



UNIPOLE LINE

INSTALLATION & MAINTENANCE INSTRUCTIONS





INSTALLATION & MAINTENANCE INSTRUCTIONS UNIPOLE LINE

60A -100A -125A - 200A - 315A - 250A - 400A

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CONDUCTOR SYSTEM NOMENCLATURE



Single conductor



Hanger clamp



Conductor joint



Anchor clamp



Expansion section



Powerfeed



End cap



Collector



Isolating section
Isolation - insulating
material



Isolating - section
Isolation - Air gap



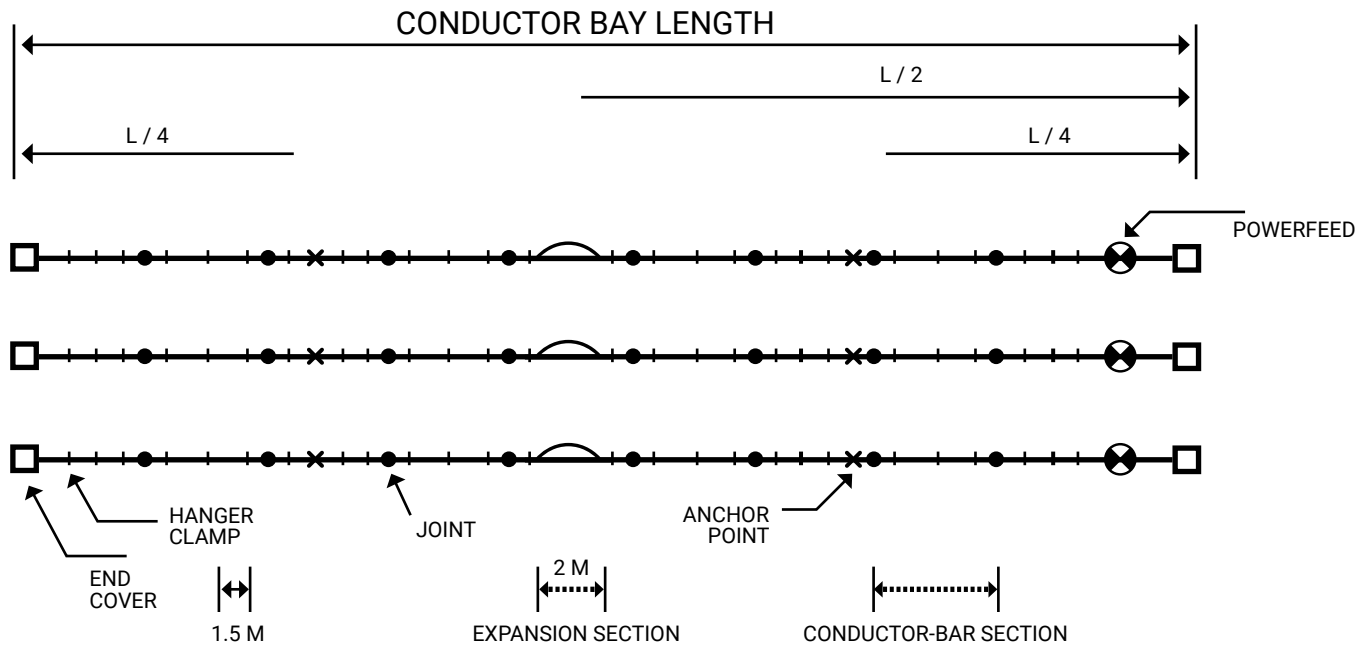
Isolating switch



Switch Fuse



TYPICAL 3 PHASE CONDUCTOR SYSTEM



| | 60 | 100 | 125 | 160 | 250 | 400 | 200 | 315 |
|---|------------------|------|------|------|------|------|------|------|
| Standard conductor length | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Expansion section length | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Maximum hanger spaging: | Vertical mount | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 |
| | Horizontal mount | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | Curve sections | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | - |
| Maximum system length without expansion section | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |

* Power feed preferably at center. Multi feed reqd. for longer bays / higher current installation



INSTALLATION NOTES

TOOL KIT REQUIRED

1. Collector mounting gauge. Supplied with every installation.
2. Screwdriver - 6".
3. Spanners - 6,8, 10 mm.

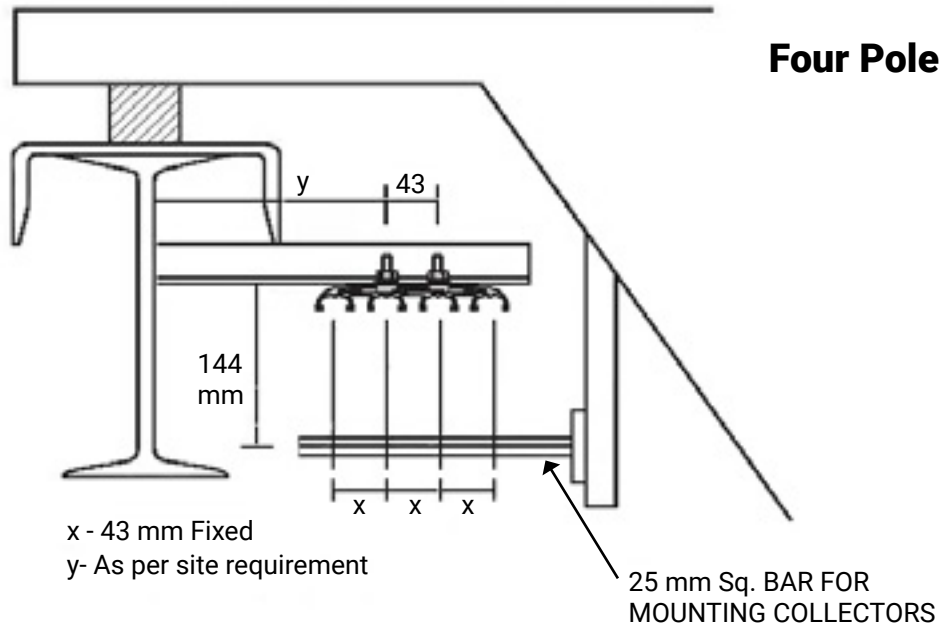
ATTENTION TO THE FOLLOWING WILL ENSURE A TROUBLE FREE SYSTEM

1. Correct alignment of support brackets.
2. Ensure that conductor joints are not against hanger clamps.
3. Wherever possible use the standard bracket pitch. This will avoid conductor joints fouling support brackets.
4. **Correct alignment of collector with conductor bars with the use of collector mounting gauge.**
5. Ensure that all power cable connections are flexible to allow for conductor movement due to expansion & contraction. Mains cable preferably be terminated in a junction box. Separate flexible leads for connection to conductor feed points.
6. For aluminium conductors, apply electrical joint compound on all contact surfaces. Supplied with every installation.

