

Souriau CLIPPER series



Cost-effective,  
reliable, easy to use  
industrial connectors

Derived from MIL-C-5015



**EATON**

*Powering Business Worldwide*

# Souriau CLIPPER series

Typical applications



Off-road vehicles



Railway



Energy and power



Utility



Traffic monitoring



Instrumentation



Communication



Robotic



Building automation & control



Infrastructure



Machinery



# Souriau CLIPPER series

## CLIPPER is a plastic, cost-effective and easy to use connector derived from MIL-C-5015

CLIPPER provides a durable, cost-effective solution for a variety of industrial applications.

With its high sealing level (IP68), salt spray resistance (1,000 h when mated) and UL qualifications, CLIPPER series connectors are interchangeable with other connectors meeting the standard MIL-C-5015, without compromising the equipment design or the application requirements, even for harsh conditions.

### A quick mating system and safety

CLIPPER has a quick, audible and lockable screw coupling system ensuring a safe, confirmed connection. **The scoop proof design protects the contacts from damage**, reducing labor time and installation cost. Additionally, there is **no need for tooling** when inserting or extracting the contacts for easy maintenance.

Mono bloc  
thermoplastic  
connector

Stamped and  
formed contacts  
available

No extraction or  
insertion tools  
needed

PG backshell  
adapter enables  
use of standard  
accessories



# Souriau CLIPPER series

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## 1 Overview

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### Technical features

#### Materials

- Monobloc shell and insulator in thermoplastic material
- Self-extinguishing according to **UL 94 V0**
- Copper alloy contacts, machined or stamped and formed



#### Electrical

- Withstand voltage: 1500 Vrms min or in accordance with **DIN 57110b**
- Contact resistance < 10 mW
- Current rating per contact:
  - Machined contacts
    - # 20 (7 Amps)
    - # 16 (13 Amps)
  - Stamped and formed contacts
    - # 20 (5 Amps)
    - # 16 (10 Amps)

#### Environmental

- Working temperature: From - 40°C to +125°C (-40°F to +257°F)
- Salt spray:
  - 48 h min
  - > 1000 h (sealed mated connectors)
- Sealing: Up to IP68
- Fluid resistance:
  - Oil
  - Petrol, fuel
  - Lubricants
  - For other fluids, please consult us
- Halogen free
- REACH and RoHS compliant

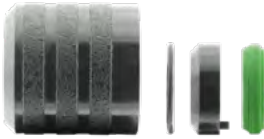


#### Mechanical

- Durability:
  - Connector: 250 cycles mating/unmating
  - Retention plate: 50 cycles mating/unmating
- Retention force:
  - # 20 = 70 N
  - # 16 = 90 N
- Vibration:
  - Frequency range: 10-2000 Hz, 20 g
  - 10 cycles in accordance with **CEI 68-2-6**
- 180° screw coupling with positive audible safety latch
- Scoop proof
- Interchangeable with MIL-C-5015 connectors

## Backnuts

Sealed grommet backnut



Unsealed backnut



## Backshells

Unsealed straight backshell for flexible conduit



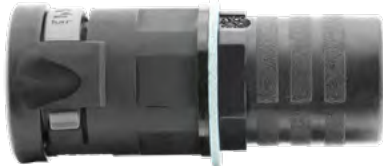
Unsealed straight cable clamp



Sealed elbow backshell with sealing gland



Sealed straight backshell for flexible conduit



Sealed anti-decoupling sealing gland



## Plugs

Unsealed  
(without O-ring and mating seal)



Sealed  
(with O-ring and mating seal)



**Receptacles**

**Unsealed**  
(without O-ring)



**Sealed**  
(with O-ring for use with backshell)



**Sealed**  
(with O-ring and panel gasket)



**Inline unsealed for male contacts**




**Inline sealed for male contacts**




**Backnuts**

**Unsealed backnut**




**Sealed grommet backnut**




**Backshells**


**Unsealed straight cable clamp**




**Unsealed straight backshell for flexible conduit**




**Sealed straight backshell for flexible conduit**



**Sealed elbow backshell with sealing gland**



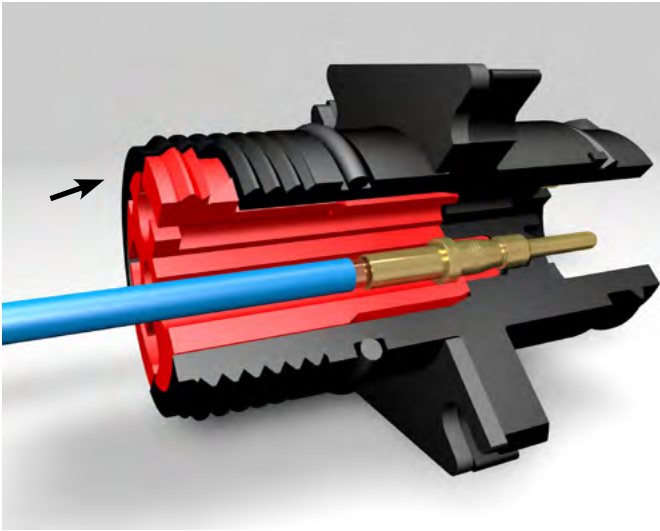
**Sealed anti-decoupling sealing gland**





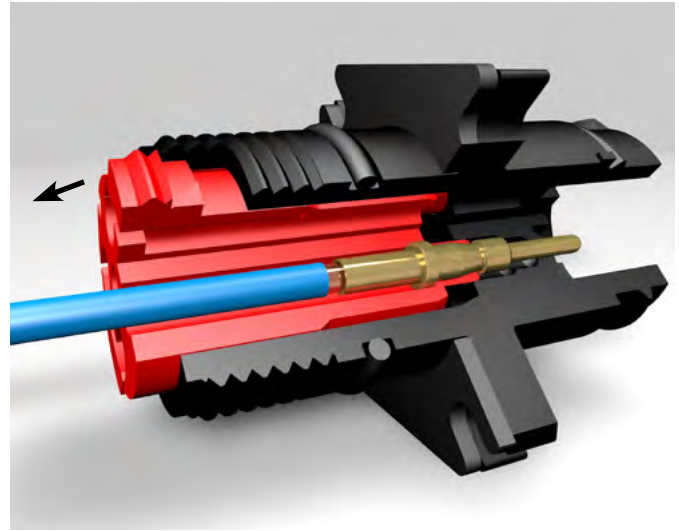
### 1

### Retention plate principle



**Locked plate**

Locked, the retention plate holds the contacts firmly in position.



**Unlocked plate**

Unlocked, the retention plate allows the insertion or extraction of contacts without tooling.

### Layouts face male contact

| Contacts                                 | Shell size 1           | Shell size 2            | Shell size 3            | Shell size 4            |
|--|------------------------|-------------------------|-------------------------|-------------------------|
| <b>Contact #16</b><br>(Ø 0.062" - 1.6mm) | <p>4 contacts, #16</p> | <p>9 contacts, #16</p>  | <p>18 contacts, #16</p> | <p>26 contacts, #16</p> |
| <b>Contact #20</b><br>(Ø 0.039" - 1.0mm) | <p>9 contacts, #20</p> | <p>14 contacts, #20</p> | <p>31 contacts, #20</p> | <p>40 contacts, #20</p> |





### Square flange receptacle and in-line receptacle - Version unsealed without O-ring and sealed with O-ring

2



**Unsealed receptacle**

**Sealed receptacle for use with backshell**

**Sealed receptacle with panel gasket**

**Inline receptacle**

| Shell size       | Layout face male contact | Unsealed receptacle |                 | Sealed receptacle for use with backshell |                 | Sealed receptacle with panel gasket |                 | Inline receptacle          |                          |
|------------------|--------------------------|---------------------|-----------------|--|-----------------|-------------------------------------|-----------------|----------------------------|--------------------------|
|                  |                          | Male contacts       | Female contacts | Male contacts                            | Female contacts | Male contacts                       | Female contacts | Unsealed for male contacts | Sealed for male contacts |
| 1                |                          | CL1M1100            | CL1R1100        | CL1M1101                                 | CL1R1101        | CL1M1102                            | CL1R1102        | CL1C1100                   | CL1C1101                 |
|                  | 4 contacts, #16          |                     |                 |  |                 |                                     |                 |                            |                          |
|                  |                          | CL1M1200            | –               | CL1M1201                                 | –               | CL1M1202                            | –               | CL1C1200                   | CL1C1201                 |
| 2                | 9 contacts, #20          |                     |                 |  |                 |                                     |                 |                            |                          |
|                  |                          | CL1M2100            | CL1R2100        | CL1M2101                                 | CL1R2101        | CL1M2102                            | CL1R2102        | CL1C2100                   | CL1C2101                 |
|                  | 9 contacts, #16          |                     |                 |  |                 |                                     |                 |                            |                          |
| 3                |                          | CL1M2200            | –               | CL1M2201                                 | –               | CL1M2202                            | –               | CL1C2200                   | CL1C2201                 |
|                  | 14 contacts, #20         |                     |                 |  |                 |                                     |                 |                            |                          |
|                  |                          | CL1M3100            | CL1R3100        | CL1M3101                                 | CL1R3101        | CL1M3102                            | CL1R3102        | CL1C3100                   | CL1C3101                 |
| 4                | 18 contacts, #16         |                     |                 |  |                 |                                     |                 |                            |                          |
|                  |                          | CL1M3200            | –               | CL1M3201                                 | –               | CL1M3202                            | –               | CL1C3200                   | CL1C3201                 |
|                  | 31 contacts, #20         |                     |                 |  |                 |                                     |                 |                            |                          |
| 4                |                          | CL1M4100            | –               | CL1M4101                                 | –               | CL1M4102                            | –               | CL1C4100                   | CL1C4101                 |
|                  | 26 contacts, #16         |                     |                 |  |                 |                                     |                 |                            |                          |
|                  |                          | CL1M4200            | CL1R4200        | CL1M4201                                 | CL1R4201        | CL1M4202                            | CL1R4202        | CL1C4200                   | CL1C4201                 |
| 40 contacts, #20 |                          |                     |                 |  |                 |                                     |                 |                            |                          |

