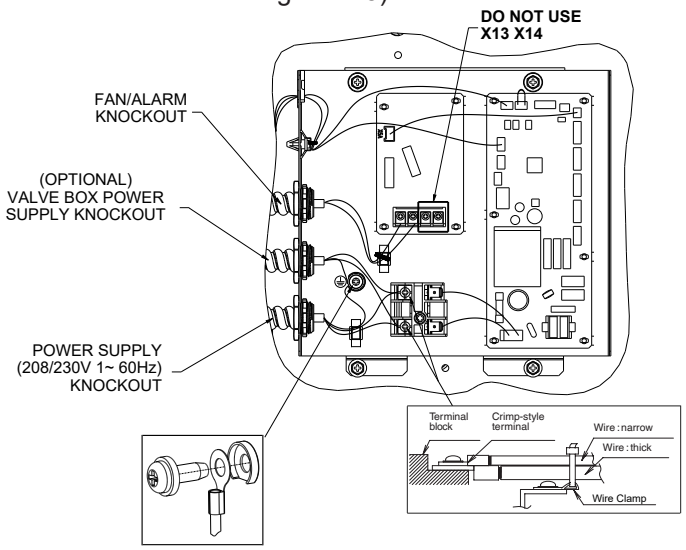


Figure N.4
MULTI PORT ENCLOSURE (CONTROL BOX KNOCKOUTS)

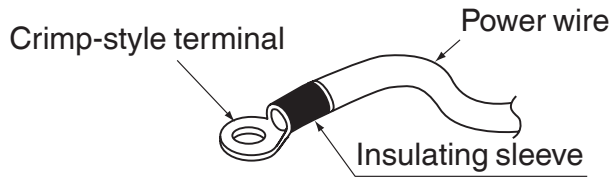


Figure N.5

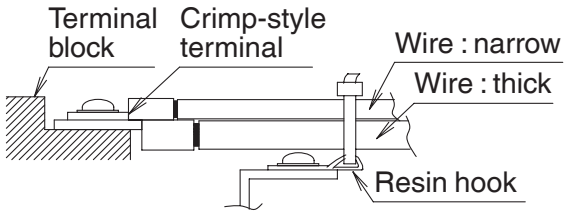


Figure N.6

1. Locate the Enclosure Power Supply Terminal Strip on the Enclosure Control Box panel. (Refer to Figure N.1)
2. Remove the Power Supply Knockout from the Enclosure Control Box and protect wiring passing through knockout as required by building and national code with appropriate field supplied hardware.
3. Be sure to use a crimp-style terminal with insulating sleeves for power and grounding connections.
4. Route 208/230V Power Supply Harness from the disconnect switch or in series with the Valve Box X1M Power Supply Terminal connecting the ring terminal ends to the terminal block (L1/L2).
5. When pulling the ground wire out, wire it so that it comes through the cut-out section of the cup washer (Refer to Figure N.4). An improper ground connection may prevent good ground from being achieved.
6. Tighten the terminal screws securely following the torque specifications listed in Table-2.

Valve Box Terminal Screw Size	Tightening Torque
M4 (Power Supply Terminal Block)	0.97 ± 0.09 ft•lbf (1.31 ± 0.13 N•m)
M4 (Ground Terminal)	1.25 ± 0.12 ft•lbf (1.69 ± 0.17 N•m)

Table 2

7. To avoid pulling forces transferring to the terminal strip, secure the cable using the wire clamp clip and a tie wrap. Secure the tie wrap through the clamp clip and around the cable. Tighten the tie wrap. (Refer to Figures N.1 and N.4)

Relay PCB dry contact for ventilation fan/alarm — Use X11/X12 only; DO NOT use X13/X14
IMPORTANT:
• A separate circuit and overcurrent protective device are required for the field provided ventilation fan and the installation and electrical wiring work for the fan should follow the applicable manufacturer's installation instructions. The Ventilation Fan is not to connect to the same circuit as the Enclosure.
• Use copper conductors only.

