RAIL & TRANSIT PRODUCTS

Certificate # 2380/00

PDS 0515-17 E

TWINCO MFG. CO., INC.
30 Commerce Dr., Hauppauge, NY 11788-3904
Ph 800-854-2338 Fx 631-231-0314
http://www.twincomfg.com

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TWINCO MFG. CO., INC.

30 Commerce Dr., Hauppauge, NY 11788-3904

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SECTION A

Introduction

TWINCO MFG. CO., INC.
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COMPANY PROFILE

TWINCO was started in 1957 by John H. Schatz in the basement of his house for the purpose of making tools & dies for various industries. The company was incorporated in 1965 as Twinco Manufacturing Company, Inc.

Until 1984 Transcontrol Corporation was TWINCO's largest customer. Transcontrol produced vital relays and signal systems for the Railroad and Transit Industry. During this time TWINCO's capabilities grew to a point where we manufactured most all of the components Transcontrol required to assemble a product.

TWINCO has grown over the years because of our commitment to the customer. We continually invest in the best and most modern, facilities and equipment to enable our employees to be as productive as possible.

TWINCO is primarily engaged in production of electrical and electro-mechanical products for the Railroad & Transit Industry. In 1985 TWINCO received approval of its first major product: a Train Stop for the New York City Transit Authority. As we have grown so has our products. The following is a brief list of some of our products to date:

AAR Hardware
Vital Relays & Components
Replacement Contacts
Laminated Tags & Wire Markers
Train Stops & Trip Layouts
Impedance Bonds
Rectifiers
Pre-wired Signal Instrument Huts & Cases
Local Control & Indication Panels
Switch Heater Controls
Specialized Wayside and Car Equipment
Manufacturing Engineering support for special projects

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The company activities are conducted in a modern 50,000 square foot freestanding building located in the Hauppauge Industrial Park. We have excellent facilities and equipment, and perform and control as much of the manufacturing process as possible. All production is undertaken at this location with the exception of raw material processes such as casting and a few specialized processes.

We are routinely engaged in the following manufacturing activities:

Engineering & Design
Assembly & Wiring
Metal Stamping
Plastic Molding
CNC Machining
Tool, Die & Mold Making

All manufacturing activities are under the direct control of the President and the Supervisors who with their personnel has broad experience and expertise in the manufacture and function of our products.

Reasonable access will be available to customer's representatives to verify that the quality system described herein is effective.

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Company Mission Statement

Twinco's mission is to manufacture and deliver high quality and competitively priced products that fulfill our customers requirements. We do this by adhering to the following philosophies:

Customer: We work to satisfy the customer. If we don't take care of the customer, somebody else will.

Quality: We will perform and control as much of the manufacturing process as possible. True quality is designed, manufactured and controlled, not merely inspected, into a product.

Productivity: We invest in the best and most modern facilities and equipment to enable our employees to be as productive as possible.

Improvement: We believe in the process of continuous improvement. It is the relentless quest for a better way, the challenge of higher and higher quality craftsmanship. It is not perfection but rather the pursuit of it.

Teamwork: We strive to work together as a spirited team in an environment of trust, cooperation, mutual respect, understanding and support of the needs of others.

Ethics: We strive to maintain the highest standards of honesty and integrity in all facets of our activities.

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SECTION B

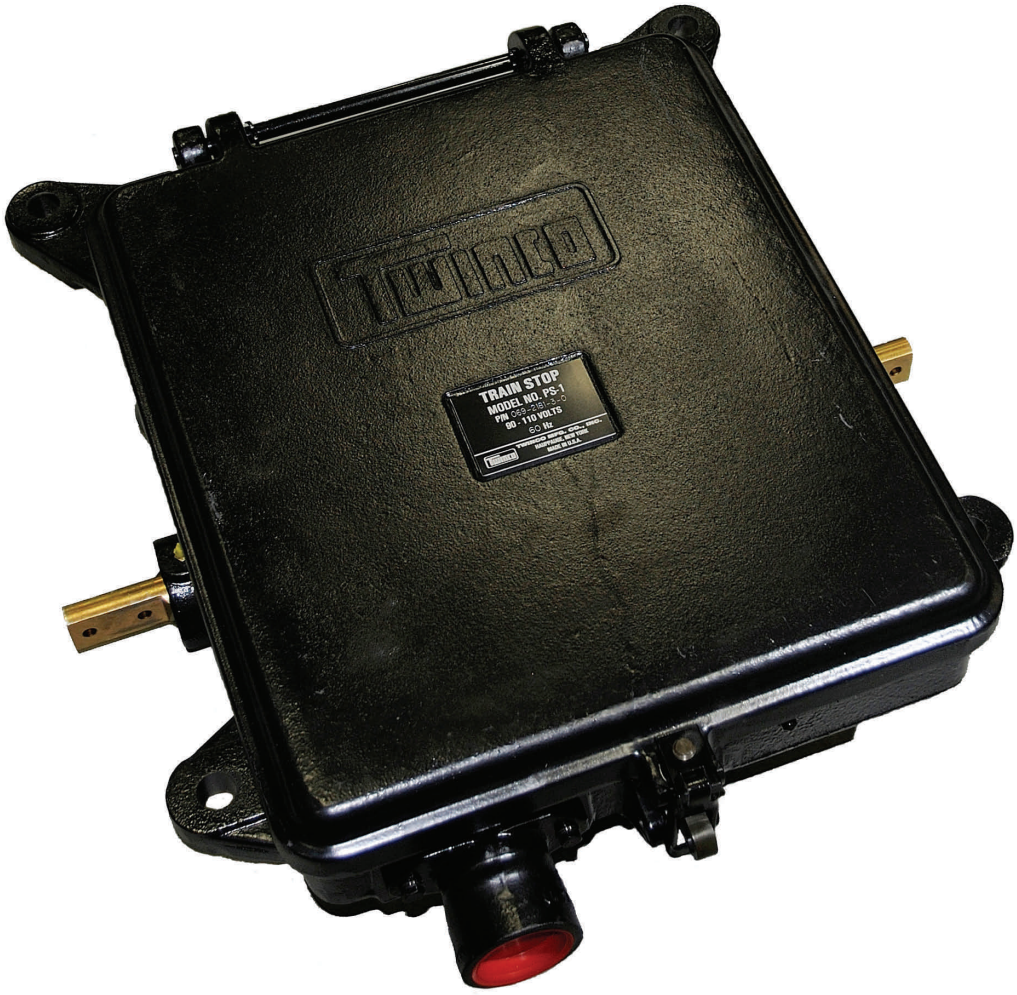
Automatic Train Stop

TWINCO MFG. CO., INC.
Ph 800-854-2338 Fx 631-231-0314 http://www.twincomfg.com

PS-1 AUTOMATIC TRAIN STOP

P/N 069-2181-3-0

- **Ensure Compliance of Restrictive Signals**
- **Variety of Layouts Available**
- **Approved by :**
  - **New York City Transit**
  - **Chicago Transit Authority**
  - **Massachusetts Bay Transportation Authority**



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TWINCO PS-1 Automatic Train Stop

The Train Stop is used in conjunction with wayside signals in rapid transit systems to ensure observance of, and compliance with, restrictive indications. Failure to comply with the rules regarding such indications results in activation of the train's braking system. Operation is completely automatic, entirely independent of any action on the part of the motorman.

The system functions by mechanical contact between a wayside trip arm and a trip cock lever on the underside of the train. The wayside trip arm is lowered when the signal is clear and is raised when the signal is at “stop” or “danger”. In the raised position, the trip arm will engage the trip cock lever of any train attempting to pass the signal, thus bringing it to a stop.

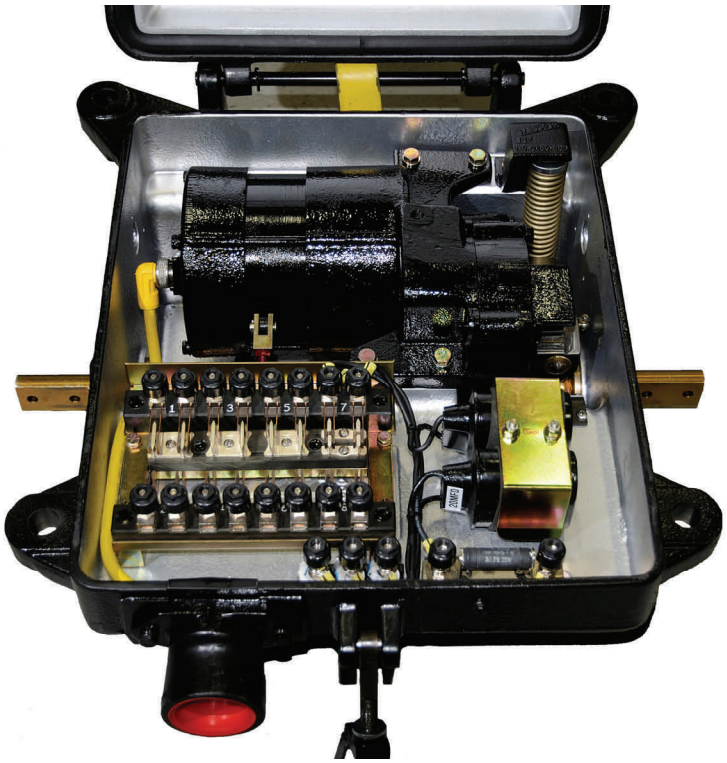

Figure 1 Train Stop Mechanism

The Train Stop mechanism, housed in a cast-iron case, consists of a combined motor and gear housing, circuit controller with driving arm, compression return spring and sector gear. The general arrangement of these components is shown above. The machine by itself measures 9-7/8" high by 21-13/16" wide by 26-3/8" long and weighs approximately 250 pounds

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Shown in Figure 2 below is a plan view of the Train Stop installed in a typical layout. It is mounted on two ties and includes the mechanism case. The trip arm assembly is mounted on the rocker shaft. One end of the rocker shaft is attached to the output shaft of the Train Stop mechanism. The other end is supported by an adjustable bearing strap. A trip hook assembly is mounted on top of the bearing strap and is used to hook or hold down the trip arm when required.

Figure 3 on the following page shows a side view of the trip arm in the tripping position. The trip arm is driven under electric power to the clear position, ½ inch below the top of the running rail. It is returned to the tripping position, 2-1/2 inches minimum and 2-3/4 inches maximum, above the top of the rail by a compression return spring. When electric power is interrupted, the trip arm automatically assumes the tripping position, giving fail-safe operation.

The Train Stop is in the tripping (trip arm up) position, as shown in figure 3, when the unit is de-energized. This position, when the trip arm is up is also referred to as the stop or danger position. The trip arm is driven to a clear position when energized. The clear position is a ½" below the top of the running rail to the top of the trip arm head. The unit is energized when the wayside signaling system provides 110 VAC at 60 Hz. When de-energized, the trip arm is returned to the stop position above the running rail, by the compression return spring. The Train Stop mechanism will cause the trip arm to automatically assume the stop position if the power is interrupted.

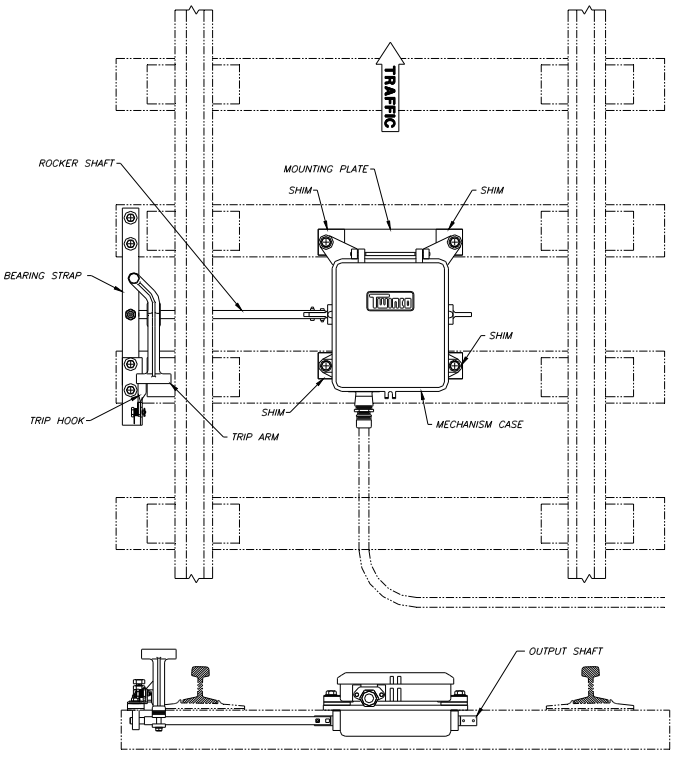

Figure 2 Typical Layout of Train Stop

Movement of the unit's output shaft is caused by the operation of an induction type motor and gear housing, acting on a sector gear attached to the output shaft. This counter-clockwise rotation of the sector gear also causes compression of the return spring. The output from the special 1/8 Hp single phase motor is changed through a series of three gears arranged in a cast iron gear box. A ratchet feature is incorporated in this gear arrangement, to protect the drive train when the rotation of the motor and gear housing is reversed by the main units' compression spring.

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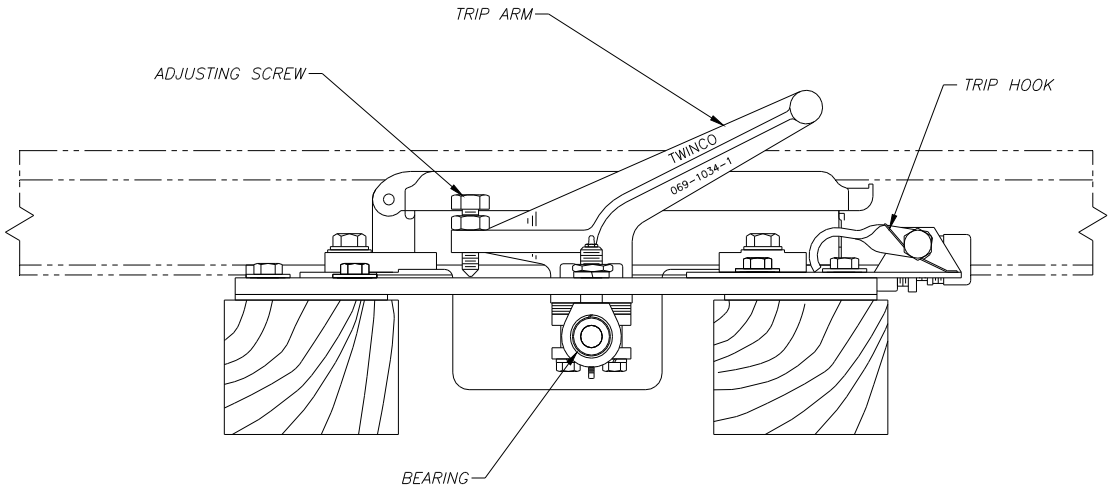

Figure 3 Trip Arm in Tripping Position

In order for the Train Stop to remain in the clear position, enough power must be continually supplied to the motor, to overcome the force of the compressed state of the return spring. Maximum drive down current at 110 VAC 60 Hz is 1.5 Amp. Maximum holding current is 0.75 Amp. The Train Stop will leave the clear position when the voltage is reduced to 60 volts or less.

Twinco also manufactures a Train Stop mechanism which operates on 110 VAC at 25 Hz (Twinco P/N 069-2181-4-0). Operation is the same as the 60 Hz unit except that a special 25 Hz motor is used with a 25 mfd motor run capacitor and a 40 mfd holding capacitor.

- Part Numbers referenced above are for mechanism only.
- Contact Factory for various layout requirements and drawings.
- Request Twinco Service Manual for more detailed information.

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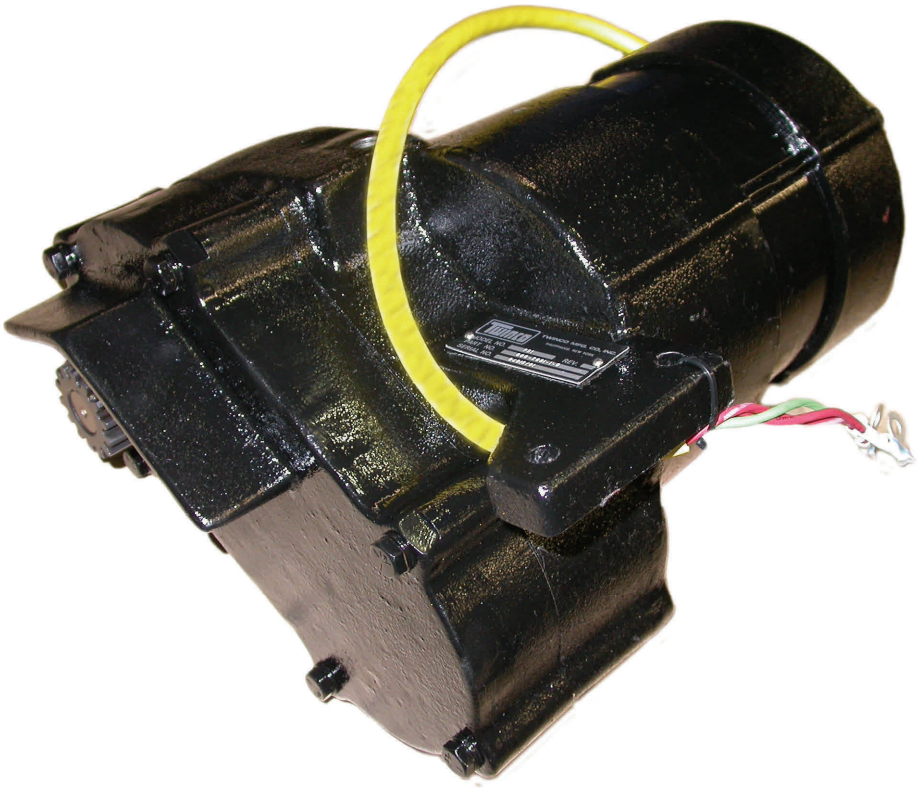
TRAIN STOP MOTOR & GEAR HOUSING

P/N 000-2081-3-0*

- Water Resistant
- Maintenance Free
- Oil Free
- Motor & gear box integrated into one unit
- Compatible with Twinco, GRS, & US&S Train Stops
- Designed, Manufactured, & Assembled by Twinco



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PRODUCT DETAILS

Unit Design Information

- Maximum drive down current at 110 VAC is 1.5 Amps
- Maximum holding current at 110 VAC is 0.75 Amps
- Final Output RPM 16
- Renewable motor cable
- Viton & Buna-N O-rings used for water tight seal
- Unit is sealed, no user serviceable parts inside
- Unit weight 66 lbs.

