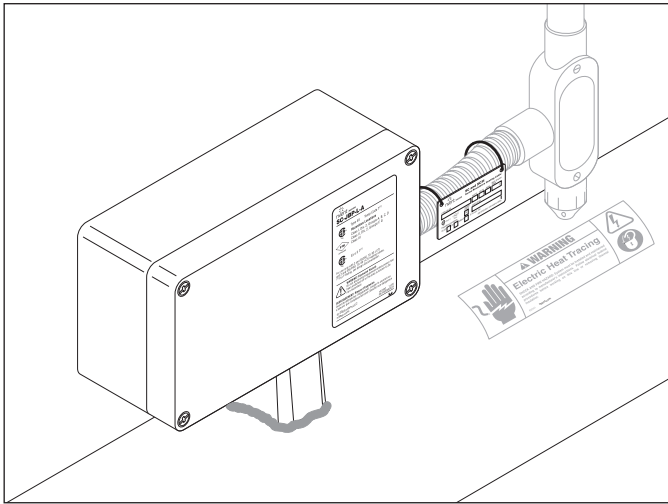




RAYCHEM

JBM-SC-A

Power connection or tri phase star point with junction box installation instructions



DESCRIPTION

The nVent RAYCHEM JBM-SC-A is a NEMA 4X-rated splice power connection kit designed for use with nVent RAYCHEM 2 and 3SCxx (-CT), 2 and 3SC/Hxx (-CT) series heating cables in hazardous locations. The boxes are designed to allow for the direct termination of these cables.

TOOLS REQUIRED

- Adjustable pliers
- Slotted screwdriver
- Wire strippers
- Diagonal cutters
- Utility knife

ADDITIONAL MATERIALS REQUIRED

- Pipe straps (2)
- Glass cloth tape:
 - GT-66 for installation temperature above 40°F
 - GS-54 for installation temperature above -40°F
- Circuit identification tag (P/N P000000311)

APPROVALS

Hazardous Locations



Class I Division 2 Group A, B, C, D
Class I Zone 2 IIC
Type 4X Temp code T ⁽¹⁾

⁽¹⁾ For system T-rating, see design documentation

⚠ WARNING:

This component is an electrical device that must be installed correctly to ensure proper operation and to prevent shock or fire. Read these important warning and carefully follow all of the installation instructions.

- This kit is intended for one time use only.
- To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with the requirements of nVent, agency certifications, and national electrical codes, ground-fault equipment protection must be used. Arcing may not be stopped by conventional circuit breaker.

- Be sure all power sources are de-energized before opening box.
- Keep components and heating cable ends dry before and during installation.
- Component approvals and performance are based on the use of nVent-specified parts only. Do not use substitute parts or vinyl electrical tape.
- Damaged conductor can overheat or short. Do not break conductor wire stands when scoring the jacket or removing insulation.
- Use only fire resistance insulation materials, such as fiberglass wrap or flame retardant foam.

⚠ AVERTISSEMENT:

Ces composants sont des dispositifs électriques. Ils doivent être installés correctement pour assurer un fonctionnement approprié et pour éviter les risques d'incendie ou de chocs électriques. Suivez attentivement toutes les instructions d'installation et lisez ces avertissements importants.

- Ce kit est destiné à un usage unique.
- Pour minimiser le danger d'incendie causé par un arc électrique continu, si le câble chauffant est endommagé ou mal installé, et pour respecter les exigences de nVent et celles des codes électriques nationaux, il est impératif d'utiliser un équipement muni d'une protection des défauts de fuite à la terre DDFT sur chaque circuit alimentant un câble chauffant. Un disjoncteur ordinaire peut ne pas être assez sensible pour prévenir les arcs continus.
- Les homologations des composants et le rendement reposent uniquement sur l'utilisation des pièces fournies par nVent. Ne pas substituer de pièce ni utiliser du ruban isolant en vinyle.

- Les composants et les terminaisons des câbles chauffants doivent être tenus au sec avant et pendant l'installation.
- Les fils omnibus endommagés peuvent surchauffer et occasionner des court-circuits. Ne cassez pas les brins du fil omnibus lorsque vous entaillez la gaine ou le noyau.
- Assurez-vous que toutes les sources d'alimentation sont hors tension avant d'ouvrir la boîte.
- Utilisez uniquement des matériaux d'isolation résistants au feu, tels que des matériaux en fibre de verre.
- Laissez ces instructions d'installation à l'utilisateur pour référence ultérieure.

