

# M Series



## Applications

Submarine : Sonars, degaussing, bulkhead  
 Subsea defense : mines, TAS  
 Underwater instrumentation : Cameras, hydrophones, diving  
 Water pollution control : Pumps, valves  
 Offshore and oceanography : ROV, subsea control, platform

## Standard

Proprietary product line



## Description

• Rugged screw coupling connectors in high corrosion resistant shells which are made in nickel aluminum bronze alloy. The design provides a very high reliability with dry mate sealing down to 2.000 meters immersion (deeper depth with special backshells). The M marine connector series is approved by VERITAS and LLOYD'S Register of shipping.

## Mechanical

| Pressures                     | Test pressure      | Insert in Teflon® |         | Insert in Kel'f® |          |
|-------------------------------|--------------------|-------------------|---------|------------------|----------|
|                               |                    | Mated             | Unmated | Mated            | Unmated  |
| Size<br>9 M                   | Test pressure      | -                 | -       | 200 bars         | 100 bars |
|                               | Operating pressure | -                 | -       | 100 bars         | 50 bars  |
| Other Sizes<br>10, 14, 20, 24 | Test pressure      | 200 bars          | 60 bars | 200 bars         | 120 bars |
|                               | Operating pressure | 100 bars          | 30 bars | 100 bars         | 60 bars  |

Connectors double watertightness can withstand higher pressures than those above (test pressure : 300 bars mated connectors).

**Note 1 :** For long unmated immersion use watertight caps.

**Note 2 :** Please consult us about higher operating pressure than those above.

**Shells :** Nickel aluminum bronze :  
 Cu A1 9 Ni 3 Fe 2, Scoop-Proof

**Inserts :** Teflon® = PTFE  
 Polytetrafluorethylene.  
 or Kel'f® = PCTFE  
 Polymonochlorotrifluorethylene  
 © Trade marks of Dupont de Nemours Inc.

**Types of contacts :** Solder unremovable except power contacts (sizes 2 and 6).

**Plating of contacts:** Gold on nickel

**Watertight washers :** Neoprene

**Polarization :** With 5 keys

**O-Rings :** Nitrile elastomer

**Endurance :** 500 cycles mating/unmating

**Free-Fall :** Connecting plug or plug harness < 1,5 m

## Electrical features

### Service rating at sea level test voltage :

- Voltage rating 1 - 1 500 Vrms 50 Hz
- Voltage rating 2 - 2 300 Vrms 50 Hz
- Voltage rating 3 - 15 000 Vrms 50 Hz

### Operation voltage :

- Voltage rating 1 - 600 Vrms 50 Hz
- Voltage rating 2 - 1 000 Vrms 50 Hz
- Voltage rating 3 - 7 000 Vrms 50 Hz

**Dielectric resistance :** ≥ 5000 megohms at 20°C and 60 % relative humidity

**Grounding resistance :** (receptacle and plug assembled) ≤ 10 mΩ at 20 °C and 60 % relative humidity

## Environmental

**Temperature range :** -20°C +70°C -68°F +158°F

**Marine environment :** 30 years ageing

### Vibrations :

From 0,1Hz to 1 Hz : amplitude = 25 mm  
 From 1Hz to 5 Hz : acceleration = 0,1 g  
 From 5Hz to 22Hz : amplitude = 1 mm  
 From 22Hz to 50Hz : acceleration = 2 g  
 Duration 1 hour on each axis

