

**HVBar**  
Engineered Conductor System



**Inverted V Design**

**High Quality Aluminum  
Construction**

**Compact Design**

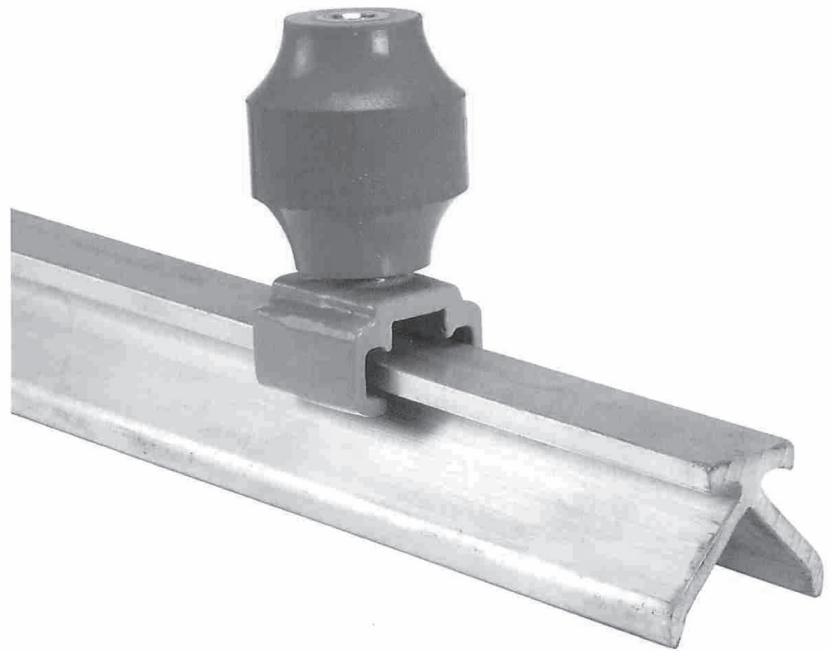
**Ease of Assembly**

**Moving Electrification *Forward***



## ***Aluminum Conductor System With Maximum Installation Flexibility***

TransTech's HV-Bar conductor system combines the economy of the lower amp H-Bar systems with the collector tracking and weather protection benefits of the V-Bar system. The HV-Bar conductor is rigid aluminum extruded from 6101-T6 alloy. The HV-Bar system offers simplicity in installation and requires no field welding, drilling or cutting. Assembly is accomplished by means of standard wrenches as hex head bolts are used on all assemblies. Conductors are furnished in factory pre-cut lengths to fit your requirements. Installation and layout drawings showing the location of all components are engineered for your particular requirements and are furnished with each system.



### **Features**

- High current capacity aluminum extrusion with excellent chemical resistance properties
- Highly rigid cross-sectional geometry resists bending and twisting and permits hangar spacing up to 7 feet
- Systems are engineered to customer specifications, including system layout and installation support
- V shaped interface provide large contact area and collector tracking for efficient current collection
- Full range of standard components including hangers, anchors, feeders, splice joints fixed expansion joints and isolation joints
- Multiple collector configurations available

<b>Component</b>	<b>Part Number</b>
Conductor 750 Amps	114546-30
Hanger With 3/8" Bolt	106125
Splice Joint	106130
Anchor	106140
Feeder (1-Lug Provision)	106170
Feeder (2-Lug Provision)	106171
Fixed Expansion Joint	106150
Isolation Joint	106145-02
Insulator 15-51-21	94551-21
Insulator With Petticoat	94571-21
Collector (2) Arm	114563

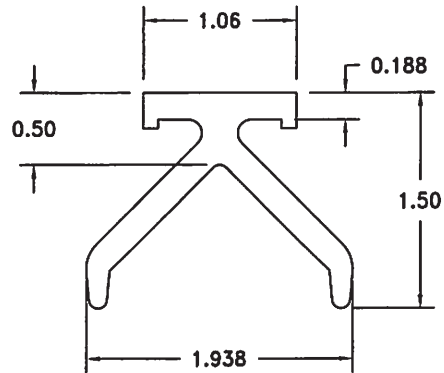
### ***Project Engineering and On-Site Installation Support***

TransTech's engineers custom-configure our products and systems to meet each customer's unique application requirements. We provide on-site technical installation support and layout drawings to our customers and their installation teams.