1. Locate the Relay PCB terminal block X1M in the Enclosure Control Box panel and identify the dry contact poles X11/X12 (Refer to Figure N.1)
2. Remove the FAN/ALARM Knockout from the Enclosure Control Box and protect wiring passing through knockout as required by building and national code with appropriate field supplied hardware.
3. Be sure to use a crimp-style terminal with insulating sleeves for connections. (Refer to Figure N.5)
4. Pass ventilation fan/alarm wiring through knockout hardware.
5. Connect the ventilation fan/alarm control wiring to X11/

X12 only, as required by the external control scheme.

6. Tighten the terminal screws securely following the torque specifications listed in Table-3.

RELAY PCB Terminal Screw Size	Tightening Torque
M3.5 Fan Wire Terminal Block	0.65 ± 0.05 ft•lbf (0.88 ± 0.08 N•m)

Table 3

7. DO NOT connect any wiring to X13/X14. These terminals are non-functioning and must not be used.
8. To avoid pulling forces transferring to the terminal strip, secure the cable using the wire clamp clip and a tie wrap. Secure the tie wrap through the clamp clip and around the cable. Tighten the tie wrap. (Refer to Figures N.1 and N.4)
9. Make sure to ground the ventilation system (fan and/or damper). Grounding resistance should be according to applicable local buildings and national codes.

Ensure all connections are secure (Refer to Figures N.1, N.2, N.3 and N.4)

1. Confirm all connectors (X2A↔X70A, etc.) are fully seated and latched.
2. Confirm the X21A jumper (Item 20) is installed on to the Valve Box PCB and fully seated.
3. Verify terminal screws (L1/L2 and X11/X12) are tight and conductors are fully captured.
4. Perform a light pull check on each wire/connector to confirm retention.
5. Confirm all wiring is properly routed and strain-relieved, and that clamps/tie wraps are installed as shown (no pinching, rubbing, or sharp-edge contact)
6. Confirm all wiring requirements as outlined in the applicable Valve Box Installation Instructions were followed.

IMPORTANT: After the wiring is completed, organize the wiring so that the control box cover (Item 18) does not lift up and then properly replace the control box cover. Make sure no wires are pinched when replacing the control box cover. Always use the wire through holes to protect wires. Refer to figure N.7 & N.8.

