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Seller agrees to repair or exchange the goods sold hereunder necessitated by reason of defective workmanship and material discovered and reported to Seller within one year after shipment of such goods to Buyer.

Except where the nature of the defect is such that it is appropriate, in Seller’s judgment, to effect repairs on site, Seller’s obligation hereunder to remedy defects shall be limited to repairing or replacing (at Seller’s option) FOB point of original shipment by Seller, any part returned to Seller at the risk and cost of Buyer. Defective parts replaced by Seller shall become the property of Seller.

Seller shall only be obligated to make such repair or replacement if the goods have been used by Buyer only in service recommended by Seller and altered only as authorized by Seller. Seller is not responsible for defects which arise from improper installation, neglect, or improper use or from normal wear and tear.

Additionally, Seller’s obligation shall be limited by the manufacturer’s warranty (and is not further warranted by Seller) for all parts procured from others according to published data, specifications or performance information not designed by or for Seller.

Seller further agrees to replace or at Seller’s option to provide a refund of the sales price of any goods that do not conform to applicable specifications or which differ from that agreed to be supplied which non-conformity is discovered and forthwith reported to Seller within thirty (30) days after shipment to the Buyer. Seller’s obligation to replace or refund the purchase price for non-conforming goods shall arise once Buyer returns such goods FOB point of original shipment by Seller at the risk and cost of Buyer. Goods replaced by Seller shall become the property of Seller.

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</table>
Safety Information Responsibility

All owner, operator, and maintenance personnel must read and understand all manuals associated with this product before installation, operation, or maintenance.

The manual provides information on the recommended installation, operation, and maintenance of this product. Failure to read and follow the information provided could cause harm to yourself or others and/or cause product damage. No one should install, operate, or attempt maintenance of this product prior to familiarizing themselves with the information in this manual.

Safety Messages

The following safety messages are used in this manual to alert you to specific and important safety related information.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CAUTION indicates unsafe actions or situations that have the potential to cause injury, and/or minor equipment or property damage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>• DANGER indicates hazards that have the potential to cause severe personal injury or death.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• WARNING indicates unsafe actions or situations that have the potential to cause severe injury, death, and/or major equipment or property damage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTE</th>
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</thead>
<tbody>
<tr>
<td>• NOTE is used to alert you to installation, operation, programming, or maintenance information that is important, but not hazard related.</td>
</tr>
</tbody>
</table>
### SECTION 2 - OVERVIEW

**Conductor System Nomenclature**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Single Conductor" /></td>
<td>Single Conductor</td>
<td><img src="image" alt="Hanger Clamp" /></td>
<td>Hanger Clamp</td>
</tr>
<tr>
<td><img src="image" alt="Joint Position" /></td>
<td>Joint Position</td>
<td><img src="image" alt="Anchor Position" /></td>
<td>Anchor Position</td>
</tr>
<tr>
<td><img src="image" alt="Expansion Section" /></td>
<td>Expansion Section</td>
<td><img src="image" alt="Powerfeed" /></td>
<td>Powerfeed</td>
</tr>
<tr>
<td><img src="image" alt="Transfer Cap" /></td>
<td>Transfer Cap</td>
<td><img src="image" alt="Isolation Section" /></td>
<td>Isolation Section</td>
</tr>
<tr>
<td><img src="image" alt="End Cap" /></td>
<td>End Cap</td>
<td><img src="image" alt="Collector" /></td>
<td>Collector</td>
</tr>
<tr>
<td><img src="image" alt="Isolation Section" /></td>
<td>Isolation Section</td>
<td><img src="image" alt="Power Interrupt" /></td>
<td>Power Interrupt</td>
</tr>
</tbody>
</table>

*Isolation = Insulating Material*
SECTION 2 - OVERVIEW

- Dimensions are in Inches (mm).
- Maximum Recommended Hanger Spacing:
  » 1.5 Meters (59.0") on straight runways
  » 1.125 Meters (44.3") on all Lateral Mount Systems and Curved Systems (curved section only)

**ATTENTION**
- Curved bar to be factory bent only.

**NOTE**
- Maximum length without expansion: 492' (150M) use anchor clamp at center.
Environmental Considerations

- Standard Cover (PVC) is suitable up to 160°F.
- Medium Heat Cover (Polycarbonate) is suitable up to 250°F.