**Shocks :** Static acceleration of 120 g on each axis

**Fluids resistance :** oil, alcohol, petrol, diesel fuel, sea water

**Various gases :** natural, butane, propane, freon

**Various acids**

# M Series



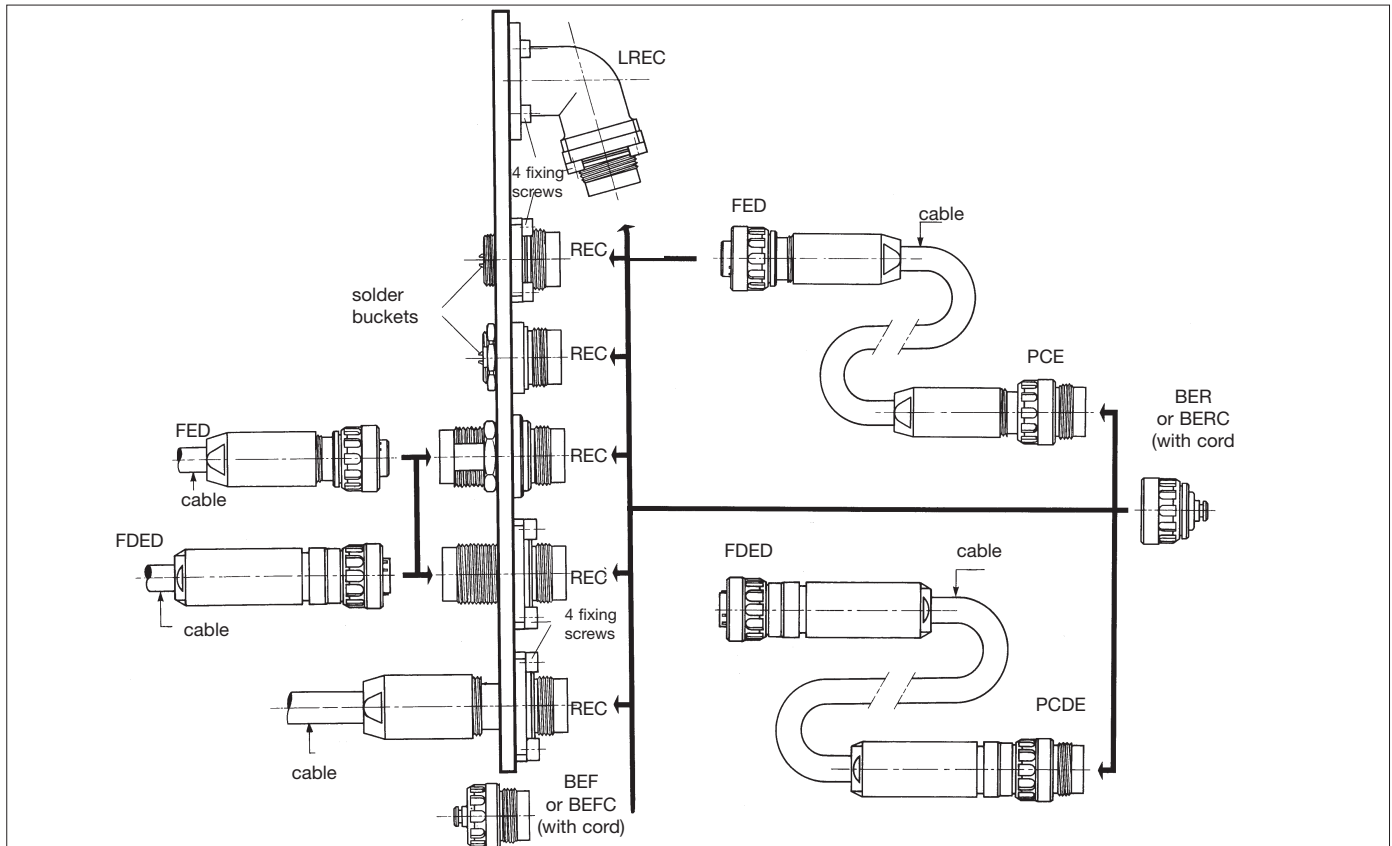
## Dimensions and electrical features of contacts

