

CONDUCTOR BAR SYSTEMS

V-BAR & 8-BAR

INSTALLATION GUIDE

A. Conductor Selection Application and Support Spacing

1. Determine the Conductor System required. Refer to separate engineering data in catalogue.

- (a) Conductor Ampacity Considerations.
- (b) Voltage Drop Considerations.
- (c) Expansion Considerations.

SYSTEM	MOUNTING	SUPPORT CONDUCTOR SECTIONS EVERY:	
		8-BAR	V-BAR
90 Amp	Vertical Mount	5 Ft.	4 Ft.
90 Amp	Lateral Mount	4 Ft.	4 Ft.
110 Amp	Vertical Mount	5 Ft.	5 Ft.
110 Amp	Lateral Mount	4 Ft.	5 Ft.
160 Amp	Vertical Mount	5 Ft.	4 Ft.
160 Amp	Lateral Mount	4 Ft.	4 Ft.
225 Amp	Vertical Mount	5 Ft.	4 Ft.
225 Amp	Lateral Mount	4 Ft.	4 Ft.
250 Amp*	Vertical Mount	5 Ft.	Consult Factory
250 Amp*	Lateral Mount	4 Ft.	
350 Amp*	Vertical Mount	5 Ft.	
350 Amp*	Lateral Mount	4 Ft.	

*Joint keeper clips required on all copper conductor systems

2. Determine the maximum ambient temperature at the Conductor System elevation.

- (a) Under 55° C - use standard PVC Insulating Covered System.
- (b) 55° C - 120° C - use High Heat Insulating Covered System.
- (c) Over 120° C - Consult Factory.

3. Determine if the System is to be Vertical Mount (bottom entry) or Lateral Mount (side entry) and use the above table. We do not recommend the use of Lateral Mount (side entry) Conductor Bar Systems for **outdoor applications**. We recommend the use of a canopy installed above the Conductor Bar System to protect it from the outside elements.

B. Mounting Brackets

1. Install Mounting Brackets (Channels, Angles, Tees, etc.) at the required spacing as determined under Installation Procedure - Item A. The brackets should be pre-punched or drilled to accept 3/8" hanger mounting bolts. The minimum distance from the web to the first hanger clamp is three inches.

C. Anchor Point Hangers

1. Anchor Hangers (one per conductor run) should be used at mid-point between expansion gaps (see page 4) and on systems less than 30 ft. long, or where conductor movement must be restricted. Install anchor clamps as follows:
 - (a) Insert conductor section into hanger assembly.
 - (b) Drill 3/16" hole into the conductor section, using the predrilled hole in the hanger assembly as a guide.
 - (c) Drive the nylon insulating rivet through the hanger into the conductor section.

IMPORTANT NOTES REGARDING ANCHOR HANGERS:

- (a) Begin with the conductor run that is closest to the runway beam or support structure, working then to the outside run.
- (b) Installation of anchor hangers for the Inverted V Bar Systems require additional care to insure that the nylon rivet does not interfere with the collector surface of the conductor.

D. Hanger Installation

1. Install Hanger Clamps securely to Mounting Brackets leaving clamping bolts loose. Make sure conductor bar openings are straight along runway path.
NOTE: Snap-in type hangers do not have clamping bolts. Use nylon snap in hangers for outdoor and wet environments

E. Conductor Installation

1. Install expansion sections first (if any) - See page 2.
2. Snap or slide conductors into the hangers. When clamp type hangers are used, tighten the clamping bolt only after conductor sections are joined.
3. Join conductor sections as outlined below:
Clean any dirt or oil on Connector Pins and join Conductor Sections using Connector Tool. File any rough joints. Joints should be completely closed.
4. Install joint keeper clips on all copper conductor systems from the inside of the V.
5. Install insulating Joint Cover over each connected joint.
Splice joints should be not less than 6" nor more than 9" from mounting bracket.
6. Install End Power Feed or Centre Power Feed (at Joint) and insulate with Power Feed/Joint Cover.
Note: V-Bar centre power feed assemblies and expansion assemblies must be staggered when the conductor bars are mounted on 1.5" centres. For the V-Bar Centre Power Feed installation, cut out enough of the insulating cover to allow for the Power Feed Clamp to be mounted to the Bar.
7. Remove Connector Pins, if any to install end covers. Install End Covers over exposed Conductor Ends.