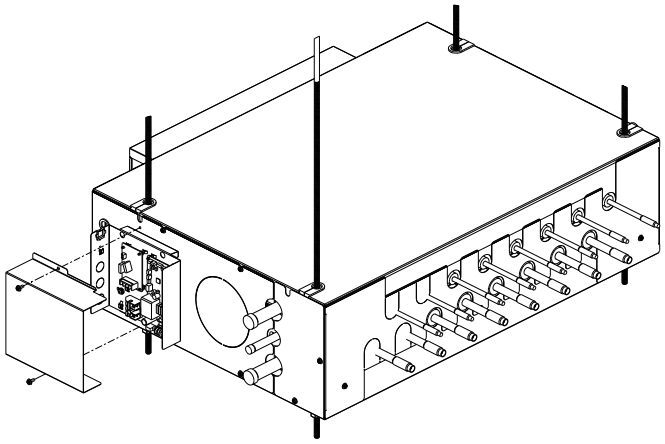


Figure N.7
installing e-box cover

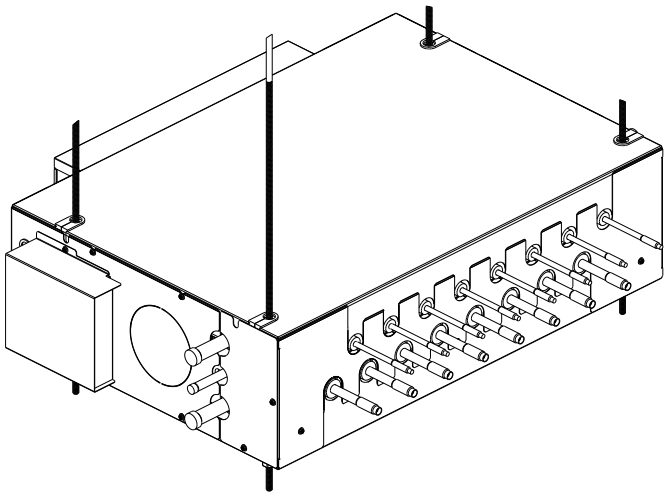


Figure N.8

STOP: After the wiring work is complete, use sealer (field supplied) to seal any wires through holes. (Entry by small animals, etc. can cause a malfunction. No opening should exceed 4mm x 4mm spacing.

Field Wiring Example

WARNING

Install circuit protection safety devices in accordance with local and national codes. Failure to install circuit protection safety devices in accordance with local and national codes may result in electric shock or fire.

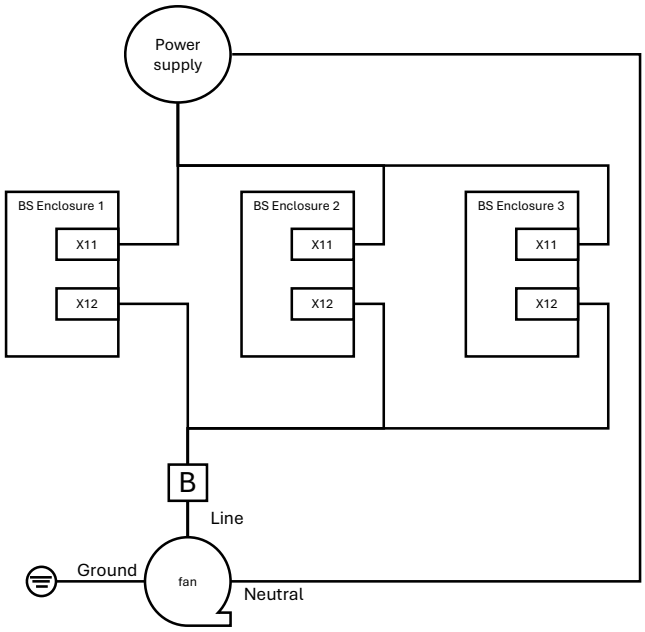


Figure 1

B :Circuit protection safety devices in accordance with local and national codes

Power Circuit

CAUTION

Make sure the LEDs on the PCBs inside the Valve Box is turned off before connecting any wire harnesses to the PCBs. Once the power is shut off, the LEDs may take up to 2 hours to turn off.

IMPORTANT: follow electric wiring work as described in the valve box installation instructions.

- This enclosure is designed to share the field power supply with the Valve Box; a separate circuit and overcurrent protective device is not required for the Enclosure.
- A separate circuit and overcurrent protective device are required for the field provided ventilation fan, and the installation and electrical wiring work for the fan should follow the applicable manufacturer's installation instructions.
- All electrical wiring work must be carried out by qualified personnel and must follow the instructions in the applicable valve box installation manual. Compliance with local building codes and national electrical codes is the responsibility of the installer.

VENTILATION REQUIREMENTS

WARNING

Do not deviate from these requirements outlined for field wiring.

WARNING

Wire the ventilation fan load exactly as shown and do not exceed the relay's rated load.

IMPORTANT:

- **It is recommended to connect the enclosure with 6-inch ductwork using a starting collar or takeoff. If a different duct size is used, install an appropriate reducer.**
- **Use flexible ductwork within the service space where possible to facilitate maintenance and service. If flexible ductwork cannot be used, provide a removable duct section near the enclosure to allow service access.**
- **Ensure the ductwork connection to the enclosure is both mechanically secured and fully sealed.**

Ductwork Layout

- Depending on site requirements, the enclosure can be installed in either a series or parallel configuration. (Refer to Figs. S.1 and S.2.)
- The allowable number of enclosures per system depends on the ventilation system design. The ventilation for each enclosure must be designed so that the minimum airflow and pressure requirements outlined in this Installation Manual are met.

