



VANDAPOWER

# Anderson

# Multipole Family



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- SB®175	17
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- SBE®80 / SBO®60	29
- SBE®160 / SBX®175	34
- SBE®320 / SBX®350	42
- SBS®	50
- Dust covers & sleeves	58

	Powerpole® Connector Family	Multipole Connector Family
Page Number	16	44
Amps (UL) Per Pole	Up to 350	Up to 450
Volts (UL) Per Pole	Up to 600	Up to 600
Wire Gauge (AWG)	20 - 3/0	16 - 300 mcm
Wire Gauge (mm <sup>2</sup> )	0.75 - 85.0	1.3 - 152
Number of Power Circuits	1 / Stackable	2 - 3 / Not Stackable
Ground	•	•
Auxiliary		•
PCB Mount	•	•
Bus Bar	•	•
Panel Mount	•	•
Blind Mate	•	
Hot Plug	•	•
Touch Safe	•	•
Strain Relief	•	•
Polarized Housing	•	•
Mechanically Keyed		•
Latching	•	
Handle		•
Air Supply System		•

# Multipole Family

## Overview of SBS®, SB® & SBX® / SBO® - Main Differentiating Features



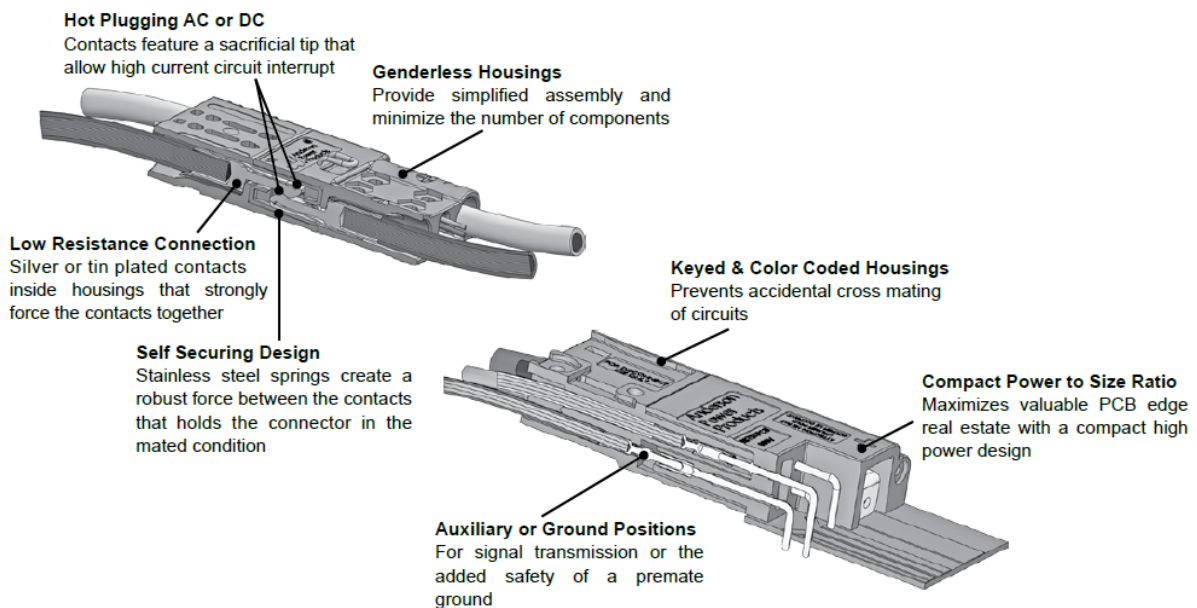
**SBS®:** The "Storage Battery Safety" connector provides a compact connection with a touch safe interface. The newest series of the Multipole connector continues to add new features and capabilities.

**SB®:** Based on the original "Storage Battery" connector that pioneered flat wiping contact technology over a half century ago. Two to three positions in a genderless mechanically-keyed housing are suitable for a wide array of power connection applications.

**SBX®:** The addition of auxiliary positions to the SB® created the "Storage Battery Auxiliary" connector. Up to 8 auxiliary positions allow expanded capabilities for the Multipole family by allowing intelligent power switching, monitoring of battery charge status, and other signal functions to be integrated into a single connector.

**SBE®:** By modifying the SBX® housing the "Storage Battery European" connector was created. The SBE® housings are molded from a chemical resistant PBT resin and the SBE®320 features improved touch safety over the SBX®350 design.

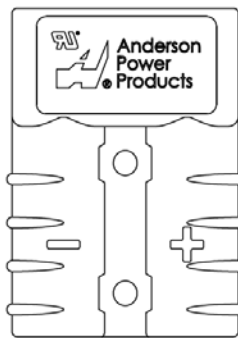
**SBO®:** Designed to meet the needs of connecting office equipment, the "Storage Battery Office" connector is molded out of durable PC like the original SB® but incorporates the auxiliary positions of the SBX® in a housing similar to the SBE®80.



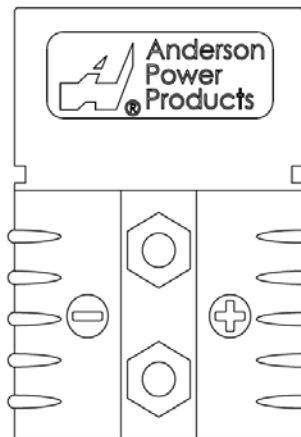
## | MULTIPOLE FAMILY SELECTION GUIDE |

	SBS® Connector	SB® Connector	SBX® / SBE® / SBO® Connectors
Page Number	50	6	29
Amps Per Pole	50 - 110	50 - 450	60 - 350
Volts (UL) Per Pole	600	600	600
Wire Gauge (AWG)	16 - 6	16 - 300	16 - 300
Wire Gauge (mm²)	1.3 - 13.3	1.3 - 152	13.3 - 152
Number of Power Circuits	2 - 3	2 - 3	2
Number of Auxiliary Circuits	4	0	8
PCB Mount	•	•	
Bus Bar		•	
Panel Mount	•	•	
Hot Plug	•	•	•
Touch Safe	•		•
Mechanically Keyed	•	•	•
Handle	•	•	•
Air Supply System			•
Environmental Protection		•	

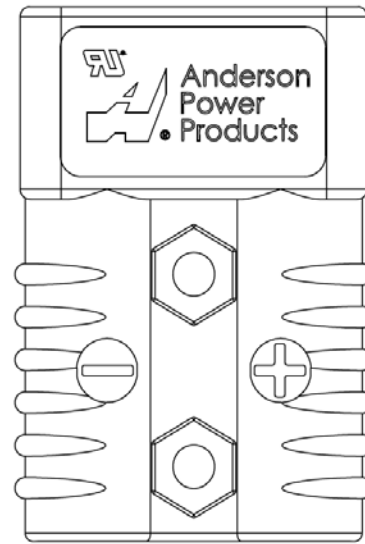
### Actual Size - Connector Half



SB®50



SB®120



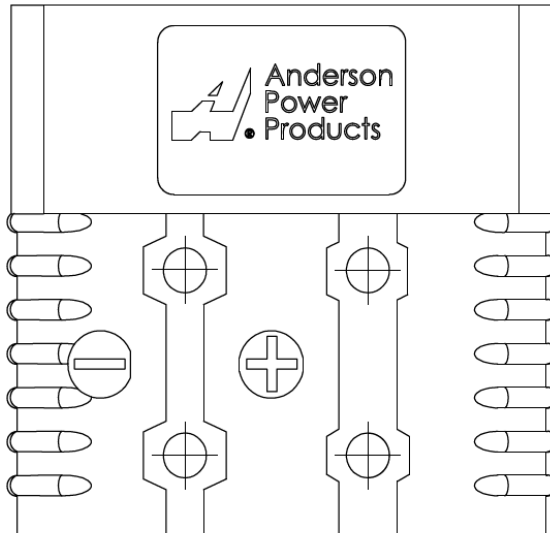
SB®175 - 2 Pole



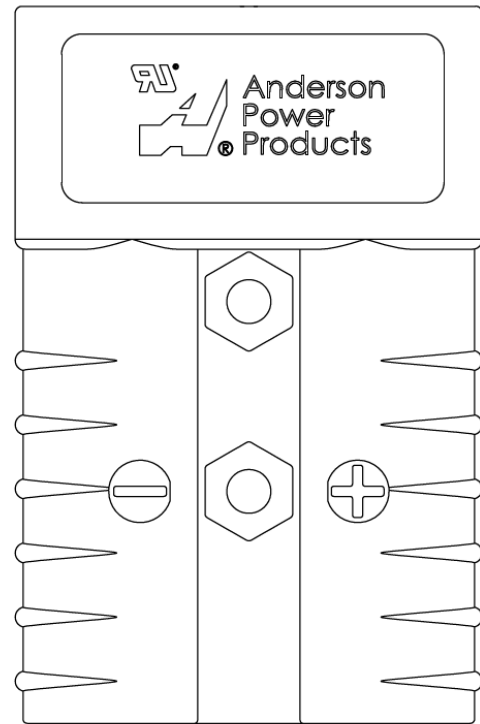
Protect your SB® 50, 120 & 175 connectors from water, dirt, chemicals and UV light with the new SB® Environmental Boot. It protects the SB® connectors in both the mated and unmated condition. Visit our website for more information, <http://www.andersonpower.com/products/multipole-sb.html>



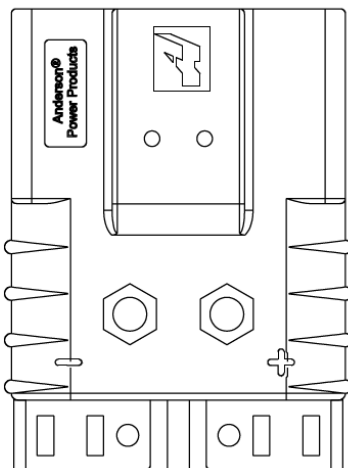
Actual Size - Connector Half



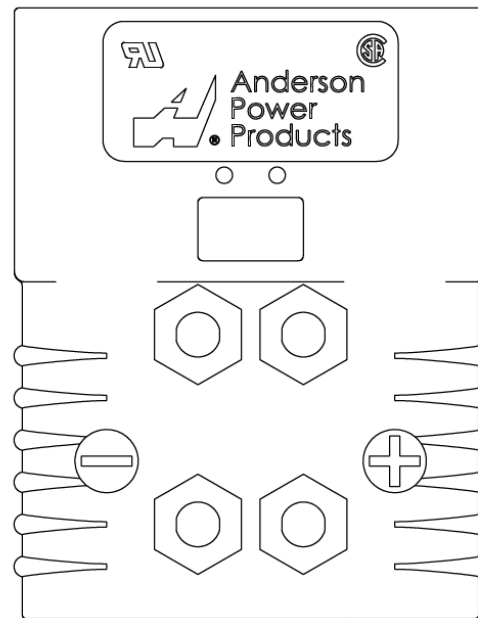
**SB®175 - 3 Pole**



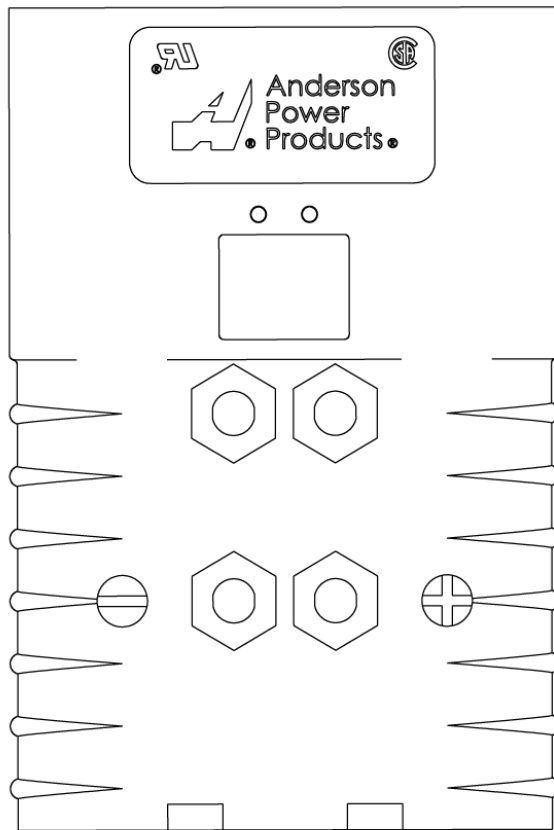
**SB®350**



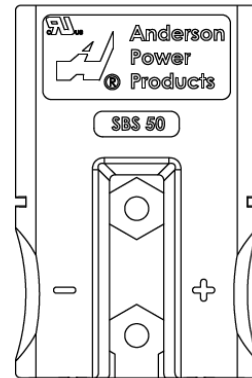
**SBE®60 - SBO®80**



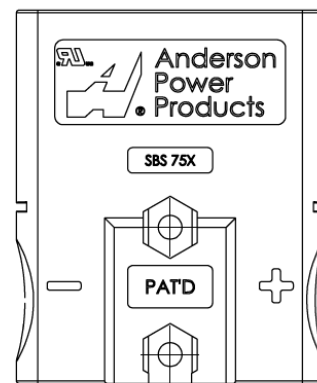
**SBE®160 - SBX®175**



**SBE®320 - SBX®350**



**SBS®50**



**SBS®75X  
&  
SBS®75G**

### Explanation of Mechanical Voltage Keys

Features molded into the mating interface of the connector housing prevent accidental cross mating of circuits. This molded feature mechanically keys the connection so that only housings with the same mating interface can be mated together.

Different mechanical keys can be easily recognized by the color of the housing. This color coding corresponds to a voltage that industrial trucks, batteries, and chargers have adopted as a standard to prevent incompatible voltages from cross mating.

The mechanical keying and color coding does not indicate or restrict the voltage capability of the connector. All colors & keys are capable of the voltage rating per the specifications for the particular connector.

Note: Some housings in the SB®50, SB®175, and SB®350 series have different colored housings with a shared mechanical keying feature. Please see the specific data sheet for details.

### Recommended Voltage Key Color Code

<b>Voltage</b>	12V	18V	24V	36V	48V	72V	80V	96V	120V	144V
<b>Color</b>	Yellow	Orange	Red	Gray	Blue	Green	Black	Brown	Purple	White



## SB® 50 Connectors - up to 120 amps



Based off the design pioneered by Anderson in 1953, APP®'s two pole SB® connectors set the standard for DC power distribution and battery connections. SB®50 connectors feature a one piece plastic housing using stainless steel springs to hold low resistance contacts in place. Wires sizes from #16 (1.3 mm<sup>2</sup>) to #6 (13.3 mm<sup>2</sup>) are held in the smallest of the SB® series housings.

- **Low Resistance Silver or Tin Plated Copper Contacts**  
Allows UL rated currents up to 120 amps
- **UL Rated for Hot Plugging up to 50 Amps**  
Great for battery or other applications where the ability to interrupt circuits is required
- **Wire, PCB, and Busbar Contacts**  
Allows one connection system to meet multiple needs

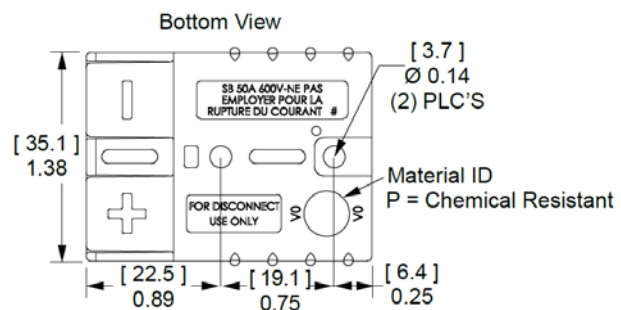
### | SB50® ORDERING INFORMATION |

#### SB®50 Standard Housings

The smallest SB® housings work with wire contacts up to 6 AWG [10 mm<sup>2</sup>] as well as PCB, and busbar contacts. Genderless design mates with itself. Mechanical keys are color coded.

Description	Part Numbers	
Minimum Quantity	500	100
Yellow	992G5-BK	992G5
Orange	992G7-BK	992G7
Red	992G1-BK	992G1
Gray	992-BK	992
Blue	992G4-BK	992G4
Green	992G6-BK	992G6
Black	992G2-BK	992G2

NOTE: SB®50 Black and Gray housings have the same keying features and can be intermated.

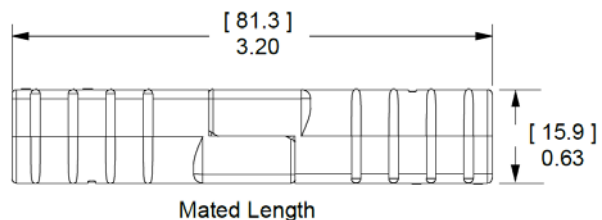


#### SB®50 Chemical Resistant Housings

Same features as the Standard SB®50 but molded in a chemical resistant PBT/ PC blend. Suitable for use to -40°C.

Description	Part Numbers	
Minimum Quantity	500	100
Red	P992G1-BK	P992G1
Gray	P992-BK	P992
Black	P992G2-BK	P992G2

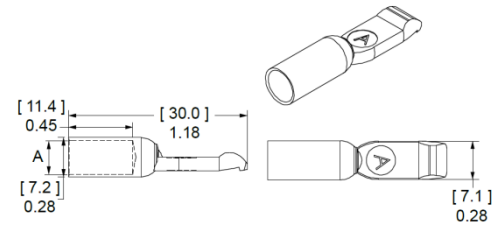
NOTE: SB®50 Black and Gray housings have the same keying features and can be intermated.



### SB®50 Silver Plated Wire Contacts

Use two silver plated contacts per housing for the best electrical performance and durability up to 10,000 mating cycles.

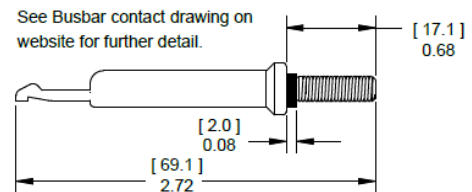
AWG	mm <sup>2</sup>	Mating Force	Loose Piece Part Numbers		Dimensions - A -	
					inches	mm
Minimum	Quantity		1000	100		
6	13.3	Low	1307-BK	1307	0.22	5.59
6	13.3	High	5900-BK	5900	0.22	5.59
8	8.4	High	5952-BK	5952	0.19	4.83
12 to 10	3.3 to 5.3	Low	5953-BK	5953	0.14	3.56
12 to 10	3.3 to 5.3	High	5915-BK	5915	0.14	3.56



### SB®50 Silver Plated Busbar Contacts

Use 2 busbar contacts per housing to provide a quick disconnect input or output busbar connection. Busbar contacts are for mating with wire contacts only. Part number 75BBS includes lock nuts. Locknuts must be ordered separately for B01915P1.

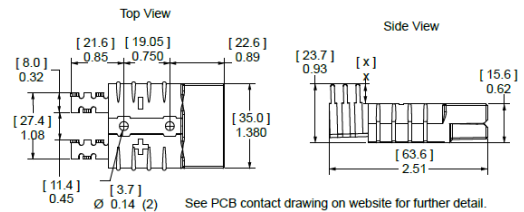
Type	Thread	Mating Force	Loose Piece Part Numbers	
Minimum	Quantity		20	10
Busbar	#10-24	High	-	75BBS
Lock Nut	#10-24	-	110G54	-



### 55A Right Angle Standard Powerclaw PCB Contacts

Standard Powerclaw contacts are for use inside a SB®50 housing and provide a color coded right angle connection to the PCB.

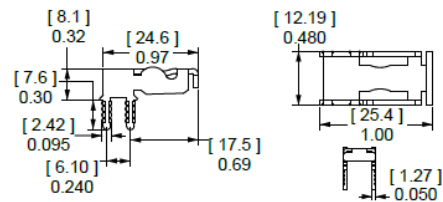
Description	Loose Piece Part Numbers	
Minimum Quantity	500	100
Tin Plated	PC5930T-BK	PC5930T



### 55A Right Angle Mini Powerclaw PCB Contacts

Right angle Mini Powerclaw contacts can be used on the PCB edge without a SB®50 housing on the PCB side. A self polarizing design only allow SB®50 wire housings to mate to PCB contacts one way.

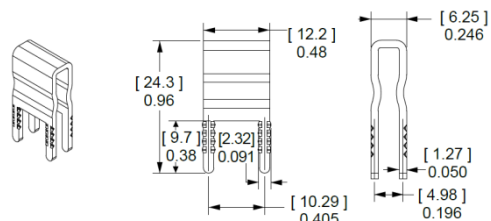
Description	Loose Piece Part Numbers	
Minimum Quantity	1000	100
Tin Plated	PC5934T-BK	PC5934T
Silver Plated	PC5934S-BK	PC5934S



### 55A Vertical Mini Powerclaw PCB Contacts

Vertical Mini Powerclaw contacts save space by not requiring a SB®50 housing on the PCB side. The guide housing is required for to provide a polarized connection. (See SB®50 accessories).