The following acidic or corrosive environments require the use of stainless steel hangers:

- Hydrochloric Acid
- Hydrofluoric Acid
- Sodium Hydrochloride
- Ammonium Chloride
- Chlorine Bleach
- Chloride Ions
- Fluoride Ions

WARNING

- Do not use standard (black) or medium heat (red) hangers in the above environments.
Installation Tools

- Man lift or platform lift for access to the installation location (if Needed)
- Sharp knife - to cut powerfeed grommets
- Steel rule or tape measure - to position collectors during installation
- Wire/cable stripper
- Cable lug crimping tool (see section 14)
- Cordless drill with socket adapter (1/4” or 3/8” drive)
- Hex wrenches
  - 4mm - for securing feed cable to 100A collector and replacing shoe
  - 5mm - for securing feed cable to 200A collector and replacing shoe
- Deep sockets for cordless drill
  - 8mm - for anchor cross bolts
  - 10mm - for splices, isolation sections, and powerfeeds
  - 13mm - for mounting hangers, anchors and transfer caps.
  - 16mm - for mounting collector assemblies
- Torque wrench for sockets listed above
- Open/box end wrenches (use ratcheting box-end wrenches if you have them)
  - 8mm
  - 10mm
  - 13mm
- Hacksaw
- Flat file and/or rat tail file to remove burrs on field cut conductors
- Pliers
- #1 Phillips Head Screwdriver
SECTION 2 - GENERAL ASSEMBLY INSTRUCTIONS

WARNING

• Always lockout-tagout all electrical power before starting work.

Installation Overview

This manual provides detailed instructions in the general order of system installation. System installation consists of five phases:

Phase 1  Identify and Organize the Materials

Check the pack list against the items received. Parts are labeled for your convenience. Review your specific installation layout drawing (if provided) or the typical layout diagram seen previously in this manual to become familiar with component location on the system. Note where the anchors, expansions, powerfeeds, and other assemblies will be located along the runway. Read through these instructions before starting work.

NOTE: Make sure to check for smaller components that may be located inside the false bottom of the package.

Phase 2  Install Brackets Along the Runway

Install brackets per the diagram included at the start of this manual. Keep them as level and evenly spaced as possible. You may install the hangers on the brackets before or after they are mounted along the runway.

Phase 3  Assemble components as much as possible on the ground

It is faster, safer, and more convenient to assemble as much as possible on the ground should you drop something. Conductor Bar and Expansion Sections will come from the factory with one splice pre-installed.

1. Install end caps on the end conductors, keeping these separated from the main runway conductors.
2. Install isolation splices (if included) on the ends of the conductors in accordance with the installation layout drawing and the instructions (see Table of Contents).
3. Install transfer caps on the conductor ends (if included).

Phase 4  Install hangers and conductors along the runway

The installation will most likely be accomplished from a lift or work platform.

1. Ensure the power is locked out-tagged out.
2. Install the hangers per instructions (see Table of Contents).
3. Roll adjacent conductors in the hangers as shown in Section 4. Conductix-Wampfler recommends the first accessible conductor being the ground conductor.
4. Move down the runway, install the next inboard conductor and join it to the corresponding conductor installed in step 3. Install the splice cover. Keep the splice assemblies 6-12” from the hanger brackets to allow for conductor movement from expansion. Repeat for the remaining phases and ground conductors.
5. When you get to where the expansion assemblies are to be installed, refer to those instructions (see Table of Contents). Be sure to divide the total expansion gap distance (from chart) between the two air gap locations in the expansion assembly.
6. Proceed with system installation, ensuring anchors are positioned the correct distance from the expansions and that they are tightened to the correct torque.
7. If a conductor must be cut to a specific length, ensure that the cut end is properly de-burred. The conductor cover is always shorter than the bar length, the proper cover length is 66mm (2.60”) shorter than bar length. (33mm / 1.30” on each end).
8. When you run the feed cable to the powerfeed assembly, ensure the cables have sufficient free length and are flexible enough to enable movement of the conductor due to expansion. Locating the powerfeed as close as possible to the anchors minimizes this concern. Do not support the weight of the feed cables with the conductors.
9. Install powerfeeds on conductor bars per layout and the instructions (see Table of Contents).
Phase 5 Collector Positioning

Properly position and align Collector Assemblies to ensure safe, reliable operation.

