# SSL - Discrete Wire IDC

## Series 9176



The 917X series of surface mount Insulation Displacement Connectors (IDC) were developed to meet the harsh automotive and industrial market applications for connecting individual wires directly to a PCB ranging from 14 AWG to 28 AWG. This industry proven contact system has been tested to automotive levels of shock, vibration, and temperature cycling to prove their reliability and robustness. The simplicity of inserting a wire into the connector with a small tool allows a wide range of devices to be connected to the PCB without soldering. In SSL applications specifically, these connectors are used to bring power and signal onto the PCB or are used to daisy chain multiple boards together in a long string. While the IDC contact provides a gas-tight connection to conductor of the wire, the housing has been designed to grab the insulation of the wire to provide a positive strain relief even in the harshest conditions. In case of repair, the wires can be removed and replace up to three times.

The 9176 series accepts 18 AWG to 24 AWG wires with an insulation diameter ranging from 1.1mm to 2.1mm. These dual contact connectors support a 10 amp current rating with two large SMT solder tails per wire to provide maximum stability on the PCB. Available in 1p-3p configuration, these connectors can be end stackable for higher pin counts. The 9176 series also comes with optional locking strain relief caps that act as the termination tool for severe vibration applications.

## APPLICATIONS

- Connecting discrete wire components directly to the PCB
- Bringing power and signals onto a PCB
- Daisy chaining PCB's together to create a continuous string of boards
- Application Notes: refer to 201-01-124

## FEATURES AND BENEFITS

- IDC contact provides a gas-tight connection to the PCB for long term reliability
- Connector housing captures the wire insulation for positive strain relief
- Tested to automotive levels on shock, vibration and temperature cycling for reliability
- Low and high volume assembly tools to match production volumes
- Reduced total applied cost versus solder or crimp processes
- Optional thru and end caps lock in place to provide maximum strain relief
- High temperature insulator capable to 260ºC reflow soldering processes

## ELECTRICAL

- Current Rating: 10 Amp / Contact
- Voltage Rating: 250 VAC

## ENVIRONMENTAL

- Operating Temperature: -40ºC to +125ºC

## MECHANICAL

- Insulator Material: Nylon 46: UL94V0
- Contact Material: Phosphor Bronze
- Plating: Tin over Nickel
- Durability: 3 Cycles

## HOW TO ORDER

**00** — **Prefix**

**9176** — **Series**

**00X** — **Number of Ways**

| Code | No of Ways | Details |
|---|---|---|
| 001 | 1 | Page 44 |
| 002 | 2 | Page 45 |
| 003 | 3 | Page 46 |

**00X** — **Wire Gauge Size**

| Code | Accepted Wire Gauge | Wire Insulation | Cap Code Pages 47-48 |
|---|---|---|---|
| 001 | 18 Gauge Stranded | Ø 1.6-2.1 | 021 |
| 011 | 20 Gauge Stranded | Ø 1.6-2.1 | 021 |
| 022 | 22 Gauge Stranded | Ø 1.1-1.6 | 016 |
| 032 | 24 Gauge Stranded | Ø 1.1-1.6 | 016 |

**X** — **Insulator Color**

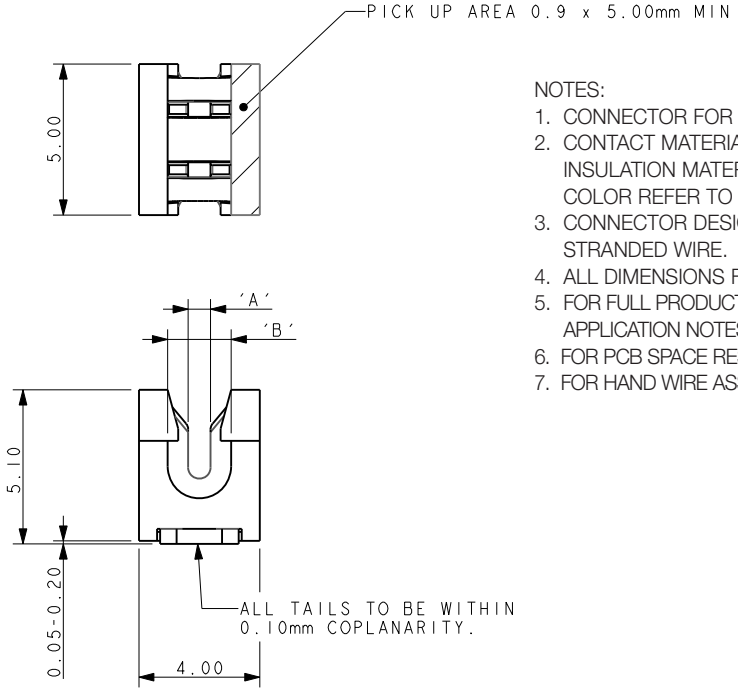
| Code | Color | Application |
|---|---|---|
| 0 | Black | Industrial |
| 1 | White | Lighting |