**Moving Electrification  
Forward**

### Conductor

The HV-Bar conductor is designed for main runway or cross-travel applications. The recommended mounting is in the inverted V position with the collectors in the under-running position. The conductors are normally mounted horizontally with a minimum phase spacing 3 1/2". The conductor is extruded from high conductivity aluminum alloy 6101-T6 and supplied in 30 foot lengths. Shorter lengths can be supplied in one foot increments to match your runway length. The HV-Bar conductor part number is 114546-L where "L" designates the conductor length in feet. Part number 114546-30 is the standard 30 foot long conductor .

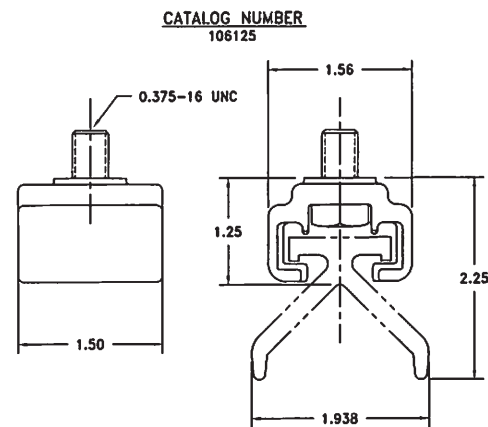


System Amperage Rating	Catalog Number	Area Sq. Inches	Weight Lbs/Ft	D.C. Resistance ohms/ 1000 Ft	A.C. Resistance ohms/ 1000 Ft
750	114546-"L"	0.82	0.96	0.018	0.025

"L" Designates conductor length in feet. Standard length is 30 feet.

### Hanger Assembly

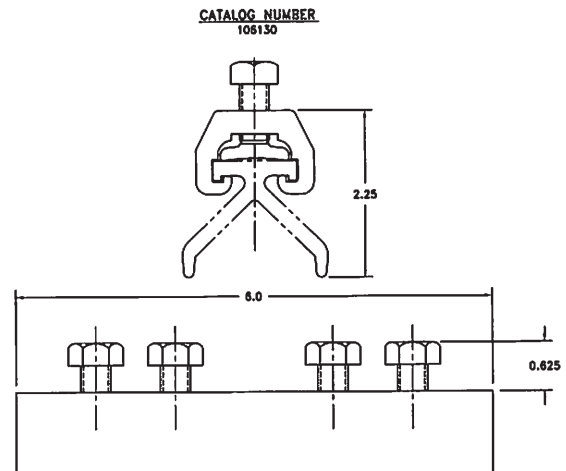
The hanger assembly is used with Red-Poly insulators to provide mechanical support and electrical insulation for the conductor system. Hangers are located on five foot spacing. The hanger is made of cast aluminum, nylon coated to assure free sliding through the hanger casting during expansion and contraction of the conductor system. Conductor "lock-up" has been eliminated by the free sliding design, provided components like feeder assemblies and isolation joints are located at least 6" away from adjacent hangers.



Maximum support spacing is 7 feet.  
Net weight is 0.17 lbs.

### Splice Joint Assembly

The splice joint assembly connects and aligns adjoining conductor sections without drilling or welding. Simplicity of the assembly requires only standard hex wrenches. Bolts secure a spring type, aluminum plate which insures the electrical connection. The aluminum splice joint has an electrical efficiency of greater than 100% when compared by the resistance method to an equal length of conductor. Torque 3/8 - 16 aluminum hex bolts provided with the splice joint assembly to 12 ft-lbs for proper installation.