- For 100A and 200A collectors, the center line of the collector mounting post must be 102mm (4.0”) below the contact surface of the conductor bars. When installed, the collector arms should be parallel with the contact surface of the bar.

- Slide the collectors on the mounting staff. Ensure the mounting base of each collector is centered below the corresponding conductor. Ensure the collectors are evenly spaced. Tighten hardware to specifications and connect the supply cable to the collector per diagram (see Table of Contents).

NOTES

- Follow lockout-tagout procedures.
- Keep accessories at least 6” from hanger brackets.
- Follow all torque specifications.
- Allow for movement of accessories due to expansion.
- Connect only flexible power cables to powerfeed assemblies.
- Keep collectors straight, level and aligned with conductors.
SECTION 3 - SUPPORT BRACKETS

Support Bracket Installation

1. Locate and secure support brackets at the recommended spacing. See Figure 13-1.

**NOTE**
- Locate support brackets at a spacing that is divisible into the conductor bar lengths. This will ensure that the joint positions do not interfere with the support brackets.

2. Observe all alignment tolerances. See Figure 13-1.
   - Datum height
   - Maximum allowable deviation from datum height + 5.0mm (+3/16").

**Advantage of Factory-Made Brackets**

Safe-Lec 2 Hanger Support Brackets come complete with all necessary mounting holes for easy installation of hangers via slide in slots or holes.
 SECTION 4 - CONDUCTOR HANGERS

Four Bar Conductor Hanger Mounting

NOTE
• For Indoor and Limited Outdoor use, p/n XA-310821
• For Lateral Mount - Consult Factory

Tools Needed
• 13mm A/F wrench

Mounting Instructions
1. Remove nut, lock washer, and washer from hanger assembly (the M8 bolt will stay in place inside the molding).
2. Assemble as shown in the diagram ensuring the correct alignment is observed. See Figure 14-1.
3. Finger tighten M8 nut.
4. Snap conductor bars into hangers.
5. Tighten M8 nut to Conductix-Wampfler recommended torque of 8 Nm (5-6 ft-lbs.)

NOTE
• This hanger may be used outside when the bar system is covered and protected from the elements. If the bar system will be directly exposed to rain, snow, ice, or other precipitation, a single pole insulated hanger must be used.

Figure 14-1
Here are several specific reasons why Safe-Lec 2 is superior to a traditional (and now outmoded) 8-Bar system. And we should know...we invented 8-Bar over 50 years ago!

**Safe-Lec 2 8-Bar**

- **Quicker and less costly Installation**
  - 14.76 ft (4.50m) bar lengths; fewer joints
  - Multiple pole hangers; a "snap" to install
  - Wires connect into lug integrated in the collector arm

**8-Bar**

- 10 ft (3.05m) bar lengths; more splices required
- Hangers hold only one bar each
- Wires must be spliced to collector pigtails

**More secure splice joint**

- Bolted joints
- No special tools required
- No need for "joint keepers" or "joint repair kits", etc

- Pinned joint can pull apart; requires special parts
- Special tool required

**Fewer expansion sections required**

- Safe-Lec 2 can go 492 ft (150m) before an expansion is required
- 8-Bar can only go 300 ft before an expansion section is required (or 200 ft for copper bar)

**Easier system alignment**

- Slotted brackets are available to reduce hole alignment problems
- System alignments are easy!
- Brackets have round holes, so alignment must be perfect
- Harder to make system alignment adjustments

**Superior Collector Shoe Tracking**

- Shoe is guided by the V-contact in the metal bar
- Collector arm articulates to accommodate mild system misalignments
- Shoe is guided by the plastic cover
- Accurate system alignment is much more critical

---

**SECTION 4 - CONDUCTOR HANGERS**

Installing Conductors Into Hanger

---

**Figure 15-1**

Recommended position for ground bar
NOTE
- For ease of access to clamping screws, install anchor hanger assemblies as shown below.

Tools Needed
- 13mm A/F open ended wrench.
- 8mm A/F open ended wrench.

Anchor Hanger Support Installation
1. Assemble anchor over cover so it is free to slide.
2. Insert anchor hanger into support bracket.
3. Tighten M5 Bolts until anchor stops meet (check anchor is tight on cover).
4. Tighten M8 Bolt to a torque of 8 Nm (5-6 ft. lbs.).

