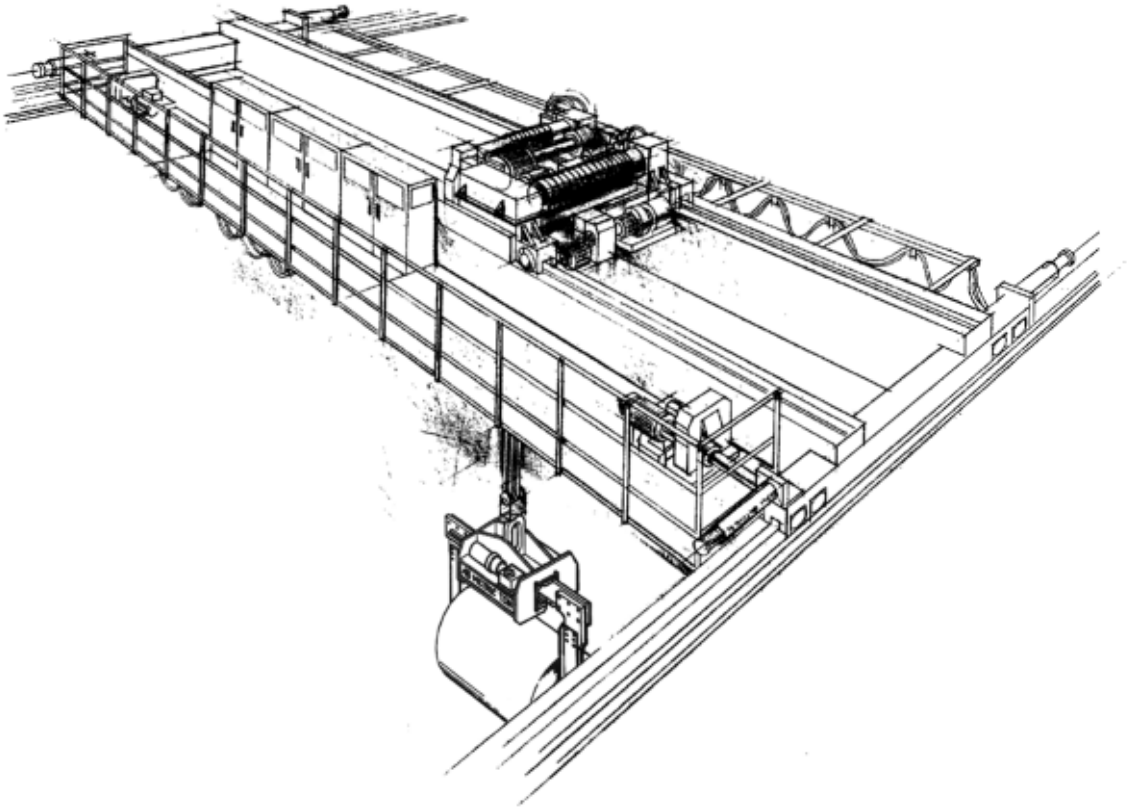


# *Electrobar Elite*

Conductor Bar System

# Instruction Manual

MAGNETEK
MATERIAL HANDLING
ELECTROMOTIVE SYSTEMS

ELITE-03A October 2011
Part Number: 005-1054-R3

## PRODUCT SAFETY INFORMATION

Magnetek, Inc. (Magnetek) offers a broad range of radio remote control products, control products and adjustable frequency drives, and industrial braking systems for material handling applications. This manual has been prepared by Magnetek to provide information and recommendations for the installation, use, operation and service of Magnetek's material handling products and systems (Magnetek Products). Anyone who uses, operates, maintains, services, installs or owns Magnetek Products should know, understand and follow the instructions and safety recommendations in this manual for Magnetek Products.

The recommendations in this manual do not take precedence over any of the following requirements relating to cranes, hoists, lifting devices or other material handling equipment which use or include Magnetek Products:

- Instructions, manuals, and safety warnings of the manufacturers of the equipment where the Magnetek Products are used,
- Plant safety rules and procedures of the employers and the owners of the facilities where the Magnetek Products are being used,
- Regulations issued by the Occupational Health and Safety Administration (OSHA),
- Applicable local, state or federal codes, ordinances, standards and requirements, or
- Safety standards and practices for the industries in which Magnetek Products are used.

This manual does not include or address the specific instructions and safety warnings of these manufacturers or any of the other requirements listed above. It is the responsibility of the owners, users and operators of the Magnetek Products to know, understand and follow all of these requirements. It is the responsibility of the employer to make its employees aware of all of the above listed requirements and to make certain that all operators are properly trained. **No one should use Magnetek Products prior to becoming familiar with and being trained in these requirements and the instructions and safety recommendations for this manual.**

## PRODUCT WARRANTY INFORMATION

For information on Magnetek's product warranties by product type, please visit www.magnetekmh.com

.

# *DANGER*, *WARNING*, *CAUTION*, and *NOTE* Statements

*DANGER, WARNING, CAUTION,* and *NOTE* statements are used throughout this manual to emphasize important and critical information. You must read these statements to help ensure safety and to prevent product damage. The statements are defined below.

**DANGER**

*DANGER* indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

**WARNING**

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

**CAUTION**

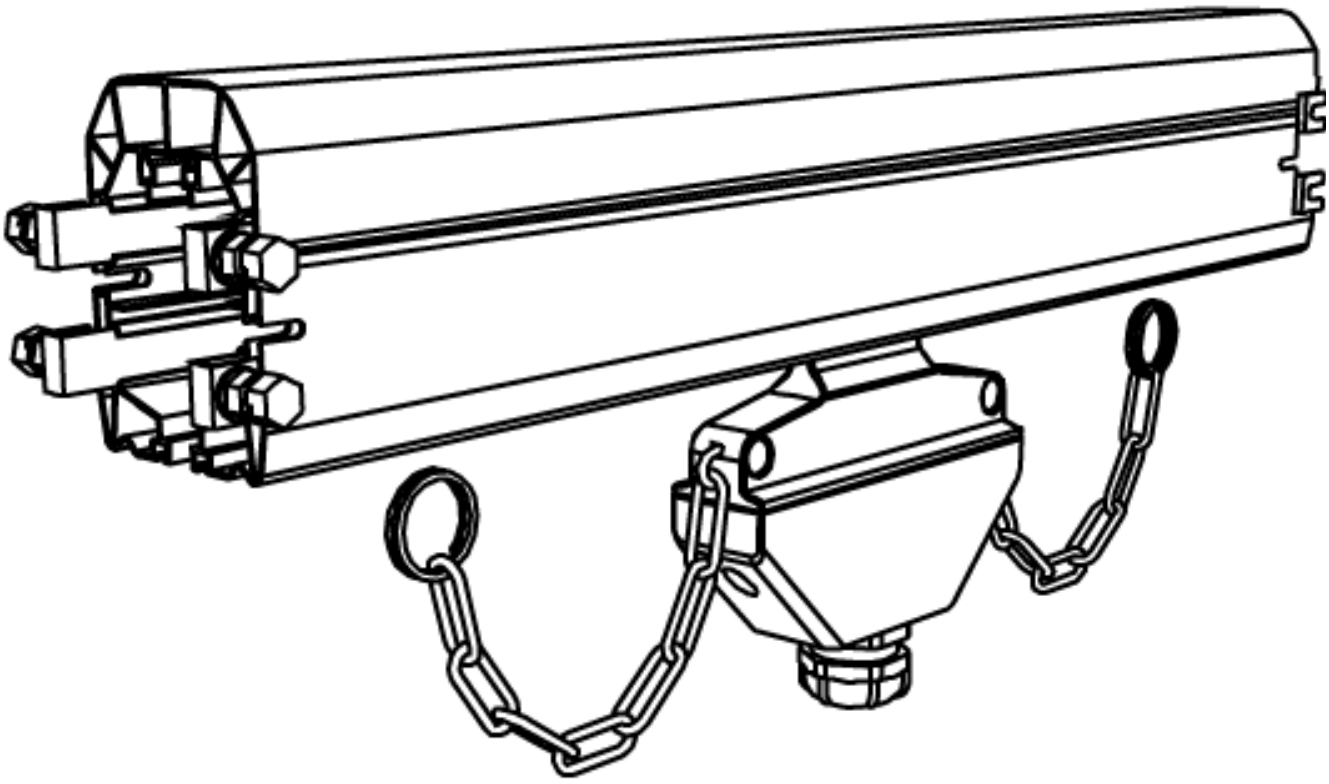
*CAUTION* indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

*NOTE: A NOTE statement is used to notify people of installation, operation, programming, or maintenance information that is important, but not hazard-related.*

**WARNING**

Many tests and procedures outlined in this manual involve exposure to components that operate at potentially lethal voltage levels. To eliminate this hazard, service personnel must ensure that the incoming three-phase AC power has been disconnected, locked out, and tagged.