|  | Size | Ø (mm)        | Solder well Ø (mm) | Contacts               |                         | cables                           |      |      |
|--|------|---------------|--------------------|------------------------|-------------------------|----------------------------------|------|------|
|  |      |               |                    | Nominal current (Amp.) | Contact resistance (mΩ) | AWG Gauge                        |      |      |
|  |      |               |                    |                        |                         | Cross section in mm <sup>2</sup> |      |      |
| For connectors size 9M                         | 20   | 1.02          | 0.9 +0.1<br>0      | 7                      | ≤ 4                     | 22                               | 24   | 26   |
|  | 16   | 1.59          | 1.2 +0.1<br>0      | 14                     | ≤ 3                     | 0.38                             | 0.21 | 0.14 |
|  |      |               |                    |                        |                         | 20                               | 22   | 24   |
| For connectors sizes 10 M, 14 M, 20 M and 24 M | 20   | 1.02          | 0.9 +0.1<br>0      | 7                      | ≤ 4                     | 22                               | 24   | 26   |
|  | 16   | 1.59          | 1.4 +0.1<br>0      | 14                     | ≤ 3                     | 0.38                             | 0.21 | 0.14 |
|  |      |               |                    |                        |                         | 18                               | 20   | 22   |
|  | 14   | 1.93          | 1.9 +0.1<br>0      | 20                     | ≤ 2.5                   | 0.93                             | 0.60 | 0.38 |
|  |      |               |                    |                        |                         | 14                               | 16   | 18   |
|  | 12   | 2.39          | 2.3 +0.1<br>0      | 26                     | ≤ 2                     | 1.91                             | 1.34 | 0.93 |
|  |      |               |                    |                        |                         | 12                               | 14   | 16   |
|  | 6    | 5             | 6.2 +0.1<br>0      | 65                     | ≤ 1                     | 3.15                             | 1.91 | 1.30 |
|  |      |               |                    |                        |                         | 6                                | 8    | 10   |
|  | 2    | 7             | 9.0 +0.1<br>0      | 115                    | ≤ 0.6                   | 13.4                             | 8.43 | 5.15 |
| 2  |      |               |                    |                        |                         | 4                                | 6    |      |
| TX 50  | 3    | 2.6 +0.1<br>0 | 26                 | ≤ 2                    | 34.5                    | 21.8                             | 13.4 |      |
| TX 75  | 1.59 | 1.4 +0.1<br>0 | 14                 | ≤ 3                    | Consult us              |                                  |      |      |
|  |      |               |                    |                        | Consult us              |                                  |      |      |

## General configuration

- FED : plug with single watertightness
- PCE : cable connecting plug with single watertightness
- FDED : plug with double watertightness
- PCDE : cable connecting plug with double watertightness
- TER : jam-nut bulkhead
- TEC : square flange bulkhead

- RER : jam-nut receptacle
- REC : square flange receptacle
- BEF : sealing cap for plug
- BER : sealing cap for receptacle or cable connecting plug
- LREC : 105° elbow mounting
- REC-SC : cable clamp receptacle



# M Series










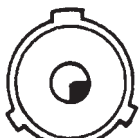
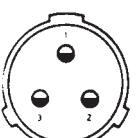




## Ordering information

|   |  |            |          |             |          |              |          |            |
|---|--|------------|----------|-------------|----------|--------------|----------|------------|
| <b>shell</b>                                  | <b>FED</b> - straight plug/single watertightness<br><b>PCE</b> - cable connecting plug/single watertightness<br><b>FDED</b> - straight plug/double watertightness<br><b>PCDE</b> - cable connecting plug/double watertightness<br><b>TEC</b> - square flange bulkhead<br><b>RER</b> - round flange receptacle<br><b>REC</b> - square flange receptacle<br><b>TER</b> - feed through bulkhead<br><b>REC-SC</b> - cable clamp square flange receptacle | <b>FED</b> | <b>M</b> | <b>24 M</b> | <b>T</b> | <b>48.16</b> | <b>M</b> | <b>265</b> |
| <b>contacts</b>                               | <b>M</b> - pin<br><b>F</b> - socket<br>1- pins and sockets for feed through bulkheads  |            |          |             |          |              |          |            |
| <b>shell size</b>                             | <b>9 M</b><br><b>10 M</b><br><b>14 M</b><br><b>20 M</b><br><b>24 M</b>   |            |          |             |          |              |          |            |
| <b>insulating material</b>                    | <b>T</b> - teflon<br><b>K</b> - kel'f  |            |          |             |          |              |          |            |
| <b>contact layouts</b>                        | - see table page below   |            |          |             |          |              |          |            |
| <b>part number of cable clamp accessories</b> | - see table page 250<br>nothing for RER - REC and TER  |            |          |             |          |              |          |            |
| <b>outside maximum diameter</b>               | - of cable (in 1/10th of mm)<br>- for standard cables mention maximum diameter of the specification<br>- for double watertightness version mention diameter on inner sheath too<br>- nothing for RER - REC and TER   |            |          |             |          |              |          |            |

**Example :** To order a cable connecting plug size 20M with Teflon insulating insert, 16 pins size 12 and standard cable clamp without grounding for cable outside diameter 22.6 mm give part number : PCE M 20 M. T. 16-12. A. 226