Description	Loose Piece Part Numbers	
Minimum Quantity	1500	100
Tin Plated	PC5933T-BK	PC5933T
Silver Plated	PC5933S-BK	PC5933S





## | SB®50 CONNECTOR SPECIFICATIONS |

Electrical		
<b>Current Rating Amperes<sup>1</sup></b>	<b>UL 1977</b>	<b>CSA</b>
Wire to Wire UL 1977 (6 AWG)	120	50
Wire to PCB UL 1977 (6 AWG)	50	
<b>Voltage Rating AC/DC</b>		
UL 1977	600	
<b>PCB Connector Recommended Voltage per IEC 60950-1 Table 2L Pollution Degree<sup>2</sup></b>		
Mini Vert. Contact	522	
Mini Horiz. Contact	504	
Standard Contact	950	
<b>Dielectric Withstanding Voltage</b>		
Volts AC	2,200	
<b>Avg. Mated Contact Resistance Milliohms<sup>1</sup></b>		
1 1/4" of #6 AWG wire	0.200	
PCB Contact to Contact	0.500	
<b>UL Hot Plug Current Rating Amperes - 250 cycles at 120V DC</b>		
Wire- wire	50A	
PCB- wire	40A	
(Vertical Mini Powerclaw)		

Materials	
<b>Housing</b>	
Standard Plastic Resin	Polycarbonate
Chem. Resistant Resin	Polycarbonate / PBT blend
Contact Retention Spring	Stainless Steel
<b>Housing Flammability Rating</b>	
UL94	V-0
<b>Contact</b>	
Base	Copper Alloy
Wire Plating	Silver
PCB Plating	Sn or Ag over Ni
<b>Contact Termination Methods</b>	
Crimp <sup>3</sup>	Wire Contacts
Hand Solder	Wire and PCB Contacts
Solder Dip*	PCB Contacts
Wave Solder*	PCB Contacts
Wrench / Socket	Busbar Contacts

Mechanical		
<b>Wire Size Range</b>	<b>AWG</b>	<b>mm<sup>2</sup></b>
Wire Contacts with Bushings	16 to 6	1.3 to 13.3
<b>Max. Wire Insulation Diameter</b>	<b>in.</b>	<b>mm</b>
	0.440	11.200
<b>Operating Temperature<sup>2</sup></b>	<b>°F</b>	<b>°C</b>
Standard	-4° to 221°	-20° to 105°
Chemical Resistant*	-40 to 221°	-40° to 105°
*Chemical resistant material not available for PCB guide housings		
<b>Mating Cycles No Load by Plating</b>	<b>Silver (Ag)</b>	<b>Tin (Sn)</b>
Wire and PCB Contacts	10,000	1,500
<b>Avg. Mating / Unmating Force</b>	<b>Lbf.</b>	<b>N</b>
Wire to Wire Low Force Contacts	10	44
Wire to Wire High Force Contacts	15	67
Standard Powerclaw to Wire	15	66
Mini Powerclaw to Wire	8	36
<b>PCB Specifications</b>		
Mounting Style	Plated Through Hole	
Max PCB Thickness- in. [mm]	Standard: 0.15 [0.381]	
	Mini: 0.25 [0.635]	
Recommended Traces	#8 AWG Cross Section	
<b>Min. Contact / Spring Retention Force</b>	<b>Lbf.</b>	<b>N</b>
Wire Housing	50	222
<b>Min. Creepage / [Clearance] Distance</b>	<b>in.</b>	<b>mm</b>
Standard Powerclaw	0.374	9.5
Mini Vert. Powerclaw	0.213	5.4
Mini Horiz. Powerclaw	0.205	5.2

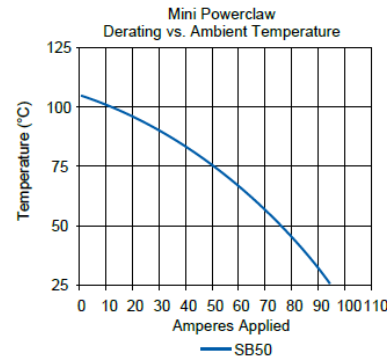
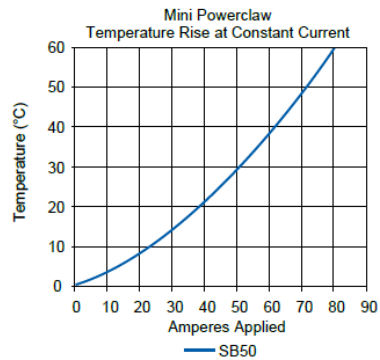
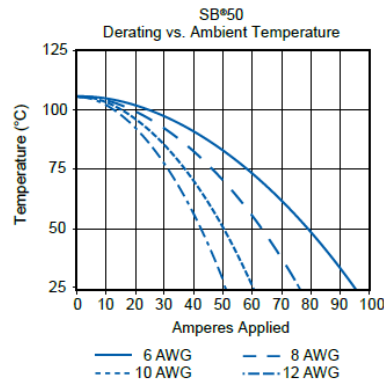
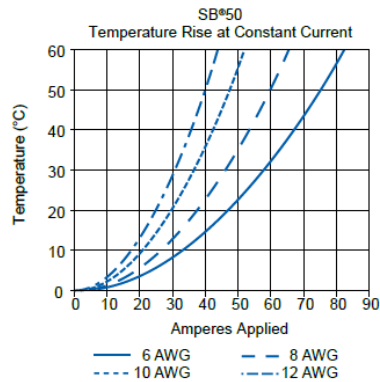
Protection	
<b>Touch Safety with Wire Contacts</b>	
IEC 60529	IP10

<sup>1</sup> Based on: 105°C rated or better cable of the largest size, Properly calibrated APP® recommended tooling, and a 25°C ambient temperature. UL rating not to exceed the maximum operating temperature. CSA rating below a 30°C temperature rise.

<sup>2</sup> Limited by the thermal properties of the connector plastic housing.

<sup>3</sup> Use APP® recommended tooling only. Alternate tools may adversely affect the performance of our connectors along with UL and CSA recognition.

## | SB®50 CONNECTOR TEMPERATURE CHARTS |



NOTE: Temperature rise charts are based on a 25°C ambient temperature. Powerclaw charts are based on #8 AWG equivalent copper foil on board side, mated to #6 AWG conductor on wire side.

## | Complete connector – SB50 – Part numbers |

Volt.	Amp.	Colour	Wire AWG	Cable Well Diam. (mm²)	Part No.
12	50	Yellow	#10/12	3.31 - 5.26 (6) (*)	6331G8
18	50	Orange	#10/12	3.31 - 5.26 (6) (*)	6331G12
24	50	Red	#10/12	3.31 - 5.26 (6) (*)	6331G2
36	50	Grey	#10/12	3.31 - 5.26 (6) (*)	6319G1
48	50	Blue	#10/12	3.31 - 5.26 (6) (*)	6331G6
72	50	Green	#10/12	3.31 - 5.26 (6) (*)	6331G10
80	50	Black	#10/12	3.31 - 5.26 (6) (*)	6331G4
12	50	Yellow	#6	13.30 (12-16)	6331G7
18	50	Orange	#6	13.30 (12-16)	6331G11
24	50	Red	#6	13.30 (12-16)	6331G1
36	50	Grey	#6	13.30 (12-16)	6319
48	50	Blue	#6	13.30 (12-16)	6331G5
72	50	Green	#6	13.30 (12-16)	6331G9
80	50	Black	#6	13.30 (12-16)	6331G3

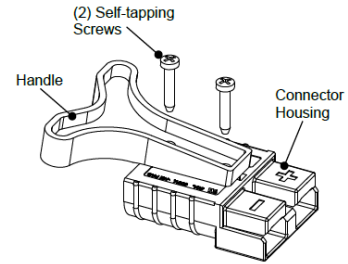
(\*) not standard

| **SB® Accessories** |

**“T” Handle**

The “T” handle makes mating and unmating the connector easier. The non-conductive red plastic material is strong and safe. (2) Self tapping screws are used to secure the handle to the connector housing.

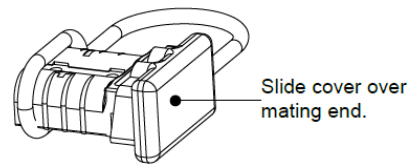
Description	Part Numbers
Minimum Quantity	50
Red “T” Handle + Hardware Bag	SB50-HDL-RED
Hardware Bag (2screws)	104G17
Red “T” Handle Only	-
#8 x 5/8" Screw (Order 2 Per Handle)	-



**Dust Cover**

Prevents dust and dirt from entering the mating interface of the connector when unmated. NOTE: Not a Hermetic Seal.

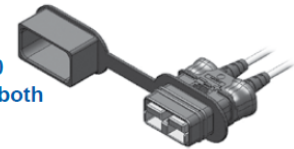
Description	Part Numbers
Minimum Quantity	50
Dust Cover With Lanyard Strap, Red	134G1-R
Dust Cover With Lanyard Strap, Black	134G1-B



\* See page 58 for dust covers and sleeves.



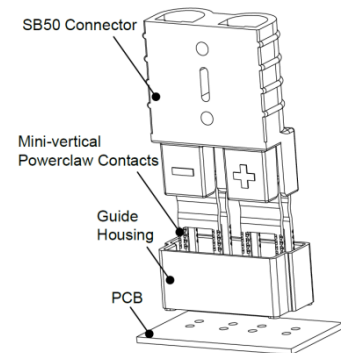
**SB® Environmental Boots provide water, dirt, chemical and UV protection for SB® 50 connectors. The durable boots shield the connectors from water and dirt to IP64 in both the mated and unmated condition. Visit our website for more information, <http://andersonpower.com/products/multipole-sb.html>.**



**Guide Housings for Vertical Mini Powerclaw Contacts**

Prevents polarity being reversed when a SB®50 is mated to vertical mini Powerclaw contacts.

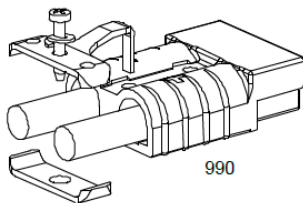
Description	Part Numbers	
Minimum Quantity	1000	50
Black Guide Housing	PC-HSG-SB-BK	PC-HSG-SB



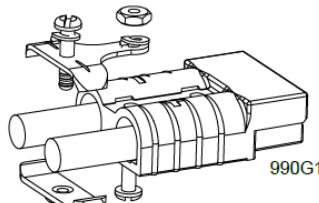
**Cable Clamps**

Durable metal cable clamps securely hold cables to prevent accidental strain or pulls from dislodging wire or contacts from the housing. Cable clamps are recommended for solder terminated wires.

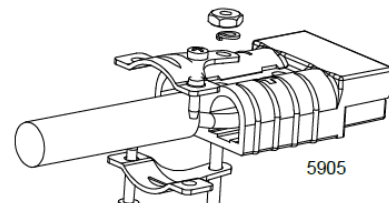
Description	Cable Size		Part Numbers	
	AWG or (Inches O.D.)	mm <sup>2</sup> or (mm O.D.)	500	50
Self Attaching for Discrete Conductor	8 to 6	10	990-BK	990
Self Attaching for Discrete Conductor	12 to 10	4 to 6	990G2-BK	990G2
Bolt on for Discrete Conductor	12 to 6	4 to 10	990G1-BK	990G1
Bolt on for Bundled Conductor	(0.320 to 0.450)	(4.27 to 11.43)	5905-BK	5905



Self attaching discrete conductor.



Bolt on discrete conductor.



Bolt on bundled conductors.

The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.



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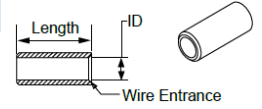


Anderson Power Products

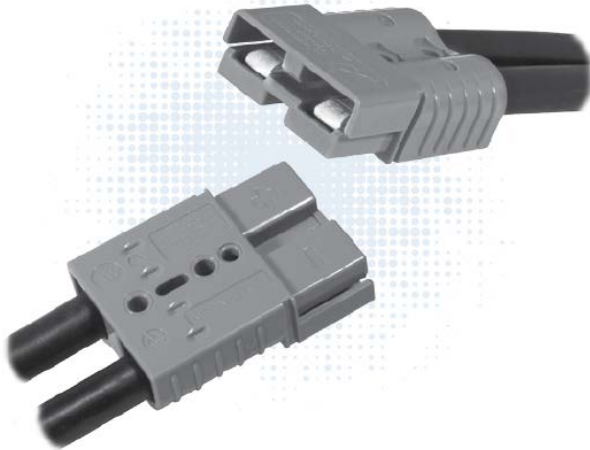
### Reducing Bushings

Use with contact part number 5900-BK or 1307-BK to allow a smaller wire to be used with the connector.  
Electrical capability is derated with smaller wire.

Contact Barrel Size	Wire Size	Part Numbers			Dimensions					
					- ID -		- Length -			
Minimum Quantity		3000	1000	100						
#6 AWG [13.3 mm <sup>2</sup> ]	#8 AWG [8.4mm <sup>2</sup> ]	-	5912-BK	5912	0.18	4.57	0.45	11.43		
#6 AWG [13.3 mm <sup>2</sup> ]	#12-10 AWG [3.3 - 5.3 mm <sup>2</sup> ]	5910-BK	-	5910	0.14	3.56	0.47	11.94		
#6 AWG [13.3 mm <sup>2</sup> ]	#16 - 14 AWG [1.3 - 2.1 mm <sup>2</sup> ]	5913-BK	-	5913	0.09	2.29	0.47	11.94		



## SB120® Connectors - up to 240 Amps



Like the other Multipole connectors, the SB®120 offers color-coded mechanically keyed housings. Keys can be used to identify and separate different circuits, or prevent users from accidentally cross mating different voltages. Wires sizes from #10 (5.3 mm<sup>2</sup>) to #1 (42.4 mm<sup>2</sup>) are held in the second smallest SB® housing.

- **New extended range contacts expand wire size up to #1 AWG (42.4 mm<sup>2</sup>)**

*Allows UL rated currents up to 240 amps*

- **Chemical resistant housing option**

*Extends temperature range down to -40°C, while offering enhanced UV and chemical resistance*

- **Panel mounting grooves**

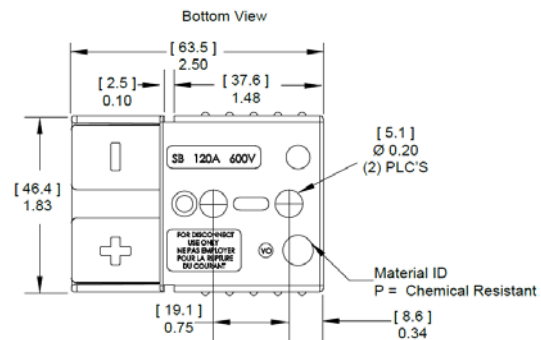
*With use of mounting clamps, can be easily mounted through panels*

### | SB®120 ORDERING INFORMATION |

#### SB®120 Standard Housings

The second to smallest SB® housings work with wire contacts up to 1 AWG [35 mm<sup>2</sup>] as well as busbar contacts. Genderless design mates with itself. Mechanical keys are color coded.

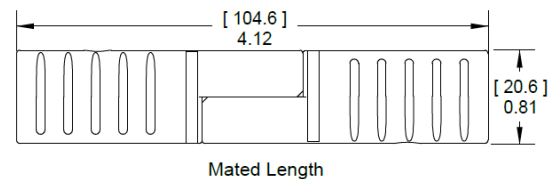
Description	Part Numbers	
Minimum Quantity	250	50
Red	6810G3-BK	6810G3
Gray	6810G1-BK	6810G1
Blue	6810G2-BK	6810G2



#### SB®120 Chemical Resistant (CR) Housings

Same features as the Standard SB®120 but molded in a chemical resistant PBT/ PC blend. Suitable for use to -40°C.

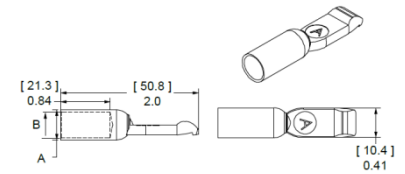
Description	Part Numbers	
Minimum Quantity	250	50
Red	P6810G3-BK	P6810G3
Gray	P6810G1-BK	P6810G1



### SB®120 Silver Plated Wire Contacts

Silver plated contacts offer superior electrical performance and durability up to 10,000 mating cycles.

AWG	mm <sup>2</sup>	Mating Force	Loose Piece Part Numbers			Dimensions			
			600	500	50	- A -		- B -	
Minimum	Quantity					inches	mm	inches	mm
1	42.4	Low	1323G1-BK	-	1323G1	0.47	11.94	0.39	9.91
2	33.6	High	-	1319-BK	1319	0.44	11.18	0.22	5.59
4	21.1	High	-	1319G4-BK	1319G4	0.44	11.18	0.30	7.62
6	13.3	High	-	1319G6-BK	1319G6	0.44	11.18	0.34	8.64

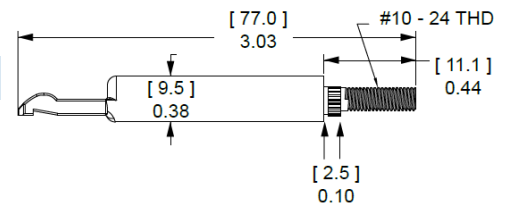


### SB®120 Silver Plated Busbar Contacts

Use 2 busbar contacts per housing to provide a quick disconnect input or output busbar connection. Busbar contacts are for mating with wire contacts only. Part number 120BBS includes lock nuts. Locknuts must be ordered separately for B01997P1.

Type	Thread	Mating Force	Loose Piece Part Numbers	
Minimum	Quantity		20	10
Busbar	#10-24	High	-	120BBS
Lock Nut	#10-24	-	110G54	-

See Busbar contact drawing on website for further detail.



## SB®120 CONNECTOR SPECIFICATIONS |

Electrical		
<b>Current Rating Amperes<sup>1</sup></b>	<b>UL 1977</b>	<b>CSA</b>
Wire to Wire (1 AWG)	240	130
Wire to Busbar (2 AWG)	120	
<b>Voltage Rating AC/DC</b>		
UL 1977	600	
<b>Dielectric Withstanding Voltage</b>		
Volts AC	2,200	
<b>Avg. Mated Contact Resistance Milliohms<sup>1</sup></b>		
5 1/2" of #2 AWG wire	0.136	
<b>Hot Plug Current Rating Amperes - Wire &amp; Busbar</b>		
250 cycles at 120V DC	60A	

Materials		
<b>Housing</b>		
Standard Plastic Resin	Polycarbonate	
Chem. Resistant Resin	Polycarbonate / PBT blend	
Contact Retention Spring	Stainless Steel	
<b>Housing Flammability Rating</b>		
UL94	V-0	
<b>Wire &amp; Busbar Contacts</b>		
Base	Copper Alloy	
Plating	Silver	
<b>Contact Termination Methods</b>		
Crimp <sup>3</sup>	Wire Contacts	
Hand Solder	Wire Contacts	
Wrench / Socket	Busbar Contacts Only	

Mechanical		
<b>Wire Size Range</b>	<b>AWG</b>	<b>mm<sup>2</sup></b>
Wire Contacts with Bushings	10 - 1	5.3 - 42.4
<b>Max. Wire Insulation Diameter</b>	<b>in.</b>	<b>mm</b>
	0.600	15.240
<b>Operating Temperature<sup>2</sup></b>	<b>°F</b>	<b>°C</b>
Standard	-4° to 221°	-20° to 105°
Chemical Resistant <sup>4</sup>	-40 to 221°	-40° to 105°
<b>Mating Cycles No Load by Plating</b>	<b>Silver (Ag)</b>	
Wire and Busbar Contacts	10,000	
<b>Avg. Mating / Unmating Force</b>	<b>Lbf.</b>	<b>N</b>
Wire to Wire	20	89
<b>Min. Contact / Spring Retention Force</b>		
lbf	75	
N	333.6	

Protection	
<b>Touch Safety with Wire Contacts</b>	
IEC 60529	IP10

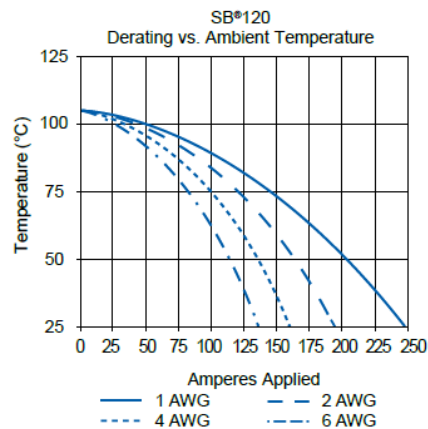
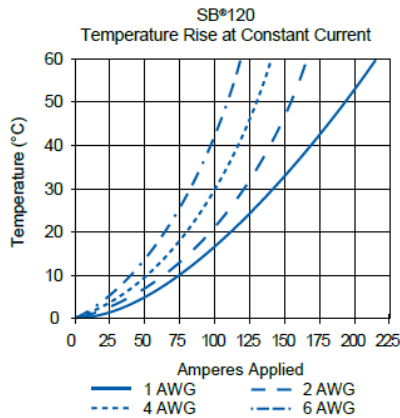


<sup>1</sup> Based on: 105°C rated or better cable of the largest size, Properly calibrated APP® recommended tooling, and a 25°C ambient temperature. UL rating not to exceed the maximum operating temperature. CSA rating below a 30°C temperature rise.

<sup>2</sup> Limited by the thermal properties of the connector plastic housing.

<sup>3</sup> Use APP® recommended tooling only. Alternate tools may adversely affect the performance of our connectors along with UL and CSA recognition.

## | SB®120 CONNECTOR TEMPERATURE CHARTS |



NOTE: Temperature rise charts are based on a 25°C ambient temperature.

## | Complete connector – SB120 – Part numbers |

Volt.	Amp.	Colour	Wire AWG	Cable Well Diam. (mm <sup>2</sup> )	Part No.
24	120	Red	#2	33.62 (35)	6802G1
36	120	Grey	#2	33.62 (35)	6800G1
48	120	Blue	#2	33.62 (35)	6801G1
			#4	21.15 (25) (*)	...G2
			#6	13.30 (16) (*)	...G3

For diameter AWG #4 replace G1 by G2 and for #6 by G3

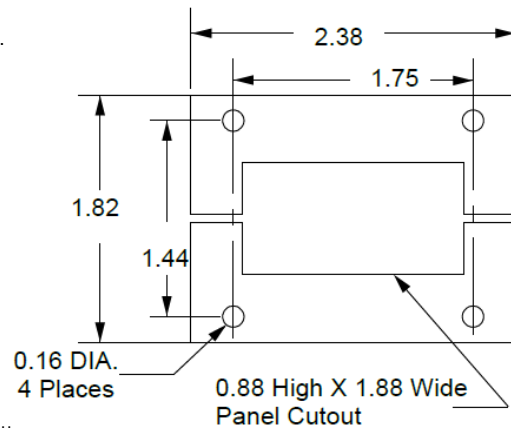
(\*) not standard

## | SB® 120 Accessories |

### Mounting Clamp for SB®120

Mounting clamps can be used for fastening a SB®120 series housings to a panel. Fastening hardware not included.

Description	Part Number
Minimum Quantity	20 sets of 2
Panel Mount Bracket for SBS*50	1467G1

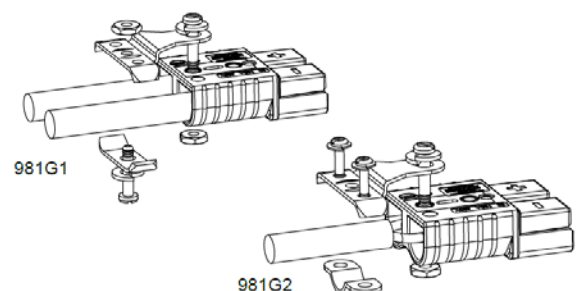


### Cable Clamps

Durable metal cable clamps securely hold cables to prevent accidental strain or pulls from dislodging wire or contacts from the housing. Cable clamps are recommended for solder terminated wires.

Description	Cable Size		Part Numbers
	Min / Max (Inches O.D.)	Min / Max (mm O.D.)	
Minimum Quantity			50
Bolt on for Descrete Conductor	0.70 to 0.23	11.7 to 5.8	981G1
Bolt on for Bundled Conductor	0.73 to 0.29	18.5 to 7.3	981G2

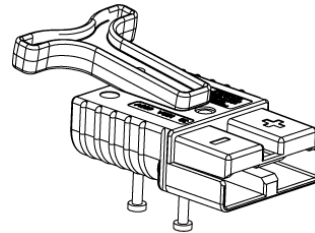
The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.



### “T” Handle

The “T” handle makes mating and unmating the connector easier. The non-conductive red plastic material is strong and safe. (2) Self tapping screws are used to secure the handle to the connector housing.

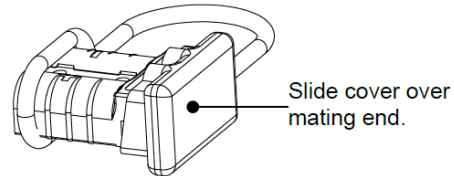
Description	Part Number
Minimum Quantity	50
Red “T” Handle + Hardware Bag	SB120-HDL-RED
Red “T” Handle Only	-
#8 x 7/8" Screw (Order 2 Per Handle)	-



### Dust Cover

Prevents dust and dirt from entering the mating interface of the connector when unmated. NOTE: Not a Hermetic Seal.

Description	Part Number
Minimum Quantity	50
Dust Cover With Lanyard Strap, Black	134G4-B

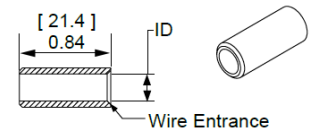


\* See page 58 for dust covers and sleeves.