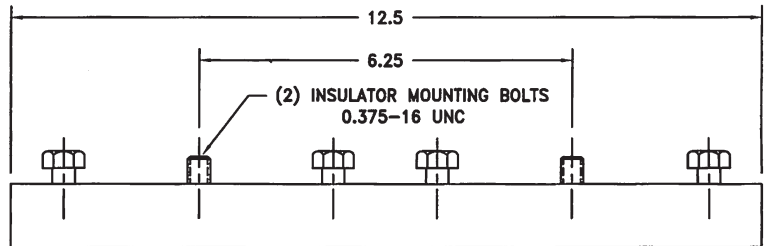
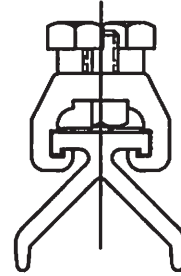


Net weight is 0.6 lbs.

### Anchor Assembly

The anchor assembly is used at one location in the conductor system to secure the conductors to a fixed point from which the conductors expand or contract through the hanger castings. The anchor assembly consists of an aluminum extrusion with aluminum hex bolts that securely clamp to the conductor. The anchor assembly replaces a hanger assembly in the system and requires two mounting brackets and two molded insulators.

**CATALOG NUMBER**  
**106140**

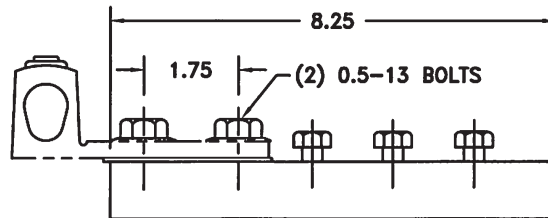


Net weight is 1.2 lbs.

### Feeder Assembly

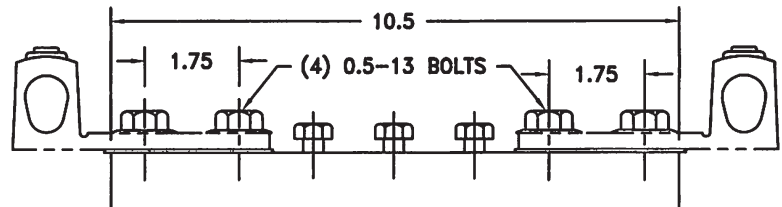
The feeder assembly provides the electrical connection from the power source to the conductor. It may be located at any point on the conductor system. The feeder is normally located at the center of the conductor system. Long systems may require two or more feeders located near the ends of the system to reduce voltage drop. Feeder assemblies must have clearance from adjacent hangers for expansion and contraction of the conductor system. Feeder cables must have enough flex to accommodate conductor movement over the expected operating temperature range. Provisions are made for one or two NEMA standard (1<sup>3</sup>/<sub>4</sub>" terminal lugs per feeder assembly. Terminal lugs are not included with the feeder assembly, but can be provided to match your cable size. Bi-metal plates are provided with each feeder assembly to prevent corrosion between bronze or copper terminal lugs and aluminum extrusions.

**CATALOG NUMBER**  
**106170**  
**(1-LUG PROVISION)**



Rating 500 amps at 30 C rise over 40 C ambient  
Terminal lug is supplied separate.  
Net weight is 0.8 lbs.

