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Need Field Service for our products? We Can Handle It!

Ask us for a quote on expert system installations, inspections, preventative maintenance, and repairs/retrofits.

As the world’s largest single source manufacturer of mobile electrification products, Conductix-Wampfler has the unique ability to offer a degree of service not found anywhere else. Conductix-Wampfler’s team of highly qualified service technicians and engineers have years of experience servicing our complete line of products.

We can provide:
- Annual service contracts
- Installation
- Commissioning
- Installation supervision to ensure your installers avoid common mistakes.
- Troubleshooting to get you up and running.
- Pre-planned inspections to complement your preventive maintenance program.

Call 1.800.521.4888 for further details.
# TABLE OF CONTENTS

## SECTION 9 - SPECIAL APPLICATIONS 27
- Field Cutting 27
- Curves 27
- Discontinuous Systems 27
- Interlock, Switches, or Fixed Gaps 28
  - Switches 28

## SECTION 10 - TROUBLESHOOTING 29

## SECTION 11 - REPLACEMENT PARTS 30
SECTION 1 - TERMINOLOGY

Anchor Clamp
Connects the bar to the structure and controls movement of the conductors during thermal expansion and contraction.

Anchor Tight
The clamping force required to overcome movement due to the heating and cooling of the conductor bar.

Collector
Transfers power from the bar to the moving machine. Connects to a 1” mounting staff.

End Cover
Caps off the end of the conductor bar.

Hanger Bracket
Attaches to crane beam or other structure to support multiple hangers.

Hanger Clamp
Suspends the conductor bar from hanger bracket.

Power Feed
Conducts the power source to the conductor bar.

Sliding Tight
The clamping force required to hold the bar in place while allowing movement due to the heating and cooling of the conductor bar. Plastic and Steel Snap-In Hangers are both designed to provide a sliding tight fit. For metal hangers with cross bolts, tighten until .02-.05 inch clearance remains between the hanger clamp and the conductor bar.

NOTE
- All hanger clamps that are not specified to be anchor tight must be installed sliding tight to assure reliable operation.
SECTION 2 - SAFETY

Safety Warnings
Disconnect power and follow all lock-out tag-out procedures as described in Appendix A of OSHA Section 1910.147.

All personnel must practice strict adherence to both local and national safety procedures, codes, regulations, and ordinances.

All personnel installing a power rail system should be familiar with the layout details and the component locations.

![WARNING]

- The law recognizes that electrical energy as commonly utilized in industrial and transit operations is dangerous and capable of causing serious damage, injury, or death. Requirements governing the handling and use of electricity, some general and some very specific and detailed, are found in various statutes like the Workmen’s Compensation Acts, Employer’s Liability Acts, National Electrical Safety Code (U.S. Dept. of Commerce), Occupational Safety and Health Administration (OSHA), etc. and city or local ordinances. When using electrical power, the law imposes the general obligation to use care to protect against accidental injury or damage to properties.

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
Safety messages in this manual are preceded by the HAZARD SYMBOL and one of three words: CAUTION, DANGER, OR WARNING. These safety messages are intended to alert you to potential hazards that could cause harm to you or others and/or cause product damage.

![CAUTION]

- The HAZARD SYMBOL used with the word CAUTION indicates unsafe actions or situations that have the potential to cause injury, and/or minor equipment or property damage.

![DANGER]

- The HAZARD SYMBOL used with the word DANGER describes immediate hazards that have the potential to cause severe personal injury or death.

![WARNING]

- The HAZARD SYMBOL used with the word WARNING describes unsafe actions or situations that have the potential to cause severe injury, death, and/or major equipment or property damage.

NOTE
- The word NOTE is used to alert you to installation, operation, programming, or maintenance information that is important, but not hazard related.
### Required Hand Tools
- Torque Wrench
- Socket Wrench Set
- Small Ball Peen Hammer
- Hacksaw
- Screwdriver Set
- 3/8" Drill and Drill Bit Set
- Small File Set

### Basic 8-Bar Components

![8-Bar Components Diagram](image)

### Storage
Conductor bar should be stored overnight in the installation environment to assure that bar has equalized to the ambient air temperature. The bar must be installed with a relatively uniform temperature to allow proper gaging of the expansion section gap setting.

### Standard Mounting
Conductix-Wampfler 8-Bar is typically installed with bar profile oriented vertically and the collector shoe entering from the bottom.

Installations that operate in a wet or dirty atmosphere or corrosive environment must be vertically mounted.

### Lateral Mounting
Some installations require the collector shoe to enter from the side. Conductix-Wampfler 8-Bar can be adapted to this configuration when required. Consult the factory for further assistance.