# Electrobar Elite Assembly Instructions



As we are continually striving to improve our products, we reserve the right to make any modifications without prior warning.

## Layout of Line Elements

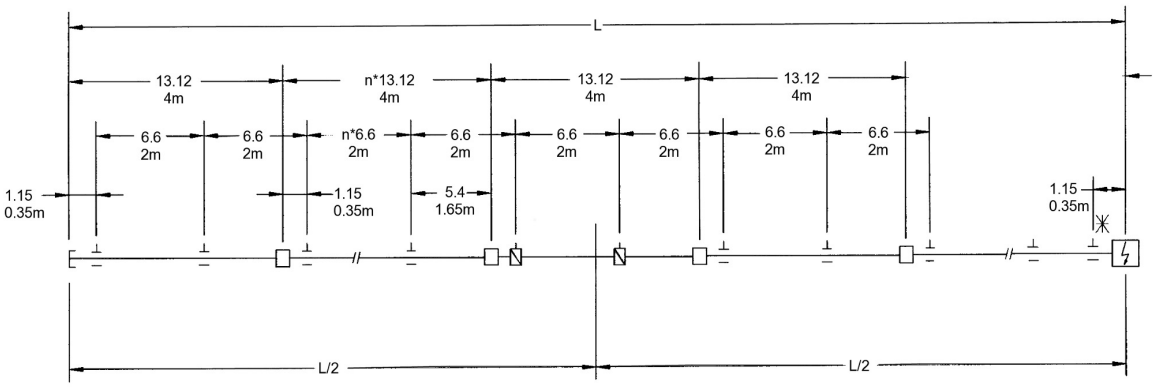



***Figure 1: Line without expansion joint***

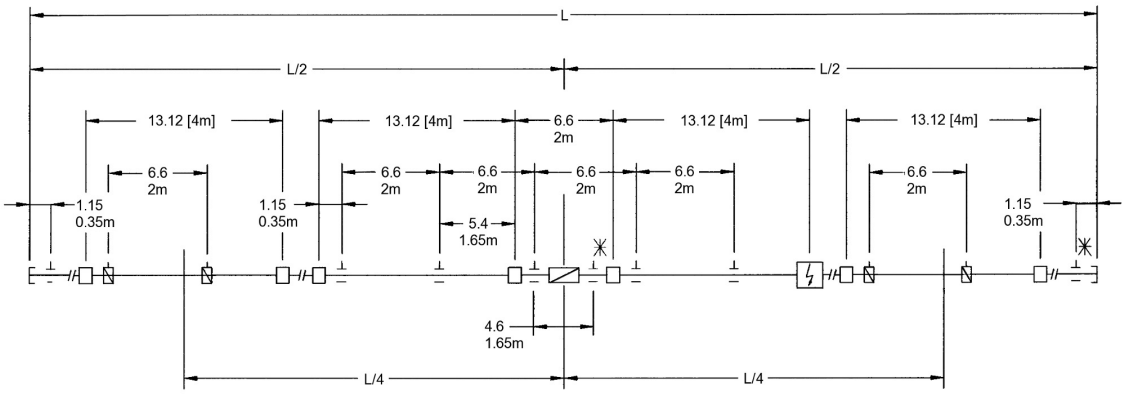



***Figure 2: Line with expansion joint***

Key:

- Fixed Hanger
- Sliding Hanger
- Covering Flange
- Feed Box
- Expansion Joint
- End-cap
- Additional Sliding Hanger

*NOTE: The position of the feed boxes shown here is only an example. This position is determined by the calculation of the voltage drop and the running conditions.*

## Assembly of the different elements

### 1. Bracket

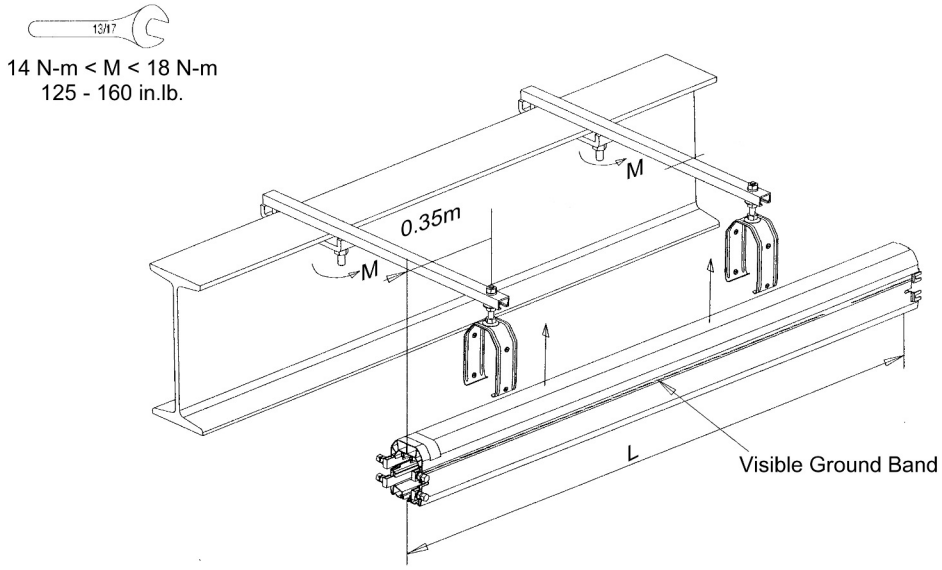
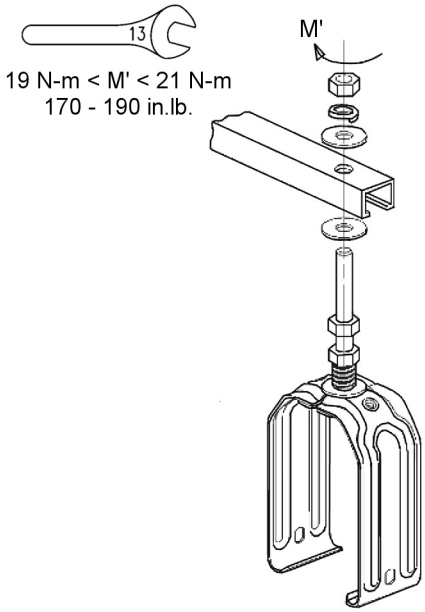



***Figure 3: Bracket***

*Use the following to determine the number of hangers:*

| 20A–130A | | | 200A | | |
|---|---|---|---|---|---|
| Length | < 1.5m | 1.5 – 4m | < 1.3m | 1.3 – 2.6m | 2.6 – 4m |
| Length | < 5’ | 5’ – 13.12’ | < 4.3’ | 4.3 – 8.5’ | 8.5 – 13.12’ |
| # of Hangers | 1 | 2 | 1 | 2 | 3 |

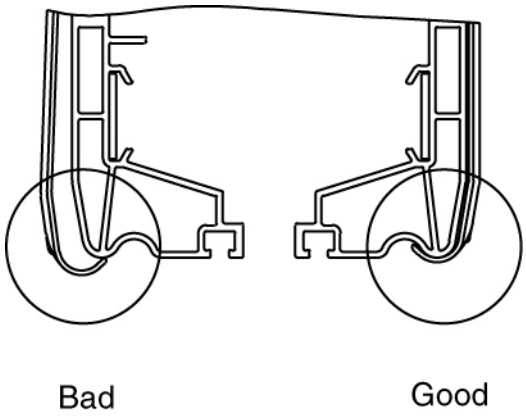
### 2. Sliding Hanger




*NOTE: One sliding hanger must be added 350 mm (13.75”) from the end of line.*

***Figure 4: Sliding Hanger***

### 3. Line Element




Be sure hangers are snapped completely under the line element.