DESIGN OF SC DIRECT CIRCUIT

Verify the circuit length, maximum allowed power levels, circuit breaker size and the maximum sheath temperature per nVent Thermal LLC's design software such as TraceCalc Pro.

Failure to do so can result in overheating of the components and or cables resulting in a fire hazard.

USAGE

The JBM-SC-A can be used to make the connection from nVent Raychem 2SC(H) or 3SC(H) heating cable directly to a power supply without the use of a cold lead.

Each box can only be used to power one heating cable circuit

It can also be used as an end box for a mono phased power supply with 2SC(H) or as an end box for the star point of a tri phase star system in case 3SC(H) cables are used. The kit contains a skip jumper to realize the end connection.

To be able to use the JBM-SC-A connection system safely, the following restrictions of power as a function of pipe temperatures and max ambient apply :

JBM-SC-A configured as mono phase Power or End box / 104°F ambient

2SC(H)-30, 40, 50, 60 (-CT)

Max allowed wattage W/ft	10.4	7.9	5.5	3.1	0
Max pipe temperature °F	176	212	248	284	320

2SC(H)-70 (-CT)

Max allowed wattage W/ft	6.7	6.7	5.5	3.1	0
Max pipe temperature °F	176	212	248	284	320

2SC(H)-80 (-CT)

Max allowed wattage W/ft	3.7	3.7	3.7	3.1	0
Max pipe temperature °F	176	212	248	284	320

JBM-SC-A configured as tri phase Power or End box / 104°F ambient

3SC(H)-30, 40, 50, 60, 70 (-CT)

Max allowed wattage W/ft	10.9	9.2	6.7	3.7	0
Max pipe temperature °F	176	212	248	284	320

3SC(H)-80 (-CT)

Max allowed wattage W/ft	5.5	5.5	5.5	3.7	0
Max pipe temperature °F	176	212	248	284	320

JBM-SC-A configured as mono phase Power or End box / 133°F ambient

2SC(H)-30,40,50 (-CT)

Max allowed wattage W/ft	7.9	6.7	5.5	3.1	0
Max pipe temperature °F	176	212	248	284	320

2SC(H)-60 (-CT)

Max allowed wattage W/ft	6.4	6.4	5.5	3.1	0
Max pipe temperature °F	176	212	248	284	320

2SC(H)-70 (-CT)

Max allowed wattage W/ft	3.9	3.9	3.9	3.1	0
Max pipe temperature °F	176	212	248	284	320

2SC(H)-80 (-CT)

Max allowed wattage W/ft	2.1	2.1	2.1	2.1	0
Max pipe temperature °F	176	212	248	284	320

JBM-SC-A configured as tri phase Power or end box / 133°F ambient

3SC(H)-30,40,50,60 (-CT)

Max allowed wattage W/ft	9.2	8.2	6.1	3.7	0
Max pipe temperature °F	176	212	248	284	320

3SC(H)-70 (-CT)

Max allowed wattage W/ft	6.4	6.4	6.1	3.7	0
Max pipe temperature °F	176	212	248	284	320

3SC(H)-80 (-CT)

Max allowed wattage W/ft	3.1	3.1	3.1	3.1	0
Max pipe temperature °F	176	212	248	284	320

Use nVent Thermal's design software such as TraceCalc Pro to validate the usage of the components for your application.

The maximum length of heating cable inside the junction cannot exceed under any circumstances :

- 5 inch (13 cm) per conductor when used as a mono phased power supply or end box
- 5 inch (13 cm) per conductor when used as a tri phased power supply or end box

This is very important to maintain the integrity of the components of the system.

POWER INFRASTRUCTURE :