## Plug and backnut - Version unsealed without O-ring and sealed with O-ring



2

| Shell size | Layout face male contact | Unsealed plug mating seal |                 | Sealed plug mating seal |                                    | Sealed backnut |                 | Unsealed backnut         |
|------------|--------------------------|---------------------------|-----------------|-------------------------|------------------------------------|----------------|-----------------|--------------------------|
|            |                          | Male contacts             | Female contacts | Male contacts           | Female contacts                    | Male contacts  | Female contacts | Male and female contacts |
| 1          |                          | CL1P1100                  | CL1F1100        | CL1P1101                | CL1F1101 (IP67)<br>CL1F1103 (IP68) | CL111102       | CL111101        | CL111000                 |
|            |                          | -                         | CL1F1200        | -                       | CL1F1201 (IP67)<br>CL1F1203 (IP68) | CL111202       | CL111201        |                          |
| 2          |                          | CL1P2100                  | CL1F2100        | CL1P2101                | CL1F2101 (IP67)<br>CL1F2103 (IP68) | CL11202        | CL11201         | CL112000                 |
|            |                          | -                         | CL1F2200        | -                       | CL1F2201 (IP67)<br>CL1F2203 (IP68) | -              | -               |                          |
| 3          |                          | CL1P3100                  | CL1F3100        | CL1P3101                | CL1F3101 (IP67)<br>CL1F3103 (IP68) | CL113102       | CL113101        | CL113000                 |
|            |                          | -                         | CL1F3200        | -                       | CL1F3201 (IP67)<br>CL1F3203 (IP68) | CL113202       | CL113201        |                          |
| 4          |                          | -                         | CL1F4100        | -                       | CL1F4101 (IP67)<br>CL1F4103 (IP68) | CL114102       | CL114101        | CL114000                 |
|            |                          | CL1P4200                  | CL1F4200        | CL1P4201                | CL1F4201 (IP67)<br>CL1F4203 (IP68) | CL114202       | CL114201        |                          |

# 2

## Connectors & backshells

Electrical thread backshells (PG)

### Straight backshell for flexible conduit - Unsealed (IP40)

2



| Shell size  | Part number |
|-------------|-------------|
| 1 (PG 13.5) | CL101040    |
| 2 (PG 16)   | CL102040    |
| 3 (PG 21)   | CL 103040   |
| 4 (PG 29)   | CL124040    |
| 4 (PG 36)   | CL104040    |

### Straight cable clamp - Unsealed (IP40)



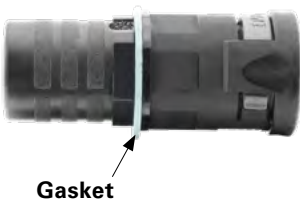
| Shell size  | Part number |
|-------------|-------------|
| 1 (PG 13.5) | CL101030    |
| 2 (PG 16)   | CL102030    |
| 3 (PG 21)   | CL103030    |
| 4 (PG 29)   | CL124030    |

### Elbow backshell with sealing gland - Sealed\*



| Shell size  | Part number |
|-------------|-------------|
| 1 (PG 13.5) | CL101051    |
| 2 (PG 16)   | CL102051    |
| 3 (PG 21)   | CL103051    |
| 4 (PG 29)   | CL124051    |

### Straight backshell for flexible conduit systems - Sealed\*



| Shell size  | Part number |
|-------------|-------------|
| 1 (PG 13.5) | CL101041    |
| 2 (PG 16)   | CL102041    |
| 3 (PG 21)   | CL103041    |
| 4 (PG 29)   | CL124041    |
| 4 (PG 29)   | CL104041    |

### Anti-decoupling sealing gland backshell - Sealed\*



| Shell size  | Part number |
|-------------|-------------|
| 1 (PG 13.5) | CL101021    |
| 2 (PG 16)   | CL102021    |
| 3 (PG 21)   | CL103021    |
| 4 (PG 29)   | CL124021    |
| 4 (PG 36)   | CL104021    |

\* Electrical thread backshells are always supplied complete with the adaptor.



## Panel gasket (for square flange receptacle)



| Shell size | Part number |
|------------|-------------|
| 1          | CL191001    |
| 2          | CL192001    |
| 3          | CL193001    |
| 4          | CL194001    |

2

## Straight adaptors



| Shell size | Part number |
|------------|-------------|
| 1          | CL101000    |
| 2          | CL102000    |
| 3          | CL103000    |
| 4          | CL104000    |

## 90° sealed adaptors for receptacles\*



| Shell size | Part number |
|------------|-------------|
| 1          | CL131001    |
| 2          | CL132001    |
| 3          | CL133001    |
| 4          | CL134001    |

\* with panel gasket.

## IP67 Dust cap for receptacle



| Shell size | Part number |
|------------|-------------|
| 1          | CL141001    |
| 2          | CL142001    |
| 3          | CL143001    |
| 4          | CL144001    |

\* Electrical thread backshells are always supplied complete with the adaptor.

# 2

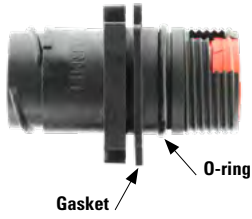
## Connectors & backshells

IP68 configuration

### Sealed version resisting water immersion up to 100 ft / 30 m

2

Wall mount receptacle



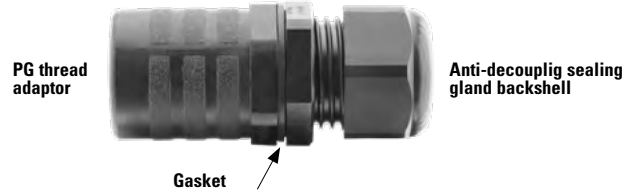
Inline receptacle



Plug



Sealed anti decoupling  
sealing gland



## Sealed version resisting water immersion up to 100 ft / 30 m - Sealed version with O-ring

2



**Sealed receptacle and panel gasket**

**Sealed inline receptacle**

**Sealed plug and mating seal**

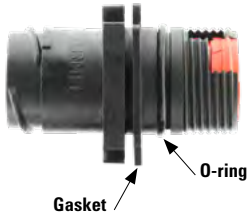
**Sealed anti decoupling sealing gland**

| Shell size | Layout face male contact | Male contacts   | Male contacts   | Female contacts | Female contacts           |
|------------|--------------------------|-----------------|-----------------|-----------------|---------------------------|
| 1          |                          | <b>CL1M1102</b> | <b>CL1C1101</b> | <b>CL1F1103</b> | <b>CL101021 (PG 13.5)</b> |
|            | 4 contacts, #16          | <b>CL1M1202</b> | <b>CL1C1202</b> | <b>CL1F1203</b> | —                         |
| 2          |                          | <b>CL1M2102</b> | <b>CL1C2101</b> | <b>CL1F2103</b> | <b>CL102021 (PG 16)</b>   |
|            | 9 contacts, #20          | <b>CL1M2202</b> | <b>CL1C2201</b> | <b>CL1F2203</b> | —                         |
|            |                          | <b>CL1M2102</b> | <b>CL1C2101</b> | <b>CL1F2103</b> | <b>CL102021 (PG 16)</b>   |
|            | 9 contacts, #16          | <b>CL1M2202</b> | <b>CL1C2201</b> | <b>CL1F2203</b> | —                         |
| 3          |                          | <b>CL1M3102</b> | <b>CL1C3101</b> | <b>CL1F3103</b> | <b>CL103021 (PG 21)</b>   |
|            | 18 contacts, #16         | <b>CL1M3202</b> | <b>CL1C3201</b> | <b>CL1F3203</b> | —                         |
| 3          |                          | <b>CL1M3102</b> | <b>CL1C3101</b> | <b>CL1F3103</b> | <b>CL103021 (PG 21)</b>   |
|            | 31 contacts, #20         | <b>CL1M3202</b> | <b>CL1C3201</b> | <b>CL1F3203</b> | —                         |
| 4          |                          | <b>CL1M4102</b> | <b>CL1C4101</b> | <b>CL1F4103</b> | <b>CL124021 (PG 29)</b>   |
|            | 26 contacts, #16         | <b>CL1M4202</b> | <b>CL1C4201</b> | <b>CL1F4203</b> | <b>CL104021 (PG 36)</b>   |
| 4          |                          | <b>CL1M4202</b> | <b>CL1C4201</b> | <b>CL1F4203</b> | <b>CL104021 (PG 36)</b>   |
|            | 40 contacts, #20         |                 |                 |                 |                           |