**06** — **Plating Option**

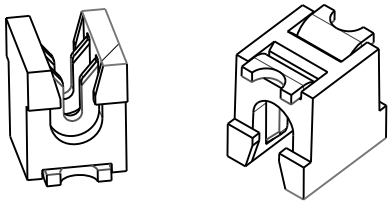
06 = Pure Tin all over

Certification: UL File #E320991

## 18-24 AWG 1 WAY IDC CONNECTOR



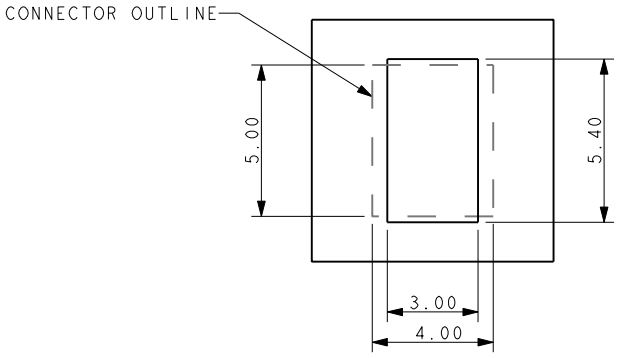

NOTES:
1. CONNECTOR FOR IDC WIRE TO BOARD CONNECTION.
2. CONTACT MATERIAL: PHOSPHORE BRONZE.
   INSULATION MATERIAL: HIGH TEMPERATURE NYLON 46.
   COLOR REFER TO PAGE 43.
3. CONNECTOR DESIGNED TO ACCEPT BETWEEN 24 AND 18 GAUGE STRANDED WIRE.
4. ALL DIMENSIONS FOR REFERENCE UNLESS OTHERWISE STATED.
5. FOR FULL PRODUCT SPECIFICATION REFER TO ELCO SPEC 201-01-106 AND APPLICATION NOTES 201-01-124.
6. FOR PCB SPACE RESTRICTED BY WIRE ASSEMBLY TOOLING REFER TO PAGE 47.
7. FOR HAND WIRE ASSEMBLY TOOLING REFER TO PAGE 49.



| Code | Accepted Wire Gauge | A | Wire Insulation | B |
|---|---|---|---|---|
| 001 | 18 Gauge Stranded | 0.72 | Ø 1.6-2.1 | 2.1 |
| 011 | 20 Gauge Stranded | 0.60 | Ø 1.6-2.1 | 2.1 |
| 022 | 22 Gauge Stranded | 0.47 | Ø 1.1-1.6 | 1.6 |
| 032 | 24 Gauge Stranded | 0.37 | Ø 1.1-1.6 | 1.6 |

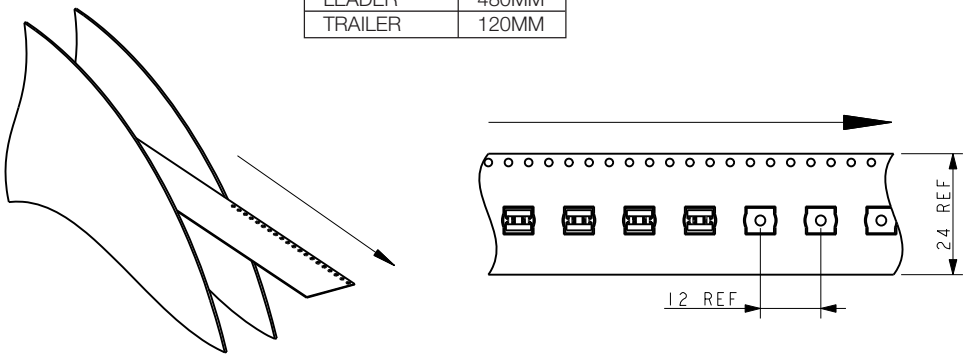
## SMT PCB LAYOUT

PURE TIN PADS

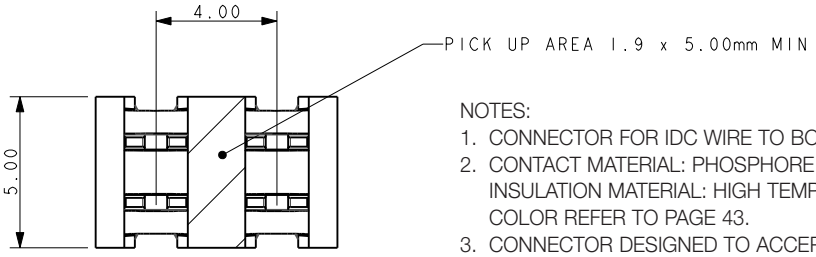



## PACKING DETAILS

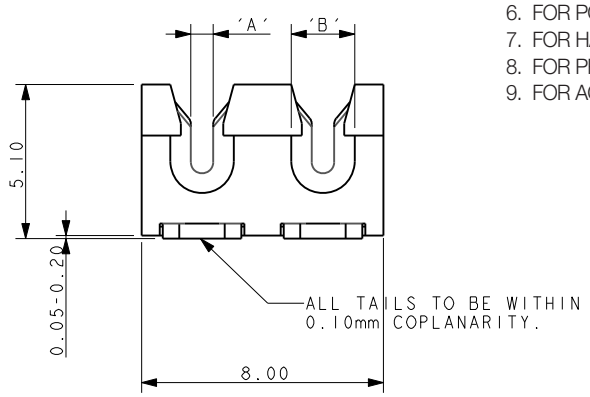
| | |
|---|---|
| REEL QTY | 1000 |
| LEADER | 480MM |
| TRAILER | 120MM |

