

# **Rail Electrical Products**



**ERICO<sup>®</sup>**

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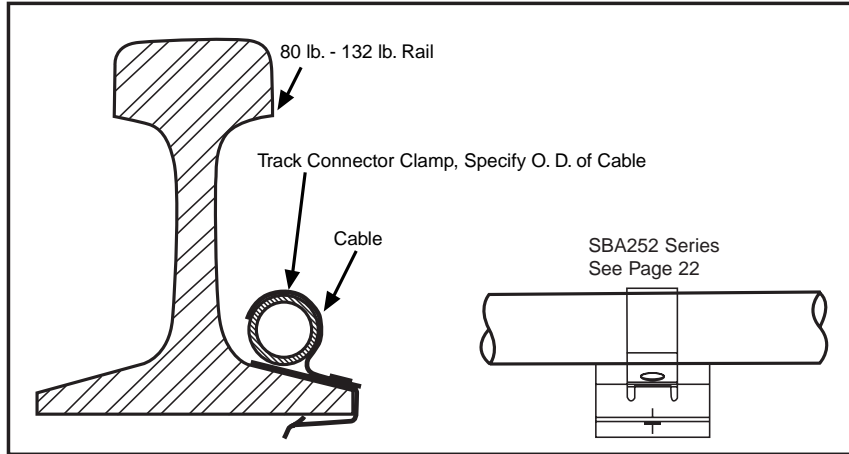
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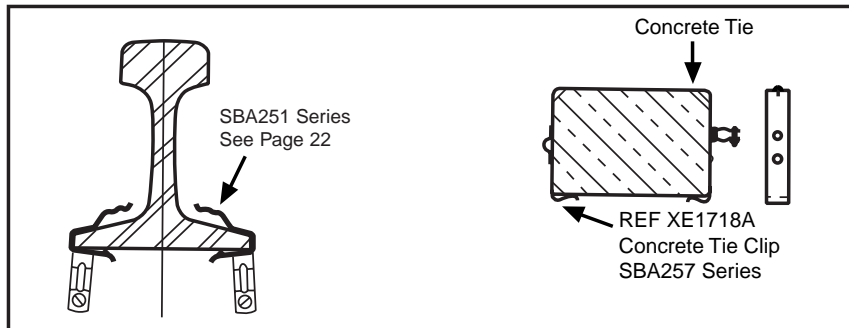
# TYPICAL APPLICATIONS

## TRACK CLIPS

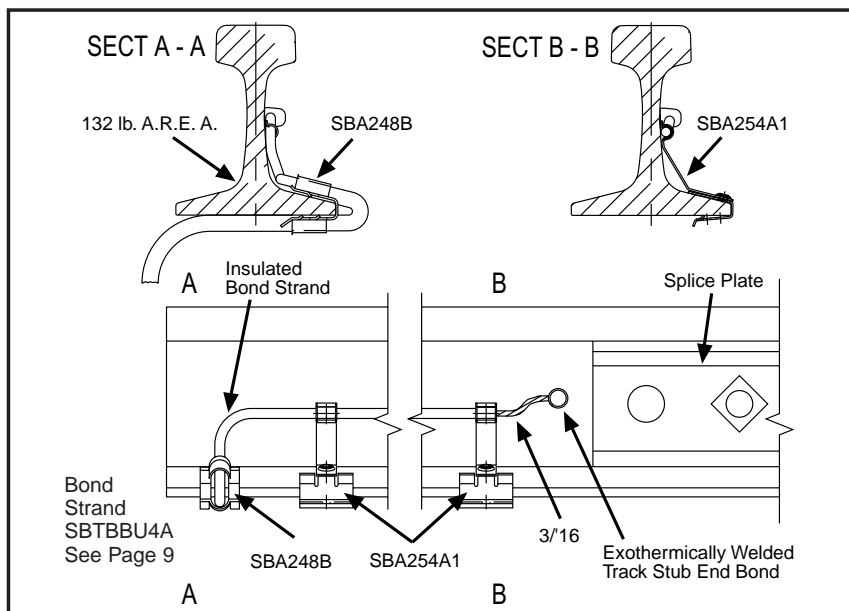
### Track Retainer Clip



### Rail Clip and Concrete Tie Clip (Contact ERICO)



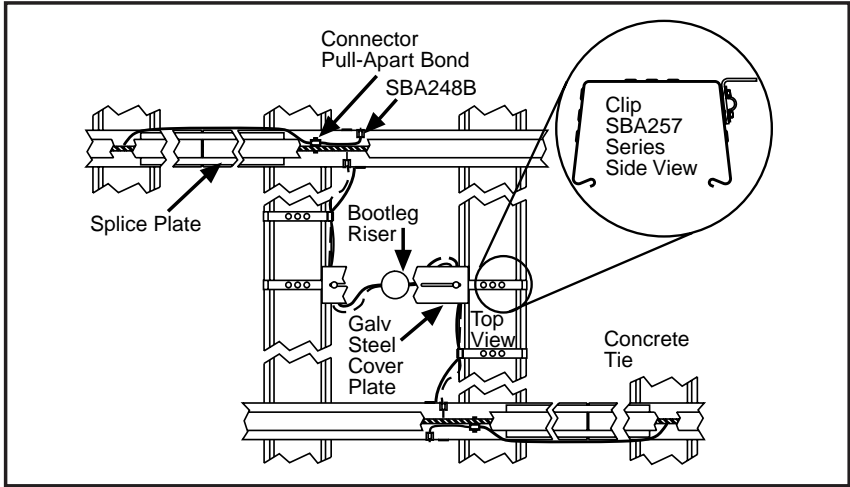
### Clip, Bootleg, Track Connector



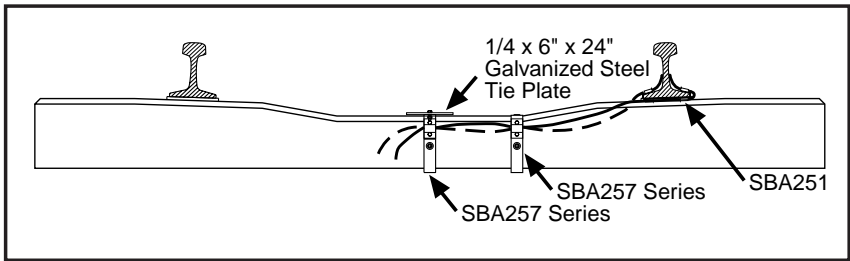
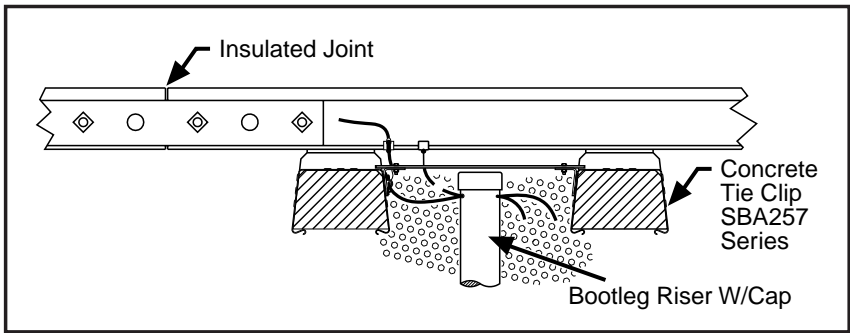
# TYPICAL APPLICATIONS

## CONCRETE TIE CLIPS

### Concrete Tie Clip Bootleg Riser 4-Wire Kit



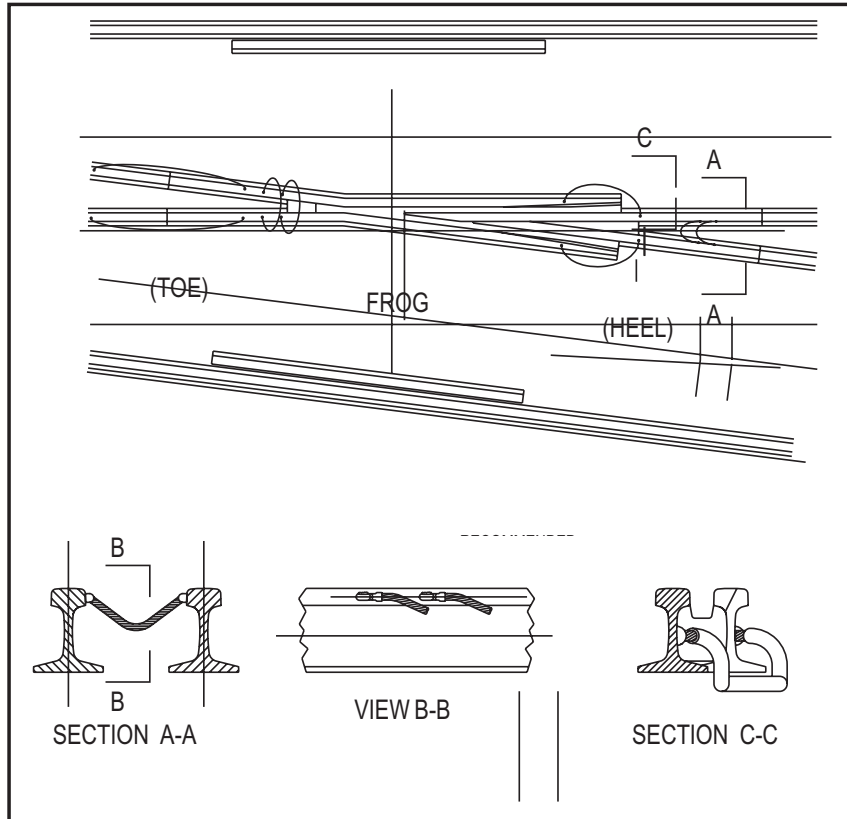
### Concrete Tie Clip Applications



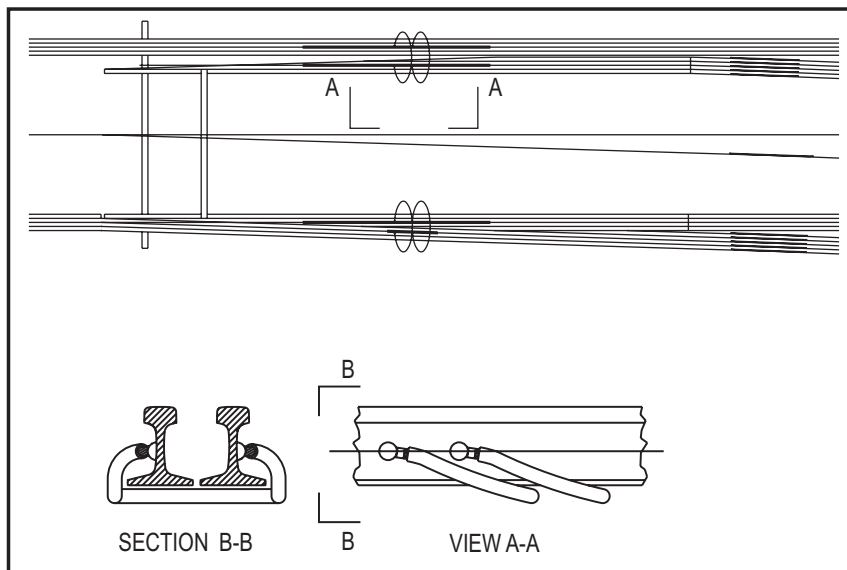
# TYPICAL APPLICATIONS

## SPECIAL TRACK WORK

### Rail Head Bond Frog Area



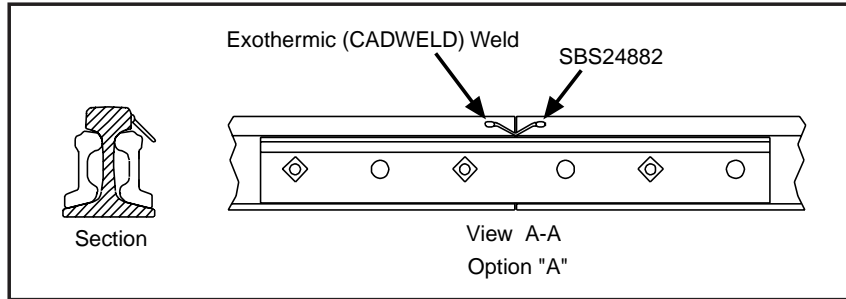
### Web Bond Switch Point Area



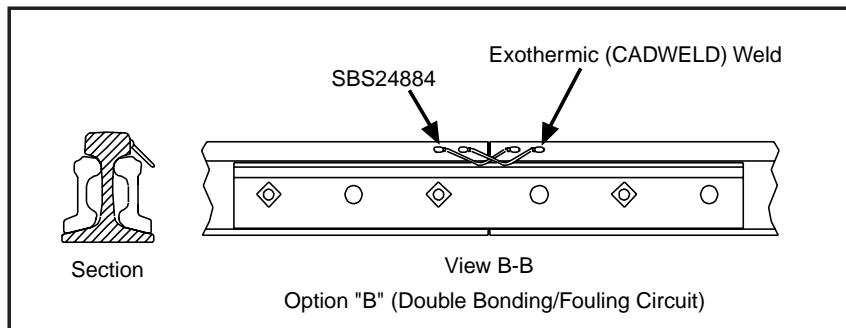
# TYPICAL APPLICATIONS

## SIGNAL BONDING

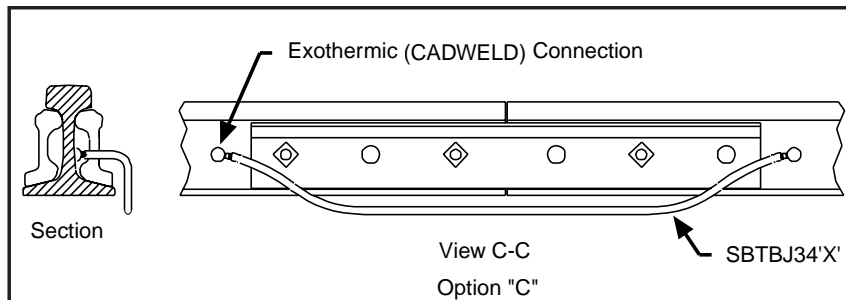
### Joint Head Bond



### Fouling Circuit



### Web Bonding



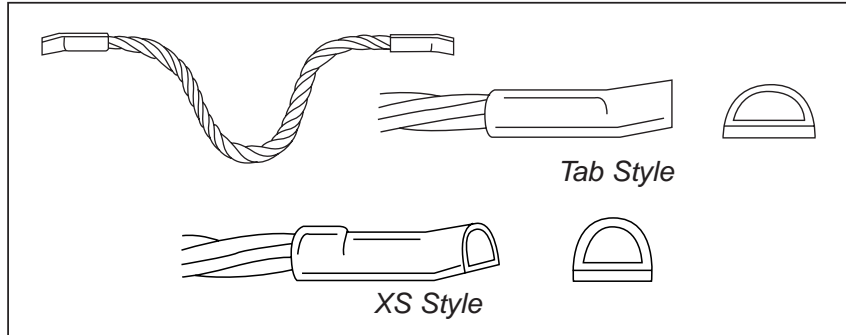


# CADWELD® BONDING PRODUCTS

## BONDS

### Joint Head Bonds

Order in boxes of 100 - Includes one pair of replacement molds, flint ignitor and necessary weld metal.