### Temporary water tightness

2

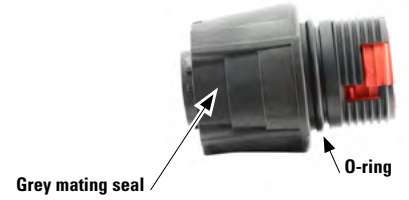
Wall mount receptacle



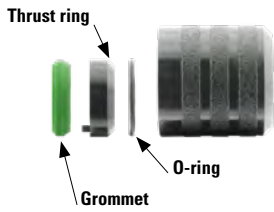
Inline receptacle



Plug



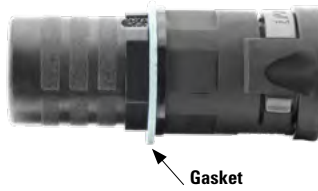
Sealed backnut



Elbow backshell with sealing gland



Straight backshell for flexible conduit



Anti-decoupling sealing gland backshell





## Temporary water tightness - Sealed version with O-ring

2



**Sealed receptacle and panel gasket**



**Sealed plug and mating seal**











**Sealed inline receptacle**

| Shell size | Layout face male contact | Male contacts | Female contacts | Male contacts | Female contacts | Male contacts |
|------------|--------------------------|---------------|-----------------|---------------|-----------------|---------------|
| 1          |                          | CL1M1102      | CL1R1102        | CL1P1101      | CL1F1101        | CL1C1101      |
|            | 4 contacts, #16          | CL1M1202      | –               | CL1F1201      | –               | CL1C1201      |
| 2          |                          | CL1M2102      | CL1R2102        | CL1P2101      | CL1F2101        | CL1C2101      |
|            | 9 contacts, #20          | CL1M2202      | –               | –             | CL1F2201        | CL1C2201      |
|            |                          | CL1M3102      | CL1R3102        | CL1P3101      | CL1F3101        | CL1C3101      |
|            | 9 contacts, #16          | CL1M3202      | –               | –             | CL1F3201        | CL1C3201      |
| 3          |                          | CL1M3102      | CL1R3102        | CL1P3101      | CL1F3101        | CL1C3101      |
|            | 18 contacts, #16         | CL1M3202      | –               | –             | CL1F3201        | CL1C3201      |
| 4          |                          | CL1M4102      | –               | –             | CL1F4101        | CL1F4101      |
|            | 26 contacts, #16         | CL1M4202      | CL1R4202        | CL1P4201      | CL1F4201        | CL1C4201      |
|            |                          |               |                 |               |                 |               |
|            | 40 contacts, #20         |               |                 |               |                 |               |

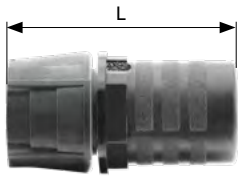
### Temporary water tightness - Sealed version with O-ring

2



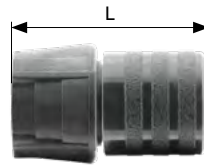
| Shell size | Layout face male contact  | Sealed plug and mating seal |                 | Elbow backshell with sealing gland | Straight backshell for flexible conduit | Anti-decoupling sealing gland backshell |
|------------|---|-----------------------------|-----------------|------------------------------------|---|---|
|            |   | Male contacts               | Female contacts | Male contacts                      |   |   |
| 1          | <br>4 contacts, #16    | CL111102                    | CL111101        | CL101051 (PG 13.5)                 | CL101041 (PG 13.5)                      | CL101021 (PG 13.5)                      |
|            | <br>9 contacts, #20    | CL111202                    | CL111201        | —                                  | —                                       | —                                       |
| 2          | <br>9 contacts, #16    | CL112102                    | CL112101        | CL102051 (PG 16)                   | CL102041 (PG 16)                        | CL102021 (PG 16)                        |
|            | <br>14 contacts, #20 | —                           | —               | —                                  | —                                       | —                                       |
| 3          | <br>18 contacts, #16 | CL113102                    | CL113101        | CL103051 (PG 21)                   | CL103041 (PG 21)                        | CL103021 (PG 21)                        |
|            | <br>31 contacts, #20 | CL113202                    | CL113201        | —                                  | —                                       | —                                       |
| 4          | <br>26 contacts, #16 | CL114102                    | CL114101        | CL124051 (PG 29)                   | CL124041 (PG 29)                        | CL104041 (PG 36)<br>CL124021 (PG 29)    |
|            | <br>40 contacts, #20 | CL114202                    | CL114201        | —                                  | —                                       | —                                       |

### Plug with adaptor



| Shell size | L inches | mm   |
|------------|----------|------|
| 1          | 2.01     | 51.0 |
| 2          | 2.09     | 53.2 |
| 3          | 2.09     | 53.2 |
| 4 (PG 29)  | 2.17     | 55.2 |
| 4 (PG 36)  | 2.17     | 55.2 |

### Plug with backnut



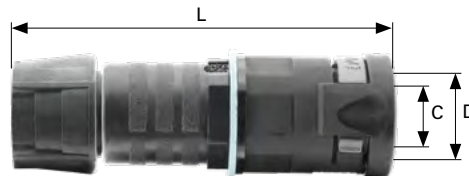
| Shell size | L inches | mm     |
|------------|----------|--------|
| 1          | 1.81     | 46.0   |
| 2          | 1.85     | 47.0   |
| 3          | 1.85     | 47.0   |
| 4 (PG 29)  | –        | –      |
| 4 (PG 36)  | 1.85     | 47.0.2 |

### Plug with straight cable clamp



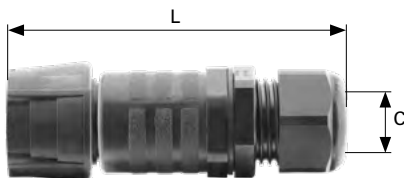
| Shell size | L inches | mm   | C (cable acceptance) |           |
|------------|----------|------|----------------------|-----------|
|            |          |      | inches               | mm        |
| 1          | 2.68     | 68.0 | 0.24/0.55            | 6.0/14.0  |
| 2          | 2.85     | 72.5 | 0.24/0.63            | 6.0/16.0  |
| 3          | 3.03     | 77.0 | 0.31/0.83            | 8.0/21.0  |
| 4 (PG 29)  | 3.41     | 86.5 | 0.39/1.10            | 10.0/28.0 |
| 4 (PG 36)  | –        | –    | –                    | –         |

### Plug with straight backshell for flexible conduit



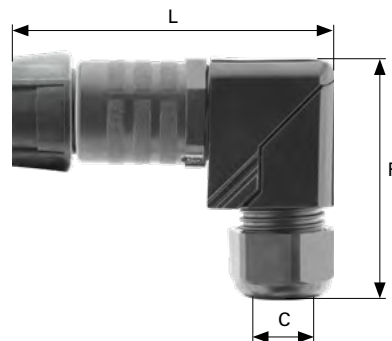
| Shell size | L inches | mm    | C (cable acceptance) |      | D (conduit Pmaxflex) |      |
|------------|----------|-------|----------------------|------|----------------------|------|
|            |          |       | inches               | mm   | inches               | mm   |
| 1          | 3.41     | 86.5  | 0.63                 | 16.0 | 0.67                 | 17.0 |
| 2          | 3.50     | 89.0  | 0.63                 | 16.0 | 0.67                 | 17.0 |
| 3          | 3.62     | 92.0  | 0.85                 | 21.5 | 0.91                 | 23.1 |
| 4 (PG 29)  | 3.70     | 94.0  | 1.08                 | 27.4 | 1.14                 | 28.9 |
| 4 (PG 36)  | 4.25     | 108.0 | 1.42                 | 36.0 | 1.42                 | 36.0 |

### Plug with anti-decoupling sealing gland



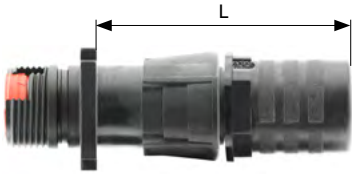
| Shell size | L inches | mm    | C (cable acceptance) |           |
|------------|----------|-------|----------------------|-----------|
|            |          |       | inches               | mm        |
| 1          | 3.15     | 80.0  | 0.24/0.47            | 6.0/12.0  |
| 2          | 3.27     | 83.0  | 0.39/0.55            | 10.0/14.0 |
| 3          | 3.35     | 85.0  | 0.51/0.71            | 13.0/18.0 |
| 4 (PG 29)  | 3.74     | 95.0  | 0.71/0.98            | 18.0/25.0 |
| 4 (PG 36)  | 4.02     | 102.0 | 0.87/1.26            | 22.0/32.0 |