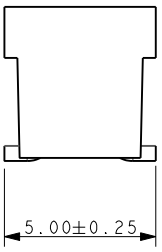


## 18-24 AWG 2 WAY IDC CONNECTOR

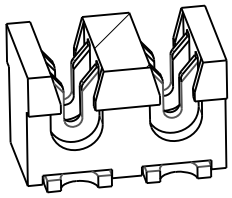


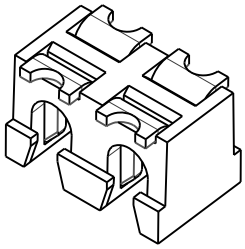

NOTES:
1. CONNECTOR FOR IDC WIRE TO BOARD CONNECTION.
2. CONTACT MATERIAL: PHOSPHORE BRONZE.
   INSULATION MATERIAL: HIGH TEMPERATURE NYLON 46.
   COLOR REFER TO PAGE 43.
3. CONNECTOR DESIGNED TO ACCEPT BETWEEN 24 AND 18 GAUGE STRANDED WIRE.
4. ALL DIMENSIONS FOR REFERENCE UNLESS OTHERWISE STATED.
5. FOR FULL PRODUCT SPECIFICATION REFER TO ELCO SPEC 201-01-106 AND APPLICATION NOTES 201-01-124.
6. FOR PCB SPACE RESTRICTED BY WIRE ASSEMBLY TOOLING REFER TO PAGE 47.
7. FOR HAND WIRE ASSEMBLY TOOLING REFER TO PAGE 49
8. FOR PRESS WIRE ASSEMBLY TOOLING REFER TO PAGE 50.
9. FOR ACCESSORY CAPS REFER TO PAGES 47 AND 48.



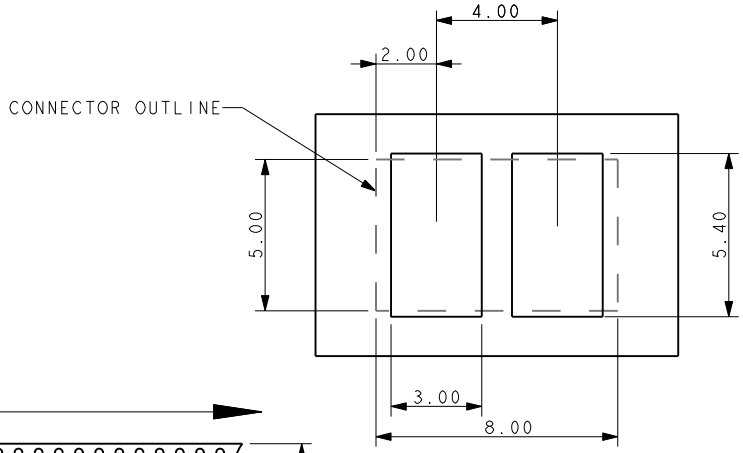

| Code | Accepted Wire Gauge | A | Wire Insulation | B |
|---|---|---|---|---|
| 001 | 18 Gauge Stranded | 0.72 | Ø 1.6-2.1 | 2.1 |
| 011 | 20 Gauge Stranded | 0.60 | Ø 1.6-2.1 | 2.1 |
| 022 | 22 Gauge Stranded | 0.47 | Ø 1.1-1.6 | 1.6 |
| 032 | 24 Gauge Stranded | 0.37 | Ø 1.1-1.6 | 1.6 |