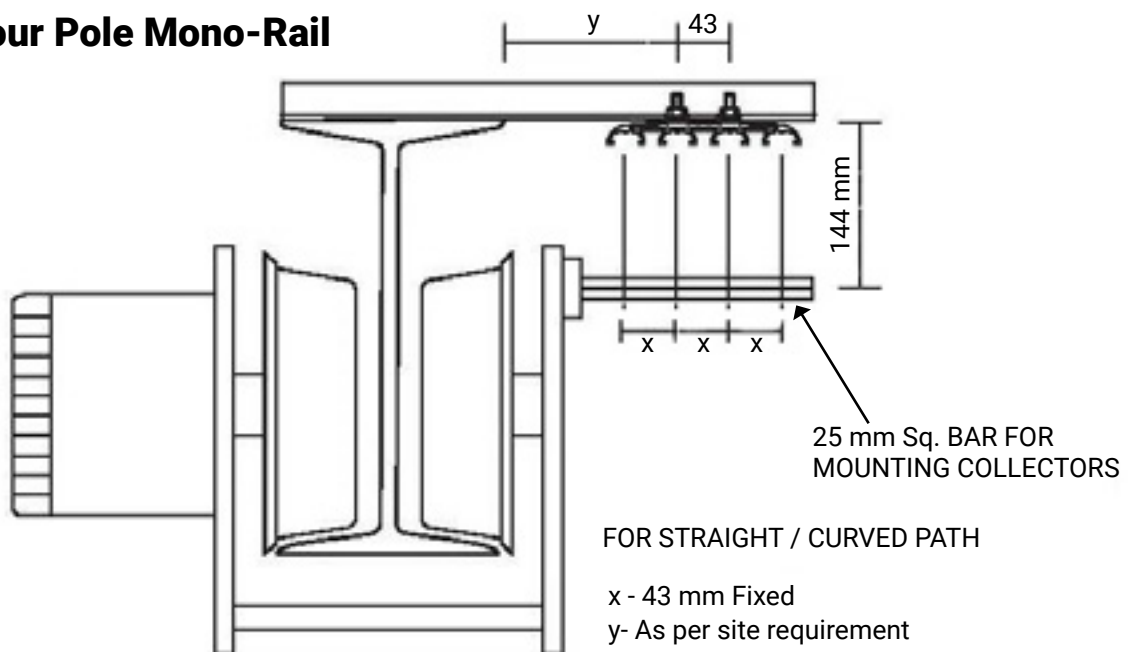


TYPE OF INSTALLATIONS

- Horizontal Mounting



Four Pole Mono-Rail

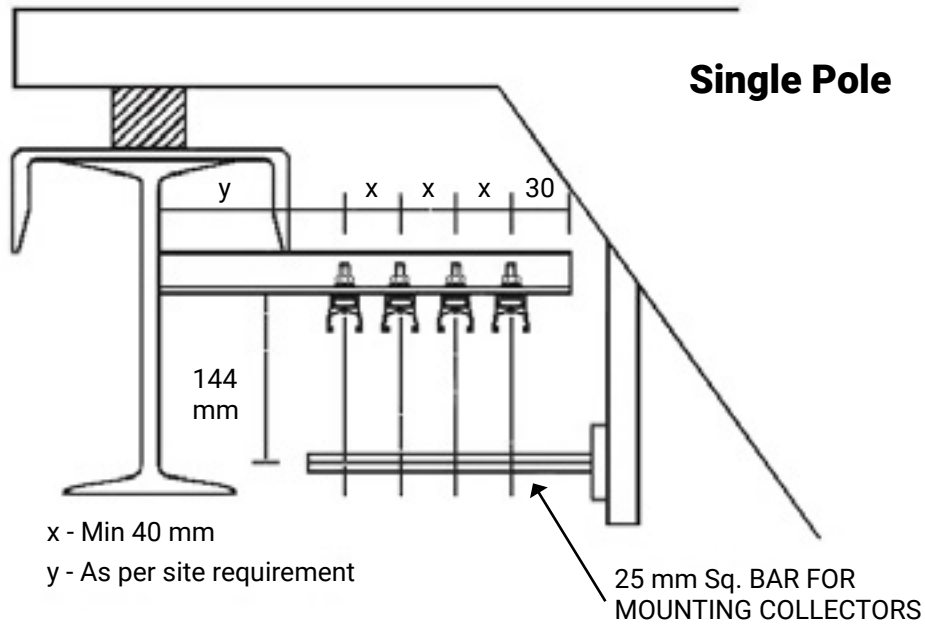


ALL ILLUSTRATIONS WITH 125/250A COLLECTORS

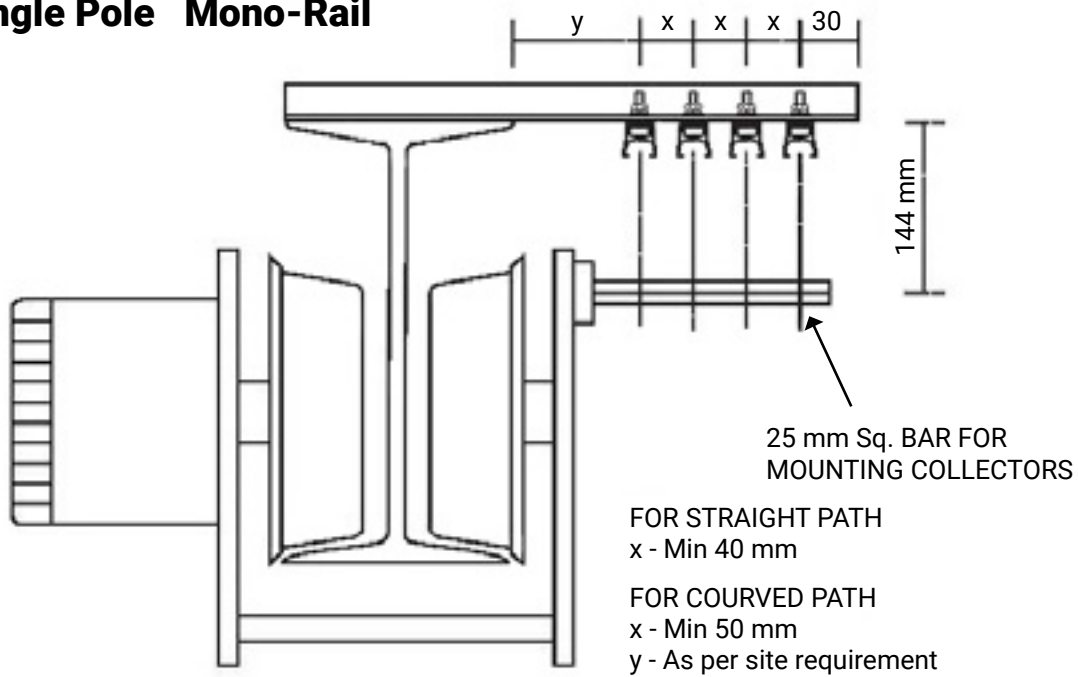


TYPE OF INSTALLATIONS

- Horizontal Mounting



Single Pole Mono-Rail

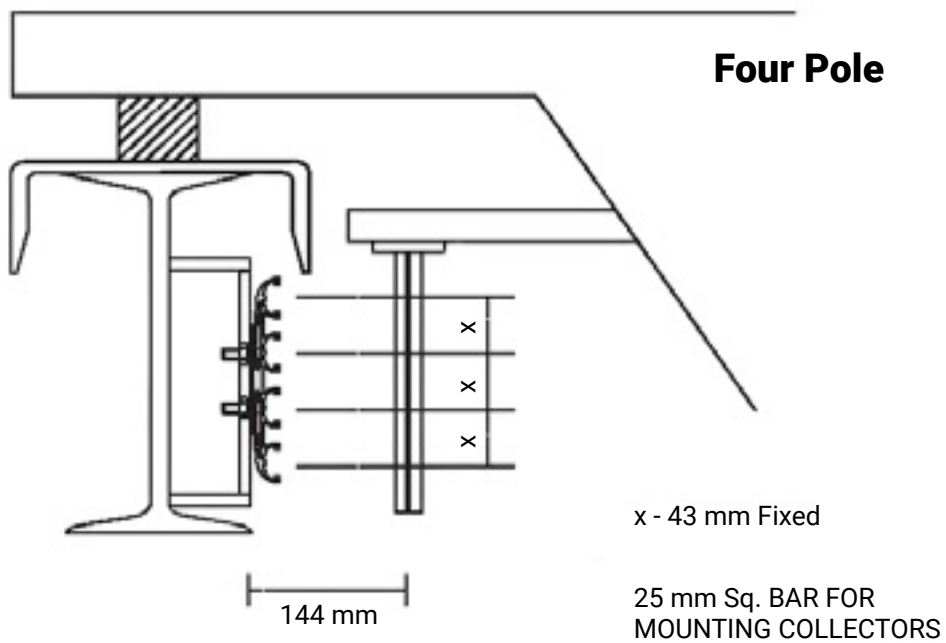
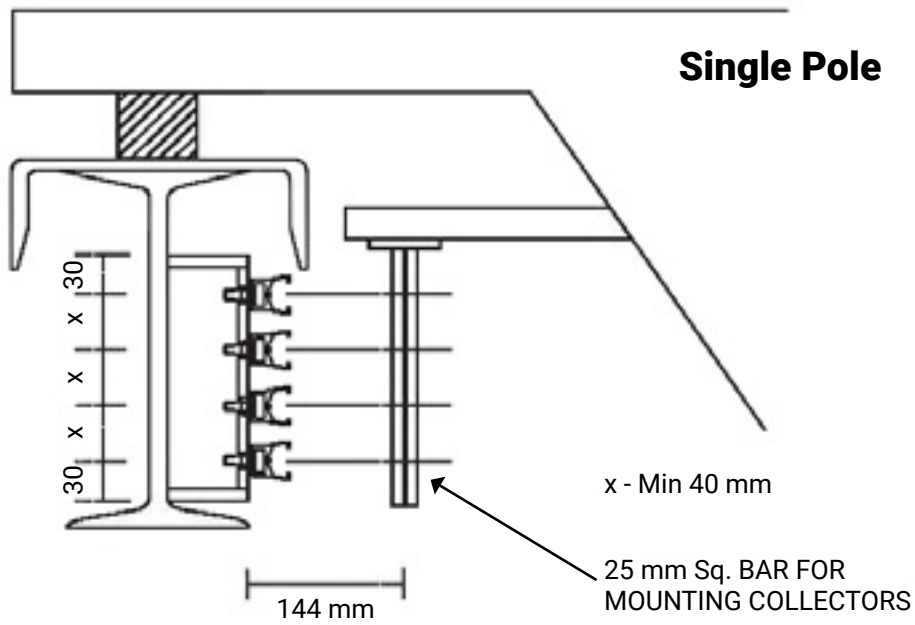


ALL ILLUSTRATIONS WITH 125/250A COLLECTORS



TYPE OF INSTALLATIONS

- Vertical Mounting

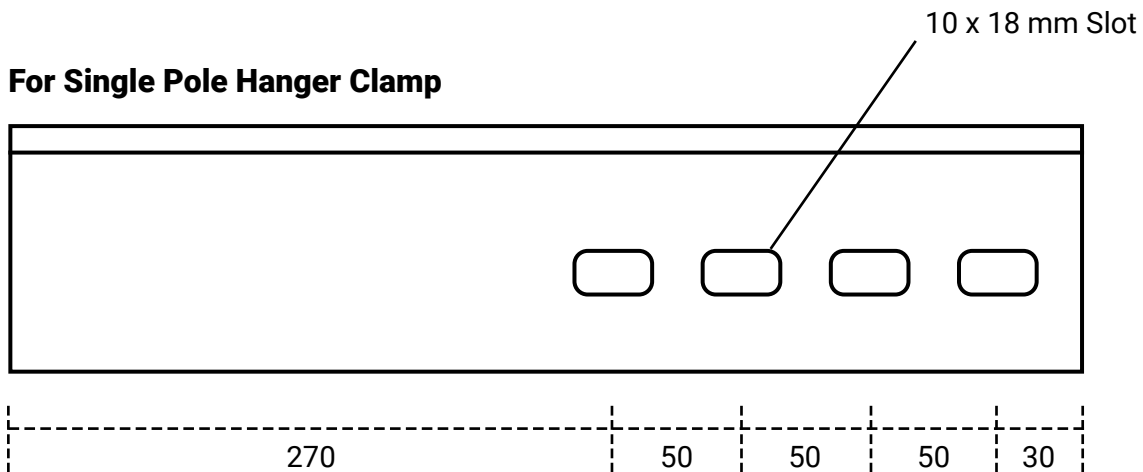




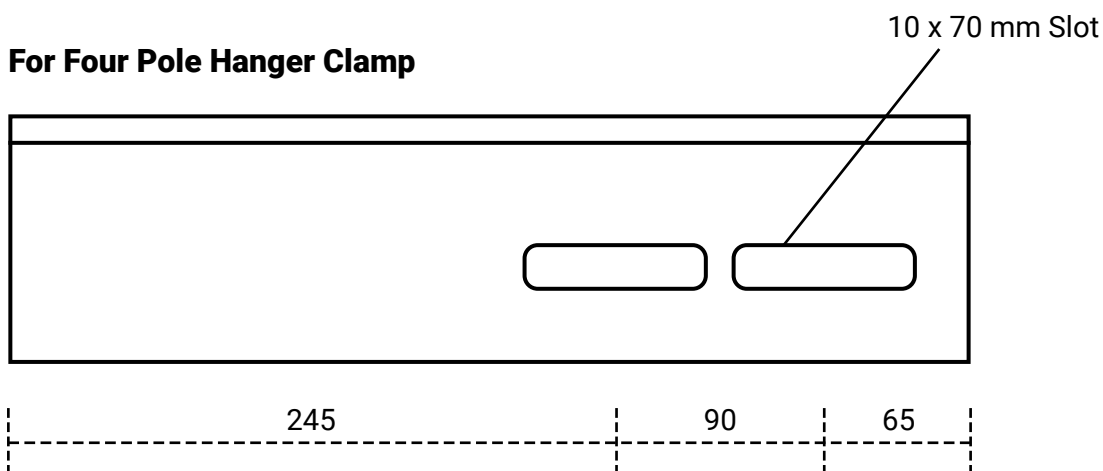
HANGER CLAMP SUPPORT

STANDARD BRACKETS

For Single Pole Hanger Clamp



For Four Pole Hanger Clamp



Fix support brackets at the correct pitch.

