

# 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 |

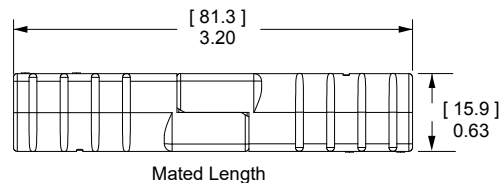
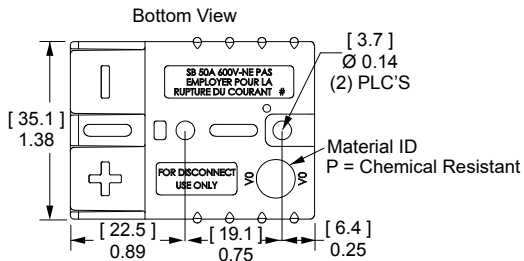
NOTE: SB<sup>®</sup> 50 Black and Gray housings have the same keying features and can be intermated.

### 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 |

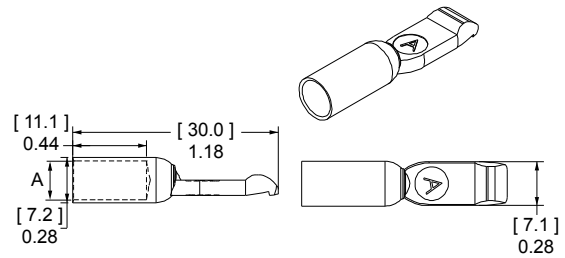
NOTE: SB<sup>®</sup> 50 Black and Gray housings have the same keying features and can be intermated.



## 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 - |      |  |
|-------------------------|-----------------|--------------|--------------------------|--------------|------------------|------|--|
|                         |                 |              | Part Numbers             | Part Numbers | 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 |  |

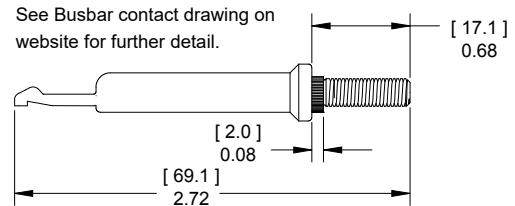


## SB® 50 Silver Plated Busbar Contacts

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 |

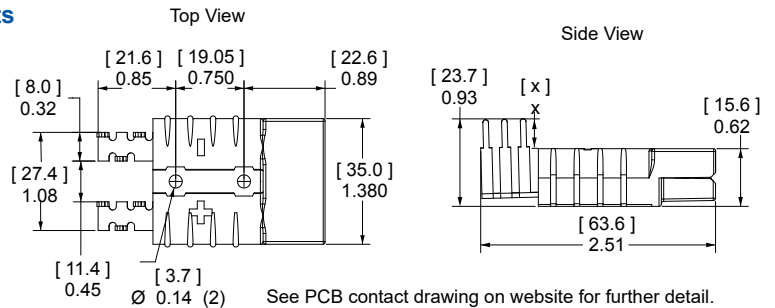
NOTE: Has not been tested by UL.



## 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.

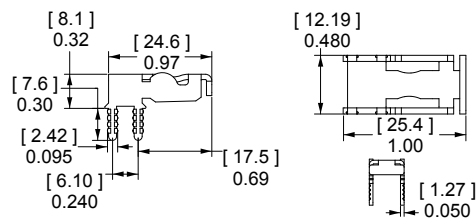
| Description             | Loose Piece Part Numbers |         |
|-------------------------|--------------------------|---------|
| <b>Minimum Quantity</b> | 500                      | 100     |
| Tin Plated              | PC5930T-BK               | PC5930T |
| Silver Plated           | PC5930S-BK  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

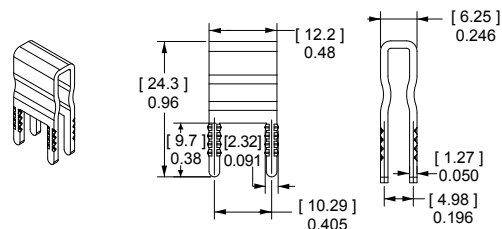
| Description             | Loose Piece Part Numbers |         |
|-------------------------|--------------------------|---------|
| <b>Minimum Quantity</b> | 1,000                    | 100     |
| Tin Plated              | PC5934T-BK               | PC5934T |
| Silver Plated           | PC5934S-BK  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