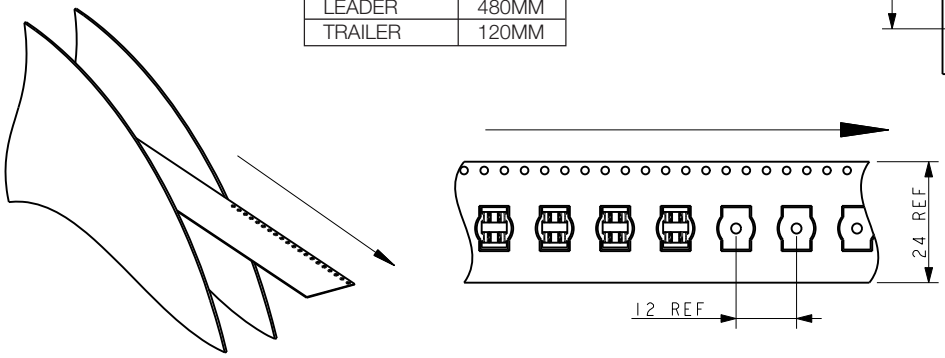
## SMT PCB LAYOUT

PURE TIN PADS

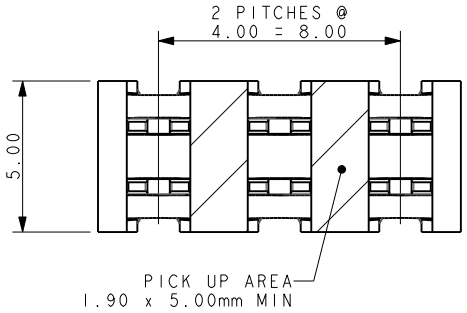



## PACKING DETAILS

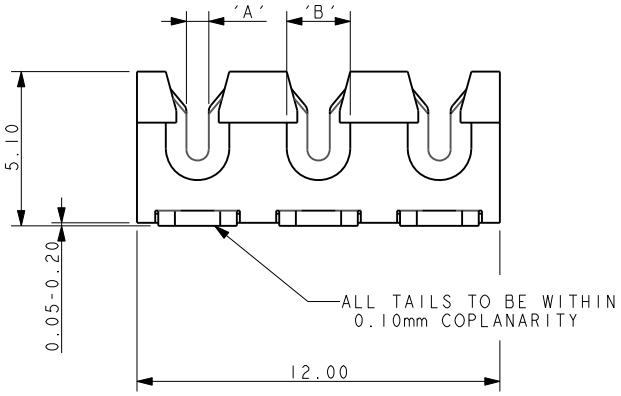
| | |
|---|---|
| REEL QTY | 1000 |
| LEADER | 480MM |
| TRAILER | 120MM |

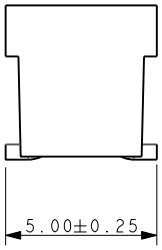


## 18-24 AWG 3 WAY IDC CONNECTOR

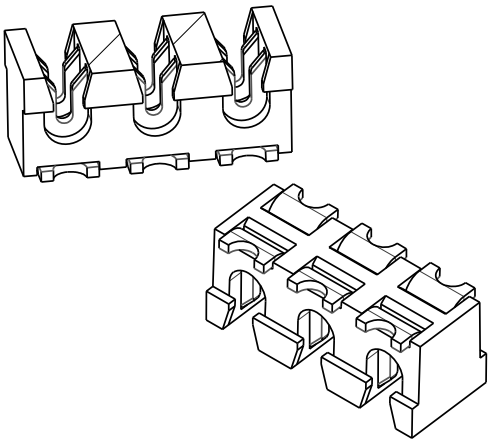



NOTES:
1. CONNECTOR FOR IDC WIRE TO BOARD CONNECTION.
2. CONTACT MATERIAL: PHOSPHORE BRONZE.
   INSULATION MATERIAL: HIGH TEMPERATURE NYLON 46.
   COLOR REFER TO PAGE 43.
3. CONNECTOR DESIGNED TO ACCEPT BETWEEN 24 AND 18 GAUGE STRANDED WIRE.
4. ALL DIMENSIONS FOR REFERENCE UNLESS OTHERWISE STATED.
5. FOR FULL PRODUCT SPECIFICATION REFER TO ELCO SPEC 201-01-106 AND APPLICATION NOTES 201-01-124.
6. FOR PCB SPACE RESTRICTED BY WIRE ASSEMBLY TOOLING REFER TO PAGE 47.
7. FOR HAND WIRE ASSEMBLY TOOLING REFER TO PAGE 49
8. FOR PRESS WIRE ASSEMBLY TOOLING REFER TO PAGE 50.
9. FOR ACCESSORY CAPS REFER TO PAGES 47 AND 48.



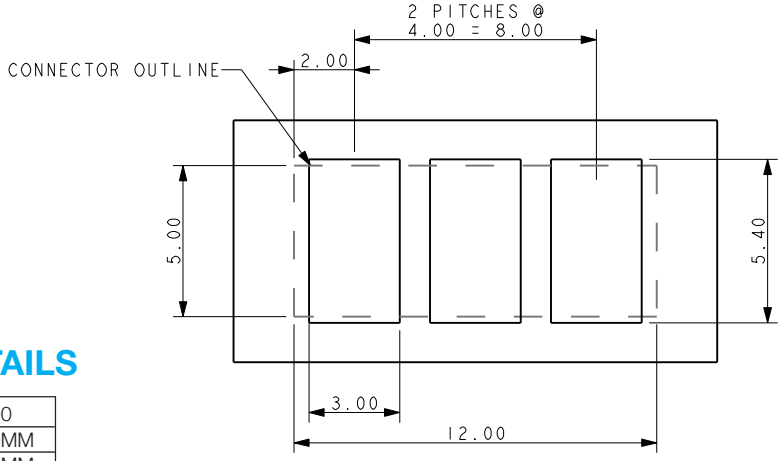




| Code | Accepted Wire Gauge | A | Wire Insulation | B |
|---|---|---|---|---|
| 001 | 18 Gauge Stranded | 0.72 | Ø 1.6-2.1 | 2.1 |
| 011 | 20 Gauge Stranded | 0.60 | Ø 1.6-2.1 | 2.1 |
| 022 | 22 Gauge Stranded | 0.47 | Ø 1.1-1.6 | 1.6 |
| 032 | 24 Gauge Stranded | 0.37 | Ø 1.1-1.6 | 1.6 |