### Additional Information
Any questions regarding the installation or use of Conductix-Wampfler 8-Bar that are not addressed in this manual can be answered by Conductix-Wampfler Engineering.

Contact the factory: **800-521-4888**
SECTION 4 - TYPICAL INSTALLATIONS

Standard Vertical Mounting Web Brackets

**NOTE**
- Mounting dimensions depend on bracket and hangers used in installation.

"A" - Hanger/Conductor Bar/Collector Spacing
- 3" Recommended
- 2" Minimum (Collectors Adjacent)
- 1.5" Minimum (Collectors Staggered)
- 3" or 4" when Pickup Guides are used
- 2" Minimum in systems with curve
- 2" Minimum (Insulated Hangers)

"B" - Support to Contact Surface
- 1.8" Plastic Snap-In, Cross-Bolt and Anchor Clamp with Spacer
- 1.4" Steel Snap-In and Anchor without Spacer

**NOTE**
- For hangers with insulators add 1" to above dimensions.

---

![Diagram](image)

Figure 9-1
SECTION 4 - TYPICAL INSTALLATIONS

Standard Monorail / Under Hung Crane Application

- Flange Brackets

Figure 10-1

1" SQUARE BAR COLLECTOR MOUNTING BRACKET (BY OTHERS). LOCATED ON VERTICAL CENTERLINE BETWEEN TROLLEY WHEELS.
SECTION 4 - TYPICAL INSTALLATIONS

Lateral Mounting

NOTE
- Not recommended for wet or dirty environments.

Figure 11-1
SECTION 4 - TYPICAL INSTALLATIONS

Plastic Snap-In Hanger Clamps

NOTE
- Not recommended for lateral mount or curves.

Figure 12-1

1.2” 2.8” 1.2”

3/8-16 UNC

INSULATOR

1.8” 1.25” 1.46”

CONTACT SURFACE

PN XA-22800/XA-23370
PN XA-24405/XA-28122

Figure 12-1
SECTION 4 - TYPICAL INSTALLATIONS

Steel Snap-In Hanger Clamps

NOTE
- Not recommended for lateral mount or curves.

Figure 13-1

3/8-16 UNC

CONTACT SURFACE

1.25"

1.2"

INSULATOR

1.4"

1.4"

1.2"

2.4"

PN XA-21600

PN XA-22000

Figure 13-1
SECTION 4 - TYPICAL INSTALLATIONS

Cross-Bolt Hanger Clamps

Figure 14-1

3/8-16 UNC

1.2"

2.8"

1.2"

1.8"

1.50"

1.46"

CONTACT SURFACE

CONTACT SURFACE

PN XA-11076/XA-11078

PN XA-11082/XA-11084
SECTION 4 - TYPICAL INSTALLATIONS

Anchor Clamps

Figure 15-1
NOTE

- This information applies only to straight bottom entry runway installations of conductor bar. Installations that include curved sections require special consideration. Please contact the factory for assistance.
SECTION 6 - TYPICAL COLLECTOR MOUNTING

Standard Vertical Mount
“C” Base - Standard Mount

NOTE
• Torque mounting hardware to 8 - 10 ft lbs.

Figure 17-1
SECTION 6 - TYPICAL COLLECTOR MOUNTING

“H” Base - Standard Mount

NOTE

- Torque mounting hardware to 8 - 10 ft lbs.

Figure 18-1

CATALOG ITEM
PN XA-13131

CONTACT SURFACE

1" SQ. MOUNTING BAR
(BY OTHERS)
SECTION 6 - TYPICAL COLLECTOR MOUNTING

"C" Base - Tandem Mount

NOTE
- Torque mounting hardware to 8 - 10 ft lbs.

![Diagram of "C" Base - Tandem Mount]

Figure 19-1
SECTION 7 - EXPANSION GAP & ANCHORING REQUIREMENTS

Installation of Expansion Sections

Installation Overview
Expansion sections are installed in the same manner as standard 10’ sections of conductor bar.

Expansion sections are shipped with 2 guide bracket clamps secured anchor tight and the other 2 guide bracket clamps at sliding tight.

NOTE
• The anchor tight side is the side with the pin installed at the end of the bar. See Figure 20-1.

### Expansion Gap Settings Table

<table>
<thead>
<tr>
<th>Ambient Temp Range (°F)</th>
<th>0°-100°F</th>
<th>20°-120°F</th>
<th>40°-140°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Temp (°F)</td>
<td>0</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Gap Setting (in)</td>
<td>2.25</td>
<td>1.75</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Table 20-1

1. After installation, set the expansion gap. See Table 20-1.
2. Tighten the two sliding tight guide bracket clamps to anchor tight.