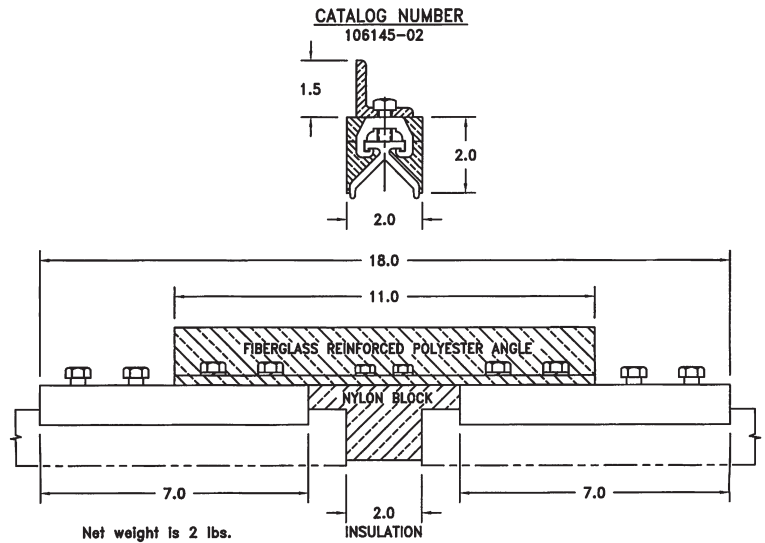
**CATALOG NUMBER**  
**106171**  
**(2-LUG PROVISION)**



Rating 750 amps at 30 C rise over 40 C ambient  
Terminal lugs are supplied separate.  
Net weight is 1.3 lbs.

### Isolation Joint Assembly

The isolation joint assembly is used to insulate one section of the conductor from an adjacent section without interfering with collector travel. It allows portions of the system to be electrically disconnected while operations continue on the other sections of the conductor system. When more than one crane is operating on the conductor system, the isolation joint is used to create a maintenance area or repair bay. The isolation joint can be inserted at any place in the conductor system. Usually the isolation joints are located 30 feet from each end and replace the last splice assembly on each end of the conductor system. Normally the maintenance area or repair bay is fed electrically through a disconnect switch attached to feeder assemblies on either side of the isolation joint assembly. This arrangement allows for electrical power to be disconnected and "locked out" at a location near the maintenance area or repair bay.

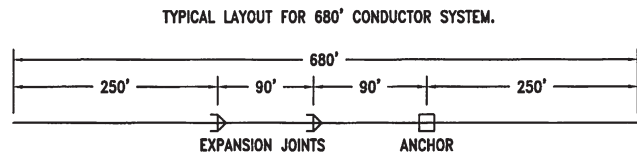
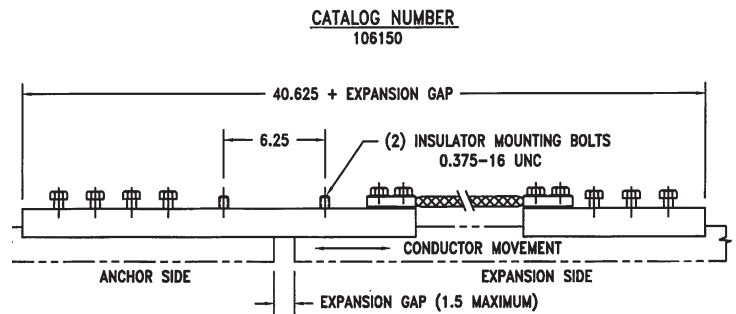


### Fixed Expansion Joint Assembly

The expansion joint assembly is necessary on long runways where expansion and contraction of the conductors exceed limits set by TransTech. Normal indoor installations do not require expansion joints if the temperature ranges do not exceed 80 degrees F. Conductor systems longer than 500 feet or systems with extreme temperature variations may require expansion joints.

The conductor gap setting is based on the ambient temperature at the time of installation and the expected temperature variation to which the system will be exposed. At the coolest ambient temperature the gaps must not exceed the maximum expansion gap setting of 1½ inches. At the hottest ambient and operating temperatures the expansion gap should be nearly closed. Electrical continuity during expansion and contraction is maintained through flexible copper shunts. Copper shunts are separated from the aluminum extrusion with bi-metal plates.

Mounting the fixed expansion joint assembly requires two mounting brackets and two molded insulators.



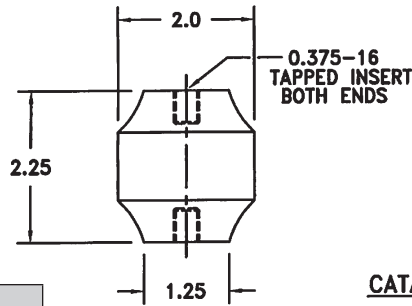
Outdoor applications over 500 feet in length require expansion joint assemblies. Expansion joint assemblies are spaced 90 feet apart. Net weight is 4 lbs.