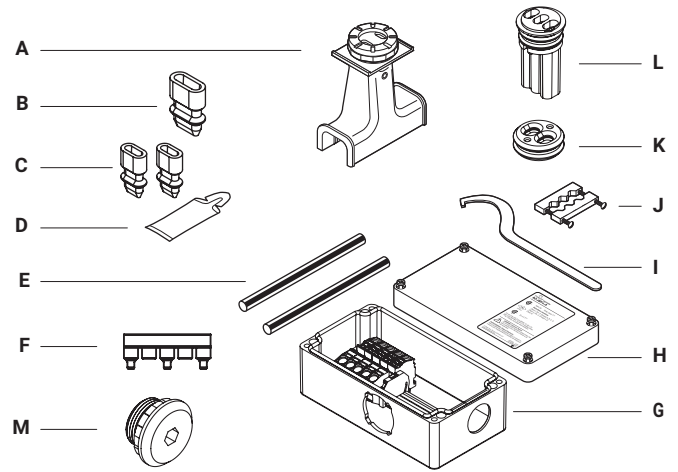
- Use a power cable with continuous temperature resistance of minimum +90°C
- Use a cable gland, approved for use in hazardous areas if required, with continuous temperature resistance of minimum +90°C
- Due to the temperatures that can occur in the junction box at maximum ambient & load, a de rating factor of 0.5 on the maximum allowed current vs cross section should be used on the part of the power system that is connected to the junction box.

STORAGE & TRANSPORTATION:

- Store and transport product in a clean, dry place
- Temperature range: -67°F to +133°F
- Protect junction box from moisture or mechanical damage

KIT CONTENTS

Item	Qty	Description
A	1	Stand assembly
B	1	Large plug
C	2	Small plug
D	1	Cable lubricant
E	2	Green/yellow tube
F	1	Skip jumper
G	1	Junction box with through hole for 3/4" NPT fitting
H	1	Lid
I	1	Spanner
J	1	Strain relief
K	1	Grommet for large cables
L	1	Grommet and cable separator for small cables
M	1	Plug and locknut

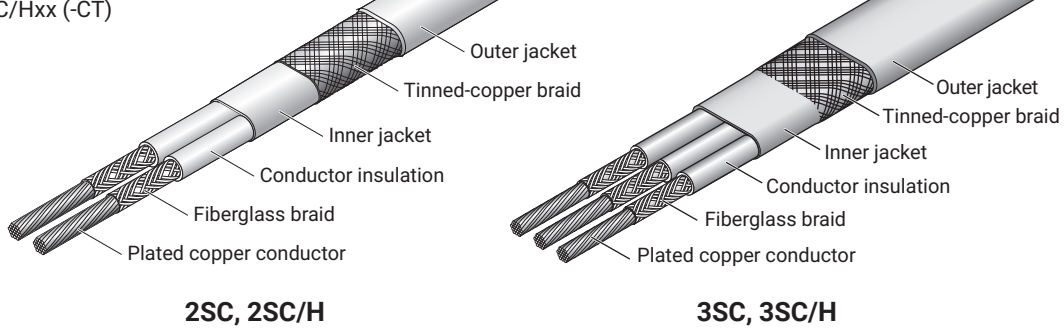


HEATING CABLE TYPES

Heating Cable Construction

2 and 3SCxx (-CT)

2 and 3SC/Hxx (-CT)

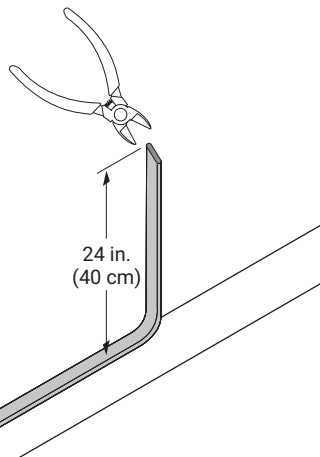


2SC, 2SC/H

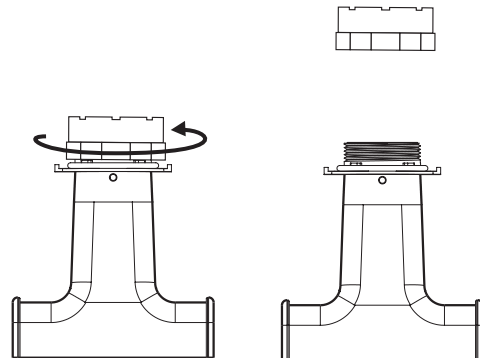
3SC, 3SC/H

1

- Allow approximately 24 inches (60 cm) of heating cable for installation.
- Cut off heating cable end at a 45° angle for easier insertion.



1.1



Cable Range	Action
2SC-30, 2SC-40, 2SC-50	Grommet, Grommet plug and cable separator for small cables to be installed (Steps C)
2SC-60, 2SC-70, 2SC-80, 3SC-30, 3SC-40, 3SC-50, 3SC-60	Grommet and cable separator are pre installed
3SC-70, 3SC-80	Grommet for large cables to be installed (Steps B)

Step A Schematic view of stand built-up

OPTION 1:
 If cable type is
 2SC-60, 2SC-70, 2SC-80, 3SC-30,
 3SC-40, 3SC-50, 3SC-60
 Grommet and cable separator are
 pre-installed, so no action required.