NOTE
• The ones to be tightened are on the side without the pin at the end of the conductor bar.
3. Proceed with installation of the remaining conductor bars.

NOTE
• After all conductor bars have been installed, loosen the 2 clamp bolts on side of guide bracket which was tightened to anchor tight (as done in step 2) on all expansion sections to sliding tight.
• Recheck the expansion gap after installation and adjust if necessary.

![Figure 20-1](image-url)
SECTION 7 - EXPANSION GAP & ANCHORING REQUIREMENTS

Expansion & Anchor Location Diagram
Location of expansion sections is critical for proper functioning of the system.

Follow installation drawing or, if no drawing is available, see Figure 21-1.

Anchors
Anchor points are required at midpoint on all systems without expansion sections. For systems with expansion sections, anchors are required midpoint between expansions and between the first and last expansions and the ends of the run. See Figure 21-1.

Cross-Bolt hangers can be used as anchors on systems without expansion sections. On systems with expansion sections it is recommended that anchor clamps be used. Proper torque for anchor clamp cross bolts is 12-14 ft-lbs. See Figure 21-2.
1. Install hanger and anchor clamps as required. See Figure 22-1.

2. Install conductor bar.
   A. For steel snap-in hangers, torque mounting bolt to 12-14 ft. lbs. after installing all conductor bars. See Figure 22-2.
   B. For plastic snap-in hangers, torque mounting bolt to 8 ft. lbs. after installing all conductor bars. See Figure 22-3.
   C. For cross-bolt hangers, torque mounting bolt to 12-14 ft. lbs. after installing all conductor bars. See Figure 22-4.
   See Table 22-1 for cross-bolt torque specs.

<table>
<thead>
<tr>
<th>Hanger Material</th>
<th>Part No.</th>
<th>Anchor Tight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plated Steel</td>
<td>XA-11076</td>
<td>4.0 - 5.0 ft-lbs</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>XA-11078</td>
<td>3.0 - 4.0 ft-lbs</td>
</tr>
</tbody>
</table>

D. Tighten until .02-.05 inch clearance remains between the hanger clamp and the conductor bar.
   A. For joining pinned conductor bars, see Figure 23-1.
   B. For joining bolted conductor bars, see Figure 23-2.
SECTION 8 - INSTALLATION PROCEDURE

4. Install joint keepers.

**NOTE**
- Only copper bars require joint keepers.

A. Slide the long end of the joint keeper under the conductor bar cover on the smooth side of the bar. See Figure 24-1.
B. Push the pins into the holes of the bar. See Figure 24-2.

5. Install joint covers.

A. Snap joint cover over all 8-bar joints. See Figure 24-3.
B. For high heat joint cover (PN XA-11123), see Figure 24-4.
   a. Snap 4.5” cover over exposed conductor. Then snap on 6” cover and center it over the joint.
   b. Complete the joint cover by clamping both covers in place with the provided cross-bolt clamp.

---

**Figure 24-1**

**Figure 24-2**

**Figure 24-3**

**Figure 24-4**
SECTION 8 - INSTALLATION PROCEDURE

6. Install powerfeeds.

A. Install powerfeeds at locations shown on installation drawing. If no drawing was provided, locate powerfeeds following the designated space considerations as shown. See Figure 25-1.

B. Cut conductor bar cover as shown. See Figure 25-1.

NOTE

• When using large cables, be sure that the customer supplied connector is attached to the clamp in such a manner that it does not interfere with the powerfeed case. See Figure 25-2.
SECTION 8 - INSTALLATION PROCEDURE

7. Install end covers / transfer caps.
   A. Center end cover / transfer cap on the end of the bar. Tap lightly with a hammer until securely seated. See Figure 26-1.

8. Install collectors.

9. Conduct a final inspection.
   A. Sight down the installed conductor runs and straighten any areas where conductor bar is out of alignment. Verify all mounting bolts on hangers are torqued to their proper values.
   B. Make sure collectors are aligned properly with the conductor bar.
   C. Check the distance between the center line of 1” square bar collector mounting staff and contact surface of conductor bar. Distance should be 3.5”
   D. Make sure anchor clamps are properly positioned and anchor tight.
   E. Make sure clamps on one side of expansion section have been made sliding tight. Verify that the expansion section air gap is correct for the ambient bar temperature.
   F. Make sure all joint covers and, if applicable, all joint keepers are securely in place.
   G. Check all electrical connections
   H. Prior to introducing the system to service run the application at slow speed through the entire runway length in both directions to verify operation.
SECTION 9 - SPECIAL APPLICATIONS

Field Cutting
1. Cut conductor with a hack saw to desired length.
2. Cut cover:
   - PVC Cover: 0.75" shorter than conductor bar
   - Hi-Heat Cover: 2.25" shorter than conductor bar
3. Deburn/file field cut end as necessary.
4. Ream conductor lobes. See Figure 27-1.
   - 40, 110-350 Amp Bar: “D” Size Drill Bit
   - 90 Amp Bar: “M” Size Drill Bit
5. Install as usual.