### Red-Poly Insulator

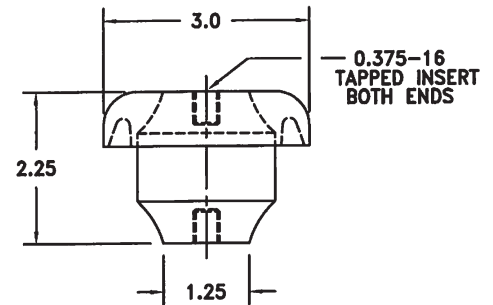
The Red-Poly insulators are molded fiberglass reinforced polyester material with superior mechanical strength, excellent electrical characteristics, flame retardant, self extinguishing and track resistant. Red-Poly insulators are manufactured in a variety of styles and heights to match your voltage and application requirements. Red-Poly insulator 15-51-21 is used for most applications.

Mechanical Properties	9455121	9457121
Tensile Strength	3,500 pounds	3,500 pounds
Cantilever Strength	3,000 Inch-pounds	3,000 Inch-pounds
Torsional Strength	600 Inch-pounds	600 Inch-pounds
Weight	0.46 pounds	0.61 pounds
Electrical Properties	9455121	9457121
Dielectric Strength - Dry	38 kV	38 kV
Dew Flashover Strength	15 kV	22 kV
Creep Distance	2.5 Inches	3.6 Inches

**CATALOG NUMBER**  
9455121



**CATALOG NUMBER**  
9457121



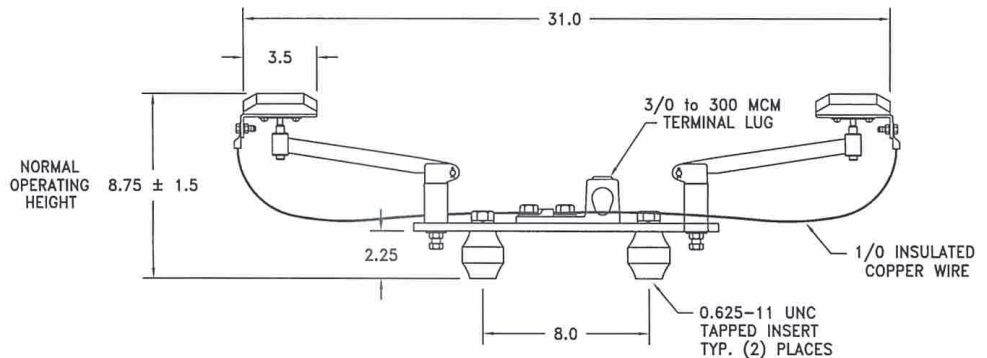
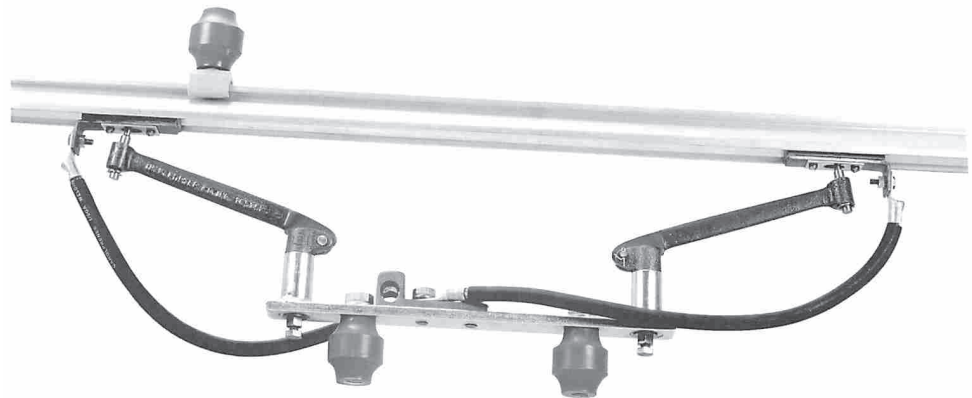
### Double Arm Collector HV-Bar