Bond	6-1/2"	7"	7-1/2"	9-3/4"	9-3/4"
<b>3/16" Dia.</b>					
XS Style	SBS24882		SBS24883	SBS24884	
Head Free Rail	SB20112		SB20128	SB20116	
Tab Style	SB20104		SB20136	SB20108	
<b>5/16" Dia.</b>					
Tab Style		SB20175			SB20118
Head Free Rail		SB20175HF			

For complete Welders (T-6 & T-7 style) see page 10.

CADWELD rail head joint bonds provide:

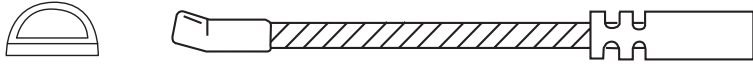
- Maximum broken rail protection
- Unchanging electrical resistance
- Maximum corrosion resistance
- Minimum installer skill required
- Simple and highly portable installation equipment
- Equally usable on old, worn, or new
- Maximum protection against physical damage to rail
- 7 to 1 shear strength over a pin head bond
- Not destroyed by rail end build up

# CADWELD BONDING PRODUCTS

## BONDS

### Track Connectors - Web

Order in boxes of 100 - Includes one pair of replacement molds, flint ignitor and necessary weld metal.

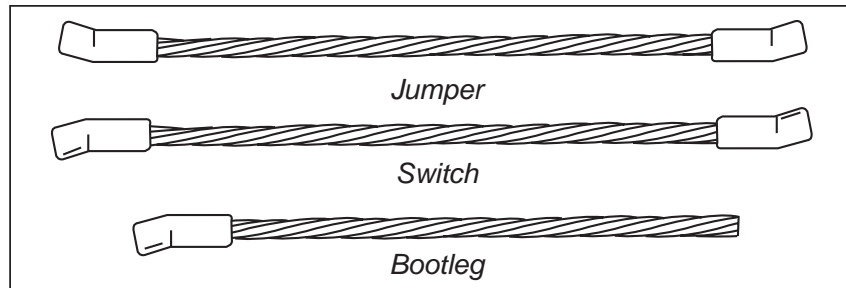
 <p style="text-align: center;"><i>Tab Style</i></p>	
Part Number	Description
SBTBBU4A	3/16" Dia. x 1" Tab x 4" Long Bootleg
SBTBCU412	3/16" Dia. x 1" Tab x 12" Long Bootleg

For complete Welder (SBTBT21C) see page 12 and compression tool (SBT031DJ) see page 18.

The ERICO CADWELD Track Connector is used when the advantages of a welded connection to the rail web are desired and standard compression connection to track wire is required. The connector provides flexibility and resistance to vibration fatigue by incorporating a length of bond strand between the CADWELD connection and the sleeved end. The SBTBBU4A and SBTBCU412 are 3/16" tinned copper alloy. (Other lengths available.)

### Jumper, Switch and Bootleg Bonds

Substitute desired length of bond in even inches for 'X'. Replacement molds sold separately. All CADWELD bonds are furnished with the necessary weld metal.



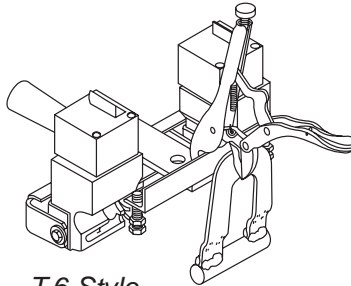
Diameter	Jumper	Switch	Bootleg
<b>3/16" Dia.</b>			
3/4" XS Style	SBXSJ33"X"	SBXSS33"X"	SBXSB33"X"
3/4" Tab	SBTBJ33"X"	SBTBS33"X"	SBTBB33"X"
1" Tab	SBTBJ34"X"	SBTBS34"X"	SBTBB34"X"
1-1/2" Tab	SBTBJ36"X"	SBTBS36"X"	SBTBB36"X"
<b>5/16" Dia.</b>			
1" Tab	SBTBJ54"X"	SBTBS54"X"	SBTBB54"X"

For complete Welders (T-7, T-21, TB-4, & TB-5 Style) see page 10, 12 and 13.

# CADWELD BONDING PRODUCTS

## WELDERS AND MOLDS

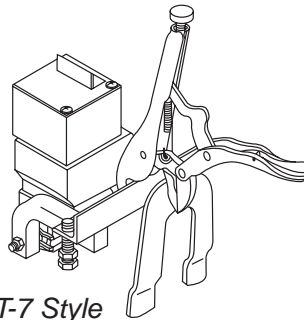
### *Rail Head Welders And Molds*



T-6 Style

T-6 Style One-Piece Rail Welder Complete				
<b>With Molds</b>				
<b>Bond</b>	<b>6-1/2"</b>	<b>7"</b>	<b>7-1/2"</b>	<b>9-3/4"</b>
<b>3/16" Dia.</b>				
XS Style	SBXST6A		SBXST6C	SBXST6D
Head Free Style	SBHFT6A		SBHFT6C	SBHFT6D
Tab Style	SBTBT6A		SBTBT6C	SBTBT6D
<b>5/16" Dia.</b>				
Tab Style		SBTBT6B		SBTBT6E
Head Free		SBHFT6B		

See page 8 for Rail Head Bonds



T-7 Style

T-7 Style Bond Terminal	3/16" Dia. Bonds		5/16" Dia. Bonds	
	Welder Pair	Molds Only (Pair)	Welder Pair	Molds Only (Pair)
3/4" XS	SBXST7D	SBM456		
3/4" Tab	SBTBT7F	SBS5838		
1" Tab	SBTBT7G	SBS5839	SBTBT7B	SBS898
Head Free	SBHFT7E	SBS925	SBHFT7K	SBB492

T-7 Welders are a convenient means of attaching rail head bonds wherever the standard T-6 Welder will not fit properly such as transposed rail and compromised joints.

# CADWELD BONDING PRODUCTS

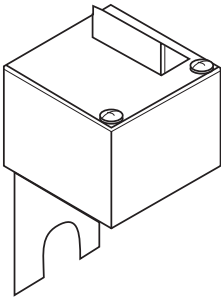
## WELDERS AND MOLDS

### *Rail Head Welders And Molds Continued*

Bond	Replacement Parts		
	Molds Only (Pair)	Molds With Mounting Parts And Clips	Bond Clips
<b>3/16" Dia.</b>			
XS Style	SBM456	SBM456F	S2659
Head Free Style	SBS925	SBS925F	S2044
Tab Style	SBS5838	SBS5838F	S2659
<b>5/16" Dia.</b>			
Tab Style	SBS898	SBS898F	S119
Head Free	SBB492	SBB492F	B194D

See page 8 for Rail Head Bonds

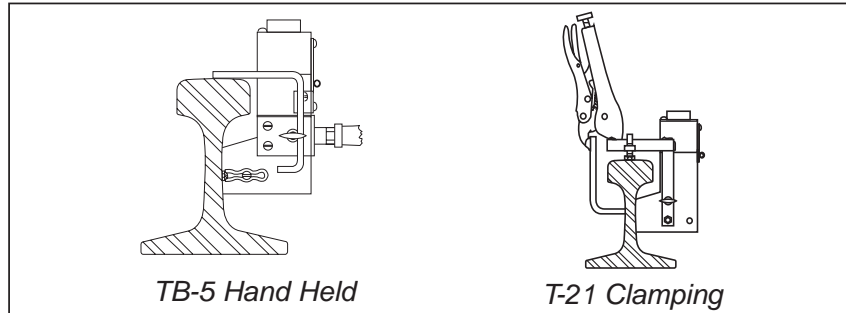
### *Replacement Mold Covers for T-6 and T-7 Welders*

	
Part Number	Description
SBB2516A	Single Replacement Cover
SBB2516APR	Pair of Replacement Covers

# CADWELD BONDING PRODUCTS

## WELDERS AND MOLDS

*Web (Field Made and Factory Made)*



*TB-5 Hand Held*

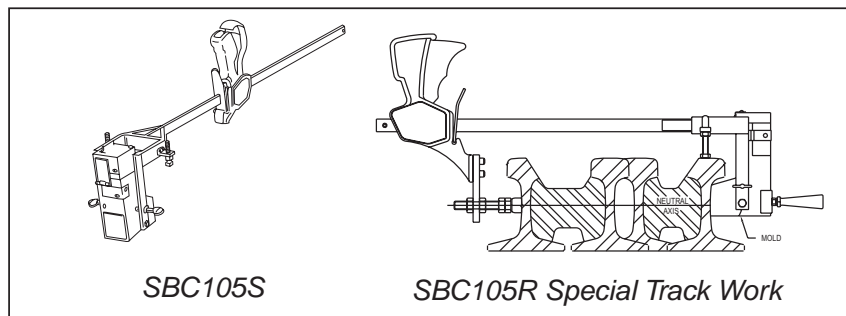
*T-21 Clamping*

Terminal Style	TB-5 Welder		T-21 Welder		Replacement Mold
	Hand Held	Frame Only	Clamping	Frame Only	
<b>3/16" Dia.</b>					
3/4" XS	SBXSTB5A		SBXST21A		SBB200A
3/4" Tab	SBTBTB5B		SBTBT21B		SBB200B
1" Tab	SBTBTB5C	M22	SBTBT21C	C105B	SBB200C
1-1/2" Tab	SBTBTB5D		SBTBT21D		SBB200D
<b>5/16" Dia.</b>					
1" Tab	SBTBTB5E	M22	SBTBT21E	C105B	SBB200E

TB-5 & T-21 Web Welders are for installation of track circuits and jumper bonds to the neutral axis.

TB-5 & T-21 Welders and Replacement Molds are supplied in pairs. Welder Frames only are sold as single units.

## Extension Clamps On Rail Head And Rail Web



*SBC105S*

*SBC105R Special Track Work*

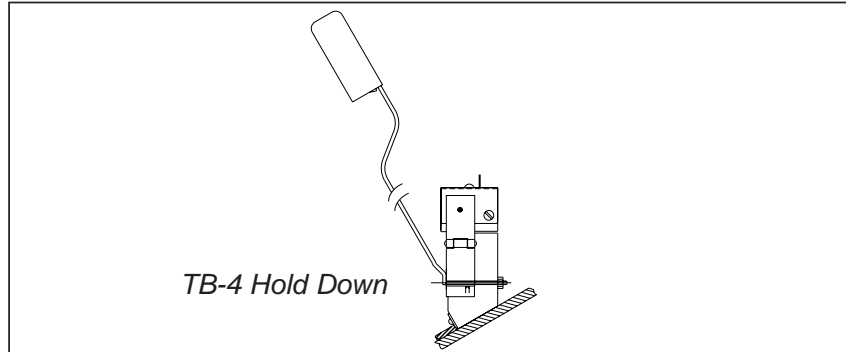
Part No.	Description	Mold
SBC105S	Head Ext. Clamp	See T-7 Style Molds
SBC105R	Web Ext. Clamp	See TB-5 / T-21 Style Molds

- Adjusts for wide span usage - e.g. frogs, switches, etc. (25-1/2" Max. Span)
- Easy to use and lightweight.
- Can be used with existing molds for head and web connections.
- Can also be used on standard (single) rail.