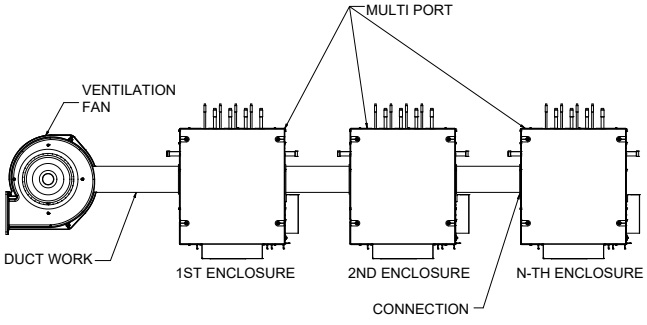


Figure S.1
installing enclosures in series

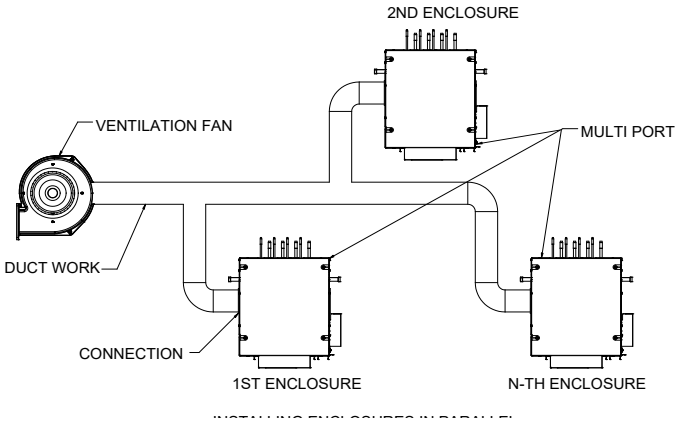


Figure S.2
INSTALLING ENCLOSURES IN PARALLEL

Fan & Damper Selection

The fan must be selected to exceed the following airflow requirements in any Enclosure while satisfying the electrical requirements specified in the following sections below.

Minimum Airflow (SCFM)	Minimum Gauge Pressure (W.G.)
11.1	0.08029

Airflow Requirements - Table 4

Ventilation Characteristics

If a damper is used, the damper must be able to withstand the pressure inside the Enclosure to which it is attached. Please use the ventilation characteristics below to design the ductwork. The system curve of the Enclosure is defined as:

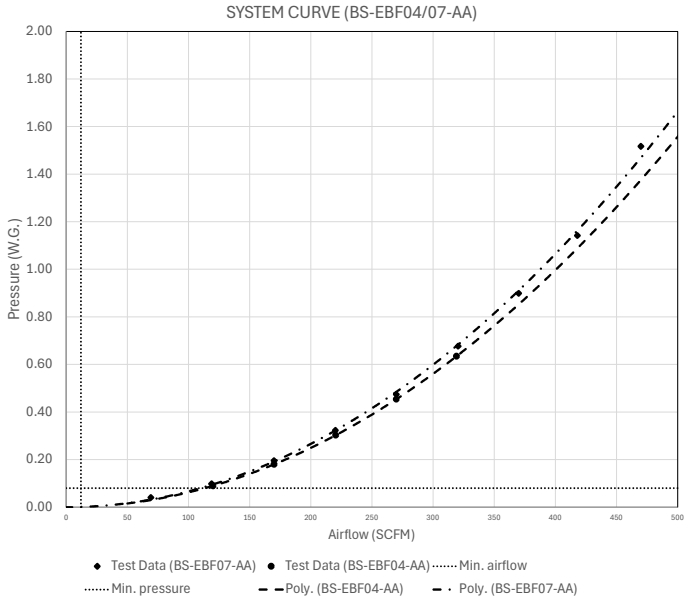
$$P=KQ^2$$

Where P is the pressure drop in water gauge (W.G.) and Q is the airflow in SCFM. K is the resistance coefficient listed below. Leak rate is the percentage (%) of the airflow entering the Enclosure from the outside of the Enclosure through gaps. Make sure the leak is accounted for in the ductwork design.