Use plumb line and ensure alignment - 9 mm dia hole required for hanger clamp mounting. 10 x 18 mm slot is recommended for ease of alignment.

Fit hanger clamp first. Check - hanger clamps of different phases are parallel to each other and also parallel to rails.

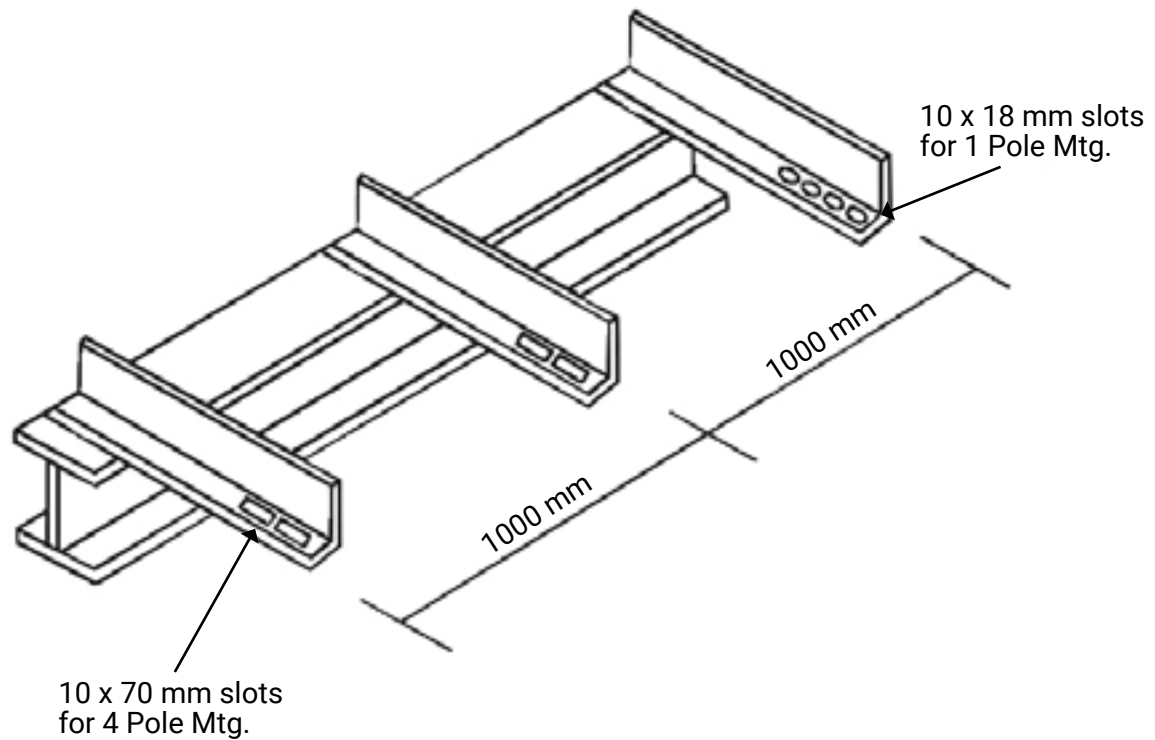
Use plumb line for checking and aligning before final tightening.

Then insert conductor as per sketch on page 10

We can supply custom made support bracket.



SUPPORT BRACKET INSTALLATION

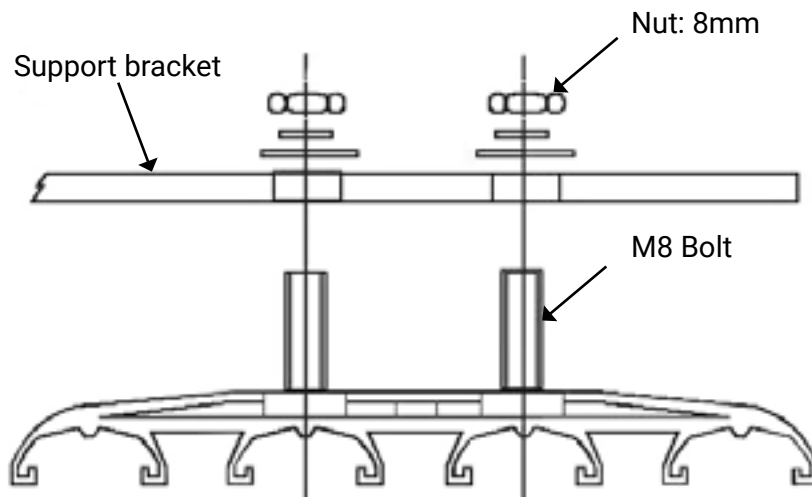


1. Locate and secure support brackets at the recommended spacing.
(NOTE: Locate support bracket at a spacing that is divisible into the conductor bar lengths. This will always ensure that the joint positions do not interfere with the support brackets.)
2. Ensure of all brackets are aligned in horizontal and vertical plane. Hanger support brackets come complete with all necessary mounting holes



MOUNTING HANGER CLAMPS

FOUR POLE



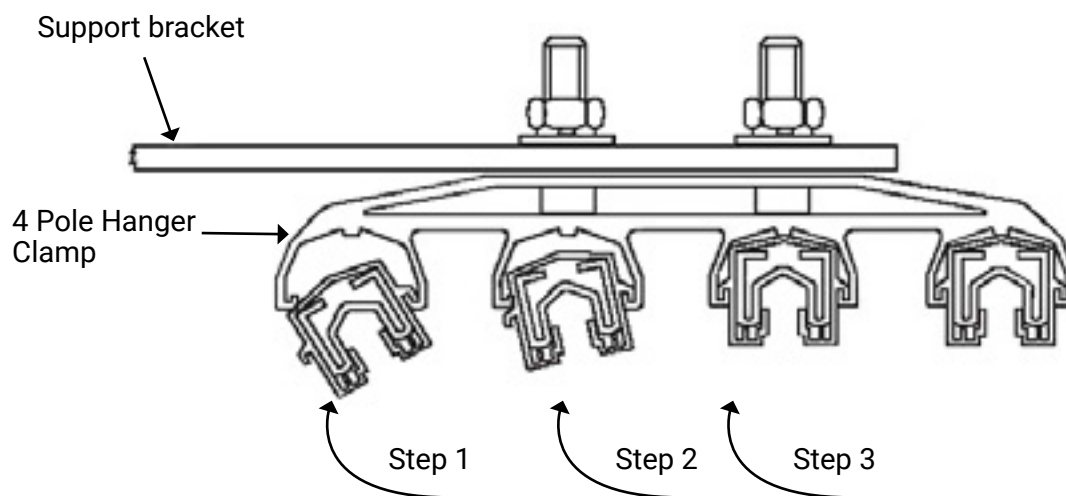
SINGLE POLE



1. Remove plain / spring washer & nut from hanger assembly.
2. Assemble as shown in the diagram ensuring the correct alignment is observed.
3. Finger tighten M8 nut.