Motor Design Information

- Completely Encapsulated Stator Winding
- High Temperature winding insulation
- 3000 VAC insulation withstand test to ground for one minute
- 1000 MΩ @ 1000 VDC Insulation Resistance

Gear Section Design Information

- Case Hardened Gears
- Overrunning clutch permanently lubricated
- NSK brand, premium grade, double shielded ball bearings throughout
- Hardened steel output shaft
- Gear Ratio 45:1

*Motor available in both 60 Hz (000-2081-3-0) & 25 Hz (000-2081-4-0) Versions

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SECTION C

Impedance Bonds

TWINCO MFG. CO., INC.
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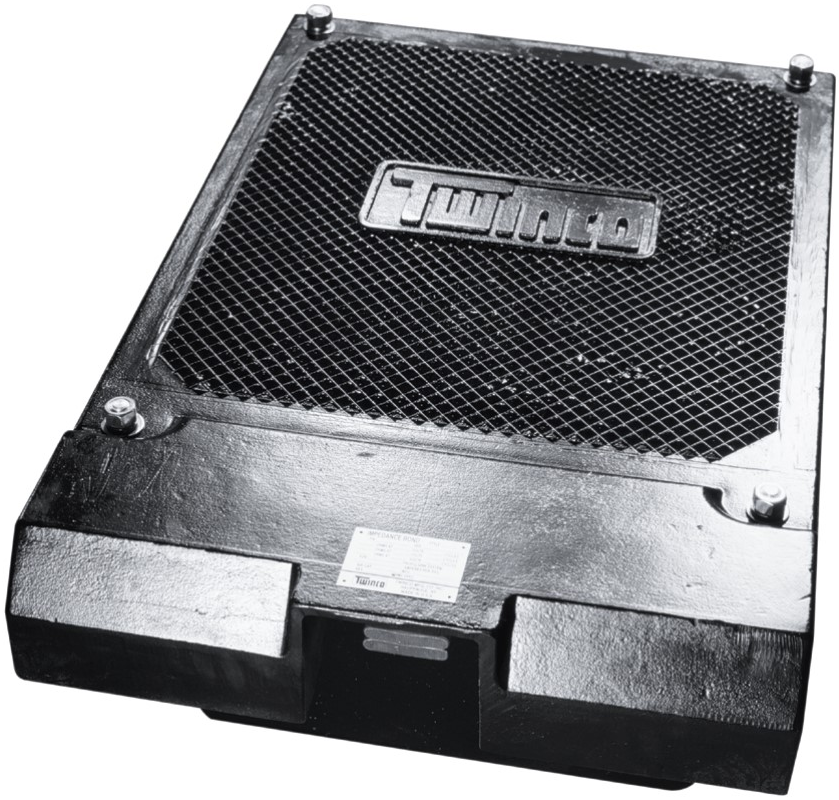
IMPEDANCE BOND

- **Permits Overlay of Signal Currents in DC Territories**
- **High Impedance, Wide Frequency Range**
- **Meets AAR Specifications**
- **Special Models Available**



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ISO 9001

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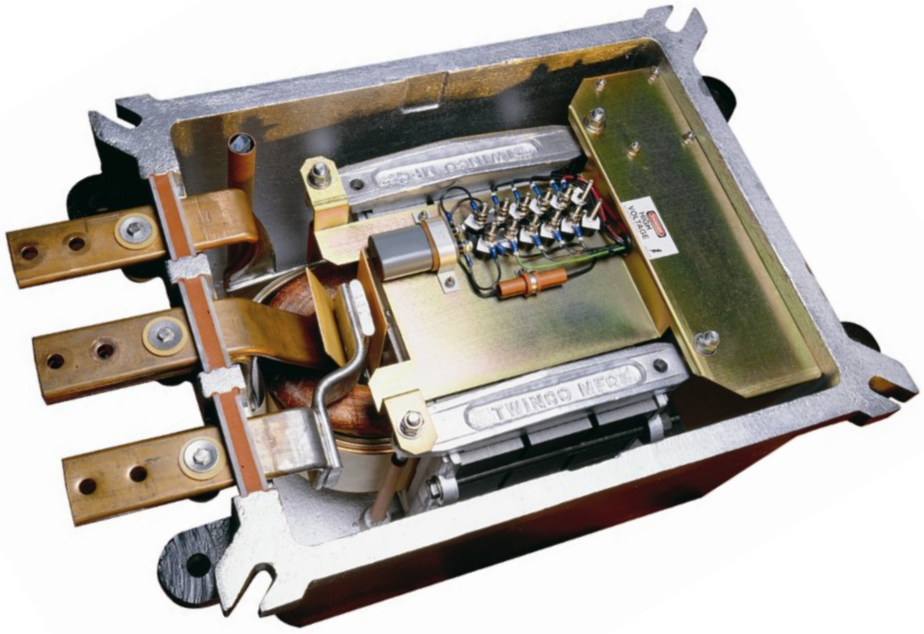
INTRODUCTION

The Twinco Impedance Bond is a rugged, high quality, self-contained product, designed for electrified territories that utilize standard insulated joint isolation of signaling currents. It meets all applicable AAR specifications. Hundreds of Style ST-1 2500 AMP units have been in service with the Long Island Railroad (LIRR) since 1992.

All components are contained in a low profile heavy duty cast iron housing, designed for mounting between the rails and across two adjacent ties. A heavy duty ramped, and diamond patterned slip resistant, removable cover is provided for ease of installation, inspection, and weather resistance. The bonds are filled with oil or petrolatum to provide moisture and corrosion protection and to aid in cooling of the bond. All hardware is either stainless steel or zinc plated for corrosion resistance.

Twinco offers a variety of impedance bonds to suit numerous applications. In addition, customized models can be developed for special situations. For over 50 years Twinco has been *manufacturing* solutions for the needs of many rail/ transit customers. Please contact your nearest Twinco sales representative, or the factory directly, to discuss your requirements.



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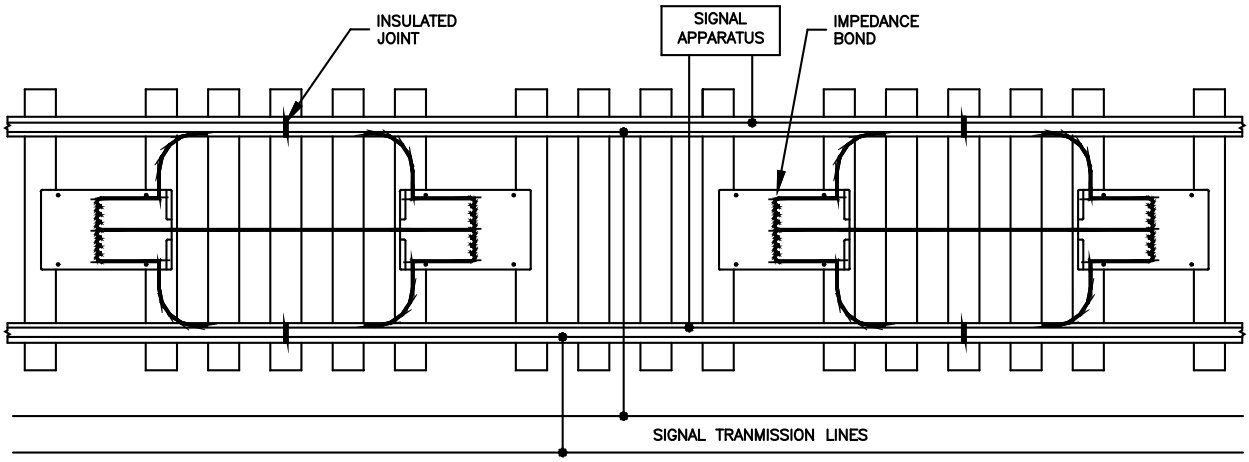

THEORY OF OPERATION

The Style ST & SZ Impedance Bonds are designed to allow return DC propulsion current to flow around insulated rail joints without interfering with the functioning of adjacent track circuits. A tuned circuit can be incorporated to enhance the impedance characteristics of the Bond for AC track circuits that are operated at the resonant frequency of this circuit. A Bond is typically installed on both sides of the insulated joints (see figure 1) and connected together through the units center tap. Signal and propulsion cables are connected to the taps on either side of the Bond.

Signal currents transmitted on the tracks are effectively blocked, rail to rail, by the inductive impedance of the bond coils. Propulsion currents, however, pass through the coils in a manner that offers little impedance to the propulsion current. Signal current passes through the windings in series, producing an unopposed magnetic flux and thus the required impedance.

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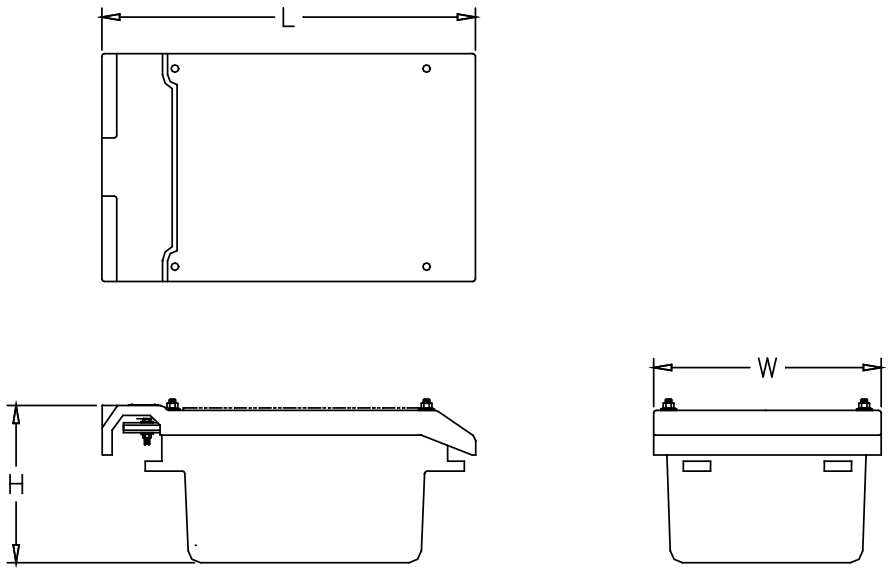
TWINCO IMPEDANCE BONDS																	
TWINCO PART NUMBER	STYLE	AMPS/ RAIL	RES. (OHMS)	IMPEDANCE (Hz)						DIMENSION (In.)			WT. (Lbs.)	COOLANT MEDIUM			COVER SPACER
				25	60	91.67	100	156	250	L	W	H		PETRO	OIL	POTTING	
067-1446-1-0	ST-1	2500	0.0003	*	*	*	2.20	*	*	37	23	16	1000		X		
067-1446-2-0	ST-2	2500	0.0003	0.12	0.24	*	0.42	*	*	37	23	16	960		X		
067-1446-3-0	ST-3	2500	0.0003	0.76	*	*	2.75	*	*	37	23	16	1000		X		
067-1446-4-0	ST-1	2500	0.0003	*	*	*	2.20	*	*	37	23	16	1000	X			X
067-1446-5-0	ST-1	2500	0.0003	*	*	*	2.20	*	*	37	23	16	1000		X		X
000-2713-1-0	ST-4	2500	0.0003	*	*	1.00	*	*	2.50	37	23	16	1000		X		
000-1667-1-0	SZ-1	1500	0.00057	0.21	0.50	*	0.85	*	*	36.5	20.5	10.5	700		X		
000-1667-3-0	SZ-1	1500	0.00057	0.21	0.50	*	0.85	*	*	36.5	20.5	10.5	700	X			
000-1667-5-0	SZ-1 HI	1500	0.00079	0.28	0.72	*	1.25	3.20	*	36.5	20.5	10.5	700		X		
000-1667-7-0	SZ-1 HI	1500	0.00079	0.28	0.72	*	1.25	3.20	*	36.5	20.5	10.5	700	X			
000-1667-2-0	SZ-2	1000	0.0008	0.28	0.60	*	1.00	*	*	36.5	20.5	10.5	675		X		
000-1667-4-0	SZ-2	1000	0.0008	0.28	0.60	*	1.00	*	*	36.5	20.5	10.5	675	X			
000-1667-6-0	SZ-2 HI	1000	0.0013	0.62	1.42	*	2.33	3.57	*	36.5	20.5	10.5	675		X		
000-1667-8-0	SZ-2 HI	1000	0.0013	0.62	1.42	*	2.33	3.57	*	36.5	20.5	10.5	675	X			
240-5410-1-0	MINI	300	0.00038	*	*	*	1.00	*	*	20.75	20.5	7.125	102			X	

* Contact Factory for Impedance Values

Tuned Impedance Values



- Standard part numbers listed above. Contact factory for specific requirements
- Contact factory for mounting & cable connection hardware.
- Request Twinco Service Manual for more detailed information

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SECTION D

TMC-1 Switch Machine

TWINCO MFG. CO., INC.
Ph 800-854-2338 Fx 631-231-0314 http://www.twincomfg.com

TMC-1 WR Switch Machine

- Submersible Design
- Compact Mechanical Switch & Lock Movement
- Low Height Profile
- Wayside or Mid-Track Mounting
- Dual Switch Point Indication Available
- Competitively Priced
- Made in the U.S.A.

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Introduction

The Twinco TMC-1 WR Submersible Switch Machine was conceived, designed and manufactured to address the most demanding requirements of todays rail and transit operations.

Chief among these needs is resiliency to uncontrolled climatic events such as flooding and extreme temperature variations. Controlling intrusion of all phases of water, be it gas, liquid or solid (i.e. moisture, rain or snow) into the machine, is essential to maintain serviceability under these conditions. To accomplish this we have employed proven sealing technologies used in other industries to control all electrical and mechanical inputs and outputs to the machine. In addition to the machine as a whole being rated IP68, all interior electrical connections and components are sealed to a minimum of IP66 to provide safety and redundancy.

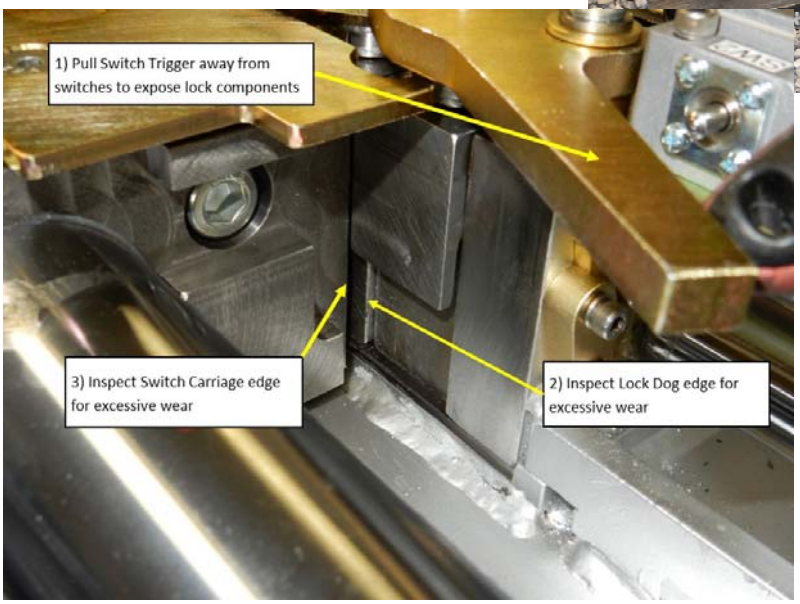
Reliability and serviceability under normal conditions is also critical in todays economic environment. Simplicity and modularity of a design are fundamental hallmarks of any well conceived machine. To this end we have created an electrical-mechanical switch machine with the fewest parts of any machine on the market while employing as many modular components as possible. This compact and low profile height switch machine can be readily adapted to customer specific requirements such as trailable vs. non-trailable or between the gauge or beside the rail.

Most importantly, quality and competitive pricing is built in by design and execution of manufacturing by a company that has been serving our industry for over 50 years. Our skilled team members use premium materials, the latest CAD design software and manufacturing technologies such as:

- fiber-optic laser cutting
- CNC synchronized hydraulic bending
- Robotic welding
- Laser probed CNC machining
- 3D printing

This allows us to custom tailor the TMC-1 to any customer specific needs, and do it better and faster than others.

Submersible Turnout Test Bed



Cycle testing at Twinco allows us to continuously evaluate and improve our product offering.