Curves
1. Install curved sections of conductor bar before any straight sections.
2. Maximum hanger spacing on curves is 3’.
3. Curves are generally anchored at the apex, at midway between the straight sections. Contact the factory with specific application questions for further information.
4. Minimum conductor bar spacing is 2” on curves, 3” recommended.
5. Cross bolt hanger clamps must be used on all curves.

Discontinuous Systems
- Cross-bolt hanger clamps on pickup guide, assemblies are required to be anchor tight.

NOTE
- Pickup guides must be mounted on 2 hanger supports.
- Collectors should not be used to interrupt current.
Interlock, Switches, or Fixed Gaps

Switches

Cut of cover and position of transfer cap must be as shown. Hanger clamps to be anchor tight at “x”. See Figure 28-1.

**NOTE**

- Switch sections over 25’ may require an expansion section.

**NOTE**

- For laterally mounted systems, contact the factory 800-521-4888.

---

**Figure 28-1**
### SECTION 10 - TROUBLESHOOTING

#### 8-Bar Conductor Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burned joints or burned cover at joints</td>
<td>Loose joint, excess vibration, or over-tightened hanger clamps. Joint keeper not used.</td>
<td>Tighten joint, install joint keeper, check hanger clamps, and replace joint cover.</td>
</tr>
<tr>
<td>Distorted cover</td>
<td>Too high ambient temperature, under-rated bar.</td>
<td>Use high or medium heat cover. Check total current draw under worst conditions.</td>
</tr>
<tr>
<td>Pitted or burned conductor</td>
<td>Improper shoe pressure or worn out shoe.</td>
<td>Check collector mounting and spring pressure. Check for worn out shoe. If the above are corrected &amp; condition persists, install tandem collectors.</td>
</tr>
<tr>
<td>Damaging environment</td>
<td>Acid fumes, salt air, extremely dirty atmosphere</td>
<td>May require copper or stainless steel conductor. Under these conditions conductor should always be mounted for vertical entry.</td>
</tr>
</tbody>
</table>

#### 8-Bar Collector Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoes wear unevenly</td>
<td>Collector not mounted directly under conductor. Square bar is rotated out of position.</td>
<td>Remount or adjust collector</td>
</tr>
<tr>
<td></td>
<td>Lead wire not slacked.</td>
<td>Loosen lead wire.</td>
</tr>
<tr>
<td></td>
<td>Collector movement too tight</td>
<td>Free collector movement &amp; lubricate</td>
</tr>
<tr>
<td>Shoes pitted and burned</td>
<td>Insufficient shoe pressure. Excessive bouncing or hand-pulled trolley not stable.</td>
<td>Check shoe pressure and mounting distance. Excessive bouncing can be reduced with tandem collectors. Install guide rollers and hand pulled trolleys. Also see: Pitted or burned conductor.</td>
</tr>
<tr>
<td>De-tracking</td>
<td>Distorted cover or joint cover.</td>
<td>Check condition and replace as necessary</td>
</tr>
<tr>
<td></td>
<td>Misalignment at switches or crossovers</td>
<td>Re-align and re-anchor. Check switch movement</td>
</tr>
<tr>
<td></td>
<td>Improperly installed.</td>
<td>Correct misalignment. Bad misalignment may require long arm collectors or expansion sections.</td>
</tr>
<tr>
<td></td>
<td>Hanger clamp (cross-bolt type) too tight making bar “snake” to where collectors interfere with each other.</td>
<td>Loosen hangers so bar will slide. Tighten one hanger in center or between each expansion section.</td>
</tr>
</tbody>
</table>
SECTION 11 - REPLACEMENT PARTS

The following is a suggested list of maintenance parts for use in the field:

- 1 extra set of contact shoes for each collector
- 1 extra spring for each collector
- 6 extra lengths of bar or 5% of total footage for average sized installations
- 1 clamp connector and cover for each extra length of bar where clamp replacement is desirable
- 3 complete collectors for 3 phase system, where use is severe
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