Catalog Number - 114563

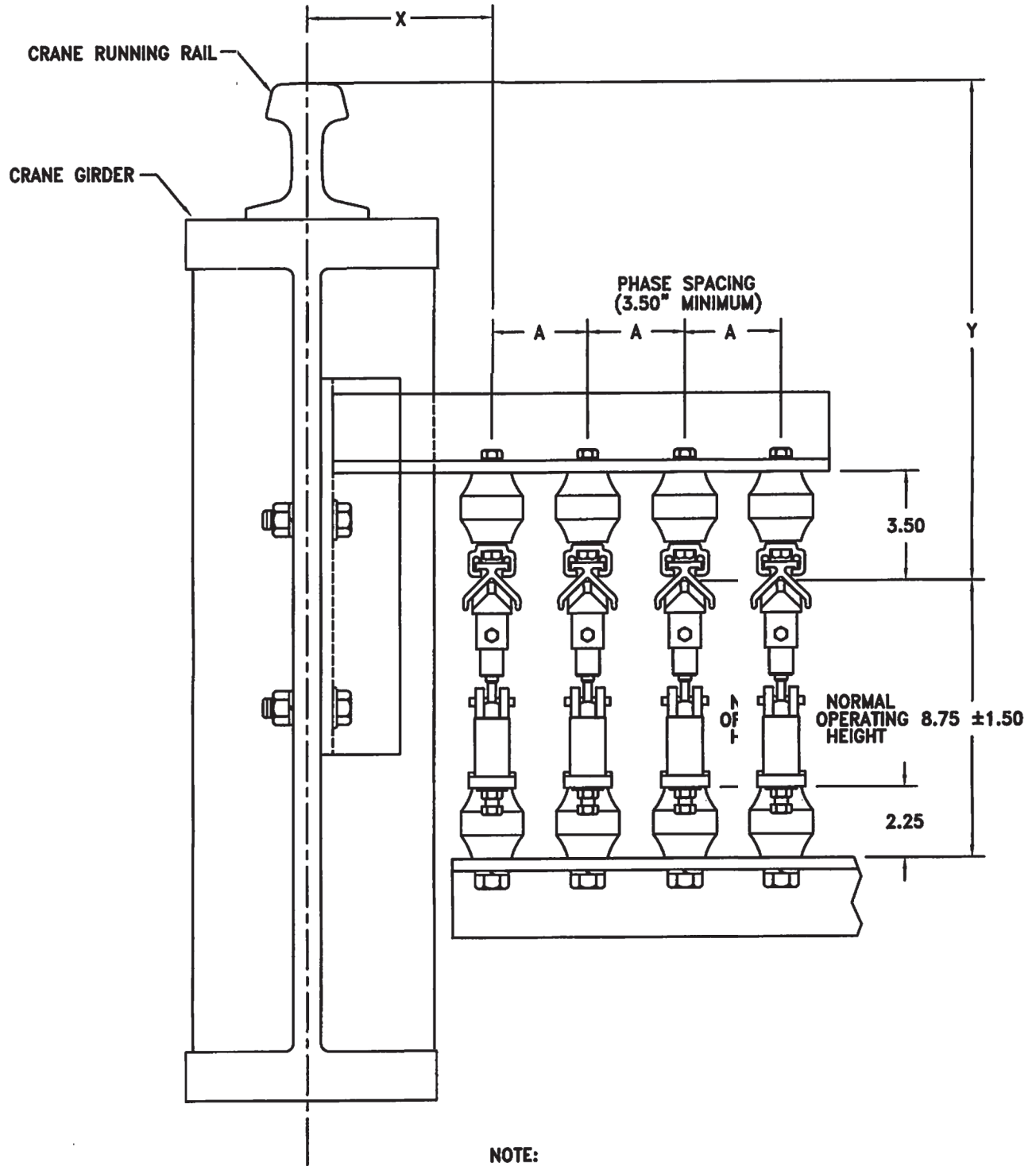
<b>Collector Ratings</b>	
Temp. Rise	Current Rating
30° C	400 Amps
40° C	500 Amps