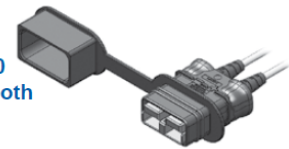
### Reducing Bushings

Use with contact part number 1319-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

Contact Barrel Size	Wire Size	Part Numbers			Dimensions - ID -	
		2000	1000	100	Inches	mm
Minimum Quantity		2000	1000	100		
#2 AWG [33.6 mm <sup>2</sup> ]	#4 AWG [21.2 mm <sup>2</sup> ]	5919-BK	-	5919	0.28	7.11
#2 AWG [33.6 mm <sup>2</sup> ]	#6 AWG [16 mm <sup>2</sup> ]	-	5920-BK	5920	0.23	5.84
#2 AWG [33.6 mm <sup>2</sup> ]	#10-8 AWG [5.3 - 8.4 mm <sup>2</sup> ]	5921-BK	-	5921	0.18	4.57

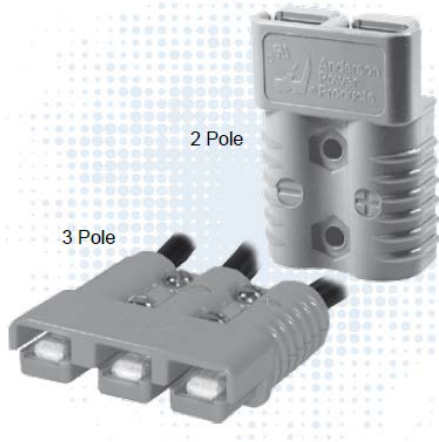


**SB® Environmental Boots provide water, dirt, chemical and UV protection for SB® 120 connectors. The durable boots shield the connectors from water and dirt to IP64 in both the mated and unmated condition. Visit our website for more information, <http://andersonpower.com/products/multipole-sb.html>.**





## SB175® Connectors - up to 280 Amps



Wires sizes from #10 (5.3 mm<sup>2</sup>) to 1/0 (53.5 mm<sup>2</sup>) fit in the second to largest connector in the SB® series. The 3 pole SB®175 adds an additional position for power or grounding. All Multipole wire connector housings are genderless and mate to themselves minimizing inventory and assembly complexity.

- **Silver Plated Wire Contacts up to 1/0 (50 mm<sup>2</sup>)**  
Allows UL rated currents up to 280 amps

- **Chemical Resistant Housing Option**  
Extends temperature range down to -40°C, while offering enhanced UV and chemical resistance

- **UL Rated for Hot Plugging up to 100 Amps**  
Great for battery or other applications where the ability to interrupt circuits is required

### | SB®175 ORDERING INFORMATION |

#### SB®175 Standard Housings

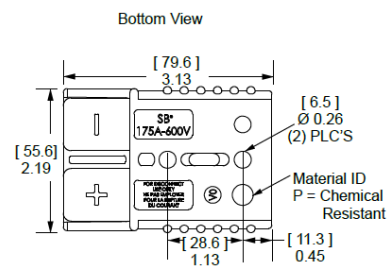
The second to largest SB® housings work with wire contacts up to 1/0 AWG [50 mm<sup>2</sup>] as well as busbar contacts. Genderless design mates with itself. Mechanical keys are color coded. NOTE: SB175 black is keyless and can be mated with all other colors.

Description	Part Numbers	
Minimum Quantity	200	50
Yellow	943-BK	943
Orange	942-BK	942
Red	949-BK	949
Gray	940-BK	940
Blue	941-BK	941
Black (keyless)	2-7252G11	-
Brown	950-BK	950

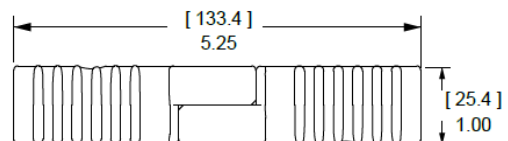
#### SB®175 Chemical Resistant Housings

Same features as the Standard SB®175 but molded in a chemical resistant PBT/ PC blend. Suitable for use to -40°C.

Description	Part Numbers	
Minimum Quantity	200	50
Red	P949-BK	P949
Gray	P940-BK	P940



#### Mated Length

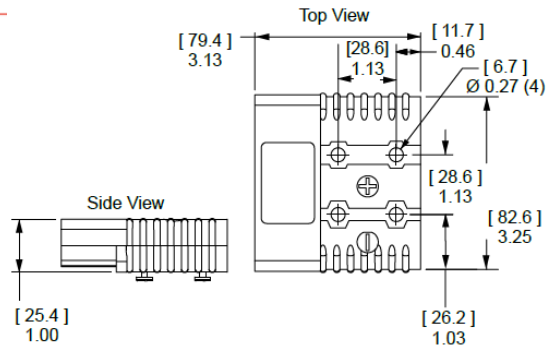


### SB®175 3 Pole Housings & Hardware

A three pole version of the standard SB®175 housing has a two piece housing with springs and hardware. Useful for DC 2 wire plus ground and AC single phase applications.

Description	Part Numbers
Minimum Quantity	25
Gray housing and Hardware Kit	902*
Gray Housing Top Half	-
Gray Housing Bottom Half	-
Hardware Kit	110G34
Complete Connector	6316

\* 902 includes (3) 1/0 contacts



### | SB®175 CONNECTOR SPECIFICATIONS |

Electrical		
Current Rating Amperes <sup>1</sup>	UL 1977	CSA
Wire to Wire (1/0 AWG)	280	175
Wire to Busbar (1/0 AWG)	200	
3 Pole Wire to Wire (1/0 AWG)	175	175
Voltage Rating AC/DC		
UL 1977	600	
Dielectric Withstanding Voltage		
Volts AC	2,200	
Avg. Mated Contact Resistance Milliohms <sup>2</sup>		
6" of 1/0 AWG wire	0.100	
UL Hot Plug Current Rating Amperes - Wire & Busbar		
250 cycles at 120V DC 1/0 wire	100A	

Materials	
Housing	
Standard Plastic Resin	Polycarbonate
Chem. Resistant Resin	Polycarbonate / PBT blend
Contact Retention Spring	Stainless Steel
Housing Flammability Rating	
UL94	V-0
Wire & Busbar Contacts	
Base	Copper Alloy
Plating	Silver
Contact Termination Methods	
Crimp <sup>3</sup>	Wire Contacts
Hand Solder	Wire Contacts
Wrench / Socket	Busbar Contacts

Mechanical		
Wire Size Range	AWG	mm <sup>2</sup>
Wire Contacts with Bushings	10 to 1/0	5.3 to 53.5
Max. Wire Insulation Diameter		
	in.	mm
	0.600	15.240
Operating Temperature <sup>2</sup>		
Standard	°F	°C
	-4° to 221°	-20° to 105°
Chemical Resistant <sup>3</sup>	-40 to 221°	-40° to 105°
Mating Cycles No Load by Plating		
Wire and Busbar Contacts	Silver (Ag)	
	10,000	
Avg. Mating / Unmating Force		
	Lbf.	N
2 Pole	25	111
3 Pole	35	156
Min. Contact / Spring Retention Force		
	lbf	
	150	
	N	667

Protection	
Touch Safety with Wire Contacts	
IEC 60529	IP10

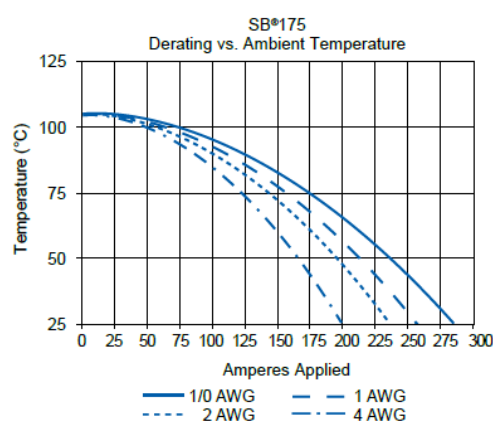
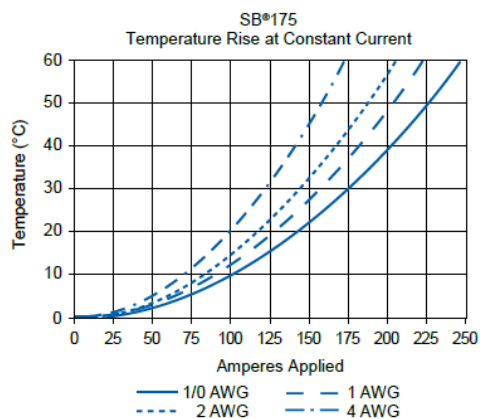
<sup>1</sup> Based on: 105°C rated or better cable of the largest size, Properly calibrated APP® recommended tooling, and a 25°C ambient temperature. UL rating not to exceed the maximum operating temperature. CSA rating below a 30°C temperature rise.

<sup>2</sup> Limited by the thermal properties of the connector plastic housing.

<sup>3</sup> Use APP® recommended tooling only. Alternate tools may adversely affect the performance of our connectors along with UL and CSA recognition.



### | SB®175 CONNECTOR TEMPERATURE CHARTS |



NOTE: Temperature rise charts are based on a 25°C ambient temperature.

## | Complete connector – SB175 – Part numbers |

Volt.	Amp.	Colour	Wire AWG	Cable Well Diam. (mm <sup>2</sup> )	Part No.
12	175	Yellow	1/0	53.50 (50)	6328G1
18	175	Orange	1/0	53.50 (50)	6327G1
24	175	Red	1/0	53.50 (50)	6329G1
36	175	Grey	1/0	53.50 (50)	6325G1
48	175	Blue	1/0	53.50 (50)	6326G1
			#2	33.62 (35) (*)	...G5
			#4	21.15 (25) (*)	...G6

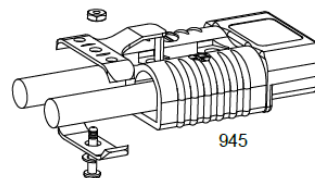
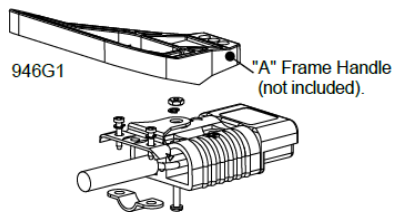
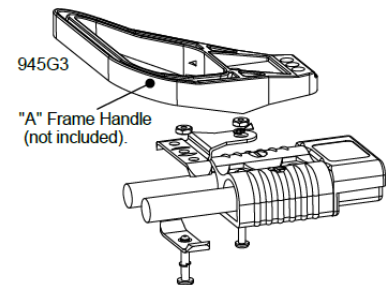
For diameter AWG #2 replace G1 by G5 and for #4 by G6  
(\*) not standard

### | SB® 175 Accessories |

#### Cable Clamps

Durable metal cable clamps securely hold cables to prevent accidental strain or pulls from dislodging wire or contacts from the housing. Only Bolt On type clamps can be used with the handles. Cable clamps are recommended for solder terminated wires. Not for use with 3 pole housing.

Description	Cable Size		Part Numbers
	Min / Max (Inches O.D.)	Min / Max (mm O.D.)	
Minimum quantity			50
Self Attaching for Discrete Conductor	0.55 to 0.24	14 to 6	945
Bolt On for Discrete Conductor	0.66 to 0.24	16.7 to 6.2	945G3
Bolt On for Bundled Conductor	0.75 to 0.29	18.3 to 7.3	946G1

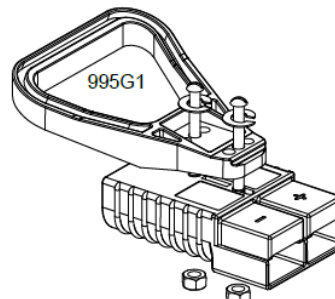


The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.

#### Handles

Handles are made out of durable PC plastic. Hardware to attach to connector body included in kits. Not for use with 3 pole housing.

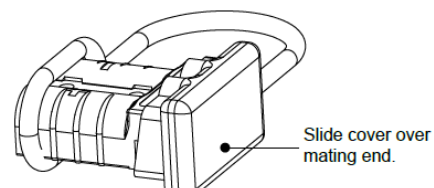
Description	Part Numbers
Minimum Quantity	25
Gray Handle Kit	995G1
Red Handle Kit	995G3
Handle Only, Gray	-
Handle Only, Red	-
Handle Only, Black	-
Hardware Bag	105G8



#### Dust Cover

Prevents dust and dirt from entering the mating interface of the connector when unmated. NOTE: Not a Hermetic Seal. Not for use with 3 pole housing.

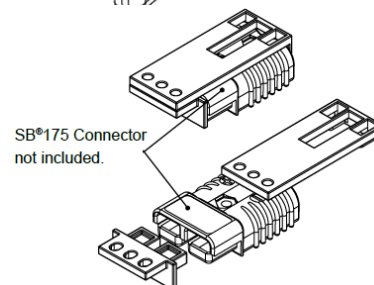
Description	Part Numbers
Minimum Quantity	50
Dust Cover with Lanyard Strap, Red	134G2



#### SB®175 Lockout

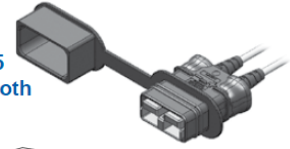
Works with standard lockout - tagout equipment to prevent access to the mating interface of the connector. Made from durable PC plastic. Can be used with 3 pole housing to lockout positive and negative positions only.

Description	Part Numbers
Minimum Quantity	25
Red Lockout - Tagout Kit	SB175-Lockout





**SB® Environmental Boots provide water, dirt, chemical and UV protection for SB® 175 connectors. The durable boots shield the connectors from water and dirt to IP64 in both the mated and unmated condition. Visit our website for more information, <http://andersonpower.com/products/multipole-sb.html>.**



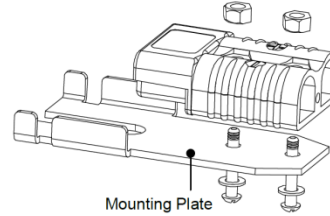
**Manual Release Bracket - Mounting Side**

Works with the Locking Side to ease mating and unmating connectors. Not for use with 3 pole housing.

Description	Part Numbers
Minimum Quantity	10
Bracket and Hardware Kit	924G1

**Manual Release Bracket - Locking Side**

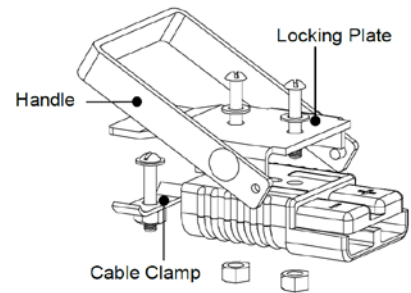
Works with the Mounting Side to ease mating and unmating connectors. Not for use with 3 pole housing.



NOTE: Product may appear different then above image.

Description	Cable Size		Part Number
	Max / Min (Inches O.D.)	Max / Min (mm O.D.)	
Minimum quantity			10
Bracket and Hardware Kit w/ Clamp	0.50 to 0.21	12.6 to 5.4	923G1

The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.

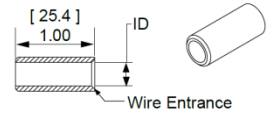


NOTE: Product may appear different then above image.

**Reducing Bushings: for Use with Contact # 1382**

Use with contact part number 1382-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

Contact Barrel Size	Wire Size	Part Numbers				Dimensions - ID -	
		1500	1000	500	100	Inches	mm
Minimum Quantity							
1/0 AWG [53.5mm <sup>2</sup> ]	#1 AWG [42.4mm <sup>2</sup> ]	-	-	5687-BK	5687	0.39	9.91
1/0 AWG [53.5mm <sup>2</sup> ]	#2 AWG [33.6mm <sup>2</sup> ]	5690-BK	-	-	5690	0.34	8.64
1/0 AWG [53.5mm <sup>2</sup> ]	#4 AWG [21.2mm <sup>2</sup> ]	-	5693-BK	-	5693	0.27	6.86
1/0 AWG [53.5mm <sup>2</sup> ]	#6 AWG [13.3mm <sup>2</sup> ]	-	5663-BK	-	5663	0.22	5.59
1/0 AWG [53.5mm <sup>2</sup> ]	#10 - 8 AWG [5.3 - 8.4mm <sup>2</sup> ]	5648-BK	-	-	5648	0.19	4.83



## SB350® Connectors - up to 450 Amps



The SB@350 is the largest connector in the series with power capabilities up to 450 amps with 4/0 wire. Wires ranging from #1/0 (50 mm<sup>2</sup>) to 300 mcm (152 mm<sup>2</sup>) fit into the one piece housing available in standard PC or a chemical resistant PBT/PC blend. Silver plated wire or busbar contacts minimize electrical resistance while offering supreme durability and reliability.

- **Up to 300 mcm (152 mm<sup>2</sup>) Wires**

Allows UL rated currents up to 450 amps with 4/0 wire

- **Chemical Resistant Housing Option**

Extends temperature range down to -40°C, while offering enhanced UV and chemical resistance

- **Same Housings Used for Wire and Busbar Contacts**

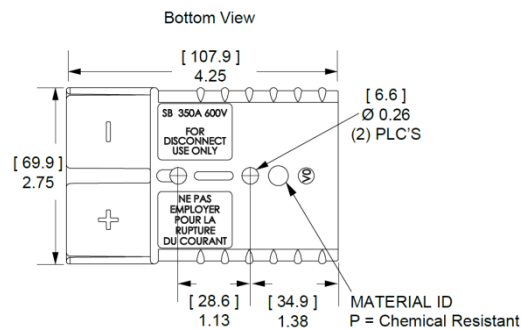
Enables color-coded mechanically keyed wire to busbar connections

### | SB@350 ORDERING INFORMATION |

#### SB@350 Standard Housings

The largest SB@ housings work with wire contacts up to 300 mcm [150 mm<sup>2</sup>] as well as busbar contacts. Genderless design mates with itself. Mechanical keys are color coded. NOTE: SB350 Black and Blue Housings have the same keying features and can be intermated.

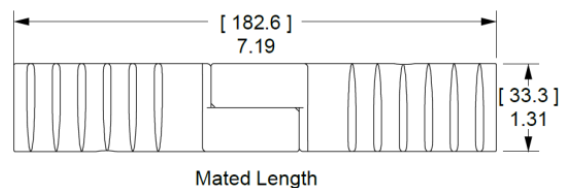
Description	Part Numbers	
Minimum Quantity	50	25
Yellow	914-BK	914
Orange	932-BK	932
Red	913-BK	913
Gray	906-BK	906
Blue	912-BK	912
Green	931-BK	931
Black	2-7250G8	-



#### SB@350 Chemical Resistant Housings

Same features as the Standard SB@350 but molded in a chemical resistant PBT/ PC blend. Suitable for use to -40°C.

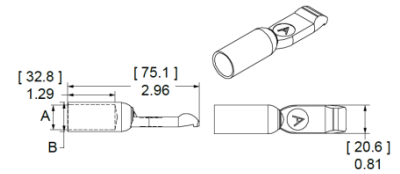
Description	Part Numbers	
Minimum Quantity	50	25
Red	P913-BK	P913
Gray	P906-BK	P906



### SB@350 Silver Plated Wire Contacts

Silver plated contacts offer superior electrical performance and durability up to 10,000 mating cycles.

AWG	mm <sup>2</sup>	Mating Force	Loose Piece Part Numbers			Dimensions			
						- A -		- B -	
					inches	mm	inches	mm	
<b>Minimum Quantity</b>			200	150	50				
300mcm	152	High	-	910-BK	910 *	0.75	19.05	0.87	22.1
4/0	107.2	High	908-BK	-	908 *	0.64	16.26	0.75	19.05
3/0	85	High	916-BK	-	916 *	0.58	14.73	0.7	17.78
2/0	67.4	High	907-BK	-	907 *	0.49	12.45	0.64	16.26
1/0	53.5	High	917-BK	-	917 *	0.44	11.18	0.51	12.95



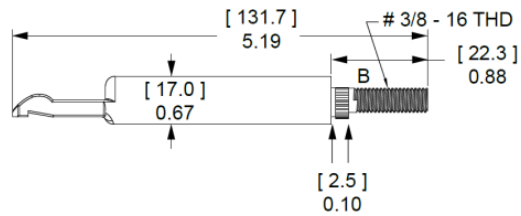
\* Sold as pairs, (2) parts ship for every 1 ordered.

### SB@350 Silver Plated Busbar Contacts

Use 2 busbar contacts per housing to provide a quick disconnect input or output busbar connection. Busbar contacts are for mating with wire contacts only. Part number 350BBS includes lock nuts. Locknuts must be ordered separately for B01998P1.

Type	Thread	Mating Force	Loose Piece Part Numbers	
<b>Minimum Quantity</b>			50	10
Busbar	1/4 - 20	High	B01998P1	350BBS
Lock Nut	1/4 - 20	-	H1216P9	110G73

See Busbar contact drawing on website for further detail.



## | SB@350 CONNECTOR SPECIFICATIONS |

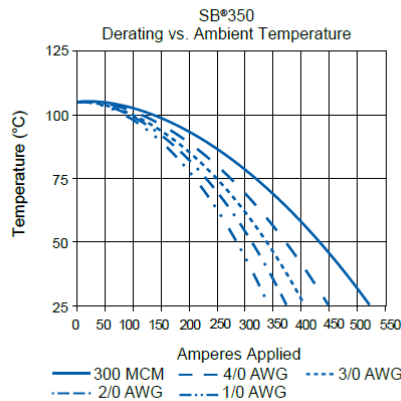
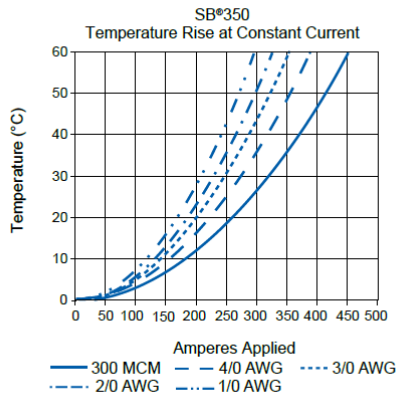
Electrical		Mechanical	
<b>Current Rating Amperes<sup>1</sup></b>	UL 1977 CSA	<b>Wire Size Range</b>	AWG mm <sup>2</sup>
Wire to Wire (4/0 AWG)	450 350	Wire Contacts with Bushings	1/0 to 300 mcm 53.5 to 152
<b>Voltage Rating AC/DC</b>	UL 1977	<b>Max. Wire Insulation Diameter</b>	in. mm
	600		1.100 27.900
<b>Dielectric Withstanding Voltage</b>		<b>Operating Temperature<sup>2</sup></b>	°F °C
Volts AC	2,200	Standard	-4° to 221° -20° to 105°
<b>Avg. Mated Contact Resistance Milliohms<sup>1</sup></b>		Chemical Resistant	-40 to 221° -40° to 105°
2 1/2" of 300mcm wire	0.050	<b>Mating Cycles No Load by Plating</b>	Silver (Ag)
<b>Hot Plug Current Rating Amperes - Wire &amp; Busbar</b>		Wire and Busbar Contacts	10,000
250 cycles at 120V DC	100A	<b>Avg. Mating / Unmating Force</b>	Lbf. N
		2 Pole	30 133
<b>Materials</b>		<b>Min. Contact / Spring Retention Force</b>	
<b>Housing</b>		lbf	150
Standard Plastic Resin	Polycarbonate	N	667
Chem. Resistant Resin	Polycarbonate / PBT blend		
Contact Retention Spring	Stainless Steel		
<b>Housing Flammability Rating</b>		<b>Protection</b>	
UL94	V-0	<b>Touch Safety with Wire Contacts</b>	
<b>Wire &amp; Busbar Contacts</b>		IEC 60529	IP10
Base	Copper Alloy		
Plating	Silver		
<b>Contact Termination Methods</b>			
Crimp <sup>3</sup>	Wire Contacts		
Hand Solder	Wire Contacts		
Wrench / Socket	Busbar Contacts		

<sup>1</sup> Based on: 105°C rated or better cable of the largest size, Properly calibrated APP® recommended tooling, and a 25°C ambient temperature. UL rating not to exceed the maximum operating temperature. CSA rating below a 30°C temperature rise.

<sup>2</sup> Limited by the thermal properties of the connector plastic housing.

