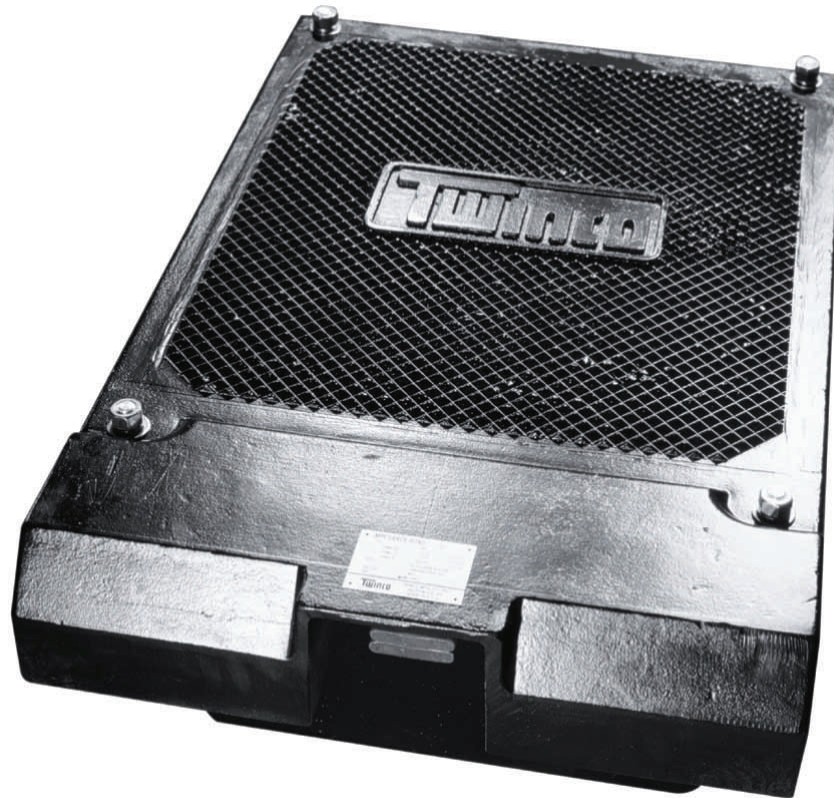




IMPEDANCE BOND

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



Certificate # 2380/00

PDS 1446-11 C

1 of 4

TWINCO MFG. CO., INC.

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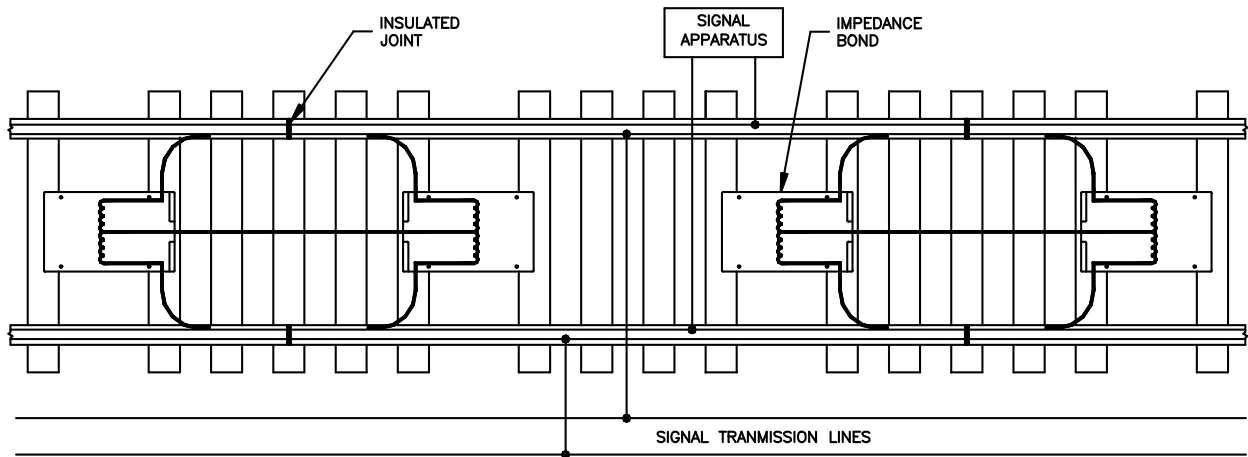
INTRODUCTION

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 35 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.





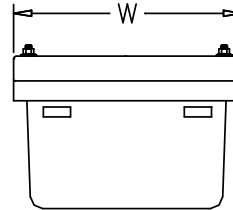
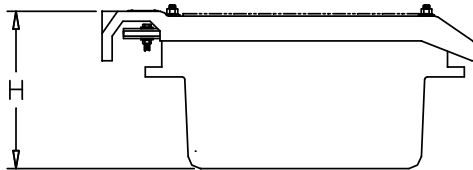
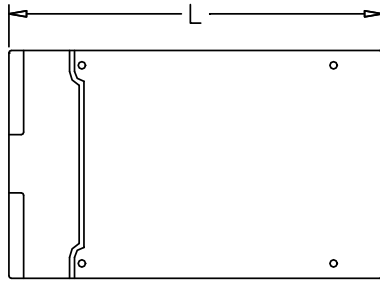
THEORY OF OPERATION

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.

TWINCO Impedance Bonds

TWINCO PART NUMBER	DESCRIPTION											
	STYLE	AMPS/ RAIL	RES. (Ohms)	IMPED. (Hz)					DIMENSIONS (In.)			WT. (Lbs.)
				25	60	91.67	100	250	L	W	H	
067-1446-1-0	ST-1	2500	.0003	—	.25	—	2.20	—	37-5/8	22-7/8	16	1000
067-1446-2-0	ST-2	2500	.0003	.12	.25	—	.42	—	37-5/8	22-7/8	16	970
067-1446-3-0	ST-3	2500	.0003	.76	—	—	2.75	—	37-5/8	22-7/8	16	1000
000-2713-1-0	ST-4	2500	.0003	—	—	1.00	—	2.50	37-5/8	22-7/8	16	1000
000-1667-1-0	SZ-1	1500	.0006	.21	.50	—	.84	—	36-1/2	20-1/2	12-1/4	695
000-1667-2-0	SZ-2	1000	.0008	.28	.63	—	1.00	—	36-1/2	20-1/2	12-1/4	615



- Standard part numbers listed above. Contact factory for specific requirements
- The Impedance Bond Part Numbers listed above are all filled with CANOPUS OIL, if you require White Petrolatum contact Twinco for designated Part Number.
- Contact factory for mounting & cable connection hardware.
- Request Twinco Service Manual for more detailed information