***Figure 5: Hanger Fit***

### 4. Expansion Joint

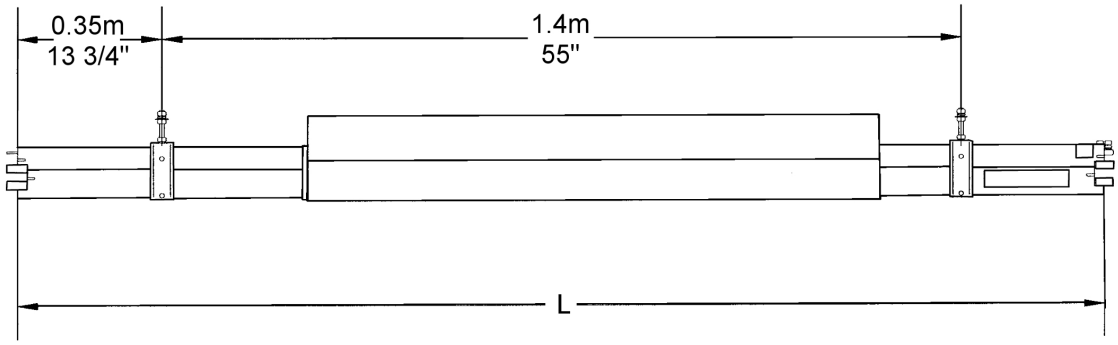
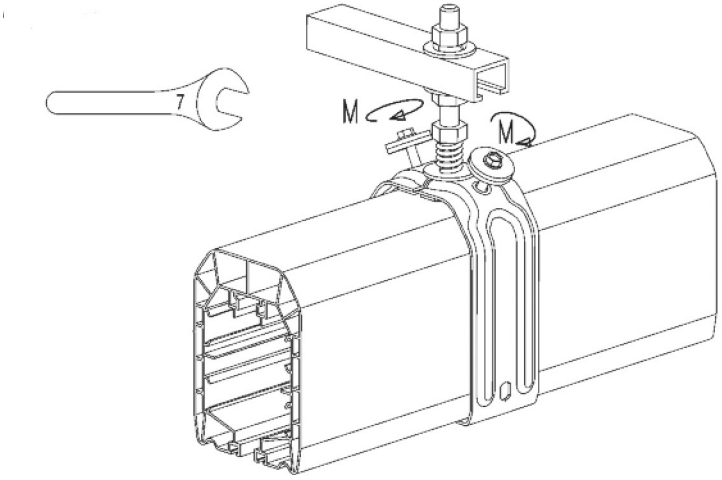



***Figure 6: Expansion Joint***

Adjust the expansion element to dimension "L" at time of assembly based on the ambient temperature during normal operating conditions. Refer to chart below.

| Temperature | | Length | |
|---|---|---|---|
| **°C** | **°F** | **mm** | **in** |
| -20 | -4 | 2005 | 78.93 |
| -10 | 14 | 2000 | 78.73 |
| 0 | 82 | 1995 | 78.54 |
| 10 | 50 | 1990 | 78.34 |
| 20 | 68 | 1985 | 78.15 |
| 30 | 86 | 1980 | 77.95 |
| 40 | 104 | 1975 | 77.76 |
| 50 | 122 | 1970 | 77.56 |
| 60 | 140 | 1965 | 77.36 |

## 5. Fixed Hanger

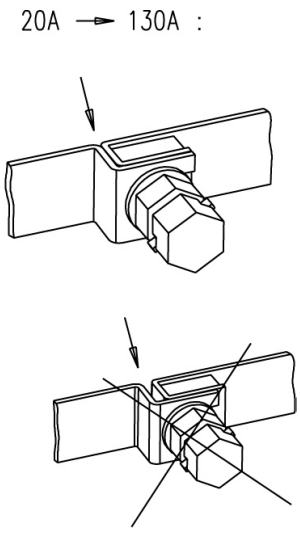



Screw self tapping screws into line element housing at fixed hanger locations.

2 N-m < M < 3 N-m
18 - 27 in.lb.

***Figure 7: Fixed Hanger***

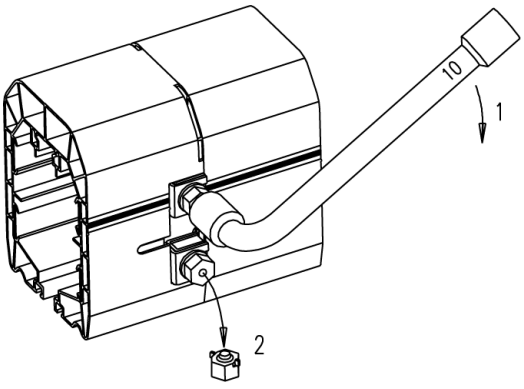
## 6. Connection of Conductors




Make sure line element conductors are together while tightening the torque-limiting bolt.

Be sure there is no gap present at the conductor joint prior to snapping of the torque-limiting bolt.

***Figure 8: Eliminate conductor gaps***




With even pressure, tighten upper bolt head until it snaps off.

*Be sure socket wrench does not overlap both bolt heads while tightening. Over torquing of conductor bar could occur.

*NOTE:If all upper bolt heads are not snapped off, the joint cover will not fit over the line element.*

***Figure 9: Bolt Heads***

***200 Amp systems do not have self torquing bolts at conductor joints. 200 amp collector joints include 3mm socket screws***

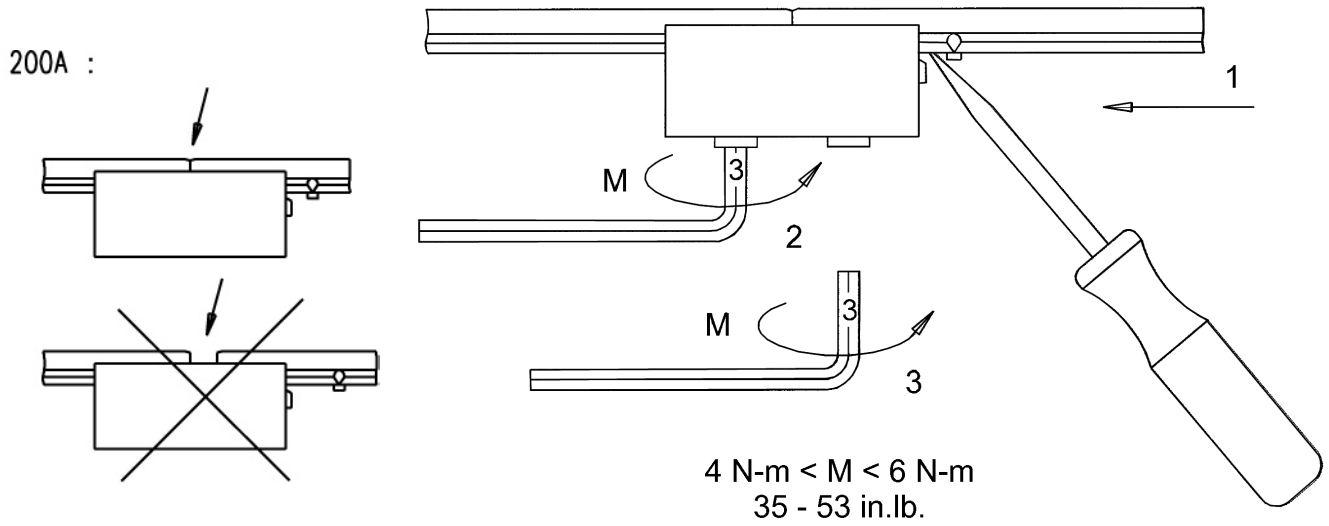



***Figure 10: 200 Amp connections***

A screw driver may be used to hold conductors together while tightening joint connector.

## 7. Joint Cover

1. Open joint cover completely. Place joint cover internal centering tabs into the gap between the line elements.
2. Rotate lower flanges of joint cover firmly under line element until each side snaps under the line element cover.
3. Rotate the (4) four joint cover locking tabs down until they snap into position.

   *NOTE: Cover will not fit over joint if conductor joint cover hardware is not properly assembled.*