### Plug with elbow backshell with sealing gland



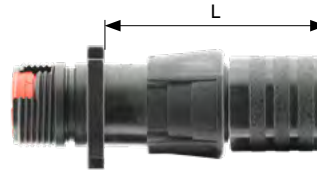
| Shell size | L inches | mm    | R max  |      | C (cable acceptance) |           |
|------------|----------|-------|--------|------|----------------------|-----------|
|            |          |       | inches | mm   | inches               | mm        |
| 1          | 3.31     | 84.0  | 2.24   | 57.0 | 0.24/0.47            | 6.0/12.0  |
| 2          | 3.46     | 88.0  | 2.34   | 59.5 | 0.39/0.55            | 10.0/14.0 |
| 3          | 3.77     | 96.0  | 2.87   | 73.0 | 0.51/0.71            | 13.0/18.0 |
| 4 (PG 29)  | 4.29     | 109.0 | 3.58   | 91.0 | 0.71/0.98            | 18.0/25.0 |
| 4 (PG 36)  | –        | –     | –      | –    | –                    | –         |

### Receptacle with adaptor



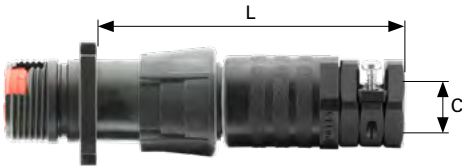
| Shell size | L inches | mm   |
|------------|----------|------|
| 1          | 2.29     | 58.2 |
| 2          | 2.33     | 59.2 |
| 3          | 2.33     | 59.2 |
| 4 (PG 29)  | 2.41     | 61.2 |
| 4 (PG 36)  | 2.41     | 61.2 |

### Receptacle with backnut



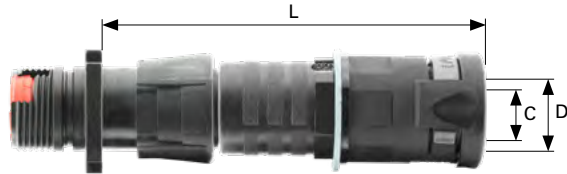
| Shell size | L inches | mm   |
|------------|----------|------|
| 1          | 2.09     | 53.0 |
| 2          | 2.09     | 53.0 |
| 3          | 2.09     | 53.0 |
| 4 (PG 29)  | –        | –    |
| 4 (PG 36)  | 2.09     | 53.0 |

### Receptacle with straight cable clamp



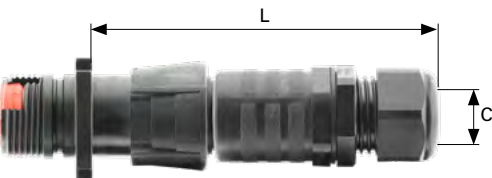
| Shell size | L inches | mm   | C (cable acceptance) |          |
|------------|----------|------|----------------------|----------|
|            |          |      | inches               | mm       |
| 1          | 2.97     | 75.5 | 0.24/0.55            | 6.0/13.9 |
| 2          | 3.09     | 78.5 | 0.24/0.63            | 6.0/16.0 |
| 3          | 3.27     | 83.0 | 0.31/0.83            | 7.8/21.0 |
| 4 (PG 29)  | 3.60     | 91.5 | 0.39/1.10            | 9.9/27.9 |
| 4 (PG 36)  | –        | –    | –                    | –        |

### Receptacle with straight backshell for flexible conduit



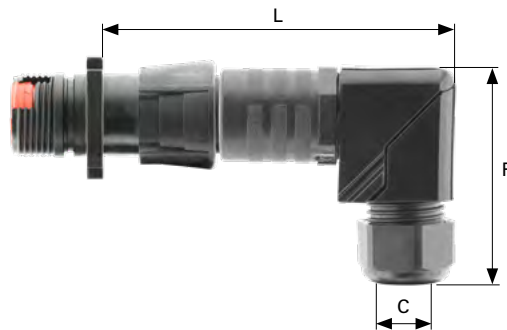
| Shell size | L inches | R max  |      | C (cable acceptance) |      |      |
|------------|----------|--------|------|----------------------|------|------|
|            |          | inches | mm   | inches               | mm   |      |
| 1          | 3.70     | 94.0   | 0.63 | 16.0                 | 0.67 | 17.0 |
| 2          | 3.74     | 95.0   | 0.63 | 16.0                 | 0.67 | 17.0 |
| 3          | 3.86     | 98.0   | 0.85 | 21.5                 | 0.91 | 23.1 |
| 4 (PG 29)  | 3.94     | 100.0  | 1.08 | 27.4                 | 1.14 | 28.9 |
| 4 (PG 36)  | 4.47     | 113.5  | 1.42 | 36.0                 | 1.42 | 36.0 |

### Receptacle with anti-decoupling sealing gland



| Shell size | L inches | mm    | C (cable acceptance) |           |
|------------|----------|-------|----------------------|-----------|
|            |          |       | inches               | mm        |
| 1          | 3.43     | 87.0  | 0.24/0.47            | 6.0/11.9  |
| 2          | 3.50     | 89.0  | 0.39/0.55            | 9.9/13.9  |
| 3          | 3.58     | 91.0  | 0.51/0.71            | 12.9/18.0 |
| 4 (PG 29)  | 3.98     | 101.0 | 0.71/0.98            | 18.0/24.8 |
| 4 (PG 36)  | 4.25     | 108.0 | 0.87/1.26            | 22.0/32.0 |

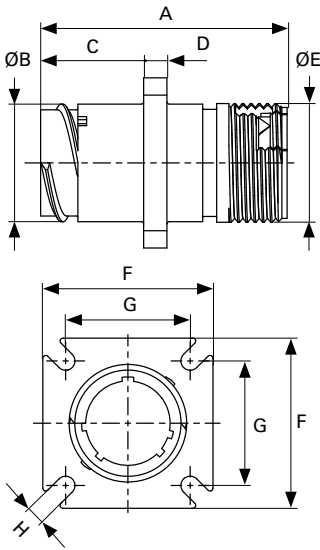
### Receptacle with elbow backshell with sealing gland



| Shell size | L inches | mm    | R max  |      | C (cable acceptance) |           |
|------------|----------|-------|--------|------|----------------------|-----------|
|            |          |       | inches | mm   | inches               | mm        |
| 1          | 3.58     | 91.0  | 2.24   | 56.8 | 0.24/0.47            | 6.0/11.9  |
| 2          | 3.70     | 94.0  | 2.34   | 59.4 | 0.39/0.55            | 9.9/13.9  |
| 3          | 4.01     | 102.0 | 2.87   | 72.8 | 0.51/0.71            | 12.9/18.0 |
| 4 (PG 29)  | 4.52     | 115.0 | 3.58   | 90.9 | 0.71/0.98            | 18.0/24.8 |
| 4 (PG 36)  | -        | -     | -      | -    | -                    | -         |



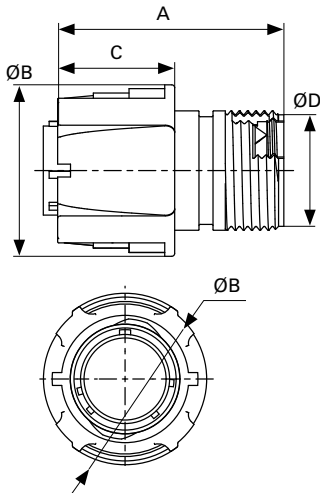
### Receptacle



| Shell size | A max inches | A max mm | ØB inches | ØB mm | C inches | C mm | D inches | D mm | ØE      | F inches | F mm  | G inches | G mm | H inches | H mm |
|------------|--------------|----------|-----------|-------|----------|------|----------|------|---------|----------|-------|----------|------|----------|------|
| 1          | 1.67         | 42.35    | 0.83      | 20.20 | 0.71     | 17.7 | 0.16     | 4.0  | PG 13   | 1.17     | 29.24 | 0.84     | 21.4 | 0.13     | 3.2  |
| 2          | 1.67         | 42.35    | 0.96      | 23.56 | 0.71     | 17.7 | 0.16     | 4.0  | M24x1.5 | 1.23     | 30.84 | 0.96     | 24.6 | 0.13     | 3.2  |
| 3          | 1.67         | 42.35    | 1.14      | 28.24 | 0.71     | 17.7 | 0.16     | 4.0  | PG 21   | 1.42     | 35.59 | 1.11     | 28.6 | 0.15     | 3.8  |
| 4          | 1.67         | 42.35    | 1.59      | 39.66 | 0.71     | 17.7 | 0.16     | 4.0  | M40x1.5 | 1.89     | 47.48 | 1.43     | 36.5 | 0.15     | 3.8  |