Figure 16-1 1. Clamp Anchor Half 5. M5 Screw
3. M8 Nut 7. M8 Flat Washer
4. M8 Screw 8. M8 Lock Washer
SECTION 6 - BOLTED STEEL/COPPER JOINT ASSEMBLY

Tools Needed
- 10mm A/F open ended wrench

Bolted Steel/Copper Joint Installation
1. Fit bolt into joint plate (ensure tab captivates the head on the setscrew).
2. Slide bolt and joint plate into conductor bar ends.
3. Place joint over bolt, making sure alignment mark is in line with end faces of conductor bar.
4. Fit washer and nut onto bolt in the order shown.
5. Tighten nut to recommended torque of 8 Nm (5-6 ft-lbs).
6. Check that both faces of the conductor bar are touching each other and there is no gap exceeding 0.5mm (0.02”) at the faces.

NOTE
- If the conductor was field cut, file off all burrs on conductor ends before assembling splices.
SECTION 7 - BOLTED ALUMINIUM JOINT ASSEMBLY

Tools Needed
- 10mm A/F open ended wrench
- Electrical Joint Compound (p/n XA-15629)

Bolted Aluminium Joint Installation
1. Apply electrical joint compound to all mating surfaces.
2. Slide bolt into conductor bar ends.
3. Place joint plate over bolts.
4. Fit washer and nut as shown.
5. Tighten nut to recommended torque of 8 Nm (5-6 ft-lbs).
6. Check that both faces of conductor bar are touching each other and that there is no gap exceeding 0.5mm (0.02") at the faces.

NOTE
- If the conductor was field cut, file off all burrs on conductor ends before assembling splices. Exposed length of bar should be 33mm (1.3") per end.

Figure 18-1 1. Nut
2. Washer
3. Joint Plate
4. Bolt
5. Conductor Bar
SECTION 8 - JOINT COVER ASSEMBLY

Install Joint Cover onto Bolted Joint Assemblies

1. Spring legs out in the directions “A-A” as shown (this is to ease the fitting of the joint cover over the conductor bar).

2. Fit the joint cover over the bolted joint. Joint cover MUST NOT be opened up more than 45° on either side during the assembly over the joint. Ensure the “Location Section” sits between the two bolts.

3. Close the flaps in the direction “D”. Ensure the flaps “click” home on both sides.
Galvanized Steel and Copper Conductor Bar Installation

Install end caps onto galvanized steel and copper conductor bars. See Figure 20-1.

Tools Needed
• 10mm A/F open ended wrench

Installation
1. Fit bolt into joint plate (ensure tab captivates the head on the set screw).
2. Place bolt and joint plate assembly into conductor bar.
3. Place end cover clamp, washer, and nut over bolt and joint plate assemblies (ensure end cover clamp is flush with conductor bar face).
4. Tighten nut to a recommended torque of 8 Nm (5-6 ft-lbs).
5. Push end cover over assembly (ensure bolt is located in point “A” on end cover).

NOTE:
Wings on Tab to face upwards.

Figure 20-1
1. Nut
2. Washer
3. End Cover Clamp
4. Bolt
5. Joint Plate
6. End Cover
Aluminium/Stainless Steel Conductor Bar Installation

Install end caps onto aluminium/stainless steel conductor bars.

**Tools Needed**
- 10mm A/F open ended wrench

**Installation**

1. Mark conductor bar top surface 13mm (0.50”) in from end face.
2. Fit bolt into conductor bar.
3. Ensure center line of setscrew bolt is on the center line marked on the conductor surface.
4. Place nut, lock washer, and flat washer on bolt in the order shown.
5. Tighten nut to a recommended torque of 8 Nm (5-6 ft-lbs).
6. Push end cover over assembly (ensure bolt is located in point “A” on end cover).

![Figure 21-1](image-url)

**Figure 21-1**

1. Bolt
2. End Cover
3. Nut
4. Flat Washer
5. Lock Washer
**SECTION 10 - EXPANSION SECTION ASSEMBLY**

**Allowable Length and Distance**
- The maximum allowable conductor system length without an Expansion Section is 150 meters (492') - Assuming a Maximum Temperature Range of 110°F
- The maximum distance between anchor points with an Expansion Section at mid-point is 70m (230') steel, 49m (160') copper, 36.5m (120') aluminum

**Expansion Section Installation**

1. Set expansion air gaps when installing assembly to appropriate gap setting for ambient temperature (see Table 22-1). The gap is adjusted by sliding the moving lengths of conductor in or out of the expansion assembly (BOTH HALVES MUST BE SET EQUAL). Always allow sufficient time for the conductor bars to achieve ambient temperature before setting Expansion gap. All Expansion assemblies must be set at site, they are not pre-set before leaving the factory. Failure to set this part correctly could result in buckling of all conductors.