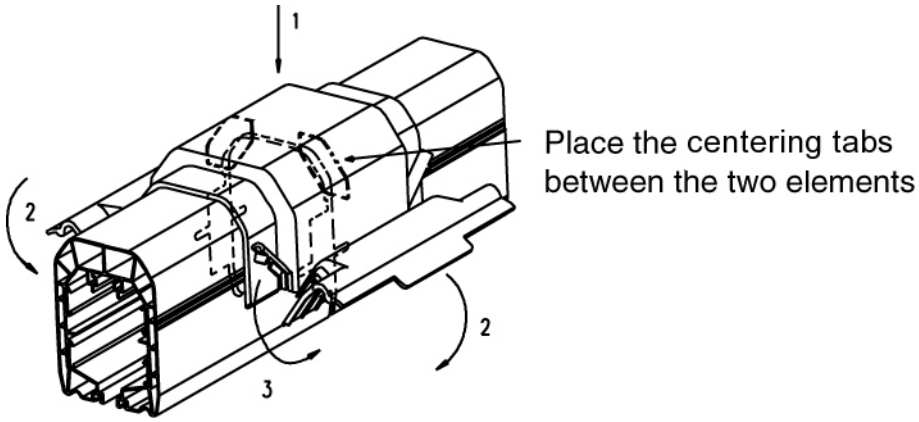



***Figure 11: Joint Cover***

## 8. Trolley

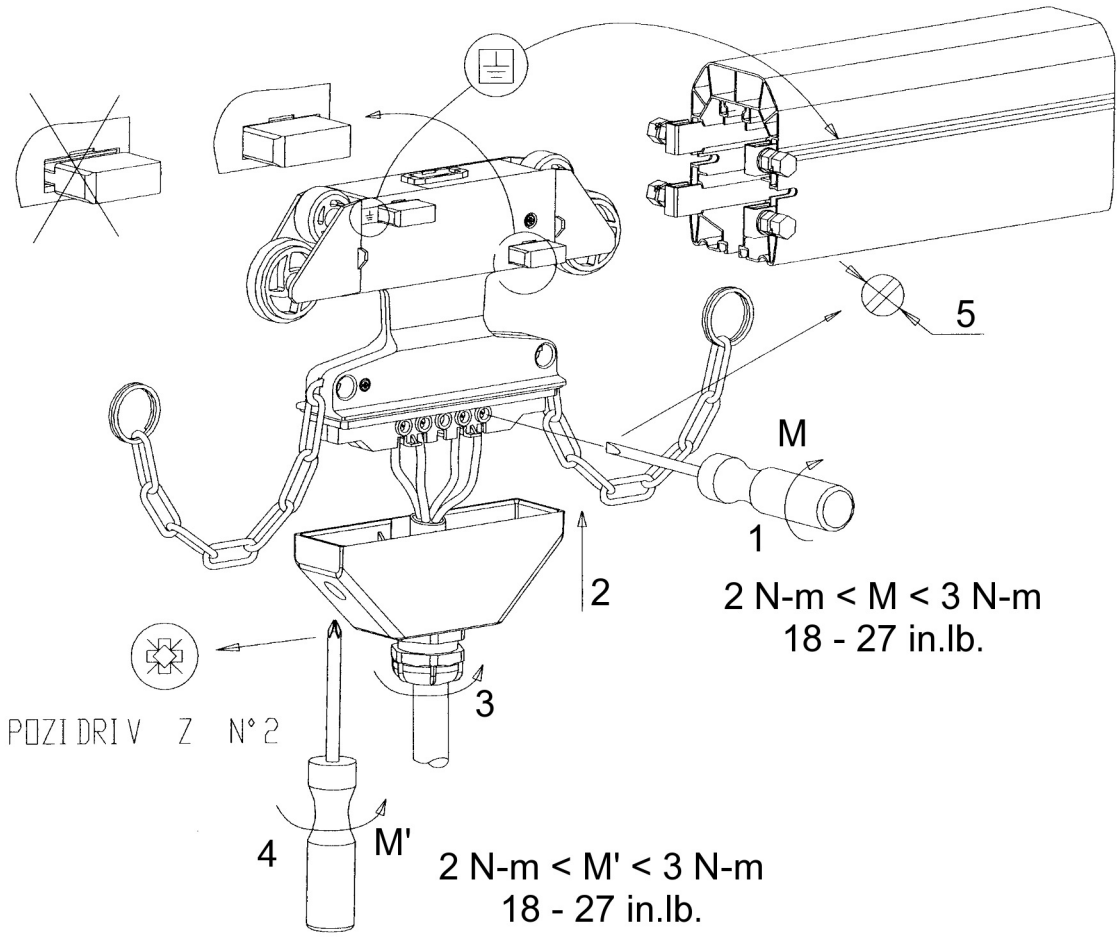



***Figure 12: Trolley***

1. See page 10 for cable trim guidelines.
2. Feed cable through cord grip on trolley cover.
3. Wire cable to trolley, check for secure terminal connection.
4. Slide trolley cover and assemble to trolley.
5. Tighten cord grip.

Slide the trolley into end of line element and be sure ground brush on the trolley is in line with the ground conductor in the line element. The ground conductor in the line element is directly under the green and yellow line on the line element cover.

Lightly hold in brushes on the trolley as it is inserted into the line element.

*NOTE: Trolleys can only be inserted into the line element in one direction. Trolleys have flanges to prevent improper assembly. If the trolley does not slide into the line element, check direction of trolley as it relates to the line element.*

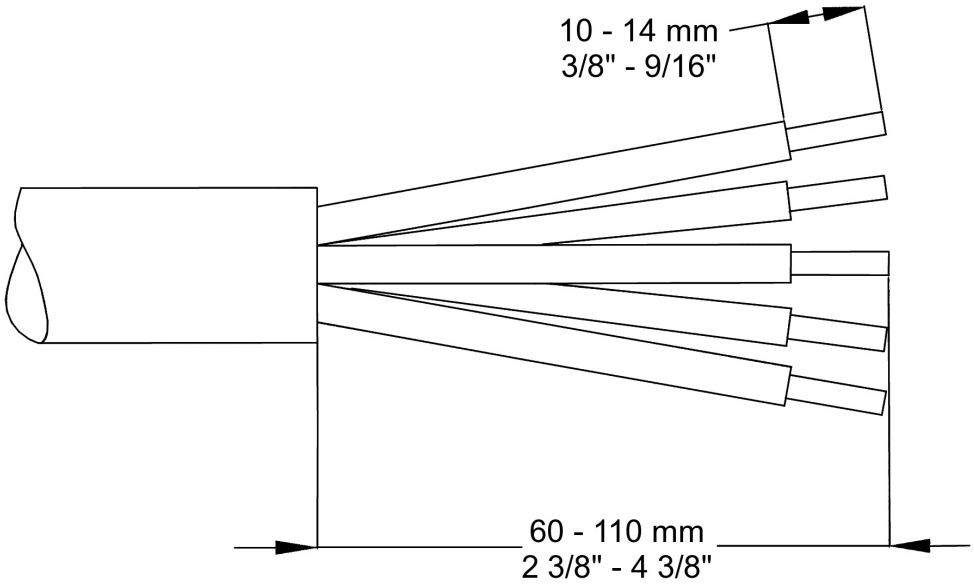
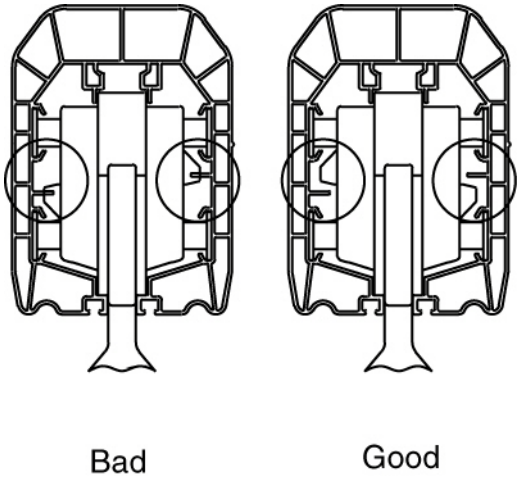



***Figure 13: Trolley cable trim guidelines***

Trolley may not be inserted. Trolley flanges prevent improper assembly.




Trolley flanges are clear. Trolley may be inserted into line element.

***Figure 14: Trolley Flanges***

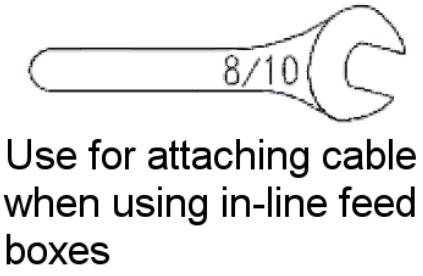
**WARNING**

*Do NOT remove trolley flanges!!*

**CAUTION**

*Connecting: flexible cable ≤ 4 $mm^2$ recommended, 6 $mm^2$ maximum. Collectors must be installed at one end of the line.*