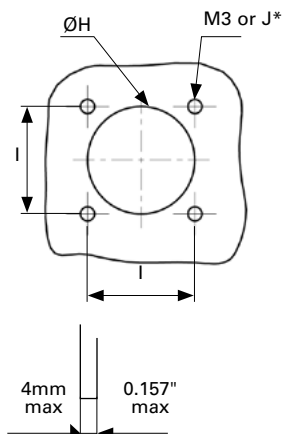
2

### Plug



| Shell size | A inches | A mm  | ØB inches | ØB mm | C inches | C mm | ØD      |
|------------|----------|-------|-----------|-------|----------|------|---------|
| 1          | 1.52     | 38.45 | 1.154     | 29.30 | 0.80     | 20.0 | PG 13   |
| 2          | 1.56     | 39.45 | 1.28      | 32.80 | 0.80     | 20.0 | M24x1.5 |
| 3          | 1.56     | 39.45 | 1.46      | 37.00 | 0.80     | 20.0 | PG 21   |
| 4          | 1.56     | 39.45 | 1.92      | 49.15 | 0.80     | 20.0 | M40x1.5 |

### Panel cut out



| Shell size | ØH inches | ØH mm | I inches | I mm  | J inches | J mm |
|------------|-----------|-------|----------|-------|----------|------|
| 1          | 0.85      | 21.60 | 0.84     | 21.33 | 0.13     | 3.30 |
| 2          | 0.98      | 24.90 | 0.97     | 24.63 | 0.13     | 3.30 |
| 3          | 1.22      | 30.98 | 1.13     | 28.70 | 0.15     | 3.81 |
| 4          | 1.61      | 40.90 | 1.44     | 36.57 | 0.15     | 3.81 |

Note: \*M3 is recommended for all shells but it is possible to use dimension J

# 3

## Contacts

### Description

The **CLIPPER series** is delivered without contacts (crimp version) and offers the unique possibility to use the same contact in any layout, as long as it receives the same active part size. This provides opportunity for standardization and subsequent inventory cost reductions, eliminates the need for added tooling and simplifies the assembly process. Souriau contacts are designed for simple snap-in installation, further eliminating the need for insertion tooling.

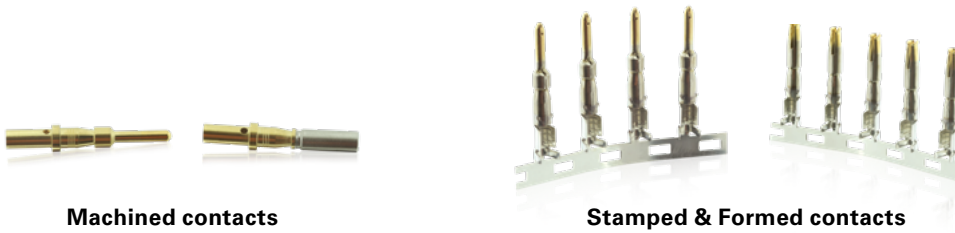
### 3

Machined contacts are generally chosen as a better solution for power applications or when lower quantities are needed.

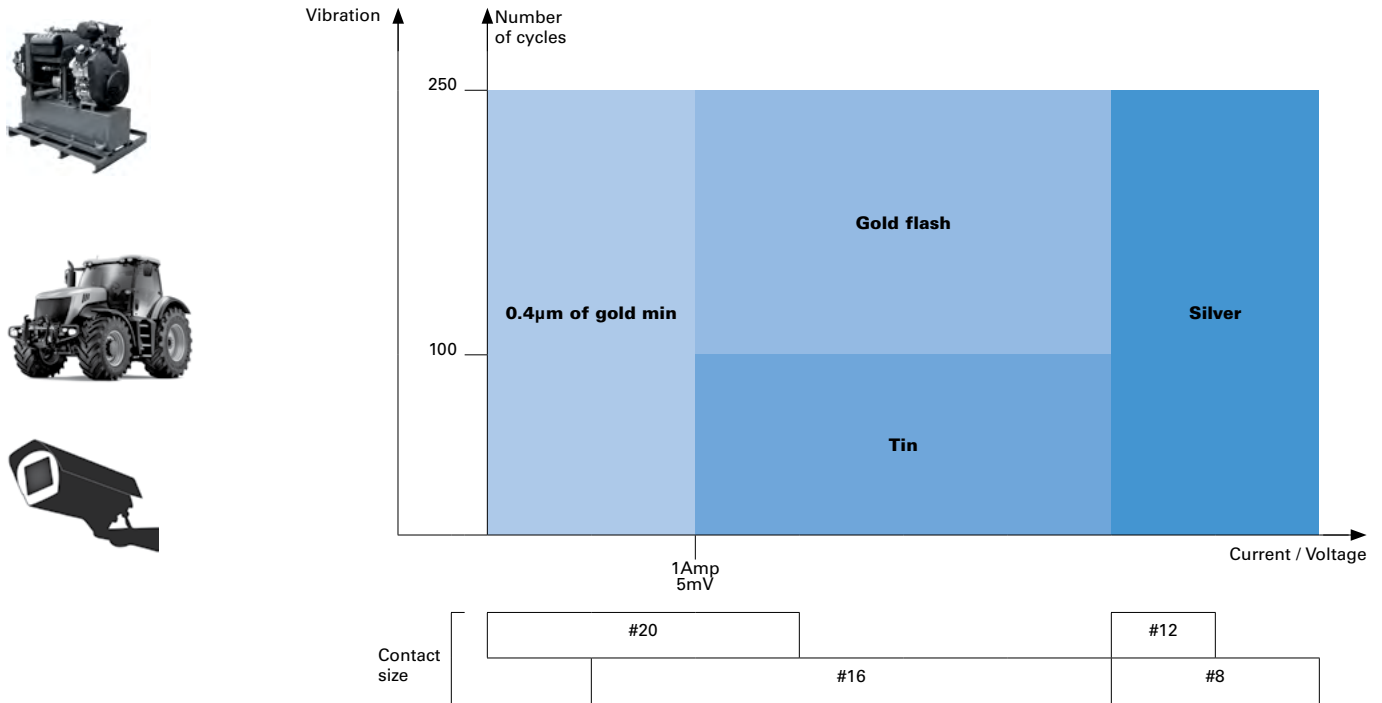
Stamped & Formed contacts offer the ability to be crimped automatically which makes them more suitable for high volume production applications.

Use the graph below for recommendations based on application, mating cycles and current/voltage needs.

**Note:** Do not mix different plating (i.e. tin plated pin contacts with gold plated socket contacts).



## Contact plating selector guide



CLIPPER contacts are available in a wide variety of packaging, from very small quantities (small bulk packaging) to very large quantities (reeled parts).

**Stamped & Formed contacts**



| Description  | Number       |
|--------------|--------------|
| Bulk package | 100 pieces   |
| Reeled       | 5,000 pieces |

3

**Machined contacts**



| Description  | Number     |
|--------------|------------|
| Bulk package | 100 pieces |
| Bulk package | 200 pieces |
| Bulk package | 500 pieces |

# 3

## Contacts

### Machined contacts

#### Crimp and solder version

3



| Contact size             | Type            | Wire size<br>AWG | mm <sup>2</sup>            | Part number<br>Male | Female            | Max insulator Ø<br>inches | mm      | Available<br>plating | Packaging |
|--------------------------|-----------------|------------------|----------------------------|---------------------|-------------------|---------------------------|---------|----------------------|-----------|
| #20<br>Ø 0.039" / Ø1mm   | Crimp           | 24-18            | 0.21-0.93                  | <b>CM10PC10MQ</b>   | <b>CM10SC10MQ</b> | 0.05-0.08                 | 1.2-2.1 | MQ*                  | Bulk      |
|                          | Solder          | 18 max           | Up to 0.93 mm <sup>2</sup> | <b>CM10PS10MQ</b>   | <b>CM10SS10MQ</b> | 0.05-0.08                 | 1.2-2.1 | MQ*                  | Bulk      |
|                          | Reducing sleeve | 30-24            | 0.06-0.21                  | <b>CM10PC20MQ</b>   | <b>CM10SC20MQ</b> | 0.05-0.08                 | 1.2-2.1 | MQ*                  | Bulk      |
| #16<br>Ø 0.062" / Ø1.6mm | Crimp           | 18-14            | 0.93-1.91                  | <b>CM16PC10MQ</b>   | <b>CM16SC10MQ</b> | 0.08-0.12                 | 2-3     | MQ*                  | Bulk      |
|                          | Solder          | 14 max           | Up to 1.91 mm <sup>2</sup> | <b>CM16PS10MQ</b>   | <b>CM16SS10MQ</b> | 0.08-0.12                 | 2-3     | MQ*                  | Bulk      |
|                          | Crimp           | 18-13            | 0.93-2.60                  | <b>CM16PC00LY</b>   | <b>CM16SC00LY</b> | 0.08-0.12                 | 2-3     | MQ*                  | Bulk      |
|                          | Reducing sleeve | 20               | 0.21-0.60                  | <b>CM16PC20MQ</b>   | <b>CM16SC20MQ</b> | 0.08-0.12                 | 2-3     | MQ*                  | Bulk      |