Step B

OPTION 2:
 If cable type is 3SC-70
 or 3SC-80 open up the
 parts & substitute the
 pre-installed grommet
 with Large Grommet
 and reassemble.

Step B1

Step B2

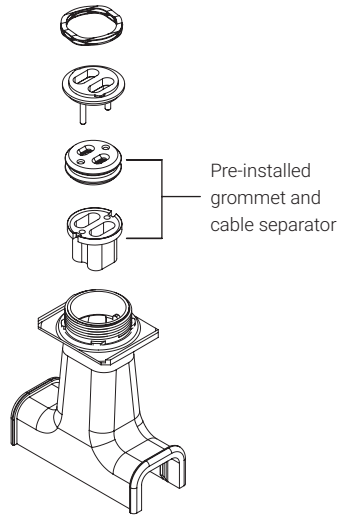
Step B3

Turn it 1.5 x so that it is
 tighten down loosely

Step C

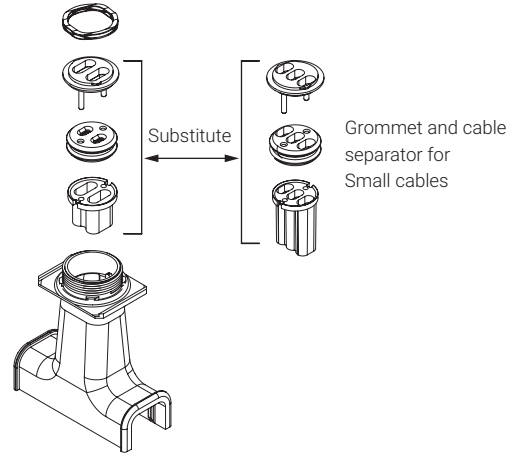
OPTION 3:

If cable type is 2SC-30, 2SC-40, 2SC-50 open the parts & remove the spring from the pre-installed cable separator. Replace the pre-installed top plate, grommet and cable separator with the provided top plate, grommet and cable separator for small cables. Re-assemble the spring and install small plug into center hole. Assemble into stand

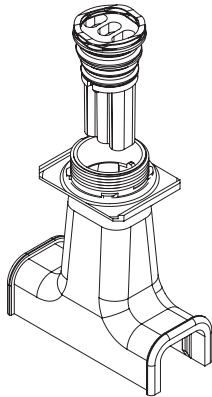


Step C1

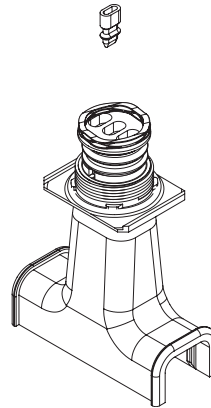
Substitute the pre-installed top plate, grommet and cable separator with the provided top plate, grommet and cable separator for small cables.



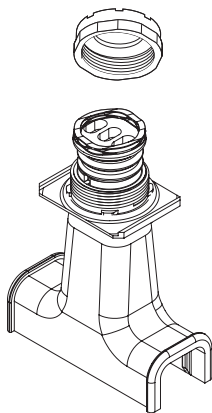
Step C2 Reassemble spring again to top plate



Step C3 Install plug in middle slot

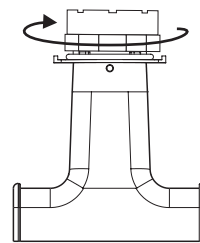


Step C4



Step C5

Turn it 1.5 x so that it is tightened down loosely



2

- Push heating cable through stand and nut as shown. Use cable lubricant if needed.
- Square off cable end with 90° angle cut.
- Do not attach stand to pipe until step 8.

18 in. (25 cm)
Box nut

3

- Lightly score outer jacket around and down as shown.
- Bend heating cable to break jacket at score, then peel off jacket.

Do not cut braid.
5 in. (130 mm)

4

- Push braid back as far as possible.
- Lightly score inner jacket around and down as shown.
- Peel off inner jacket.

4.5 in. (110 mm)

5

- Push braid forward. Use a screwdriver to open braid.
- Bend heating cable and work it through opening in braid.
- Pull braid tight to make pigtail.