<sup>3</sup> Use APP® recommended tooling only. Alternate tools may adversely affect the performance of our connectors along with UL and CSA recognition.

## | SB®350 CONNECTOR TEMPERATURE CHARTS |



NOTE: Temperature rise charts are based on a 25°C ambient temperature.

## | Complete connector – SB350 – Part numbers |

Volt.	Amp.	Colour	Wire AWG	Cable Well Diam. (mm <sup>2</sup> )	Part No.
12	350	Yellow	2/0	67.43 (70)	6323G1
18	350	Orange	2/0	67.43 (70)	6400G1
24	350	Red	2/0	67.43 (70)	6322G1
36	350	Grey	2/0	67.43 (70)	6320G1
48	350	Blue	2/0	67.43 (70)	6321G1
72	350	Green	2/0	67.43 (70)	6324G1
			3/0	85.01 (85) (*)	....G5
			4/0	107.2 (*)	....G2
			300MCM	152 (*)	....G4

For diameter AWG 3/0 replace G1 by G5, for AWG 4/0 by G2 and for AWG 300MCM by G4 (\*) not standard

## | SB® 350 Accessories |

### Cable Clamps

Durable metal cable clamps securely hold cables to prevent accidental strain or pulls from dislodging wire or contacts from the housing. Cable clamps are recommended for solder terminated wires.

Description	Cable Size		Part Number
	Max / Min (Inches O.D.)	Max / Min (mm O.D.)	
Bolt On for Discrete Conductor	1.00 to 0.35	25.4 to 8.8	996G1
Discrete Conductor w/ Integral Handle	0.76 to 0.32	19.3 to 8.2	911

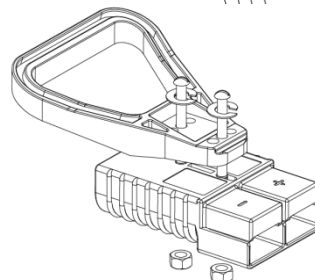
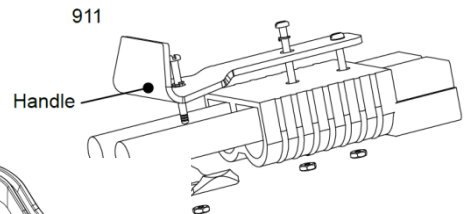
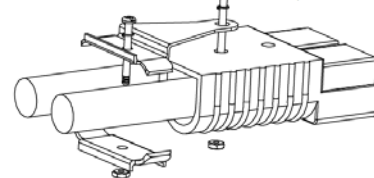
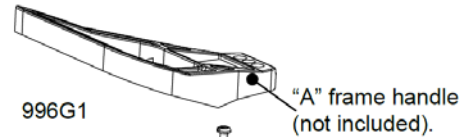
The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.

### Handles

Handles are made out of durable PC plastic.

Hardware to attach to connector body included in kits.

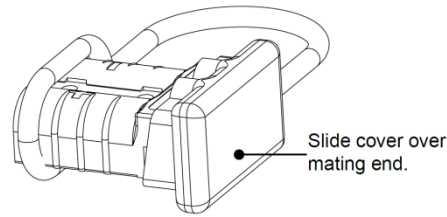
Description	Part Numbers	
	Minimum Quantity	
Gray Handle Kit	-	995G2
Red Handle Kit	-	995G4
Handle Only, Gray	3-5074P1	-
Handle Only, Red	3-5074P3	-
Handle Only, Black	3-5074P5	-
Hardware Bag	-	106G7



**Dust Cover**

Prevents dust and dirt from entering the mating interface of the connector when unmated. NOTE: Not a Hermetic Seal.

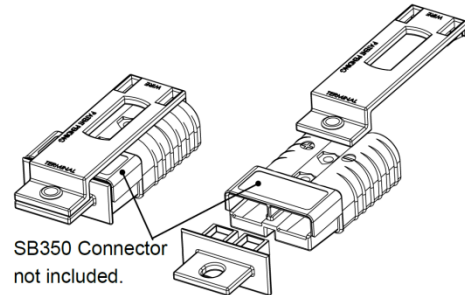
Description	Part Numbers
Minimum Quantity	500 50
Dust Cover with Lanyard Strap, Red	113890P3 134G3



**SB@350 Lockout**

Works with standard lockout - tagout equipment to prevent access to the mating interface of the connector. Made from durable PC plastic.

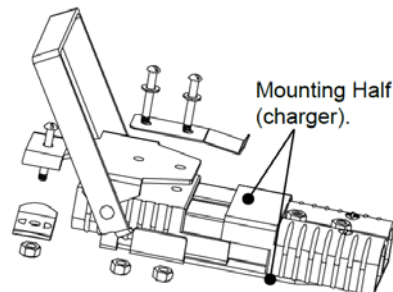
Description	Part Number
Minimum Quantity	25
Red Lockout - Tagout Kit	SB350-LOCKOUT



**Manual Release Bracket - Mounting Side**

Works with the Locking Side to ease mating and unmating connectors.

Description	Part Numbers		
	66	25	10
Bracket and Hardware Kit	-	-	922G1
Bracket Only	B00229P1	-	-
Hardware Bag	-	106G6	-

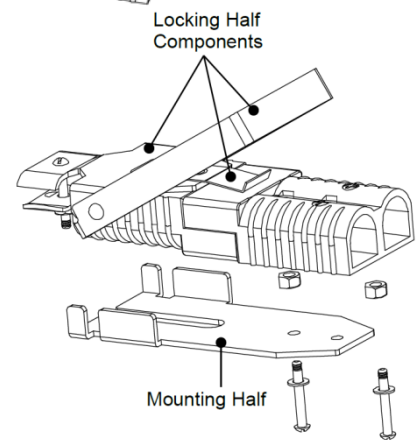


**Manual Release Bracket - Locking Side with Cable Clamp**

Works with the Mounting Side to ease mating and unmating connectors.

Description	Cable Size		Part Number
	Max / Min (Inches O.D.)	Max / Min (mm O.D.)	
Minimum quantity			10
Bracket and Hardware Kit w/ Clamp Kit	0.94 to 0.61	23.7 to 15.5	919

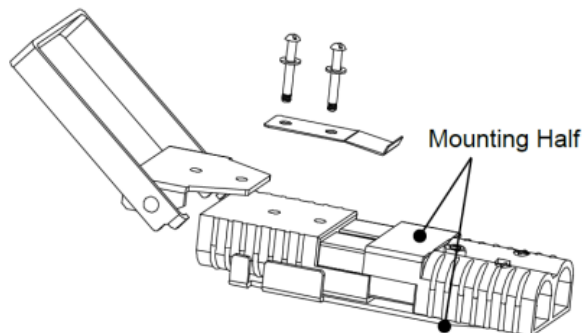
The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.



**Manual Release Bracket - Locking Side no Cable Clamp**

Works with the Battery side to ease mating and unmating connectors.

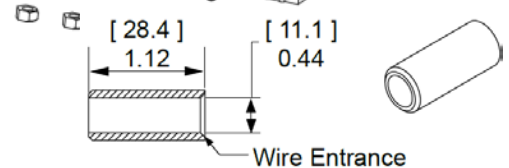
Description	Part Number
Minimum Quantity	10
Bracket and Hardware Kit No Clamp Kit	919G1



**Reducing Bushings: for Use with Contact # 907**

Use with contact part number 907-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

Contact Barrel Size	Wire Size	Part Numbers
Minimum Quantity		500 100
2/0 AWG [64.4mm²]	1/0 AWG [53.5mm²]	5918-BK 5918





## SB® - Tooling Information

Wire Size		Loose Piece Part Numbers	Loose Piece Contact Crimp Tools				Number of Crimps
AWG	mm <sup>2</sup>	Silver Plating	Hand Tool	or Pneumatic Bench Tool	+ Die	+ Locator	
<b>SB50</b>							
#6	13.3	1307	1309G4	1387G1	1388G6	1389G6	Single
		5900					
#8	8.4	5952					
#10 / 12	5.3 / 3.3	5953			1388G7		
		5915					
<b>SB120</b>							
#1	42.4	1323G1	1368 Series	1387G1	1388G3	1389G4	Single
#2	33.6	1319			1388G4		
#4	21.2	1319G4					
#6	13.3	1319G6					
<b>SB175</b>							
1/0	53.5	1382	1368 Series	1387G2	1303G13	1304G32	Double
#1	42.4	1347					
#2	33.6	1383					
#4	21.1	1384		1387G1	1388G4	1389G3	Single
#6	13.3	1348					
<b>SB350</b>							
300mcm	152	910	1368 Series	1387G2	N/A		Double
4/0	107.2	908			1303G3		
3/0	85	916			1303G12	1304G31	
2/0	67.4	907					
1/0	53.5	917					

NOTE: See website for the most current information.

## SBE®80 / SBO® 60 Connectors - up to 80 Amps



SBE® and SBO® connectors build on the capability of the two pole SB® connectors by offering up to 8 auxiliary power / signal contacts along with an IEC 60950 touch safe housing. The center of the main connector features a connector holder for either: two PP15-45, two PPMX, or APP's innovative 1x4 auxiliary connector.

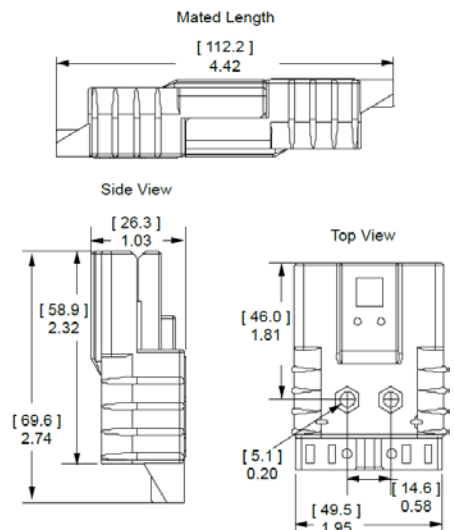
- **Touch Safe Interface**  
Minimizes potential contact with live circuits per IEC 60950
- **Up to 8 Last Mate / First Break Auxiliary's**  
Enables intelligent power switching, CAN and interlock loop circuitry, as well as power up to 20 amps per pole
- **Silver Plated Wire Contacts up to #4 (25 mm<sup>2</sup>)**  
Allows UL rated currents up to 80 amps per pole

### | SBE®80 / SBO®60 ORDERING INFORMATION |

#### SBE®80 / SBO®60 Housings

The smallest size of SBE®, X, O style housing. SBE®80 and SBO®60 housings of the same Voltage Color Code can be mated but is not recommended as it invalidates UL approvals. SBO®60 housings do not meet EN1175-1 requirements for industrial trucks.

Description	SBE®80 Part Numbers	SBO®60 Part Numbers
Minimum Quantity	25	25
Yellow	SBE80YEL	SBO60YEL
Orange	SBE80ORN	SBO60ORN
Red	SBE80RED	SBO60RED
Gray	SBE80GRA	N/A
White	N/A	SBO60WHT

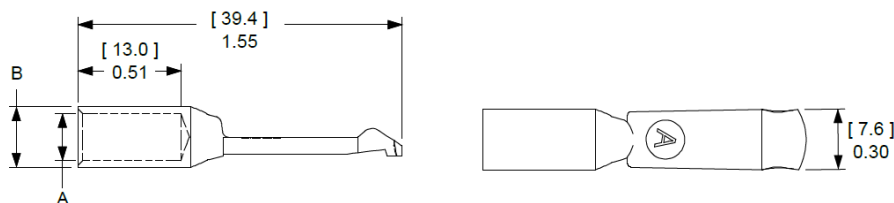


#### SBE®80 / SBO®60 Silver Plated Primary Power Wire Contacts

Use two silver plated contacts per housing for the best electrical performance and durability up to 10,000 mating cycles.

AWG	mm <sup>2</sup>	Mating Force	Loose Piece Part Numbers		Dimensions			
					- A -		- B -	
Minimum	Quantity		1000	100	inches	mm	inches	mm
4	25	Low	1339G4-BK	1339G4 *	0.28	7.11	0.35	9.0
6	16	High	1339G1-BK	1339G1 *	0.22	5.59	0.29	7.3

\* Sold as pairs, (2) parts ship for every 1 ordered.



## | SBE®80 / SBO®60 CONNECTOR SPECIFICATIONS |

Electrical			
<b>Current Rating Amperes<sup>1</sup></b>	<b>SBO60</b>	<b>SBE80</b>	
Primary Power (6 AWG)	70	80	
Powerpole® Auxiliary (12 AWG)	20	20	
1x4 Auxiliary (12 AWG)	20	20	
PPMX Auxiliary (20 AWG)	7 UL	5 CSA	
<b>Voltage Rating AC/DC</b>	<b>UL 1977</b>	<b>EN1175-1</b>	
Primary Power	600	150 <sup>4</sup>	
Powerpole® Auxiliary	600	150 <sup>4</sup>	
1x4 Auxiliary	200		
PPMX Auxiliary	300		
<b>Dielectric Withstanding Voltage Primary Power</b>			
Volts AC	2,200		
<b>Avg. Mated Contact Resistance Milliohms<sup>1</sup></b>			
1 1/4" of #6 AWG wire	0.200		
<b>Hot Plug Current Rating Amperes - 250 cycles at 120V DC</b>			
Power	60A		
Powerpole® Auxiliary	30A		
1x4 Auxiliary	5A		

Materials			
<b>Housing</b>			
SBO® and Powerpole® Plastic Resin	Polycarbonate		
SBE® and 1x4 Auxiliary Housing	Polycarbonate / PBT blend		
Contact Retention Spring	Stainless Steel		
<b>Housing Flammability Rating</b>			
UL94	V-0		
<b>Power &amp; Powerpole® Contact</b>			
	Silver Plated Copper Alloy		
<b>1x4 Auxiliary Contacts</b>			
Pin	Copper alloy, Au over Ni		
Socket	BeCu, Au over Ni		
Socket Body	Copper alloy, Sn bright over Ni		
Retention Clip	Stainless Steel		
<b>PPMX Contacts</b>			
	Gold Plated Copper Alloy		
<b>Contact Termination Methods</b>			
Crimp <sup>2</sup>			
Hand Solder			

Mechanical			
<b>Wire Size Range</b>	<b>AWG</b>	<b>mm<sup>2</sup></b>	
Power Contacts	16 to 4	1.3 to 25	
Auxiliary Contacts	24 to 10	0.25 to 5.3	
<b>Max. Wire Insulation Diameter</b>	<b>in.</b>	<b>mm</b>	
Power Contacts	0.440	11.200	
Powerpole® Auxiliary	0.175	4.450	
1x4 Auxiliary	0.140	3.600	
<b>Operating Temperature<sup>2</sup></b>	<b>°F</b>	<b>°C</b>	
SBO® and SBE® Housings	-4° to 221°	-20° to 105°	
<b>Mating Cycles No Load by Plating</b>	<b>Silver (Ag)</b>	<b>Gold (Au)</b>	
Power Contacts	10,000		
Powerpole® Auxiliary	10,000		
1x4 Auxiliary		10,000	
PPMX Auxiliary		5,000	
<b>Avg. Mating / Unmating Force</b>	<b>Lbf.</b>	<b>N</b>	
Main Connector Housing	16	70	
Per Powerpole®	5	22	
Per Contact in 1x4 Auxiliary	0.7	3.0	
Per PPMX Housing	4.50	20.00	
<b>Min. Contact / Spring Retention Force</b>	<b>Lbf.</b>	<b>N</b>	
Power Standard Housing	50	222	
Powerpole® Housing	25	111	
1x4 Auxiliary Housing	10	44.5	
PPMX Housing	12	53	

Protection	
<b>Touch Safety Main Connector Housing</b>	
IEC 60950	Pass
IEC 60529	IP20

<sup>1</sup> Based on: 105°C rated or better cable of the largest size, Properly calibrated APP® recommended tooling, and a 25°C ambient temperature. UL rating not to exceed the maximum operating temperature. CSA rating below a 30°C temperature rise. Only SBO® has UL recognition.

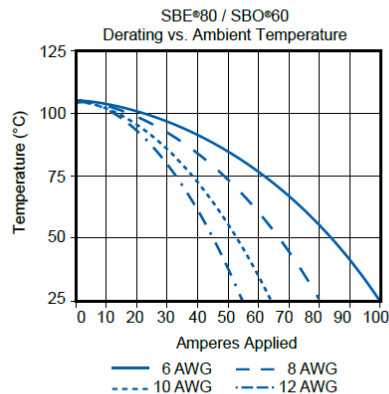
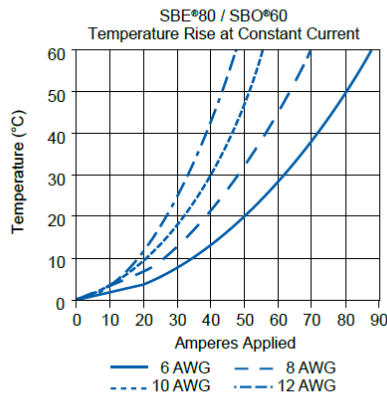
<sup>2</sup> Limited by the thermal properties of the connector plastic housing.

<sup>3</sup> Use APP® recommended tooling only. Alternate tools may adversely affect the performance of our connectors along with UL and CSA recognition.

<sup>4</sup> Voltage capability of SBE® housings is identical to SBO®, but derated to meet EN1175-1 requirements.



## | SBE®80 / SBO®60 CONNECTOR TEMPERATURE CHARTS |



NOTE: Temperature rise charts are based on a 25°C ambient temperature.

## | Complete connector – SBE80 – Part numbers |

Volt.	Amp.	Colour	Cable Well Diam. (mm <sup>2</sup> )	Part No.
24	80A	Red	16	SBE80RED16MMHDL

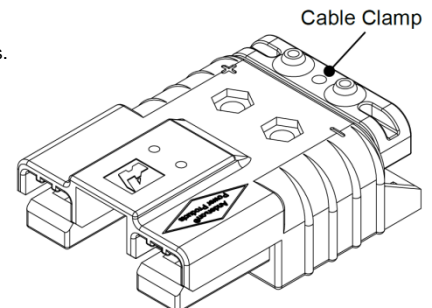
Auxiliary contacts provide for secondary circuits.

## | SBE®80 / SBO®60 Accessories |

### Cable Clamps

Clamps are made out the same chemical resistant PBT material that is used in the SBE® housings. Clamp holds the cable between the clamp piece and the connector housing. Screws must be ordered separately for part numbers starting with "113".

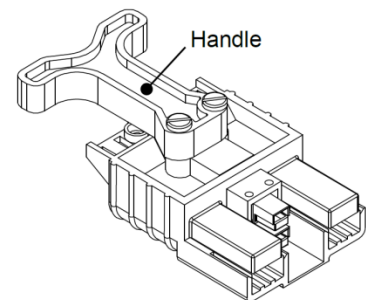
Description	Part Numbers
Minimum Quantity	25
Red Clamp and Hardware Kit	SBE80CLPRED or SBO60CLPRED
Red Clamp Only	-
Screws (2 per clamp)	-



### "T" Handle

Handles are made out the same chemical resistant PBT material that is used in the SBE® housings. (2) screws and (2) nuts are required to attach each handle.

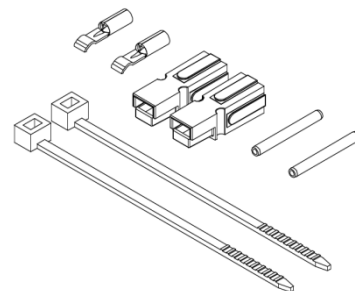
Description	Part Numbers
Minimum Quantity	25
Red Handle and Hardware Kit	SBE80HDLRED or SBO60HDLRED
Red Clamp Only	-
Hardware Bag	105G13
M5 x 35 Screws	-
M5 Nut	-



### Powerpole® Auxiliary

Powerpole® auxiliary connectors are rated up to 30 amps 600 volts and can be used for auxiliary power, control or sensing. The auxiliary kit includes (1) each black and red Standard Powerpole® housing, (2) contacts, (2) zip cable straps, and (2) retaining pins.

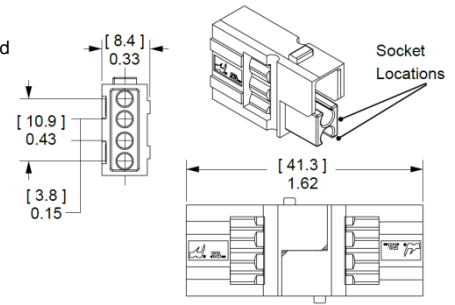
Description	Part Numbers		
Minimum Quantity	200	100	25
Powerpole® Auxiliary Kit	-	-	6344
Black Powerpole® Housing	1327G6	-	-
Red Powerpole® Housing	1327	-	-
#16 to #12 contact	1331	-	-
Retaining Pin	-	110G9	-



### 1x4 Auxiliary Connector

APP's unique 1x4 auxiliary connector allows up to 4 auxiliary circuits up to 20 amps 200 volts each in SBE®, SBO®, & SBX® housings. The genderless design holds two each of the gold plated pin & socket contacts. This innovation allows the very durable and cost effective design of SBE®, O, X connectors to substitute for DIN 43589-1 applications where 4 auxiliary contacts are required. Multiple pin lengths allow the further benefit of sequencing between circuits.

(2) Retaining pins are required to hold the auxiliary housing in place. Auxiliary Kits include (1) Auxiliary Housing, (2) Standard Length Pin Contacts, and (2) Socket Contacts, (2) Retaining Pins and (1) Retaining Clip.

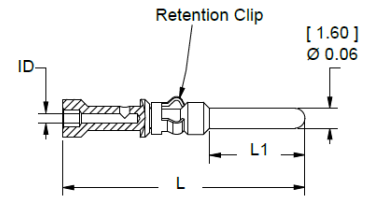


Description	AWG	mm <sup>2</sup>	Part Numbers
<b>Minimum Quantity</b>			<b>25</b>
1x4 Auxiliary Kit	12	4	441G3
1x4 Auxiliary Kit	16 to 4	1.5 to 2.5	441G1
1x4 Auxiliary Kit	20 to 16	0.75 to 1.5	441G2
1x4 Auxiliary Housing	Contacts Sold Separately		-

### Pin Contacts for 1x4 Auxiliary Connector

Gold plated contacts are available in 4 lengths to allow sequencing of circuits.

Description	AWG	mm <sup>2</sup>	Part Numbers
<b>Minimum Quantity</b>			<b>500</b>
Standard Length 7.7mm	12	2.5	PM16P12S30
	16 to 14	1.0 to 1.5	PM16P1416S30
	20 to 16	0.75 to 1.0	PM16P1620S30
	24 to 20	0.50 to 0.75	PM16P2024S30
Pre-Mate 9.3mm	12	2.5	PM16P12A30
	16 to 14	1.0 to 1.5	PM16P1416A30
	20 to 16	0.75 to 1.0	PM16P1620A30
	24 to 20	0.50 to 0.75	PM16P2024A30
Post-Mate 6.4mm	12	2.5	PM16P12C30
	16 to 14	1.0 to 1.5	PM16P1416C30
	20 to 16	0.75 to 1.0	PM16P1620C30
	24 to 20	0.50 to 0.75	PM16P2024C30

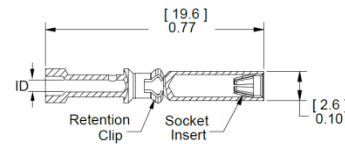


Auxiliary Pin Contact Lengths	- L -		- L1 -	
	in.	mm	in.	mm
Standard Length 7.7 mm	0.77	19.6	0.30	7.7
Pre-Mate 9.3 mm	0.83	21.2	0.37	9.3
Post-Mate 6.4 mm	0.72	18.3	0.25	6.4

### Socket Contacts for 1x4 Auxiliary Connector

Selectively gold plated contacts offer low resistance and durability up to 10,000 mating cycles.