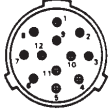



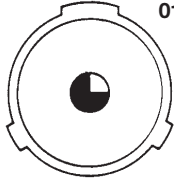

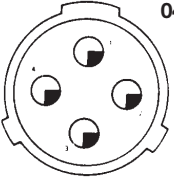
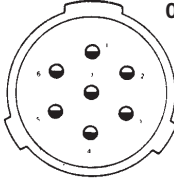
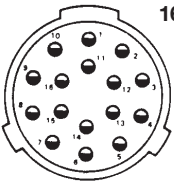
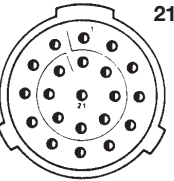
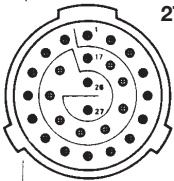
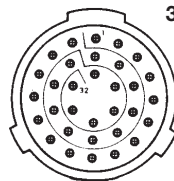
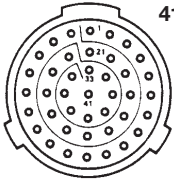
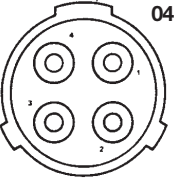
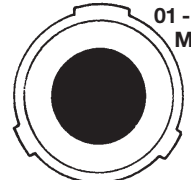
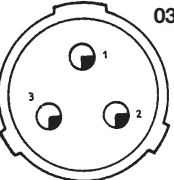
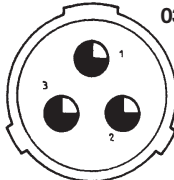
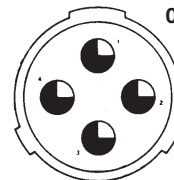
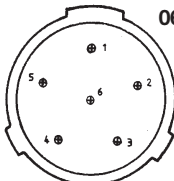
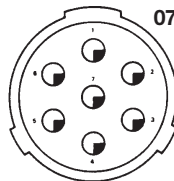
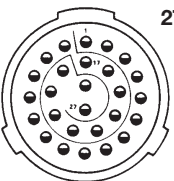
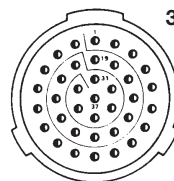
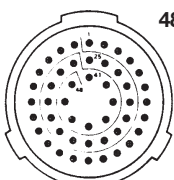
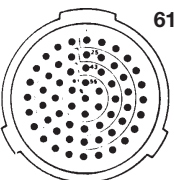
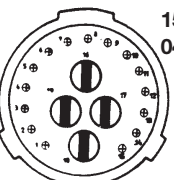
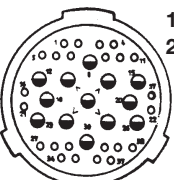
## Contact layouts

|             |  |   |   |  |
|-------------|--|---|---|--|
| <b>9 M</b>  |  <b>04 - 16</b><br>4 contacts size 16<br>voltage rating : 2 300 V |  <b>07 - 20</b><br>7 contacts size 20<br>voltage rating : 1 500 V                    |   |  |
|             |  <b>02 - 14</b><br>2 contacts size 14<br>voltage rating : 2 300 V |  <b>03 - 14</b><br>3 contacts size 14<br>voltage rating : 2 300 V                    |  <b>04 - 16</b><br>4 contacts size 16<br>voltage rating : 2 300 V |  <b>05 - 16</b><br>5 contacts size 16<br>voltage rating : 1 500 V |
| <b>10 M</b> |  <b>07 - 20</b><br>7 contacts size 20<br>voltage rating : 1 500 V |  <b>1C - 50</b><br><b>1C - 75</b><br>1 COAX 50 Ω or 75 Ω<br>voltage rating : 1 500 V |  <b>01 - HT</b><br>1 high voltage<br>voltage rating : 15 000 V   |  |
|             |  <b>01 - 06</b><br>1 contact size 06<br>voltage rating : 2 300 V  |  <b>03 - 12</b><br>3 contacts size 12<br>voltage rating : 2 300 V                    |  <b>04 - 12</b><br>4 contacts size 12<br>voltage rating : 2 300 V |  <b>07 - 14</b><br>7 contacts size 14<br>voltage rating : 2 300 V |
| <b>14 M</b> |  |   |   |  |