**9. In-Line Feed Box**



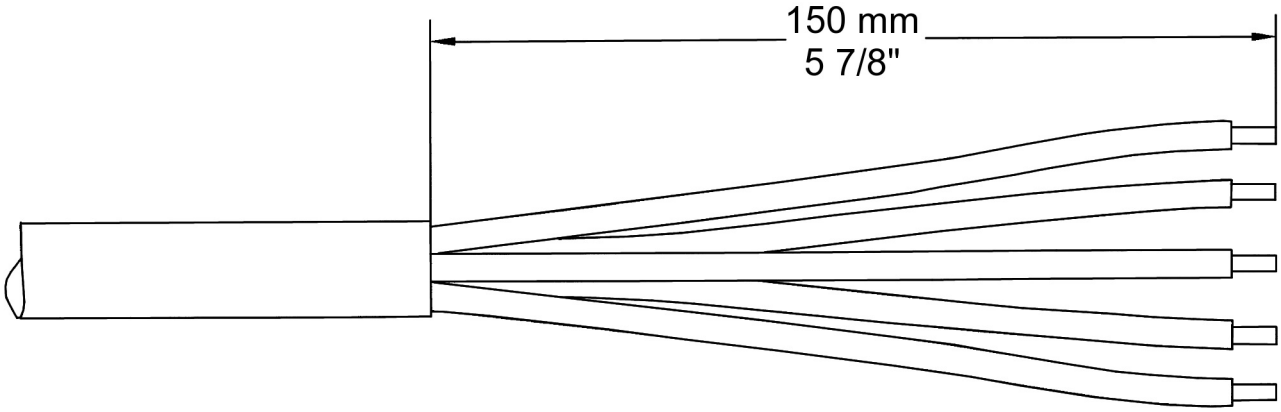




***Figure 15: Power Feed cable Trim guide***

*NOTE: Attach appropriate flat wire terminal connector to power feed cable conductor ends. Feed cable through cord grip prior to attaching flat wire terminals.*

*To Open Covers:*

1. Un-snap the (4) four locking tabs with a small flat screwdriver.
2. Rotate locking tabs clear from the lower half of the cover.
3. Rotate the lower half of the cover open.

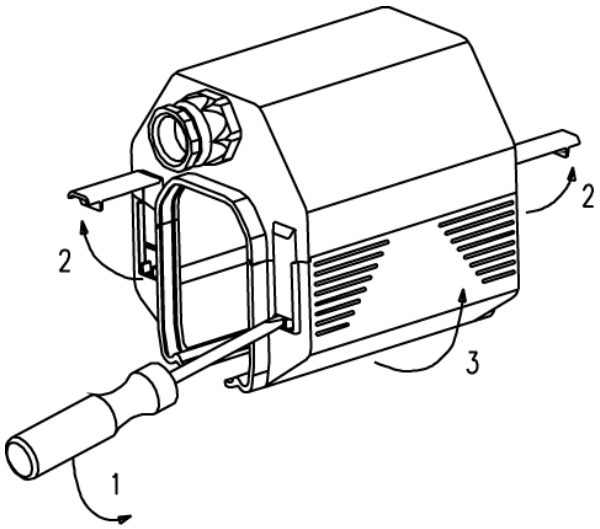



***Figure 16: Feed Box Cover***

*Power Feed Connection*

Feed the power feed cable through the cord grip in the cover and attach the flat terminal connectors. Attach the power feed cable terminals under the joint connection bolts. Tighten the torque limiting bolts until the upper head snaps off.

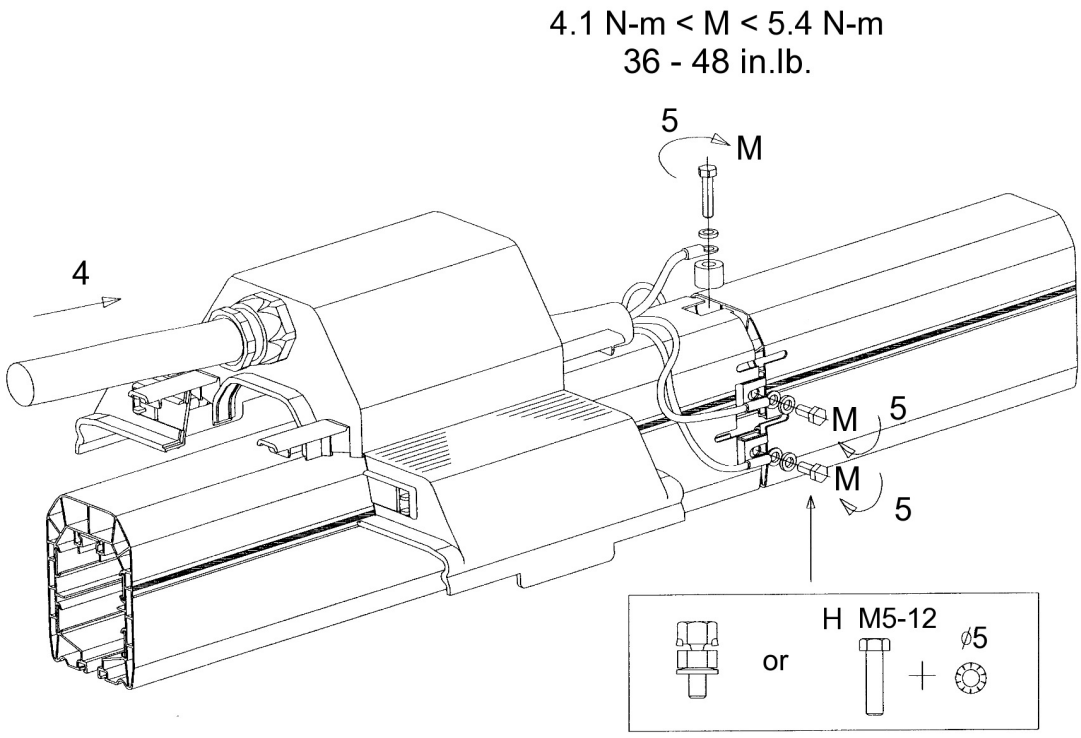



***Figure 17: Power Feed Connection***

Slide the power feed cover over the center of the joint. Lower the cover onto the line element. Place the cover centering tabs into the line element cover slots. Rotate and snap the lower half of the power feed cover under the line element cover. Rotate and snap the (4) four locking tabs on the side of the power feed cover into position.

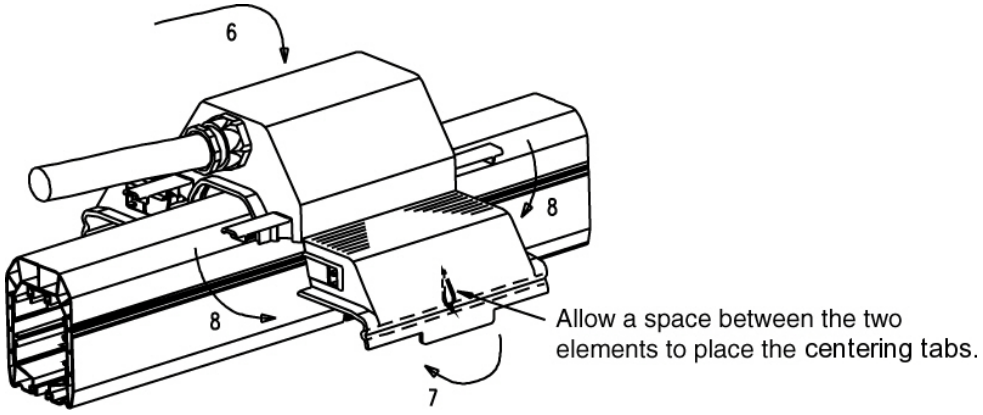
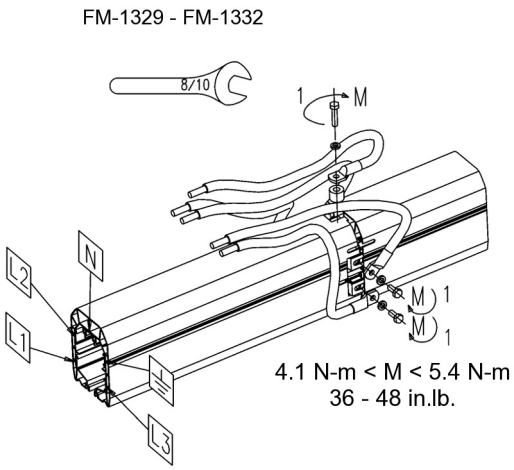



***Figure 18: In Line Power Feed assembly***

*In-line Power Feed with Junction Box*




Install the power feed cable to the joint connection.