Description	AWG	mm <sup>2</sup>	Part Numbers
<b>Minimum Quantity</b>			<b>500</b>
Socket Contact	12	2.5	PM16S12S32
	16 to 14	1.0 to 1.5	PM16S1416S32
	20 to 16	0.75 to 1.0	PM16S1620S32
	24 to 20	0.50 to 0.75	PM16S2024S32



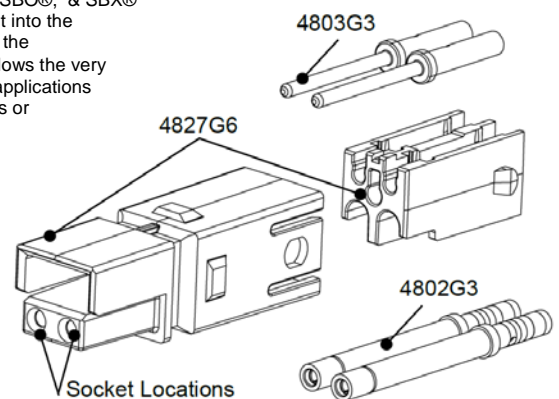
Auxiliary Socket Contacts Crimp Barrel ID	Wire Gauge	in.	mm.
	#24 / 20	0.04	1.1
	#20 / 16	0.07	1.7
	#16 / 14	0.08	2.1
	#12	0.10	2.6

### PPMX Auxiliary Connector

The PPMX auxiliary connector allows up to 8 auxiliary circuits to be used in the SBE®, SBO®, & SBX® housings. There are 4 auxiliary circuits per PPMX connector and two PPMX housings fit into the auxiliary port in the main connector housing. Rated up to 7 amps 300 volts per contact, the genderless design holds two each gold plated pin & socket contacts. This innovation allows the very durable and cost effective equipment design of SBE®, O, X connectors to be used for applications requiring up to 8 battery monitoring or vehicle communication circuits. (2) Retaining pins or (1) Retaining clip is required to hold the auxiliary housing in place.

Auxiliary Kits include (1) Auxiliary Housing, (2) Pin Contacts, and (2) Socket Contacts.

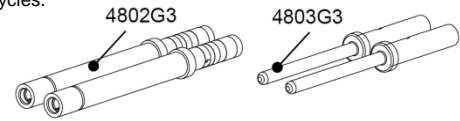
Description	AWG	mm <sup>2</sup>	Part Numbers
<b>Minimum Quantity</b>			<b>1000</b>
PPMX Auxiliary Kit	24 to 20	0.50 to 0.25	4850G6
1x4 Auxiliary Housing	Contacts Sold Separately		4827G6-BK



### Pin & Socket Contacts for PPMX Auxiliary Connector

Gold plated contacts are ideal for signal or low power use with durability up to 5,000 mating cycles.

Description	AWG	mm <sup>2</sup>	Part Numbers	
Minimum Quantity			1000	100
Pin Contacts	24 to 20	0.50 to 0.25	4803G3-BK	4803G3
Socket Contacts	24 to 20	0.50 to 0.25	4802G3-BK	4802G3

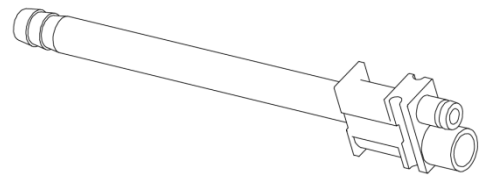


NOTE: Contacts sold individually, not sold as a set of two.

### SBE® Air Tubes

Air tubes fit into SBE® housings to allow electrolyte circulation while charging the battery. Genderless tube design allows the same part to be used on both sides. (2) Retaining pins are required to hold the air tube in place. Retaining pins are included in Air Tube Kit.

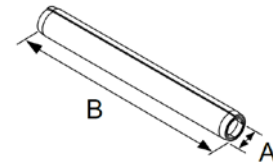
Description	Part Numbers
Minimum Quantity	25
Air Tube Kit	6396G1
Air Tube Only	-



### Retaining Pins

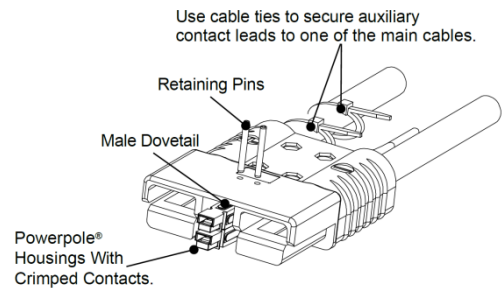
Retaining pins are used to hold accessories in the auxiliary port in SBE®, SBO®, & SBX® housings. Dimension "B" is +/- 0.015 in or 0.38 mm.

Description	Part Numbers		Dimensions			
			- A -		- B -	
Minimum Quantity	1000	100	inches	mm	inches	mm
For SBE®80 & SBO®60	110G9-BK	110G9	0.093/0.103	2.36/2.62	1.000	38.100



### Zip Cable Straps

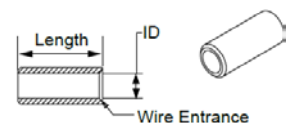
Zip cable straps are used to secure auxiliary wires to the side of the main power cables.



### Reducing Bushings

Use with contact part number 1339G1 to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

Contact Barrel Size	Wire Size	Part Numbers			Dimensions			
					- ID -		- Length -	
Minimum Quantity		3000	1000	100	Inches	mm	Inches	mm
#6 AWG [13.3mm <sup>2</sup> ]	#8 AWG [8.4mm <sup>2</sup> ]	-	5912-BK	5912	0.18	4.57	0.45	11.43
#6 AWG [13.3mm <sup>2</sup> ]	#12-10 AWG [3.3-5.3mm <sup>2</sup> ]	5910-BK	-	5910	0.14	3.56	0.47	11.94
#6 AWG [13.3mm <sup>2</sup> ]	#16-14 AWG [1.3-2.1mm <sup>2</sup> ]	5913-BK	-	5913	0.09	2.29	0.47	11.94



## SBE®160 / SBX®175 Connectors - up to 175 Amps



SBX® and SBE® connectors can integrate up to 8 auxiliary power / signal contacts along with the two primary power circuits. SBE® connectors feature an IEC 60950 touch safe housing molded from a chemical resistant PBT/PC blend resin. SBX® are molded from a rugged PC resin and are rated IP20 per IEC 60529.

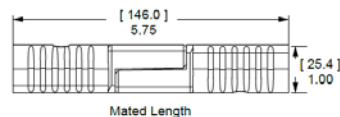
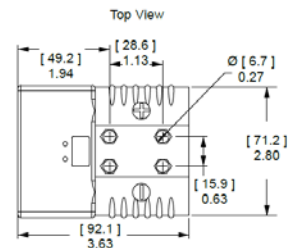
- Touch Safe Interface**  
 Minimizes potential contact with live circuits per IEC 60950 & IEC 60529
- Up to 8 Last Mate / First Break Auxiliary's**  
 Enables intelligent power switching, CAN and interlock loop circuitry, as well as power up to 20 amps per pole
- Color-coded Mechanical Voltage Keys**  
 Like all Multipole connectors, the SBE® and SBX® offer an easy way to identify circuits and protect against cross mating

### | SBE®160 / SBX®175 ORDERING INFORMATION |

#### SBE®160 / SBX®175 Housings

The middle size of SBE®, X, O style housing. SBE® housings are molded from a chemical resistant PBT. SBX® housings are molded from PC. SBE®160 and SBX®175 housings of the same Voltage Color Code can be mated but is not recommended as it invalidates UL approvals. SBX®175 housings do not meet EN1175-1 requirements for industrial trucks.

Description	- SBE®160 Part Numbers	- SBX®175 Part Numbers
Minimum Quantity	25	25
Yellow	E6383G1	6383G1
Orange	E6382G1	6382G1
Red	E6385G1	6385G1
Gray	E6380G1	6380G1
Blue	E6381G1	6381G1
Green	E6390G1	6390G1
Black	E6392G1	N/A

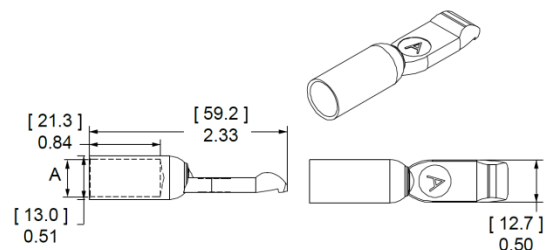


#### SBE®160 / SBX®175 Silver Plated Primary Power Wire Contacts

Use two silver plated contacts per housing for the best electrical performance and durability up to 10,000 mating cycles.

AWG	mm <sup>2</sup>	Loose Piece Part Numbers		Dimensions - A -	
Minimum	Quantity	500	50	inches	mm
1/0	50	6384G1-BK	6384G1 *	0.44	11.1
2	35	6384G2-BK	6384G2 *	0.38	9.7

\* Sold as pairs, (2) parts sip for every 1 ordered.



## | SBE®160 / SBX®175 CONNECTOR SPECIFICATIONS |

### Electrical

Current Rating Amperes <sup>1</sup>	SBX175	SBE160
Primary Power (1/0 AWG)	175	160
Powerpole® Auxiliary (12 AWG)	20	20
1x4 Auxiliary (12 AWG)	20	20
PPMX Auxiliary (20 AWG)	7 UL	5 CSA
<b>Voltage Rating AC/DC</b>	<b>UL 1977</b>	<b>EN1175-1</b>
Primary Power	600	150 <sup>4</sup>
Powerpole® Auxiliary	600	150 <sup>4</sup>
1x4 Auxiliary	200	
PPMX Auxiliary	300	
<b>Dielectric Withstanding Voltage Primary Power</b>		
Volts AC	2,200	
<b>Avg. Mated Contact Resistance Milliohms<sup>1</sup></b>		
6" of 1/0 AWG wire	0.100	
<b>UL Hot Plug Current Rating Amperes - 250 cycles at 120V DC</b>		
Power	75A	
Powerpole® Auxiliary	30A	
1x4 Auxiliary	5A	

### Materials

<b>Housing</b>	
SBX® and Powerpole® Plastic Resin	Polycarbonate
SBE® and 1x4 Auxiliary Housing	Polycarbonate / PBT blend
Contact Retention Spring	Stainless Steel
<b>Housing Flammability Rating</b>	
UL94	V-0
<b>Power &amp; Powerpole® Contact</b>	Silver Plated Copper Alloy
<b>1x4 Auxiliary Contacts</b>	
Pin	Copper alloy, Au over Ni
Socket	BeCu, Au over Ni
Socket Body	Copper alloy, Sn bright over Ni
Retention Clip	Stainless Steel
<b>PPMX Contacts</b>	Gold Plated Copper Alloy
<b>Contact Termination Methods</b>	
Crimp <sup>3</sup>	
Hand Solder	

### Mechanical

Wire Size Range	AWG	mm <sup>2</sup>
Power Contacts	10 to 1/0	5.3 to 53.5
Auxiliary Contacts	24 to 10	0.25 to 5.3
<b>Max. Wire Insulation Diameter</b>	<b>in.</b>	<b>mm</b>
Power Contacts	0.440	11.200
Powerpole® Auxiliary	0.175	4.450
1x4 Auxiliary	0.140	3.600
<b>Operating Temperature<sup>2</sup></b>	<b>°F</b>	<b>°C</b>
SBX® and SBE® Housings	-4° to 221°	-20° to 105°
<b>Mating Cycles No Load by Plating</b>	<b>Silver (Ag)</b>	<b>Gold (Au)</b>
Power Contacts	10,000	
Powerpole® Auxiliary	10,000	
1x4 Auxiliary		10,000
PPMX Auxiliary		5,000
<b>Avg. Mating / Unmating Force</b>	<b>Lbf.</b>	<b>N</b>
Main Connector Housing	30	134
Per Powerpole®	5.00	22.00
Per Contact in 1x4 Auxiliary	0.70	3.00
Per PPMX Housing	4.50	20.00
<b>Min. Contact / Spring Retention Force</b>	<b>Lbf.</b>	<b>N</b>
Power Standard Housing	120	533.7
Powerpole® Housing	25	111
1x4 Auxiliary Housing	10	44.5
PPMX Housing	12	53

### Protection

<b>Touch Safety Main Connector Housing</b>	
IEC 60950 SBE®160 Only	Pass
IEC 60529 SBX®175 Only	IP20

<sup>1</sup> Based on: 105°C rated or better cable of the largest size, Properly calibrated APP® recommended tooling, and a 25°C ambient temperature. UL rating not to exceed the maximum operating temperature. CSA rating below a 30°C temperature rise.

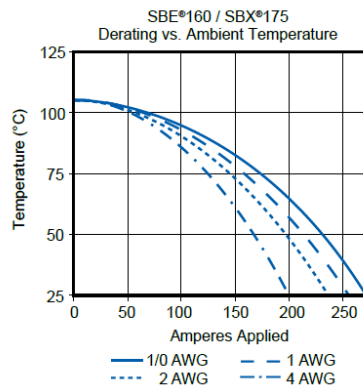
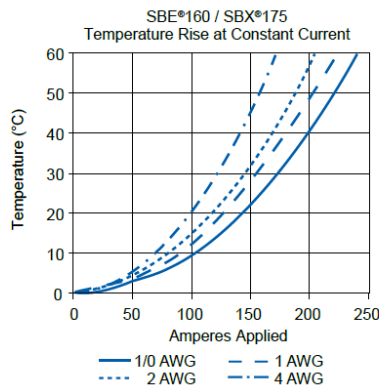
<sup>2</sup> Limited by the thermal properties of the connector plastic housing.

<sup>3</sup> Use APP® recommended tooling only. Alternate tools may adversely affect the performance of our connectors along with UL and CSA recognition.

<sup>4</sup> Voltage capability of SBE® housing is identical to SBX®, but derated to meet EN1175-1 requirements.



## | SBE®160 / SBX®175 CONNECTOR TEMPERATURE CHARTS |



NOTE: Temperature rise charts are based on a 25°C ambient temperature.

## | Complete connector – SBX 175 / SBE 160 – Part numbers



Volt.	Amp.	Colour	Cable Well Diam. (mm <sup>2</sup> )	Part No.
12	160	Yellow	50	E6377G1
18	160	Orange	50	E6376G1
24	160	Red	50	E6379G1
36	160	Grey	50	E6374G1
48	160	Blue	50	E6375G
72	160	Green	50	E6391G
80	160	Black	50	E6389G1

**The SBX175 and SBE160 have the same housing. The SBE160 replaces the SBX175.**

Special constructions for bigger/smaller diameters on demand

For diameter 85mm<sup>2</sup> replace G1 by G2

For diameter 107.2mm<sup>2</sup> replace G1 by G3

For diameter 152mm<sup>2</sup> replace G1 by G5

Auxiliary contacts provide for secondary circuits

## | Complete connector – SAE 3160/3-pole – Part numbers |

Picture	Amp.	Colour	Cable Well Diam. (mm <sup>2</sup> )	Part No.
	160	Red	50	SAE-3160RED
	160	Blue	50	SAE-3160BLU

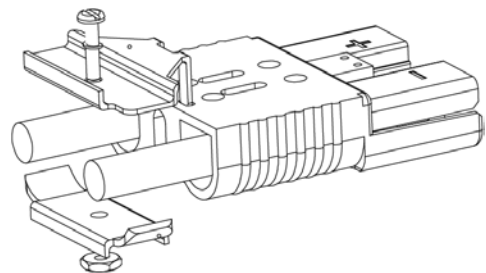
## | SBE®160 / SBX®175 Accessories |

### Cable Clamps

Durable metal clamps adapt to a wide range of cable sizes.

Description	Cable Size		Part Number
	Max / Min (Inches O.D.)	Max / Min (mm O.D.)	
Minimum quantity			25
Cable Clamp Kit	0.62 to 0.22	15.7 to 5.6	945G2

The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.





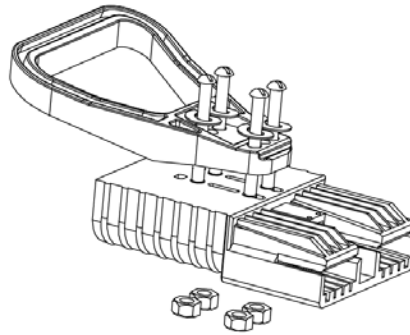
**VANDAPOWER**



**Handles**

Handles are made out of durable PC plastic. Hardware to attach to connector body included in kits.

Description	Part Numbers
Minimum Quantity	25
Gray Handle Kit	995G1-Gray
Red Handle Kit	995G1-Red
Handle Only, Gray	-
Handle Only, Red	-
Handle Only, Black	-
Hardware Bag	105G8



**E Cable clamps – Part numbers |**



Description	Part No.
Cable clamp for use with SR175/SRE160	78000-00
Cable clamp SR350/SRE320/SRX350	78000-00

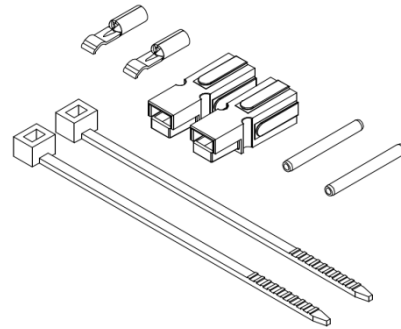
**| SBE Handles – Part numbers |**

Picture	Description	Colour	Part No.
	"A"- Frame handle SBE 160	Gray	995G1
	"A"- Frame handle SBE 320	Red	995G3
	"A"- Frame handle SBE 160	Gray	995G2
	"A"- Frame handle SBE 160 - 0°	Red	995G4
	Handle SAE-SBE 160	Black	HDL-SBE160
	Handle 3-pole	Black	HDL-SAE3160

### Powerpole® Auxiliary

Powerpole® auxiliary connectors are rated up to 30 amps 600 volts and can be used for auxiliary power, control or sensing. The auxiliary kit includes (1) each black and red Standard Powerpole® housing, (2) contacts, (2) zip cable straps, and (2) retaining pins. (1) Retaining clip can be substituted for (2) retaining pins.

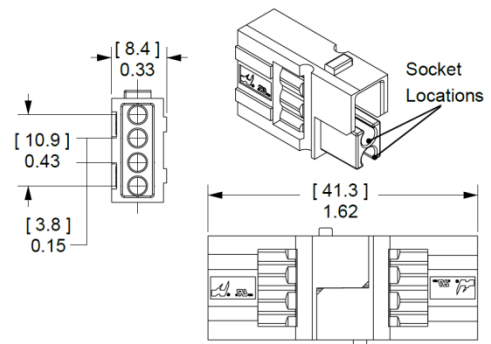
Description	Part Numbers	
Minimum Quantity	200	25
Powerpole® Auxiliary Kit	-	6344
Black Powerpole® Housing	1327G6	-
Red Powerpole® Housing	1327	-
#16 to #12 contact	1331	-



### 1x4 Auxiliary Connector

APP's unique 1x4 auxiliary connector allows up to 4 auxiliary circuits up to 20 amps 150 volts each in SBE®, SBO®, & SBX® housings. The genderless design holds two each of the gold plated pin & socket contacts. This innovation allows the very durable and cost effective design of SBE®, O, X connectors to substitute for DIN 43589-1 applications where 4 auxiliary contacts are required. Multiple pin lengths allow the further benefit of sequencing between circuits. (2) Retaining pins or (1) Retaining clip is required to hold the auxiliary housing in place. Auxiliary Kits include (1) Auxiliary Housing, (2) Standard Length Pin Contacts, (2) Socket Contacts, (2) Retaining Pins and (1) Retaining Clip.

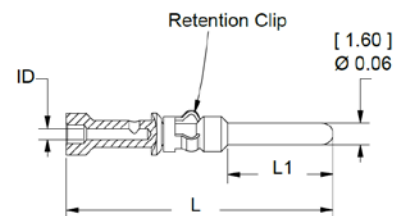
Description	AWG	mm <sup>2</sup>	Part Numbers	
Minimum Quantity			25	
1x4 Auxiliary Kit	12	4	441G3	
1x4 Auxiliary Kit	16 to 14	1.5 to 2.5	441G1	
1x4 Auxiliary Kit	20 to 16	0.75 to 1.5	441G2	
1x4 Auxiliary Housing	Contacts Sold Separately		-	



### Pin Contacts for 1x4 Auxiliary Connector

Gold plated contacts are available in 4 lengths to allow sequencing of circuits.

Description	AWG	mm <sup>2</sup>	Part Numbers	
Minimum Quantity			500	50
Standard Length 7.7mm	12	2.5	PM16P12S30	PM16P12S30-50
	16 to 14	1.0 to 1.5	PM16P1416S30	PM16P1416S30-50
	20 to 16	0.75 to 1.0	PM16P1620S30	PM16P1620S30-50
	24 to 20	0.50 to 0.75	PM16P2024S30	PM16P2024S30-50
Pre-Mate 9.3mm	12	2.5	PM16P12A30	PM16P12A30-50
	16 to 14	1.0 to 1.5	PM16P1416A30	PM16P1416A30-50
	20 to 16	0.75 to 1.0	PM16P1620A30	PM16P1620A30-50
	24 to 20	0.50 to 0.75	PM16P2024A30	PM16P2024A30-50
Post-Mate 6.4mm	12	2.5	PM16P12C30	PM16P12C30-50
	16 to 14	1.0 to 1.5	PM16P1416C30	PM16P1416C30-50
	20 to 16	0.75 to 1.0	PM16P1620C30	PM16P1620C30-50
	24 to 20	0.50 to 0.75	PM16P2024C30	PM16P2024C30-50

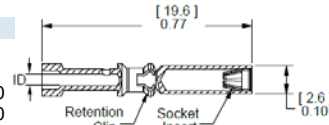


Auxiliary Pin Contact Lengths	- L -		- L1 -	
	in.	mm	in.	mm
Standard Length 7.7 mm	0.77	19.6	0.30	7.7
Pre-Mate 9.3 mm	0.83	21.2	0.37	9.3
Post-Mate 6.4 mm	0.72	18.3	0.25	6.4

### Socket Contacts for 1x4 Auxiliary Connector

Selectively gold plated contacts offer low resistance and durability up to 10,000 mating cycles.

Description	AWG	mm <sup>2</sup>	Part Numbers	
<b>Minimum Quantity</b>			<b>500</b>	<b>50</b>
Socket Contact	12	2.5	PM16S12S32	PM16S12S32-50
	16 to 14	1.0 to 1.5	PM16S1416S32	PM16S1416S32-50
	20 to 16	0.75 to 1.0	PM16S1620S32	PM16S1620S32-50
	24 to 20	0.50 to 0.75	PM16S2024S32	PM16S2024S32-50



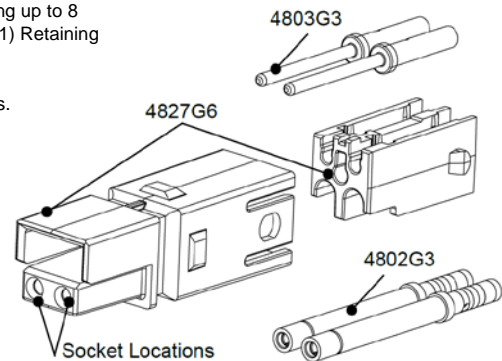
Auxiliary Socket Contacts Crimp Barrel ID		
Wire Gauge	in.	mm.
#24 / 20	0.04	1.1
#20 / 16	0.07	1.7
#16 / 14	0.08	2.1
#12	0.10	2.6

### PPMX Auxiliary Connector

The PPMX auxiliary connector allows up to 8 auxiliary circuits to be used in the SBE®, SBO®, & SBX® housings. There are 4 auxiliary circuits per PPMX connector and two PPMX housings fit into the auxiliary port in the main connector housing. Rated up to 7 amps 300 volts per contact, the genderless design holds two each gold plated pin & Socket contacts. This innovation allows the very durable and cost effective design of SBE®, O, X connectors to be used for applications requiring up to 8 battery monitoring or equipment vehicle communication circuits. (2) Retaining pins or (1) Retaining clip is required to hold the auxiliary housing in place.

