

# SB<sup>®</sup> 50 Connectors

Up to 120 amps



Based off the design pioneered by Anderson™ in 1953, the two pole SB<sup>®</sup> connectors set the standard for DC power distribution and battery connections. SB<sup>®</sup> 50 connectors feature a one piece plastic housing using stainless steel springs to hold low resistance contacts in place. Wires sizes from 16 to 6 AWG (1.5 to 13.3 mm<sup>2</sup>) are held in the smallest of the SB<sup>®</sup> 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*

SB<sup>®</sup> 50

## SB<sup>®</sup> 50 ORDERING INFORMATION

### SB<sup>®</sup> 50 Standard Housings

The smallest SB<sup>®</sup> 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

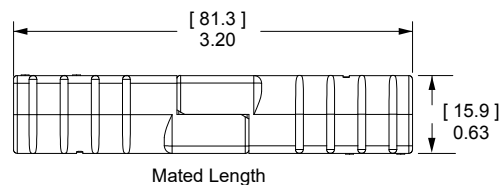
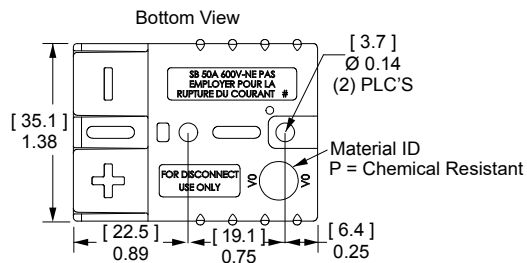
NOTE: SB<sup>®</sup> 50 Black and Gray housings have the same keying features and can be intermated.

### SB<sup>®</sup> 50 Chemical Resistant Housings

Same features as the Standard SB<sup>®</sup> 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

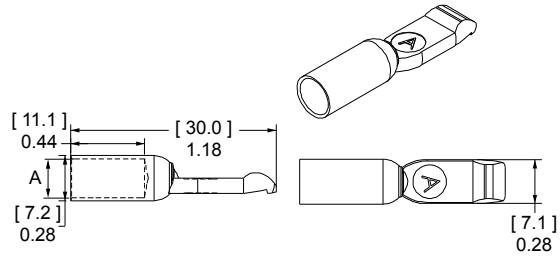
NOTE: SB<sup>®</sup> 50 Black and Gray housings have the same keying features and can be intermated.



### 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. See reducing bushings in accessory section for smaller wires.

AWG	mm <sup>2</sup>	Mating Force	Loose Piece Part Numbers		Dimensions - A -		
					inches	mm	
<b>Minimum Quantity</b>					1,000	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	

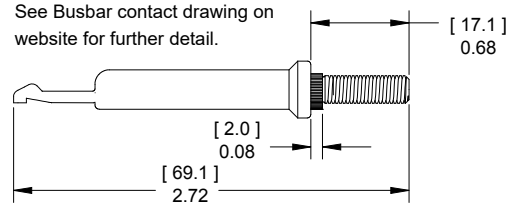


### SB® 50 Silver Plated Busbar Contacts

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	
<b>Minimum Quantity</b>				
Busbar	10 to 24	High	B01915P1	75BBS
Lock Nut	10 to 24	-	H1216P8	110G54

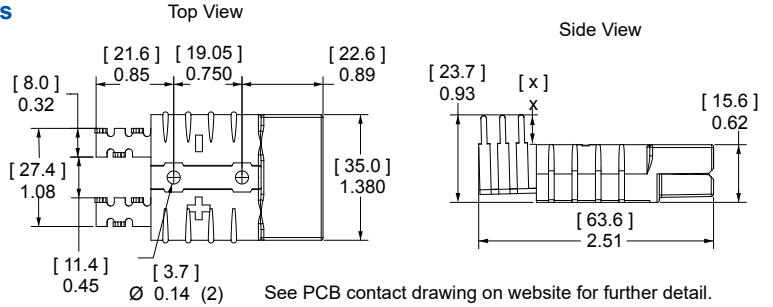
NOTE: Has not been tested by UL.