2. Set anchor clamp and torque on one side, install up to next anchor clamp but DO NOT TIGHTEN. Go back and set expansion to correct gap setting per current ambient temperature. Once gap is set, go to second anchor clamp and tighten.

![Half Total Air Gap](image)

**Table 22-1**  
Expansion Air Gap Setting For Conductor Bars With PVC Cover

<table>
<thead>
<tr>
<th>ACTUAL SITE AMBIENT: °C (°F)</th>
<th>LOWEST POSSIBLE SITE AMBIENT °C (°F) [SEE NOTE]</th>
<th>ACTUAL TOTAL GAP SETTING: mm (in)</th>
<th>TOTAL GAP SETTING: mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25° (77°)</td>
<td>20° (68°)</td>
<td>15° (59°)</td>
<td>10° (50°)</td>
</tr>
<tr>
<td>-25° (-13°)</td>
<td>-20° (-4°)</td>
<td>-15° (5°)</td>
<td>-10° (14°)</td>
</tr>
<tr>
<td>50 (1.97)</td>
<td>45 (1.77)</td>
<td>41 (1.61)</td>
<td>36 (1.42)</td>
</tr>
<tr>
<td>50 (1.97)</td>
<td>46 (1.81)</td>
<td>42 (1.65)</td>
<td>38 (1.50)</td>
</tr>
<tr>
<td>50 (1.97)</td>
<td>46 (1.81)</td>
<td>42 (1.65)</td>
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22 Safe-Lec 2 Conductor Bar Manual
SECTION 11 - END POWERFEED ASSEMBLY

NOTE
• Installation is for 100 Amp Conductor Bar only.

Tools Needed
• 10mm A/F Wrench
• Suitable Sharp Knife
• Cable Stripper
• Cable Crimping Tool
• Suitable Cable Terminal (see list of recommended suppliers and references).

End Powerfeed Installation
1. Cut powerfeed end cap to suit cable diameter.
2. Pass cable through powerfeed end cap.
3. Crimp terminal to cable.
4. Fit bolt into joint plate (wings on tab to face upward).
5. Fit assembly into conductor bar.
6. Fit clamp end over joint plate and bolt. Secure with half nut. Tighten half nut to recommended torque value of 10 Nm (7-8 ft-lbs).
7. Fit terminal and secure washer and nut.
8. Tighten nut to recommended torque of 8 Nm (5-6 ft-lbs).
9. Push powerfeed end cap over assembly (ensure bolt is located in point “A” on powerfeed end cap).

NOTE
• Maximum cable size is 25 sq mm PVC 600/1000V stranded copper conductor (#4 AWG Extra Flexible).

Figure 23-1
1. Joint Plate
2. Bolt
3. Clamp End
4. Half Nut
5. Washer
6. Nut
7. Powerfeed End Cap

These faces to be flush
**SECTION 12 - LOW AMP JOINT POWERFEED ASSEMBLY**

**NOTE**
- Installation up to 100 Amp.

**Tools Needed**
- 10mm A/F Wrench
- Suitable Sharp Knife
- Cable Stripper
- Cable Crimping Tool
- Suitable Cable Terminal (see list of recommended suppliers and references).

**Low Amp Joint Powerfeed Installation**
1. Remove black plug on powerfeed cap.
2. Assemble joint to conductor bar as described previously.
3. Pass supply cable through grommet.
4. Crimp terminal to supply cable.
5. Secure terminal to joint using washer and nut and tighten nut to a recommended torque of 8 Nm (5-6 ft-lbs).
6. Fit powerfeed cap over assembly (ensure the cable is threaded carefully through grommet).
7. Once in position close flaps and ensure flaps click home.

**NOTE**
- Joint must not support the cable.
- Max cable size 10sq. mm pvc 600/1000V stranded copper conductor (#8 AWG Extra Flexible).

---

**Figure 24-1**
1. Washer
2. Nut
3. Powerfeed Cap
NOTE

- Clean all mating surfaces with 3M Scotch Brite pad, apply a small amount of Electrical Joint Compound (EJC) to all mating parts.
- Apply anti-seize to bolt ends prior to assembly to any stainless steel nuts.