# CADWELD BONDING PRODUCTS

## WELDERS AND MOLDS

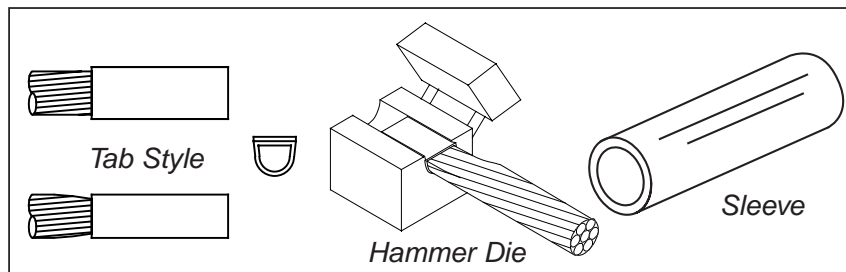
### Frog and Special Track Work



Terminal Style	TB-4 Welder		Replacement Mold
	Hold Down	Frame Only	
<b>3/16" Dia.</b>			
3/4" XS	SBXSTB4A	B323L	SBB343A
3/4" Tab	SBTBTB4B	B323L	SBB343B
1" Tab	SBTBTB4C	B323L	SBB343C
1-1/2" Tab	SBTBTB4D	B323L	SBB343D
<b>5/16" Dia.</b>			
1" Tab	SBTBTB4E	B323L	SBB343E

## FIELD MADE BONDS

### Tab-Style Terminals

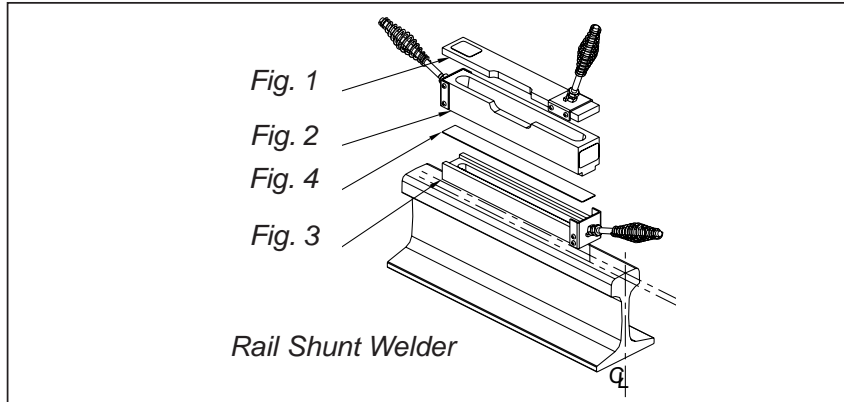


Cable Size	Terminal Length	Sleeves		Hammer Dies	Weld Material	
		Part Number	Std. Pkg.	Part Number	Part Number	Std Pkg.
#6 Sol	1"	SBS10	100			
	3/4"	SBS11C	100			
3/16"	1"	SBS12C	100	SBD50	SB25	50
	1-1/2"	SBS13C	100			
5/16"	1"	SBS09C	100	SBD51	SB32	50

Cable - supplied by ERICO in 3/16" and 5/16" copper alloy stranded signal cable (bare) and 3/16" signal cable with 4/64" and 6/64" PVC insulation. Available in 100' coils, 500' and 1000' reels. See page 15.

# CADWELD BONDING PRODUCTS

## CADWELD RAIL SHUNT MATERIAL



### *Shunt Welders*

Part Number	Description	Fig.
SBB304	Welder Complete	1-3
SBB304B	Bottom	3
SBB304T	Top	2
SBB304C	Cover	1

### *Shunt Mold*

Part Number	Description	Fig.
SBB304M	Mold Complete	1-3
SBB304BM	Bottom	3
SBB304TM	Top	2
SBB304CM	Cover	1

### *Shunt Weld Material*

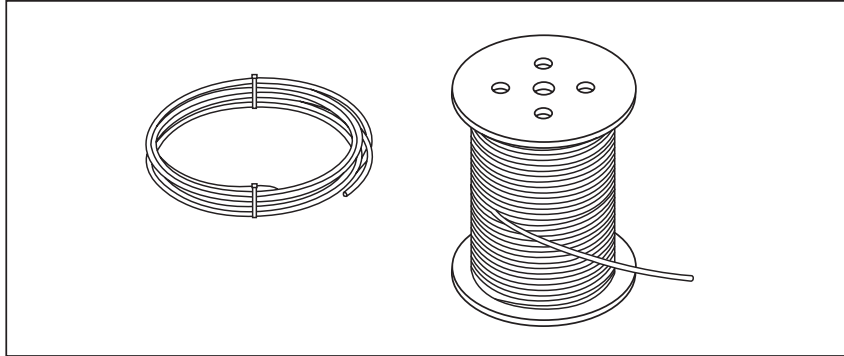
Part Number	Description	Fig.	Std. Pkg.
SBRS	Weld Material w/Shim Stock	Not Shown	50
B140J	Shim Stock	4	50

Rail Shunt Metal provides a non-rusting contact surface fused onto the top of the rail. CADWELD SHUNTING provides positive shunting surface on rusty track or seldom used sidings. One 'RS' provides one foot of shunt metal.

# CADWELD BONDING PRODUCTS

## RELATED MATERIALS

### *Bond Strand*



Part Number			Description
100' Coil	500' Reel	1000' Reel	
SBS8CINSUL	SBS8LINSUL	SBS8INSUL	S-8, 3/16", Black 4/64 PVC
SBS8CINORG	SBS8LINSORG	SBS8INORG	S-8, 3/16", Orange 4/64 PVC
SBS8TCINS	SBS8TDINSUL	SBS8TINSUL	S-8, 3/16" Tinned, Black 4/64 PVC
SBS8TCINS664	SBS8TLINS664		S-8, 3/16" Tinned, Black 6/64 PVC
SBS8TCINSRD		SBS8TINSRD	S-8, 3/16" Tinned, Red 6/64 PVC
SBS8CBARE	SBS8LBARE	SBS8BARE	S-8, 3/16", Bare
SBS17CBARE		SBS17BARE	S-17, 5/16", Bare

### *Miscellaneous Bonding Items*

Part Number	Description	Std. Pkg.
B154A	3/8" Straight head plug terminal	25
B101AA	Lug - 1/16" x 1/2", 1-hole (1/4" stud)	25
SBK012A	1/4" split stud kit	10
SBK012B	1/4" split stud kit	100
SB25	Rail Weld Material	50
SB32	Rail Weld Material	50



# MECHANICAL CONNECTORS

## BONDS

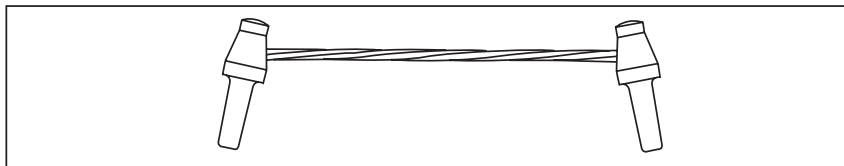
### Plug Bonds

#### Standard Package 50

Specify bond length as a suffix to part number, i.e., SBPAJA24 is an S-1 cable type, 24" long.

Part Number	Cable Type
<b>AREMA Drawing 8.1.25-#1</b>	
SBPAJA"XX"	S-1
SBPAJB"XX"	S-5
SBPAJC"XX"	7-#10
SBPAJD"XX"	7-#12
SBPAJ3"XX"	S-8
SBPAJR"XX"	S-8 Insul
SBPAJG"XX"	S-12
<b>AREMA Drawing 8.1.25-#2</b>	
SBPAJP"XX"	DS-1
SBPAJN"XX"	14-#12

Lengths 24, 30, 34, 36, 42, 48, 60, 72, and 96.



Cable Type	Description	Bare Dia. Inches
S-1	1 Copper, 6 Galvanized Steel	0.3270
S-5	3 Copper, 16 Galvanized Steel	0.3300
7-#10	7-40% Copperweld*	0.3060
7-#12	7-40% Copperweld*	0.2430
S-8	133 Cadmium Bronze	0.1875
S-8 Insul.	133 Cadmium Bronze w/ 4/64" PVC Insulation	0.1875
S-12	42 Cadmium Bronze, 91 Hard Drawn Stain, Steel	0.2510

ERICO Plug Bonds are designed for application to the rail web. Plug bonds are hammered into a 3/8" diameter hole drilled through the rail web (driven from same side hole was drilled). This recommended method of installation requires a bond 12 inches longer than the splice bar.

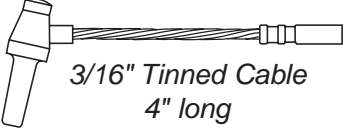
\*Copperweld DSA is a registered trademark of Copperweld Bimetallics Division, Glassport, PA

# MECHANICAL CONNECTORS

## BONDS

### Track Connectors “Chicken Heads”

Standard Package 200

 <p>3/16" Tinned Cable 4" long</p>	
Part Number	Connector
SBPAC3A	3/16" - #6 str
SBPAC3G	#8 str/#6sol
SBPAC3R	#9 str/#8sol
SBPAC3Y	#10 str/#9sol
SBPAC3ACSX*	3/16" - #6 str
SBPAW35	3/8" tapered plug


\*Zinc chromate plated assembly.

The ERICO Track Connector is used when bond strand is being utilized for track connections, fouling circuits, and even bonding around the splice bar. The plug terminal is hammered into a 3/8" Diameter hole drilled through the rail web (driven from same side hole was drilled).

Compression Tool (SBT031DJ ) sold separately. See page 18.

### Multi-Purpose Bonds

Standard Package 48

	
Part Number	Cable Type
SBPMJ3 "X"	Bare - 3/16" S-8
SBPMJR "X"	Black Insul. - 3/16" S-8
SBPMJS "X"	Orange Insul. - 3/16" S-8

Substitute length for "X" (10", 12", or 14")

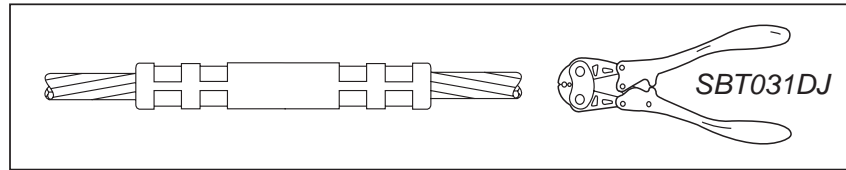
The ERICO Multi-Purpose Bond is used when a standard plug bond cannot be installed from the field side of rail due to tight areas such as frogs and switches.

# MECHANICAL CONNECTORS

## ASSOCIATED MATERIAL

### Sleeves - Compression Type

Standard Package 100

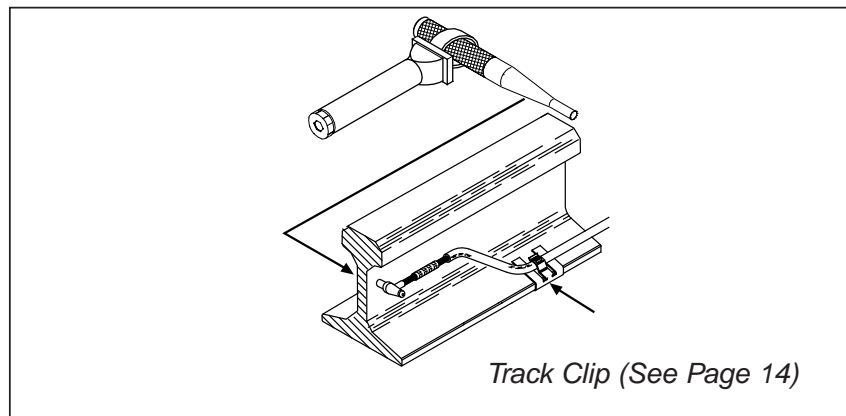


Part Number	3/16" Bond Strand To: Description
A2314J	#9 solid or #10 str
A2364J	#8 solid or #9 str
A2363J	#6 solid or #8 str
A2367J	#3/16" or #6 str
A2412J	1/4" Binding Post, Lug
SBT031DJ	Compression Tool

### No-Oxide Grease

Part Number	Description
T369	1 ounce tube

### Bond Removal Punch

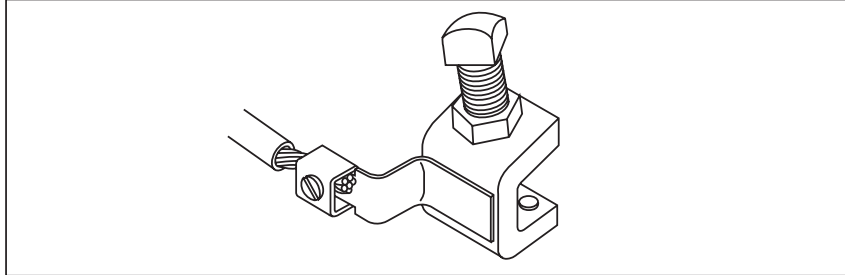


Part Number	Description
SBT382B	Punch Only
SBT408	Plastic Handle Only
SBT382BWH	Punch w/Handle
SBT382BWPH	Punch w/Plastic Handle

# MECHANICAL CONNECTORS

## TEMPORARY CONNECTORS

### *Temporary Track Connector*



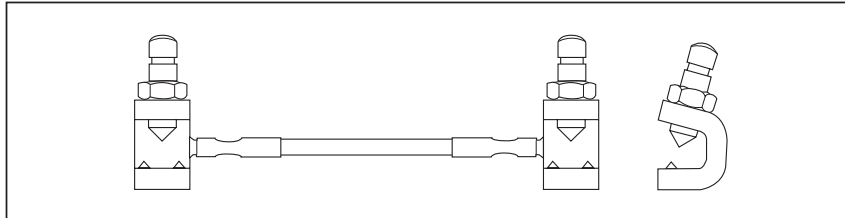
Part Number	Description
A140	Bolt Type
A140WT	T-Handle Type

#### **Standard Package 5**

Makes temporary signal bonds and track circuit connections using your cable.

- Accepts cable sizes #6 thru 1/0, including 3/16" and 5/16" diameter bond strand.
- Hardened contact points on clamps bite through rust and scale.