Auxiliary Kits includes: (1) Auxiliary Housing, (2) Pin Contacts, and (2) Socket Contacts.

Description	AWG	mm <sup>2</sup>	Part Numbers	
<b>Minimum Quantity</b>			<b>1000</b>	<b>100</b>
PPMX Auxiliary Kit	24 to 20	0.50 to 0.25	-	4850G6
1x4 Auxiliary Housing	24 to 20	0.50 to 0.25	4827G6-Bk	-



### Pin & Socket Contacts for PPMX Auxiliary Connector

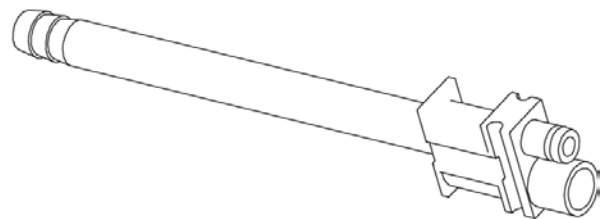
Gold plated contacts are ideal for signal or low power use with durability up to 5,000 mating cycles.

Description	AWG	mm <sup>2</sup>	Part Numbers	
<b>Minimum Quantity</b>			<b>2000</b>	<b>50</b>
Pin Contacts	24 to 20	0.50 to 0.25	4803G3-BK	4803G3
Socket Contacts	24 to 20	0.50 to 0.25	4802G3-BK	4802G3

### SBE® Air Tubes

Air tubes fit into SBE® housings to allow electrolyte circulation while charging the battery. Genderless tube design allows the same part to be used on both sides. (2) Retaining pins or (1) Retaining clip is required to hold the air tube in place. Retaining pins are included in Air Tube Kit.

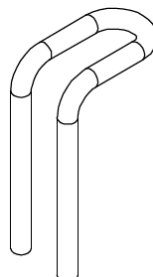
Description	Part Numbers
<b>Minimum Quantity</b>	<b>25</b>
Air Tube Kit, Black	6396G1
Air Tube Only	-



### Retaining Clip

Retaining clips can be used in place of two retaining pins to hold auxiliary connectors or air tubes. Allows easier removal of auxiliary modules.

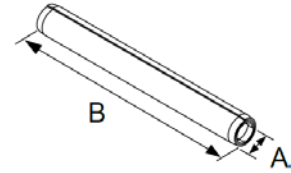
Description	Part Number
<b>Minimum Quantity</b>	<b>100</b>
For SBE®160 & SBX®175	2-8675P2



### Retaining Pins

Retaining pins are used to hold accessories in the auxiliary port in SBE®, SBO®, & SBX® housings. Dimension "B" is +/- 0.015 in or 0.38 mm.

Description	Part Numbers		Dimensions			
			- A -		- B -	
			inches	mm	inches	mm
Minimum Quantity	1000	100				
For SBE®160 & SBX®175	110G9-BK	110G9	0.093/0.103	2.36/2.62	1.000	38.100



### Zip Cable Straps

Zip cable straps are used to secure auxiliary wires to the side of the main power cables.

### Manual Release - Battery Side

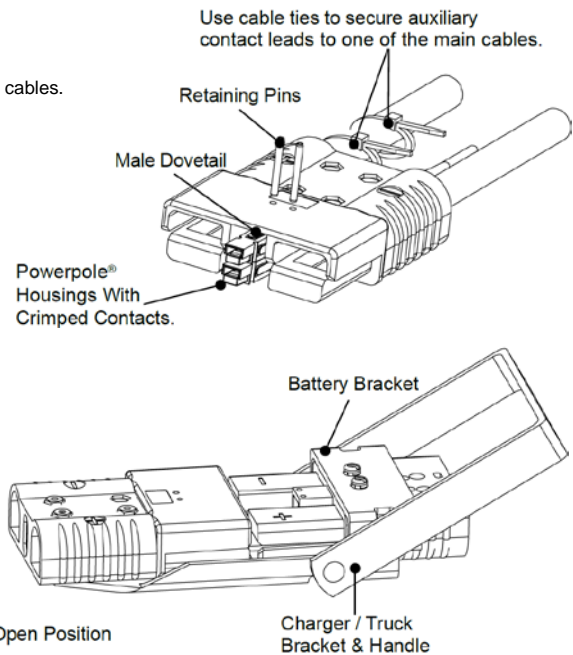
Works with the Charger / Truck side to ease mating and unmating connectors.

Description	Part Numbers	
Minimum Quantity	88	25
Bracket And Hardware Kit	-	993G2
Battery Bracket Only	111961P2	-
Hardware Bag	-	105G1

### Manual Release - Charger / Truck Side

Works with the Battery side to ease mating and unmating connectors.

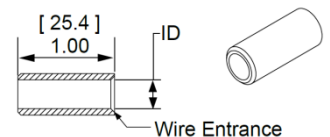
Description	Part Numbers
Minimum Quantity	25
Bracket And Hardware Kit	994G2



### Reducing Bushings: for Use with Contact # 6384G1

Use with contact part number 6384G1-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

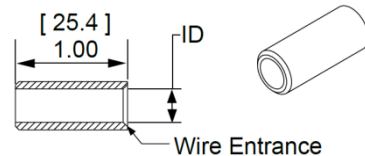
Contact Barrel Size	Wire Size	Part Numbers				Dimensions - ID -	
		1500	1000	500	100	Inches	mm
Minimum Quantity							
1/0 AWG [53.5mm²]	#1 AWG [42.4mm²]	-	-	5687-BK	5687	0.39	9.91
1/0 AWG [53.5mm²]	#2 AWG [33.6mm²]	5690-BK	-	-	5690	0.34	8.64
1/0 AWG [53.5mm²]	#4 AWG [21.2mm²]	-	5693-BK	-	5693	0.27	6.86
1/0 AWG [53.5mm²]	#6 AWG [13.3mm²]	-	5663-BK	-	5663	0.22	5.59
1/0 AWG [53.5mm²]	#10-8 AWG [5.3 - 8.4mm²]	5648-BK	-	-	5648	0.19	4.83



### Reducing Bushings: for Use with Contact # 6384G2

Use with contact part number 6384G2-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

Contact Barrel Size	Wire Size	Part Numbers	
Minimum Quantity		1000	100
35mm²	16mm²	5920-BK	5920



## SBE®320 / SBX®350 Connectors - up to 350 Amps



SBX® and SBE® connectors can integrate up to 8 auxiliary power / signal contacts along with the two primary power circuits. Sequencing within auxiliary positions is possible using the 4 pin lengths available in the 1x4 auxiliary connector. The SBE® touch safety rating is equivalent to that of the SBS® connector line.

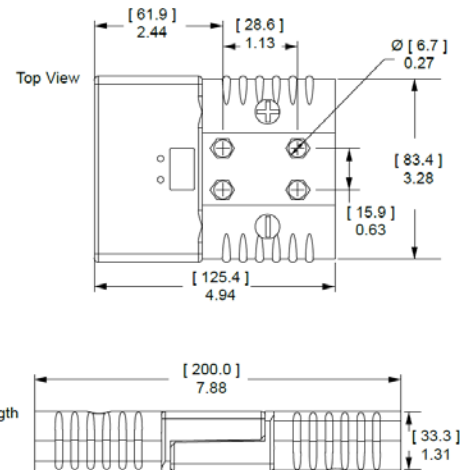
- Silver Plated Wire Contacts up to 300 mcm (152 mm<sup>2</sup>)  
Allows low resistance UL rated currents up to 350 amps per pole
- Up to 8 Last-mate / First-break Auxiliary's  
Enables intelligent power switching, CAN and interlock loop circuitry, as well as power up to 20 amps per pole
- Durable Housings and Contacts  
Like all Multipole connectors, the silver plated power contacts are rated up to 10,000 mating cycles

### | SBE®320 / SBX®350 ORDERING INFORMATION |

#### SBE®320 / SBX®350 Housings

The largest size of SBE®, X, O style housing. SBE® housings are molded from a chemical resistant PBT. SBX® housings are molded from PC. SBE®320 and SBX®350 housings of the same Voltage Color Code cannot be mated. SBX®350 housings do not meet EN1175-1 requirements for industrial trucks.

Description	- SBE®320 Part Numbers	- SBX®350 Part Numbers
Minimum Quantity	25	25
Yellow	E6362	6362
Orange	E6339	6339
Red	E6352	6352
Gray	E6350	6350
Blue	E6351	6351
Green	E6353	6353
Black	E6361	6361
Brown	E6336	N/A
Purple	E6349	N/A

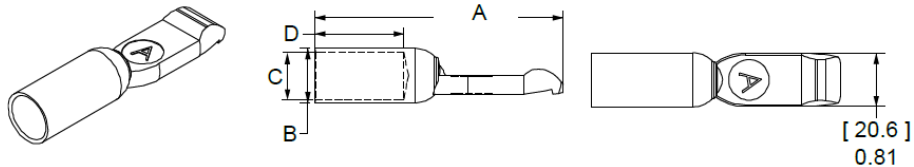


#### SBE®320 / SBX®350 Silver Plated Primary Power Wire Contacts

Silver plated contacts offer superior electrical performance and durability up to 10,000 mating cycles.

AWG	mm <sup>2</sup>	Loose Piece Part Numbers				Dimensions							
		200	150	50		- A -		- B -		- C -		- D -	
Minimum	Quantity				inches	mm	inches	mm	inches	mm	inches	mm	
300 mcm	150	-	6358-BK	6358 *	3.03	76.96	0.88	22.35	0.75	19.05	0.88	22.35	
4/0	120	6356-BK	-	6356 *	3.10	78.74	0.75	19.05	0.64	16.26	0.81	20.57	
3/0	95	6355-BK	-	6355 *	3.10	78.74	0.70	17.78	0.58	14.73	0.81	20.57	
2/0	70	6354-BK	-	6354 *	3.10	78.74	0.64	16.26	0.49	12.45	0.81	20.57	
2	35	6394-BK	-	6394 *	3.03	76.96	0.51	12.95	0.38	9.65	0.81	20.57	

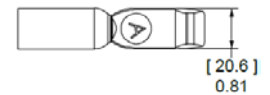
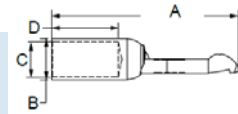
\* Sold as pairs, (2) parts ship for every 1 ordered.



**SBE®320 DIN Standard Silver Plated Primary Power Wire Contacts**

Crimp barrel O.D. are compliant with DIN standard tooling. Will also fit into SBX®350 housings. Not recommended for cross mating with above typical contacts for SBE® & SBX®.

AWG	mm <sup>2</sup>	Loose Piece Part Numbers		Dimensions							
				- A -		- B -		- C -		- D -	
				inches	mm	inches	mm	inches	mm	inches	mm
Minimum	Quantity	200	50								
3/0	95	1341G3-BK	1341G3 *	2.89	73.41	0.78	19.81	0.59	14.99	0.94	23.88
2/0	70	1341G2-BK	1341G2 *	2.74	69.6	0.68	17.27	0.51	12.95	0.79	20.07
1/0	50	1341G1-BK	1341G1 *	2.65	67.31	0.57	14.48	0.43	10.92	0.79	20.07



**| SBE®320 / SBX®350 CONNECTOR SPECIFICATIONS |**

Electrical			
<b>Current Rating Amperes<sup>1</sup></b>	<b>SBX350</b>	<b>SBE320</b>	
Primary Power (300 mcm)	350	320	
Powerpole® Auxiliary (12 AWG)	20	20	
1x4 Auxiliary (12 AWG)	20	20	
PPMX Auxiliary (20 AWG)	7 UL	5 CSA	
<b>Voltage Rating AC/DC</b>	<b>UL 1977</b>	<b>EN1175-1</b>	
Primary Power	600	150 <sup>4</sup>	
Powerpole® Auxiliary	600	150 <sup>4</sup>	
1x4 Auxiliary	200		
PPMX Auxiliary	300		
<b>Dielectric Withstanding Voltage Primary Power</b>			
Volts AC	2,200		
<b>Avg. Mated Contact Resistance Milliohms<sup>1</sup></b>			
2 1/2" of 300mcm wire	0.050		
<b>UL Hot Plug Current Rating Amperes - 250 cycles at 120V DC</b>			
Power	100A		
Powerpole® Auxiliary	30A		
1x4 Auxiliary	5A		

Materials		
<b>Housing</b>		
SBX® and Powerpole® Plastic Resin	Polycarbonate	
SBE® and 1x4 Auxiliary Housing	Polycarbonate / PBT blend	
Contact Retention Spring	Stainless Steel	
<b>Housing Flammability Rating</b>		
UL94	V-0	
<b>Power &amp; Powerpole® Contact</b>	Silver Plated Copper Alloy	
<b>1x4 Auxiliary Contacts</b>		
Pin	Copper alloy, Au over Ni	
Socket	BeCu, Au over Ni	
Socket Body	Copper alloy, Sn bright over Ni	
Retention Clip	Stainless Steel	
<b>PPMX Contacts</b>	Gold Plated Copper Alloy	
<b>Contact Termination Methods</b>		
Crimp <sup>3</sup>		
Hand Solder		

Mechanical		
<b>Wire Size Range</b>	<b>AWG</b>	<b>mm<sup>2</sup></b>
Power Contacts	10 to 300 mcm	5.3 to 150
Auxiliary Contacts	24 to 10	0.25 to 5.3
<b>Max. Wire Insulation Diameter</b>	<b>in.</b>	<b>mm</b>
Power Contacts	0.440	11.200
Powerpole® Auxiliary	0.175	4.450
1x4 Auxiliary	0.140	3.600
<b>Operating Temperature<sup>2</sup></b>	<b>°F</b>	<b>°C</b>
SBX and SBE Housings	-4° to 221°	-20° to 105°
<b>Mating Cycles No Load by Plating</b>	<b>Silver (Ag)</b>	<b>Gold (Au)</b>
Power Contacts	10,000	
Powerpole® Auxiliary	10,000	
1x4 Auxiliary		10,000
PPMX Auxiliary		5,000
<b>Avg. Mating / Unmating Force</b>	<b>Lbf.</b>	<b>N</b>
Main Connector Housing	55	245
Per Powerpole®	5.00	22.00
Per Contact in 1x4 Auxiliary	0.70	3.00
Per PPMX Housing	4.50	20.00
<b>Min. Contact / Spring Retention Force</b>	<b>Lbf.</b>	<b>N</b>
Power Standard Housing	150	667.2
Powerpole® Housing	25	111
1x4 Auxiliary Housing	10	44.5
PPMX Housing	12	53

Protection		
<b>Touch Safety Main Connector Housing</b>		
IEC 60950 SBE®320 Only	Pass	
IEC 60529 SBE®320 & SBX®350	IP20	

<sup>1</sup> Based on: 105°C rated or better cable of the largest size, Properly calibrated APP® recommended tooling, and a 25°C ambient temperature. UL rating not to exceed the maximum operating temperature. CSA rating below a 30°C temperature rise.

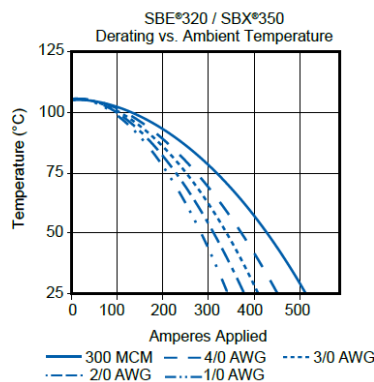
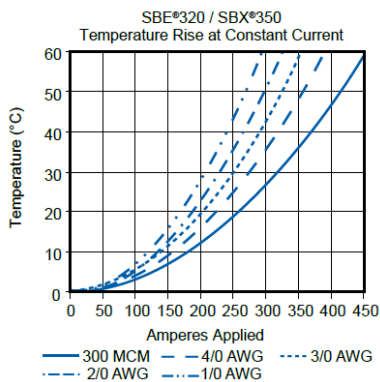
<sup>2</sup> Limited by the thermal properties of the connector plastic housing.

<sup>3</sup> Use APP® recommended tooling only. Alternate tools may adversely affect the performance of our connectors along with UL and CSA recognition.

<sup>4</sup> Voltage capability of SBE® housings is identical to SBX®, but derated to meet EN1175-1 requirements.



## | SBE®320 / SBX®350 CONNECTOR TEMPERATURE CHARTS |



## | Complete connector – SBE 320 – Part numbers |



Volt.	Amp.	Colour	Cable Well Diam. (mm <sup>2</sup> )	Part No.
12	320	Yellow	70	E6364G8
18	320	Orange	70	E6369G8
24	320	Red	70	E6347G8
36	320	Grey	70	E6345G8
48	320	Blue	70	E6346G8
72	320	Green	70	E6348G8
80	320	Black	70	E6363G8
96	320	Brown	70	E6334G8
120	320	Purple	70	E6335G8
			35 (*)	....G6
			50 (*)	....G7
			95 (*)	....G9

For diameter 35mm<sup>2</sup> replace G8 by G6, for 50mm<sup>2</sup> by G7 and for 95mm<sup>2</sup> by G9  
(\*) not standard

## | Complete connector – SBX 350 – Part numbers |



Volt.	Amp.	Colour	Cable Well Diam. (mm <sup>2</sup> )	Part No.
12	350	Yellow	70	6364G8
18	350	Orange	70	6369G8
24	350	Red	70	6347G8
36	350	Grey	70	6345G8
48	350	Blue	70	6346G8
72	350	Green	70	6348G8
80	350	Black	70	6363G8

Special constructions for bigger/smaller diameters on demand

For diameter 85mm<sup>2</sup> replace G8 by G2

For diameter 107.2mm<sup>2</sup> replace G8 by G3

For diameter 152mm<sup>2</sup> replace G8 by G5

Auxiliary contacts provide for secondary circuits

**The contacts for the SBE can be used for the SBX.**

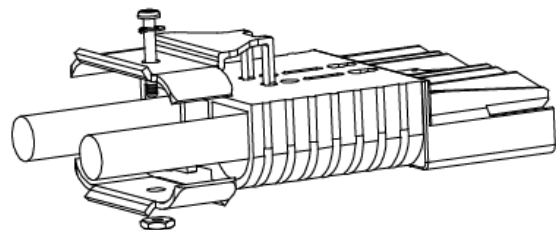
## | SBE®320 / SBX®350 Accessories |

### Cable Clamps

Durable metal clamps adapt to a wide range of cable sizes. Cable clamp kit includes Clamp Top and Bottom as well as the Hardware Bag.

Description	Cable Size		Part Number
	Max / Min (Inches O.D.)	Max / Min (mm O.D.)	
Minimum quantity			25
Cable Clamp Kit	0.85 to 0.67	21.6 to 17.1	911G2

The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.





### Handles

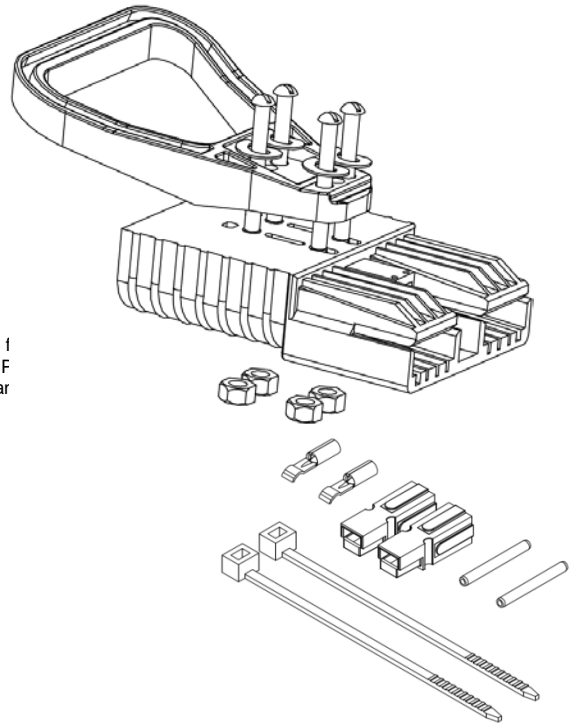
Handles are made out of durable PC plastic. Hardware to attach to connector body included in kits.

Description	Part Numbers
Minimum Quantity	25
Gray Handle Kit	995G2-Gray
Red Handle Kit	995G2-Red
Handle Only, Gray	-
Handle Only, Red	-
Handle Only, Black	-
Hardware Bag	106G7

### Powerpole® Auxiliary

Powerpole® auxiliary connectors are rated up to 30 amps 600 volts and can be used for power, control or sensing. The auxiliary kit includes (1) each black and red Standard F housing, (2) contacts, (2) zip cable straps, and (2) retaining pins. (1) Retaining clip can substituted for (2) retaining pins.

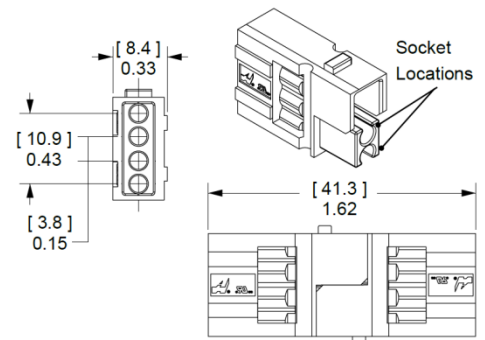
Description	Part Numbers
Minimum Quantity	200 25
Powerpole® Auxiliary Kit #16 to #12 Contact	- 6305G1
Powerpole® Auxiliary Kit #20 to #16 Contact	- 6310G1
Black Powerpole® Housing	1327G6 -
Red Powerpole® Housing	1327 -
#16 to #12 Contact	1331 -
#20 to #16 Contact	1332 -



### 1x4 Auxiliary Connector

APP's unique 1x4 auxiliary connector allows up to 4 auxiliary circuits up to 20 amps 150 volts each in SBE®, SBO®, & SBX® housings. The genderless design holds two each of the gold plated pin & socket contacts. This innovation allows the very durable and cost effective design of SBE®, O, X connectors to substitute for DIN 43589-1 applications where 4 auxiliary contacts are required. Multiple pin lengths allow the further benefit of sequencing between circuits. (2) Retaining pins or (1) Retaining clip is required to hold the auxiliary housing in place. Auxiliary Kits include (1) Auxiliary Housing, (2) Standard Length Pin Contacts, (2) Socket Contacts, (2) Retaining Pins and (1) Retaining Clip.

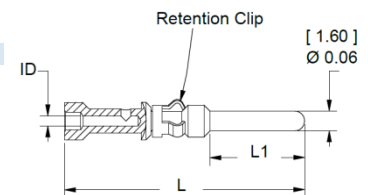
Description	AWG	mm²	Part Numbers
Minimum Quantity			25
1x4 Auxiliary Kit	12	4	440G3
1x4 Auxiliary Kit	16 to 14	1.5 to 2.5	440G1
1x4 Auxiliary Kit	20 to 16	0.5 to 1.5	440G2
1x4 Auxiliary Housing	Contacts Sold Separately		-



### Pin Contacts for 1x4 Auxiliary Connector

Gold plated contacts are available in 4 lengths to allow sequencing of circuits.