### 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.

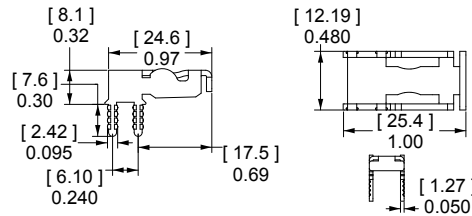
Description	Loose Piece Part Numbers	
<b>Minimum Quantity</b>	500	100
Tin Plated	PC5930T-BK	PC5930T
Silver Plated	PC5930S-BK	PC5930S



### 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.

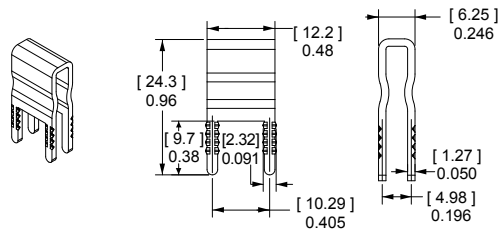
Description	Loose Piece Part Numbers	
<b>Minimum Quantity</b>	1,000	100
Tin Plated	PC5934T-BK	PC5934T
Silver Plated	PC5934S-BK	PC5934S



### 55A Vertical Mini Powerclaw PCB Contacts

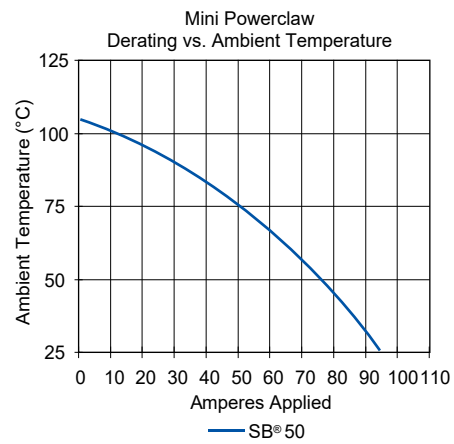
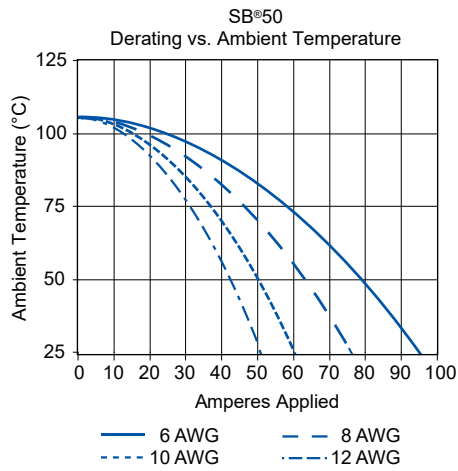
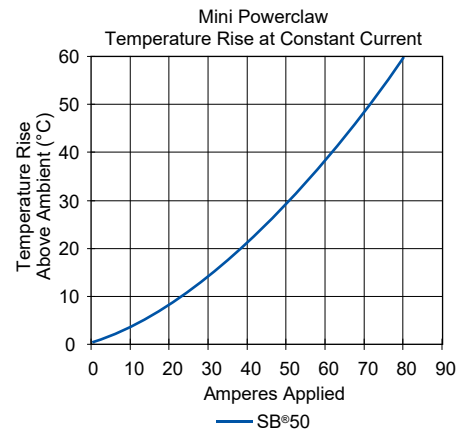
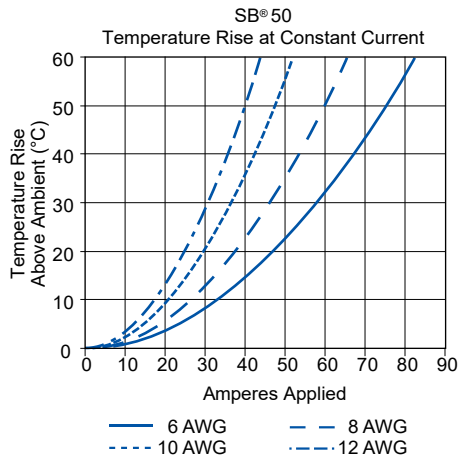
Vertical Mini Powerclaw contacts save space by not requiring a SB® 50 housing on the PCB side. The guide housing is required for to provide a polarized connection. (See SB® 50 accessories).