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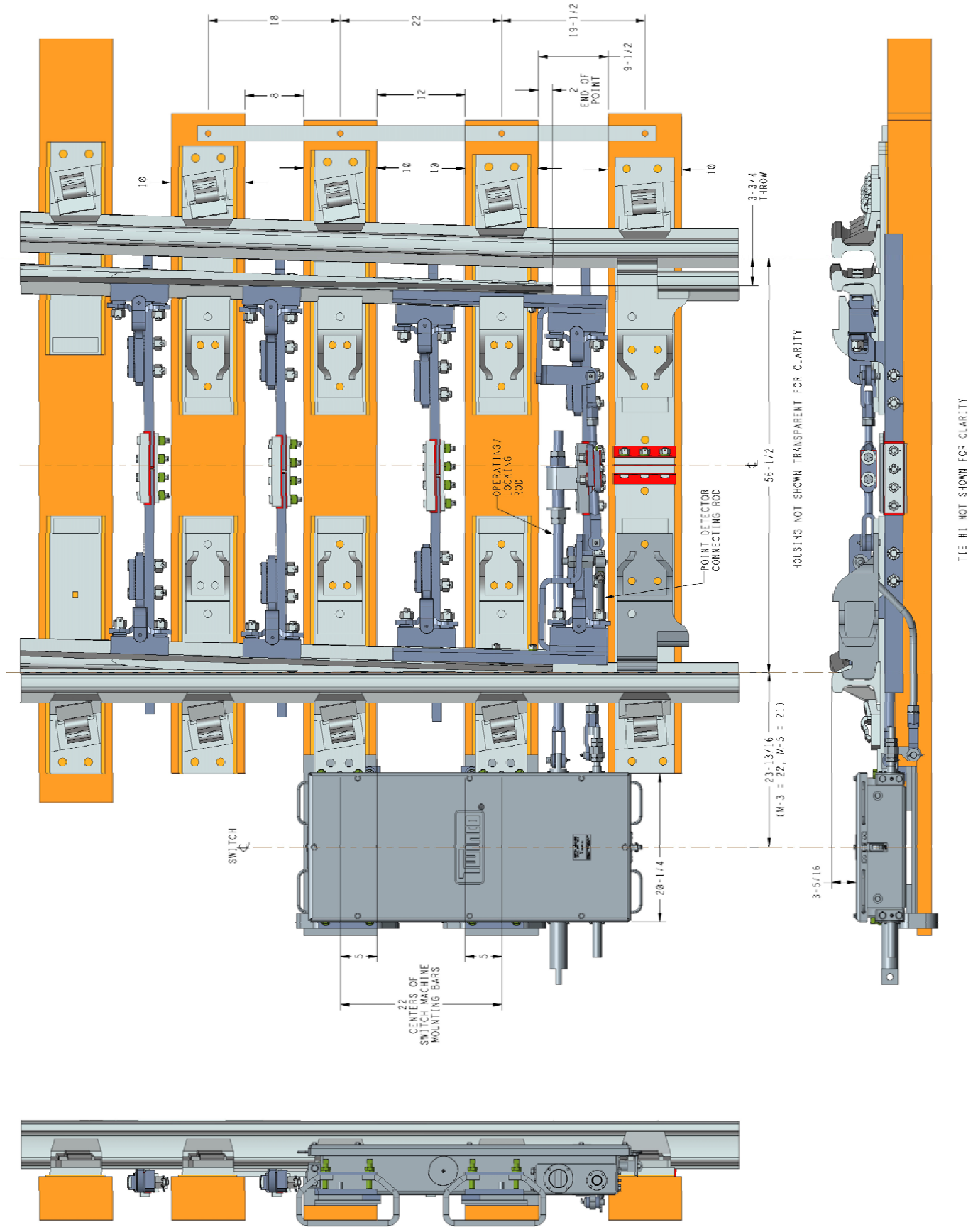
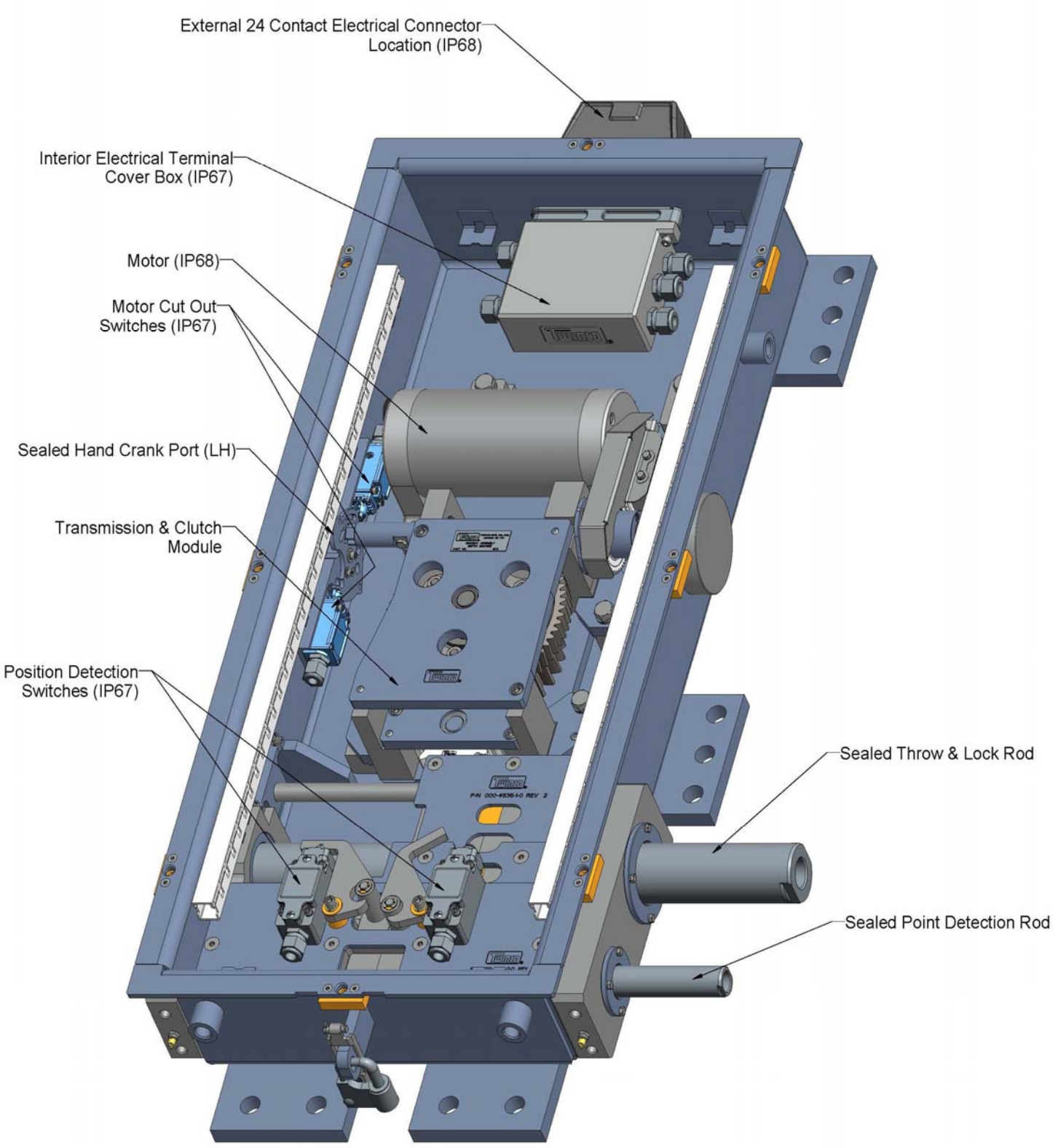


Typical Wayside Layout



Internal Arrangement of Components
(Shown with Cover removed)

Technical Data

The data listed below are the standard data for the TMC-1 WR Switch Machine. Order-specific modifications are included in the documents of the order. Specific (measured) data of the switch machine are on the inspection label of each machine.

Overall system

Designation of the machine:	TMC-1
For switches:	Track gauge 56.5 inches (1432 mm)
Installation position:	Outside or Inside between switch points:
Principal dimensions (L x W x H):	47 x 20.25 x 7.63 inches
Weight:	600 lbs.
Travel:	6-5/16” Max.
Switching time:	< 2 s
Protection class:	IP 68
Noise level (L_{PA})	< 70 dB (A)

Operating conditions

Temperature:	- 40°F* to + 185 °F	* Internal heater required

Electrical connection data:

Nominal motor voltage:	110 VDC or AC
Rated current:	< 8 A
Motor protection class:	IP 68
Control voltage:	As specified by Customer
Cable resistance:	< 30 Ohm per strand
Hi-pot Voltage:	2,500 V, 60 Hz, 1 s

Note:

For reliability and serviceability purposes it is recommended that all machine electrical control configuration components be mounted in an enclosure (IP68) separate from the machine.

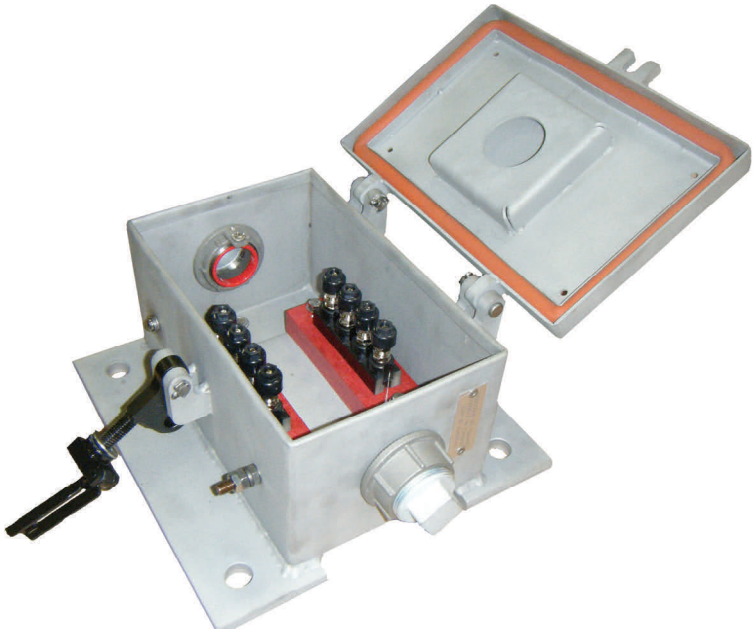
SECTION E

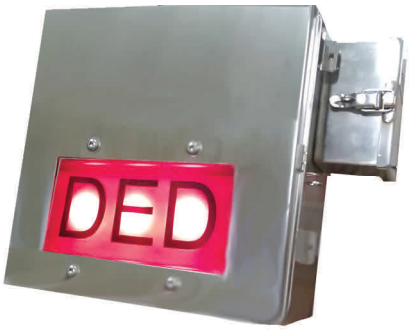
Custom Wayside Equipment

TWINCO MFG. CO., INC.
Ph 800-854-2338 Fx 631-231-0314 http://www.twincomfg.com

CUSTOM ENCLOSURES

- **Custom Built to Customers Specifications**
- **Sizes Range from Small Junction Box Enclosures to Large Cabinets**
- **Stainless, Aluminum, Steel and Other Construction Materials Offered**
- **Engineering Designing Services Available**
- **Highest Level of Quality and Workmanship**
- **Flexible Manufacturing Facility Geared to Custom Production Runs**
- **Offer Wiring, Assembly and Other Operational Services**





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LED WAYSIDE LIGHT

P/N 069-2616-1-0

- **Provides reliable lighting for maintenance, service and emergency personnel.**
- **Features include:**
  - **Solid state design**
  - **Low heat generation**
  - **Low power consumption**
  - **100,000 hour life LED's**
  - **Vandal and impact resistant**
  - **Suitable for wet and hazardous locations**
  - **Rugged aluminum housing**
  - **No re-strike time**
- **115VAC operation.**
- **Consult factory for various configurations.**
- **Replaces Holophane Small Predator Series Light**

Switch Point Light Configuration

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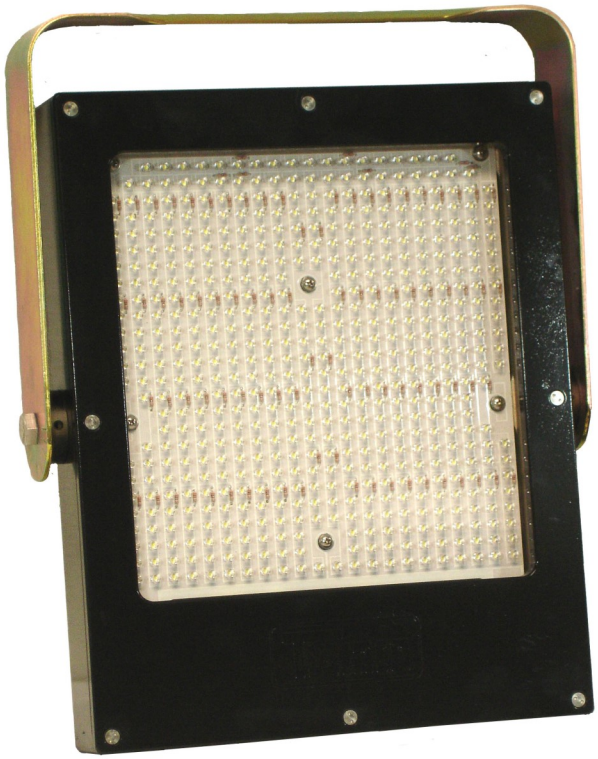
High vibration pole mount-ed configuration



Wall or ceiling mounted configuration

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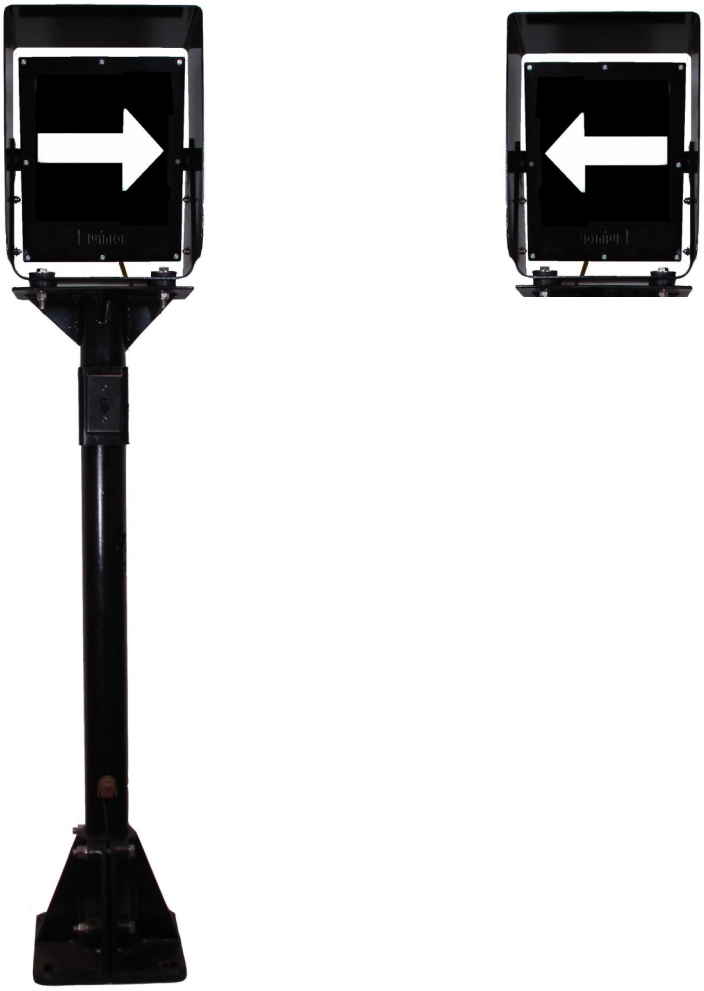
LED DIRECTIONAL ARROW LIGHT



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Ph 800-854-2338 **Fx 631-231-0314** **http://www.twincomfg.com**

METAL HALIDE HID SWITCH POINT LIGHT

P/N 069-2717-1-0

- **Provides emergency lighting for maintenance and service personnel.**
- **Lamp and socket are shock and vibration mounted to reduce the level of vibration transmitted from the right-of-way.**
- **115VAC operation.**
- **5 & 6 foot height configurations available.**
- **NYCT Approved Design**

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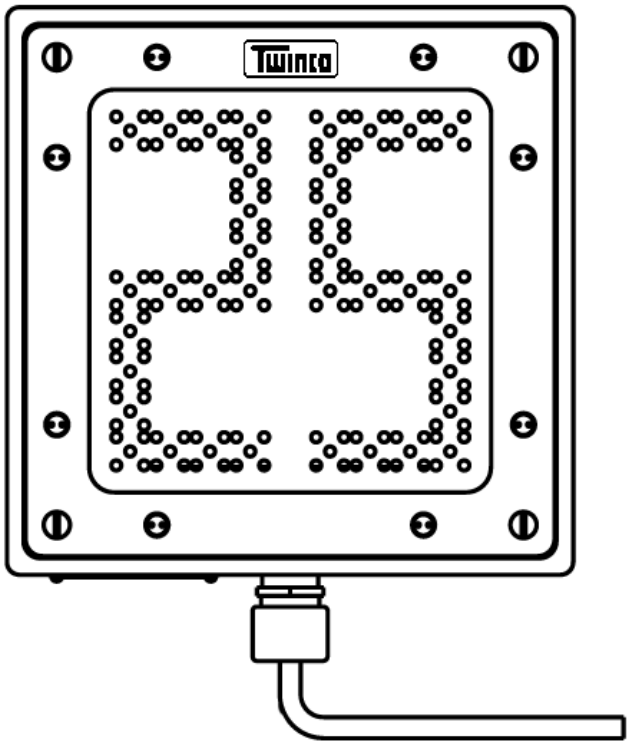
ST LED SIGN

- Utilizes LED Technology for:
  - Long Life
  - Reduced Maintenance Costs.
  - Low Power Consumption.
- Water Resistant Aluminum Housing
- Rear Mounting Bracket for 3” Diameter Pole Provided
- Other Custom Arrangements Available, Consult Factory
- Operating Voltage
  - AC 12-15 V, 60 HZ
  - DC 12-15 V



ISOQAR QUALITY ASSURED ISO 9001 UKAS QUALITY MANAGEMENT 026

Certificate # 2380/00

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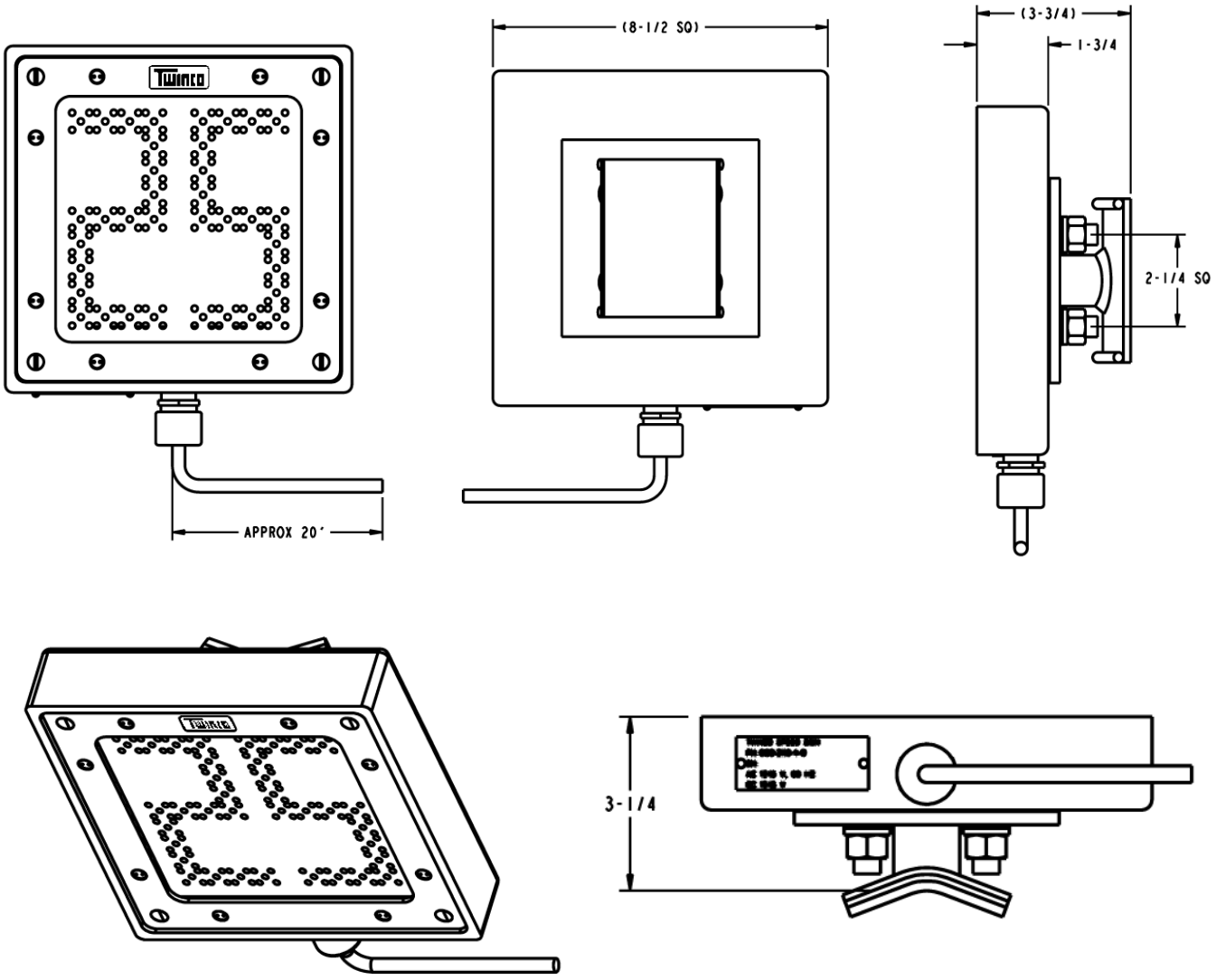