### ***Temporary Signal Bond 3/16"***



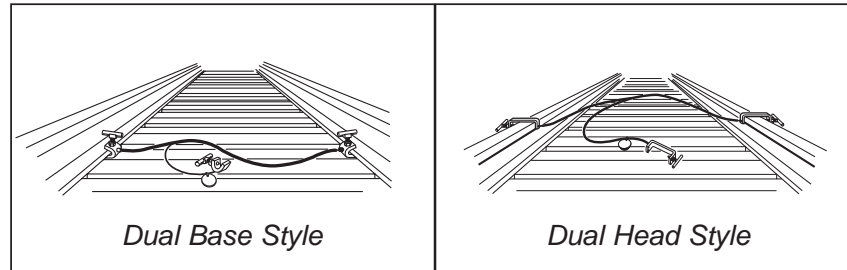
Part Number	Description
SBS3086S48	3/16" Orange Insul. 48" long
SBS3086S48WT	3/16" Orange Insul. w/T-handle 48" long
SBS3086R48	3/16" Black Insul. 48" long
SBS3086R48WT	3/16" Black Insul. w/T-handle 48" long

- Lightweight - made from 3/16" PVC insulated bond strand.
- PVC insulation available in black or orange.
- Hardened contact points on clamps bite through rust and scale.
- Cable welded to terminal for electrical reliability.

# MECHANICAL CONNECTORS

## TRACK CIRCUIT SHUNTS

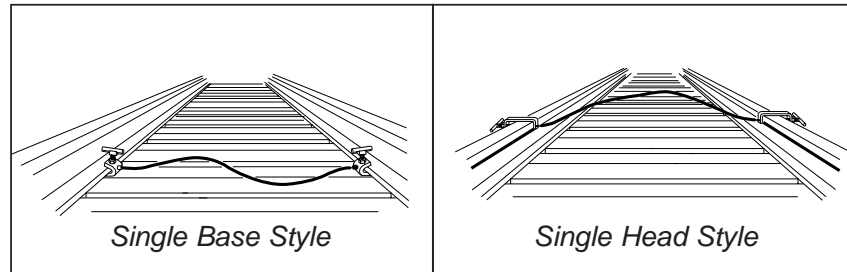
### Dual Shunt



Part Number	Description
SBB2721S	Dual Shunt (0.06 ohm/hard) Base style 2 pt. clamp
SBB2721T	Dual Shunt (0.06 ohm/hard) Head style 2 pt. clamp
SBB2721G	Dual Shunt (0.06 ohm/hard) Head style 3 pt. clamp
SBB2721B	Dual Shunt (0.06 ohm/hard) Base style 3 pt. clamp

- One easy-to-carry assembly.
- No resistor to fail. Product is pre-engineered to provide permanent 0.06 ohm shunting.
- 100% tested and tagged to assure reliability.
- Hardened contact points on clamps bite through rust and scale.
- 62" length for all track gauges.
- 0.06 ohm clamps painted red for easy identification.

### Single Shunt



Part Number	Description
SBB2721F	0.06 ohm Shunt only, Base style, 3 pt. clamp
SBB2721H	0.06 ohm Shunt only, Head style, 2 pt. clamp
SBB2721CS72	Hard Shunt only, Base style, 3 pt. clamp
SBB2721JS72	Hard Shunt only, Head style, 3 pt. clamp
SBB2721VS72	Hard Shunt only, Base style, 2 pt. clamp

- Two shunt assemblies are available - "hard" zero ohm or 0.06 ohm.
- 0.06 ohm style has no resistor to fail. Product is pre-engineered to provide permanent 0.06 ohm shunting.
  - Hardened contact points on clamps bite through rust and scale.
  - Bright orange insulation on "Hard" shunt for high visibility and easy identification.

# CABLE CLIPS

## RETAINER CLIPS

### Design Features

- Spring steel and “snap-on” designs mean no more holes to drill - no anchors or adhesives on concrete.
- Resilient - no bolts to loosen, staples to back out or clamps to rattle off.
- Flexibility - wide range of clips fit all standard rails and a variety of conductors.
- Versatility - ERICO now enables you to secure cables — reducing maintenance and improving wayside safety.

### Electroplated Spring Steel

A248B	A251		
Part Number	Max Cable Diameter	Position on Rail Base	Standard Packaging
A248B	3/8"	Perpendicular	50
A251	3/8"	Double Parallel	50

### Electroplated Steel

A154/A206	A203/A205	A219	
Part Number	Max Cable Diameter	Position on Rail Base	Standard Packaging
A154	5/16"	Perpendicular	50
A203	5/16"	Parallel	100
A205	1/2"	Parallel	100
SBA206	1/2"	Perpendicular	50
A219	5/16"	Double Parallel	100

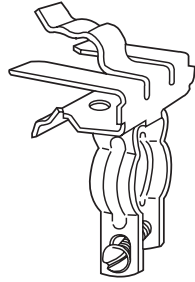
### PVC Cable Keeper

Part Number	Description
T375	7/16" Diameter Cable Keeper – 2 Holes w/nails

# CABLE CLIPS

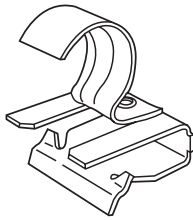
## RETAINER CLIP ASSEMBLIES

### *Below Rail Base*



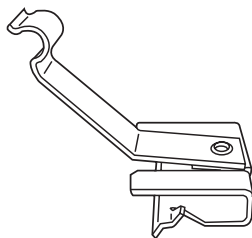
Part Number	Description	Standard Packaging
SBA2510B	3/4" Dia.	50
SBA2511B	1" Dia.	50
SBA2512B	1 1/4" Dia.	50

### *Rail Base*



Part Number	Description	Standard Packaging
SBA252S0	3/4" Dia.	50
SBA252S1	1" Dia.	50
SBA252S2	1-1/4" Dia.	50

### *Web*

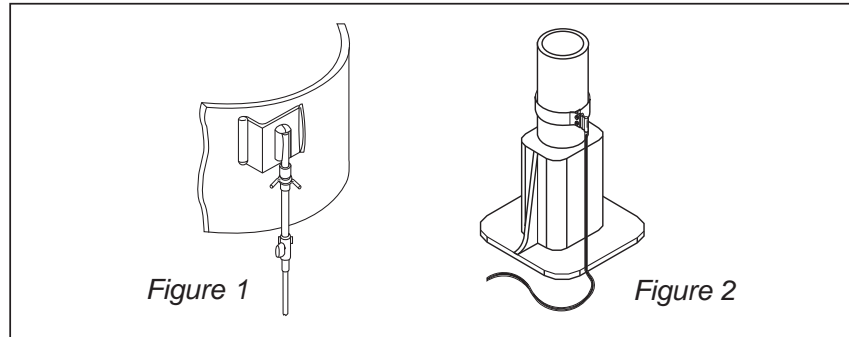


Part Number	Description	Standard Packaging
SBA254A1	3/8" Dia.	25
SBA255D1	1/2" Dia.	25

# GROUNDING

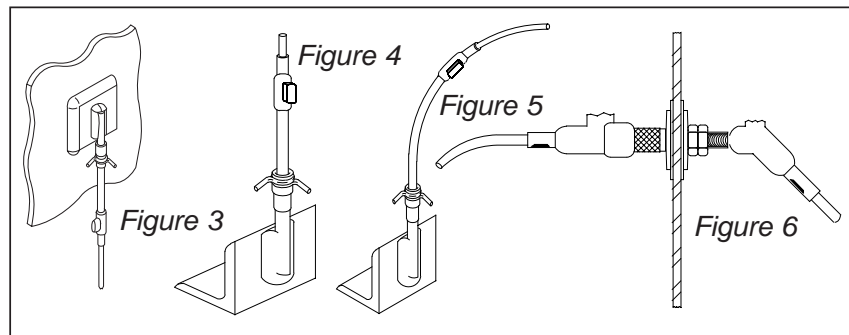
## ALUMINUM-COPPER GROUNDING STUD

### Aluminum Signal Mast



Part Number	Description (#6 Solid Copper Pigtail)	Figure Number
<b>Aluminum-Copper Grounding Stud</b>		
SBB855E1G72	with 72" long Pigtail	1
SBB855E1G96	with 96" long Pigtail	1
<b>Signal Mast Grounding Clamp</b>		
SBB852A8C1G48	with 48" long Pigtail - 3" to 8" Mast Dia.	2
SBB852A8C1G72	with 72" long Pigtail - 3" to 8" Mast Dia.	2
SBB852A12C1G96	with 96" long Pigtail - 3" to 12" Mast Dia.	2

### Aluminum Signal Case



Part Number	Description	Figure Number
<b>Aluminum-Copper Grounding Stud</b>		
SBB855C1G36	with 36" long Pigtail, #6 Solid	3
SBB855C1G48	with 48" long Pigtail, #6 Solid	3
SBB855C1K48	with 48" long Pigtail, #4 Solid	3
SBB855F1G48	with 36" long Pigtail, #6 Solid	4
SBB855G1G30	with 30" long Pigtail, #6 Solid	5
<b>Feed-Through Stud</b>		
SBB853B	with Hardware	6
SBB853A72	with Hardware and 72" long Pigtail, #6 Solid	6

Other Pigtail sizes available.



# GROUNDING

## GEM™ GROUND ENHANCEMENT MATERIAL

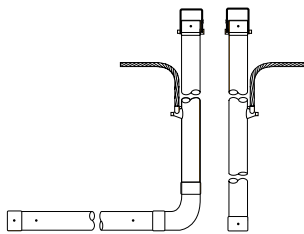


Part Number	Description
GEM25A	25 Pound Bag

A superior conductive material that solves the toughest grounding problems.

- Improves grounding effectiveness regardless of soil conditions.
- Can use where ground rods cannot be driven or where limited land area makes adequate grounding difficult with conventional methods.
- Unmatched for reducing earthing resistance and maintaining low resistance permanently.
- No other material equals GEM in providing high conductivity for the life of the grounding system.

## CHEMICAL GROUND ROD ELECTRODE KIT



Part Number	Description
ECRV10 "xx"4 "y"	10' Vert. w/4' Pigtail, Backfill Material, Cover
ECRV12 "xx"4 "y"	12' Vert. w/4' Pigtail, Backfill Material, Cover
ECRV15 "xx"4 "y"	15' Vert. w/4' Pigtail, Backfill Material, Cover
ECRV20 "xx"4 "y"	20' Vert. w/4' Pigtail, Backfill Material, Cover
ECRH10 "xx"4 "y"	10' Horz. w/4' Pigtail, Backfill Material, Cover
ECRH12 "xx"4 "y"	12' Horz. w/4' Pigtail, Backfill Material, Cover
ECRH15 "xx"4 "y"	15' Horz. w/4' Pigtail, Backfill Material, Cover
ECRH20 "xx"4 "y"	20' Horz. w/4' Pigtail, Backfill Material, Cover

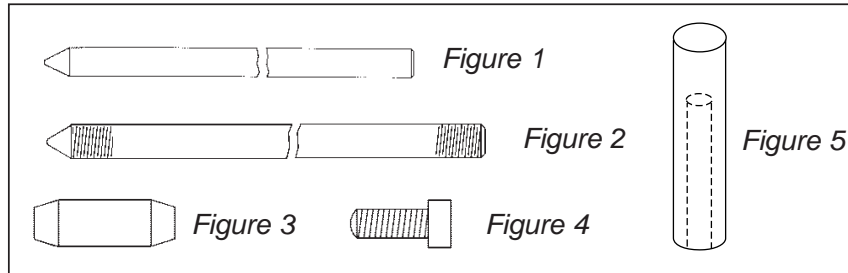
"xx" – Cable code for specified pigtail conductor (4/0 conc typical)

"y" – Pigtail orientation: U-up, D-down

Extended "sectional" versions available for rods longer than 20 feet.

# GROUNDING

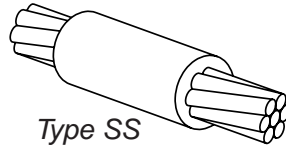
## ERITECH® GROUND RODS



Part Number	Diameter	Figure	Standard Packaging	Length
<b>Pointed Copper Bonded Rods</b>				
615850	5/8"	1	5	5'
615880	5/8"	1	5	8'
615800	5/8"	1	5	10'
613480	3/4"	1	5	8'
613400	3/4"	1	5	10'
<b>Sectional Copper Bonded Rods</b>				
635840	5/8"	2	5	4'
635880	5/8"	2	5	8'
633800	5/8"	2	5	10'
633480	3/4"	2	5	8'
633400	3/4"	2	5	10'
<b>Pointed Copper Bonded Rod Couplings</b>				
CC58	5/8"	3	25	
CC34	3/4"	3	25	
<b>Driving Sleeves for Pointed Ground Rods</b>				
DH58C	5/8"	5	1	
DH34C	3/4"	5	1	
<b>Sectional Copper Bonded Rod Couplers</b>				
CR58	5/8"	3	25	
CR34	3/4"	3	25	
<b>Driving Stud Bolts for Sectional Rods</b>				
DS58	5/8"	4	25	
DS34	3/4"	4	25	

# GROUNDING

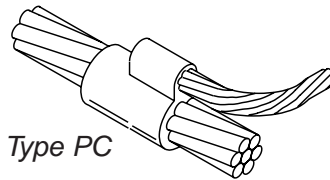
## CADWELD CONNECTIONS CABLE-TO-CABLE



Type SS

Cable Size	Welder Part No.	Weld Metal
#6 Sol	SB02SS6	SB25
4	SB03SS1L	SB25
2	SB10SS1V	SB32
3/16"	SB02SS3	SB25
3/16"	SB02SS3001	SB32

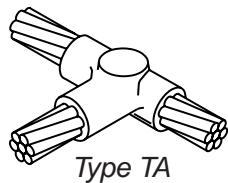
### Run Tap



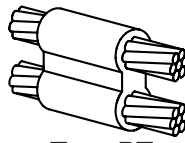
Type PC

Cable Size	Welder Part No.	Weld Metal
<i>Run</i> #6 Sol	SB10PC66	SB32
<i>Tap</i> #6 Sol	SB02SC66001	SB25
#6 Sol	SB02SC65001	SB32
#6 Sol	SB02SC65001	SB32
3/16"	SB02SC36001	SB25
3/16"	SB02SC33001	SB25

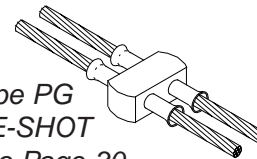
### Other Types and Sizes Available



Type TA



Type PT



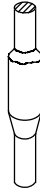
Type PG  
ONE-SHOT  
Refer to Page 30

## CABLE TO GROUND ROD

See CADWELD ONE-SHOT Connections on Page 29 & 30.