***Figure 19: Installing power feed cables***

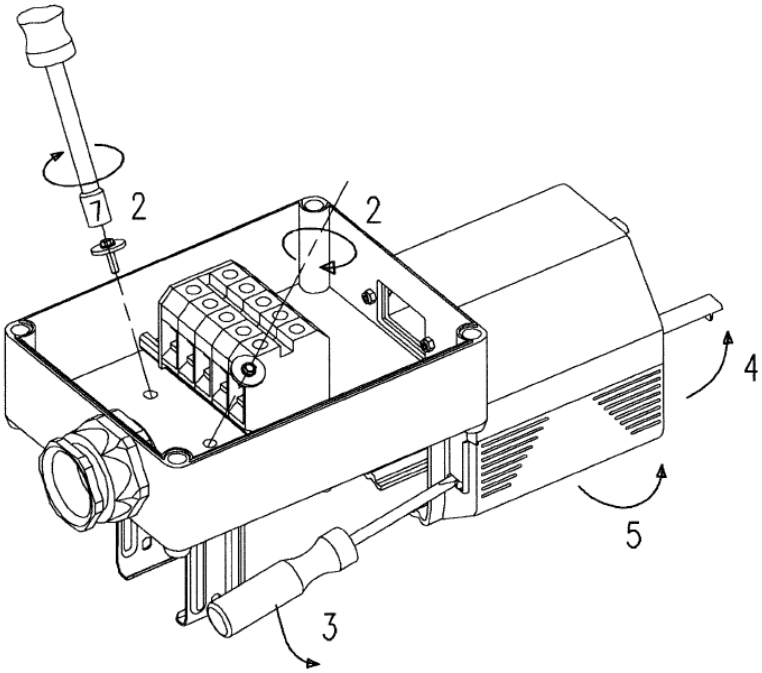



***Figure 20: Opening Power Feed Cover***

*Open Power Feed Cover*

1. With a small flat screwdriver pry open and rotate the (4) four locking tabs clear of the lower half of the cover.
2. Rotate open the lower half of the power feed cover.
3. Assemble the sliding hanger to the junction box. DO NOT TIGHTEN AT THIS TIME.

Feed the power feed cables into the junction box from under the power feed cover. Center the cover over the joint and rotate the assembly and hanger over the line element cover.

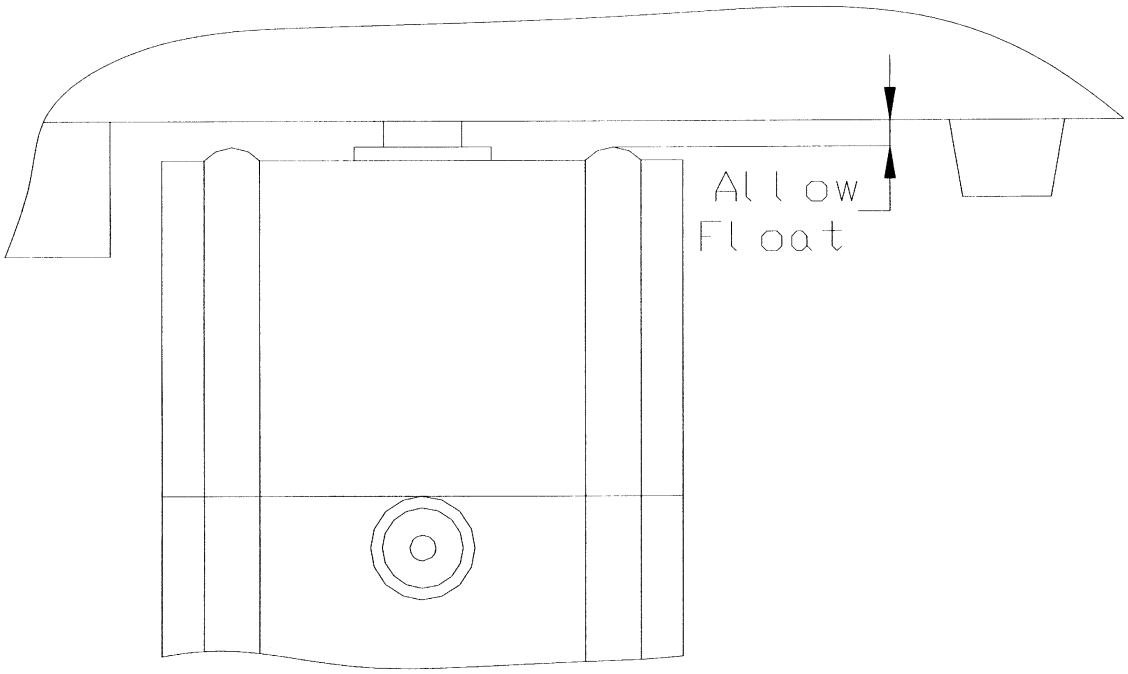



***Figure 21: Placing Power Feed Cover***

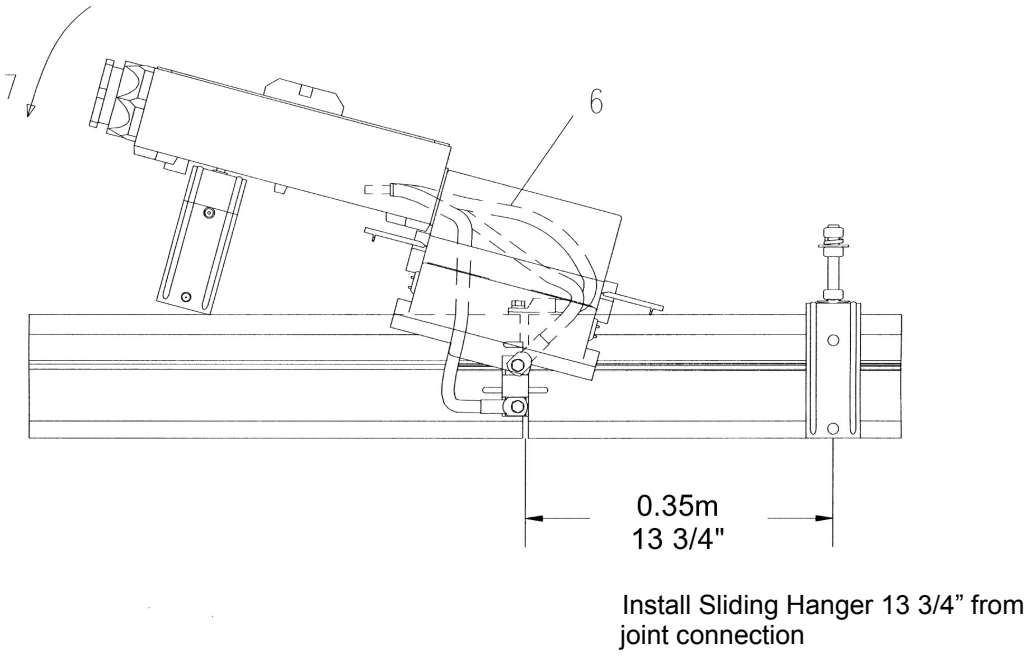



***Figure 22: In Line Power Feed with Junction Box assembly***

Rotate and snap the lower half of the power feed cover under the joint of the line element. Rotate locking tabs down and snap into position. Install the wires to the terminals. Tighten the hanger with the bolt in the junction box.

Insert the power cable through the cord grip. Install the power feed cable to the junction box terminals. Tighten the cord grip, and install the junction box cover.