FITTING CONDUCTORS INTO FOUR POLE HANGER CLAMP

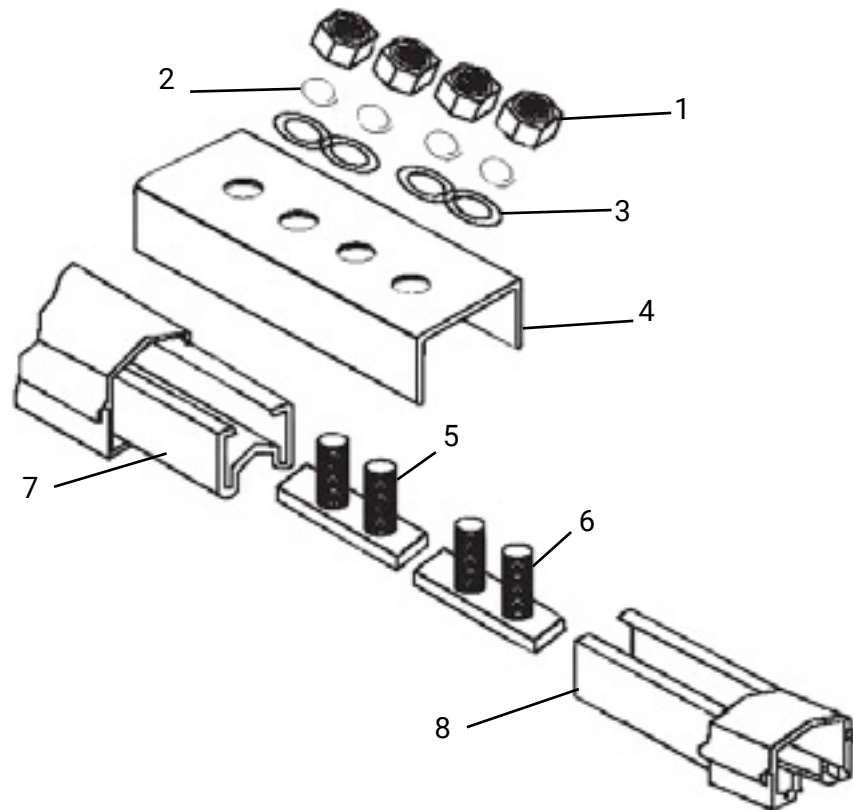


1. Fit conductors into hangers slots as illustrated above.
2. Fully tighten M8 nuts.



CONDUCTOR JOINT ASSEMBLY

For 60 / 100 / 125 / 160 / 250 / 400 A

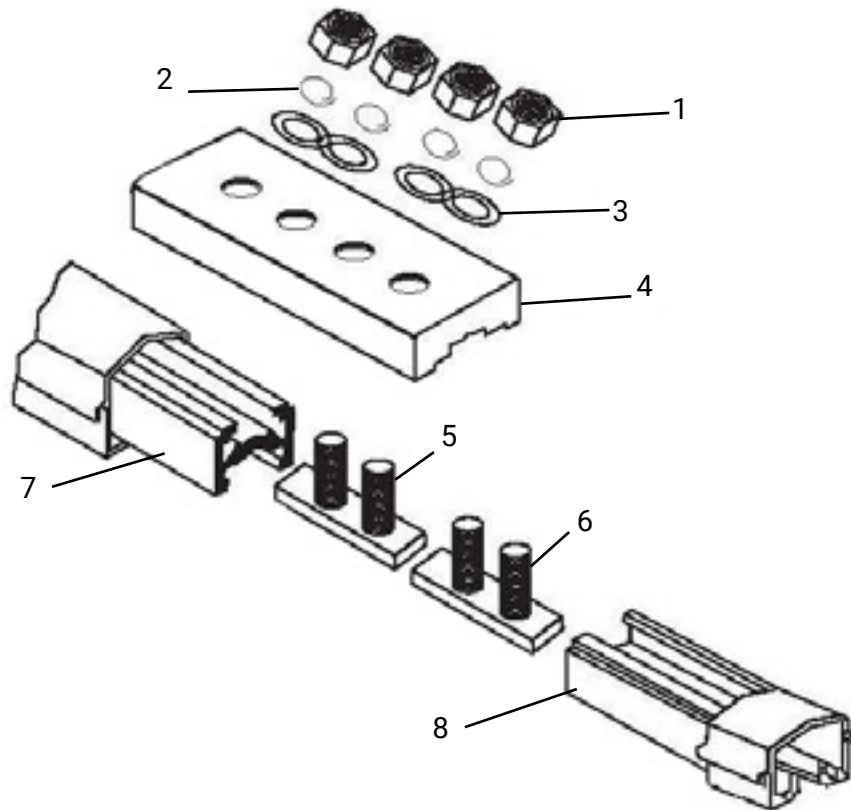


1. Slide item 5 & 6 into item 7 and item 8 respectively.
2. Place item 4 over item 5 & 6 making sure of alignment of ends of both conductor bars.
3. Fit item 3, 2 and 1.
4. Fully tighten item 1 (nut).
5. Check that both ends of the conductor bar are touching each other and the gap should not exceed 0,5 mm.



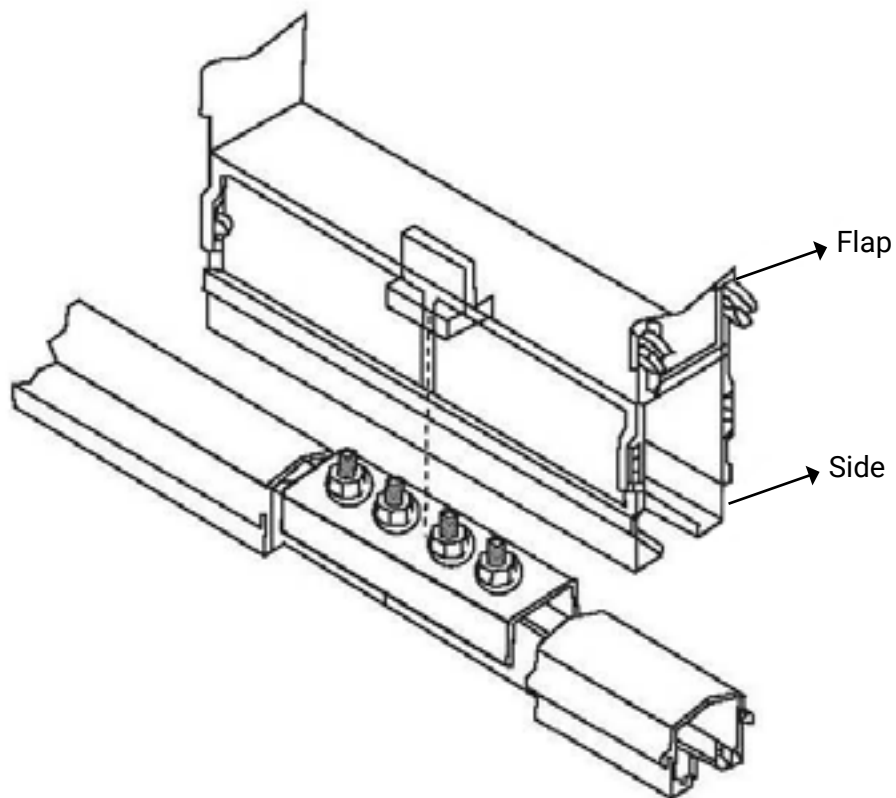
CONDUCTOR JOINT ASSEMBLY - ALUMINIUM

For 200 / 315 A



1. Apply electrical joints compounds on all contact surfaces (supplied).
2. Slide item 5 & 6 into item 7 and item 8 respectively
3. Place item 4 over item 5 & 6 making sure of alignment of ends of both conductor bars.
4. Fit items 3, 2 and 1.
5. Fully tighten item 1 (nut).
6. Check that both ends of the conductor bar are touching each other and the gap should not exceed 0.5 mm.

JOINT COVER FITTING

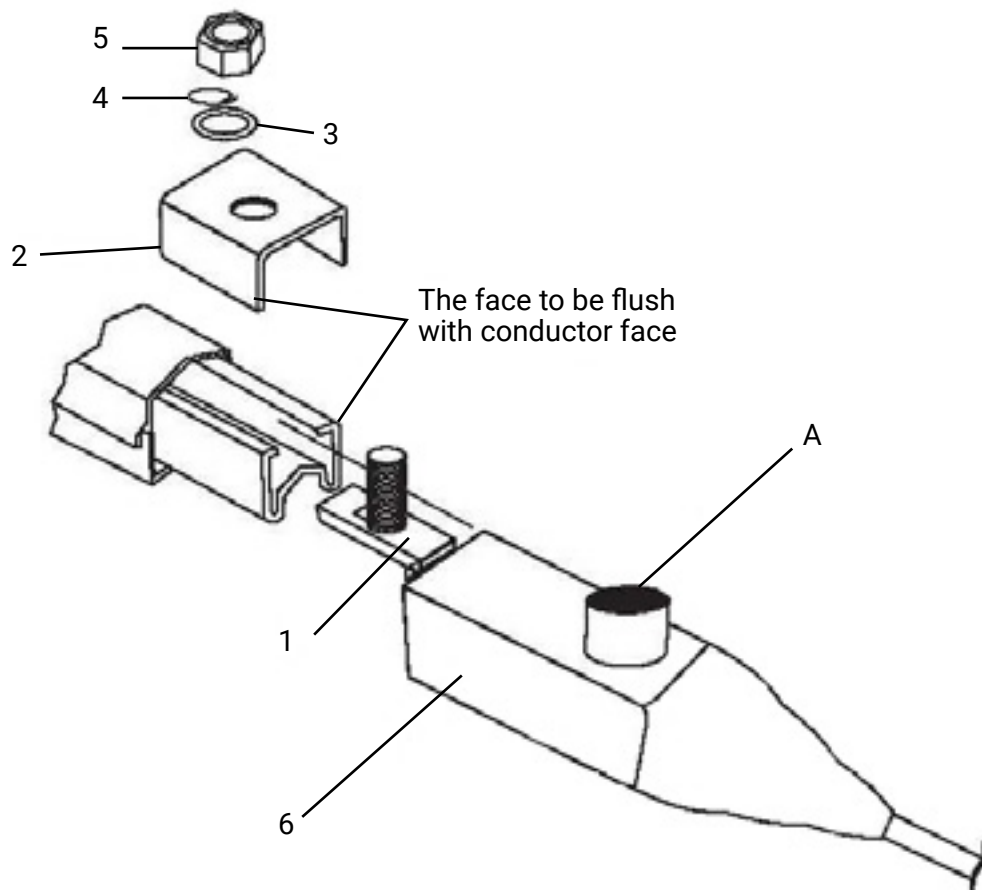


1. Open sides out in the directions as shown.
2. Fit the joint cover over the bolted joint. Ensure the “location section” sits between the two bolts.
3. Close both side flaps. Ensure that flaps “click” in the slot.