Description	Loose Piece Part Numbers	
<b>Minimum Quantity</b>	1,500	100
Tin Plated	PC5933T-BK	PC5933T
Silver Plated	PC5933S-BK	PC5933S



SB® 50 CONNECTOR TEMPERATURE CHARTS - Temperature rise charts are based on a 25°C ambient temperature.

Current - Temperature Derating per IEC 60512-5-2 Test 5B



NOTE: Powerclaw charts are based on 8 AWG equivalent copper foil on board side, mated to 6 AWG conductor on wire side.

# SB® 50 CONNECTOR SPECIFICATIONS

## ELECTRICAL

Current Rating Amperes <sup>1</sup>	UL 1977	CSA
Wire-to-Wire UL 1977 (6 AWG)	120	50
Wire-to-PCB UL 1977 (6 AWG)	50	

### Voltage Rating AC/DC

UL 1977	600
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### PCB Connector Recommended Voltage per IEC 60950-1 Table 2L Pollution Degree <sup>2</sup>

Mini Vert. Contact	522
Mini Horiz. Contact	504
Standard Contact	950

### Dielectric Withstanding Voltage

Volts AC	2,200
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### Avg. Mated Contact Resistance Milliohms <sup>1</sup>

1 1/4" of 6 AWG wire	0.200
PCB Contact to Wire	0.500

### UL Hot Plug Current Rating Amperes - 250 Cycles at 120V DC

Wire to Wire	50A
PCB to Wire (Vertical Mini Powerclaw)	40A

## MATERIALS

### Housing

Standard Plastic Resin	Polycarbonate
Chem. Resistant Resin	Polycarbonate / PBT blend
Contact Retention Spring	Stainless Steel

### Housing Flammability Rating

UL94	V-0
Glow Wire	960°C (GWFI) / 800°C (GWIT)

### Contact

Base	Copper Alloy
Wire Plating	Silver
PCB Plating	Sn or Ag over Ni

### Contact Termination Methods

Crimp <sup>3</sup>	Wire Contacts
Hand Solder	Wire and PCB Contacts
Solder Dip	PCB Contacts
Wave Solder	PCB Contacts
Wrench / Socket	Busbar Contacts

NOTE 1: See IEC 60664-1 for working voltage.

NOTE 2: Amp ratings are stated per position and based on all positions being fully loaded.

1 - 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.

2 - Limited by the thermal properties of the connector plastic housing.

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

4 - Tested with contact part number 5900.

\* UL Rated for 65°C largest wire or cable size.

## MECHANICAL

Wire Size Range	AWG	mm <sup>2</sup>
Wire Contacts with Bushings	16 to 6	1.3 to 13.3

Max. Wire Insulation Diameter	in.	mm
	0.440	11.200

Operating Temperature <sup>2</sup>	°F	°C
Standard	-4° to 221°	-20° to 105°
Chemical Resistant*	-40 to 221°	-40° to 105°

\*Chemical resistant material not available for PCB guide housings

Mating Cycles No Load by Plating	Silver (Ag)	Tin (Sn)
Wire and PCB Contacts	10,000	1,500

Avg. Mating / Unmating Force	Lbf.	N
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

### PCB Specifications

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

Min. Contact / Spring Retention Force	Lbf.	N
Wire Housing	50	222

Min. Creepage / Clearance Distance	in.	mm
Standard Powerclaw	0.374	9.5
Mini Vert. Powerclaw	0.213	5.4
Mini Horiz. Powerclaw	0.205	5.2

### Mechanical Shock <sup>4</sup>

MIL-STD-202	213 Condition A	50g's
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### Vibration High Frequency <sup>4</sup>

MIL-STD-202	204 Condition A	10g's
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# IEC INFORMATION