Enclosure model Name	K	Leak rate
BS-EBF04-AA	6.2282E-06	4%
BS-EBS07-AA	6.6521E-06	1%

Airflow Requirements - Table 5

The system curve is also shown below for reference.



System Curve

NOTE: Please provide a method of insulation for the duct holes in the valve box enclosure to protect the enclosure and the valve box unit from small creatures and animals entering inside the unit. Such items can include a metal grate, metal mesh, glass-fiber mesh, etc. covering the duct path to ensure no small creatures or animals are able to enter inside the enclosure.

Requirement of electrical characteristics

The combined current of the fan and damper should not exceed the limits listed below for the corresponding voltage.

Inductive Load	Maximum Current
250 VAC	1.5 A (cosφ = 0.85)
125 VAC	2 A (cosφ = 0.85)
30 VAC	1.5 A (L/R = 3 ms)

Electrical Characteristics Table

* Inrush current = 2.75 A at AC250 1.5A
* Rated carry current = 3 A
* Maximum rated voltage = 250 VAC/30 VDC

CHECK OPERATION AND TEST OPERATION

- Verify that the control box cover is reattached to the control box.
- After gasket installation and panel closure, visually check that sensor and ventilation openings are fully unobstructed. Remove or re-seat any gasket that blocks these areas.
- After confirming that all work on the outdoor unit, indoor unit, Valve Box unit, and Enclosure has been completed and they are safe to operate, perform check operation and test operation in accordance with the installation manual supplied with the outdoor unit.

- If there is an error, an error code will be displayed on the remote controller. For error codes and their explanations, refer to Table 6 of this manual as well as the manuals supplied with the outdoor units.

TROUBLESHOOTING AND SERVICING

Instruction to verify R32 Sensor mitigation

- After installation and test-run operation has been complete for the system, verify at the controller that no errors for the R32 sensor populate.
- Refer to error codes listed in Table 6 to verify that there are no errors related to the R32 sensor and that the sensor is installed correctly and functioning appropriately.
- **Refer to the Valve Box service manual for detailed instructions to clear error codes.**

Main Code	Sub Code	Contents	Solution
CH	21	R32 Sensor (item) is disconnected or not communicating	Check connection of the R32 sensor
LC	41	1. Jumper connector (factory) on the terminal X3A of the sub-PCB is missing or 2. Jumper connector (item) is NOT connected to terminal X21A/X15A on A1P PCB of the Valve Box	Check connection on printed circuit board
CH	20	Standby on R32 sensor replacement confirmation	Change the field setting 2-23 from 0 to 1

Table 6

General Service Instructions

- Disconnect all power before servicing
- Refer to the applicable Service Manual for service instructions and requirements.
- During any service that removes or disturbs the lower panel, inspect the rubber blocks on the bottom of the Valve box; re-seat loose blocks or replace damaged blocks before reinstalling the panel.
- Visually inspect the harness, and edge-seal for kinks, cuts, or compression damage. If any damage is seen, please replace it with a new one. No field splicing—replacement only. Replace the entire harness or edge-seal component in the assembly when damage is found.
- To gain access to the serviceable components and controls refer to Figures T.1, T.2, and T.3.