END CAP ASSEMBLY

For 60 / 100 / 125 / 160 / 250 / 400 A

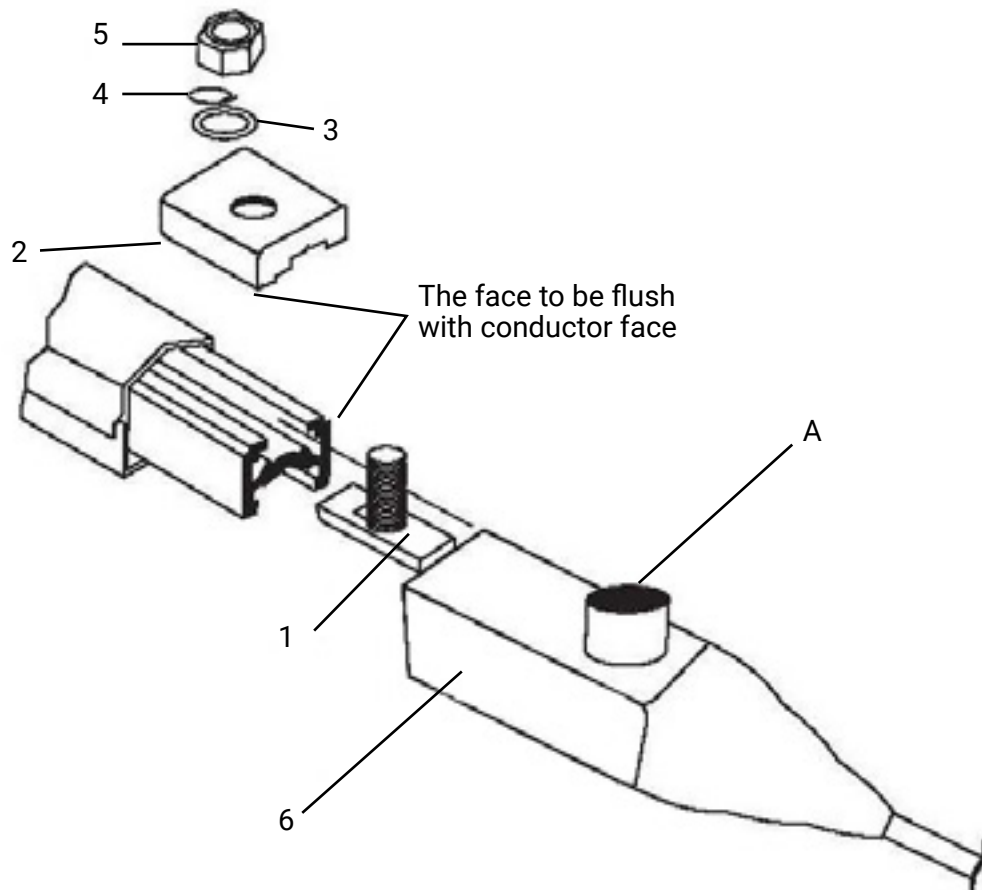


1. Place item 1 into conductor bar.
2. Place item 2 over item 1
(Item 2 is to be flush with conductor bar face)
3. Tighten item 5
4. Ensure bolt is positioned into item 6 at hump location A



END CAP ASSEMBLY FOR ALUMINIUM CONDUCTOR

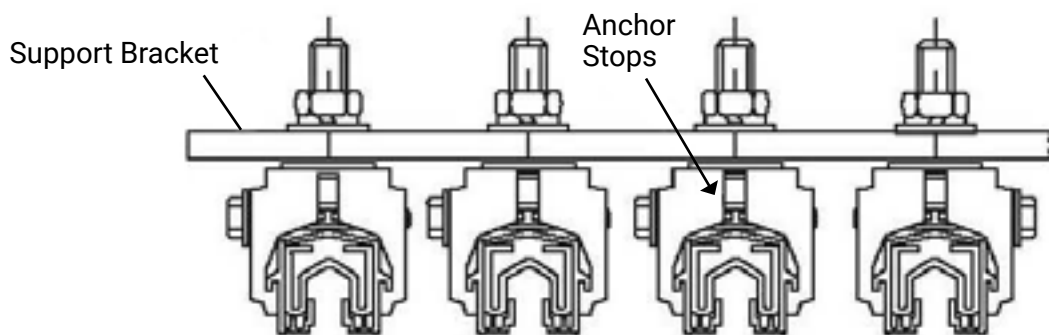
For 200 / 315 A



1. Place item 1 into conductor bar.
2. Place item 2 over item 1
(Item 2 is to be flush with conductor bar face)
3. Tighten item 5
4. Ensure bolt is positioned into item 6 at hump location "A"



ANCHOR CLAMP ASSEMBLY

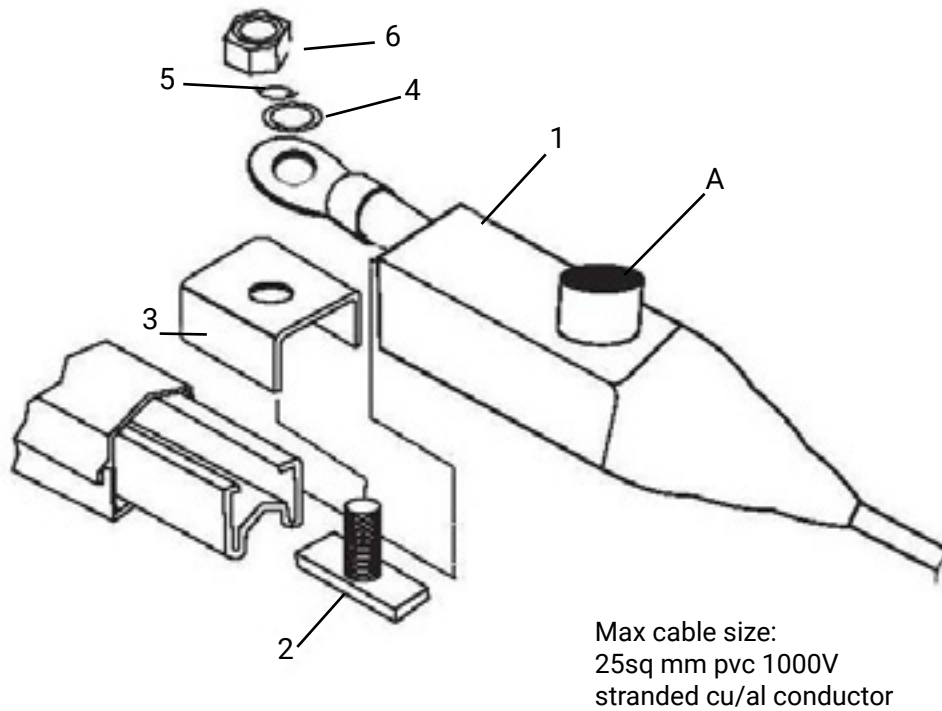


1. Remove nut and both washers.
2. Fix anchor clamp over PVC cover, it should be free to slide.
3. Place anchor clamp in support bracket.
4. Insert plain / spring washer & nut, tighten the nut loosely
5. Fully tighten anchor screw
(check anchor is clamped tight on cover)
6. Fully tighten the nut



END POWER FEED ASSEMBLY

For 60 / 100 / 125 / 160 / 250 / 400 A

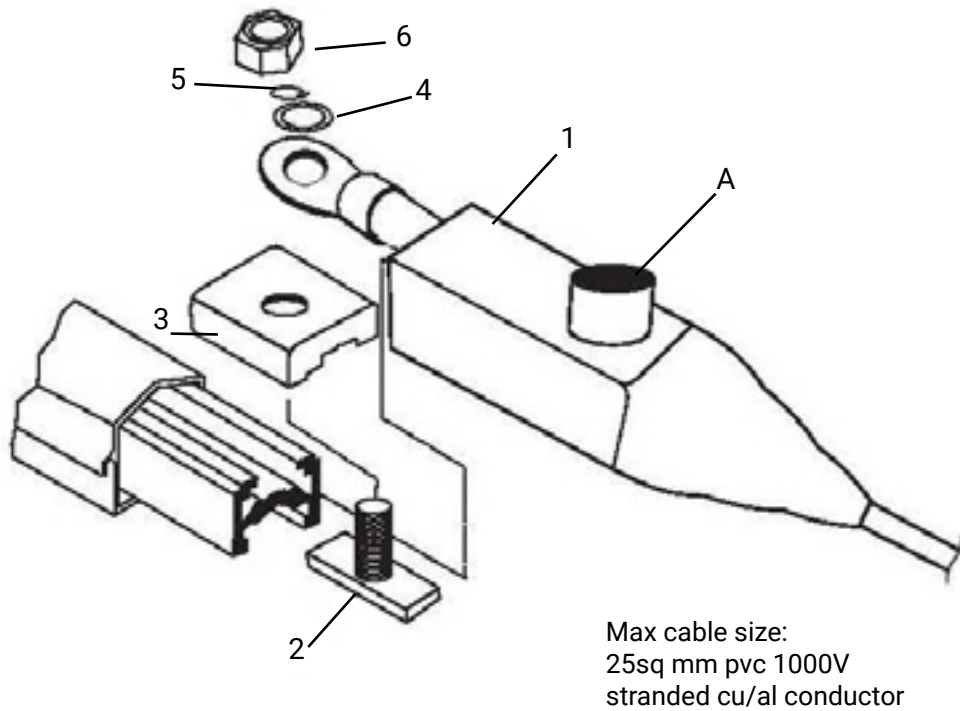


1. Cut item 1 to suit cable diameter
2. Pass cable through item 1
3. Crimp lug to cable
4. Insert item 2 in conductor
5. Fit item 3 over item 2
6. Fit lug and tighten with item 4, 5 & 6
7. Push item 1 over assembly
(ensure item 2 is located in point "A" on item 1)