General Specifications

Weight	25 lbs
Power Consumption	5 watts at 12V

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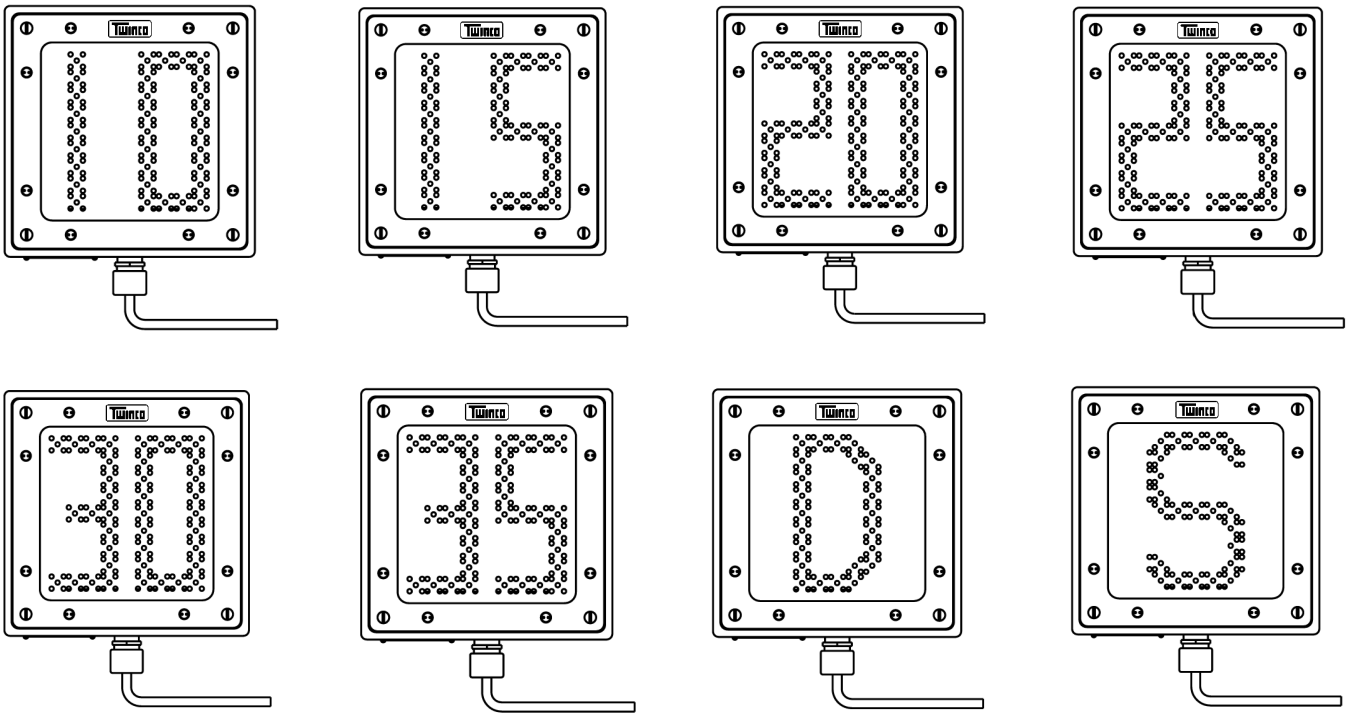

ST LED SIGNS	
TWINCO PART NUMBER	**DESCRIPTION**
069-2110-1-0	ST-10 MPH LED SIGN
069-2110-2-0	ST-15 MPH LED SIGN
069-2110-3-0	ST-20 MPH LED SIGN
069-2110-4-0	ST-25 MPH LED SIGN
069-2110-5-0	ST-30 MPH LED SIGN
069-2110-6-0	LED SIGN “D”
069-2110-7-0	LED SIGN “S”
069-2110-8-0	ST-35 MPH LED SIGN

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Ph 800-854-2338 Fx 631-231-0314 http://www.twincomfg.com

STATION TIME WHITE LED

P/N 069-2650-1-0

- **Utilizes LED Technology for:**

  Long Life, Reduced Maintenance Costs.

  Low Power Consumption.

- **Water Resistant Aluminum Housing Compatible with TWINCO's LED Speed Sign**

- **Operates from 12VAC/DC, 25/60Hz**

- **5-1/4" Diameter Clear Lens meets AAR Standards**

- **Provided with Rear Mounting Bracket for 3" Diameter Pole**

- **Other Custom Arrangements Available, Consult Factory**

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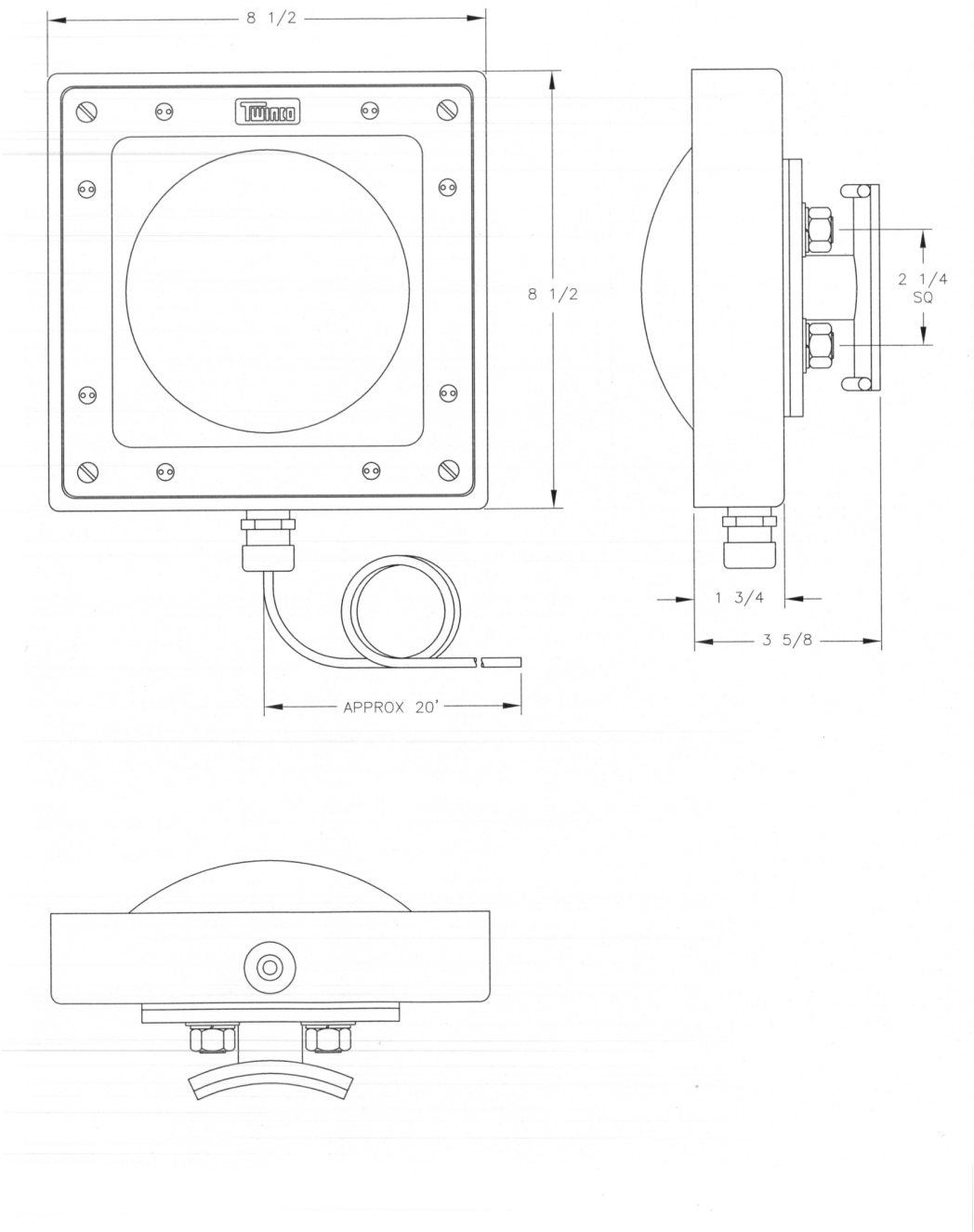

General Specifications

Weight	10 lbs
Power Consumption	5 watts at 12V

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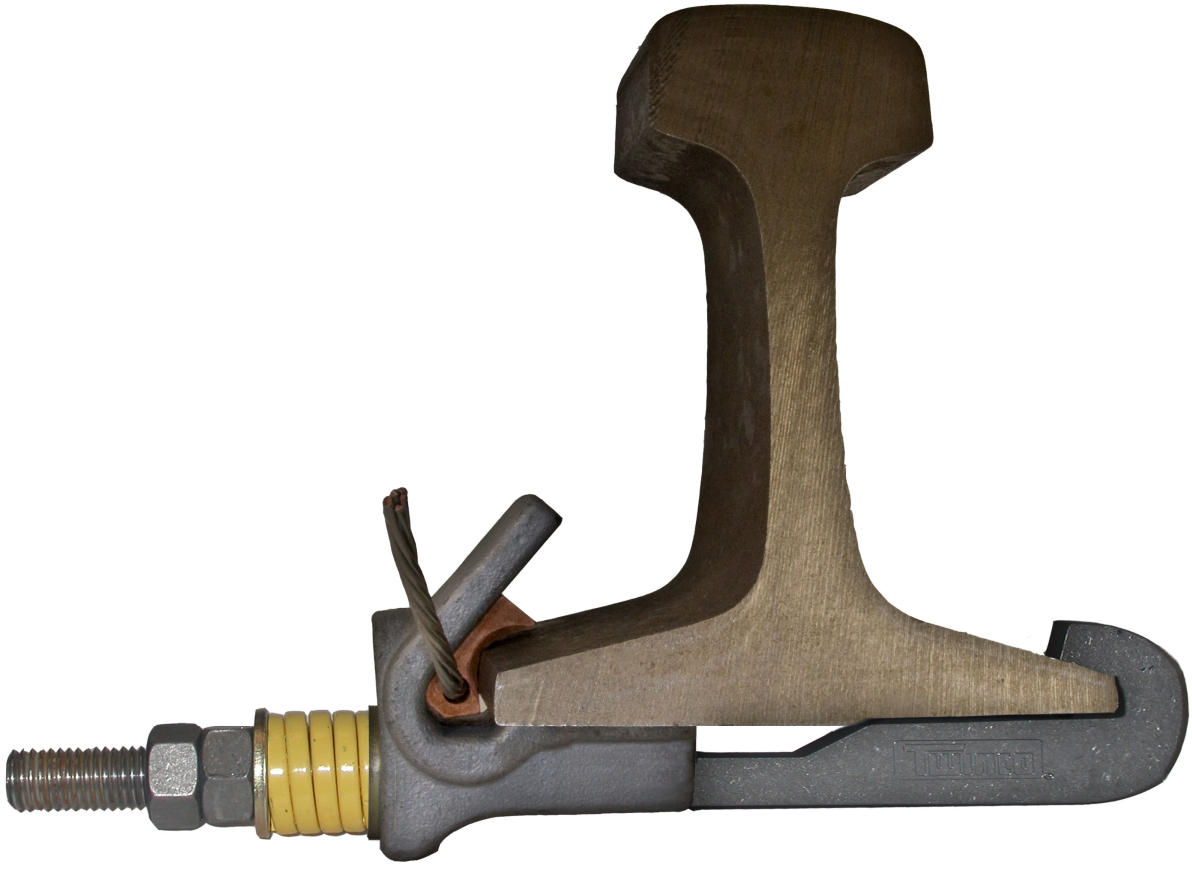
RAIL SIGNAL BOND

P/N 000-2738-1-0

- **Provides a reliable electrical connection to rail**
- **Quick and easy to install**
- **Fixture is both easily removable and reusable**
- **Accommodates all rail sizes**
- **Preserves rail integrity**



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30 Commerce Dr., Hauppauge, NY 11788-3904 **http://www.twincomfg.com**

GENERAL DESCRIPTION

Twinco Rail Signal Bonds features a spring loaded Clamp Assembly (Figure 1), which is used to mechanically press a Wire Contact Jaw (Figure 2) into the rail flange. This process ensures a constant electrical connection is maintained over a wide range of temperature and vibration conditions. This results in an unchanging electrical resistance of the bond for as long as it is applied.

FIGURE 1

FIGURE 2

ORDERING INFORMATION	
TWINCO PART NUMBER	**DESCRIPTION**
000-2738-1-0	RAIL SIGNAL BOND KIT (INCLUDES ITEMS SHOWN IN FIGURE 1 AND FIGURE 2)
000-2851-1-0	CLAMP ASSEMBLY (INCLUDES ITEMS SHOWN IN FIGURE 1)
000-2742-1-0	WIRE CONTACT JAW (INCLUDES ITEMS SHOWN IN FIGURE 2)

TWINCO MFG. CO., INC.
http://www.twincomfg.com Ph 800-854-2338 Fx 631-231-0314

CONSTANT POTENTIAL RECTIFIERS

- Ideal for track line applications
- High efficiency
- Housing designed to keep dirt & debris away from transformer & diode rectifier bridge
- Intended for use with DC equipment such as relay or other devices requiring a constant voltage source
- NYCT approved

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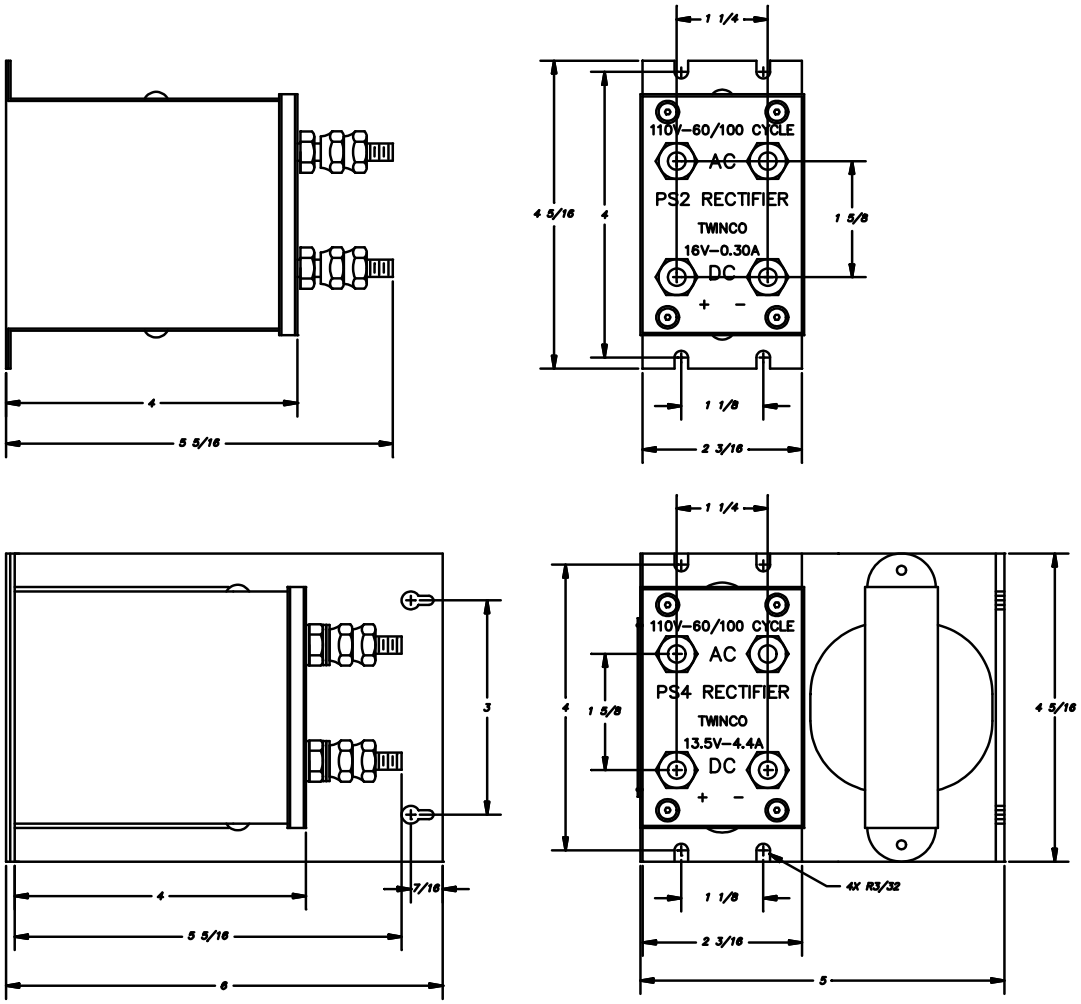
TWINCO Constant Potential Rectifiers					
Twinco Model	AC Input		DC Output		Twinco P/N
	Volts	Hz	Volts	Amps	
PS-2	110	60/100	16.0	0.30	069-0995-1-0
PS-3*	55	25	16.0	0.30	069-0995-2-0
PS-4	110	60/100	13.5	4.40	069-0995-4-0
PS-5	115	60/100	12.0	0.30	069-0995-5-0
PS-8	55	25	12.0	0.50	069-2252-1-0

* Model PS-3 is the same dimensions as the model PS-2 shown below.