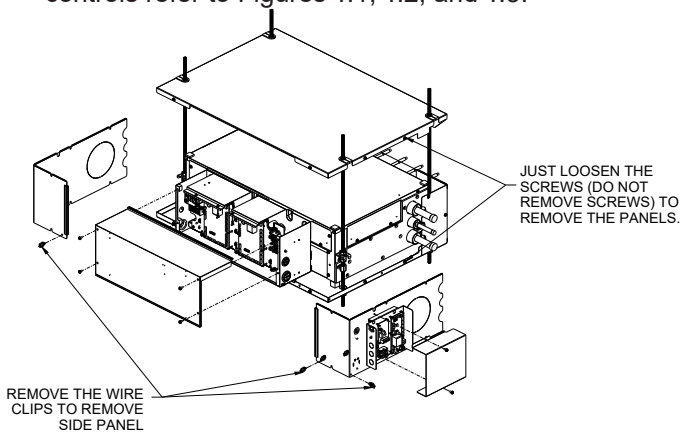


Figure T.1

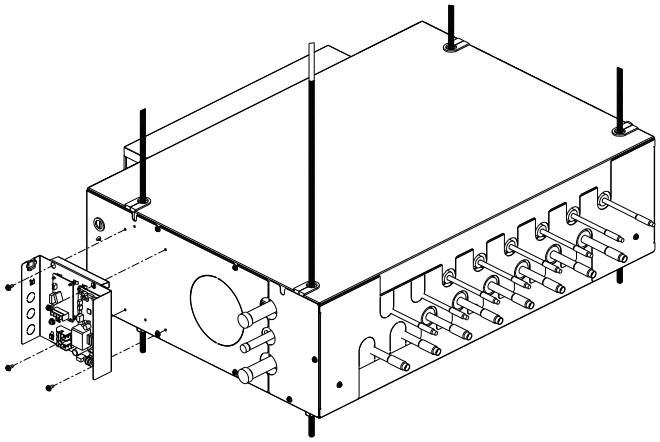


Figure T.2
control box removal

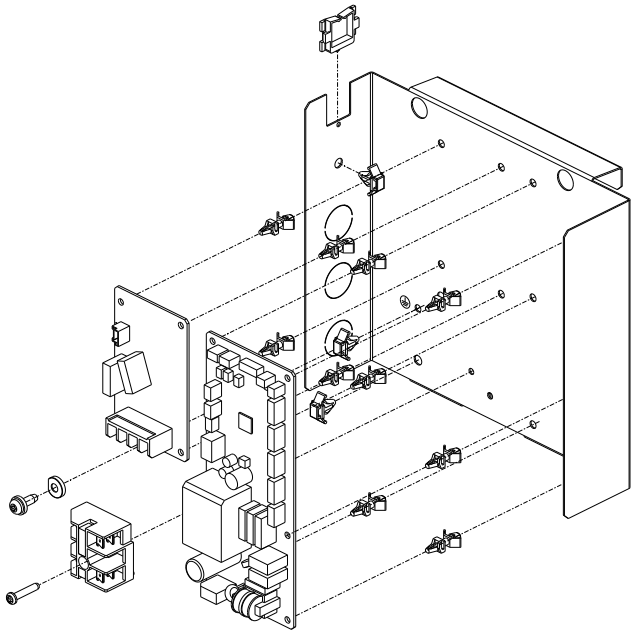
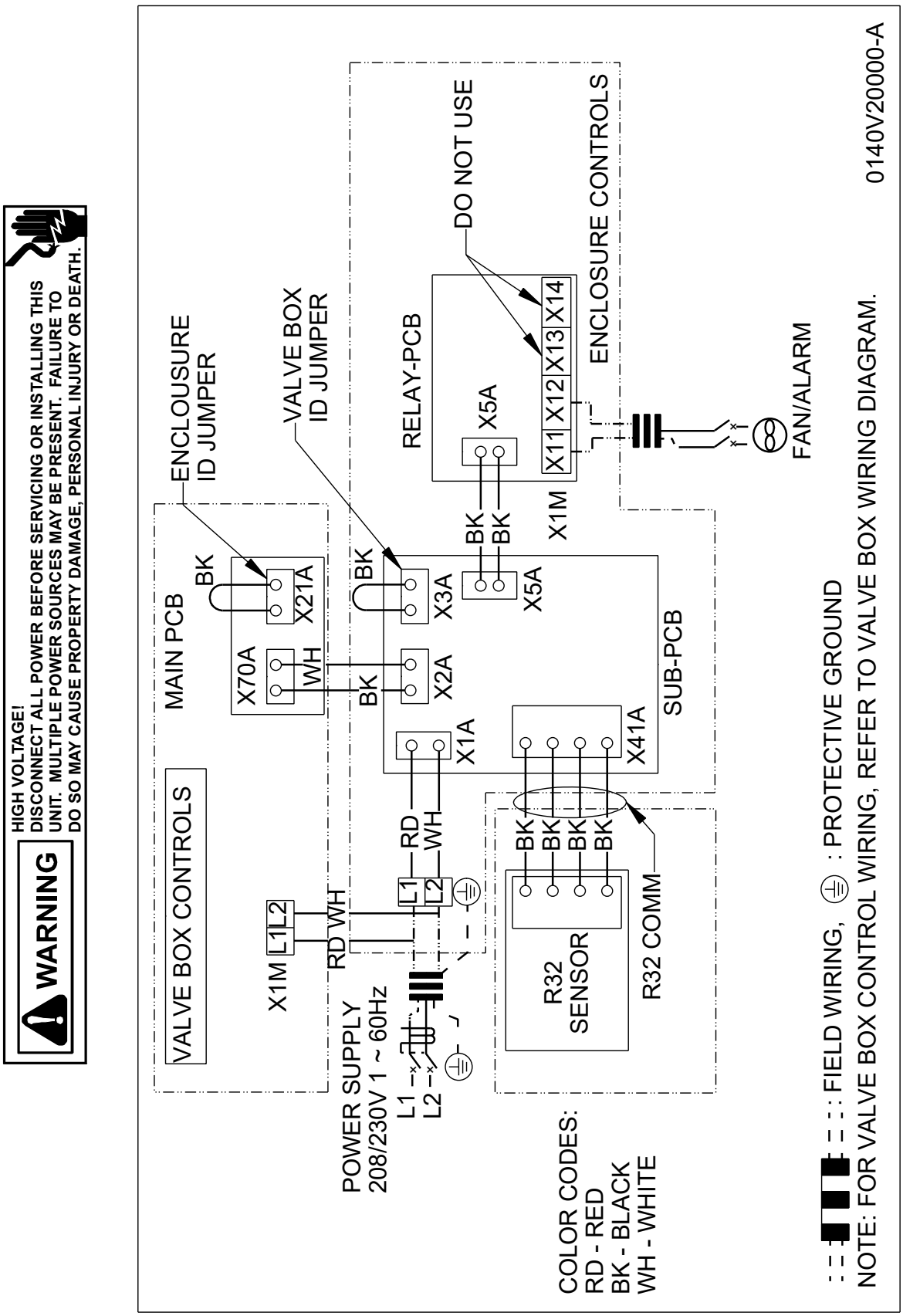


Figure T.3
control box component removal

WIRING DIAGRAM



WIRING DIAGRAM - MULTI-PORT ENCLOSURE

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

Pre-Installation Checklist

Date: _____
Model Number:_____
Technician: _____

- □ Before installation of the assembly, ensure all components listed in the "Parts & Accessories" list are present and undamaged. If any of the listed components are damaged, removed, heavily contaminated, or missing, replace the component before installing on the assembly.
- □ Perform a continuity check on the electrical components to detect any damage from shipping and handling. (For the Sub-PCB & relay-PCB, check continuity at connection locations indicated in section 4.1)
- □ If the Valve box is already installed at site location, determine if the thread rod extension are required for enclosure installation by adhering to the instructions outlined in Section 2 of this IOM, to meet the minimum 1.75" requirement.
- □ Before installation, gently uncoil the harness to allow it to relax to its natural shape before routing and securing in the assembly.
- □ If a panel knockout is unintentionally removed prior to assembly, reseal the opening using suitable field-supplied material (e.g., sheet-metal patch, mesh, or tape) to restore leak containment and debris protection functionality of the enclosure.
- □ Confirm the valve box is being installed in the orientations and with the clearances specified in this IOM, away from external heat sources. DO NOT install where airflow around the enclosure is blocked.