## 55A Vertical Mini Powerclaw PCB Contacts

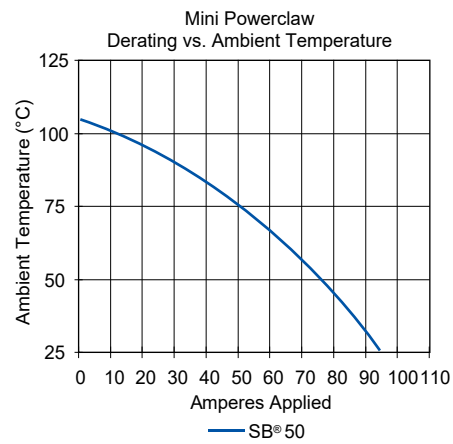
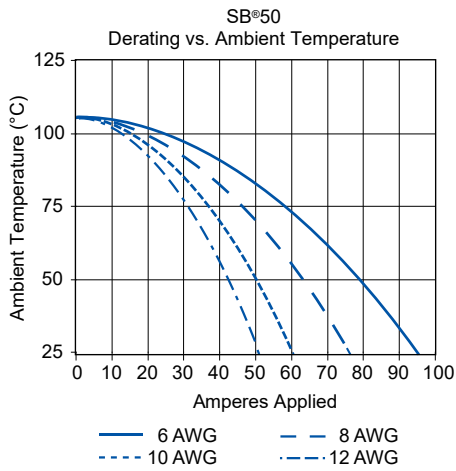
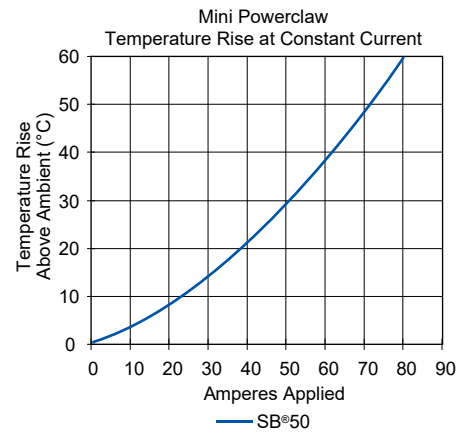
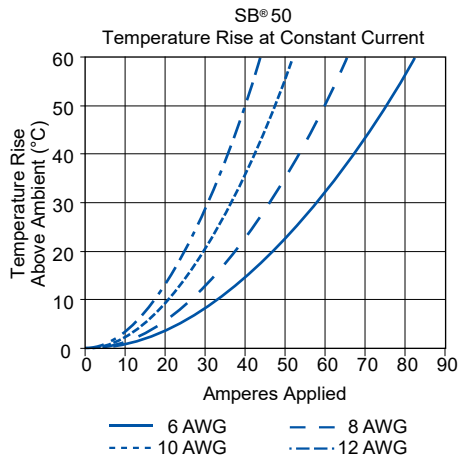
Vertical Mini Powerclaw contacts save space by not requiring a SB® 50 housing on the PCB side. The guide housing is required for to provide a polarized connection. (See SB® 50 accessories).

| 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 |
|---------|-----|

### 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 |
|----------|-------|

### 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<br>(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)<br>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 |
|-------------|-----------------|-------|

### Vibration High Frequency <sup>4</sup>

|             |                 |       |
|-------------|-----------------|-------|
| MIL-STD-202 | 204 Condition A | 10g's |
|-------------|-----------------|-------|