END POWER FEED ASSEMBLY FOR ALUMINIUM CONDUCTOR

For 200 / 315 A



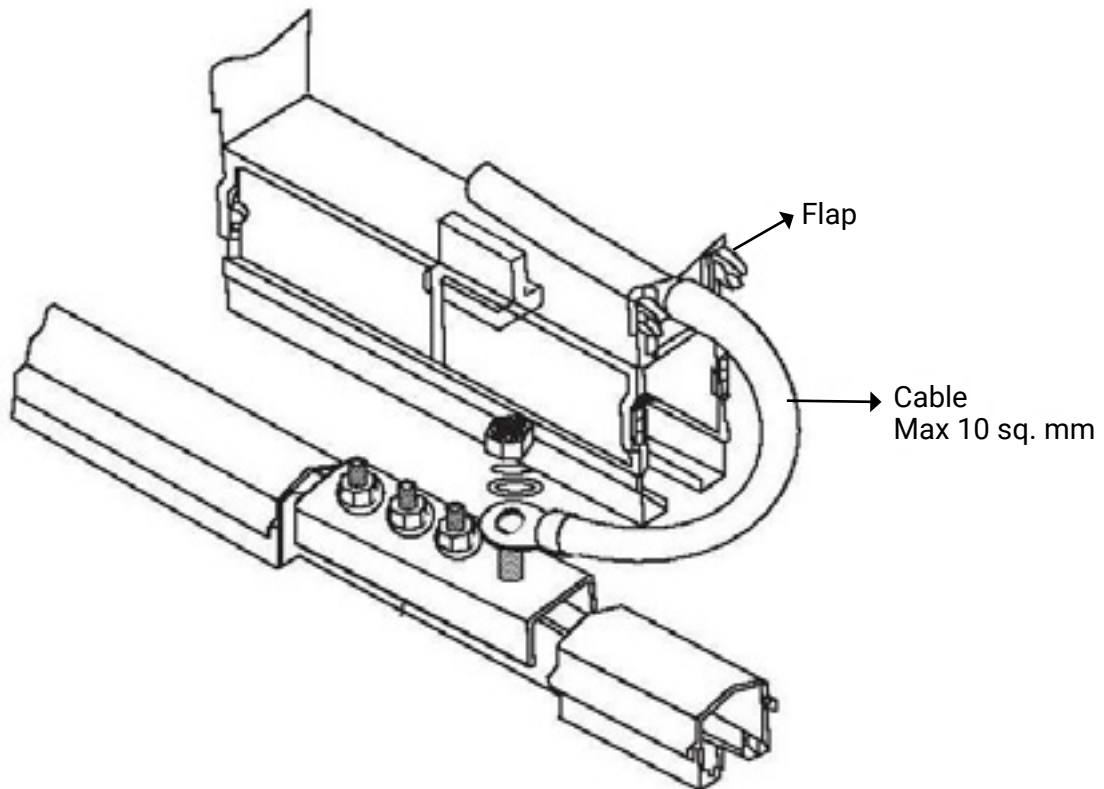
Max cable size:
25sq mm pvc 1000V
stranded cu/al conductor

1. Cut item 1 to suit cable diameter
2. Pass cable through item 1
3. Crimp lug to cable
4. Insert item 2 in conductor
5. Fit item 3 over item 2
6. Fit lug and tighten with item 4, 5 & 6
7. Push item 1 over assembly
(ensure item 2 is located in point "A" on item 1)



CENTER POWER FEED ASSEMBLY

For < 100 A

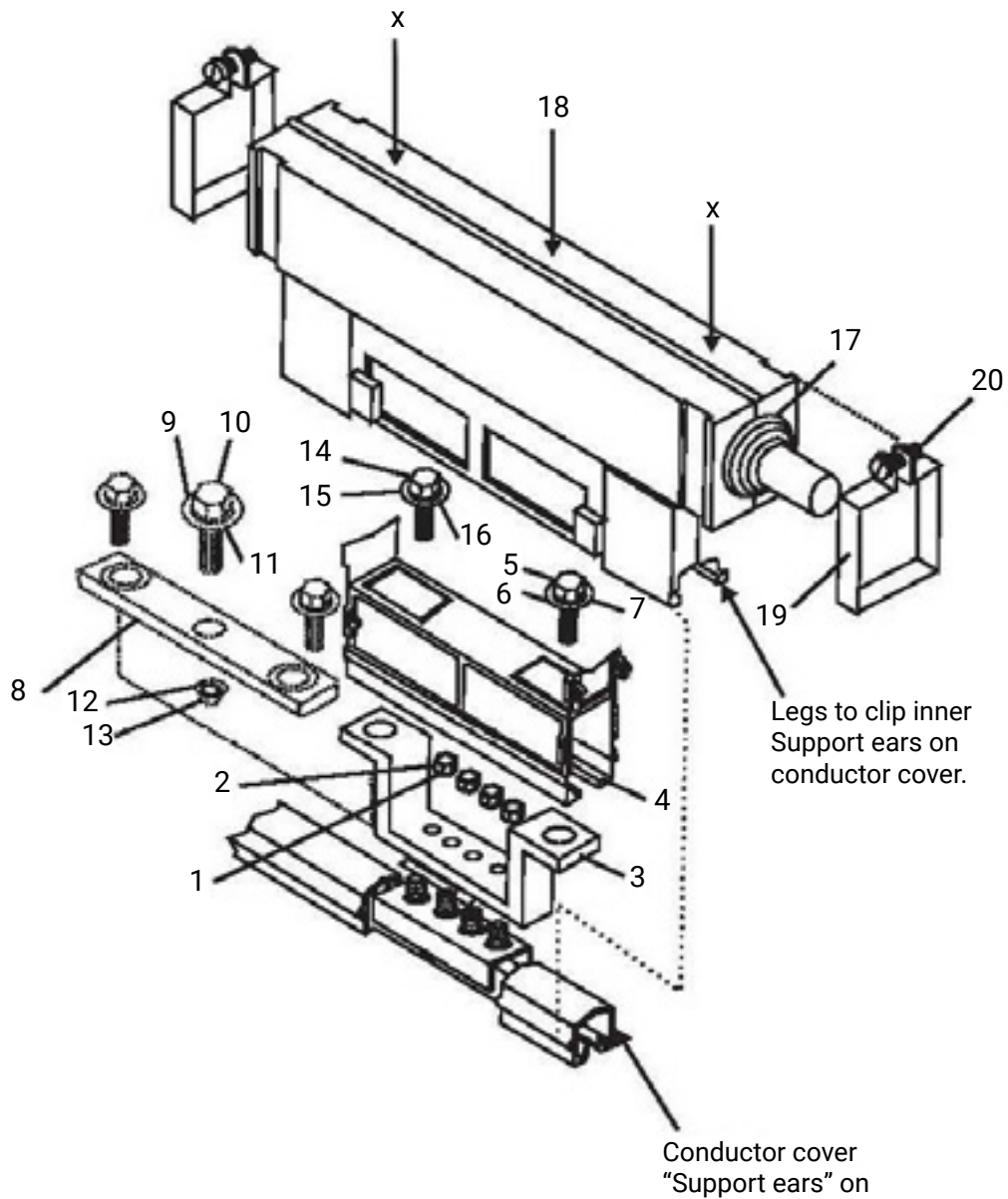


1. Cut hole in flap to suit cable
2. Join two conductors as illustrated earlier
3. Pass supply cable through flap
4. Crimp lug to supply cable
5. Stretch cable and place lug on joint bolt
6. Place washer and tighter nut securely
7. Fit cover over assembly.
Ensure the cable is positioned carefully trough flap
8. Once in position close flaps and ensure flaps click in the slots



ASSEMBLY OF CENTER POWER FEED

For > 100 A





ASSEMBLY OF CENTER POWER FEED

For > 100 Amps

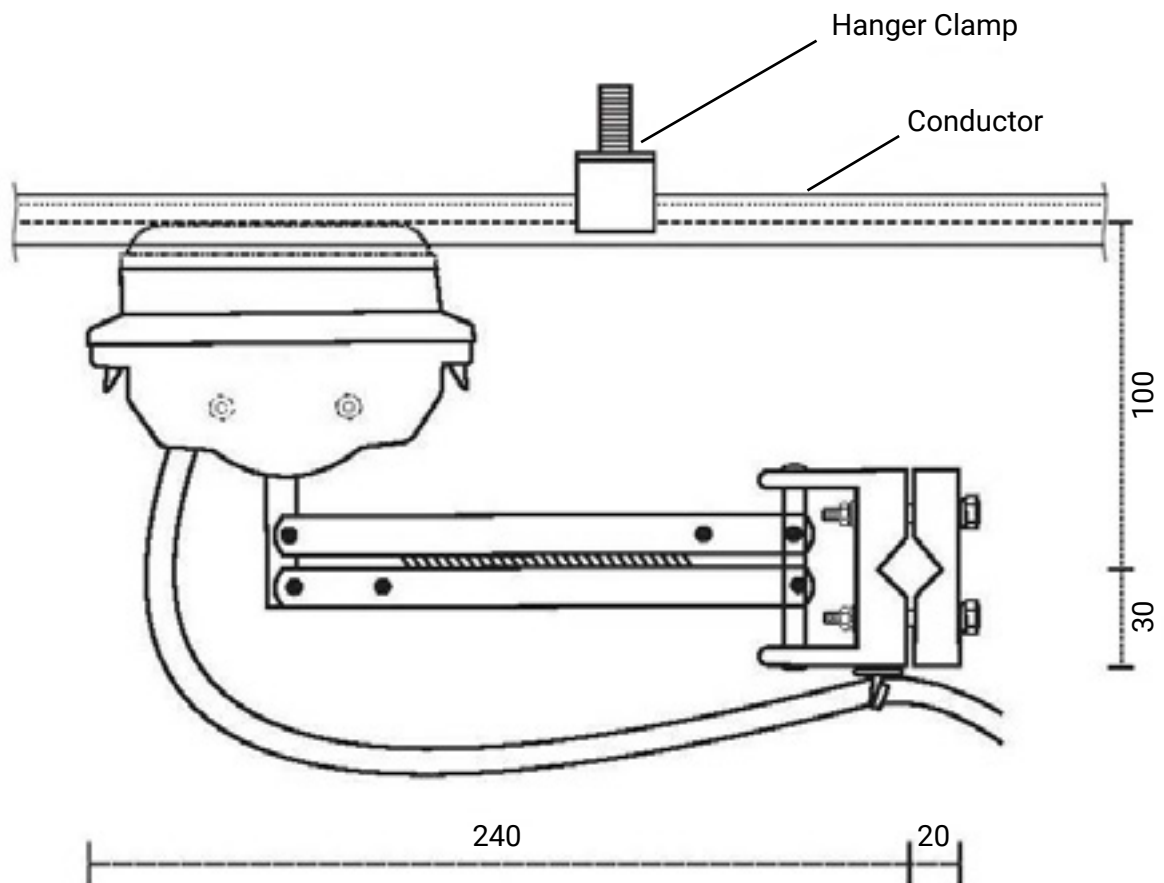
1. Joint two conductors as illustrated earlier.
2. Remove nut and washer originally fitted to the joint assembly.
3. Fit aluminium section item 3 to joint assembly as illustrated.
4. Fit joint cover item 4 as shown
5. Cut grommet item 17 suitable for cable entry.
6. Crimp lug to supply cable.
7. Ensure the lug is properly crimped.
8. Fit it to item 3 and tighten using plain / spring washer and nut (5 - 6 & 7)
9. In case of two incoming cables, use other end of al section item 3 (14 - 15 & 16)
10. Fit power feed cover item 18 to assembly.
11. Ensure both grommets are fitted into item 18 before closing halves together.
12. Make sure the legs of the cover fit under the conductor cover.
13. Fit items 19 into item 18, secure with item 20.