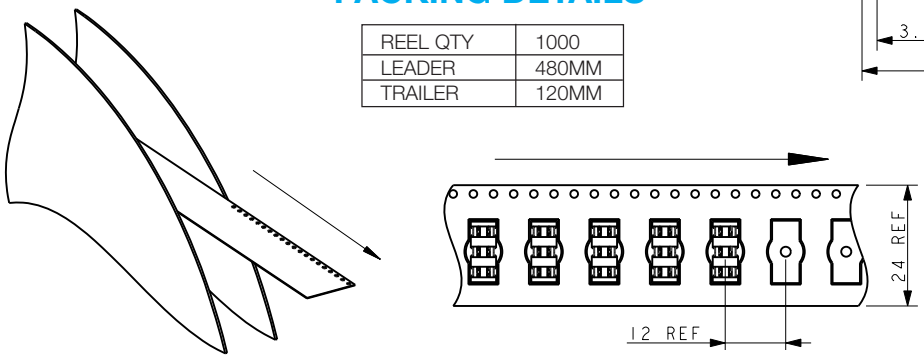
## SMT PCB LAYOUT

PURE TIN PADS



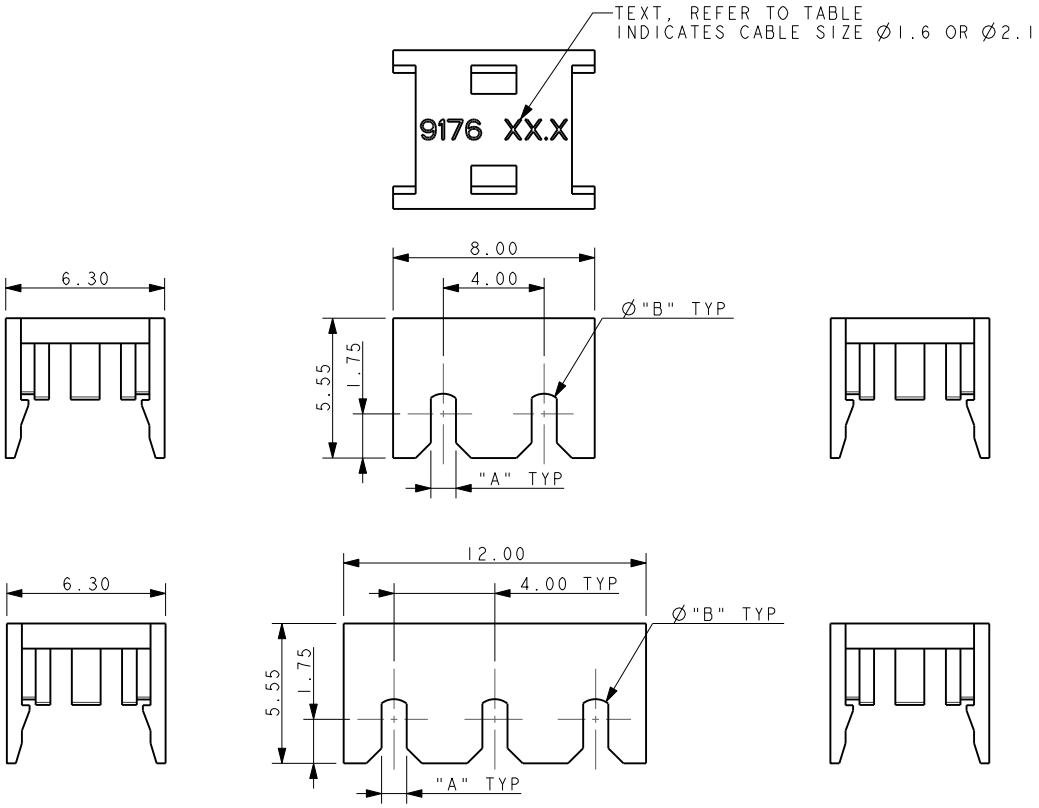

## PACKING DETAILS

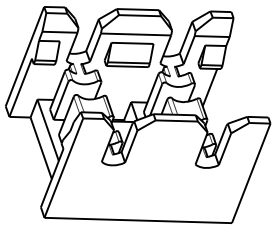
| | |
|---|---|
| REEL QTY | 1000 |
| LEADER | 480MM |
| TRAILER | 120MM |