**Installation Up to and Including 250 Amps (p/n XA-310910B)**

1. Assemble joint to conductor bar as described previously (do not fit washers and nuts).
2. Fit powerfeed top hat assembly to joint assembly. On copper and aluminum conductors apply Electrical Joint Compound (EJC) between mating surfaces.
3. Discard spring washers originally fitted to the joint assembly and fit external tooth lock washers (supplied in the kit) along with nuts and bolts and tighten to a recommended torque of 8 Nm (5-6 ft-lbs).
4. Fit joint powerfeed cover as shown previously.
5. Cut out grommet using suitable knife and fit over cable.
6. Crimp terminal to supply cable (see list of recommended terminals).
7. Ensure the terminal is properly crimped as failure to do so will result in over-heating on the powerfeed assembly.
8. Fit terminal to powerfeed top hat assembly and secure using washer and bolts. Torque bolt to 8 Nm (5-6 ft-lbs).
9. There is a second set of hardware (washers and bolt) for use with two cable feeds and should be left tight on powerfeed top hat assembly if only one feed is used.
10. Fit powerfeed joint cover to assembly.
11. Ensure both grommets are fitted into powerfeed cover before closing halves together.
12. Make sure the legs of the cover fit under the conductor cover support ears (a little pressure at points "x-x" will ensure this).
13. Fit powerfeed case clip assembly to powerfeed cover and secure with screws.
Installation Over 250 Up to 400 Amps (p/n XA-310912B)

1. Assemble joint to conductor bar as described previously (do not fit washers and nuts).
2. Fit powerfeed top hat assembly to joint assembly. On copper and aluminum conductors apply Electrical Joint Compound (EJC) between mating surfaces.
3. Discard spring washers originally fitted to the joint assembly and fit external tooth lock washers (supplied in the kit) along with nuts and tighten to a recommended torque of 8 Nm (5-6 ft-lbs).
4. Fit powerfeed joint cover as shown previously.
5. Apply EJC between mating surfaces on powerfeed top hat assembly and powerfeed shunt link.
6. Place powerfeed shunt link over powerfeed top hat assembly and secure with screws. Torque to 8 Nm (5-6 ft-lbs).
7. Cut out grommet using suitable knife and fit over cable.
8. Crimp terminal to supply cable. (See list of recommended terminals).
9. Ensure the terminal is properly crimped as failure to do so will result in over-heating on the powerfeed assembly.
10. Apply EJC to the center arc of powerfeed shunt link.
11. Fit lug to the center powerfeed shunt link and secure using bolt, washer, and nut in the order shown. Torque to 8 Nm (5-6 ft-lbs).
12. Fit powerfeed cover to assembly.
13. Ensure both grommets are fitted to powerfeed cover before closing halves together.
14. Make sure the legs of the cover fit under the conductor cover support ears. A little pressure at points “x-x” will ensure this.
15. Fit powerfeed case clip assembly to powerfeed cover and secure with screws.

Figure 26-2

1. Splice Bolt
2. Bolt
3. Grommet
4. Powerfeed Case Clip Assembly
5. Powerfeed Cover
6. Powerfeed Joint Cover
7. Powerfeed Top Hat Assembly
8. Washer
9. Washer
10. Powerfeed Shunt Link
11. Screw
12. Nut
The Thomas and Betts (T&B) terminal part numbers are shown below for reference only. Dimensions shown are the maximum allowable sizes. All powerfeeds must have expansion loops incorporated in their installation. Flexible cables are recommended for all powerfeed and collector assemblies. The use of cables with solid (non-strained) conductor is NOT RECOMMENDED.

<table>
<thead>
<tr>
<th>Powerfeed p/n</th>
<th>Lug p/n</th>
<th>T&amp;B p/n</th>
<th>Dim “A”</th>
<th>Dim “B”</th>
<th>Dim “C”</th>
<th>Cable Size (AWG)</th>
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<td>1.32</td>
<td>.60</td>
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<td>1.04</td>
<td>3/8</td>
<td>3/0AN-4/0</td>
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<tr>
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<td>M972</td>
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<td>4/0AN - 250 kcmil</td>
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<td></td>
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<td>300 kcmil</td>
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<tr>
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<td>D71</td>
<td></td>
<td>1.13</td>
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</table>
SECTION 15 - 100 AMP COLLECTOR MOUNTING DETAILS

P/N XA-SLC2-100S-1M Single Collector

When stationary, single collector is rated for 50 continuous on copper or galvanized steel bars, and 25 continuous amps on aluminum-stainless steel bar.