F. Collector Installation

1. Mount Collector Assemblies on 1" Square Collector Mounting Post. Be sure that the collector mounting post is securely fastened to the moving equipment which is to be electrified. The centreline of the mounting post to the conductor bar collector running surface should be 3.5". The following alignment adjustments should be made as necessary:
 - (a) The Collector Mounting Post should be parallel to the ground on "Vertical Mount" applications $\pm 2'$ or perpendicular to the ground on "Lateral Mount" applications $\pm 2'$.
 - (b) Each Collector should be mounted in line with the conductor running surface.
 - (c) The Collector Contact Shoes should not be cocked at an angle, but should enter the Conductor Bar contact points at right angles and be able to move along the conductor run unrestricted.
 - (d) Collector Contact Shoe must be seated securely in shoe holder.
 - (e) Collector Head must be free to articulate - leave sufficient slack in pigtail lead wire.

G. Final Inspection

1. Final inspection of all components should be made including the following important items:
 - (a) Make sure the Conductor Bar runs are straight. Adjust any hanger clamps which are not straight and replace any Conductor Bar which may have been bent or damaged.
 - (b) No "Hot" bare metal parts should be exposed. Make sure insulating covers, joint covers, power feed covers, and covers are securely in place to prevent any accidental contact by personnel.
 - (c) Run the equipment back and forth several times along the entire system length to make sure the system functions properly.
 - (d) File any Surface Joints that are uneven, or not smooth.
 - (e) Make sure the conductors are able to "float" to allow for expansion and contraction due to temperature variations, except at anchor points.
 - (f) Make sure there is no excessive ambient heat - heat shields might need to be installed near furnaces, etc.

V-BAR & 8-BAR INSTALLATION PROCEDURE

INSTALLING EXPANSION SECTIONS

(See page 4 for system layout)

Expansion Gap Installation

Expansion Gap Assemblies must be supported at the gap location
-See figure #1.

A 10 ft. expansion gap assembly is installed in the same manner as other 10 ft. sections of conductor system.

For shipping purposes, the gap has been completely closed and must be adjusted according to the ambient temperature.

Expansion Gap Requirements

- Refer to Engineering Data in the Catalogue for specific applications and requirements.
- Begin Installation at Expansion Section Location.
- Recommend conductor spacing is 3".
- Set the Expansion Gaps as follows:

OPERATING TEMPERATURES		INSTALLATION TEMPERATURES	SET GAP DISTANCE
MIN.			
0° F	100° F	25° F	3/4"
		50° F	1/2"
		75° F	1/4"
25° F	125° F	50° F	3/4"
		75° F	1/2"
		100° F	1/4"
50° F	155° F	75° F	3/4"
		100° F	1/2"
		125° F	1/4"

Expansion Gap Information

Steel Expands 1"/100°F/150 ft.
Copper Expands 1"/100°F/100 ft.

Expansion gaps should be placed at intervals determined by the conductor temperature rise, e.g., if the estimated temperature rise for a steel conductor system is 150° F, a 1" expansion gap should be provided every 100 ft.

For an average installation, expansion gap assemblies should be located as follows:

Steel conductors, 90 or 110 Amp Systems every 150 ft. of straight run.
Copper conductors, 160, 225, 250 or 350 Amp Systems every 100 ft. of straight run.
All systems at building expansion joints.