5 in. (130 mm)

6

- Remove 3/4-inch (20 mm) insulation and fiberglass braid from end of each conductor.

3/4 in. (20 mm)
Fiberglass braid

3SC heating cable shown.

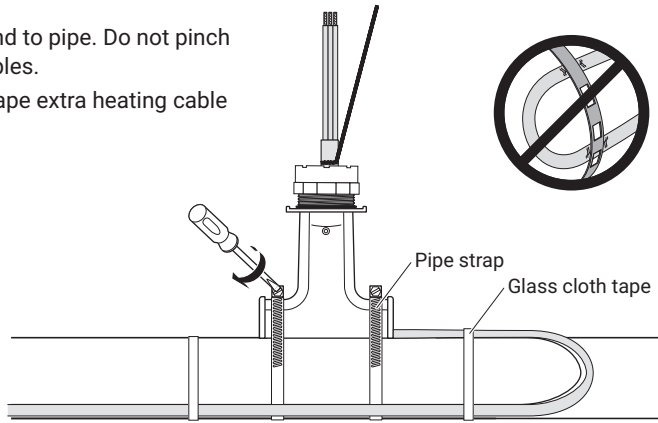
7

- Pull heating cable back into stand as shown. Use cable lubricant if needed.
- The cable braid should be in contact with the grommet in the stand. Failure to leave more heater in the JB can cause over heating of the components

Max 5 in (130 mm)

8

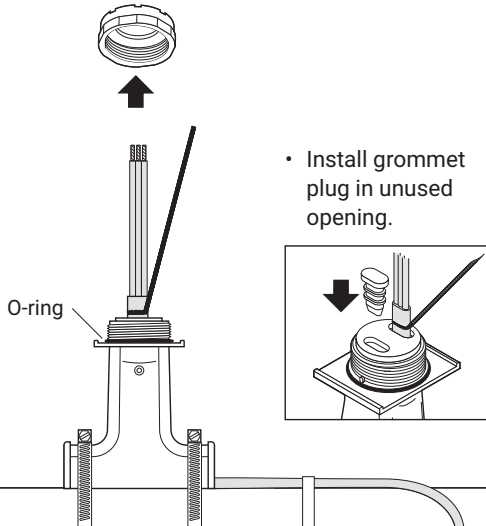
- Fasten stand to pipe. Do not pinch heating cables.
- Loop and tape extra heating cable to pipe.



WARNING: Fire and Shock Hazard.
To prevent cable damage and shorting, position pipe straps under the heating cable. Ensure the cable does not cross over itself.

9

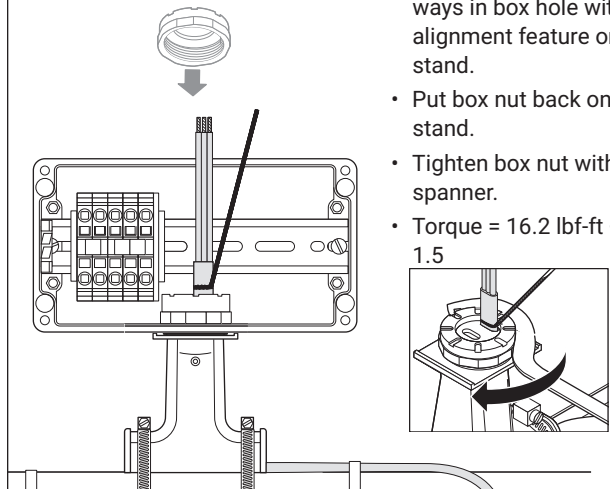
- Remove box nut.



- Install grommet plug in unused opening.

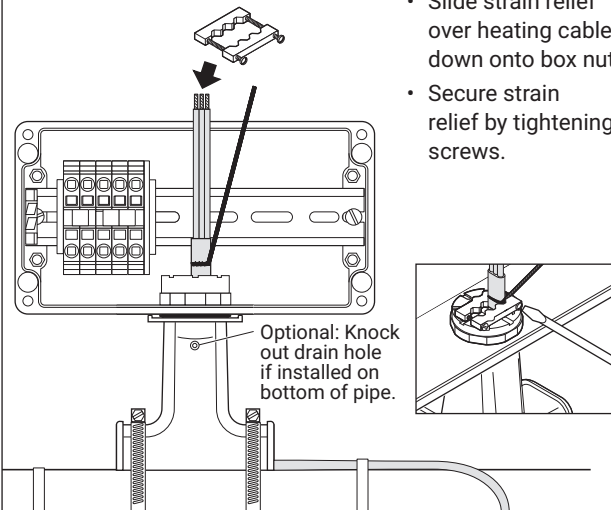
10

- Place junction box onto stand. Align keyways in box hole with alignment feature on stand.
- Put box nut back onto stand.
- Tighten box nut with spanner.
- Torque = 16.2 lbf-ft +/- 1.5