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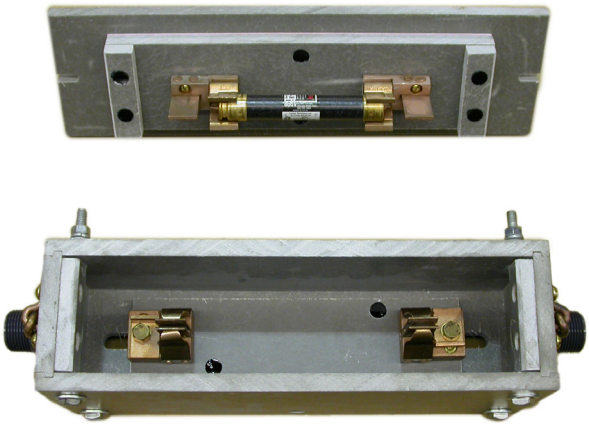
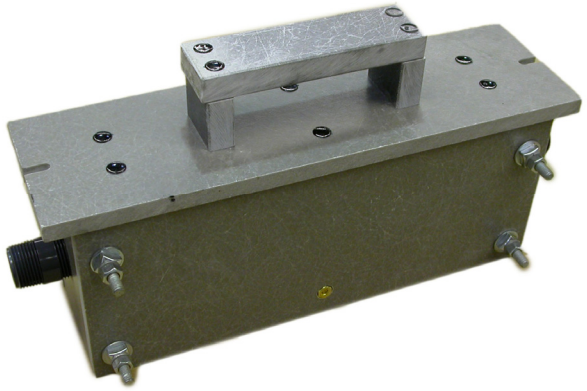
3rd RAIL TAP FUSE BOX

- Manufactured from low smoke Glastic 1130
- Tongue and groove construction
- Fuse mounted in cover allows circuit to open when cover is removed
- Consult factory for various mounting bracket arrangements





TWINCO Fuse Box Styles		
Twinco Part Number	**Box Capacity**	**Box Size (in.)**
069-1170-1-0	30 Amp	4-1/4 x 8-1/4 x 14
069-1170-2-0	60 Amp	4-1/4 x 8-1/4 x 14
069-1106-1-0	100 Amp	4-1/4 x 8-1/4 x 15
069-1106-2-0	200 Amp	4-1/4 x 8-1/4 x 15

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30 Commerce Dr., Hauppauge, NY 11788-3904 **http://www.twincomfg.com**

TYPE S1 TRANSFORMER

P/N 067-2036-1-0

Design Features:

- **Small and compact**
- **Mount in housing of most signal units and switch machines**
- **Can be wall or rack mounted**

Applications include:

- **lighting signal lamps**
- **panel lamps**
- **feeding clearance track circuits.**

Connections are made to No. 10-32 terminal screws which are securely fastened to an interface board.

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Certificate # 2380/00

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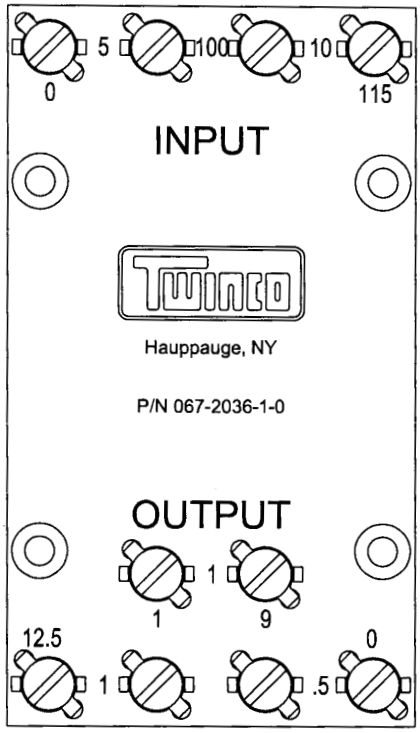
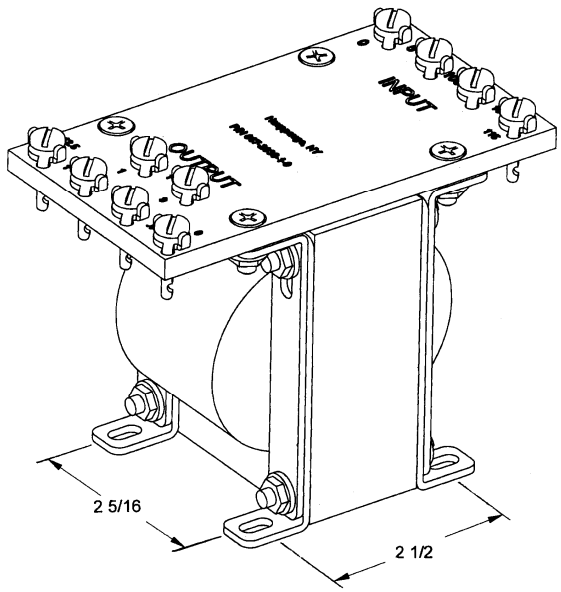
TYPE S1 TRANSFORMER

Primary Volts	Secondary Volts	Secondary Amperes	Total Volts/ Amps	Part Number
115 (5-100-10)	12.5 (0.5-9-1-1-1)	4.8	60	067-2036-1-0



Length: 4.875”
Height: 3.75”
Width: 2.75”



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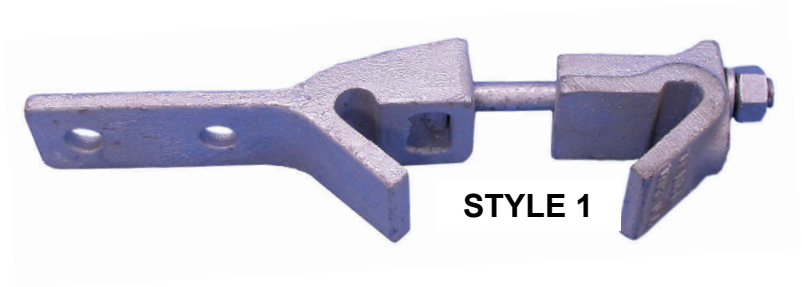
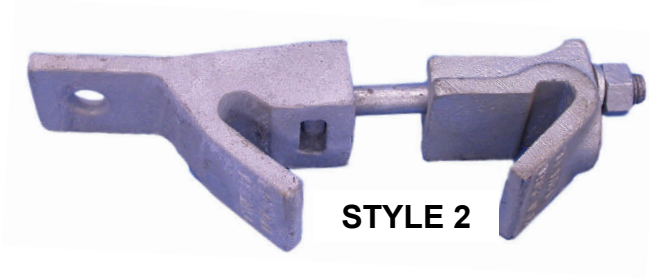
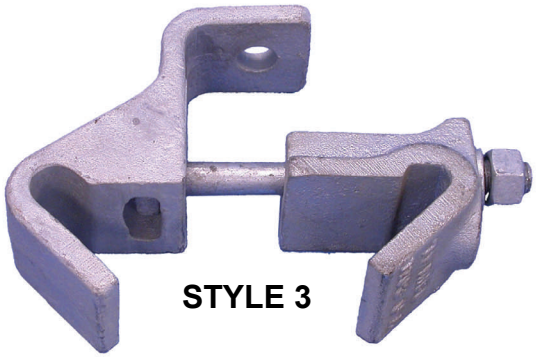
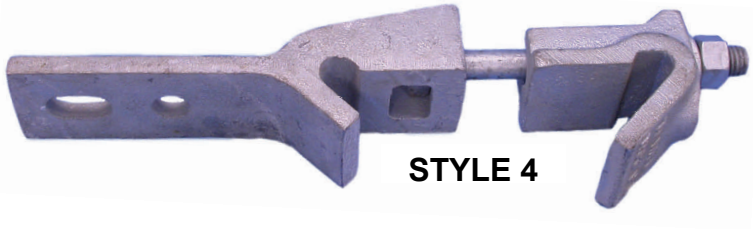
COLUMN CLAMPS


STYLE 1


STYLE 2


STYLE 3


STYLE 4

- Accommodates I-Beam Flange Thickness up to 1”
- NYCT approved
- Cast Steel per ASTM A27 Grade 60-30
- Hot Dipped Galvanized
- 5/8” Galvanized Bolt, Nut, and Lock washer included
- Custom Configurations Available

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Certificate # 2380/00

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http://www.twincomfg.com

COLUMN CLAMPS			
Twinco P/N	**Style**	**Column Flange Width**	**Bolt Length**
069-1103-1-0	1	5”	5-1/2”
069-1103-2-0	1	5-1/2”	6”
069-1103-3-0	1	6”	6-1/2”
069-1103-4-0	1	7”	7-1/2”
069-1103-5-0	1	8-1/2”	9”
069-1103-6-0	1	10-1/2”	11”
069-1103-7-0	1	12-1/2”	13”
069-1104-1-0	2	5”	5-1/2”
069-1104-2-0	2	5-1/2”	6”
069-1104-3-0	2	6”	6-1/2”
069-1104-4-0	2	7”	7-1/2”
069-1104-5-0	2	8-1/2”	9”
069-1104-6-0	2	10-1/2”	11”
069-1104-7-0	2	12-1/2”	13”
069-1105-1-0	3	5”	5-1/2”
069-1105-2-0	3	5-1/2”	6”
069-1105-3-0	3	6”	6-1/2”
069-1105-4-0	3	7”	7-1/2”
069-1105-5-0	3	8-1/2”	9”
069-1105-6-0	3	10-1/2”	11”
069-1105-7-0	3	12-1/2”	13”
069-2119-1-0	4	5”	5-1/2”
069-2119-2-0	4	5-1/2”	6”
069-2119-3-0	4	6”	6-1/2”
069-2119-4-0	4	7”	7-1/2”
069-2119-5-0	4	8-1/2”	9”
069-2119-6-0	4	10-1/2”	11”
069-2119-7-0	4	12-1/2”	13”

* Consult Factory for Custom Configurations or Dimensional Details

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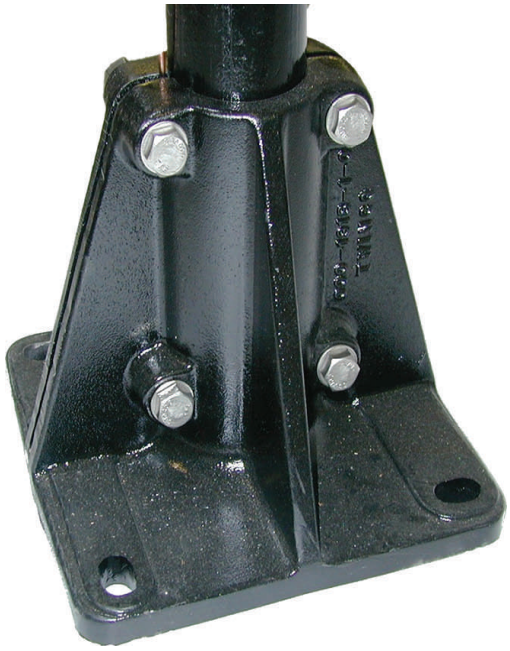
SIGNAL BASE ASSEMBLY

P/N 000-1944-1-0

- **3” Split Base accepts 3” Schedule 40 Pipe**
- **Gray Cast Iron**
- **13/16” Diameter x 1-5/16” Long slotted mounting holes for easy installation**
- **Mounting holes 9-1/2” Center to Center**
- **Offered with either Stainless Steel or Galvanized Hardware**
- **Overall Height 10”**



Replacement Parts	
Twinco Part Number	**Description**
000-1918-1-0	Base Half
701-0874	5/8-11 Cap Screw SS
701-0875	5/8 Flat Washer SS
	5/8 Lock Washer SS
701-0878	5/8-11 Hex Nut SS

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PORTABLE RAIL CLAMP

P/N 069-1523-2-0 Black Handle
P/N 069-1523-3-0 Red Handle

- NYCT Approved Design
- Handle constructed out of Phenolic and finished with a non-conductive paint
- The clamp body and hook manufactured from brass
- Heavy duty internal spring securely grips the 3rd rail web
- Provided with a 30 Amp fuse in the handle
- Consult factory for additional hook configurations

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Certificate # 2380/00

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RAIL CONNECTION RISER BOX

P/N 069-1643-1-0

- Three slip fit hubs for 1” conduit
- Cover drilled to accept ¾” Crouse-Hinds Type CGE cable fitting
- Box cast from ASTM A48 Class 30 Gray Iron
- Cover made from NYCT approved Glastic 1130 glass reinforced polyester plastic
- All machined plastic surfaces sealed with resin for weather resistance
- Hardware is all bronze

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Certificate # 2380/00

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600 VDC PORTABLE LAMP BANK

P/N 069-2678-1-0

- **Two 25 ft. long 14 Awg 1/C EPR insulated yellow hypalon® jacketed 1000 Volt Connection Cables**
- **Combination Cushioned Cable Holder & Lamp Bank Hanger**
- **Five Medium Base 600 Volt DC Lamp Sockets connected in a splice free series arrangement, mounted on a fire retardant painted wood base**
- **One piece Neoprene Handle Grip provides safe grip & protects Connection Cables**
- **NYCT Approved Design**

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Certificate # 2380/00

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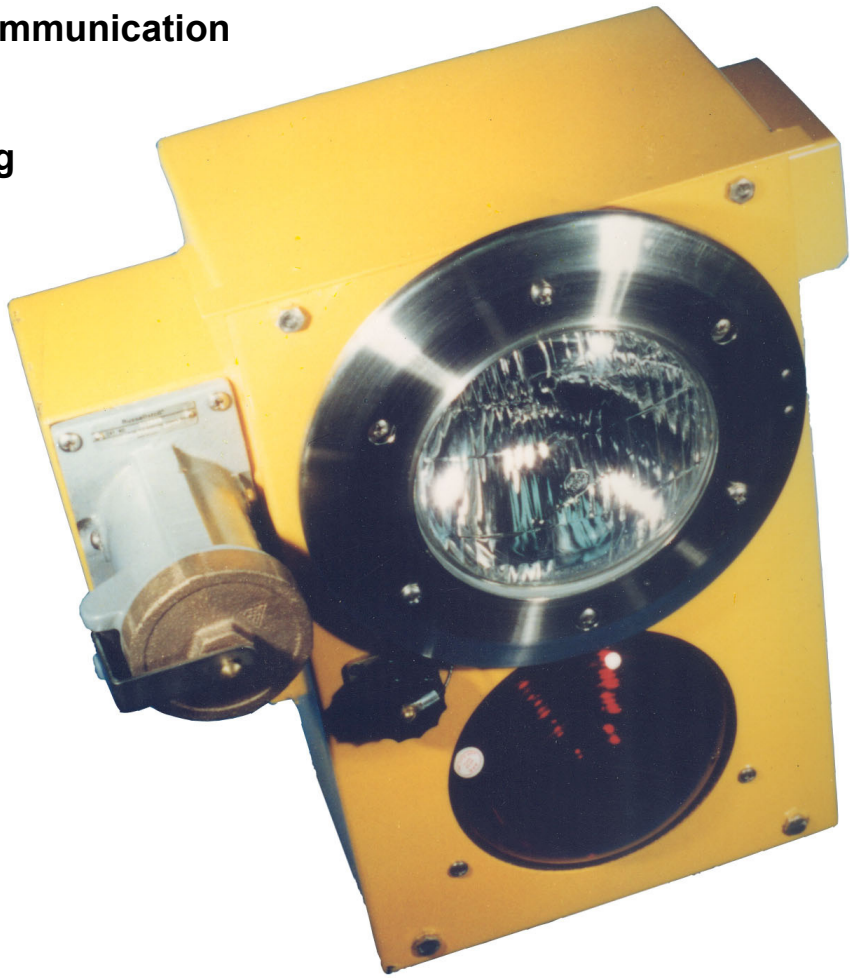
Ph 800-854-2338 **Fx 631-231-0314**
http://www.twincomfg.com

HEAD LIGHT/TAIL LIGHT ASSEMBLY

P/N 069-0994-1-0 Left Hand
P/N 069-0994-2-0 Right Hand

- NYCT Approved Design
- Rugged steel housing primed with zinc chromate primer inside and out.
- Finish paint per customer specification.
- Furnished with 4-point communication port.
- Selector switch and wiring harness included.
- Various configurations including LED tail light available.



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http://www.twincomfg.com

SECTION F

Signal Wiring Projects

TWINCO MFG. CO., INC.
Ph 800-854-2338 Fx 631-231-0314 http://www.twincomfg.com

Twinco delivers an Instrument Hut, Battery Case, & Switch Heater Case to the LIRR for its Sayville Y Interlocking. Utilized in this project were twenty seven JBT-97 Vital Relays, also manufactured by Twinco in our Hauppauge plant.

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Certificate # 2380/00

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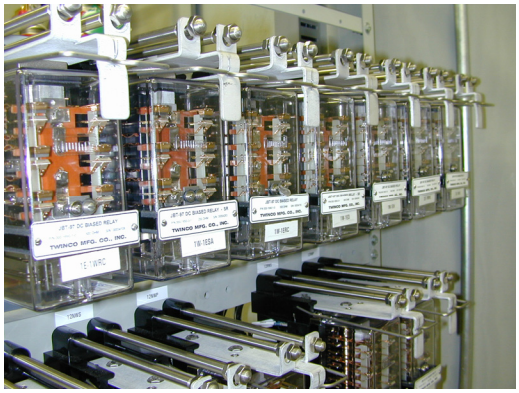
Modern Assembly Facilities



Rack View of Twinco Produced JBT-97 Vital Relays

Field Installation & Service

WHO IS TWINCO

We have been a *"well kept secret"* in the signal business. In fact, you've probably been using parts manufactured by us for decades without even knowing it.

From AAR terminal hardware to vital relay components we have produced over 1500 different parts during the past 40 years.

OUR STRENGTHS

What sets us apart from the larger traditional Signal & Communication companies is our manufacturing abilities. We are routinely engaged in the following manufacturing activities:

- Engineering & Design
- Assembly & Wiring
- Product Manufacturing

OUR PHILOSOPHIES

Quality

We perform and control as much of the manufacturing process as possible. True quality is designed, manufactured and controlled, not merely inspected into a product.

Productivity

We invest in the best and most modern, facilities and equipment, to enable our employees to be as productive as possible.

Improvement

We believe in the process of continuous improvement. It is the relentless quest for a better way and the challenge of higher and higher quality craftsmanship. It is not perfection but rather the pursuit of it.

TWINCO MFG. CO., INC.

http://www.twincomfg.com Ph 800-854-2338 Fx 631-231-0314

SWITCH HEATER CONTROLS

- Switch heater control cases manufactured to customers specification.
- AC or DC input configurations
- 2, 4, 8, & 12 circuit configurations available.
- Single phase or three phase power operation.
- All wire and cables ends are clearly tagged for easy identification.
- Cases can be furnished in a variety of configurations.
- Available material is aluminum, stainless steel, or Cor-Ten® steel.