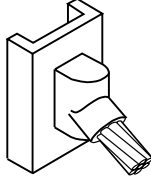
# GROUNDING

## CADWELD CONNECTIONS GROUND ROD SPLICE

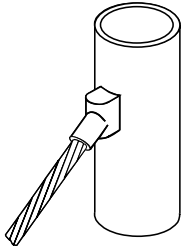
 <p>Type GB</p>		
Cable Size	Mold Part No.	Weld Metal
5/8" Copperclad (.563" rod dia.)	PB50HDGB16	2-PB150

## CABLE-TO-STEEL STRUCTURES

### Flat Vertical Surface

 <p>Type VS</p>		
Cable Size	Welder Part No.	Weld Metal
Sol 4	SB01VS4	SB25
Sol 6	SB01VS6	SB25
Sol 6	SB01VS6001	SB32
Sol 8	SB01VS8	SB25
3/16"	SB01VS3	SB25

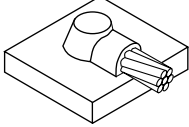
### Round Vertical Surface

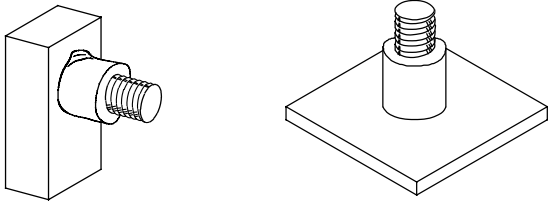
		
Cable Size	Welder Part No.	Weld Metal
Sol 6	SB01VS6V5C	SB25
Sol 6	SB01VS6V5C01	SB32

# GROUNDING

## CADWELD CONNECTIONS CABLE-TO-STEEL STRUCTURES

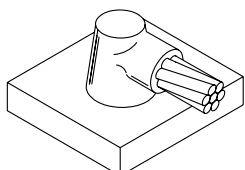
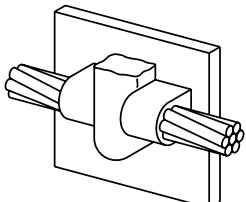
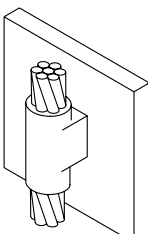
### *Horizontal Flat Surface*

 <p style="text-align: center;"><i>Type HA</i></p>		
Cable Size	Welder Part No.	Weld Metal
Sol 6 Sol 6	SB41HA6 SB41HA6001	SB32 SB25

 <p style="text-align: center;"><i>Type HV</i>                      <i>Type HX</i></p>		
Cable Size	Welder Part No.	Weld Metal
1/4" AAR Split Stud	SB01HV10001 SB01HV10002 SB01HX10002	SB32 2-SB25 SB32

SBK012 - 1/4" Split Stud Kit (Includes AAR thread stud, washer, clamping nut and binding nut)

### *Other Types and Sizes Available*

 <p style="text-align: center;"><i>Type HS</i></p>	 <p style="text-align: center;"><i>Type VG</i></p>	 <p style="text-align: center;"><i>Type VV</i></p>
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# GROUNDING

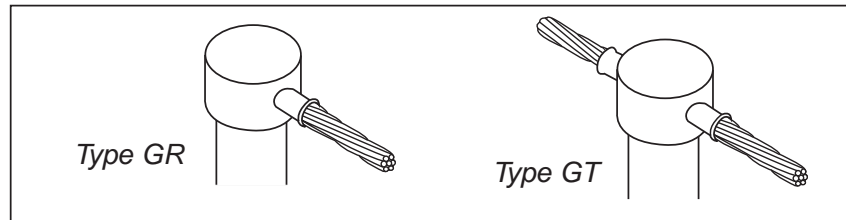
## CADWELD ONE-SHOT CONNECTIONS

The ONE-SHOT consists of a ceramic mold, disk, weld material and cover.

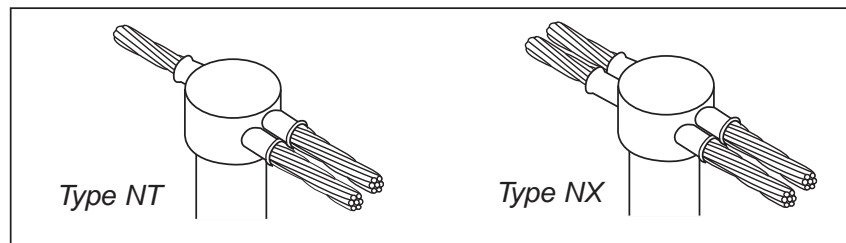
- Disposable ceramic unit eliminates graphite mold.
- Produces a permanent connection that will not loosen or corrode.
- Fits both plain or threaded copperclad and full size, steel and stainless steel rods.

Standard Package 12

### Cable-To-Ground Rod



Ground Rod Size	Conductor Size		Connector Part Number	
	Solid	Stranded	Type GR	Type GT
1/2"	#6, 8	#8	GR1141G	GT1141G
	3, 4	4, 6	GR1141L	GT1141L
	1, 2	2, 3	GR1141V	GT1141V
5/8"	6, 8	8	GR1161G	GT1161G
	3, 4	4, 6	GR1161L	GT1161L
	1, 2	2, 3	GR1161V	GT1161V
3/4"	6, 8	8	GR1181G	GT1181G
	3, 4	4, 6	GR1181L	GT1181L
	1, 2	2, 3	GR1181V	GT1181V



Ground Rod Size	Conductor Size		Connector Part Number	
	Solid	Stranded	Type NT	Type NX
1/2"	#6, 8	#8	NT1141G	NX1141G
	3, 4	4, 6	NT1141L	NX1141L
	1, 2	2, 3	NT1141V	
5/8"	6, 8	8	NT1161G	NX1161G
	3, 4	4, 6	NT1161L	NX1161L
	1, 2	2, 3	NT1161V	NX1161V
3/4"	6, 8	8	NT1181G	NX1181G
	3, 4	4, 6	NT1181L	NX1181L
	1, 2	2, 3	NT1181V	NX1181V

# GROUNDING

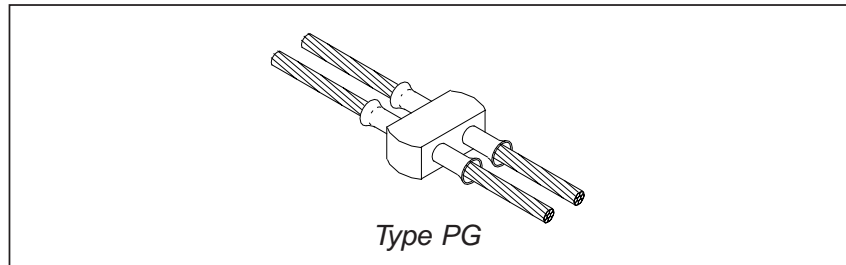
## CADWELD ONE-SHOT CONNECTIONS

The ONE-SHOT consists of a ceramic mold, disk, weld material and cover.

- Disposable ceramic unit eliminates graphite mold.
- Produces a permanent connection that will not loosen or corrode.
- Fits both plain or threaded copperclad and full size, steel and stainless steel rods.

**Standard Package 12**

### ***Cable-To-Cable***



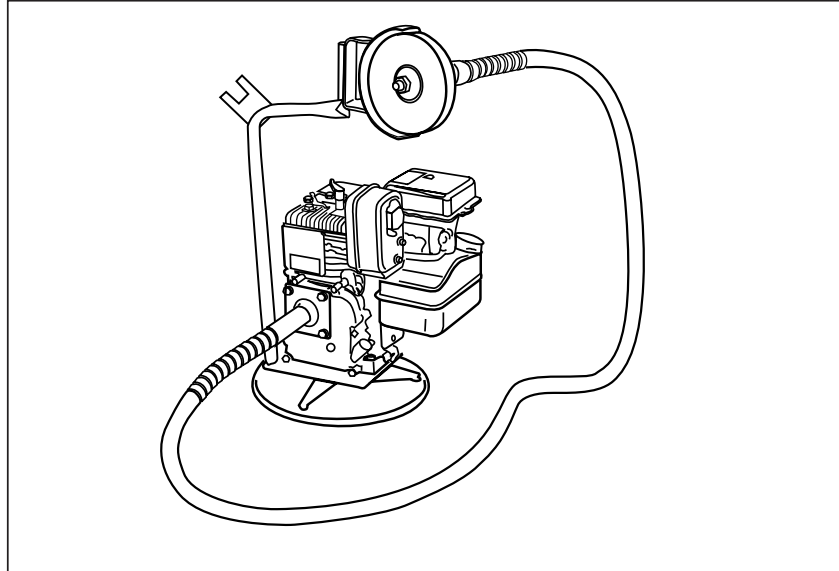
*Type PG*

Conductor Size		Parallel Tap Part Number
Solid	Stranded	
3, 4, 6	4, 6	PG11L

# GRINDERS AND EQUIPMENT

## RAIL GRINDERS

### *Pedestal Rail Grinder (Gas Powered)*

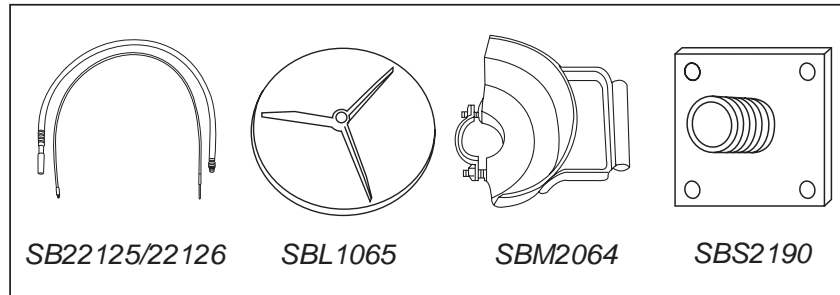


Part Number	Description
SBG141	3.5 HP (Briggs & Stratton I/C) Grinder with 6' Shaft & Housing Base Plate Shaft Adapter Straight Spindle 6" Wheel & Guard Dressing Stone
SBG142	As above except with 12' Shaft & Housing
SBG141WD	3.5 HP Power Unit with Engine Mounting 3-Wheel Rail Dolly
SBG141B	3.5 HP 6' Accessory Package with 6' Shaft & Housing Straight Spindle 6" Wheel & Guard Dressing Stone Shear Coupling Shaft Extension



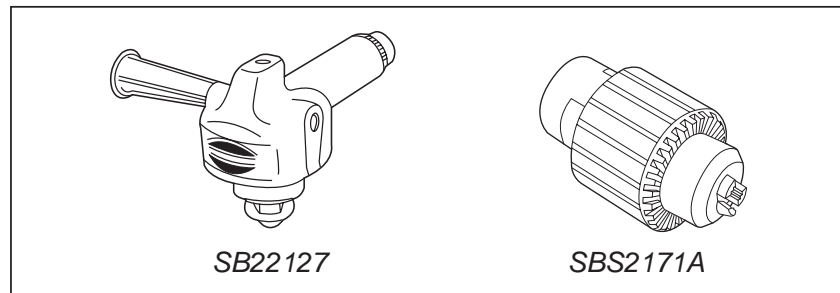
# GRINDERS AND EQUIPMENT

## Rail Grinder Parts & Accessories



Part Number	Description
SBB201	3.5HP (Briggs & Stratton I/C) Engine
SBL115A	Engine Mounting
SBL1005	Base Plate
SBS2190	Flexible Shaft Adapter
SBG310B	Straight Spindle
SBA1811	Shear Coupling for Use With Briggs & Stratton I/C Only
SBA1812	Flexible Shaft Adapter Extension
SB22125	6' flexible Shaft Housing
SB22126	6' flexible Shaft
SB22123	12' flexible Shaft Housing
SB22124	12' flexible Shaft
G102	3 Wheel Dolly
SBM2064	6" Grinding Wheel Guard
T349	Shaft Grease

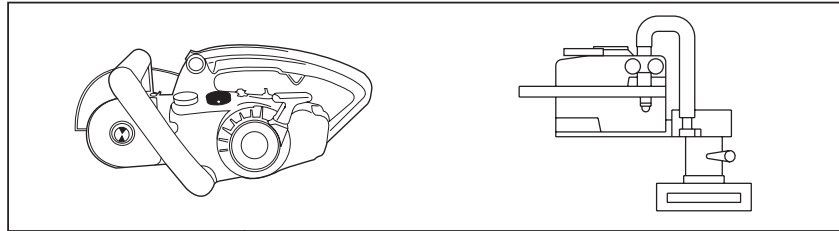
## Drill Attachment Parts



Part Number	Description
SBL165	Drill Attachment — complete with angle spindle & drill chuck
SBL165SA	Drill Attachment — Frame Only
SB22127	Angle spindle — 10:1 ratio
SB22127A	Replacement gear kit for Angle spindle
SBS2171A	Drill chuck — 1/8" to 5/8" key type
SBS2171AK	Drill chuck key
T385B	3/8" Bonding bit / round shank