**Note:**

Collector Horizontal Misalignment is  $\pm 2"$



TYPICAL MOUNTING CONFIGURATION



**TECHNICAL DATA  
MAXIMUM AMPERE DEMAND**

Maximum ampere demand equals the sum of all main and auxiliary hoist H.P. plus (1/2) the sum of all bridge and trolley motor H.P.

**CALCULATION**

Load H.P. x amperes per H.P. (Table A) = maximum ampere demand.

Maximum ampere demand x crane factor (Table C) = adjusted maximum ampere demand.

**VOLTAGE DROP  
CALCULATION**

**Symbols**

$\Delta V$  = Line Voltage at Feeder (Source).

V = Voltage Drop.

I = Load Amperes.

L = Effective System Length in Feet. Maximum distance from feeder to end of system.

RDC = D. C. Resistance-ohms/1000 feet.

K = Voltage Drop Multiplier (Table B).

**Formulas**

Direct Current

$$\Delta V = \frac{I \times L \times R_{DC}}{500}$$

$\Delta$ .C. 3 phase (80% power factor)

$$\Delta V = I \times L \times K \text{ (Line to Line)}$$

**Example**

Length of runway, 400 feet, operating on 440 volts, 3 phase, 60 Hz, phase spacing 5 inches, feeder location-center of runway, one crane on runway. Maximum ampere demand would be calculated as follows:

	ACTUAL H.P.	CALCULATED H.P.
Main Hoist	200	200
Auxiliary Hoist	150	150
Bridge	200	100
Trolley	50	<u>25</u>
		Total 475

From Table A multiplier is 1.5. 1.5 x 475 H.P. = 713 ampere

From Table B, the (phase spacing of 5")

$$K = 81 \times 10^{-6}$$

$$\Delta D = 713 \times 200 \times 81 \times 10^{-6}$$

$$\Delta D = 11.55$$

$$\text{Regulation} = \frac{\Delta D}{V - \Delta D} \times 100$$

$$\text{Regulation} = \frac{11.55}{440 - 11.55} \times 100$$

$$\text{Regulation} = 2.7\%$$

Current	Voltage	Multiplier
Amperes Per Horsepower Conversion Table	D.C. 230 V	4.0
	D.C. 600 V	1.6
	A.C. 220 V	3.0
	A.C. 440 V	1.5

HV-Bar	K Values x 10 <sup>-6</sup>										
	Phase Spacing In Inches										
	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	9
750A	72	75	78	81	83	85	87	89	91	93	95