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Certificate # 2380/00

TWINCO MFG. CO., INC. Ph 800-854-2338 Fx 631-231-0314
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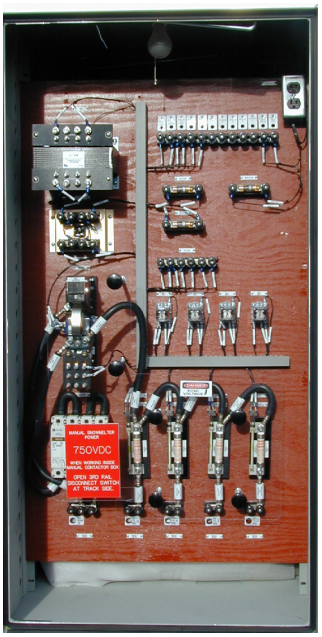
NYCT Stainless Steel
Vibration Isolated Case

LIRR 480VAC,
3 Circuit Controller

NYCT 600VDC,
4 Circuit Controller

MNCRR 480VAC,
6 Circuit Controller



LIRR 750VAC,
4 Circuit Controller

TWINCO MFG. CO., INC.
http://www.twincomfg.com Ph 800-854-2338 Fx 631-231-0314

BH110 TRANSFORMER RECTIFIER

- **Provides Constant Voltage for Switch, Signal, & Communication Circuits**
- **Simple, Rugged, Modular Design**
- **Available in Single or Three Phase AC Input**
- **NYCT Approved & Preferred**

Certificate # 2380/00

TWINCO MFG. CO., INC. Ph 800-854-2338 Fx 631-231-0314
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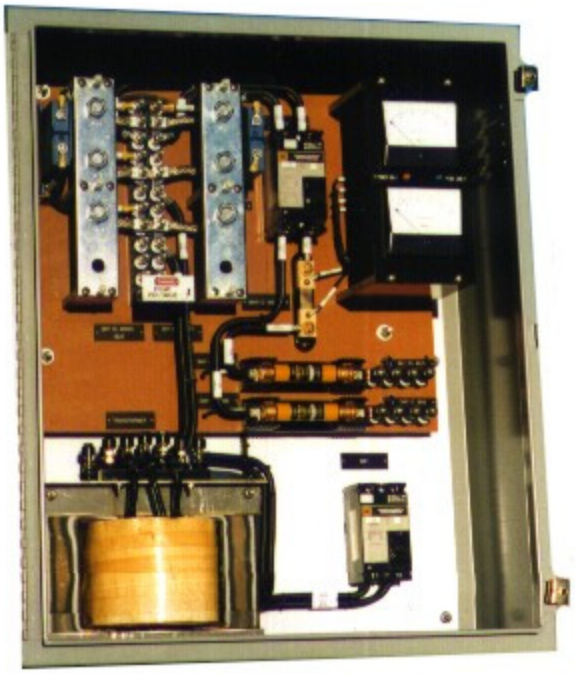
Interior Component Layout
(Cover Removed)



PRODUCT DETAILS

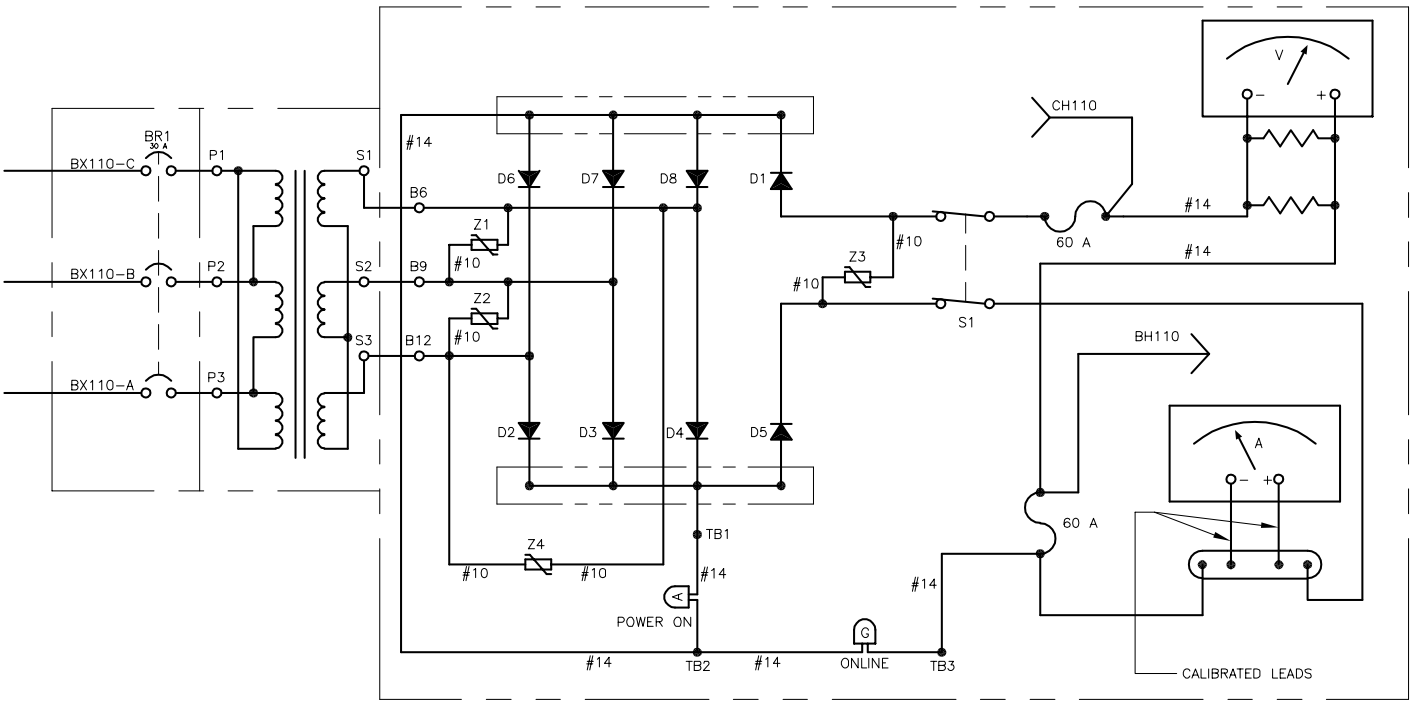
All Wires are #6 Awg except as noted.
Transformer:
- Dry Type, Air Cooled.
- All Taps Terminated with Standard AAR Terminal hardware.
- Single Phase 110/120V Primary, 125/130/135/140V Secondary.
- Three Phase 208/220V Delta Primary, 89/96/105V Secondary Wye.

AC Input Circuit Breaker:
- Single Phase 50A / 240V 2 Pole Molded Case.
- Three Phase 30A / 240V 3 Pole Molded Case.

DC Output Switch 100A / 250VDC 2 Pole Square D Class 601.
Fuses, 60A Class RK1 Dual Element, Time Delay.
- Note replace with a shunt to utilize existing system fuses if required.

LED Indicators for Energized (Amber) and On Line (Green).
DC Voltmeter 0-150 VDC +/-2% full scale accuracy.
DC Ammeter 0-100 Amperes +/- 2% full scale accuracy with 100 Amp Shunt.
Standard AAR Terminal Output connections.
Natural Convection Cooling.

TWINCO MFG. CO., INC.
http://www.twincomfg.com Ph 800-854-2338 Fx 631-231-0314



3 PHASE WIRING SCHEMATIC

TWINCO BH110 Transformer Rectifiers									
TWINCO PART NUMBER	DESCRIPTION								
	STYLE	PHASE	TRANS-FORMER Input (KVA)	DC OUTPUT		DIMENSIONS (In.)			WT. (Lbs.)
				VOLTS	AMPS	D	W	H	
069-1794-1-0	BH110	1	7.5	110	100	16	30	36	300
069-1794-2-0	BH110	3	9.0	110	100	16	30	36	450

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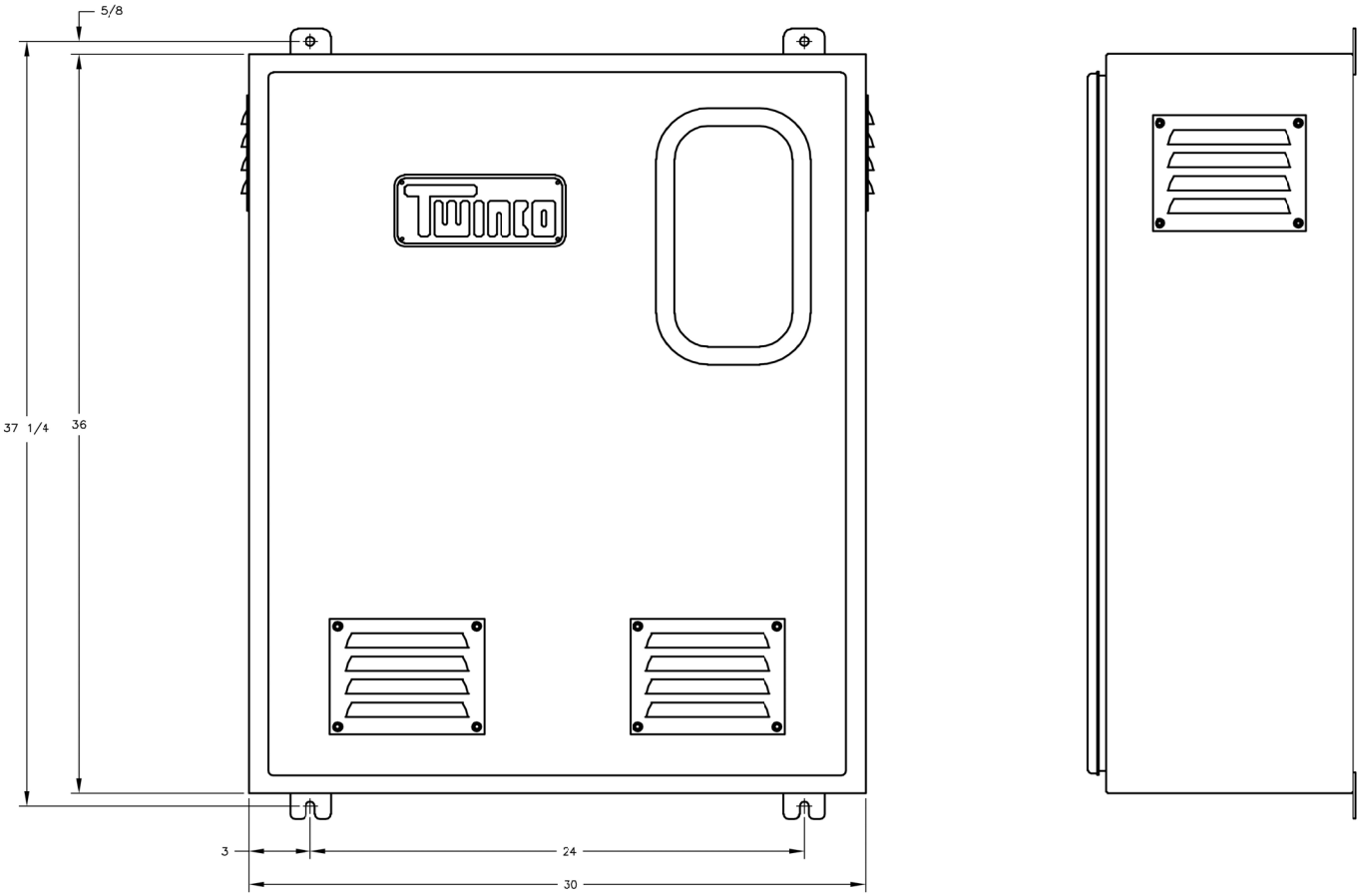

MOUNTING DETAILS

- Standard part number listed above. Contact factory for specific requirements
- Contact factory for mounting & cable connection hardware.
- Request Twinco Service Manual for more detailed information

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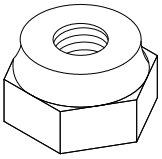
SECTION G

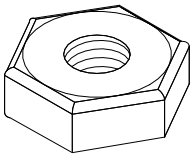
AREMA (AAR) Hardware

TWINCO MFG. CO., INC.
Ph 800-854-2338 Fx 631-231-0314 http://www.twincomfg.com

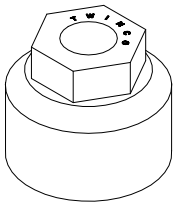
AAR HARDWARE



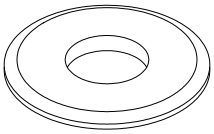
14-24 Binding Nut



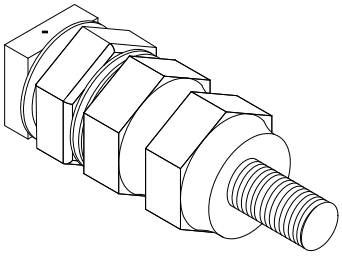
14-24 Clamp Nut



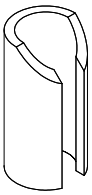
14-24 Insulated Nut



AAR Washer



Terminal Post With Hardware



Insulating Sheild

TWINCO AAR Hardware		
Twinco Part Number	**Description**	**AAR Spec.**
701-0136	Binding Nut, 14-24	14.1.11-6
701-0192	Clamp Nut, 14-24	14.1.11-7
000-1187-0-0	Insulated Nut	N/A
000-0543-0-0	AAR Washer	14.1.11-8
701-0312	Binding Post Bare	14.1.11-9
048-1657-*-0	Insulating Shield	N/A

- Twinco Binding Nuts and Clamp Nuts have a #14-24 UNS-2B thread and are made from nickel plated brass.
- Twinco Insulated Nut consists of a Binding Nut molded in black phenolic with a standard AAR hex head.
- Twinco AAR Washers are made from nickel plated copper and accommodate #14-24 terminal posts.
- Twinco Terminal Posts can be ordered with or without AAR Binding Nuts, Clamp Nuts, and Washers.
- Twinco Terminal Shields are made from black phenolic and come in a variety of sizes.

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Certificate # 2380/00

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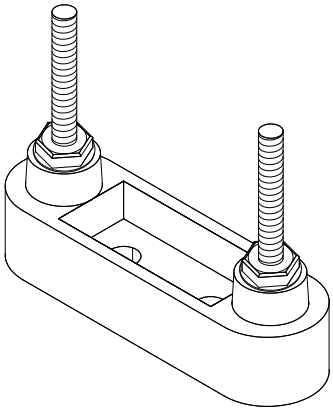
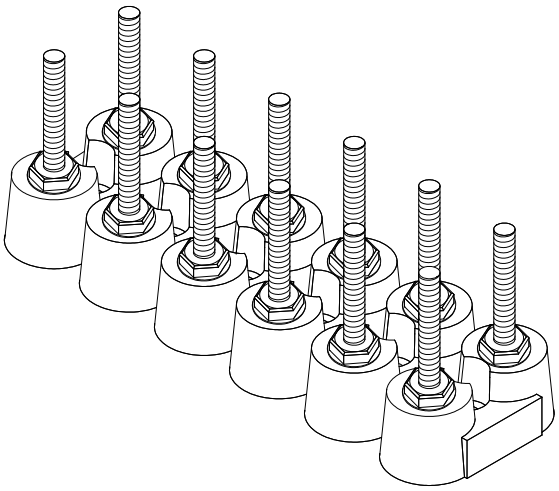
30 Commerce Dr., Hauppauge, NY 11788-3904 **http://www.twincomfg.com**

AAR TERMINAL BLOCKS

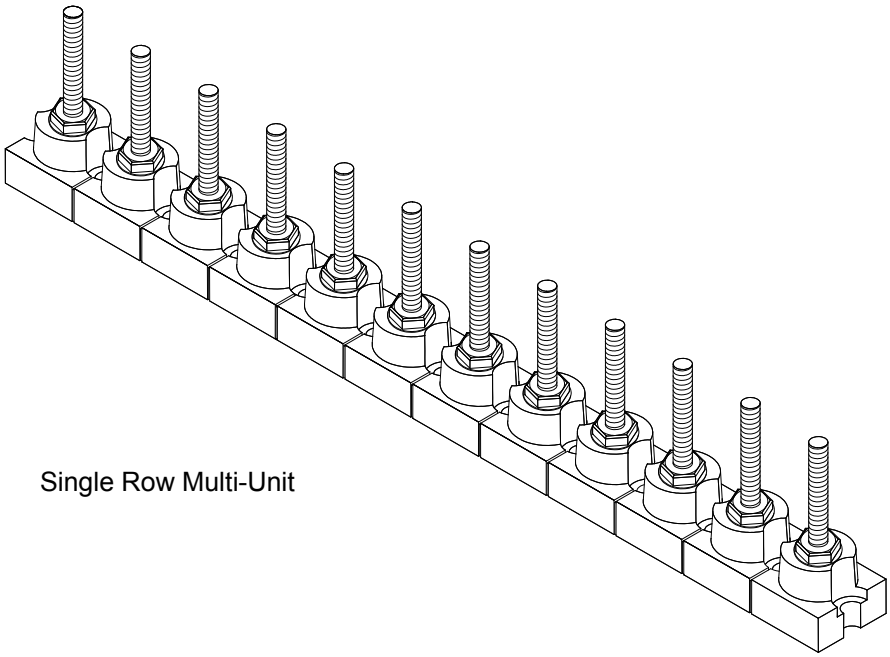
- **Molded from High Quality Bakelite Phenolic**
- **AAR 14.1.12-1 Terminal Posts**
- **Easily Cut**



2-3/8” Two Post Unit



Double Row Multi-Unit



Single Row Multi-Unit

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TWINCO Terminal Blocks		
Twinco Part Number	**Description**	**Terminal Spacing**
014-0633-0-A	2-3/8" Two Post Unit (Bare Block)	2 -3/8
014-0633-0-0	2-3/8" Two Post Unit (as shown)	2 -3/8
000-1828-1-0	2-3/8" Two Post Unit *Complete w/ hardware*	2-3/8
014-0632-0-A	Double Row Multi-Unit (Bare Block)	1
014-0632-0-0	Double Row Multi-Unit (as shown)	1
000-1814-1-0	Double Row Multi-Unit *Complete w/ hardware*	1
000-1697-0-A	Single Row Multi-Unit (Bare Block)	1
000-1697-0-0	Single Row Multi-Unit (as shown)	1
000-1805-1-0	Single Row Multi-Unit, *Complete w/ hardware*	1

- Twinco Terminal Blocks are sold either Bare Block (No Hardware), with 1 AAR Washer and 1 AAR Clamp Nut on each post, or "Complete w/ Hardware" (Refer to Chart for Twinco Part Numbers)
- "*Complete w/ Hardware*" indicates terminal post hardware is supplied. Hardware consists of 3 AAR Washers (14.1.11-8), 2 AAR Binding Nuts (14.1.11-6) and 1 AAR Clamp Nut (14.1.11-7) per post.
- Consult the factory for any special hardware arrangements or assembly requirements.