\* Plating MQ: 0.4µm gold on active part (0.016µ inches)

#### Extended ground contact-crimp (Length + .039 inch = +1 mm)



| Contact size             | Type  | Wire size<br>AWG | mm <sup>2</sup> | Part number<br>Male | Max insulator Ø<br>inches | mm      | Packaging |
|--------------------------|-------|------------------|-----------------|---------------------|---------------------------|---------|-----------|
| #20<br>Ø 0.039" / Ø1mm   | Crimp | 24-18            | 0.21-0.93       | <b>8501 9641</b>    | 0.05-0.08                 | 1.2-2.1 | Bulk      |
| #16<br>Ø 0.062" / Ø1.6mm | Crimp | 18-14            | 0.93-1.91       | <b>8501 9642 CL</b> | 0.08-0.12                 | 2-3     | Bulk      |

#### PCT machined contact



| Contact size             | Part number       | Available plating | Packaging |
|--------------------------|-------------------|-------------------|-----------|
| #20<br>Ø 0.039" / Ø1mm   | <b>CM10PT10LY</b> | LY*               | Bulk      |
| #16<br>Ø 0.062" / Ø1.6mm | <b>CM16PT10LY</b> | LY*               | Bulk      |

\* Plating LY: 0.4µm Gold (0.014µ inches) over 1µm Nickel mini (0.036µ inches)

**Crimp with strain relief version**



3

| Contact size              | Wire size<br>AWG | mm <sup>2</sup> | Part number<br>Male | Female            | Max insulator Ø<br>inches | mm      | Available<br>plating | Packaging    |
|---------------------------|------------------|-----------------|---------------------|-------------------|---------------------------|---------|----------------------|--------------|
| #20<br>Ø 0.039"<br>Ø1mm   | 22-20            | 0.35-0.6        | <b>CF10PC10RF</b>   | <b>CF10SC10RF</b> | 0.05-0.08                 | 1.2-2.1 | RF*                  | Bulk         |
|                           | 22-20            | 0.35-0.6        | <b>CF10PC18RF</b>   | <b>CF10SC18RF</b> | 0.05-0.08                 | 1.2-2.1 | RF*                  | 5.000 pieces |
| #16<br>Ø 0.062"<br>Ø1.6mm | 18-16            | 0.7-1.5         | <b>CF16PC10RF</b>   | <b>CF16SC10RF</b> | 0.08-0.12                 | 2-3     | RF*                  | Bulk         |
|                           | 18-16            | 0.7-1.5         | <b>CF16PC18RF</b>   | <b>CF16SC18RF</b> | 0.08-0.12                 | 2-3     | RF*                  | 5.000 pieces |

Plating RF: gold flash on active part for standard version

**Filler plug # 16**



| Description                  | Part number        |
|------------------------------|--------------------|
| For un-used contact cavities | <b>8500 479 CL</b> |

**Filler plug # 20**



| Description                  | Part number      |
|------------------------------|------------------|
| For un-used contact cavities | <b>8500 4144</b> |

**Polarization contact**



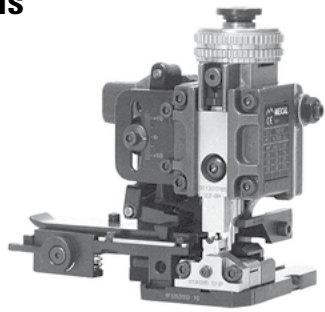
| Description  | Part number       |
|--|-------------------|
| Instruction for polarizing connector - see page 33 | <b>CP16SW9700</b> |



### Automatic crimping tools

Contact Mecal for semi-automatic production tools.

Mecal sales network:  
www.mecal.net



Min Applicator



Stripper



Presses

### Crimp tooling - Machined contact #20 & 16

#### Tooling



#### Description

For machined contact #20 & 16

#### Part number

8365 (M 22520/1-01)

#### Locator



#### Description

For machined contact #20 & 16

#### Part number

8365-02 (M 22520/1-02)

### Crimp tooling - Stamped and formed contact #20 & 16

#### Tooling



#### Description

Handle (without head)

#### Part number

SHANDLES

Box containing handle and several crimp tooling

Toolkit

#### Crimp tooling



#### Description

Crimp tooling for contact #20 (without Shandles)

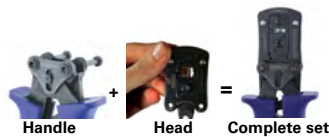
#### Part number

S20CFSP (20)

Crimp tooling for contact #16 (without Shandles)

S16CFSP (16)

Heads to be used with handle PN: SHANDLES



## Stripping & cutting dimensions of outer jacket

### Use the upmost care when stripping:

- Use stripping pliers appropriate for the cable gauge

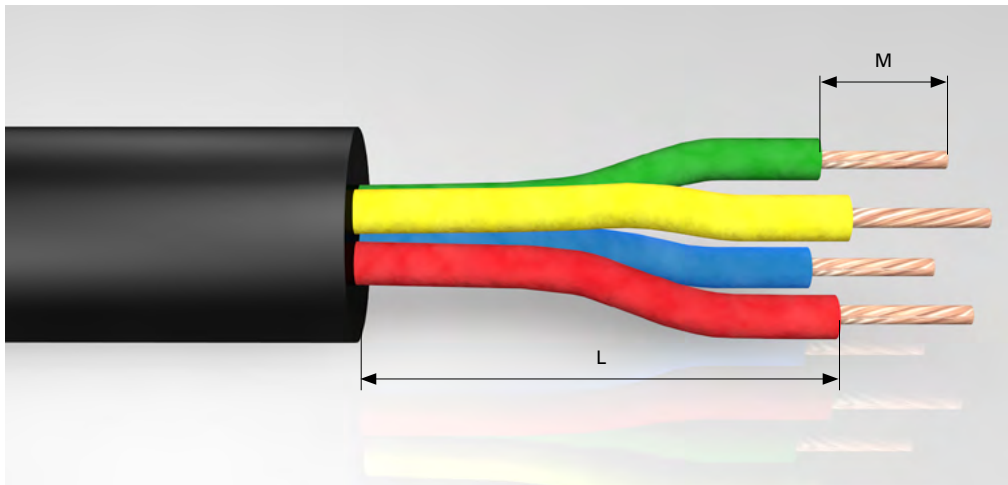
- In order to obtain a correct crimping and to maintain all of the connector sealing characteristics, the wires must have the dimensions described below

### Jacketed cable stripping length

- Make a 90° cut at the cable end
- Carefully make an incision in order to remove the cable

protection on a length L as described.

4



### Caution:

This operation should be performed without deterioration of wire insulation.

Then, follow the normal stripping instructions:

- single wire with machined crimping contacts
- single wire with stamped and formed crimping contacts

## Wire stripping length

| Contact size   | Stripping length M inches | mm |
|--|---------------------------|----|
| Machined contact #20<br>over insulation < 2 mm / 0.08" | 0.20                      | 5  |
| Machined contact #20<br>over insulation > 2 mm / 0.08" | 0.27                      | 7  |
| Machined contact #16                                   | 0.236                     | 6  |
| Stamped & formed #20 & #16                             | 0.157                     | 4  |

## Cable stripping length

| Shell size  | Stripping length L inches | mm  |
|-------------|---------------------------|-----|
| 1           | 2.36                      | 60  |
| 2           | 2.56                      | 65  |
| 3           | 2.56                      | 65  |
| 4 layout 26 | 3.15                      | 80  |
| 4 layout 40 | 3.94                      | 100 |

# 4

## Technical information

Handle & interchangeable heads for crimp contacts

### Crimping with Souriau tooling

4



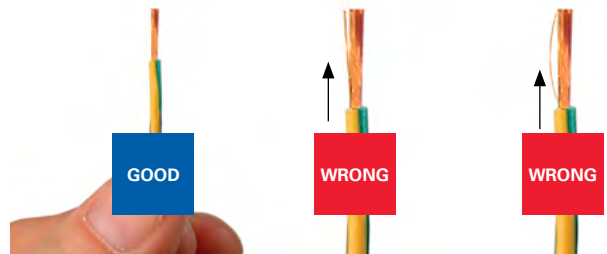
1) Fully close then release the tool, keep it open. Open the two pins.