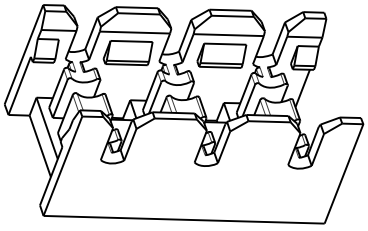
## 60-9176-00X-0XX-X00

## ACCESSORY CAP – THROUGH WIRE

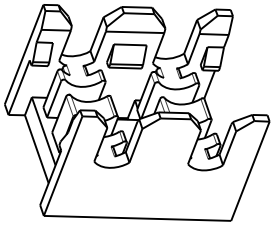


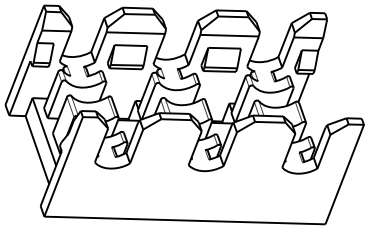
60-9176-002-016-X00



60-9176-003-016-X00



60-9176-002-021-X00



60-9176-003-021-X00

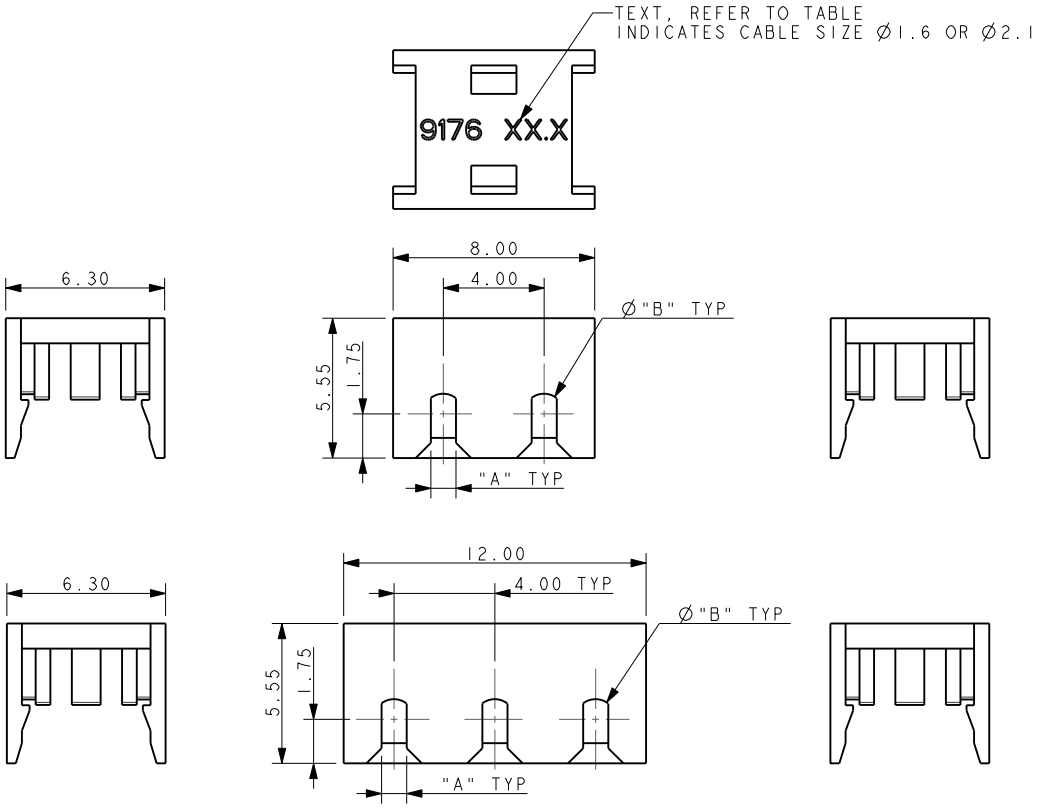
NOTES:

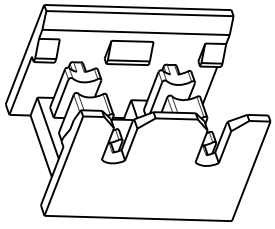
1. CAP FOR IDC WIRE TO BOARD CONNECTION, 2 AND 3 WAY, THROUGH WIRE.
2. FOR USE WITH STANDARD 9176 IDC CONNECTORS, SEE PAGE 43 FOR THE CORRECT PART CODE TO MATCH WIRE.
3. CAP MATERIAL: GLASS FILLED NYLON 46, FOR COLORS SEE TABLE BELOW.
4. DIMENSIONS A, B AND TEXT, SEE TABLE BELOW.
5. CAPS DESIGNED TO ACCOMMODATE WIRE INSULATION DIAMETERS 1.1MM TO 1.6MM AND 1.6MM TO 2.1MM.
6. ALL DIMENSIONS SHOWN ARE REFERENCE DIMENSIONS.
7. PACKED IN BAGS, 1000 PIECES PER BAG.

| Code | Slot A | Diameter B | Text |
|---|---|---|---|
| 016 | 1.60 | 1.00 | 9176 Ø1.6 |
| 021 | 2.10 | 1.50 | 9176 Ø2.1 |

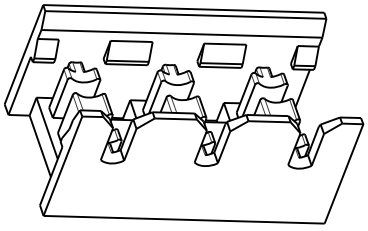
| Color | X00 |
|---|---|
| Black | 000 |
| White | 100 |