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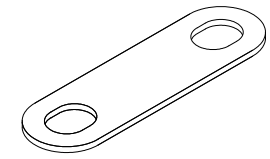
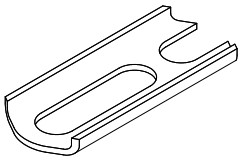
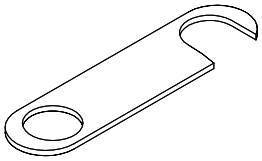
AAR TERMINAL CONNECTORS



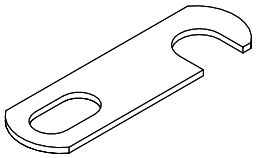
Connector Style 1



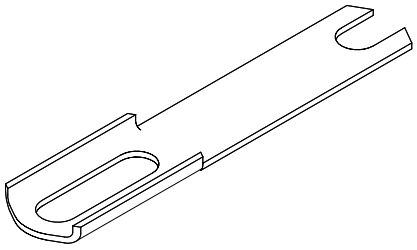
Connector Style 2



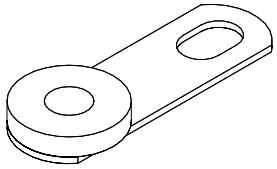
Switch Buss



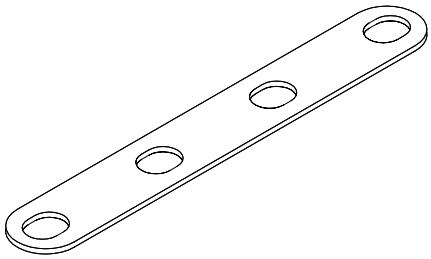
Connector Style 3



Connector Style 4



Insulated Link



Buss Connector

TWINCO Terminal Connectors			
Twinco Part Number	**Description**	**Center to Center Distance (in.)**	**AREMA Spec.**
001-0553-1-0	Connector Style 1	1	14.1.15-3
001-0553-2-0	Connector Style 1	1-1/8	14.1.15-*
001-0553-5-0	Connector Style 1	1-3/8	14.1.15-*
001-0553-3-0	Connector Style 1	2-3/8	14.1.15-4
001-0553-4-0	Connector Style 1	2-19/32	14.1.15-*
000-1812-1-0	Connector Style 2	3/8 Through 1	14.1.15-1
000-1812-2-0	Connector Style 2	1 Through 1-5/8	14.1.15-*
000-1825-1-0	Switch Bus	1- 3/8	14.1.15-7
000-1826-1-0	Connector Style 3	1	14.1.15-8
000-1812-3-0	Connector Style 4	1-3/4 Through 2-3/8	14.1.15-2
000-0571-1-0	Insulated Link	1	14.1.15-9
000-1827-1-0	Buss Connector	1	14.1.15-6
000-1827-0-0	Buss Connector	Less Holes	14.1.15-5

- Twinco Terminal Connectors are made from nickel plated copper and are available in a variety of lengths and center to center mounting sizes.
- Twinco Buss Connectors can be ordered in specified lengths with and without holes.

*Custom Hole Spacing

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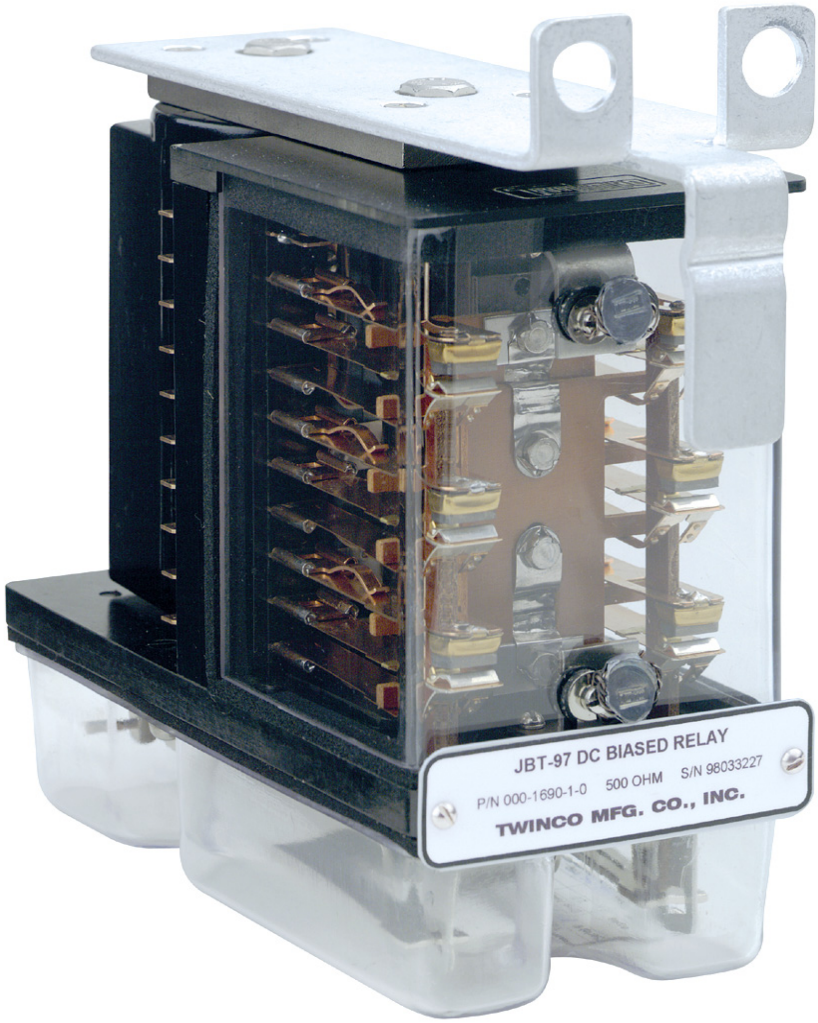
SECTION H

Vital Relays & Contacts

TWINCO MFG. CO., INC.
Ph 800-854-2338 Fx 631-231-0314 http://www.twincomfg.com

JBT-97 VITAL PLUG-IN RELAY

- For Railroad or Transit Applications, Wayside or Car Carried
- Wide Selection of Coil Resistance & Contact Configurations
- Front or Rear Serviceable
- Compatible with the PD-1 Relay



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GENERAL DESCRIPTION

Twinco JBT-97 relays are designed to meet the special needs of vital circuits employed in railroad and transit signal systems. A plug-in design allows for close mounting of relays as well as ease of service. The JBT-97 relays meet all applicable AREMA recommended specifications for vital relays.

Integral to the plug coupler is a unique registration coding that is designed to match each specific type of relay. Each relay has a corresponding arrangement of indexing pins to ensure insertion of the proper relay for each circuit function.

The plug coupler contacts are designed to ensure a low resistance contact with the relay contact points. Wire termination to the plug coupler is accomplished with standard commercially available “Faston” plug connectors. The plug connectors can be either soldered or crimped to the wire and are available with or without a locking feature. Up to two connections may be made to each contact.

The relay is built on a specially designed fiberglass reinforced, thermal treated base plate. The magnetic structure of the relay is mounted directly on this base plate. It is made from high quality, nickel plated, non-aging silicon iron. A heavy armature provides for positive and consistent drop away characteristics. The magnetic air gap between the armature and corepins is protected by a separate clear polycarbonate cover. This ensures the air gap is not disturbed when the relay’s contacts or coil are being replaced, adjusted or measured.

The contact finger and springs are manufactured from grade A spring tempered phosphorus bronze. The fingers are molded into a phenolic block. Each individual contact spring is pushed on and soldered to the contact block fingers. A bronze bearing is employed to connect the heel spring to the contact driver rod, thus ensuring a proper contact wiping action. The heel and back contact tips are swaged from pure fine silver. Low voltage front contacts are made from silver impregnated carbon material. Heavy duty contacts are silver to silver. A second independent clear polycarbonate cover is used to protect the contact arrangement from dust, moisture, or tampering. Please consult the factory for other special contact requirements.

The relay’s operating coil is a one piece totally encapsulated molded part. It can be easily replaced without disturbing the armatures’ magnetic air gap or the calibration

TWINCO MFG. CO., INC.
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ORDERING INFORMATION

JBT-97 Ordinary Acting DC Track Relay								
Twinco P/N	Contacts						Nominal Resistance (Ohms)	Max. PU & Working Current (Amps)
	Low Voltage			Heavy Duty				
	FB	F	B	FB	F	B		
000-1889-1-X*	-	-	-	-	6	-	2	0.1870
000-1889-2-X**	-	6	-	-	-	6	2	0.1870
000-1889-3-X**	6	-	-	-	-	-	2	0.1870

* Neutral Relay
** Biased Neutral Relay

JBT-97 Ordinary Acting Biased Neutral DC Line Relay								
Twinco P/N	Contacts						Nominal Resistance (Ohms)	Max. PU & Working Current (Amps)
	Low Voltage			Heavy Duty				
	FB	F	B	FB	F	B		
000-1890-1-X	6	-	-	-	-	-	125	0.0308
000-1890-2-X	2	4	2	-	-	-	125	0.0280
000-1891-1-X	6	-	-	-	-	-	200	0.0260
000-1690-2-X	2	4	2	-	-	-	500	0.0143
000-1690-1-X	6	-	-	-	-	-	500	0.0143
000-1690-3-X	-	6	-	-	-	6	500	0.0143
000-1690-4-X***	6	-	-	-	-	-	500	0.0143
000-1887-1-X	6	-	-	-	-	-	800	0.0110
000-1887-2-X	2	4	2	-	-	-	800	0.0110
000-1888-1-X****	2	4	2	-	-	-	3500	0.0053
000-1888-2-X****	2	4	2	-	-	-	3500	0.0053
000-1888-3-X	6	-	-	-	-	-	3500	0.0053
000-1888-4-X	-	-	-	6	-	-	3500	0.0053

*** 2K arc suppressor connected externally
**** 12K arc suppressor connected externally

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JBT-97 Slow Pick-Up, Slow Release DC Line Relay								
Twinco P/N	Contacts						Nominal Resistance (Ohms)	Max. PU & Working Current (Amps)
	Low Voltage			Heavy Duty				
	FB	F	B	FB	F	B		
000-1847-1-X*	4	-	-	-	-	-	164	0.0244
000-1847-2-X*	2	-	-	-	-	-	164	0.0244
000-1847-3-X*	4	-	-	-	-	-	200	0.0250

* Biased Neutral Relay

JBT-97 Slow Pick-Up DC Line Relay								
Twinco P/N	Contacts						Nominal Resistance (Ohms)	Max. PU & Working Current (Amps)
	Low Voltage			Heavy Duty				
	FB	F	B	FB	F	B		
000-1848-1-X*	6	-	-	-	-	-	120	0.0750
000-1848-3-X*	4	-	-	-	-	-	200	0.0450
000-1849-1-X**	2	-	-	-	-	-	200	0.0330
000-1849-2-X**	4	-	-	-	-	-	200	0.0468

* Biased Neutral Relay
** Neutral Relay

JBT-97 Slow Release DC Line Relay								
Twinco P/N	Contacts						Nominal Resistance (Ohms)	Max. PU & Working Current (Amps)
	Low Voltage			Heavy Duty				
	FB	F	B	FB	F	B		
000-1850-1-X*	4	-	-	-	-	-	200	0.0350
000-1850-3-X*	6	-	-	-	-	-	200	0.0390
000-1851-1-X**	6	-	-	-	-	-	200	0.0360
000-1851-2-X**	-	-	-	6	-	-	200	0.0360
000-1851-3-X**	4	-	-	-	-	-	200	0.0330
000-1851-4-X**	-	-	-	4	-	-	200	0.0330
000-1851-5-X**	4	-	-	2	-	-	200	0.0330

* Biased Neutral Relay
** Neutral Relay

Use Letter X of part number to designate mounting according to the following:

-1 for Front Service arrangement
-2 for Rear Service arrangement
-3 for Shelf Mounting
-4 for Train Carried

TWINCO MFG. CO., INC.
http://www.twincomfg.com Ph 800-854-2338 Fx 631-231-0314

VR-1 CONTACT BLOCK

- Direct replacement for Westinghouse VR-1 Vital Relay
- 6FB 3F Contact Arrangement
- Front Contact made from silver impregnated carbon alloy for high conductivity and non welding
- BART approved

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Certificate # 2380/00

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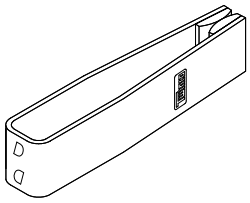
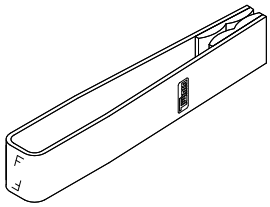
REPLACEMENT CONTACTS

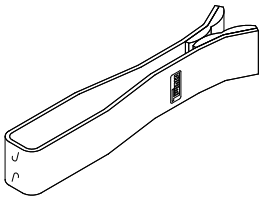
- **Superior Quality**
- **Meets OEM Requirements**
- **NYCT Approved**



Single Tip Contact Finger



Double Tip Contact Finger



Special Tip Contact Finger

TWINCO Replacement Contact Fingers			
Twinco Part Number	**Description**	**Overall Length**	**OEM Part Number**
069-0942-1-N	Single Tip Finger, “G Contact”	1.66	51195-9-GR-7
069-0942-0-L	Single Tip Finger, “D Contact”	1.75	51195-9-GR-4
069-1056-0-0	Single Tip Finger, “E Contact”	2.94	51195-9-GR-6
069-1311-1-0	Single Tip Finger, “C Contact”	1.52	51195-9-GR-3
069-0942-0-M	Double Tip Finger, “H Contact”	2.10	51195-10-GR-3
069-0942-0-N	Double Tip Finger, “F Contact”	2.23	51195-10-GR-2
069-1073-0-0	Double Tip Finger, “B Contact”	2.35	51195-10-GR-1
069-1311-2-0	Double Tip Finger, “K Contact”	1.88	51195-10-GR-5
069-1057-0-0	Special Tip Finger, “J Contact”	2.22	51195-10-GR-4

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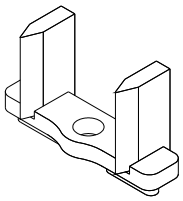
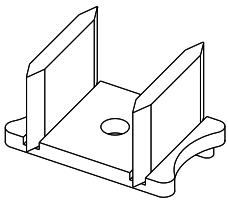
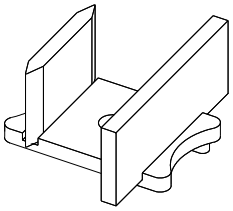


Single Wiper



Double Wiper



Special Wiper

TWINCO Replacement Wiper Contacts		
Twinco Part Number	**Description**	**OEM Part Number**
069-0942-0-C	Single Wiper Contact Block	54027-4-GR-1
069-0942-0-B	Double Wiper Contact Block	54027-5-GR-1
060-1055-0-0	Special Wiper Contact Block	54027-6-GR-1

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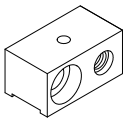
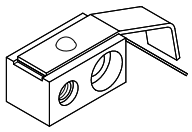
REPLACEMENT CONTACTS

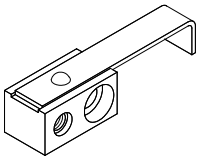
- **Superior Quality**
- **Meets OEM Requirements**
- **NYCT Approved**



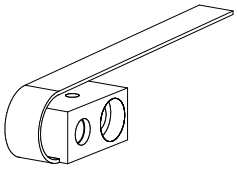
Contact Block



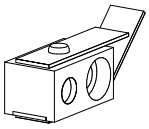
Two Finger Contact Spring



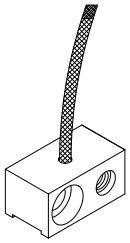
One Finger Contact Spring



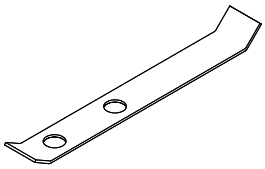
Long Contact Spring



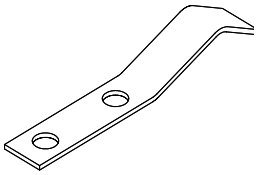
Short Contact Spring



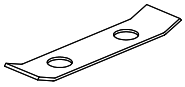
Terminal Connector



Contact Spring



Stop Spring



Contact Spring Washer

ISOQAR QUALITY ASSURED ISO 9001 UKAS QUALITY MANAGEMENT 026

Certificate # 2380/00

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OEM Replacement Contacts		
Twinco Part Number	**Description**	**OEM Part Number**
069-1223-0-A	Contact Block	N/A
245-1788-2-0	Two Finger Contact Spring	N156367
245-1788-1-0	One Finger Contact Spring	N156377
069-1223-1-0	Short Contact Spring	N179246
069-1223-2-0	Long Contact Spring	N236209
245-1788-3-0	Terminal Connector, With Braid	N167538
245-1789-3-0	Contact Spring	M153495
245-1789-2-0	Stop Spring	M157743
245-1789-1-0	Contact Spring Washer	M187712

- Contact Blocks are made from precision machined brass alloy.
- Contact Springs are made from grain oriented grade A phosphorous bronze.
- Blocks & Springs are nickel plated for superior corrosion resistance.
- Assemblies are carefully soldered for electrical contact.
- Consult factory for special requirements.

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SECTION I

Identification Products

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IDENTIFICATION PRODUCTS

- **Single source for all your identification needs**
- **Fast turn around**

ISOQAR QUALITY ASSURED ISO 9001 — UKAS QUALITY MANAGEMENT 026

Certificate # 2380/00

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Twinco Vinyl Identification Products are manufactured from high quality vinyl film. Your text is printed on a 10 mil solid base color of your choice and then permanently protected by lamination of a 5 mil thick clear film. This manufacturing process insures that Twinco Tags will stand the test of time in the harshest environments. For this reason, the New York City Transit, specifies only these type tags be used in their system.

Twinco Vinyl Identification Products offer the following product features:

- Extremely Long Life
- Impervious to Water, Oil, Dirt, Cleaning Solvents, etc.
- Vermin and Fungus Proof
- Outstanding Legibility
- High Abrasion Resistance
- UV Resistant
- Withstands Temperatures to 220°F**
- New York City Transit Approved
- Fast Delivery
- Great Prices

The features above apply to all flat tags, disc tags, split sleeve wire markers and pipe markers.

** For split sleeve wire markers at temperatures above 150°F the split joint should be welded with special cement. Consult factory for additional info.