Assembly Checklist

Date: _____
Model Number:_____
Technician: _____

- □ Confirm all indicated gaps are sealed appropriately per the assembly instructions around the sheet metal joints and copper piping/insulation using the specified sealing material or equivalent field supplied materials to ensure no refrigerant can by pass the sensor.
- □ If a knock-out is unintentionally removed during assembly, reseal the opening using suitable field-supplied material (e.g., sheet-metal patch, mesh, or tape) to restore leak containment and debris protection functionality of the enclosure.
- □ Confirm the requirements outlined in the wiring diagram for the enclosure match the physical system set-up after assembly is completed BEFORE energizing the system. DO NOT energize the system if wiring set-up does NOT match the wiring diagram.
- □ After the wire harnesses are connected to the system, complete a "Tug-Test" for each wire harness by slightly pulling on the wire close to the connector to ensure the proper seating on the PCB.
- □ Confirm the wire harnesses are NOT placed in an orientation forcing them into sharp bend. Ensure there is no tension developed in the cables.
- □ Ensure the high-voltage and low voltage conductors are in separate bundles and clamps. Do NOT combine high-voltage and low-voltage conductors in the same tie or clamp.
- □ Perform ground continuity checks to verify that all bonding connections are intact and within specified resistance limits.
- □ Perform a continuity and polarity check for the "SIG IN" wiring path.
- □ Verify the load wiring before commissioning the product to work.

Service Checklist

Date: _____
Model Number:_____
Technician: _____

- □ Before servicing to the unit, disconnect power from the system by removing the power supply wire harnesses from the terminal strip. Confirm there is no voltage reading across any of the components before servicing the enclosure.
- □ If a panel is removed that has gasketing attached, before service is completed, inspect the gasketing for cuts, tears, or damage. If the gasketing has any damage, replace the part before completing service.
- □ During service, if a knock-out is unintentionally removed during assembly, reseal the opening using suitable field-supplied material (e.g., sheet-metal patch, mesh, or tape) to restore leak containment and debris protection functionality of the enclosure.
- □ After any service that removes the lower panel, if any of the rubber cubes are temporarily removed for access, missing, or displaced after service replace and/or re install them in their original locations before closing the lower panel, completing service. Use the reference marks/features and installation instructions specified in section 3 to confirm correct placement.
- □ After any service that removes the lower panel, re-seat the panel firmly against the rubber blocks at the indicated contact points and verify that the panel is fully engaged and aligned before tightening fasteners.
- □ When a wire harness is found to have damage, DO NOT splice or repair harness in the field. Replace the entire harness assembly.
- □ If any of the wire harnesses are manipulated/disconnected during service, refer to sections 4 for proper re-installation of the wire harness.
- □ If any of the wire harnesses are manipulated/disconnected during service, confirm the requirements outlined in the wiring diagram for the enclosure match the physical system set-up after assembly is completed BEFORE energizing the system. DO NOT energize the system if wiring set-up does NOT match the wiring diagram.
- □ If any of the wire harnesses are manipulated/disconnected during service, after the wire harness are connected back to the system, complete a "Tug-Test" for each wire harness by slightly pulling on the wire close to the connector to ensure the proper seating on the PCB.
- □ If any of the wire harnesses are manipulated/disconnected during service, confirm the wire harnesses are NOT placed in an orientation forcing them into sharp bend. Ensure there is no tension developed in the cables.
- □ If any of the power supply wire harnesses are manipulated/disconnected during service, ensure the high-voltage and low voltage conductors are in separate bundles and clamps. Do NOT combine high-voltage and low-voltage conductors in the same tie or clamp.

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CUSTOMER FEEDBACK
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