11

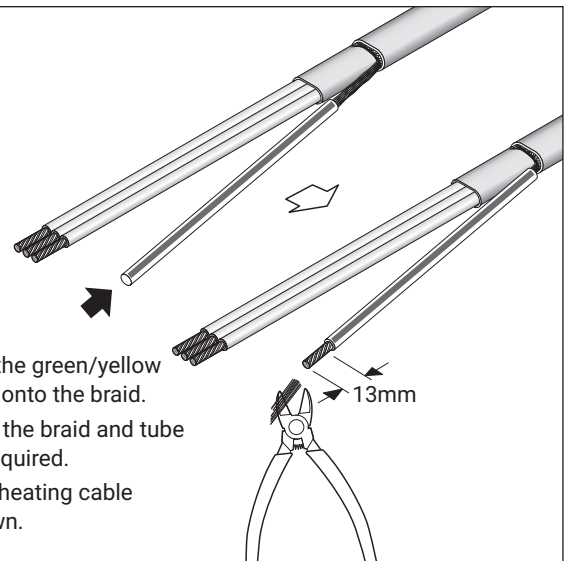
- Slide strain relief over heating cable, down onto box nut.
- Secure strain relief by tightening screws.



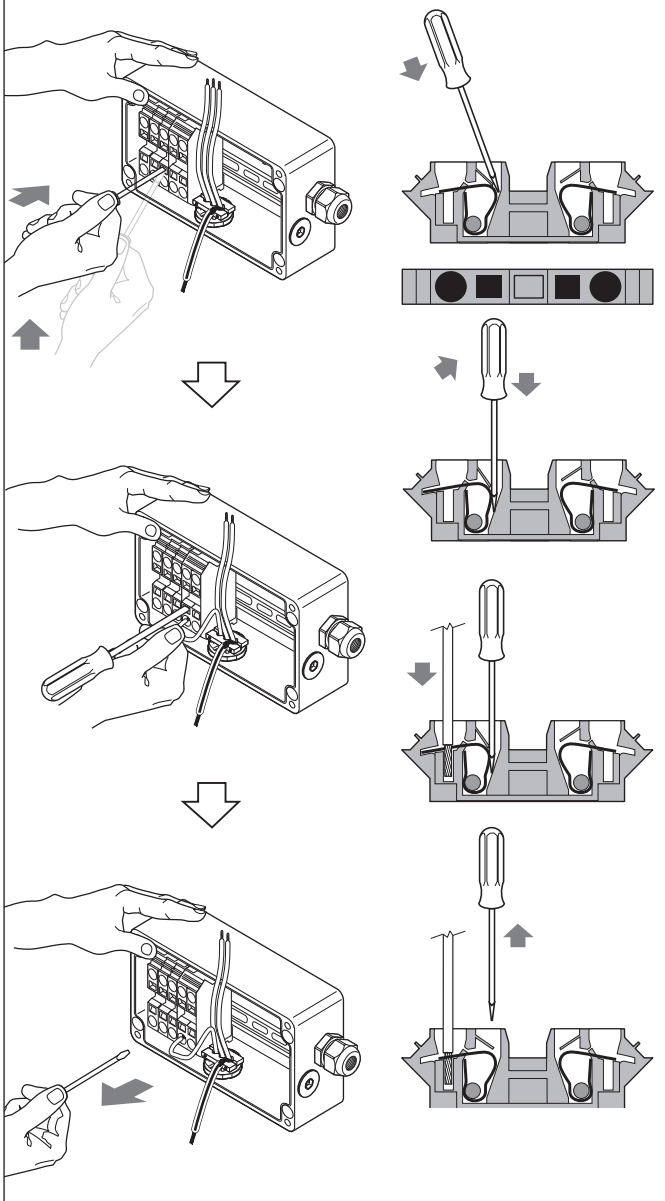
Optional: Knock out drain hole if installed on bottom of pipe.