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FLAT TAGS

Twinco RA Style Flat Tags		
Twinco P/N	**Hole Diameter**	**Hole Location**
51-002-1-A	3/16	Left
51-002-1-B	5/16	Left
51-002-1-C	1/2	Left
51-002-2-A	3/16	Right
51-002-2-B	5/16	Right
51-002-2-C	1/2	Right

Twinco RB Style Flat Tags		
Twinco P/N	**Hole Diameter**	**Hole Location**
51-002-3-A	3/16	Top
51-002-3-B	5/16	Top
51-002-3-C	1/2	Top
51-002-4-A	3/16	Bottom
51-002-4-B	5/16	Bottom
51-002-4-C	1/2	Bottom

* ALL RA & RB are 3/4" x 1 1/2"

DISC TAGS

Twinco DA Style Disc Tags		
Twinco P/N	**Disc Diameter**	**Hole Diameter**
51-003-3-B	3/4	1/8
51-003-3-C	3/4	3/16
51-003-3-D	3/4	1/4
51-003-4-B	1	1/8
51-003-4-C	1	3/16
51-003-4-D	1	1/4
51-003-6-B	1 1/2	1/8
51-003-6-C	1 1/2	3/16
51-003-6-D	1 1/2	1/4
51-003-8-B	2	1/8
51-003-8-C	2	3/16
51-003-8-D	2	1/4
51-003-8-E	2	5/16
51-003-8-F	2	3/8

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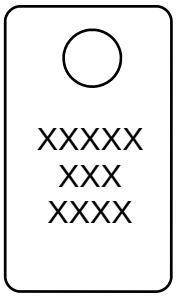
VARIOUS FLAT TAGS



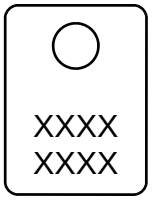
* ALL RC & RD are 7/8" x 1 1/2"

Twinco RC Style Flat Tags

Twinco P/N	Hole Diameter	Hole Location
51-010-1-B	5/16	Left
51-010-2-B	5/16	Right

Twinco RD Style Flat Tags

Twinco P/N	Hole Diameter	Hole Location
51-010-3-B	5/16	Top
51-010-4-B	5/16	Bottom



* ALL RM & RN are 3/4" x 1"

Twinco RM Style Flat Tags

Twinco P/N	Hole Diameter	Hole Location
51-018-1-E	1/4	Left
51-018-2-E	1/4	Right

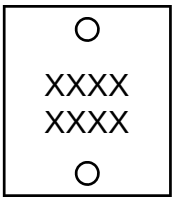
Twinco RN Style Flat Tags

Twinco P/N	Hole Diameter	Hole Location
51-018-3-E	1/4	Top
51-018-4-E	1/4	Bottom

Twinco RJ Style Flat Tags

Twinco P/N	Tag Description
51-014-1-A	1/2" x 2"
51-014-1-B	1/2" x 2" w/ adhesive
51-014-1-C	1/2" x 2" w/ 1/8" holes LR
51-014-1-D	1/2" x 2" w/ 1/8" holes LR & adhesive
51-014-2-A	3/8" x 1-5/8"
51-014-2-B	3/8" x 1-5/8" w/ adhesive
51-014-5-A	5/16" x 1-3/4"
51-014-6-A	1" x 7/8" w/ 1/8" holes TB

** When ordering Style RJ Flat Tags, please indicate what mounting options are required. (I.e. Adhesive backing, mounting holes, both or neither.)



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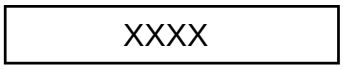

PN: 51-014-2-A

PN: 51-014-1-A

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Along with the product features of our other tags the Twinco Split Sleeve Wire Marker has a “lap type” joint. *This allows for application* of the marker either* ***before*** *or* ***after*** *the termination of the wire*. It also provides for minor diameter changes so the marker will grip tightly around the wire. If required the split sleeve marker may be welded into a solid sleeve simply by applying our special cement** onto the split.

Twinco Split Sleeve Wire Markers are available in diameters ranging from 1/8” through 3” and lengths from 1/2” through 8”. Below are our more common markers.

* See table and pictures located in the upper half of pg. 7.
** For split sleeve wire markers at temperatures above 150°F the split joint should be welded with special cement. Consult factory for additional info.

Twinco SSA Style Wire Markers

Twinco P/N	Length	Diameter
51-001-2-A	1/2	1/8
51-001-2-B	1	
51-001-2-E	1 1/4	
51-001-2-C	1 1/2	
51-001-2-F	1 3/4	
51-001-2-D	2	
51-001-2-G	2 1/2	
51-001-2-H	3	
51-001-532-A	1/2	5/32
51-001-532-B	1	
51-001-532-E	1 1/4	
51-001-532-C	1 1/2	
51-001-532-F	1 3/4	
51-001-532-D	2	
51-001-532-G	2 1/2	
51-001-532-H	3	
51-001-3-A	1/2	3/16
51-001-3-B	1	
51-001-3-E	1 1/4	
51-001-3-C	1 1/2	
51-001-3-F	1 3/4	3/16
51-001-3-D	2	
51-001-3-G	2 1/2	
51-001-3-H	3	
51-001-4-A	1/2	1/4
51-001-4-B	1	
51-001-4-E	1 1/4	
51-001-4-C	1 1/2	
51-001-4-F	1 3/4	
51-001-4-D	2	
51-001-4-G	2 1/2	
51-001-4-H	3	
51-001-5-A	1/2	5/16
51-001-5-B	1	
51-001-5-E	1 1/4	
51-001-5-C	1 1/2	
51-001-5-F	1 3/4	
51-001-5-D	2	
51-001-5-G	2 1/2	
51-001-5-H	3	
51-001-6-B	1	3/8
51-001-6-E	1 1/4	
51-001-6-C	1 1/2	
51-001-6-F	1 3/4	
51-001-6-D	2	
51-001-6-G	2 1/2	
51-001-6-H	3	
51-001-7-B	1	7/16
51-001-7-E	1 1/4	
51-001-7-C	1 1/2	
51-001-7-F	1 3/4	
51-001-7-D	2	
51-001-7-G	2 1/2	
51-001-7-H	3	
51-001-8-E	1 1/4	1/2
51-001-8-C	1 1/2	
51-001-8-F	1 3/4	
51-001-8-D	2	
51-001-8-G	2 1/2	
51-001-8-H	3	

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Split Sleeve Wire Markers (cont.)

Twinco SSA Style Wire Markers (cont.)					
Twinco P/N	**Length**	**Diameter**	**Twinco P/N**	**Length**	**Diameter**
51-001-10-E	1 1/4	5/8	51-001-14-C	1 1/2	7/8
51-001-10-C	1 1/2		51-001-14-F	1 3/4	
51-001-10-F	1 3/4		51-001-14-D	2	
51-001-10-D	2		51-001-14-G	2 1/2	
51-001-10-G	2 1/2		51-001-14-H	3	
51-001-10-H	3		51-001-16-C	1 1/2	1
51-001-12-C	1 1/2	3/4	51-001-16-F	1 3/4	
51-001-12-F	1 3/4		51-001-16-D	2	
51-001-12-D	2		51-001-16-G	2 1/2	
51-001-12-G	2 1/2		51-001-16-H	3	
51-001-12-H	3				

Pipe Markers

Twinco Pipe Markers share all the products features of Twinco Split Sleeve Wire Markers. The only difference being that they are on a larger scale.

Twinco Pipe Markers are available in diameters ranging from 1” through 3” and lengths 1” through 8”. Below are some of the more common sizes.

Twinco PMA Style Pipe Markers		
Twinco P/N	**Length**	**Diameter**
51-005-16-J	8	1
51-005-24-J	8	1 ½
51-005-32-J	8	2
51-005-48-J	8	3

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WHEN ORDERING ENGRAVED NAMEPLATES/SIGNS

1. *Select Material*
   - *Twinply Ultra* - for exterior/interior use, scratch resistant, UV resistant and can withstand temperatures up to 180°F. Comes in matte or satin finish.
   - Other materials available upon request.
   - Beveling is an option for engraved plates *greater than* a 1/2" high.
2. *Choose Lettering*
   - Indicate any special lettering styles or heights required. Otherwise, a standard lettering will be used and letter height will be determined by size of engraving surface.
3. *Choose A Color Combination*
   - Black background w/ white letters
   - White background w/ black letters
   - Red background w/ white letters
   - And many other colors available
4. *Specify The Text/Symbols Required*
   - You can either mail, fax or e-mail your requirements over to Twinco. When sending via mail or fax, please write as neat as possible. When e-mailing your list (when text only) you can attach an Excel file to your e-mail. Column A would contain Line 1, Column B would contain Line 2, etc… If you have any questions on formatting, please call.
5. *Mounting Options*
   - High Strength Adhesive Backing
   - Mounting holes
   - Both

***See pages 8 and 9 for our more common Engraved Nameplates ***

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ENGRAVED NAMEPLATES/SIGNS

Twinco ENV Style Engraved Nameplates/Signs

Twinco P/N	Size
Some of the more common sizes:	
51-004-10-A	1/2”h x 2 1/2”w
51-004-12-C	1”h x 3”w
51-004-16-E	1 1/2”h x 4”w
51-004-20-L	3”h x 5”w
51-004-24-H	2”h x 6”w
51-004-28-T	5”h x 7”w
51-004-32-P	4”h x 8”w
51-004-36-Y	7”h x 9”w
51-004-40-AA	8”h x 10”w
51-004-44-P	4”h x 11”w

All Engraved Nameplates/Signs can have the following mounting options:

1. Adhesive Backing
2. Mounting Holes
3. Both 1 & 2
4. Neither

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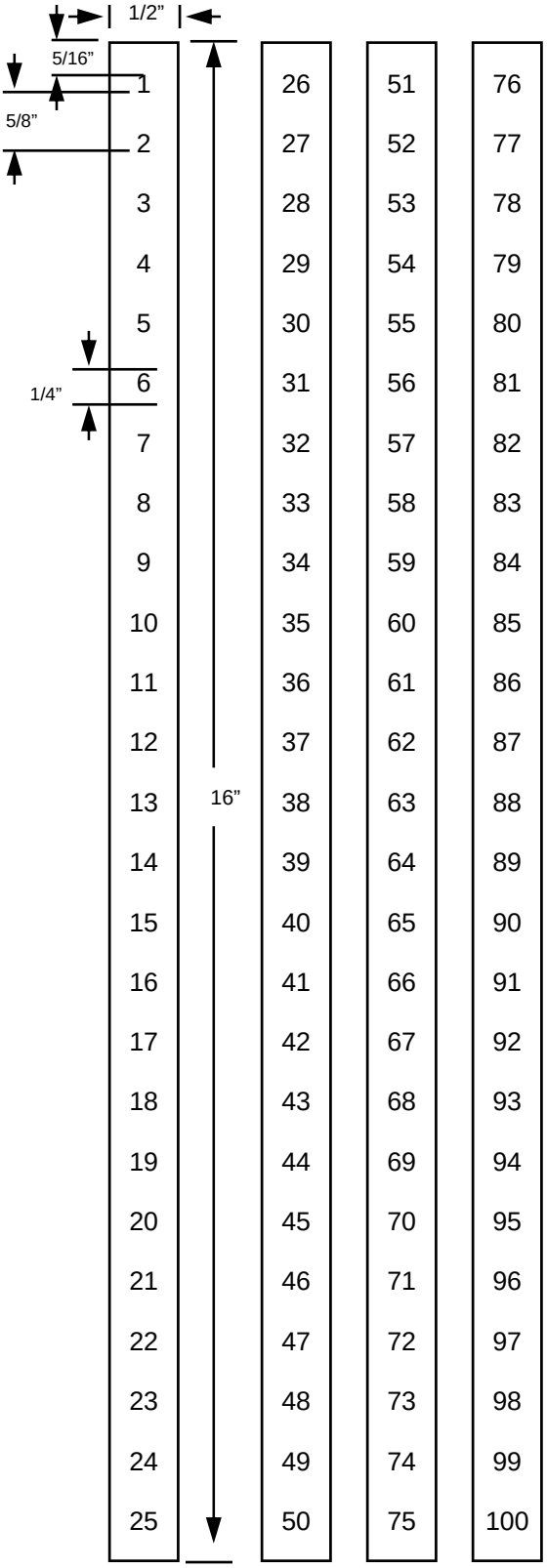

Twinco ENV Style Numbered Terminal Strips	
Twinco P/N	**Marked:**
51-004-2-T25	1-25
51-004-2-T50	26-50
51-004-2-T75	51-75
51-004-2-T100	76-100

- **Standard Size of Terminal Strip is 1/2" Wide x 16" Long with letters/ numbers vertically placed.**
- **Made From High Quality Engraving Material**
- **White Background with 1/4" Black Numbers/Letters ***
- **Adhesive Backing, Mounting Holes or Both ****
- **NYCT Approved**

* If a color other than white w/ black letters is needed, please indicate on purchase order.
** When ordering, please indicate what mounting options are required.

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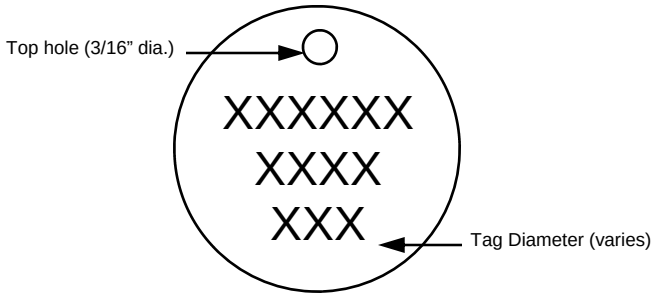
METAL DISC TAGS



Twinco Brass Disc Tags are made from 18 gauge brass (.040" thick) and have a top hole (3/16" dia.) for attachments. The letters are engraved into the tag. The letters can be made various sizes depending on the diameter of the tag.

Twinco Stainless Steel Disc Tags are made from 20 gauge stainless steel (.036" thick) and have a top hole (3/16" dia.) for attachments. The letters are engraved into the tag. The letters can be made various sizes depending on the diameter of the tag.

** P/N's shown are for tags w/ engraved lettering.
Add the letter "B" to the P/N for a **Blank** Tag.

Twinco BDA Style Brass Disc Tags

Twinco P/N	Tag Diameter
51-006-4-C	1
51-006-5-C	1-1/4
51-006-375-C	1-3/8
51-006-6-C	1-1/2
51-006-8-C	2

Twinco SDA Style Stainless Steel Disc Tags

Twinco P/N	Tag Diameter
51-007-4-C	1
51-007-5-C	1-1/4
51-007-375-C	1-3/8
51-007-6-C	1-1/2
51-007-8-C	2

METAL FLAT TAGS

Twinco Brass Flat Tags are made from 0.040" thick brass and have a 3/16" diameter hole for attachments. The letters are engraved into the tag.

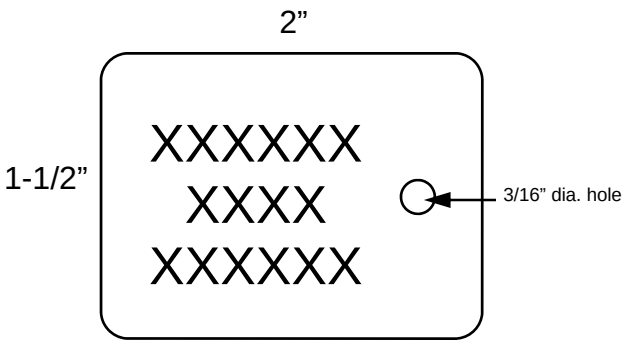
Twinco Stainless Steel Flat Tags are made from 0.036" thick stainless steel and have a 3/16" diameter hole for attachments. The letters are engraved into the tag.

Twinco BRA Style Brass Flat Tags

Twinco P/N	Hole Diameter	Hole Location
51-008-1-A	3/16	Left
51-008-2-A	3/16	Right

Twinco SRA Style Stainless Steel Flat Tags

Twinco P/N	Hole Diameter	Hole Location
51-009-1-A	3/16	Left
51-009-2-A	3/16	Right



* Standard size = 1-1/2" x 2".

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SPLIT SLEEVE TAG APPLICATORS

P/N: **51-000-2-A**

P/N: **51-000-2-B**

P/N: **51-000-2-C**

****Split Sleeve Applicators***

Twinco P/N	For diameters:
51-000-2-A	1/8, 5/32
51-000-2-B	3/16
51-000-2-C	1/4, 5/16*

* Split Sleeve Wire Markers larger than 5/16" will not require an applicator. They can be opened and put on a terminated wire by hand.

NYLON STRING

Twinco offers nylon string for attaching tags. There are two types; wax coated and non-wax coated.

Wax: P/N 51-000-1-A
Non-Wax: P/N 51-000-1-B

It is sold in bags of 100 pre-tied string.

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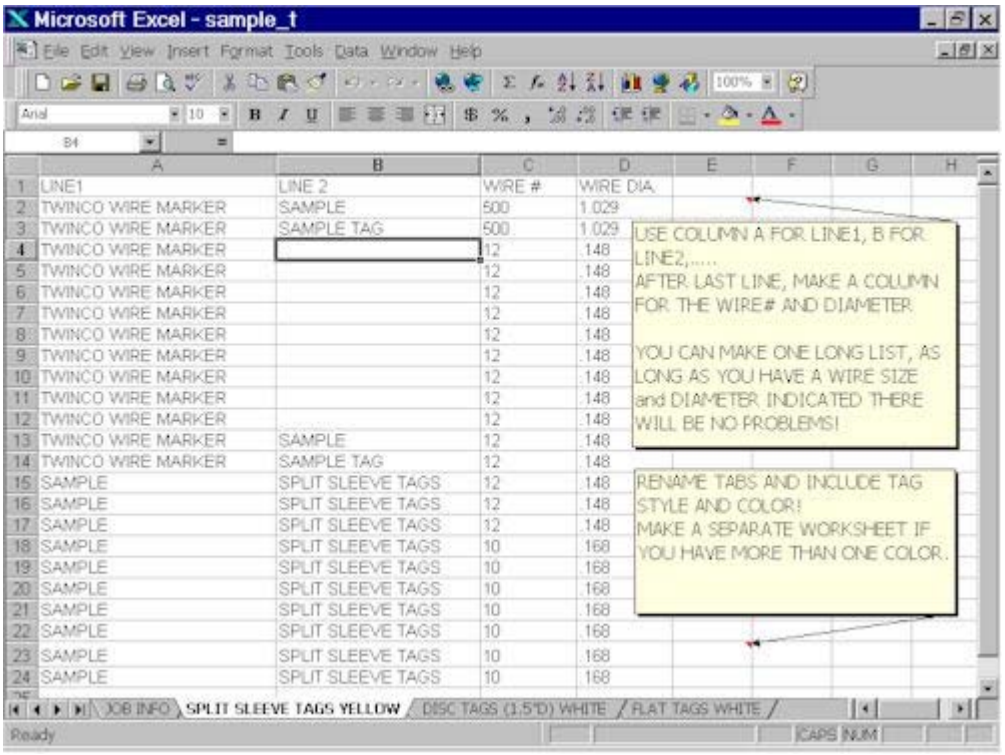
ORDERING INFORMATION

- ***Send order via :***
  - Tag nomenclature can be faxed or mailed for Twinco to do the data entry.
  - Files can be sent directly to Twinco on floppy disk.
  - Files can be e-mailed to ***twinco@twincomfg.com*** .
- ***Please indicate the following somewhere on your order :***
  - Style & Type of ID Product
  - P/N (if available)
  - color (background & lettering)
  - wire diameter or wire # and type (for Style SSA)
  - Purchase Order #
  - Attn: and Ship to: information
  - Phone #, Fax # or E-mail address
  - Or any other information you feel necessary for your order
- ***Regardless of how information is sent to Twinco, it should be presented in the following format:***
  - Data should be presented in a simple spreadsheet format, preferably in an Excel or Lotus file.
  - The first row should be column headers designating line numbers
  - If tags are being sent in Excel or Lotus, Twinco prefers a worksheet be created for each style of tag. (*Notice on picture below, there is a tab for each style of tag, Disc Tags, Flat Tags, etc*.)
  - When sending an Excel or Lotus file, please do ***not*** put a quantity column. Instead actually copy and paste a particular nomenclature the number of times you need it.
  - For more information on formatting your order, please call Jayson Skowronek at (631) 231-0022.



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