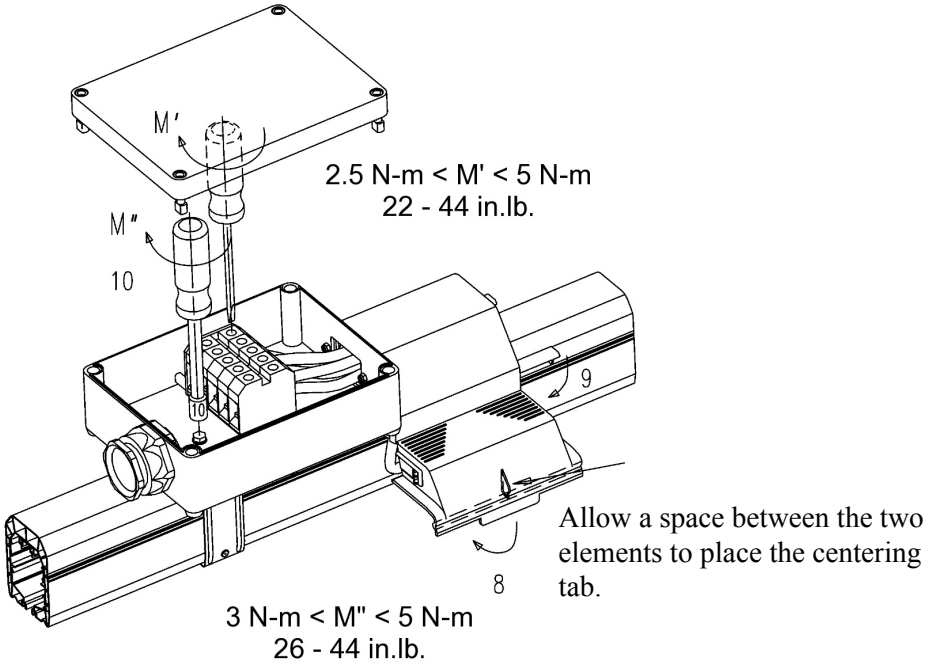



***Figure 23: Placing the Power Feed Cover***

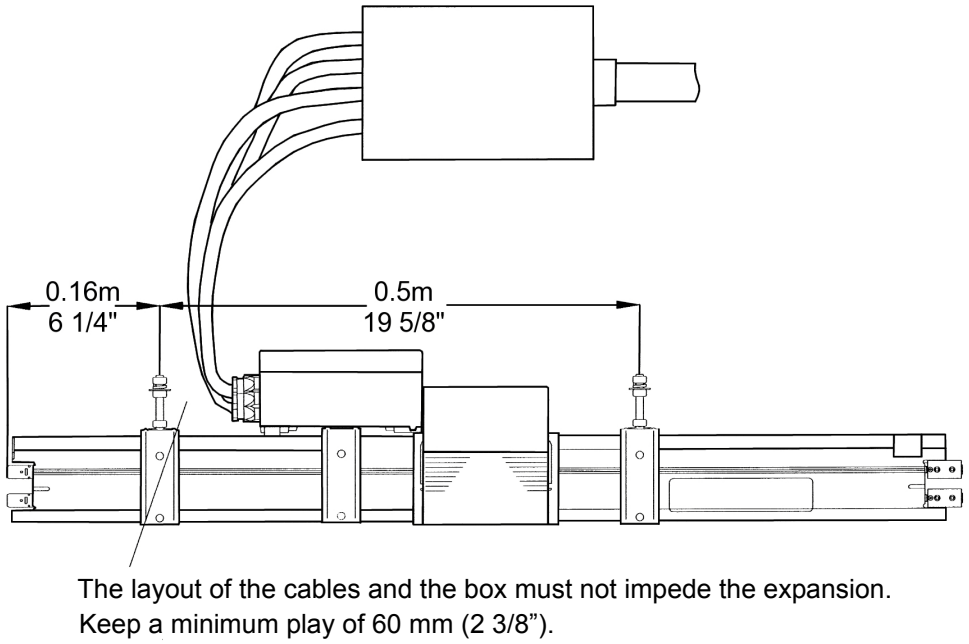
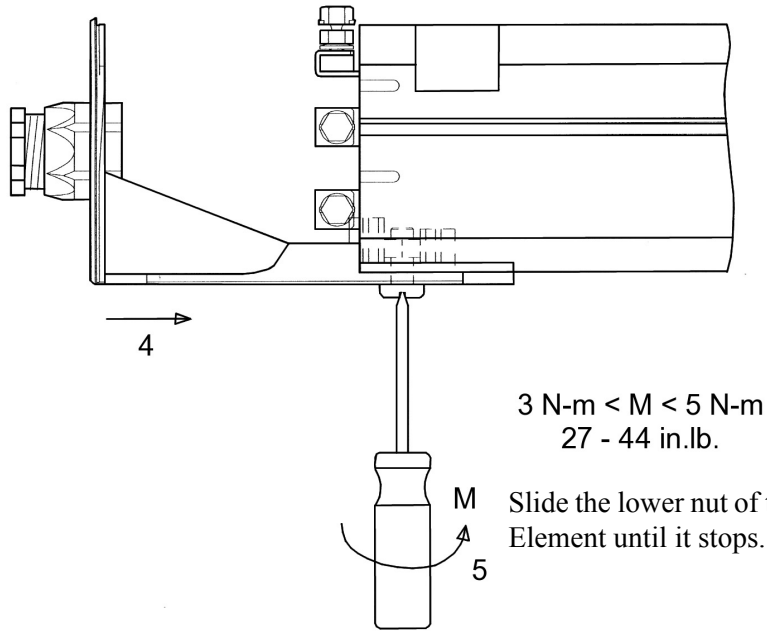



***Figure 24: In Line Power Feed with Junction Box Placement***

## 10. End-line feed box




Slide the lower nut of the End Line Feed Box into the Line Element until it stops. Tighten with a flat screwdriver.

***Figure 25: End Line Feed Box***

Insert the power feed cable through the cord grip and attach the flat terminal connectors. Assemble the cable to the conductor connection bolts. Tighten the cord grip.

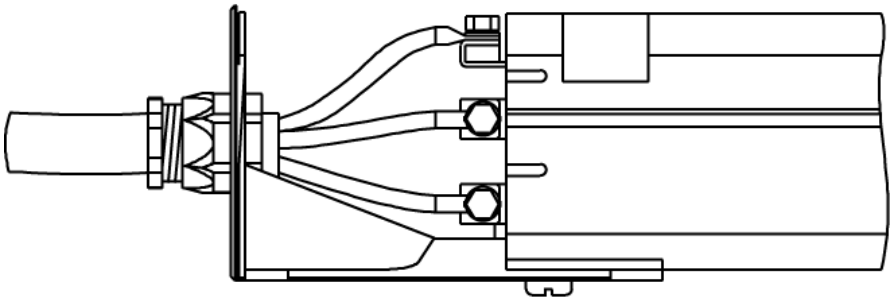
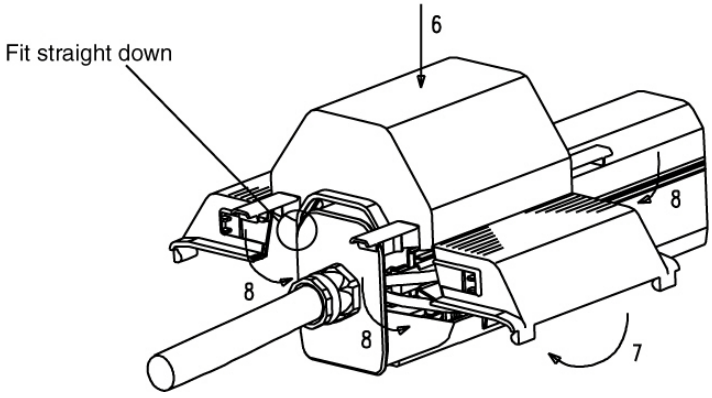


***Figure 26: End Line Feed Cable Connections***

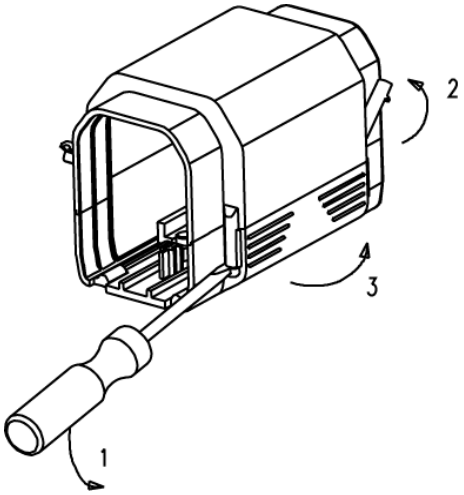



Lower the power feed cover straight down over the end of the line element and feed cover base. Snap the lower cover halves to the base and under the line element. Rotate the (4) four locking tabs and snap into position.

***Figure 27: End Line Feed***

## 11. End-cap

.




Open the end cap cover. Pry the (4) four locking tabs open with small flat screwdrivers. Rotate clear of lower half of cover. Rotate lower halves of the end cover open.

***Figure 28: End Cap Cover***

Slide the lower nut of the end cap into line element slot until it stops. Tighten with flat screwdriver.

.

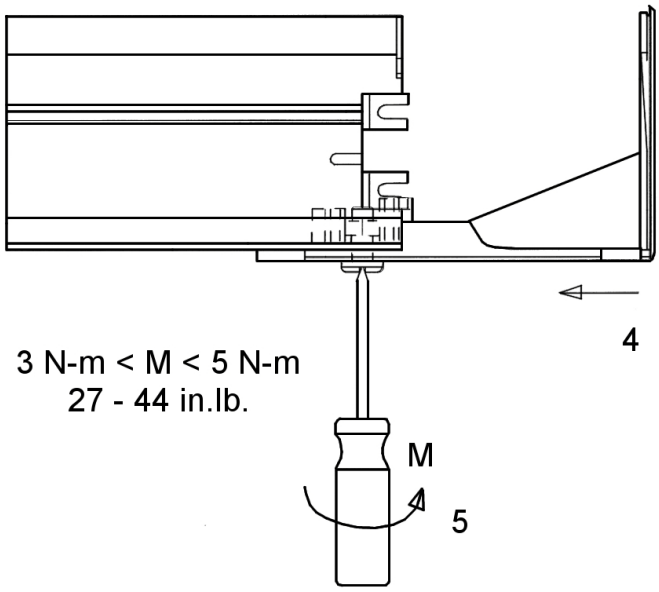
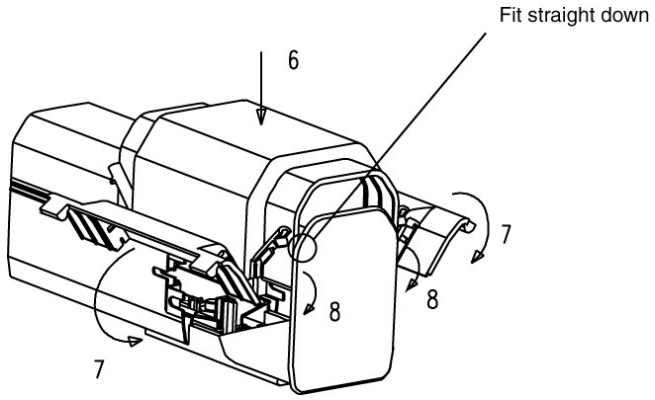