## 60-9176-00X-0XX-X99
## ACCESSORY CAP – WIRE STOP

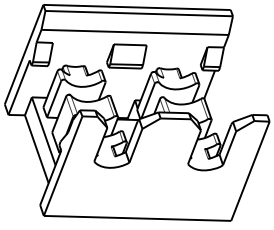


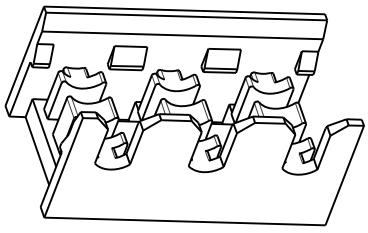
60-9176-002-016-X99



60-9176-003-016-X99



60-9176-002-021-X99



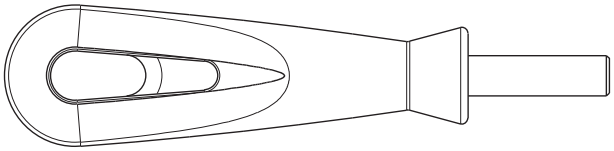
60-9176-003-021-X99

NOTES:
1. CAP FOR IDC WIRE TO BOARD CONNECTION, 2 AND 3 WAY, WITH WIRE STOP.
2. FOR USE WITH STANDARD 9176 IDC CONNECTORS, SEE PAGE 43 FOR THE CORRECT PART CODE TO MATCH WIRE.
3. CAP MATERIAL: GLASS FILLED NYLON 46, FOR COLORS SEE TABLE BELOW.
4. DIMENSIONS A, B AND TEXT, SEE TABLE BELOW.
5. CAPS DESIGNED TO ACCOMMODATE WIRE INSULATION DIAMETERS 1.1MM TO 1.6MM AND 1.6MM TO 2.1MM.
6. ALL DIMENSIONS SHOWN ARE REFERENCE DIMENSIONS.
7. PACKED IN BAGS, 1000 PIECES PER BAG.

| Code | Slot A | Diameter B | Text |
|---|---|---|---|
| 016 | 1.60 | 1.00 | 9176 Ø1.6 |
| 021 | 2.10 | 1.50 | 9176 Ø2.1 |

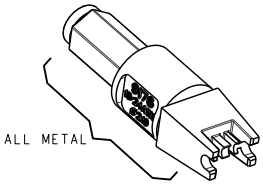
| Color | X99 |
|---|---|
| Black | 099 |
| White | 199 |

## HAND INSERTION TOOLING FOR SINGLE 18/24 GAUGE WIRE



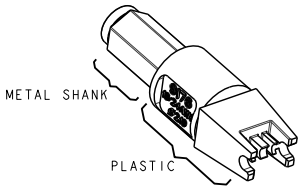
### UNIVERSAL HANDLE

| Details | Tool Part Number |
|---|---|
| 6.35 A/F HEX BIT HOLDER | 06 7000 7730 01 000 |




### HIGH PRODUCTION
**Metal**

| Max Insulation Dia | Tool Part Number |
|---|---|
| ∅ 2.10 | 06 9176 7017 01 000 |
| ∅ 1.60 | 06 9176 7017 02 000 |

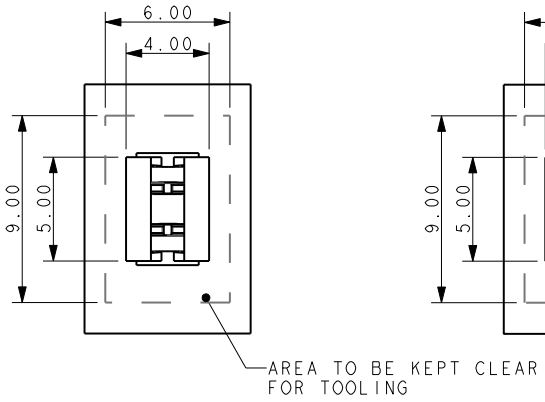



### MED PRODUCTION
**Metal/Plastic**

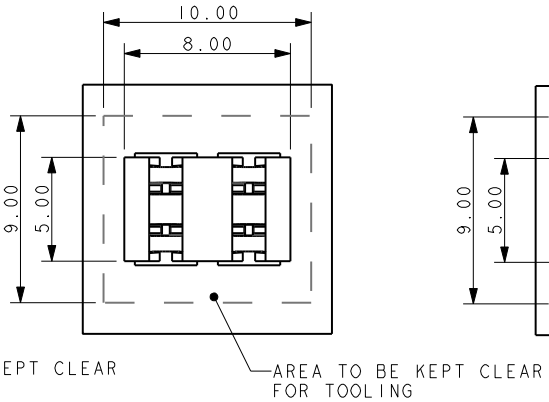
| Max Insulation Dia | Tool Part Number |
|---|---|
| ∅ 2.10 | 06 9176 7016 01 000 |
| ∅ 1.60 | 06 9176 7016 02 000 |