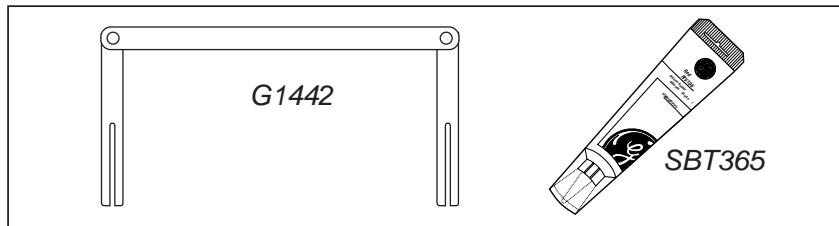
# GRINDERS AND EQUIPMENT

## Portable Grinder (Gas Powered)



Part Number	Description
SBG150	Rail Grinder
SBG150WC	Rail Grinder With Metal Case
SBT364C	Metal Case Only For SBG150
SBT364PLC	Plastic Case Only For SBG150

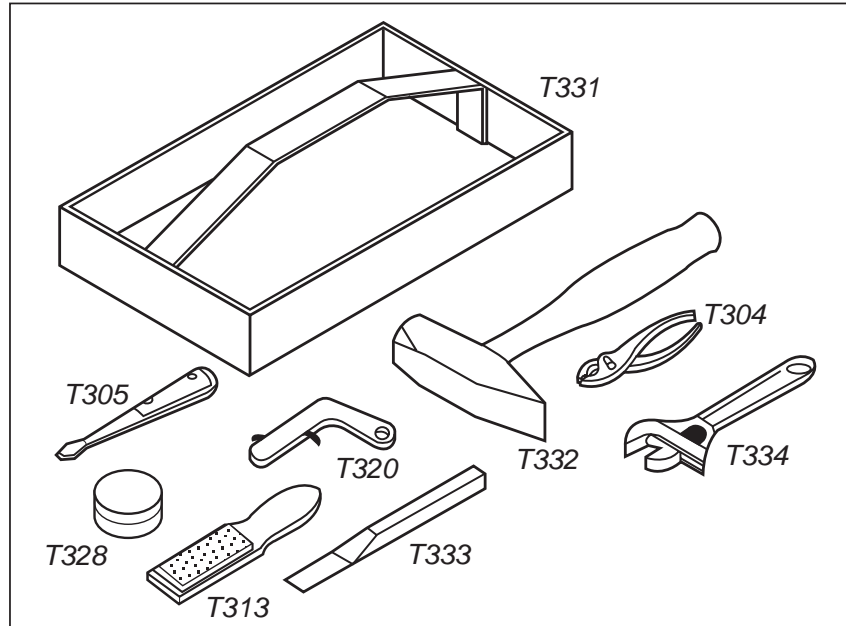
## Grinding, Slotting Wheels/Accessories



Part Number	Description
SBS2333	6" Grinding Wheel — 3/4" wide
SB22122	6" Grinding Wheel — 1" wide
S2129	6" Beveled Grinding Wheel — Head Free Rail
SBS3590	Grinding Wheel Dressing Stone
SBK104	Slotting Wheel Kit — Includes 1/8" x 6" Diameter Slotting Wheel Spacer Depth Gauge Insulation
22128	6" Slotting Wheel With Spacer
22128P	1/8" x 6" Diameter Slotting Wheel
A223	Spacer
G1442	Adjustable Depth Gauge (For SBG144A & SBG145A only)
SBT365	3 Oz. Tube Silicon Rubber Insulation

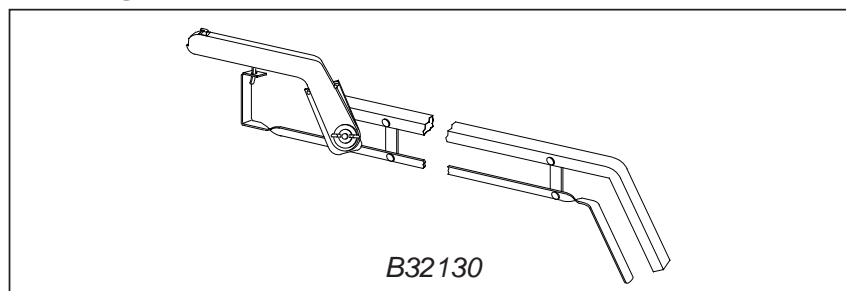
# GRINDERS AND EQUIPMENT

## Miscellaneous Tools



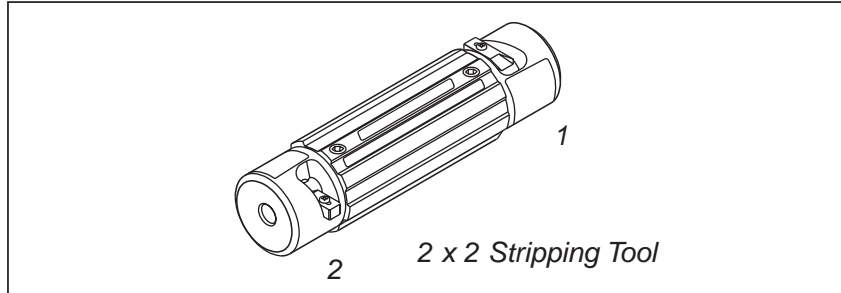
Part Number	Description
T330	Tool Tray With Tools (Includes)
T331	Tool Tray Only
T304	Slip Joint Pliers
T305	Screw Driver
T313	Card Cloth Brush
T320	Flint Ignitor
T320A	Replacement Flints (10 each/package)
T328	Disk Container
T332	Engineers Hammer, 3 lb. size
T333	Cold Chisel, 1/8" Cutting Edge
T334	Adjustable 6" Wrench for Welder
SBB394C SBA127A	T-34 Rail Head and Web Cleaner, One Universal Tool Replacement Cutting Disk for T-34
B136D T403	Mold Cleaner Mold Sealer - 2 Pound Tub
B32130	Flint Ignitor Extension (30")

## Flint Ignitor Extension



# GRINDERS AND EQUIPMENT

## Stripping Tools 2 x 2



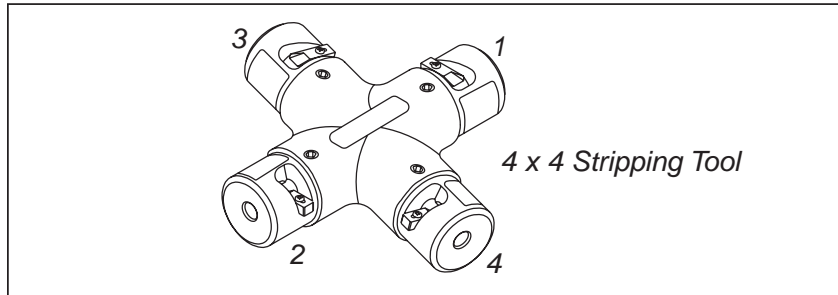
Part Number	Description	
	Bushing 1	Bushing 2
SBRT36100106	3/16" Bond Strand, 4/64" Insulation	#6 Solid, Concentric 8/64" Insulation
SBRT36100134	3/16" Bond Strand, 6/64" Insulation	#6 Concentric, 5/64" Insulation
SBRT36100135	3/16" Bond Strand, 4/64" Insulation	#9 Solid, 10/64" Insulation
SBRT36100136	3/16" Bond Strand, 4/64" Insulation	3/16" Bond Strand, 6/64" Insulation
SBRT36100138	3/16" Bond Strand, 6/64" Insulation	#6 Solid, Concentric 8/64" Insulation
SBRT36100139	3/16" Bond Strand, 4/64" Insulation	#6 Solid, 11/64" Insulation
SBRT36100140	3/16" Bond Strand, 6/64" Insulation	#6 Solid, 11/64" Insulation
SBRT36100142	#6 Solid, 1/64" Insulation	#6 Solid, 12/64" Insulation
SBRT36100147	3 Conductor, 6/64" Insulation	#6 Solid, 6/64" Insulation
SBRT36100148	7 Conductor, 6/64" Insulation	#9 Solid, 6/64" Insulation
SBRT36100149	3/16" Bond Strand, 6/64" Insulation	#6 Solid, 7/64" Insulation
SBRT36100150	5 Conductor, 6/64" Insulation	#9 Solid, 6/64" Insulation
SBRT36100152	10 Conductor, 6/64" Insulation	12 Conductor, 6/64" Insulation
SBRT36100177	3/16" Bond Strand, 4/64" Insulation	#6 Solid, 12/64" Insulation

## Blades

Part Number	Description
SBRTCB6667	Replacement Blades-Pkg of 5

# GRINDERS AND EQUIPMENT

## Stripping Tools 4 x 4



Part Number	Description	
	Bushing 1	Bushing 2
SBRT36000906	3/16" Bond Strand, 4/64" Insulation	#6 Solid, 11/64" Insulation
SBRT36000907	3/16" Bond Strand, 4/64" Insulation	#6 Solid, 11/64" Insulation
SBRT360001004	3/16" Bond Strand, 4/64" Insulation	#6 Solid, 11/64" Insulation
SBRT360001010	3/16" Bond Strand, 6/64" Insulation	3/16" Bond Strand, 6/64" Insulation
	Bushing 3	Bushing 4
SBRT36000906	#6 Solid, 12/64" Insulation	#9 Solid, 10/64" Insulation
SBRT36000907	#6 Solid, 12/64" Insulation	2/0 Ropelay, 6/64" Insulation
SBRT360001004	#6 Solid, 12/64" Insulation	3/16" Bond Strand, 6/64" Insulation
SBRT360001010	#6 Solid, 11/64" Insulation	#6 Solid, 12/64" Insulation

## Additional Bushings

Part Number	Description
SBRT1034048	3/16" Bond Strand, 4/64 Insul.
SBRT1040075	3/16" Bond Strand, 6/64 Insul.
SBRT1037590	#6 Solid, 7/64" Insulation
SBRT10450110	#6 Solid, Concentric 8/64" Insul.
SBRT10515145	#6 Solid, 11/64" Insulation
SBRT10550162	#6 Solid, 12/64" Insulation
SBRT1030075	#9 Solid, 6/64" Insulation
SBRT10430135	#9 Solid, 10/64" Insulation
SBRT1036060	#6 Concentric, 5/64" Insulation
SBRT111102575	3 Conductor, 6/64" Insulation
SBRT111100075	5 Conductor, 6/64" Insulation
SBRT111105075	7 Conductor, 6/64" Insulation
SBRT1187575	10 Conductor, 6/64" Insulation
SBRT1197575	12 Conductor, 6/64" Insulation
SBRT1067575	2/0 Ropelay, 6/64" Insulation

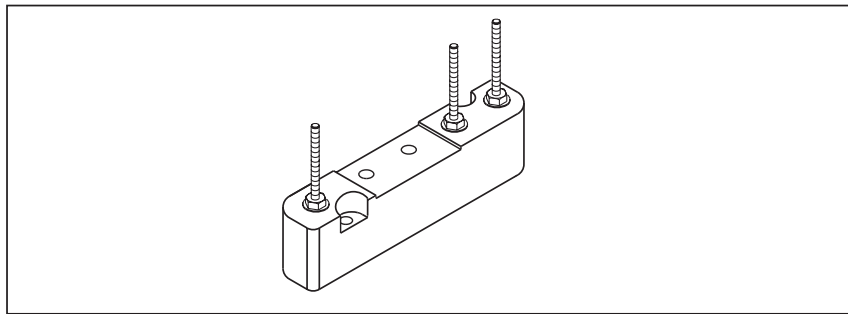
# ERICO TOTAL FACILITY PROTECTION

## EPP PRODUCTS FOR HIGH FREQUENCY, LOW IMPEDANCE, PATH TO GROUND

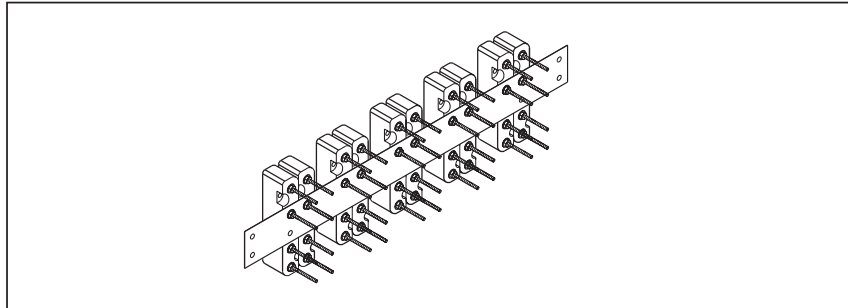
- Meets AAR Specifications
- Modular Design for Field Assembly and Future Expansion
- Pre-Engineered and Manufactured Panels
- Design Assistance for Special Applications
- Separation of “Clean” from “Dirty” Wiring
- Improved Arrester Performance
- Integral Test Link

### **4 Terminal Block**

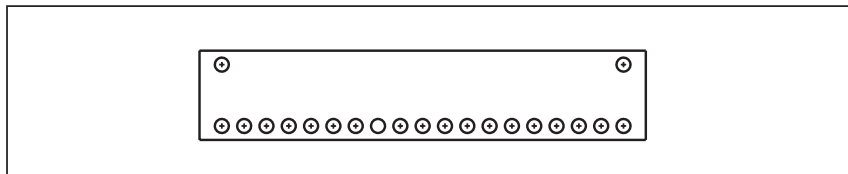
- Slot for Low Impedance Busbar
- Integral, High Current Busbar from Equipment to Ground Terminals