FOR 400 AMPS

Fit lug to the center of item 8 and secure using items plain / spring washer Bolt & nut (9 - 10 - 11 - 12 & 13) as illustrated.



MOUNTING DETAILS FOR 60ACC



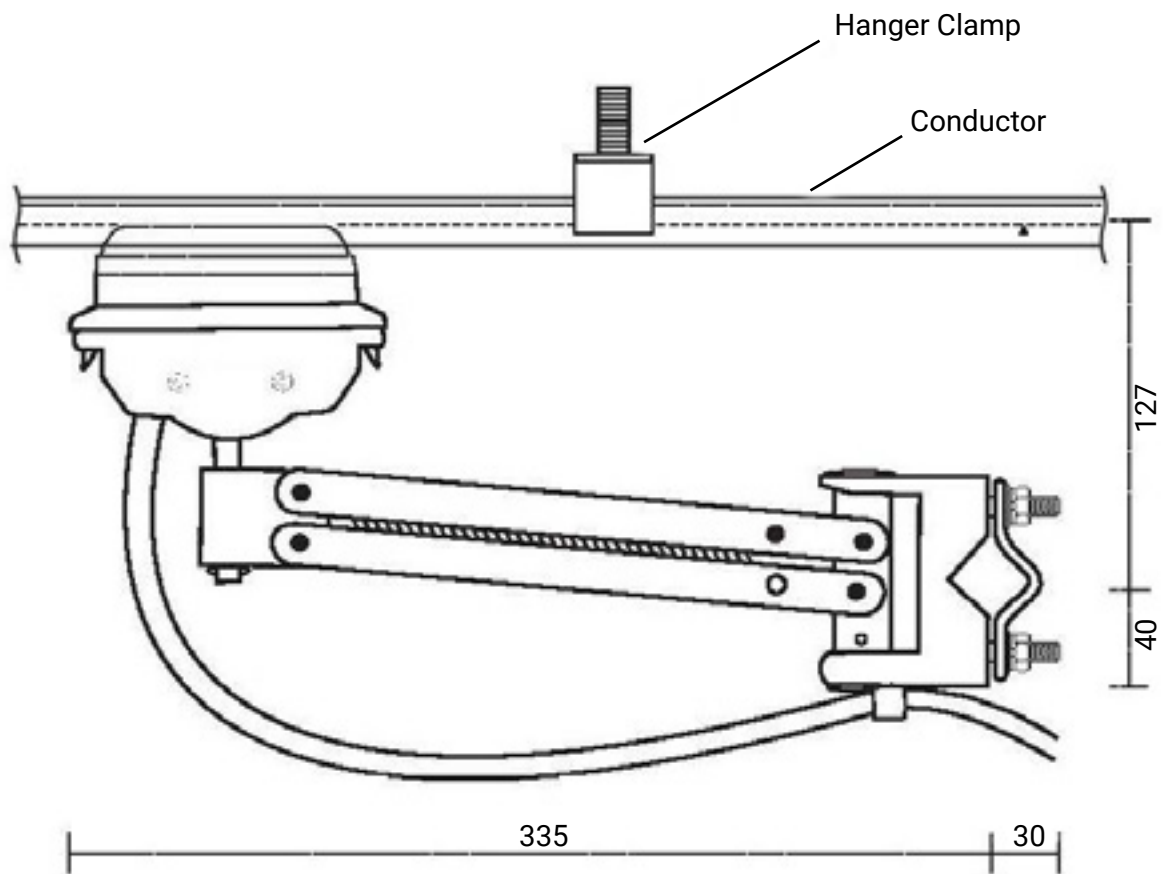
Collectors must be mounted on 25 mm square bar.

For the correct setting height, use collector mounting gauge. Ref page 26

IT'S IMPORTANT TO MAINTAIN CORRECT VERTICAL AND LATERAL ALIGNMENT WITH THE CONDUCTOR.



MOUNTING DETAILS FOR 125ACC



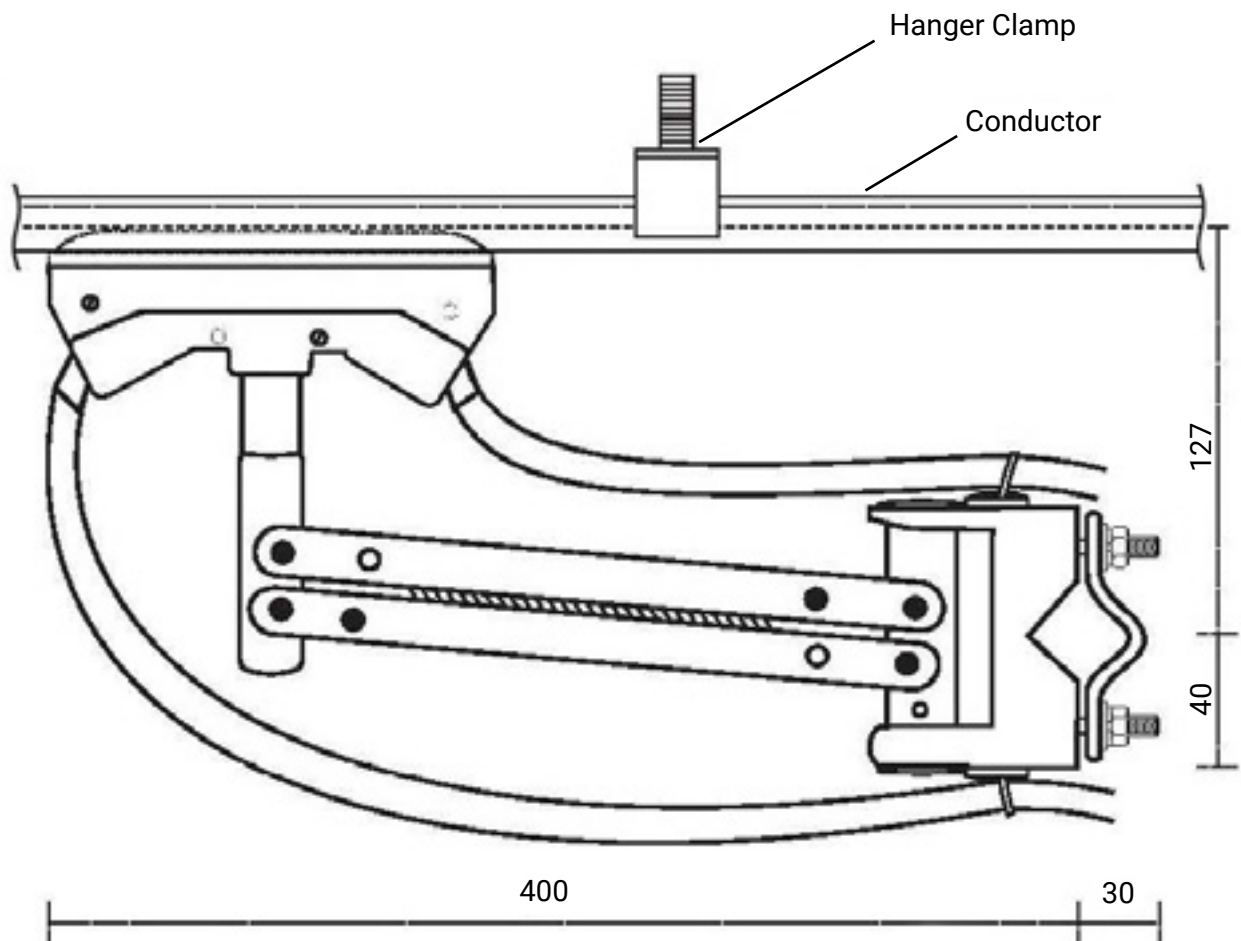
Collectors must be mounted on 25 mm square bar.

For the correct setting height, use collector mounting gauge. Ref page 26

IT'S IMPORTANT TO MAINTAIN CORRECT VERTICAL AND LATERAL ALIGNMENT WITH THE CONDUCTOR.