# M Series



## Contact layouts

|      |   |  |  |  |
|------|---|--|--|--|
| 14 M |  <p><b>12 - 16</b></p> <p>12 contacts size 16<br/>voltage rating : 2 300 V</p>                               |  <p><b>19 - 20</b></p> <p>19 contacts size 20<br/>voltage rating : 1 500 V</p>        |  <p><b>1 C - 50</b></p> <p>1 COAX 50 <math>\Omega</math><br/>voltage rating : 2 300 V</p>  |  <p><b>TX - 50<br/>or<br/>TX - 75</b></p> <p>1 TRIAX 50 <math>\Omega</math> or 75 <math>\Omega</math><br/>voltage rating : 2 300 V</p>    |
|      |  <p><b>01 - 02</b></p> <p>1 contact size 2<br/>voltage rating : 2 300 V</p>                                  |  <p><b>03 - 06</b></p> <p>3 contacts size 6<br/>voltage rating : 2 300 V</p>          |  <p><b>04 - 06</b></p> <p>4 contacts size 6<br/>voltage rating : 2 300 V</p>   |  <p><b>07 - 12</b></p> <p>7 contacts size 12<br/>voltage rating : 2 300 V</p>   |
| 20 M |  <p><b>16 - 12</b></p> <p>16 contacts size 12<br/>voltage rating : 2 300 V</p>                               |  <p><b>21 - 14</b></p> <p>21 contacts size 14<br/>voltage rating : 1 500 V</p>        |  <p><b>27 - 16</b></p> <p>27 contacts size 16<br/>voltage rating : 1 500 V</p>   |  <p><b>32 - 16</b></p> <p>32 contacts size 16<br/>voltage rating : 1 500 V</p>  |
|      |  <p><b>41 - 20</b></p> <p>41 contacts size 20<br/>voltage rating : 1 500 V</p>                             |  <p><b>04 - HT</b></p> <p>4 contacts high voltage<br/>voltage rating : 15 000 V</p> |  |  |
|      |   |  |  |  |
| 24 M |  <p><b>01 - 120<br/>MC</b></p> <p>1 contact cross section 120 mm<sup>2</sup><br/>nominal current 600 A</p> |  <p><b>03 - 06</b></p> <p>3 contacts size 6<br/>voltage rating : 2 300 V</p>        |  <p><b>03 - 02</b></p> <p>3 contacts size 2<br/>voltage rating : 2 300 V</p>   |  <p><b>04 - 02</b></p> <p>4 contacts size 2<br/>voltage rating : 2 300 V</p>  |
|      |  <p><b>06 - 16</b></p> <p>6 contacts size 16<br/>voltage rating : 3 000 V</p>                              |  <p><b>07 - 06</b></p> <p>7 contacts size 6<br/>voltage rating : 2 300 V</p>        |  <p><b>27 - 12</b></p> <p>27 contacts size 12<br/>voltage rating : 2 300 V</p>   |  <p><b>37 - 14</b></p> <p>37 contacts size 14<br/>voltage rating : 2 300 V</p>  |
|      |  <p><b>48 - 16</b></p> <p>48 contacts size 16<br/>voltage rating : 1 500 V</p>                             |  <p><b>61 - 16</b></p> <p>61 contacts size 16<br/>voltage rating : 1 500 V</p>      |  <p><b>15 - 16<br/>04 - 10</b></p> <p>15 contacts size 16 and 4 contacts size 10<br/>voltage rating : 1 500 V - insulator in kel'f</p> |  <p><b>13 - 12<br/>24 - 20</b></p> <p>13 contacts size 12 and 24 contacts size 20<br/>voltage rating : 1 500 V - insulator in kel'f</p> |

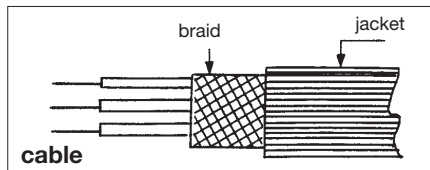
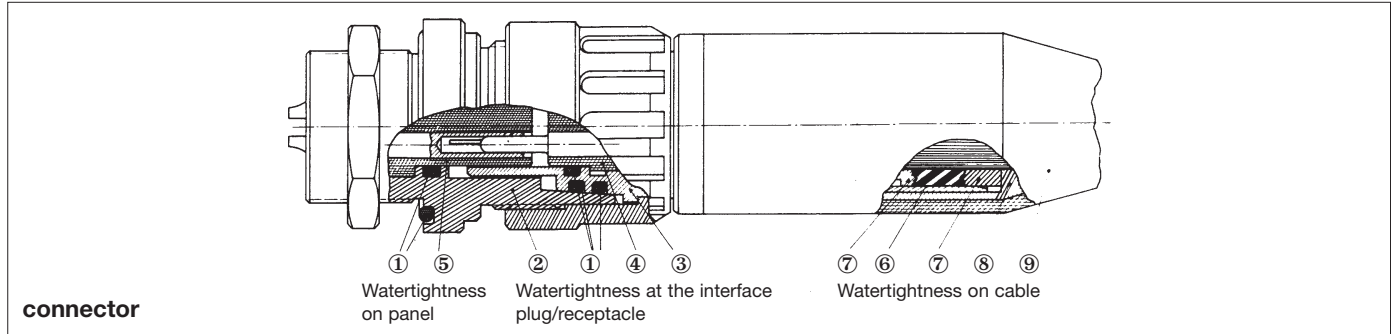
# M Series