Description	AWG	mm²	Part Numbers	
			500	50
Minimum Quantity			500	50
Standard Length 7.7mm	12	2.5	PM16P12S30	PM16P12S30-50
	16 to 14	1 to 1.5	PM16P1416S30	PM16P1416S30-50
	20 to 16	0.75 to 1	PM16P1620S30	PM16P1620S30-50
	24 to 20	0.5 to 0.75	PM16P2024S30	PM16P2024S30-50
Pre-Mate 9.3mm	12	2.5	PM16P12A30	PM16P12A30-50
	16 to 14	1 to 1.5	PM16P1416A30	PM16P1416A30-50
	20 to 16	0.75 to 1	PM16P1620A30	PM16P1620A30-50
	24 to 20	0.5 to 0.75	PM16P2024A30	PM16P2024A30-50
Post-Mate 6.4mm	12	2.5	PM16P12C30	PM16P12C30-50
	16 to 14	1 to 1.5	PM16P1416C30	PM16P1416C30-50
	20 to 16	0.75 to 1	PM16P1620C30	PM16P1620C30-50
	24 to 20	0.5 to 0.75	PM16P2024C30	PM16P2024C30-50

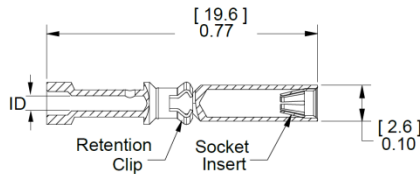


Auxiliary Pin Contact Lengths	- L -		- L1 -	
	in.	mm	in.	mm
Standard Length 7.7 mm	0.77	19.6	0.30	7.7
Pre-Mate 9.3 mm	0.83	21.2	0.37	9.3
Post-Mate 6.4 mm	0.72	18.3	0.25	6.4

### Socket Contacts for 1x4 Auxiliary Connector

Selectively gold plated contacts offer low resistance and durability up to 10,000 mating cycles.

Description	AWG	mm <sup>2</sup>	Part Numbers	
Minimum Quantity			500	50
Socket Contact	12	2.5	PM16S12S32	PM16S12S32-50
	16 to 14	1 to 1.5	PM16S1416S32	PM16S1416S32-50
	20 to 16	0.75 to 1	PM16S1620S32	PM16S1620S32-50
	24 to 20	0.5 to 0.75	PM16S2024S32	PM16S2024S32-50



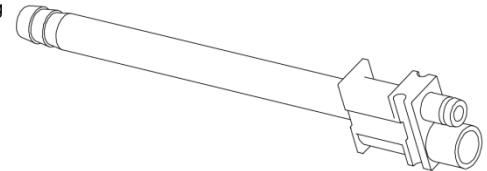
#### Auxiliary Socket Contacts Crimp Barrel ID

Wire Gauge	in.	mm.
#24 / 20	0.04	1.1
#20 / 16	0.07	1.7
#16 / 14	0.08	2.1
#12	0.10	2.6

### SBE® Air Tubes

Air tubes fit into SBE® housings to allow electrolyte circulation while charging the battery. Genderless tube design allows the same part to be used on both sides. (2) Retaining pins or (1) Retaining clip is required to hold the air tube in place. Retaining pins are included in Air Tube Kit.

Description	Part Numbers
Minimum Quantity	25
Air Tube Kit, Black	6396G1
Air Tube Only	-

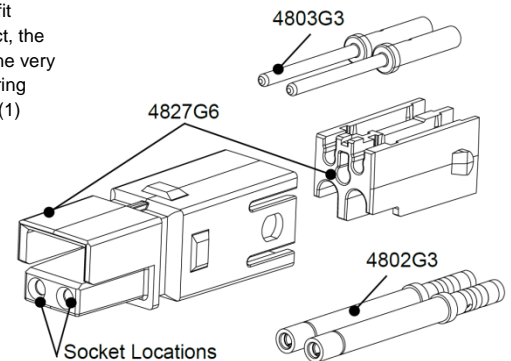


### PPMX Auxiliary Connector

The PPMX auxiliary connector allows up to 8 auxiliary circuits to be used in the SBE®, SBO®, & SBX® housings. There are 4 auxiliary circuits per PPMX connector and two PPMX housings fit into the auxiliary port in the main connector housing. Rated up to 7 amps 300 volts per contact, the genderless design holds two each gold plated pin & socket contacts. This innovation allows the very durable and cost effective design of SBE®, O, X connectors to be used for applications requiring up to 8 battery monitoring or equipment vehicle communication circuits. (2) Retaining pins or (1) Retaining clip is required to hold the auxiliary housing in place.

Auxiliary Kits includes: (1) Auxiliary Housing, (2) Pin Contacts, and (2) Socket Contacts.

Description	AWG	mm <sup>2</sup>	Part Numbers	
Minimum Quantity			1000	100
PPMX Auxiliary Kit			-	4850G6
1x4 Auxiliary Housing	24 to 20	0.5 to 0.25	4827G6-BK	-
	Contacts Sold Separately			



### Pin & Socket Contacts for PPMX Auxiliary Connector

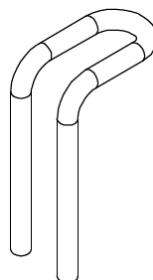
Gold plated contacts are ideal for signal or low power use with durability up to 5,000 mating cycles.

Description	AWG	mm <sup>2</sup>	Part Numbers	
Minimum Quantity			2000	50
Pin Contacts	24 to 20	0.5 to 0.25	4803G3-BK	4803G3
Socket Contacts	24 to 20	0.5 to 0.25	4802G3-BK	4802G3

### Retaining Clip

Retaining clips can be used in place of two retaining pins to hold auxiliary connectors or air tubes. Allows easier removal of auxiliary modules.

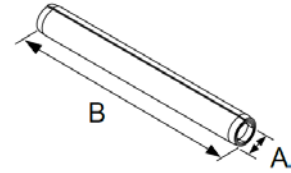
Description	Part Number
Minimum Quantity	100
For SBE®320 & SBX®350	2-8675P1



### Retaining Pins

Retaining pins are used to hold accessories in the auxiliary port in SBE®, SBO®, & SBX® housings. Dimension "B" is +/- 0.015 in or 0.38 mm.

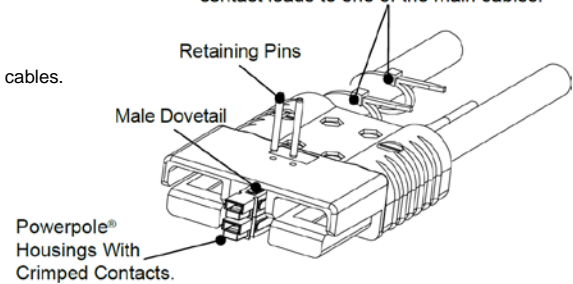
Description	Part Numbers	Dimensions			
		- A -		- B -	
		inches	mm	inches	mm
Minimum Quantity	1000				
For SBE®320 & SBX®350	110G59-BK	0.093/0.103	2.36/2.62	1.000	38.100



### Zip Cable Straps

Zip cable straps are used to secure auxiliary wires to the side of the main power cables.

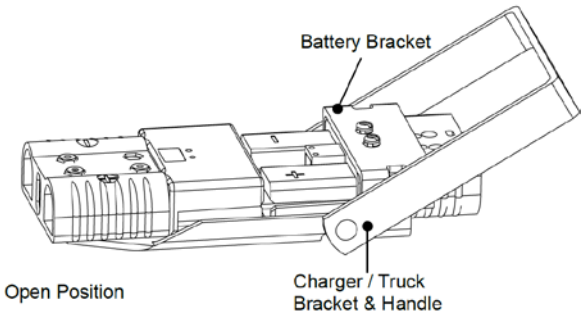
Use cable ties to secure auxiliary contact leads to one of the main cables.



### Manual Release - Battery Side

Works with the Charger / Truck side to ease mating and unmating connectors.

Description	Part Numbers
Minimum Quantity	25
Bracket And Hardware Kit	993G1
Battery Bracket Only	-
Hardware Bag	106G6



### Manual Release - Charger / Truck Side

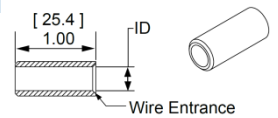
Works with the Battery side to ease mating and unmating connectors.

Description	Part Numbers
Minimum Quantity	25
Bracket And Hardware Kit	994G1

### Reducing Bushings: for Use with Contact # 6354 and Bushing # 5918

Use with contact part number 6354-BK and bushing part number 5918-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

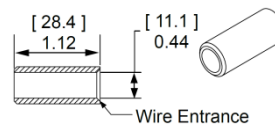
Bushings #5918 Barrel Size	Wire Size	Part Numbers				Dimensions - ID -	
		1500	1000	500	100	Inches	mm
Minimum Quantity							
1/0 AWG [53.5mm²]	#1 AWG [42.4mm²]	-	-	5687-BK	5687	0.39	9.91
1/0 AWG [53.5mm²]	#2 AWG [33.6mm²]	5690-BK	-	-	5690	0.34	8.64
1/0 AWG [53.5mm²]	#4 AWG [21.2mm²]	-	5693-BK	-	5693	0.27	6.86
1/0 AWG [53.5mm²]	#6 AWG [13.3mm²]	-	5663-BK	-	5663	0.22	5.59
1/0 AWG [53.5mm²]	#10-8 AWG [5.3-8.4mm²]	5648-BK	-	-	5648	0.19	4.83



### Reducing Bushings: for Use with Contact # 6354

Use with contact part number 6354-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

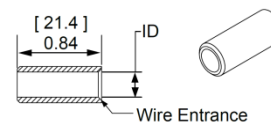
Contact Barrel Size	Wire Size	Part Numbers	
Minimum Quantity		500	100
2/0 AWG [67.4mm²]	1/0 AWG [53.5mm²]	5918-BK	5918



### Reducing Bushings: for Use with Contact # 6394

Use with contact part number 6394-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

Contact Barrel Size	Wire Size	Part Numbers		Dimensions - ID -	
		500	100	Inches	mm
Minimum Quantity					
35mm²	16mm²	5920-BK	5920	0.23	5.8





**VANDAPOWER**



| SRE Cable clamps – Part numbers |



Description	Part No.
Cable clamp for use with SR175/SRE160	78000-00
Cable clamp SR350/SRE320/SRX350	78000-00

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Fax +32 9 362 91 35

## SBO® / SBE® / SBX® - Tooling Information

Wire Size		Loose Piece Part Numbers	Loose Piece Contact Crimp Tool				
AWG	mm²	Contacts	Pneumatic Bench Tool	Die	Locator	Number of Crimps	or Hand Tool
<b>SBE 320 / SBX 350</b>							
300 MCM	152	6358	N/A	N/A	N/A	N/A	1368 Series
4/0 AWG	107.2	6356	1387G2	1303G12	1304G28	Double	
3/0 AWG	85	6355					
2/0 AWG	67.4	6354					
#2	N/A	6394					
N/A	95 mm²	1341G3	1387G2	1303G17	1304G35	Double	
N/A	70 mm²	1341G2					
N/A	50 mm²	1341G1					
<b>SBE 160 / SBX 175</b>							
1/0 AWG	53.5	6384G1	1387G2	1303G2	1304G13	Single	1368 Series
#2	35 mm²	6384G2	1387G1	1388G3	1389G3		
			1387G2	1303G2	1304G13		
<b>SBO 60 / SBE 80</b>							
#4	25	1339G4	1387G1	1388G7	1389G9	Single	N/A
#6	16	1339G1		1388G6			1309G4
<b>Powerpole 15/45 Auxiliary Contacts **</b>							
#16 / 20	1.3 / .52	1332	1367G1	N/A	N/A	Single	1309G2 or 1309G8
#12 / 16	3.3 / 1.3	1331					
<b>PowerMod 1x4 Auxiliary Contacts</b>							
#12 / 24	2.5 / .25	All Crimp Pins	TP0001*	N/A	TL0001	Single	TM0001*
		All Crimp Sockets			TL0002		PM1000G1
<b>PPMX Auxiliary Contacts</b>							
#20 / 24	0.50 / 0.25	4803G3	TP0001*	N/A	TL0005	Single	TM0001* or PM1000G1
		4802G3					

\* TP0001 and TM0001 tools require locators to properly position contacts.

\*\* See Powerpole® family tooling chart for other Powerpole® contacts

NOTE: See website for the most current information.

Insertion / Extraction Tool for PP15/45 Contacts = 111038G2


Insertion Tool for 1x4 Auxiliary Contacts = PM1002G1

Extraction Tool for 1x4 Auxiliary Contacts = PM1003G1

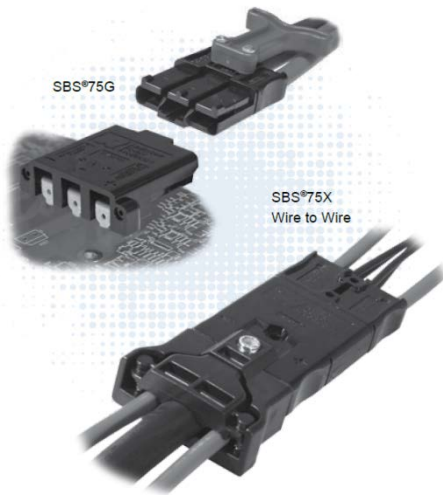
Extraction Tool for SBE®160 & SBX®175 Power Contacts = 969P1

Extraction Tool for SBE®320 & SBX®350 Power Contacts = 970P1

### | Extraction Tools – Part numbers |

Contact extraction tool	For use with	Part No.
	SBX175	969P1
	SBX350	970P1
Contact insertion/extraction tool	For use with	Part No.
	Auxiliary contact kit (6344)	111038G2

## SBS® Connectors - up to 110 amps



The patented SBS® connector family is designed to provide high power in a compact ergonomic housing with protection against accidental contact with live circuits. This is of particular importance in applications where DC voltages exceed 30 volts and can be health threatening.

Wire-to-wire and wire-to-board configurations both provide power contacts rated up to 110 amps. The SBS®75X offers up to 4 mate-last break-first auxiliary power contacts rated up to 20 amps. The SBS®75G features a third first-mate last-break ground or power contact. All contact positions are rated for circuit interruption (hot plugging).

- **Touch Safe Interface**

- Can safely be used in through panel applications
- Minimizes potential contact with live circuits per IEC 60950

- **Wire-to-Wire and Wire-to-Board Configurations**

Allows one connector to meet multiple needs

- **Ground or Auxiliary Contacts Integrated into the One Piece Housing**

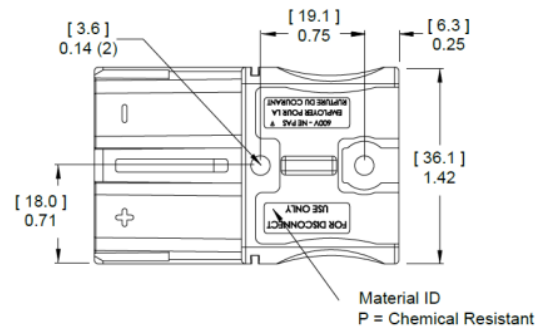
Meets all connection requirements in one compact connector housing

### | SBS® ORDERING INFORMATION |

#### SBS®50 Standard Housings

Polycarbonate housings feature 2 positions all finger proof. Genderless design mates with itself. Mechanical keys are color coded.

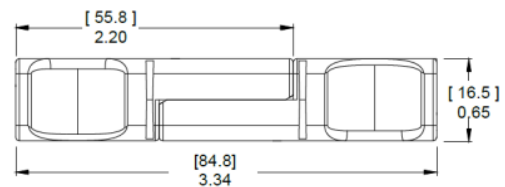
Description	Part Numbers	
Minimum Quantity	500	50
Red	SBS50RED-BK	SBS50RED
Gray	SBS50GRA-BK	SBS50GRA
Blue	SBS50BLU-BK	SBS50BLU
Green	SBS50GRN-BK	SBS50GRN
Black	SBS50BLK-BK	SBS50BLK
Brown	SBS50BRN-BK	SBS50BRN
White	SBS50WHT-BK	SBS50WHT



#### SBS®50 Chemical Resistant (CR) Housings

Same features as the standard housings, but molded out of a chemical resistant PBT/ PC blend. Suitable for use to -40°C.

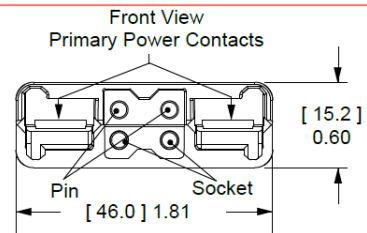
Description	Part Numbers	
Minimum Quantity	500	50
Red	PSBS50RED-BK	PSBS50RED
Gray	PSBS50GRA-BK	PSBS50GRA
Blue	PSBS50BLU-BK	PSBS50BLU
Green	PSBS50GRN-BK	PSBS50GRN
Black	PSBS50BLK-BK	PSBS50BLK
Brown	PSBS50BRN-BK	PSBS50BRN



### SBS®75X Standard Housings

Polycarbonate housings feature 4 auxiliary and 2 primary positions all finger proof. Genderless design mates with itself, or the PCB connector. Mechanical keys are color coded.

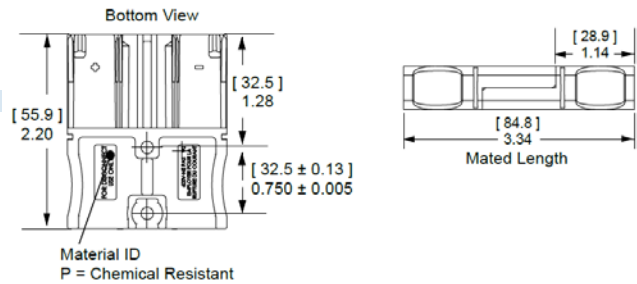
Description	Part Numbers	
Minimum Quantity	250	50
Black	SBS75XBLK-BK	SBS75XBLK
Brown	SBS75XBRN-BK	SBS75XBRN



### SBS®75X Chemical Resistant (CR) Housings

Same features as the standard housings, but molded out of a chemical resistant PBT/ PC blend. Suitable for use to -40°C.

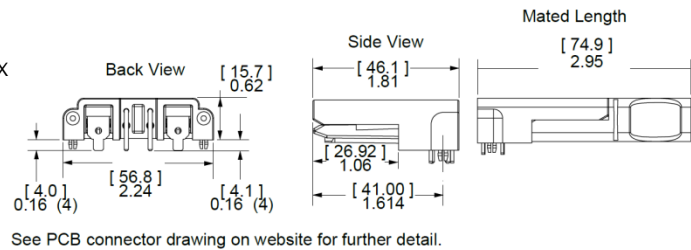
Description	Part Numbers	
Minimum Quantity	250	50
Green	PSBS75XGRN-BK	PSBS75XGRN
Black	PSBS75XBLK-BK	PSBS75XBLK



### SBS®75X Assembled PCB Connector

Fully assembled PCB connector is designed to mate with SBS®75X Wire connector. All positions are preloaded with contacts including standard mating length auxiliary positions. Press fit board locks help secure the connector to the PCB before and after soldering.

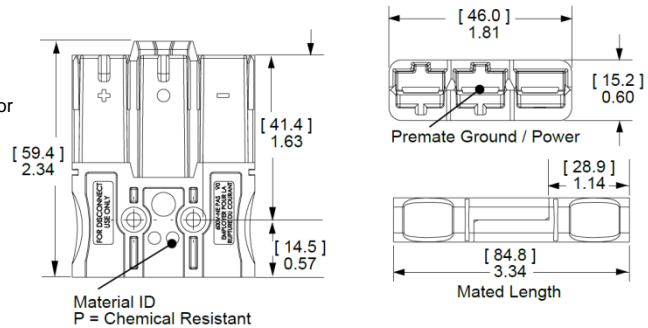
Description	Part Number
Minimum Quantity	100
Black	SBS75XPRBLK-BK



### SBS®75G Wire Housings

Polycarbonate housings feature three finger proof positions. The center position can be used for pre-mate power or ground. Genderless design mates with itself, or the PCB connector. Mechanical keys are color coded. Inquire with customer service for chemical resistant housings.

Description	Part Numbers	
Minimum Quantity	250	50
White	SBS75GWHT-BK	SBS75GWHT
Blue	SBS75GBLU-BK	SBS75GBLU
Black	SBS75GBLK-BK	SBS75GBLK
Brown	SBS75GBRN-BK	SBS75GBRN

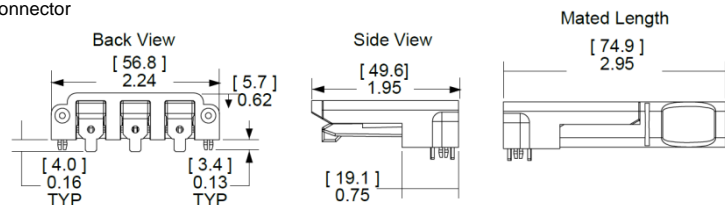


### SBS®75G Assembled PCB Connector

Fully assembled PCB connector is designed to mate with SBS®75G Wire connector. Has press fit board locks to help secure the connector to the PCB before and after soldering.

Description	Part Number
Minimum Quantity	100
Black	SBS75GPRBLK-BK

See PCB connector drawing on website for further detail.

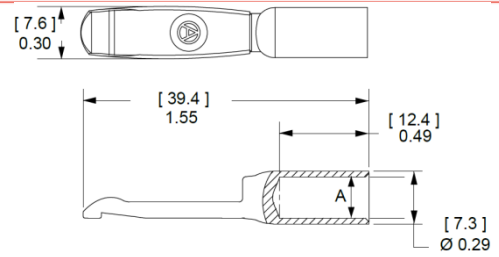


### SBS® Silver Plated Primary Power Wire Contacts

Use two silver plated contacts per housing for the best electrical performance and durability up to 10,000 mating cycles. Standard contacts are for use in all primary power positions for SBS® 50, 75X, & 75G wire housings.

Type	AWG	mm <sup>2</sup>	Loose Piece Part Numbers		Dimensions - A -	
			Quantity	inches	mm	
Minimum			1000	100		
Standard	6	16	1339G2-BK	1339G2 *	0.22	5.59
Standard	8	10	1339G5-BK	1339G5 *	0.19	4.83
Standard	12 to 10	2.5 to 6	1339G3-BK	1339G3 *	0.14	3.56

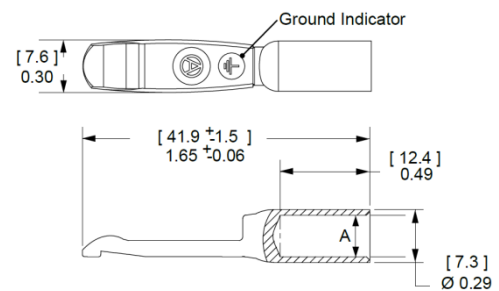
\* Part numbers 1339G2, 1339G3, 1339G5 are sold as pairs. You will receive 2 contacts for every 1 ordered.



### SBS®75G Silver Plated Pre-Mate Wire Contacts

Pre-Mate contacts are for the center Pre-Mate position on the SBS®75G wire housings.