12

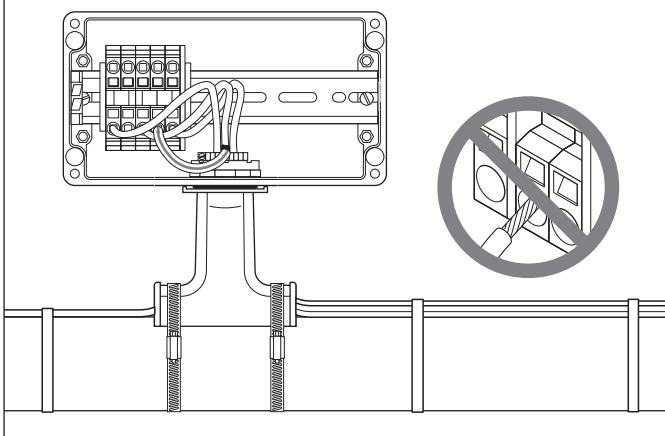
- Slip the green/yellow tube onto the braid.
 - Trim the braid and tube as required.
- 3SC heating cable shown.



13

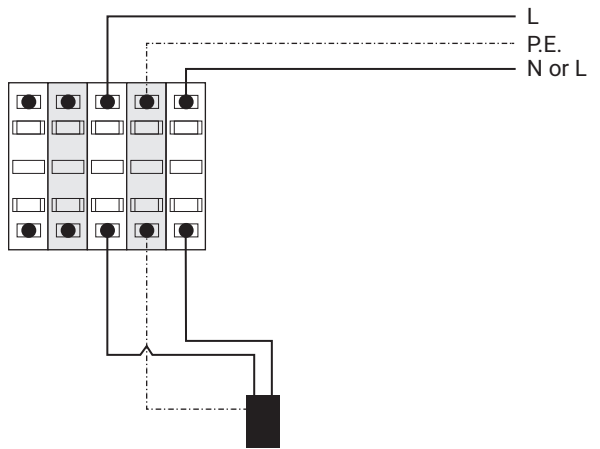


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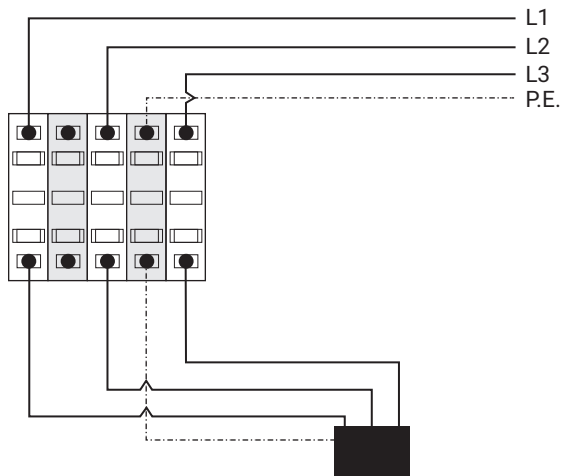


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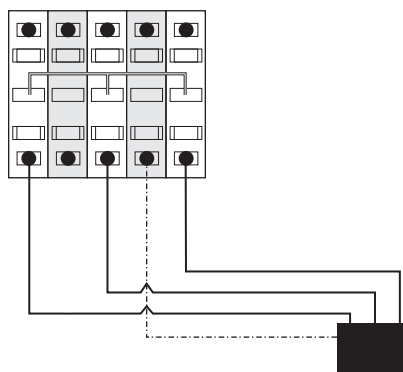
Mono phase power connection