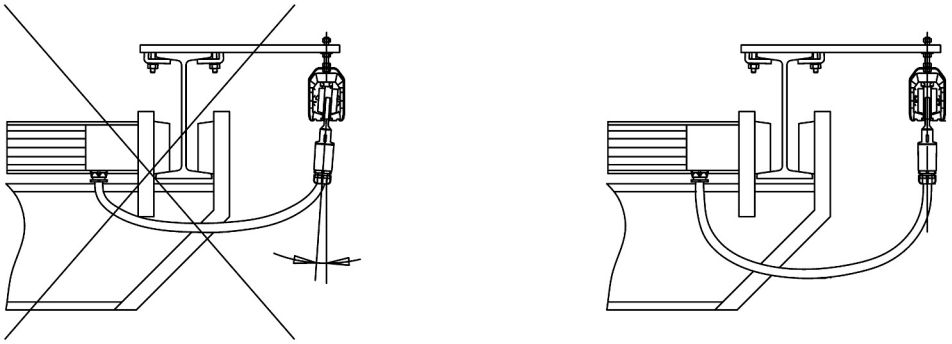

***Figure 29: End Cap Placement***




Lower the end cap cover straight down over the end of line element and the end cap base. Rotate the lower half of the end cap cover and snap into position. Rotate down and snap the (4) four locking tabs into position.

***Figure 30: End Cap Final Assembly***

## 12. Connecting The Trolley



Do not allow the trolley cable to pull the trolley to the side. Premature trolley wheel and brush wear can occur.

The cable is to hang straight down from tthe trolley.

***Figure 31: Trolley connections***

## 13. Tow Brackets

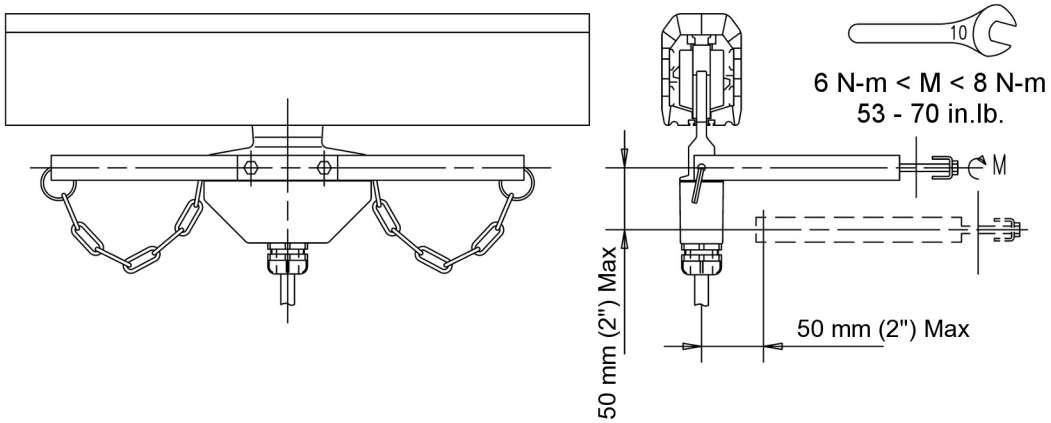



***Figure 32: Tow Brackets***

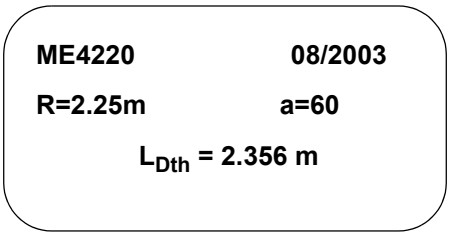
50 mm maximum deviation of tow bracket from trolley at any point over the length of the system.

# Curved Applications

### Before Assembly:

***Important!*** *Do not un-tighten curves before assembly on site. Do not try to take off the grey pieces.*

All curves have an identification label:




### Expansion Placement

If an expansion joint is planed between two curves, it is imperative that it be placed at equal distance between the curves.

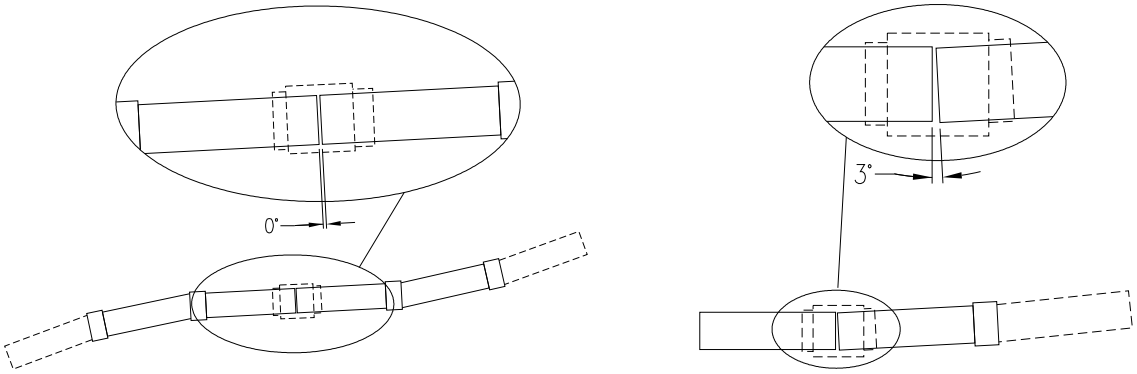
### Fixed Hanger Placement

***Important!*** *Always place fixed hanger on all curves. There is a risk of unhooking due to expansion.*

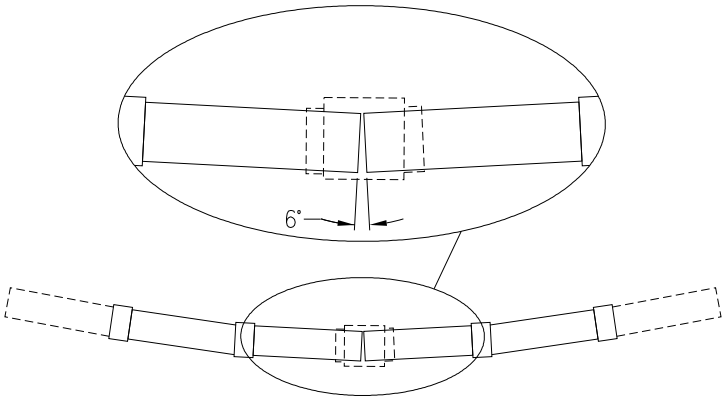
| Fixed Hanger Requirements | |
|---|---|
| If Length of arc < 0.8m (2.62') | 1 fixed hanger |
| If Length of arc is 0.8m - 3m (2.62' - 9.84') | 2 fixed hangers |
| If Length of arc > 3m (9.84') | 3 fixed hangers |

## Connecting Curved Elements

The last section, at the end of each curve, makes a 3 degree angle with the next element.




Covering flange FM-1000 or Feed Box FM-1300 or FM-1330




Covering flange FM-1000-CO or Feed Box FM-1300-CO or FM-1330-CO

***Figure 33: Curved Line Element placement***

*Assembly Procedure:*

1. Put the fixed hangers on the mounting brackets (refer to section 5 on page 7).
2. Put the curve in the fixed hangers without fixing anchoring screws. (Warning: at rest the radius of the curve is greater than the nominal radius due to flexibility in the element.)
3. Assemble connection on one side, conductors abutting each other.
4. Place the next element in the hangers, then close a little bit of the curve to place the remaining curve connections.
5. Install the joint covers (refer to section 7 on page 8). Use FM-1000 for straight sections and FM-1000-CO for curves.
6. Tighten the fixed hanger screws.
7. Special Articulated trolleys (single/double/triple) are required on all installations with a curve.