### **EPP Field Module Assembly**



### **Modular System for Future Expansion**



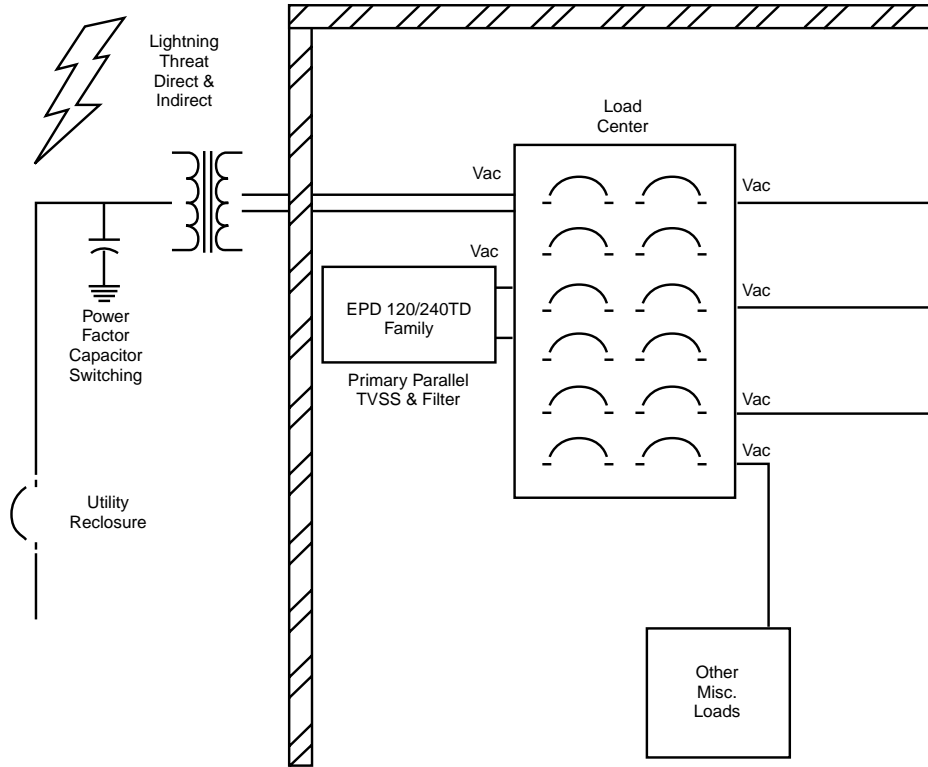
*AAR Hardware Available*

Contact ERICO For Design Assistance

# ERICO SOLUTIONS TO

## Typical Signal Bungalow Power Protection Layout

### NOW WITH TRANSIENT

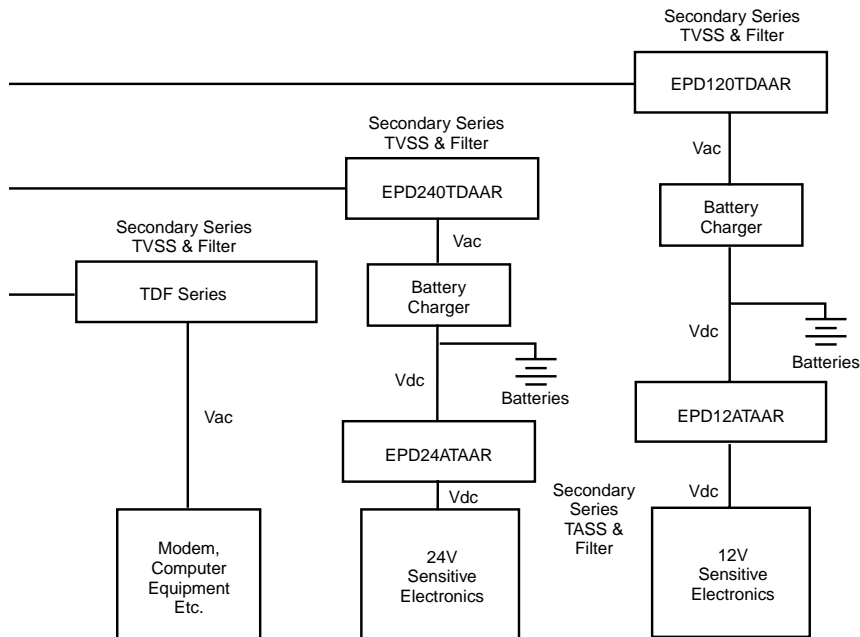
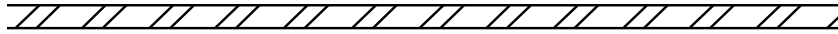


Part Number	Description
EPD208Y/120TDF	208Y/120 VAC 3 phase primary surge protector, internally fused, TD Technology, form C
EPD120/240TDF	120/240 VAC primary surge protector, internally fused, TD Technology, form C
EPD120/240TD	120/240 VAC primary surge protector, TD Technology, form C
EPD120TD	120 VAC primary surge protector, TD Technology, form C
EPD120/240TDFL	120/240 VAC primary surge protector, TD Technology, flying lead, 85kA
EPD25HZ120TDF	120 VAC 25 HZ primary surge protector, internally fused, TD Technology, form C
EPD100HZ120TDF	120 VAC 100 HZ primary surge protector, internally fused, TD Technology, form C

# POWER QUALITY PROBLEMS

Using ERICO Protection Devices For Total Facility Protection

## DISCRIMINATING™ (TD™) TECHNOLOGY



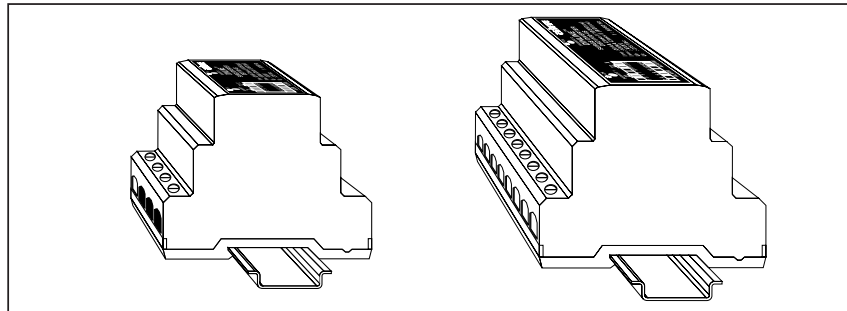
Part Number	Description
EPD120TDAAR	120 VAC secondary surge protector, series type, 15 amp, AAR terminals, TD Technology, form C
EPD120HCTDAAR	120 VAC secondary surge protector, series type, 30 amp, AAR terminals, TD Technology, form C
EPD240TDAAR	240 VAC secondary surge protector, series type, 15 amp, AAR terminals, TD Technology, form C
EPD12ATAAR	12 Vdc secondary surge protector, series type, 15 amp, AAR terminals, Advanced Technology, form C
EPD12HCATAAR	12 Vdc secondary surge protector, series type, 30 amp, AAR terminals, Advanced Technology, form C
EPD12HPATAAR	12 Vdc secondary surge protector, parallel type, 60 amp, AAR terminals, Advanced Technology, form C
EPD24ATAAR	24 Vdc secondary surge protector, series type, 15 amp, AAR terminals, Advanced Technology, form C
EPD24HCATAAR	24 Vdc secondary surge protector, series type, 30 amp, AAR terminals, Advanced Technology, form C
EPD24PATAAR	24 Vdc secondary surge protector, series type, 60 amp, AAR terminals, Advanced Technology, form C



# PERIPHERAL POWER PROTECTION

## DINLINE SURGE FILTERS

- Transient Discriminating filter modules
- Single Phase 3A, 6A, 10A and 20A
- Available in 30V dc, 150V and 275V AC
- Three-mode unit, 8-50kA protection per mode (8/20 $\mu$ s)
- Power Indication
- EMI/RFI noise filtering
- 5 year Warranty



Part Number	Description (With Peak 8/20 $\mu$ s rating)
DSF6A 30V	1 Phase, 30VAC 24VDC, 2W+G, 6A, L-N, L-G, N-G, 8kA/Phase
TDF3A 120	1 Phase, 120VAC/DC, 2W+G, 3A, L-N, L-G, N-G, 50kA/Phase
TDF3A 240	1 Phase, 240VAC/DC, 2W+G, 3A, L-N, L-G, N-G, 50kA/Phase
TDF10A 120	1 Phase, 120VAC/DC, 2W+G, 3A, L-N, L-G, N-G, 50kA/Phase
TDF10A 240	1 Phase, 240VAC/DC, 2W+G, 3A, L-N, L-G, N-G, 50kA/Phase
TDF20A 120	1 Phase, 120VAC/DC, 2W+G, 3A, L-N, L-G, N-G, 50kA/Phase
TDF20A 240	1 Phase, 240VAC/DC, 2W+G, 3A, L-N, L-G, N-G, 50kA/Phase

# PERIPHERAL POWER PROTECTION

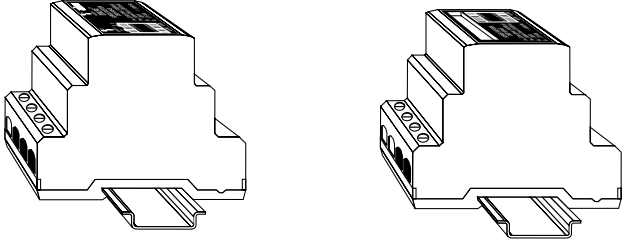
## DINLINE PERIPHERALS

### Alarm Relay

- Used where the status of TDF units need to be monitored by external alarm systems
- Voltage-free alarm change-over contacts
- Provides 4000V isolation
- Can connect up to 16 TDF units to provide common single alarm output
- 5 year Warranty

### Surge Counter

- Voltage transient detection method allows simple installation
- Optional current transformer for connection to multiple circuits
- Maximum count 9999 surges
- Non-resettable counter prevents accidental erasure
- 5 year Warranty

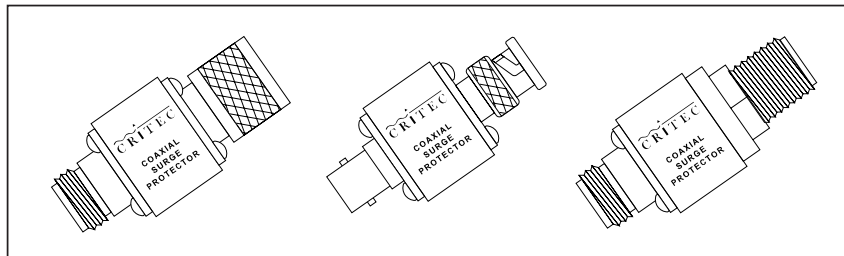
	
Part Number	Description
TDS CT DAR 275V	Surge Counter Unit w/CT Inclusive Form C Relay Unit, 90V-275VAC, 4kV Insulation – Use with TDF Opto-Isolated Outputs, UL cUL, CSA Approvals

# COMMUNICATIONS AND DATA EQUIPMENT PROTECTION

## RADIO COMMUNICATIONS PROTECTION

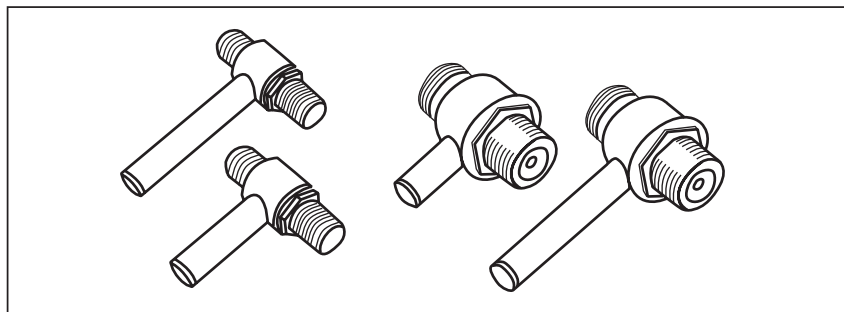
- Robust design
- Simple plug-in installation
- Four models to suit most common cable terminations
- High impulse ratings
- Wide operating frequency spectrum (up to 3GHz on some models)
- Low insertion and return loss
- 5 year Warranty

### Coaxial Surge Protectors - CSP



Part Number	Description
CSP NMF 90	NM to NF, 90V Clamp, DC-3GHz, 300W, 50 ohms, 10kA 8/20 $\mu$ s
CSP NMF 600	NM to NF, 600V Clamp, DC-3GHz, 300W, 50 ohms, 10kA 8/20 $\mu$ s
CSP BNC 90	BNC, 90V Clamp, DC-3GHz, 300W, 50 ohms, 10kA 8/20 $\mu$ s
CSP BNC 600	BNC, 600V Clamp, DC-3GHz, 300W, 50 ohms, 10kA 8/20 $\mu$ s
CSP NB 90	N Bulkhead, 90V Clamp, DC-3GHz, 300W, 50 ohms, 10kA 8/20 $\mu$ s
CSP NB 600	N Bulkhead, 600V Clamp, DC-3GHz, 300W, 50 ohms, 10kA 8/20 $\mu$ s

### Quarter-Wave Stub Protectors



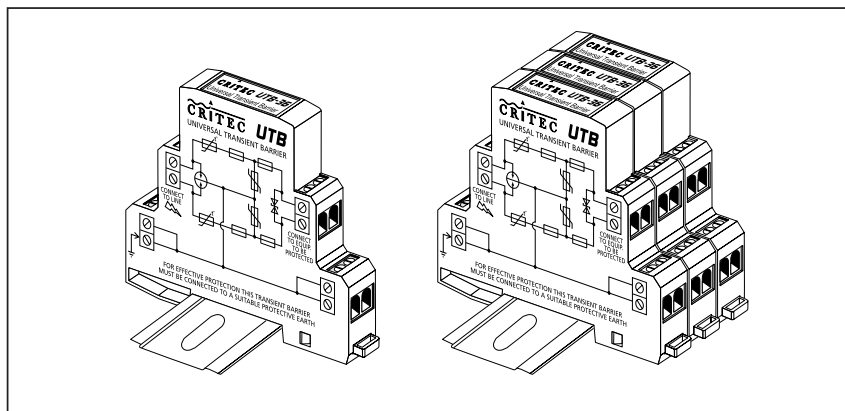
Part Number	Description
QSP NA 0916	NF Bulkhead to NF Connector, 916 MHz Band
QSP NA 0450	NF Bulkhead to NF Connector, 400-480 MHz Band
QSP NA 0859	NF Bulkhead to NF Connector, 805-915 MHz Band
QSP NA 1920	NF Bulkhead to NF Connector, 1.8-2.0 GHz Band