P/N XA-SLC2-100T-1M Tandem Collector

When stationary, tandem collector is rated for 100 continuous amps on copper or galvanized steel bars, and 50 continuous amps on aluminum-stainless steel bar.

Tools Needed
- 16mm socket wrench
- Steel rule or suitable tape measure
- 4mm hex wrench
- Cable stripper

Installation
1. Attach collector mounting bracket to a suitable support at the correct setting height (see Figs. 28-1 and 28-2).
2. Remove the collector clamp and place collector on the mounting bracket.
3. Ensure collectors are directly aligned with the center of the conductor bars. Collector arms should be parallel with the running surface.
4. Replace collector clamp and tighten Bolt 1 and Bolt 2 to a recommended torque of 24.4-27.1 Nm (18-20 ft-lbs).
5. For customer installed cable on the collectors there must be 18" for 100 amp and 19.5" 200 amp of cable length from the exit of the cable clamp to the entrance of the collector head. Reference the striped cable sections of Figures 28-1, 28-2, 29-1 & 29-2.

NOTE: Cable length between the exit of the cable clamp and the cable entry hole on the collector head should be 18" for 100 Amp Collectors and 19.5" for 200 Amp Collectors to ensure proper head movement on the collectors.

Figure 28-1 XA-SLC2-100S-1M Single Collector

Figure 28-2 XA-SLC2-100T-1M Tandem Collector
SECTION 16 - 200 AMP COLLECTOR MOUNTING DETAILS

NOTE
- Torque mounting hardware per the chart below.
- In a stationary position, these collectors are UL rated at 100 amps continuous-duty on copper, and 50 amps on aluminum-stainless steel.

<table>
<thead>
<tr>
<th>Collector Base Material</th>
<th>Torque Spec</th>
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<tr>
<td>Aluminum</td>
<td>24.4 to 27.1 Nm (18-20 ft-lb)</td>
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</tbody>
</table>

NOTE: Cable length between the exit of the cable clamp and the cable entry hole on the collector head should be 18” for 100 Amp Collectors and 19.5” for 200 Amp Collectors to ensure proper head movement on the collectors.

Figure 29-1  XA-SL2C-200S-1M

Figure 29-2  XA-SL2C-200T-1M

P/N XA-590062  Ground Flag

Installation
1. The ground flag should be oriented on the ground collector with the flag facing away from the other phase collectors as to prevent the ground conductor from being inserted into any of the phase rails.
2. Align the two 3.2mm through holes located near the pivot post on the head with the two holes on the ground flag.
3. The supplied M3 locking nuts should be inserted into the flag where the hexagonal nut bosses are molded into the flag. Orient the nylon section of the nuts facing away from the collector.
4. Insert the two M3 x 30 screws through the collector head and into the flag and flag nuts.
5. Tighten the M3 screws to 0.9N·m (8in-lb)
SECTION 17 - CUSTOMER SUPPLIED CABLE INSTALLATION

1. Strip customer-supplied cable back 13-15 mm (0.5”-0.6”) using a suitable cable stripping tool.
2. Loosen Screw Number 1.
3. Push customer-supplied cable into entry hole.
4. Tighten Screw Number 1 fully and ensure that the cable is clamped firmly into position.
5. Ensure that the cables do not restrict the free movement of the collector arm or collector head. The collector head must be free to track on the conductor bar within the movement tolerances noted on page 28.

6. **We recommend the use of flexible, finely stranded cables to wire collectors.** The use of cables with solid conductors is not recommended.

Figure 30-1
SECTION 18 - TRANSFER CAP ASSEMBLY

Tools Needed
- 13mm A/F wrench
- Soft mallet

Transfer Cap Installation
1. Mark conductor cover 22mm (0.87") in from end of cover.
2. Gently tap transfer cap onto bar and cover assembly using a soft mallet.
3. Line up back edge of transfer cap with mark on the cover.
4. Install transfer cap into support bracket (not shown) at 43mm (1.7") centers.
5. Fit nut and washers in the order shown.
6. Tighten nut to a recommended torque of 28.4 Nm (20 - 21 ft-lbs).