MOUNTING DETAILS FOR 250ACC

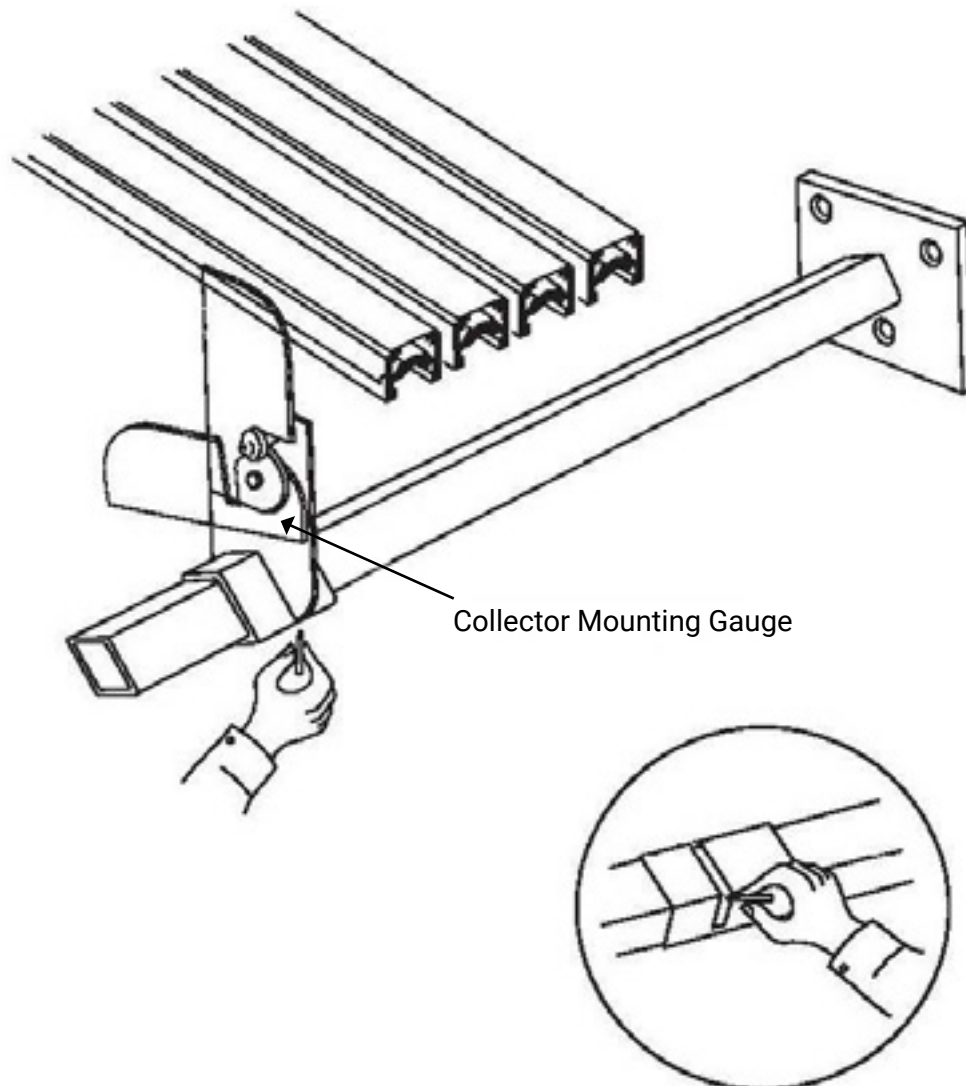


Collectors must be mounted on 25 mm square bar.

For the correct setting height, use collector mounting gauge. Ref page 26

IT'S IMPORTANT TO MAINTAIN CORRECT VERTICAL AND LATERAL ALIGNMENT WITH THE CONDUCTOR.

INSTALLING OF CURRENT COLLECTOR



1. Adjust the height of the square bar.
2. Mark location of each phase and mount collector on position.



EXPANSION SECTION

1. The maximum allowable conductor system length without an expansion section is as follows:

| | |
|---------|------------|
| 60 AMP | 150 metres |
| 100 AMP | 150 metres |
| 125 AMP | 150 metres |
| 160 AMP | 150 metres |
| 250 AMP | 150 metres |
| 400 AMP | 150 metres |
| 200 AMP | 150 metres |
| 315 AMP | 150 metres |

2. The maximum distance between anchor points with an expansion selection at approximate midpoints is as follows:

| | |
|---------|-----------|
| 60 AMP | 75 metres |
| 100 AMP | 75 metres |
| 125 AMP | 75 metres |
| 160 AMP | 75 metres |
| 250 AMP | 75 metres |
| 400 AMP | 75 metres |
| 200 AMP | 75 metres |
| 315 AMP | 75 metres |

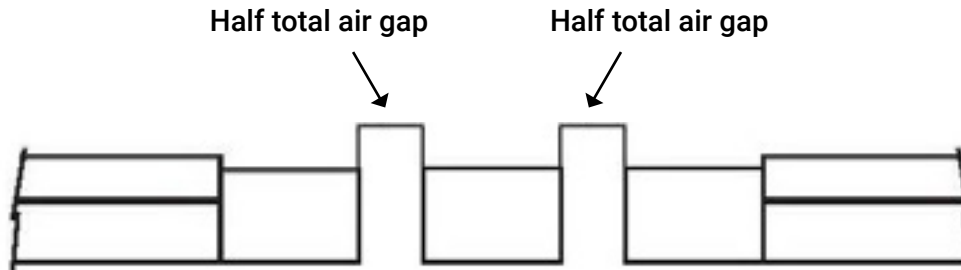
3. Set expansion air gaps when fitting assembly to appropriate gap setting for ambient (see chart). The air gap is adjusted by sliding the moving lengths of conductor in or out of the expansion assembly. (Note: Both halves must be set equal).

Always allow sufficient time for the conductor bars to achieve ambient temperature before setting expansion air gaps.

All expansion assemblies must be set at site, they are NOT preset before leaving our factory. Failure to set this part correctly could result in buckling of all conductors.



EXPANSION AIR GAP SETTING FOR CONDUCTOR BARS WITH PVC COVER



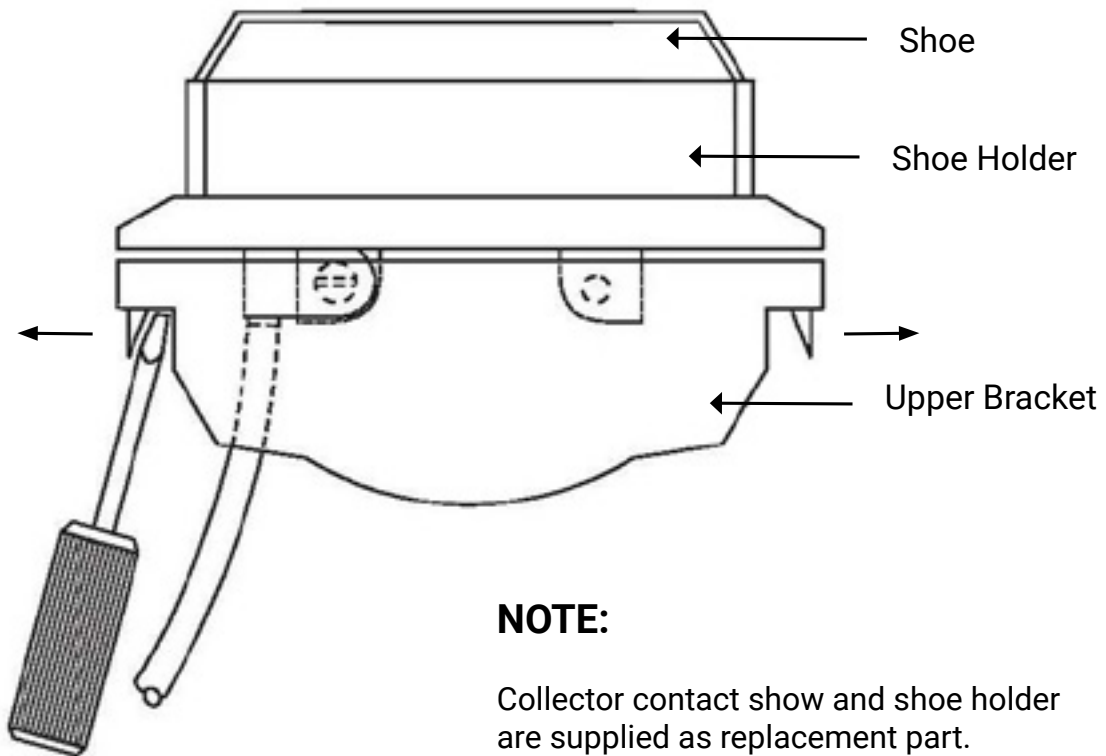
| Lowest Possible Site Ambient °C | Actual Site Ambient °C | | | | | | | | | | | | | | |
|---------------------------------|------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| | - | -5 | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | |
| 25 | | | | | | | | 50 | 45 | 41 | 36 | 32 | 27 | 23 | |
| 20 | | | | | | | 50 | 46 | 42 | 38 | 33 | 29 | 25 | 31 | |
| 15 | | | | | | 50 | 46 | 42 | 38 | 35 | 31 | 27 | 23 | 19 | |
| 10 | | | | | 50 | 46 | 43 | 39 | 36 | 32 | 29 | 25 | 21 | 18 | |
| 5 | | | | 50 | 47 | 43 | 40 | 37 | 33 | 30 | 27 | 23 | 20 | 17 | |
| 0 | | | 50 | 47 | 44 | 41 | 38 | 34 | 31 | 28 | 25 | 22 | 19 | 16 | |
| -5 | | 50 | 47 | 44 | 41 | 38 | 35 | 32 | 29 | 26 | 24 | 21 | 18 | 15 | |
| -10 | 50 | 47 | 44 | 42 | 39 | 36 | 33 | 31 | 28 | 25 | 22 | 19 | 17 | 14 | |
| -15 | 50 | 47 | 45 | 42 | 39 | 37 | 34 | 32 | 29 | 26 | 24 | 21 | 18 | 16 | |

NOTE:

These figures are the lowest possible ambient in °C used in the calculation to determine the air gap in expansion sections required per phase.



REPLACEMENT OF COLLECTOR CONTACT SHOE AND SHOE HOLDER



NOTE:

Collector contact shoe and shoe holder are supplied as replacement part.

1. Lever lugs in direction shown.
2. Lift shoe and holder.
3. Disconnect cable.
4. Reverse procedure to fit new shoe.

SYSTEM MAINTENANCE

1. Contact shoes should be checked for wear on a monthly basis until a wear pattern can be established. Failure to replace worn out contact shoes will result in damage to the conductor, and reduce subsequent contact shoe life.
2. When checking for contact shoe wear, also check that all collector pivot points are free, and generally check alignment of the collector to the conductors.
3. Check conductor system for any mechanical damage & clean the system especially for conductive dust.



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