# COMMUNICATIONS AND DATA EQUIPMENT PROTECTION

## CONTROL SIGNAL EQUIPMENT PROTECTION

- Genuine 20kA surge rating for 8/20 $\mu$ s test pulse
- Premium three stage protection
- Over-voltage and over-current protection
- Self-resetting
- Survives high ground Potential Rise (EPR)
- Clamps voltages from 9 to 72 volts
- Models to suit balanced pair signal lines operating at up to 8MHz and line currents up to 3.0 Amps
- UTB-S model for telephone circuit
- Low profile, slim design (just 12mm / .473" wide)
- Complete with ability to fit most common DIN rail mountings and screwmount requirements
- 5 year Warranty

### *Universal Transient Barrier (UTB and UTB-S)*



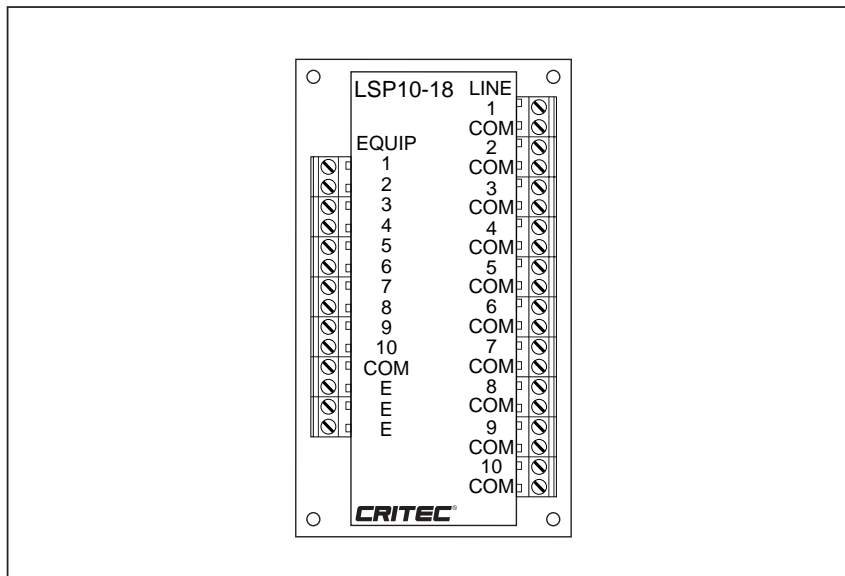
Part Number	Description
UTB 9	9V Clamp 12mm DIN Profile, 20kA 8/20 $\mu$ s, 1.5A Load Current
UTB 18	18V Clamp 12mm DIN Profile, 20kA 8/20 $\mu$ s, 1.5A Load Current
UTB 36	36V Clamp 12mm DIN Profile, 20kA 8/20 $\mu$ s, 1.5A Load Current
UTB 36 R1	55V Clamp 12mm DIN Profile, 20kA 8/20 $\mu$ s, 1.5A Load Current
UTB 36 R2	140V Clamp, 2 Stages, 12mm DIN Profile, 20kA 8/20 $\mu$ s, 3.0A Load Current
UTB 72	72V Clamp, 12mm DIN Profile, 20kA 8/20 $\mu$ s, 200mA Load Current
UTB S	Subscriber Line Protector for Modems and Telephone Lines, 20kA

# COMMUNICATIONS AND DATA EQUIPMENT PROTECTION

## CONTROL SIGNAL EQUIPMENT PROTECTION

- For 5 balanced or 10 unbalanced signal lines
- Program Logic Control type circuit protection
- 10kA surge capacity
- Clamp voltages from 9V to 100V
- Working current up to 110mA
- 2Amp version for solenoid controller protection
- 5 year Warranty

### *Line Surge Protector (LSP)*



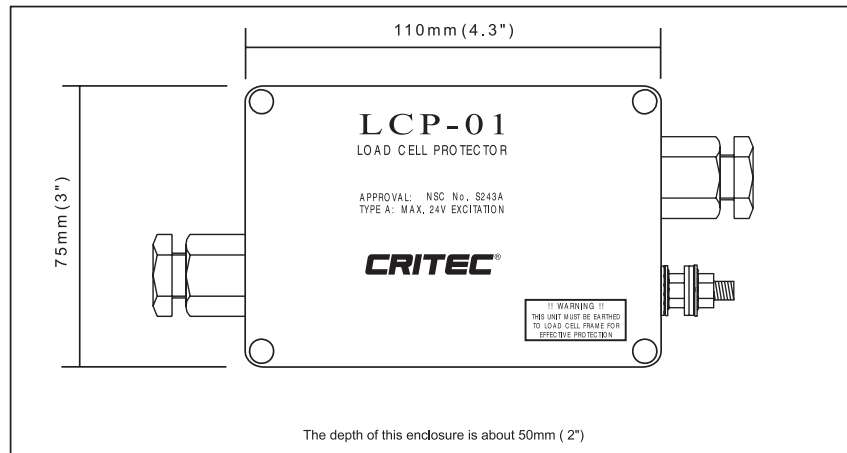
Part Number	Description
LSP109	10 Way Signal Control Line Surge Protector, 9V Clamp
LSP1018	10 Way Signal Control Line Surge Protector, 18V Clamp
LSP1036	10 Way Signal Control Line Surge Protector, 36V Clamp

# COMMUNICATIONS AND DATA EQUIPMENT PROTECTION

## CONTROL SIGNAL EQUIPMENT PROTECTION

- Protection for load cells & instrumentation equipment against lightning induced transients
- For 4-wire or 6-wire load cells
- Supplied in a weather-proof enclosure which satisfies IP55 specs
- Under normal operating conditions LCP does not affect load cell calibration
- LCP is a low capacitance device and does not affect or cause earth loop problems

### Load Cell Protection (LCP)



Part Number	Description
LCP01A	Load Cell Protector, 4 or 6 Wire, 30V Clamp

# GROUND TEST KITS

## Ground Testers

### *Earth Systems Tester Units*



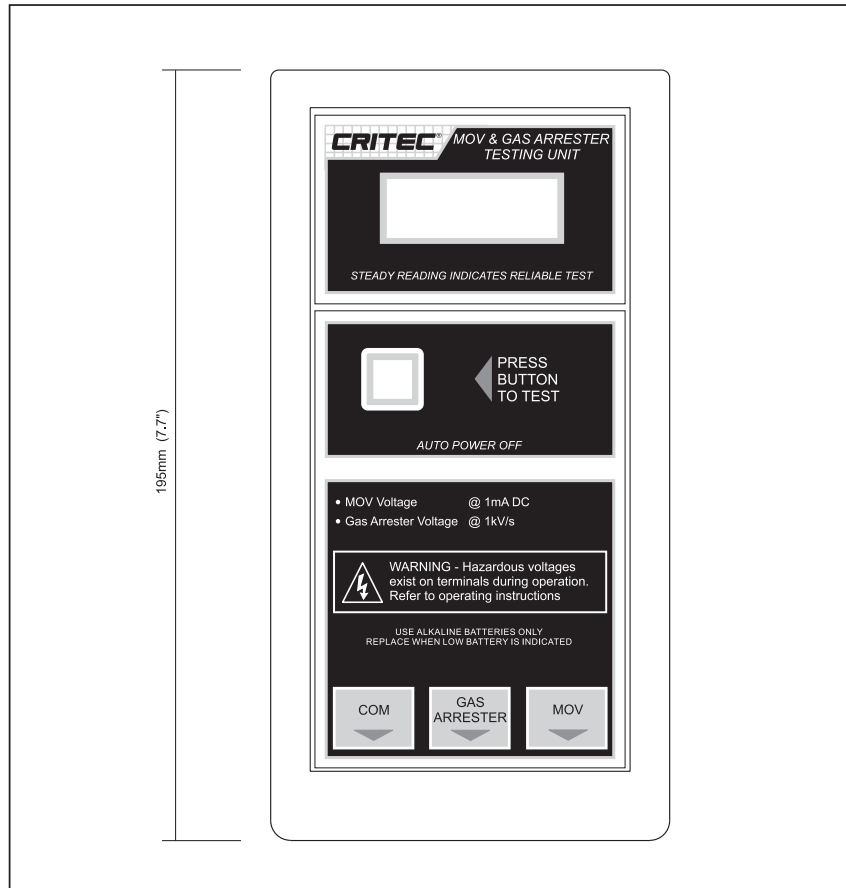
Part Number	Description
EST101	Handy Earth Tester, 2 Pole Resistance; 3 Pole Ground/Earth Resistance Measurements @ 128Hz; Ground to Neutral Voltage and Impedance
EST201	Earth System Tester, 2 Pole AC Resistance; 2 and 3 Pole Ground/Earth Resistance Measurements; 4 Pole Soil Resistivity
EST301	Universal Earth System Tester, 2 Pole AC, 2 and 3 Pole Ground/Earth Resistance; 4 Pole Soil Resistivity & Clamp on Stakeless and Selective
ESTREELKIT500	EST Reel Kit, 500 Feet long (Includes Two Reels)

# TEST DEVICES

## MGA AND TLP TEST UNITS

- Tests the integrity of metal oxide varistors (MOVs) and gas arresters, allowing for the remedial replacement of devices nearing their end-of-life
- Display of the component clamp voltage
- Testing voltages up to 900 volts
- Fully portable for field operation
- Battery controlled with low battery warning and Auto "Power Off"
- Complete with protective case and leads
- 2 year Warranty

### MOV and Gas Arrester (MGA) Test Unit



Part Number	Description
MGA Tester	MOV and GAS Arrester Test Unit

Can not be used on TD Technology devices.



# LITERATURE & VIDEOS

R359LT1	RAIL TRANSPORTATION CAPABILITIES BROCHURE
RT7H	TOOLS AND EQUIPMENT BROCHURE
SB7D	CABLE STRIPPING TOOL FLYER
RT7G	TRACK CIRCUIT RETAINER CLIPS BROCHURE

## GROUNDING

RT1AE	CADWELD ONE-SHOT GROUNDING
SB4A	STEEL CASE GROUNDING
SB4B	ALUMINUM CASE GROUNDING
SB4C	GROUNDING – MAST CLAMP
RT7F	GEM – GROUND ENHANCEMENT MATERIAL

## BONDING

RT7J	EPP CASE HISTORY BROCHURE
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## PROTECTION

S270C	CRITEC® SURGE PROTECTION PRODUCTS
X7A	ERICO SIX POINT PROTECTION PLAN

## VIDEO

RRTAPE3	INSTRUCTION VIDEO – TRACTION POWER CONNECTION, 3RD RAIL
RRTAPE5	INSTRUCTION VIDEO – SIGNAL BONDS

## CD

R383D	SIGNAL BOND TRAINING
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633480	25	DS34	25
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635880	25	ECRH10 "XX" 4 "Y"	24
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A140WT	19	ECRH15 "XX" 4 "Y"	24
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A2363J	18	EPD120/240TD	38
A2364J	18	EPD120/240TDF	38
A2367J	18	EPD120/240TDFL	38
A2412J	18	EPD120HCTDAAR	39
A248B	21	EPD120TD	38
A251	21	EPD120TDAAR	39
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B136D	34	EPD12HCATAAR	39
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SBA206	21	SBB394C	34
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SBA2511B	22	SBB492	10
SBA2512B	22	SBB492	11
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SBPAJA "XX"	16	SBRT36100142	35
SBPAJB "XX"	16	SBRT36100147	35
SBPAJC "XX"	16	SBRT36100148	35
SBPAJD "XX"	16	SBRT36100149	35
SBPAJG "XX"	16	SBRT36100150	35
SBPAJN "XX"	16	SBRT36100152	35
SBPAJP "XX"	16	SBRT36100177	35
SBPAJR "XX"	16	SBRTCB6667	35
SBPAW35	17	SBS09C	13
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SBS3086R48	19	SBTBB54 "X"	9
SBS3086R48WT	19	SBTBBU4A	9
SBS3086S48	19	SBTBCU412	9
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SBS898F	11	SBTBS36 "X"	9
SBS8BARE	15	SBTBS54 "X"	9
SBS8CBARE	15	SBTBT21B	12
SBS8CINORG	15	SBTBT21C	12
SBS8CINSUL	15	SBTBT21D	12
SBS8INORG	15	SBTBT21E	12
SBS8INSUL	15	SBTBT6A	10
SBS8LBARE	15	SBTBT6B	10
SBS8LINSORG	15	SBTBT6C	10
SBS8LINSUL	15	SBTBT6D	10
SBS8TCINS	15	SBTBT6E	10
SBS8TCINS664	15	SBTBT7B	10
SBS8TCINSRD	15	SBTBT7F	10
SBS8TDINSUL	15	SBTBT7G	10
SBS8TINSRD	15	SBTBTB4B	13
SBS8TINSUL	15	SBTBTB4C	13
SBS8TLINS664	15	SBTBTB4D	13
SBS925	10, 11	SBTBTB4E	13

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# NOTES

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