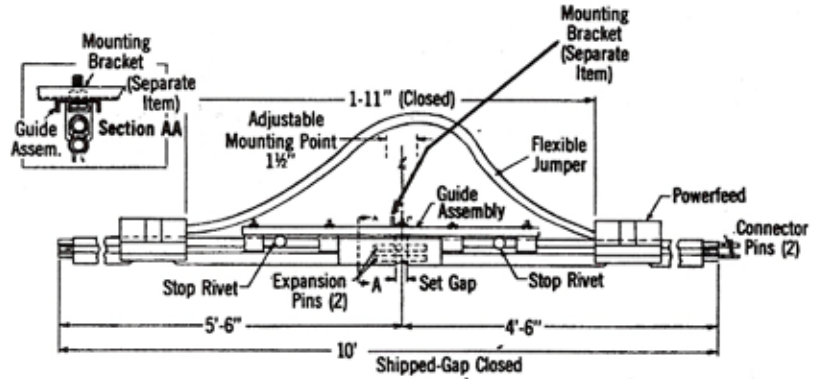


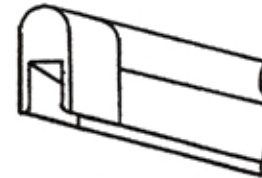
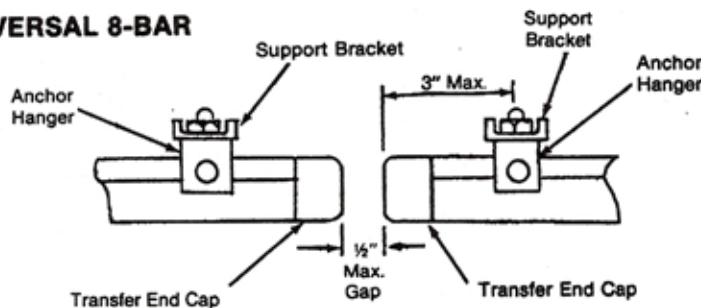
Figure #1 — Expansion Section

INSTALLING TRANSFER POINT CAPS

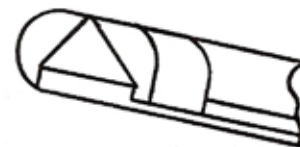
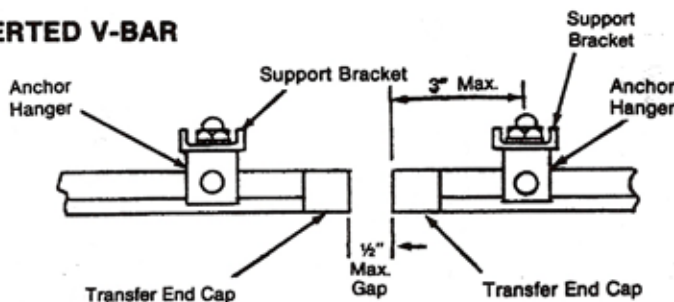
- Install conductor support brackets with anchor clamps as shown. (See separate instructions for anchor clamps).
- Drill ends of conductor bars with 5/16" drill to accommodate transfer cap pins.

- Tap in transfer cap with rubber mallet.
- File or de-burr any rough edges along collector tracking surface.
- Align opposing conductor runs and anchor to prevent movement during vibration or collector transfer.