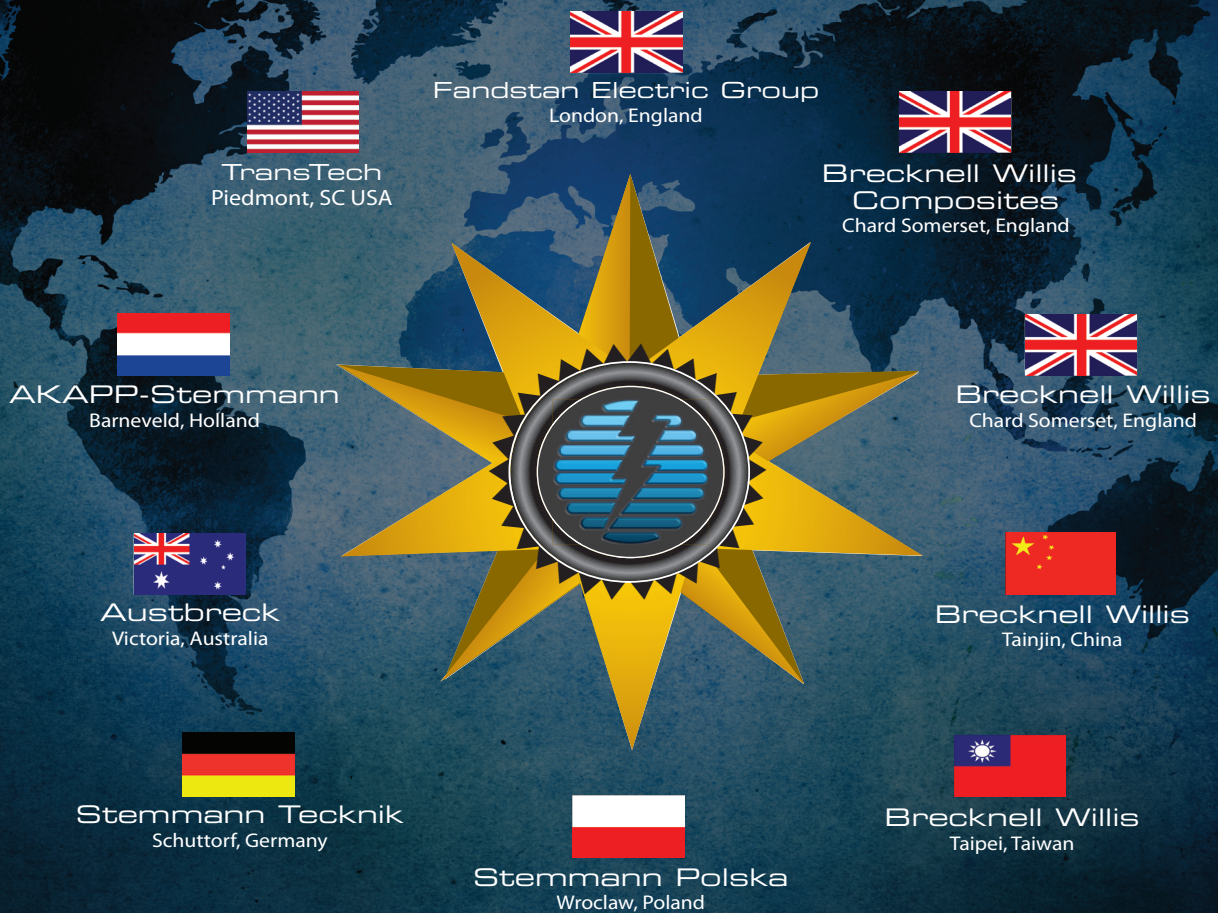
Crane Factor	Cranes Per Runway	Multiplying Factor
	1	1
	2	0.95
	3	0.91
	4	0.87







# *The Fandstan Electric Companies*



## ***Fandstan Electric Group***

The Fandstan Electric Group specializes in engineering solutions for the supply of electrical power and data to moving objects, both linear and rotary. Applications are as wide ranging as public mass transit, mobile cranes, industrial equipment, robots and wind turbines. The Group's Knowledge of the electrical interface is unrivalled. Fandstan is an independent, privately owned, electrical engineering group with major subsidiaries in Europe, America, Asia (including China) and Australia. The Group, which was founded in 1979, has grown both organically and by acquisition and now employs over 700 people, manufactures across four continents and sells throughout the world. The global positioning of the companies within the Group enables Fandstan Electric to supply close support to the customer and operator.





**TranstTech**  
POWER TRANSFER SYSTEMS

### **The Leaders In Power Transfer Technology**

TranstTech is a subsidiary of Fandstan Electric, a global group of companies focusing on energy transfer systems with installations in over 100 countries. Working synergistically with our European sister companies such as Brecknell-Willis, Stemmann and AKAPP, we are able to leverage a broad product portfolio and a wealth of technical expertise. Our goal is to better serve our power transfer markets by continuing to provide solutions that improve product life, performance, and reliability.

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