ATTRIBUTES	SB® 50
AMP Rating AC/DC	50
Voltage Rating AC/DC (Steady State)	250
Breaking Capacity - AMP Rating / Cycles	50 / 10 Cycles
Voltage Rating (Breaking Capacity)	220 VDC
Finger Safety - Mated Only	IEC 60529 - IP20
Wire Size Tested	16 mm <sup>2</sup>
Contact Series Tested	5900/1307
Climatic Testing (Cold, Heat & MFG)	IEC 60512 Test-11j, 11i & 11g
Cycle Life	IEC 60512 Test 9a - 5,000 Cycles
Mechanical Strength Impact	IEC 60512-5 @ 29.5 Inches- Dropped 8 times
Temperature Range	-20°C to 105°C -4°F to 221°F

Connector Series	Configurations	Creepage / Clearance per IEC 60950-1	Material Group
SB® 50	Unmated	2.99 mm	IIIa
	Mated	2.99 mm	

## PROTECTION

### Touch Safety with Wire Contacts & PCB Mating Interface

IEC 60529 IP10 unmated

### Environmental Sealing with Boots

IEC 60529 IP64



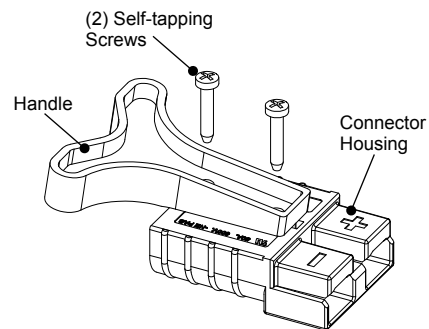
## SB® Accessories

### “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	1,000	50
Red “T” Handle + Hardware Bag	-	SB50-HDL-RED
Hardware Bag (2 Screws)	-	104G17
Red “T” Handle Only	113899P1	-
#8 x 5/8” Screw (Order 2 Per Handle)	H1120P55	-

\* Torque value 12 (in - lbs) / 1.4 (Nm)

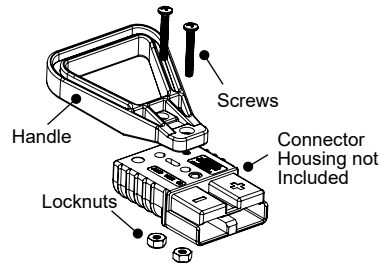


### “A” frame handle for SB® 50 \*

Handle makes mating and unmating the connector easier. The non-conductive gray plastic material is strong and safe. Machine screws and locknuts included.

Description	Part Number
Minimum Quantity	200
Gray “A” Handle & Hardware	997G1

\* Torque value 12 (in - lbs) / 1.4 (Nm)

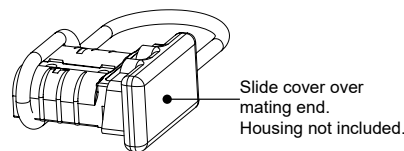


### Dust Cover

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	113890P1	134G1

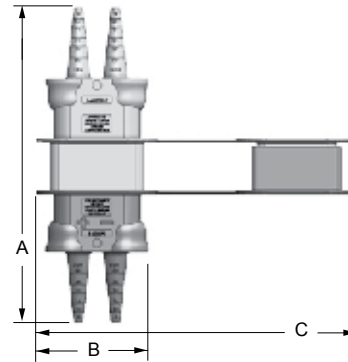


## SB® Environmental Boots

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.

Description	Part Numbers	
Minimum Quantity	250	25
SB® 50 Environmental Boot (with cover), Load	3-6054P2-BK	3-6054P2
SB® 50 Environmental Boot (with cover), Source	3-6055P2-BK	3-6055P2
SB® 50 Environmental Boot (no cover), Load	3-6054P1-BK	3-6054P1
SB® 50 Environmental Boot (no cover), Source	3-6055P1-BK	3-6055P1

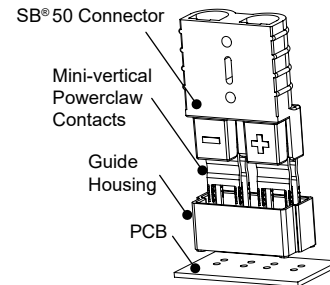
Dimensions					
- A -		- B -		- C -	
in.	mm	in.	mm	in.	mm
5.9	151.4	1.8	45.1	6.3	160



## 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	1,000	50
Black Guide Housing	PC-HSG-SB-BK	PC-HSG-SB



## Cable Clamps

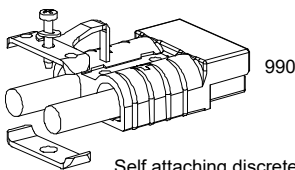
Durable metal cable clamps securely hold cables to prevent accidental strain or pulls from dislodging wire or contacts from the housing. Cable clamps are recommended for solder terminated wires.