# 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<br>-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



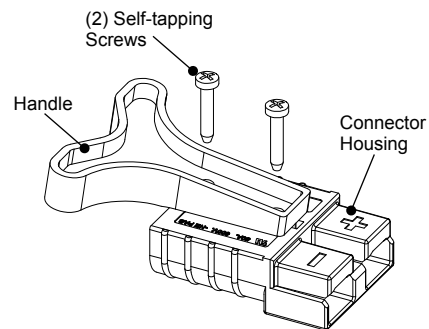
## SB® Accessories

### “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)

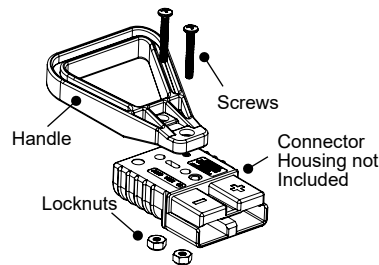


### “A” frame handle for SB® 50 \*

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)

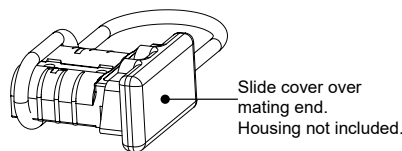


### Dust Cover

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 |

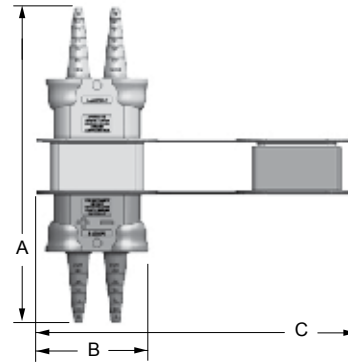


## SB® Environmental Boots

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 |

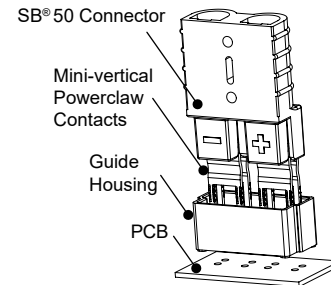
| Dimensions |       |       |      |       |     |
|------------|-------|-------|------|-------|-----|
| - A -      |       | - B - |      | - C - |     |
| in.        | mm    | in.   | mm   | in.   | mm  |
| 5.9        | 151.4 | 1.8   | 45.1 | 6.3   | 160 |



## 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

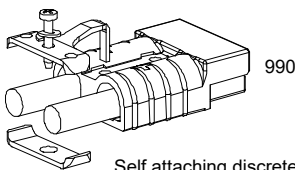
Durable metal cable clamps securely hold cables to prevent accidental strain or pulls from dislodging wire or contacts from the housing. Cable clamps are recommended for solder terminated wires.

| 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  |

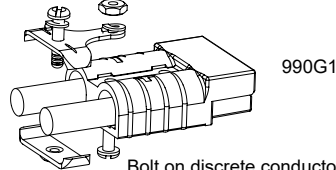
\* Torque value 12 (in - lbs) / 1.4 (Nm)

NOTE: For assembly of cable clamp to housing only

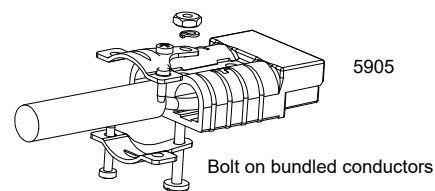
The given wire O.D. information is an estimate. Cable clamps should be evaluated for performance with the actual wire to be used.



Self attaching discrete conductor



Bolt on discrete conductor

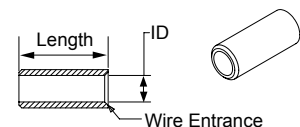


Bolt on bundled conductors

## 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            |   |         |   | 1304G31 | Double           |        |        |  |        |  |         |
| 300 mcm        | 152             | 910                     |                                 |    |                |   |         |   |         |                  |        |        |  |        |  |         |
| 4/0            | 107.2           | 908                     |                                 |    |                |   |         |   |         |                  |        |        |  |        |  |         |
| 3/0            | 85              | 916                     |                                 |    |                |   |         |   |         |                  |        |        |  |        |  |         |
| 2/0            | 67.4            | 907                     |                                 |    |                |   |         |   |         |                  |        | 1387G2 |  | 1303G3 |  | 1303G12 |
| 1/0            | 53.5            | 917                     |                                 |    |                |   |         |   |         |                  |        |        |  |        |  |         |

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™

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