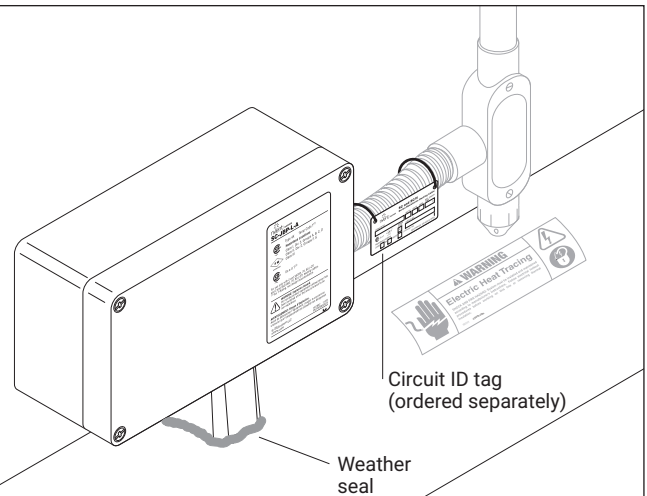
Tri phase power connection

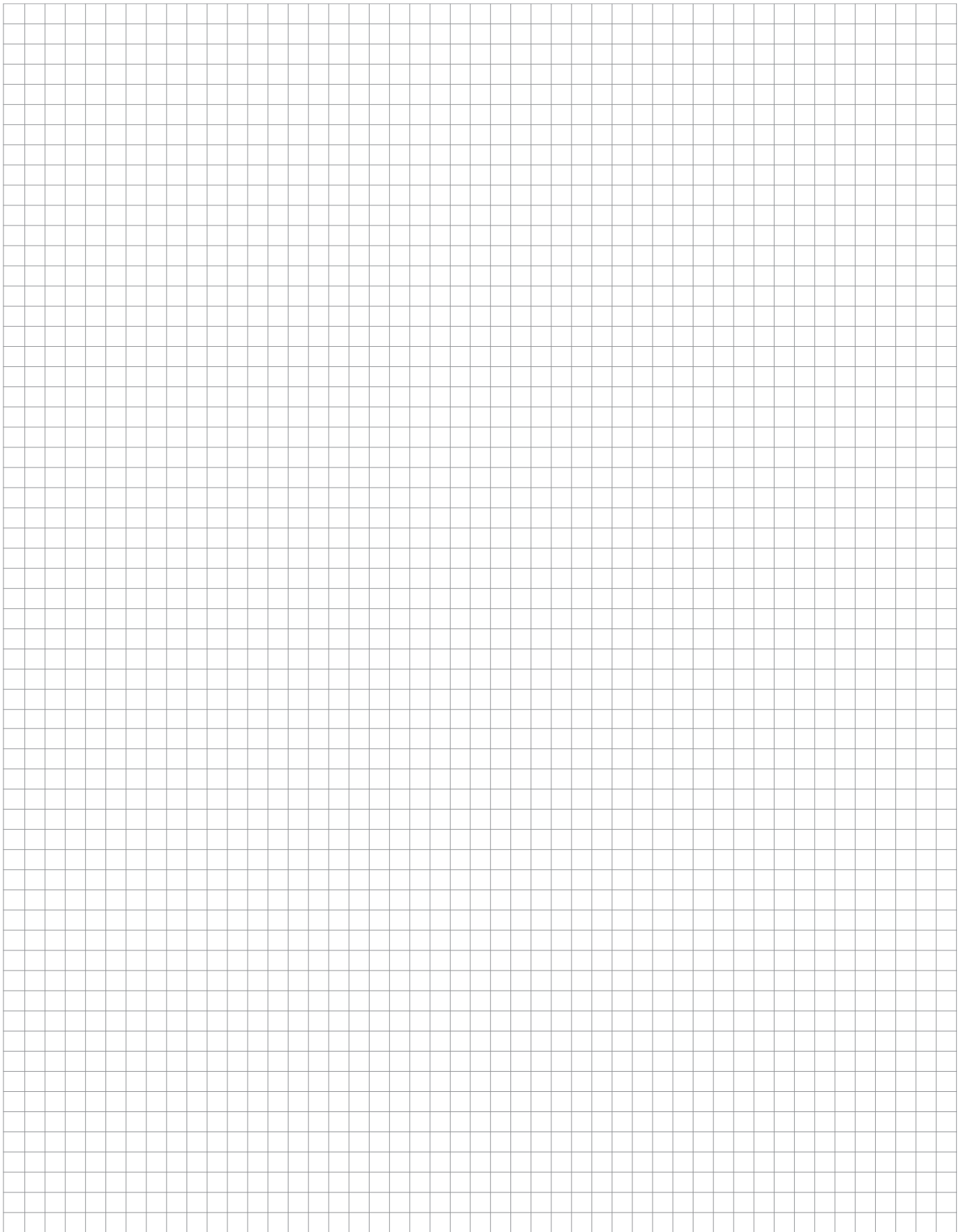


Tri phase end box (star connection)



- Install lid. Torque = 0.75 to 1.08 lbf-ft
- Apply insulation and cladding.
- Weather-seal stand entry.
- Install electric heat-tracing labels on insulation cladding.
- Leave these installation instructions with the end user for future reference.
- Attach the circuit identification tag within 3 inches of the power connection, i.e. on the conduit.





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