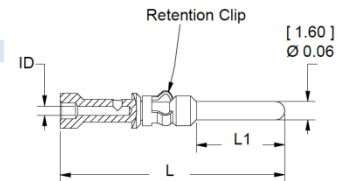
Type	AWG	mm <sup>2</sup>	Loose Piece Part Numbers		Dimensions - A -	
			Quantity	inches	mm	
Minimum			500	50		
Pre-Mate	6	16	1340G1-BK	1340G1	0.22	5.59
Pre-Mate	8	10	1340G2-BK	1340G2	0.19	4.83
Pre-Mate	12 to 10	2.5 to 6	1340G3-BK	1340G3	0.14	3.56



### Pin Contacts for SBS®75X Connector

Gold plated contacts are available in 4 lengths to allow sequencing of circuits. All auxiliary positions are mate-last, break-first in relation to power contacts.

Description	AWG	mm <sup>2</sup>	Part Numbers	
Minimum			500	50
Standard Length 7.7mm	12	2.5	PM16P12S30	PM16P12S30-50
	16 to 14	1.0 to 1.5	PM16P1416S30	PM16P1416S30-50
	20 to 16	0.75 to 1.0	PM16P1620S30	PM16P1620S30-50
	24 to 20	0.50 to 0.75	PM16P2024S30	PM16P2024S30-50
Pre-Mate 9.3mm	12	2.5	PM16P12A30	PM16P12A30-50
	16 to 14	1.0 to 1.5	PM16P1416A30	PM16P1416A30-50
	20 to 16	0.75 to 1.0	PM16P1620A30	PM16P1620A30-50
	24 to 20	0.50 to 0.75	PM16P2024A30	PM16P2024A30-50
Post-Mate 6.4mm	12	2.5	PM16P12C30	PM16P12C30-50
	16 to 14	1.0 to 1.5	PM16P1416C30	PM16P1416C30-50
	20 to 16	0.75 to 1.0	PM16P1620C30	PM16P1620C30-50
	24 to 20	0.50 to 0.75	PM16P2024C30	PM16P2024C30-50

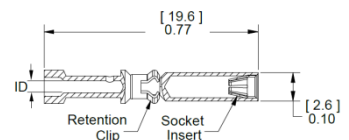


Auxiliary Pin Contact Lengths	- L -		- L1 -	
	in.	mm	in.	mm
Standard Length 7.7 mm	0.77	19.6	0.30	7.7
Pre-Mate 9.3 mm	0.83	21.2	0.37	9.3
Post-Mate 6.4 mm	0.72	18.3	0.25	6.4

### Socket Contacts for SBS®75X Connector

Selectively gold plated contacts offer low resistance and durability up to 10,000 mating cycles.

Description	AWG	mm <sup>2</sup>	Part Numbers		Auxiliary Socket Contacts Crimp Barrel ID	
			Quantity	in.	mm.	
Minimum			500	50		
Socket Contact	12	2.5	PM16S12S32	PM16S12S32-50	#24 / 20	0.04 1.1
	16 to 14	1.0 to 1.5	PM16S1416S32	PM16S1416S32-50	#20 / 16	0.07 1.7
	20 to 16	0.75 to 1.0	PM16S1620S32	PM16S1620S32-50	#16 / 14	0.08 2.1
	24 to 20	0.50 to 0.75	PM16S2024S32	PM16S2024S32-50	#12	0.10 2.6





## | SBS® CONNECTOR SPECIFICATIONS |

Electrical		
<b>Current Rating Amperes<sup>1</sup></b>	<b>UL 1977</b>	<b>CSA/TUV</b>
Primary Power (6 AWG)	110	75
Auxiliary (12 AWG)	20	10
<b>Voltage Rating AC/DC</b>		
UL 1977	600	
<b>Dielectric Withstanding Voltage</b>		
Volts AC	2,200	
<b>Avg. Mated Contact Resistance Milliohms<sup>1</sup></b>		
Power & Ground: 1 1/4" of #6 AWG wire	0.200	
Auxiliary: Wire & PCB	3.000	
<b>UL Hot Plug Current Rating Amperes - 250 cycles at 120V DC</b>		
Wire & PCB Power	50A	
Wire & PCB Auxiliary	5A	
<b>UL Ground Short Time Current Test - SBS75G Wire &amp; PCB</b>		
1530 Amps, #6 AWG Wire	6 seconds	

Materials	
<b>Housing</b>	
Standard Plastic Resin	Polycarbonate
Chem. Resistant Resin	Polycarbonate / PBT blend
Contact Retention Spring	Stainless Steel
<b>Housing Flammability Rating</b>	
UL94	V-0
<b>Wire Power &amp; Ground Contact</b>	Silver Plated Copper Alloy
<b>PCB Power &amp; Ground Contact</b>	Tin Plated Copper Alloy
<b>SBS75X Auxiliary Contacts</b>	
Pin	Copper alloy, Au over Ni
Socket	BeCu, Au over Ni
Socket Body	Copper alloy, Sn bright over Ni
Retention Clip	Stainless Steel
<b>PCB Press Fit Retainers</b>	Brass - Tin Plated
<b>Contact Termination Methods</b>	
Crimp <sup>3</sup>	Wire Contacts
Hand Solder	Wire and PCB Contacts
Solder Dip	PCB Contacts
Wave Solder	PCB Contacts

Mechanical			
<b>Wire Size Range</b>	<b>AWG</b>	<b>mm<sup>2</sup></b>	
Power Contacts with Bushings	16 to 6	1.3 to 13.3	
Auxiliary Contacts	24 to 12	0.25 to 3.3	
<b>Max. Wire Insulation Diameter</b>			
SBS®75G Power & Ground	in.	mm	
SBS®50 & SBS®75X Power Contacts	0.380	9.652	
SBS®75X Auxiliary Contacts	0.410	10.414	
	0.140	3.600	
<b>Operating Temperature<sup>2</sup></b>			
Standard	°F	°C	
Chemical Resistant	-4° to 221°	-20° to 105°	
	-40 to 221°	-40° to 105°	
<b>Mating Cycles No Load by Plating</b>			
Power & Ground Contacts Wire	Silver (Ag)	Tin (Sn)	Gold (Au)
Power & Ground Contacts PCB	10,000	1,500	
Auxiliary Contacts			10,000
<b>Avg. Mating / Unmating Force</b>			
SBS®75X and SBS®75G Wire to Wire	Lbf.	N	
SBS®50 Wire to Wire	16	70	
SBS®75X and SBS®75G Wire to PCB	8	36	
	8	36	
<b>Min. Contact / Spring Retention Force</b>			
Power, Standard Housing	Lbf.	N	
Power, Chem. Resistant Housing	50	222	
Aux. Standard Housing	30	133	
Aux. Chem. Resistant Housing	15	67	
	10	44	
<b>PCB Specifications</b>			
Mounting Style	Plated Through Hole		
Max PCB Thickness- in. [mm]	0.093 [2.4]		
Recommended Traces Power & Ground	#6 AWG Cross Section		
Recommended Traces Auxiliary	#12 AWG Cross Section		
<b>Min. Creepage / Clearance Distance PCB</b>			
Power to Aux. Creepage SBS®75X	in.	mm	
Power to Aux. Clearance SBS®75X	0.41	10.4	
Power to Ground Creepage SBS®75G	0.24	6.1	
Power to Ground Clearance SBS®75G	0.35	8.9	
Auxiliary Creepage SBS®75X	0.26	6.7	
Auxiliary Clearance SBS®75X	0.12	3.0	
	0.12	3.0	

Protection	
<b>Touch Safety with Wire Contacts &amp; PCB Mating Interface</b>	
IEC 60950	Pass
IEC 60529	IP20

Auxiliary contacts are available for SBS®75X only.

SBS®75X and SBS®75G PCB connectors are designed to mate only with the wire connector of the same series.

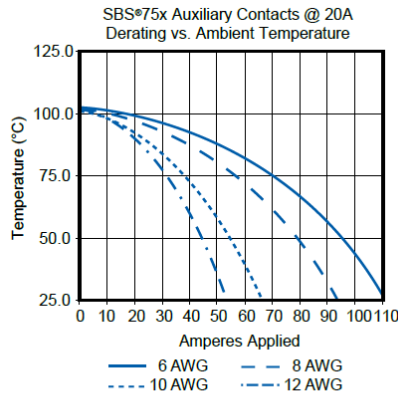
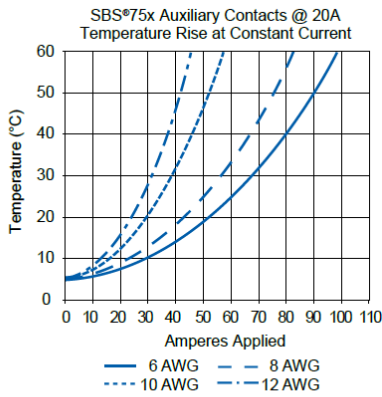
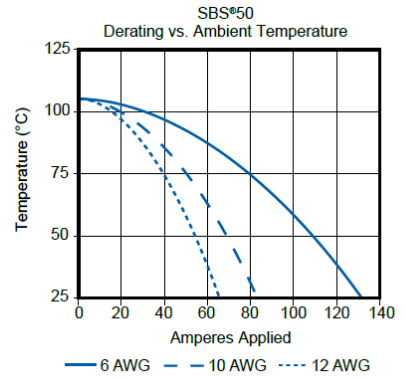
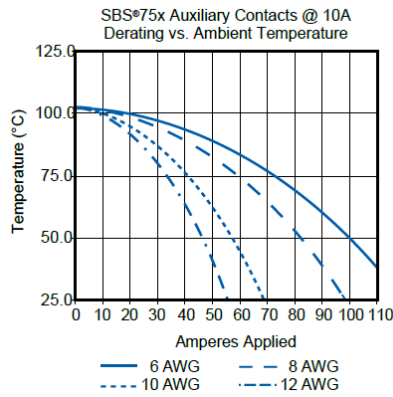
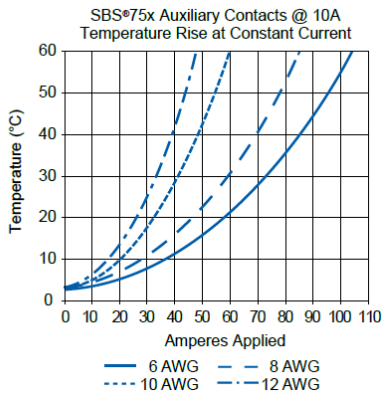
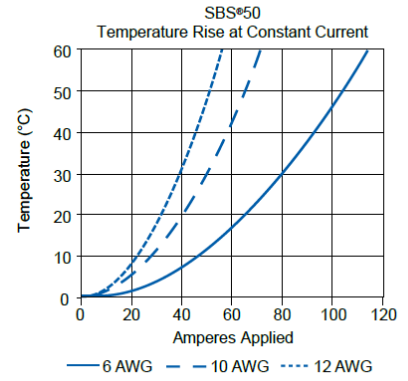
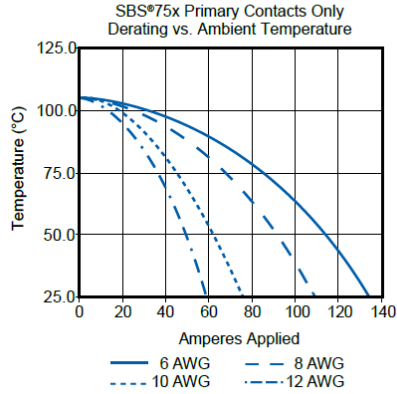
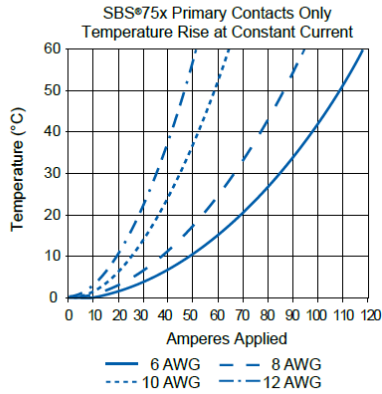
<sup>1</sup> Based on: 105°C rated or better cable of the largest size, Properly calibrated APP® recommended tooling, and a 25°C ambient temperature. UL rating not to exceed the maximum operating temperature. CSA rating below a 30°C temperature rise.

<sup>2</sup> Limited by the thermal properties of the connector plastic housing.

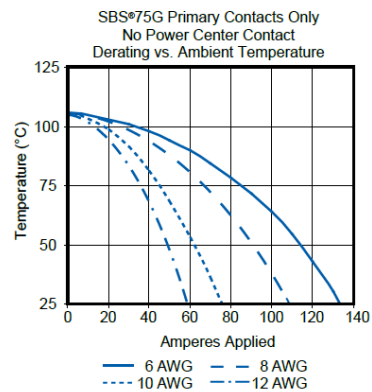
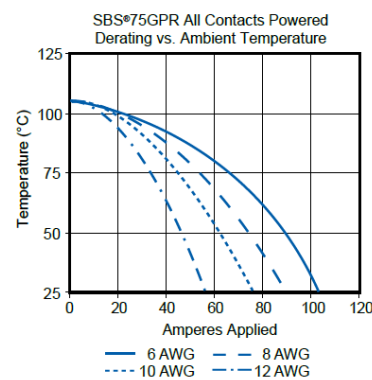
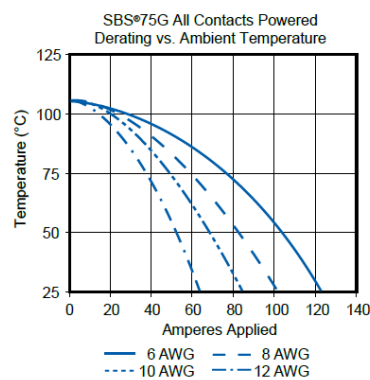
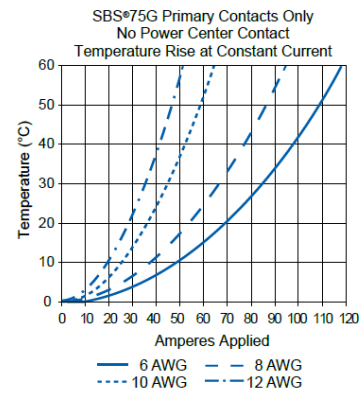
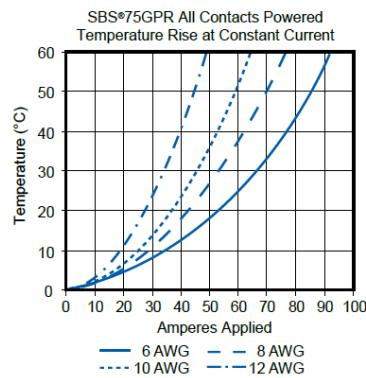
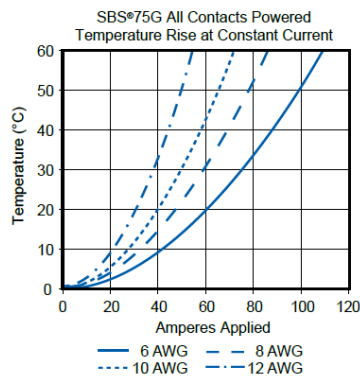
<sup>3</sup> Use APP® recommended tooling only. Alternate tools may adversely affect the performance of our connectors along with UL and CSA recognition.



| SBS® CONNECTOR TEMPERATURE CHARTS |



NOTE: Temperature rise charts are based on a 25°C ambient temperature.

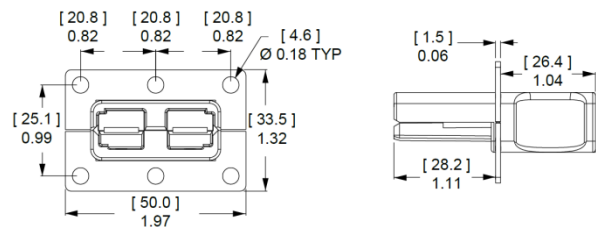


## | SBS® Accessories |

### Mounting Clamp for SBS®50

Mounting clamps can be used for fastening a SBS®50 series housings to a panel. Fastening hardware not included.

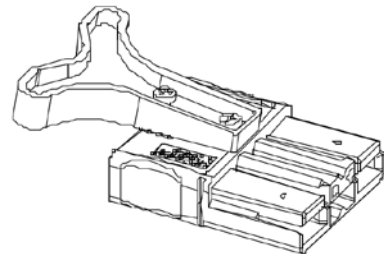
Description	Part Number
Minimum Quantity	20 sets of 2
Panel Mount Bracket for SBS®50	1466G1



### T-Handle for SBS®50 and SBS®75X

The "T" handle makes mating and unmating the connector easier. The non-conductive red plastic material is strong and safe. (2) Self tapping screws are used to secure the handle to the connector housing.

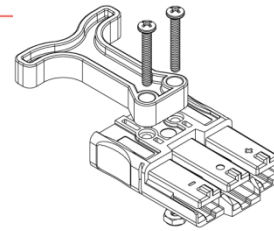
Description	Part Numbers
Minimum Quantity	1000 50
Red "T" Handle + Hardware Bag	- SBS50-HDL-RED
Hardware Bag (2 Screws)	- 104G17
Red "T" Handle Only	113899P1 -
#8 x 5/8" Screw (Order 2 Per Handle)	H1120P55 -



### T-Handle for SBS®75G

The "T" handle makes mating and unmating the connector easier. The non-conductive red plastic material is strong and safe. (2) Machine screws and lock nuts.

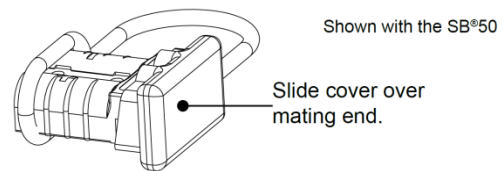
Description	Part Number
Minimum Quantity	50
Red "T" Handle + Hardware Bag	SBS75HDLRED



### Dust Cover SBS®50

Prevents dust and dirt from entering the mating interface of the connector when unmated. NOTE: Not a Hermetic Seal.

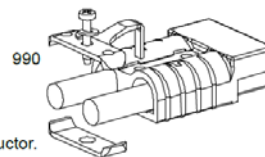
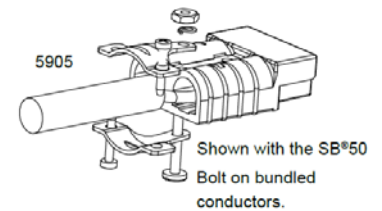
Description	Part Numbers	
Minimum Quantity	500	50
Dust Cover with Lanyard Strap, Red	113890P1	134G1



### Cable Clamps for SBS®50

Durable metal cable clamps securely hold cables to prevent accidental strain or pulls from dislodging wire or contacts from the housing. Cable clamps are recommended for solder terminated wires.

Description	Cable Size AWG or (Inches O.D.)	mm <sup>2</sup> or (mm O.D.)	Part Numbers	
Minimum quantity				
Self Attaching for Discrete Conductor	8 to 6	10	990-BK	990
Self Attaching for Discrete Conductor	12 to 10	2.5 to 4	990G2-BK	990G2
Bolt On for Discrete Conductor	12 to 6	2.5 to 10	990G1-BK	990G1
Bolt On for Bundled Conductor	(0.320 to 0.450)	(4.27 to 11.43)	5905-BK	5905

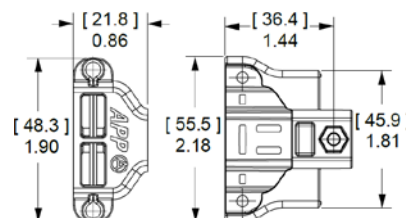


The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.

### Cable Clamps for SBS®75X with Integral Handle

Rugged chemical resistant PBT/ PC plastic cable clamps securely hold cables to prevent accidental strain or pulls from dislodging wire or contacts from the housing. Cable clamps are recommended for solder terminated wires.

Description	Cable Size AWG or (Inches O.D.)	mm <sup>2</sup> or (mm O.D.)	Part Numbers	
Minimum quantity				
Large Wire Clamp Kit w/ Hardware	12 to 6 (0.39 to 0.60)	4 to 10 (9.9 to 15.2)	PSBS75XCLP1-BK	PSBS75XCLP1
Small Wire Clamp Kit w/ Hardware	12 to 6 (0.34 to 0.55)	4 to 10 (8.6 to 14.0)	PSBS75XCLP2-BK	PSBS75XCLP2



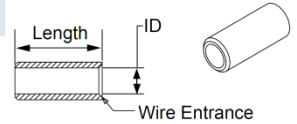
The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.

Clamp hardware requires phillips or flat blade screwdriver to assemble.

### Reducing Bushings

Use with contact part number 1339G2-BK or 1340G1-BK to allow a smaller wire to be used with the connector. Electrical capability is derated with smaller wire.

Contact Barrel Size Minimum Quantity	Wire Size	Part Numbers			Dimensions			
		3000	1000	100	- ID -		- Length -	
					Inches	mm	Inches	mm
#6 AWG [13.3mm <sup>2</sup> ]	#8 AWG [8.4mm <sup>2</sup> ]	-	5912-BK	5912	0.18	4.57	0.45	11.43
#6 AWG [13.3mm <sup>2</sup> ]	#12-10 AWG [3.3-5.3mm <sup>2</sup> ]	5910-BK	-	5910	0.14	3.56	0.47	11.94
#6 AWG [13.3mm <sup>2</sup> ]	#16-14 AWG [1.3-2.1mm <sup>2</sup> ]	5913-BK	-	5913	0.09	2.29	0.47	11.94



## SBS® - Tooling Information

Wire Size		Power / Ground Contacts						
AWG	mm <sup>2</sup>	Power Contact Part Number	Pneumatic Bench Tool	Die	Locator	Number of Crimps	Hand Tool	
#6	13.3	1339G2	1387G1	1388G6	1389G9	Single	1309G4	
#8	8.4	1339G5		1388G7				
#10 / 12	5.3 / 3.3	1339G3		1388G6	1389G20			
#6	13.3	1340G1						
#8	8.4	1340G2						
#10 / 12	5.3 / 3.3	1340G3	1388G7					

Wire Size		SBS®75X Auxiliary Contacts					
AWG	mm <sup>2</sup>	Auxiliary Contact Part Number	APP Hand Tool w/ Integral Locator	Mil Std. Hand Tool*	Pneumatic Tool*	Number of Crimps	Locator for: TM0001 & TP0001
#12 / 24	2.5 / 0.25	All Crimp Pins	PM1000G1	TM0001	TP0001	Single	TL0001
		All Crimp Sockets					TL0002

\* TP0001 and TM0001 tools require locators TL0001 for Pins and TL0002 for Sockets.

NOTE: See website for the most current information.



Insertion Tool for SBS®75X Auxiliary Contacts - 111038G3  
Extraction Tool for SBS®75X Auxiliary Contacts - PM1003G1




**VANDAPOWER**

## | Dust Covers – Part numbers |

### Dust Cover (Soft)

Part Number	For use with	Colour	Picture
134G1-B	SB50	Black	  Connector not included
134G1-R	SB50	Red	
134G4-B	SB120	Black	
134G2-B	SB175	Black	
134G2-R	SB175	Red	
134G3-B	SB350/SBE160	Black	
134G3-R	SB350/SBE160/SBX175	Red	

TILH-SBE160-EC	SBE160/SBX175	Black	 Connector not included
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### Dust Cover (Hard)

Part Number	For use with	Colour	Picture
DCSB50	SB50	Black	  Connector not included
DCSB175 (Not possible with yellow housing)	SB175	Black	
DCSB350 (Not possible with orange housing)	SB350	Black	



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## | Sleeves – Part numbers |

### Dust Cover (Soft)

Part Number	For use with	Colour	Picture
TILH-SB50-S (Short sleeve)	SB50	Black	 <small>Connector not included</small>
TILH-SB50-S (Long sleeve)	SB50	Black	
TILH-SB175-SL	SB175	Black	
TILH-SBE160- SL	SB350/SBE160/SBX175	Black	
TILH-SBE320- SL	SBE320	Black	