UNIVERSAL 8-BAR



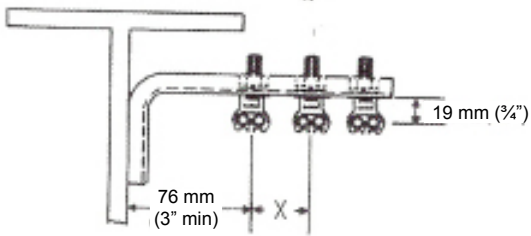
INVERTED V-BAR



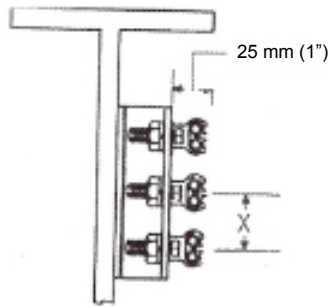
MOUNTING METHODS / DIMENSIONS

TYPICAL INSTALLATIONS

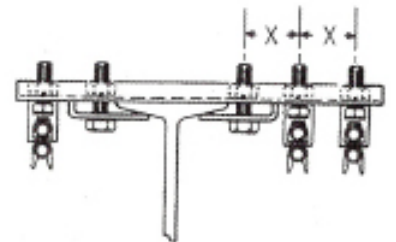
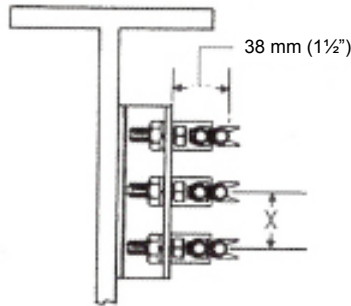
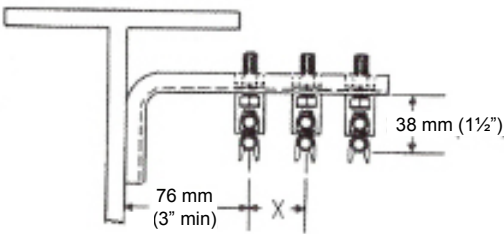
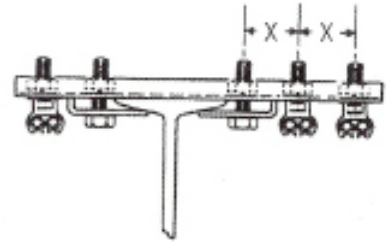
**BOTTOM ENTRY
(WEB MOUNT)**



**SIDE ENTRY
(WEB MOUNT)**

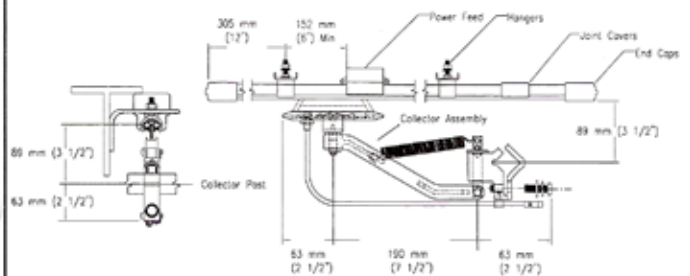


**BOTTOM ENTRY
(FLANGE MOUNT)
CLAMP ON TYPE**

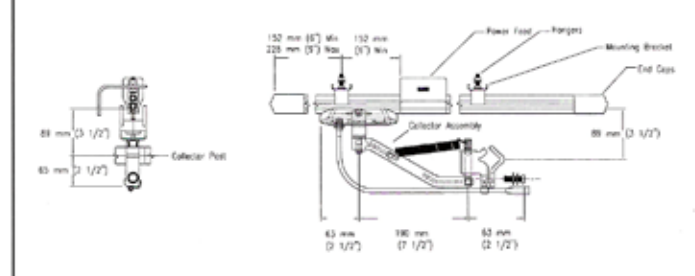


APPLICATION	X DIMENSION			
	V-BAR		8-BAR	
	Minimum	Recommended	Minimum	Recommended
Collectors:				
Adjacent	51mm (2.0")	76mm (3.0")	51mm (2.0")	76mm (3.0")
Staggered	38mm (1.5")	38mm (1.5")	38mm (1.5")	38mm (1.5")
Power Feeds:				
Adjacent	51mm (2.0")	76mm (3.0")	51mm (2.0")	76mm (3.0")
Staggered	38mm (1.5")	38mm (1.5")	38mm (1.5")	38mm (1.5")
Expansion Assemblies:				
Adjacent	51mm (2.0")	76mm (3.0")	51mm (2.0")	76mm (3.0")
Staggered	51mm (2.0")	51mm (2.0")	51mm (2.0")	51mm (2.0")
When Insulators Are Used:				
	51mm (2.0")	76mm (3.0")	51mm (2.0")	76mm (3.0")

UNIVERSAL V-BAR



UNIVERSAL 8-BAR



V-BAR & 8-BAR INSTALLATION PROCEDURE

A. Curved-Conductor Systems (Web Mounted V-Bar Systems are recommended).

1. Conductor Bar Sections may be field bent for 48" or greater radius - form conductors around curved web of monorail beam.
2. Factory bent conductor sections are available for less than 48" radius. (Min. Radius - 3' - 0").
3. Conductor supports should be located not more than 2ft. apart on curves.

Curved conductor sections must not have splices or power feeds.