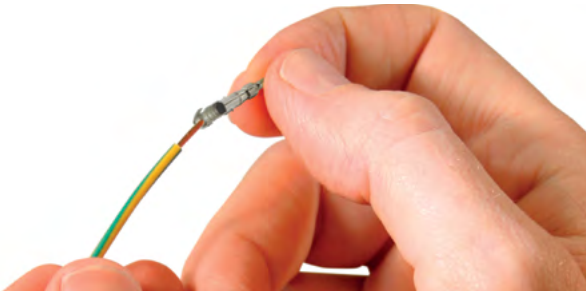
2) Choose the adapter head (sold separately). Keep vertical and slide it into the handle until the mechanical stop.



3) Close the two pins simultaneously to maintain the head.



4) Strip the cable properly by checking the recommended size in the catalog on page 27.



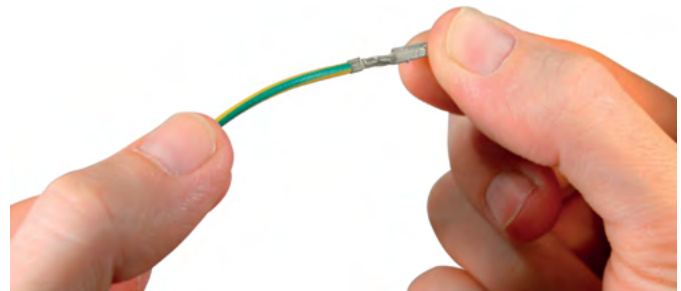
5) Place conductors, with no deterioration, in the contact bucket. All strands to be located in the crimp bucket.



6) Position the contact in the bottom of the tool by checking its orientation. Maintain the wire in position.



7) Tighten the handles to the end of the mechanism (max 175 N). After handles are opened, extract the contact.



8) Control the quality of crimping.

**Note:** Assembly operations mentioned above shall not interfere or to be in contradiction with IPC-WHMA-A-620B

## Insertion of contacts

### Single wires

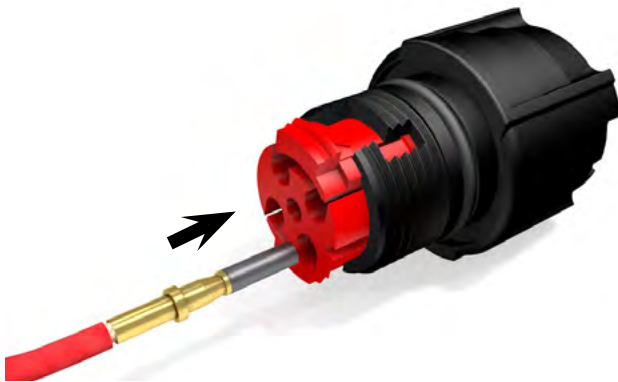
Contact insertion and extraction is performed without a tool thanks to the retainer plate system.



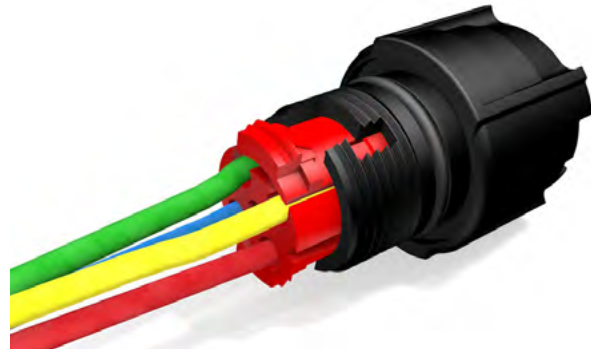
1) With the thumb and index finger, squeeze the retainer plate flaps.



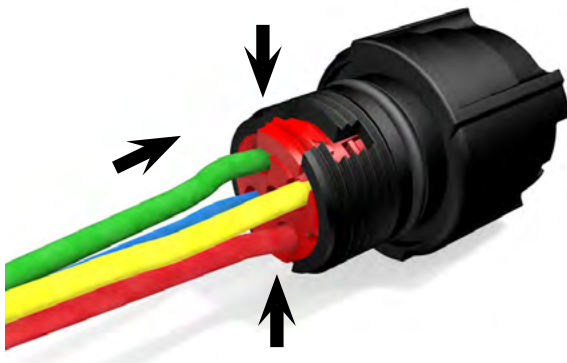
2) Pull backwards. The plate is then in the unlocked position.



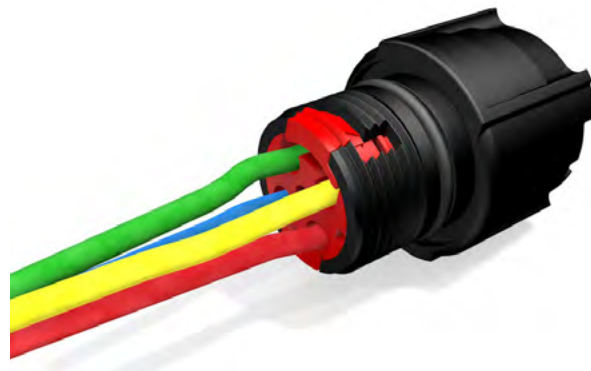
3) Fully insert the wired contact in the cavity.



4) Repeat the same procedure for the other contacts.



5) Once again squeeze the retainer plate flaps and push forward. The plate is then locked and retains the contacts



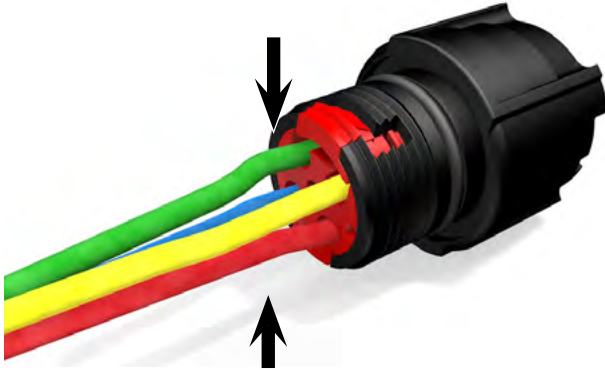
6) The plate can only be pushed back if the contacts are correctly engaged (backup security).  
90 N of retention force for contacts of 1.6 mm diameter.

## Extraction of contacts

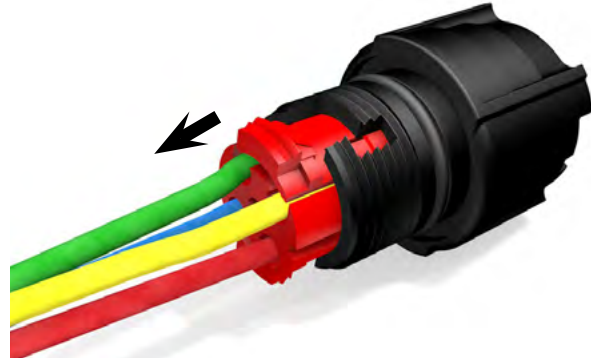
### Single wires

Contact insertion and extraction is performed without a tool thanks to the retainer plate system.

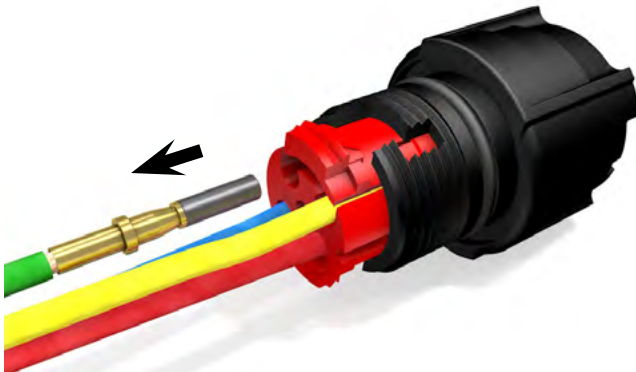
4



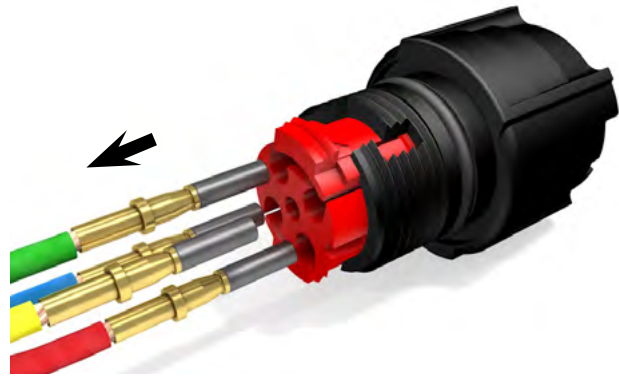
1) With the thumb and index finger, squeeze the retainer plate flaps.



2) Pull backward. The plate is then in the unlocked position.



3) Pull the contact wire. The contact comes out of the cavity.



4) Repeat the same procedure for the other contacts.