Description	Cable Size		Part Numbers	
	AWG or (Inches O.D.)	mm <sup>2</sup> or (mm O.D.)		
Minimum Quantity			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

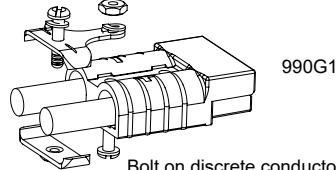
\* Torque value 12 (in - lbs) / 1.4 (Nm)

NOTE: For assembly of cable clamp to housing only

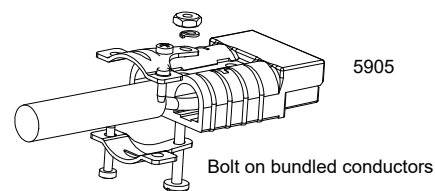
The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.



Self attaching discrete conductor



Bolt on discrete conductor

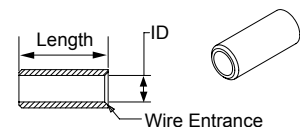


Bolt on bundled conductors

## 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				
AWG	mm <sup>2</sup>	AWG	mm <sup>2</sup>			- ID -		- Length -		
						inches	mm	inches	mm	
Minimum Quantity				3,000	1,000	100				
6	13.3	8	8.4	-	5912-BK	5912	0.18	4.57	0.45	11.43
6	13.3	12 to 0	3.3 to 5.3	5910-BK	-	5910	0.14	3.56	0.47	11.94
6	13.3	16 to 14	1.3 to 2.1	5913-BK	-	5913	0.09	2.29	0.47	11.94



## SB® Tooling Information

Wire Size		Loose Piece Part Number	Loose Piece Contact Crimp Tools													
AWG	mm <sup>2</sup>	Silver Plating	Hand Tool	OR	Pneumatic Tool	+	Die	+	Locator	Number of Crimps						
<b>SB® 50</b>																
6	13.3	1307	1309G4		1387G1		1388G6		1389G6	Single						
		5900														
8	8.4	5952														
10 to 12	5.3 to 3.3	5953					1388G7		1389G7							
		5915														
<b>SB® 120</b>																
1	42.4	1323G1	1368 Series		1387G1		1388G3		1389G4	Single						
2	33.6	1319														
4	21.2	1319G4									1388G4					
6	13.3	1319G6														
<b>SB® 175</b>																
1/0	53.5	1382	1368 Series		1387G2		1303G13		1304G32	Double						
1	42.4	1347														
2	33.6	1383														
4	21.1	1384														
6	13.3	1348										1387G1		1388G4		1389G3
<b>SB® 350</b>																
350 mcm	185	910	1368 Series		N/A					Double						
300 mcm	152	910														
4/0	107.2	908														
3/0	85	916														
2/0	67.4	907										1387G2		1303G3		1304G31
1/0	53.5	917												1303G12		

NOTE: See website for the most current information.

## SB® 2/0 Tooling Information

Wire Size		Loose Piece Part Number	Loose Piece Contact Crimp Tools							
AWG	mm <sup>2</sup>	Silver Plating	Hand Tool	OR	Pneumatic Tool	+	Die	+	Locator	Number of Crimps
2/0	53.5	1328G1	1368		1387G2		1303G12		1304G32	Double

NOTE: See website for the most current information.

### Your Best Connection™

2020-0055 DS-SB50 REV C7

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[M40B](#) [NLS-N-W-C240-M40B](#) [NPS-3-BL-T6](#) [1986615-1](#) [2-1589900-8](#) [2199314-1](#) [KA8102](#) [9300480317](#) [SBS50BRN#6](#) [29131](#)