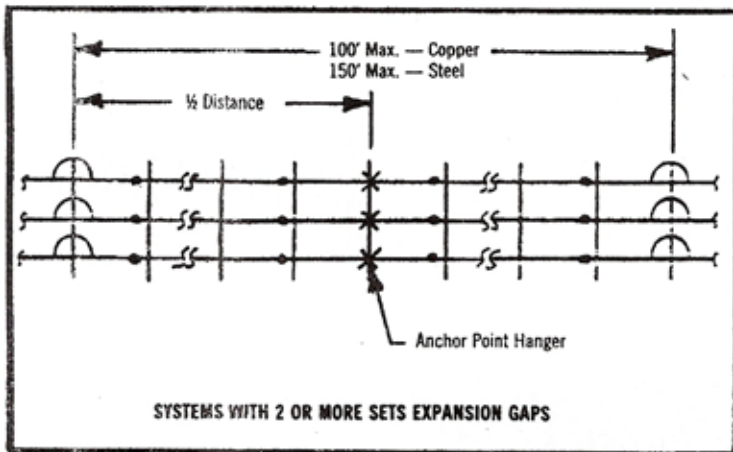
B. Discontinuous Systems.

Consult factory for flying pickup of collector assemblies.

Field Cutting of Conductor Bar Sections.

1. Cut ends squarely with metal cutting band saw or hack saw.
2. If cut conductor section is to be joined with another conductor section, cut insulating cover back 1" from end of conductor - leave insulating cover flush with end of conductor if transfer cap or end cap is to be installed.
3. Drill ends of cut conductors as follows:
 - (a) 90 Amp and 250 Amp conductors - use 19/64" drill.
 - (b) 110 Amp, 160 Amp, 225 Amp, and 350 Amp conductors - use 1/4" drill.
 - (c) For transfer caps - use 19/64" drill.
4. De-burr ends of conductors.

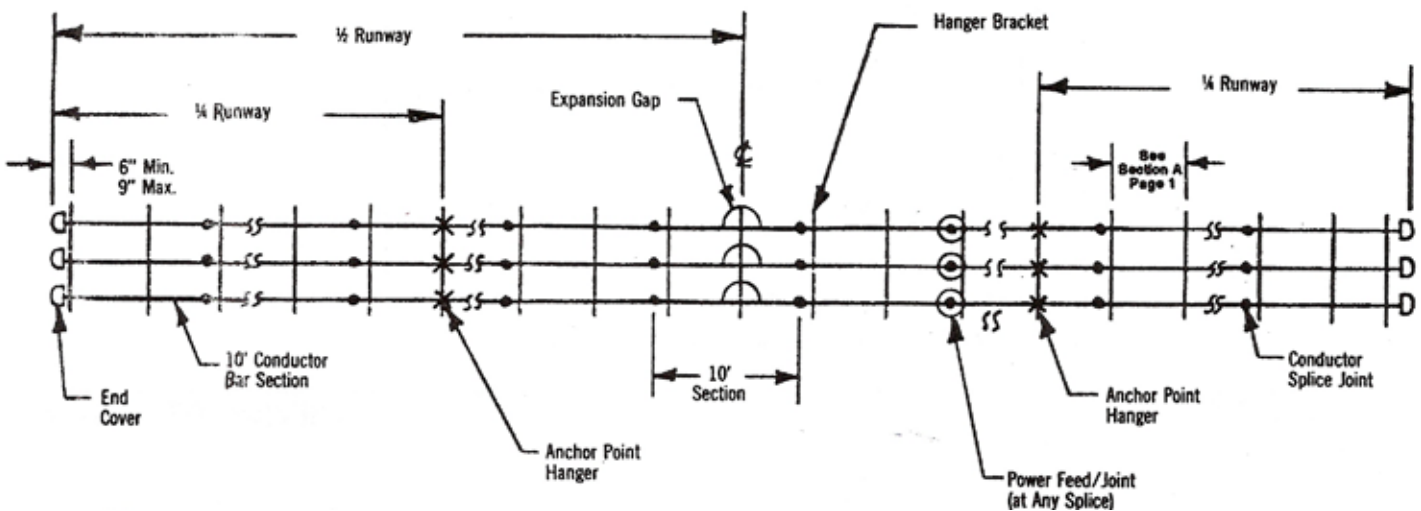
TYPICAL 3-CONDUCTOR SYSTEM LAYOUT



IMPORTANT

BEGIN INSTALLATION AT EXPANSION GAP LOCATION & WORK IN BOTH DIRECTIONS FROM THAT POINT

MAKE CERTAIN THAT POWER SUPPLY IS TURNED OFF WHENEVER WORK IS TO BE PERFORMED WITHIN REACH OF CONDUCTOR BARS.



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