Figure 31-1

1. Nut
2. Washer
3. Washer
4. Support Stud
5. Transfer Cap
Side view of transfer caps showing maximum alignment tolerance.

Plan view of transfer caps showing maximum alignment tolerance.

Please note: Where transfer caps are used in a system, tandem collectors must be used.
SECTION 20 - ASSEMBLY OF ISOLATION SPLICE ASSEMBLIES

Tools Needed:
- 10mm A/F open ended wrench

Installation
1. Fit bolt into joint plate. Ensure tab captivates the head on the setscrew.
2. Slide bolt and joint plate into conductor bar ends respectively.
3. Place cap over bolt.
4. Fit washers and nuts in the order shown.
5. Tighten nuts to a recommended value of 8 Nm (5-6 ft-lbs).

Note:
Tab wings must be faced upwards.

Figure 33-1
1. Nut
2. Washer
3. Cap
4. Bolt
5. Joint Plate
6. Conductor Bar
7. Conductor Bar
SECTION 21 - SYSTEM MAINTENANCE AND INSTALLATION NOTES

Maintenance Notes
1. Contact shoes should be checked for wear on a monthly basis until a wear pattern can be established.
2. Check alignment of collector and conductor bars. Base of collector should be directly in-line with associated conductor.
3. Check conductor system to ensure no damage to insulation cover.
4. In environments that are subject to considerable build up of dust, especially conductive dust, remove this dust at regular intervals by brushing.
5. Check collector pivot points are free from any contamination.
6. Uneven shoe wear indicates less than optimal collector alignment.

Installation Notes
1. Ensure all power is disconnected before attempting to install or maintain the system.
2. Ensure all electrical joints are free from any contamination.
3. Ensure correct alignment and location of support brackets.
4. Ensure conductor joints are not against hanger clamps. Adequate clearance must be allowed for expansion and contraction.
5. Ensure correct alignment of collector with conductor bar. Collector arms should be parallel with contact surface.
6. Ensure all power cables are flexible to allow expansion and contraction of the conductor bar system.
7. Ensure all armored cables are terminated into a suitable junction box and only flexible cables are installed into the powerfeed assemblies.
8. Ensure conductor bars DO NOT support the weight of the feed cables.
9. Conductix-Wampfler recommends that the first accessible conductor bar should be the ground bar.
SECTION 22 - COLLECTOR CONTACT SHOE AND SHOE HOLDER

NOTE

- Collector contact shoe is supplied as replacement p/n XA-577940 for 100A collectors and p/n XA-577947 for 200A collectors.

Tools Needed

- 4mm hex wrench for 100A collector
- 5mm hex wrench for 200A collector

Replacement Instructions

2. Remove shoe by pulling downward.
3. Replace shoe with new shoe.
4. Tighten 100A shoe set screw to 13-16 Nm (10-12 in-lb). Tighten 200A shoe set screw to 24-27 Nm (18-20 in-lb).

Figure 35-1
Assembly Instructions

1. Remove nut, lock washer, and flat washer.
2. Remove transfer caps from pickup guide.
3. Fit transfer caps on to the ends of the conductor bars.
4. Ensure any hanger clamps are at least one meter back from the transfer caps.
5. Squeeze transfer caps together and fit pickup guide over support stud.
6. Fit transfer cap support bracket over support stud.
7. Fit nut, lock washer, and flat washer in order shown.
8. Tighten nut to a recommended torque of 28.4 Nm (20-21 ft-lbs).
9. Remove nut, lock washer, and flat washer.
10. Fit bracket over bolt.
11. Fit nut, lock washer, flat washer.
12. Tighten nut to a recommended torque of 28.4 Nm (20-21 ft-lbs).

NOTE

- Bracket width must not exceed 40mm (1.55").

NOTE

- When using pick-up guides, you must use collector part number XA-577973. Please contact factory when ordering.

Figure 36-1

1. Support Stud
2. Nut
3. Lock Washer
4. Flat Washer
5. Bolt
6. Nut
7. Lock Washer
8. Flat Washer
Conductors are UL rated for continuous duty. Use the appropriate curve on the graph to rate the conductors for your duty cycle.

Note: Duty cycles are based on a 2 minute cycle time.
(i.e. 50% = 1 minute on 1 minute off.)