## CLEARANCE AREA ON PCB FOR HAND TOOLING

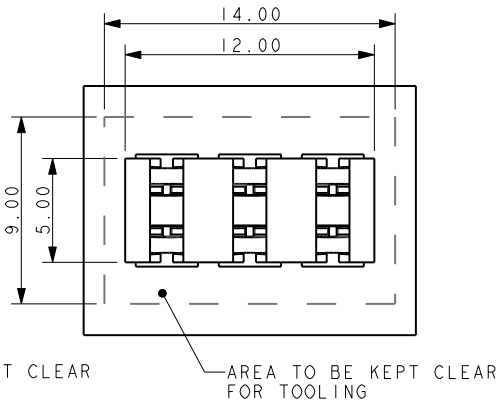
### 1 WAY




### 2 WAY

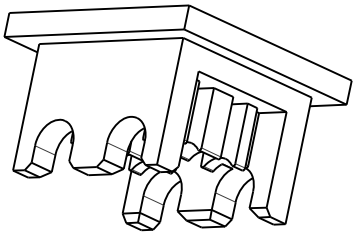



### 3 WAY

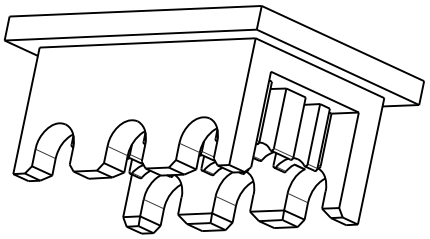


## INSERTION TOOLING
## REQUIRES HAND PRESS WITH FLAT ROCK PLATES

### 2 WAY



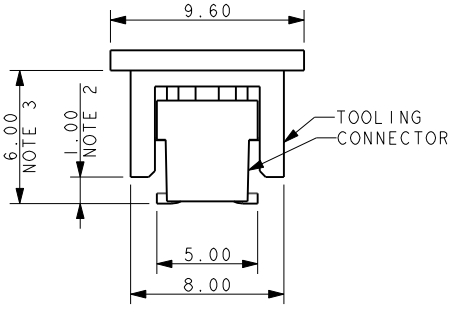
### 3 WAY

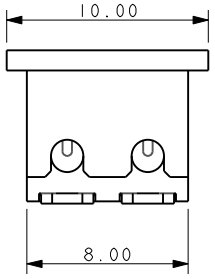


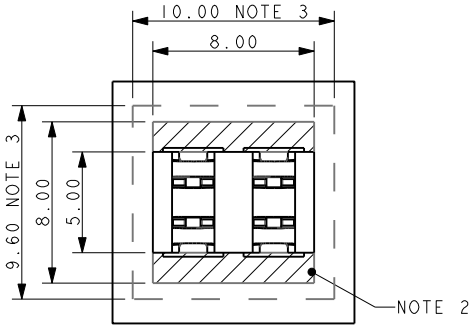
### HIGH PRODUCTION
**Metal**

| No. of Ways | Max Insulation Dia | Tool Part Number |
|---|---|---|
| 2 | ∅ 2.10 | 06 9176 7017 01 002 |
| | ∅ 1.60 | 06 9176 7017 02 002 |
| 3 | ∅ 2.10 | 06 9176 7017 01 003 |
| | ∅ 1.60 | 06 9176 7017 02 003 |

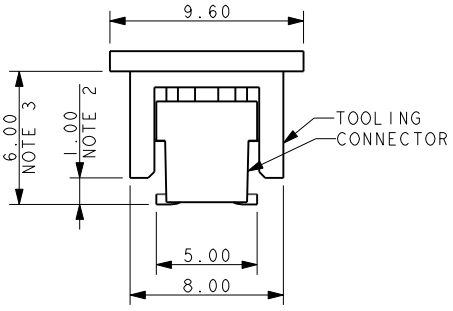
### 2 WAY

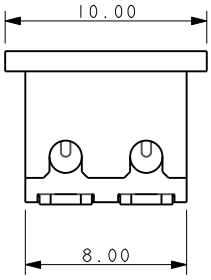


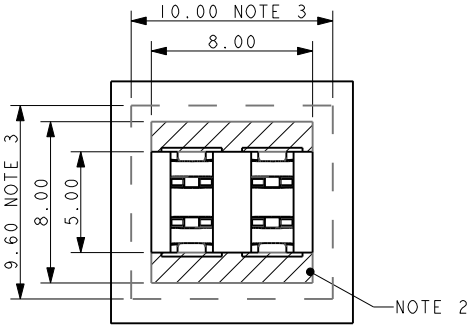




### 3 WAY




NOTES:
1. DIMENSIONS SHOWN ARE REFERENCE DIMENSIONS.
2. MAXIMUM COMPONENT HEIGHT 1.00MM IN THIS AREA.
3. MAXIMUM COMPONENT HEIGHT 6.00MM IN THIS AREA.
4. THE SAME RESTRICTIONS APPLY TO ALL WIRE INSULATION DIAMETERS
5. 2 AND 3 WAY TOOLS ONLY, FOR USE UNDER HAND PRESS WITH FLAT PLATES.
6. FOR HAND TOOLING REFER TO PAGE 47.