## Plug with anti-decoupling sealing gland assembly

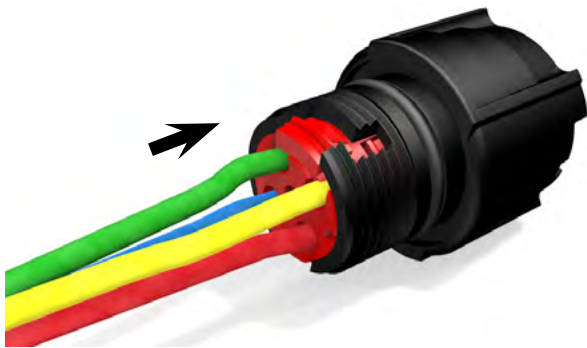
4



1) Strip external cable jacket and wires (see page 27).



2) Locate the first contact and the corresponding cavity. Unlock the retainer plate as described page 32. Fully insert the wired contact in the cavity.



3) Respect the same procedure for the other contacts. Once again squeeze the retainer plate flaps and push forward. The plate is then locked.

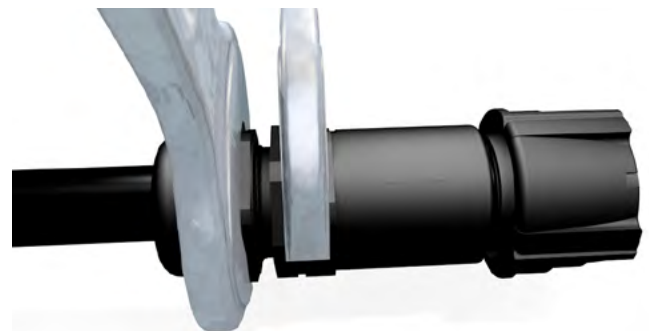
**Note:** The plate can only be pushed back if the contacts are correctly engaged (backup-security).



4) Manually fully screw the backshell on the connector. Caution. In the sealed version, don't forget the O-ring.



5) Push the cable forwards into the backshell.



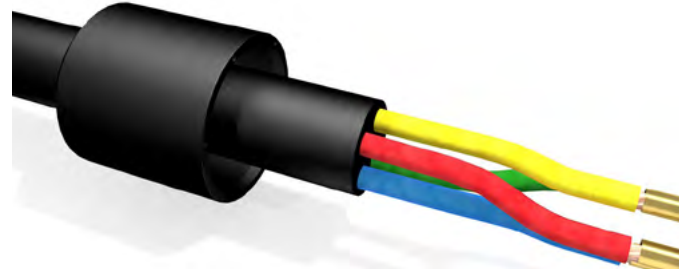
6) Fully screw on the backshell with a wrench while holding the adaptor with another wrench.



## Grommet backshell assembly



4



1) Position the O-ring at the bottom of the baknut.  
When inserting the grommet into the trust ring, make sure that the small cavity of the grommet is facing towards the exterior.

2) Run the backnut around the cable.



3) Unlock the retainer plate.



4) Position the grommet in the thrust ring, resting against the retainer plate.



5) Insert the contacts through the grommet and the retainer plate.



6) Lock the retainer plate.



7) Screw the backshell.

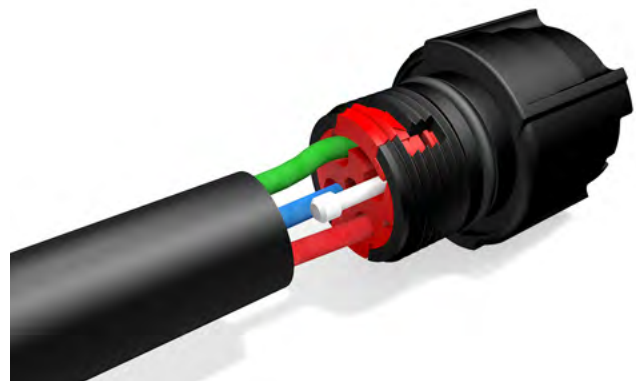
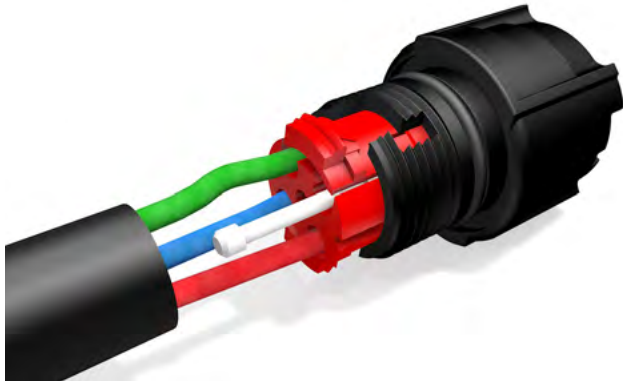
## Polarizing connector mounting

When the insert is partially filled with contacts, place polarization contact (part number: CP16SW9700) into selected hole location in the FEMALE INSERT and push in until seated.

Polarization contacts are used in the socket-cavities of standard plugs and reverse receptacles to provide keying capabilities for the **CLIPPER series**.

In order to lock the couple of chosen connectors, you have to let free the cavity in front of the polarization contact. To avoid connection with other connectors, you must insert a contact in the cavity in front of the polarization contact.

4



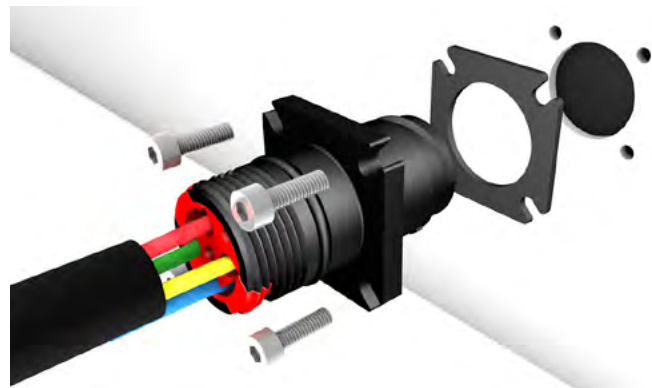
## Panel mounting

Maximum wall thickness: 4mm, 0.157 inch.

### Front mounting



### Rear mounting

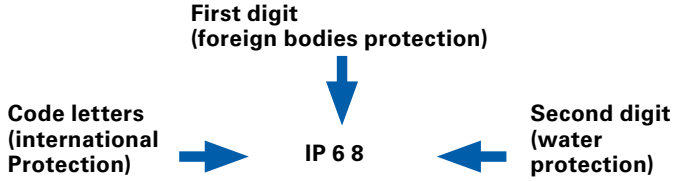


**Note:** Respect the coupling torques indicated M3 (all shells): 0.70 N.m Max

### Protection provided by an enclosure

For safety reasons, electrical equipment needs to be protected against outside influences. The basis for the determination is the standard IEC 60529. IP is a coding system that provides information regarding the accessibility of live parts against ingress of water or other foreign bodies.

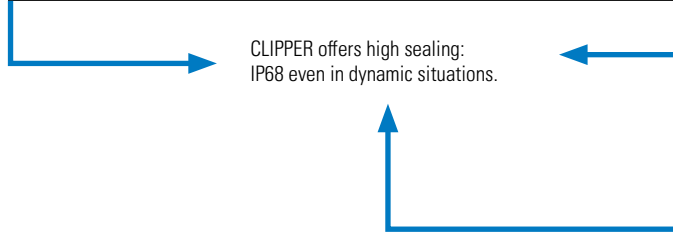
4



| 1st digit | Degree of protection  | 2nd digit | Degree of protection   |
|-----------|---|-----------|--|
| 0         | No protection against accidental contact.<br>No protection against solid foreign bodies.  | 0         | No protection against water.   |
| 1         | Protection against contact with any large area by hand and against large solid foreign bodies with a diameter bigger than 48 mm.                                    | 1         | Drip-proof.<br>Protection against vertical water drips.  |
| 2         | Protection against contact with the fingers.<br>Protection against solid foreign bodies with a diameter bigger than 12 mm.  | 2         | Drip-proof.<br>Protection against water drips up to a 15° angle.   |
| 3         | Protection against tools, wires or similar objects with a diameter bigger than 2.5 mm.<br>Protection against small solid bodies with a diameter bigger than 2.5 mm. | 3         | Spray-proof.<br>Protection against diagonal water drips up to a 60° angle.                                 |
| 4         | Same as 3 however diameter is bigger than 1 mm.   | 4         | Splash-proof.<br>Protection against splashed water from all directions.                                    |
| 5         | Full protection against contact. Protection against interior injurious dust deposits.   | 5         | Hose-proof.<br>Protection against water (out of a nozzle) from all directions.                             |
| 6         | Total protection against contact.<br>Protection against penetration of dust.  | 6         | Protection against powerful water jets .   |
|           |   | 7         | Protection against temporary immersions.   |
|           |   | 8         | Protection against water pressure.<br>Pressure and immersion time to be specified by supplier.             |
|           |   | 9K        | High pressure hose-proof.<br>Protection against high pressure water (out of a nozzle) from all directions. |

In addition to the IEC 60529 we conjointly use the ISO 20653 for the implementation of IPx9K testing:

CLIPPER offers high sealing:  
IP68 even in dynamic situations.





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