## The M Series offer two versions :

- Single watertightness for cables with single jacket
- Double watertightness for cables with inner and outer sheaths

### Single Watertightness on outer sheath :



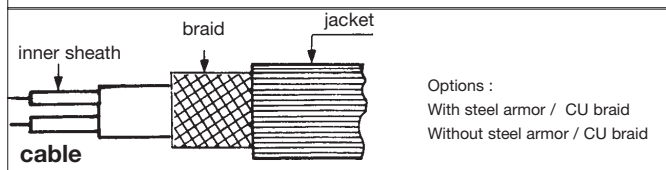
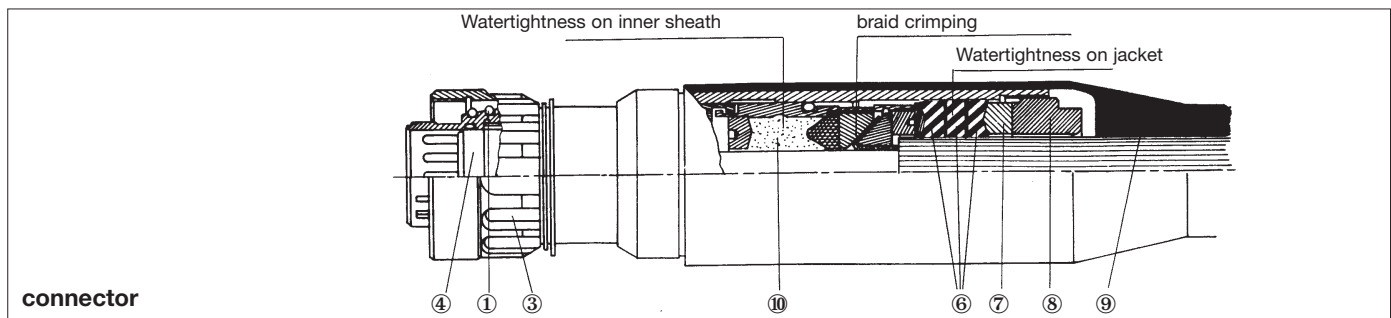
Options : With steel armor / CU braid  
Without steel armor / CU braid

- The M Series Single watertightness connectors are available in 5 standard sizes, 9M, 10M, 14M, 20M and 24M. 100 % watertightness is achieved by both o-rings and packing washers inside the metal housings. The packing washers offer waterproofing independently of the cable clamps so that a brutal traction on the cable cannot reduce the watertightness.
- Since the watertightness is not achieved through overmolding or heat vulcanization the assembling of connectors can be made outside

- workshop on the spot when necessary.
- The main parts achieving watertightness can be seen on fig. 1.
  - O-rings (1) are located on receptacles (2), plugs (3) and pin and socket inserts (4) and (5).
  - The packing washer (6) is compressed by metal washers (7) through screwing of the rear tightening metal sleeve (8).
  - The neoprene boot is intended to limit the cable radius curvature.

### Double Watertightness on inner and outer sheaths

- FDED straight plug
- PCDE cable connecting plug



Options :  
With steel armor / CU braid  
Without steel armor / CU braid

- The M Series double watertightness connectors are available in 3 sizes 14M, 20M and 24M. The watertightness is ensured at two levels :
  - on the outer jacket
  - on the inner sheath.
 Mechanical cable strength is provided by :
  - a mechanical capture of the braid armor
  - a clamping thanks to a metal clamping sleeve on sheath in the event there is no armour.

- The main parts achieving watertightness at the level of the plug can be seen on fig. 2.
  - On the outer jacket, packing washer (6) are compressed by metal tightening sleeve (8).
  - On the inner sheath, compound injection inside a compounding housing (10) ensures a second watertightness level (watertightness relay).
  - The neoprene boot (9) has the same roles as preceding version.

**Note :** The two versions are compatible with in the following standard M series shells :

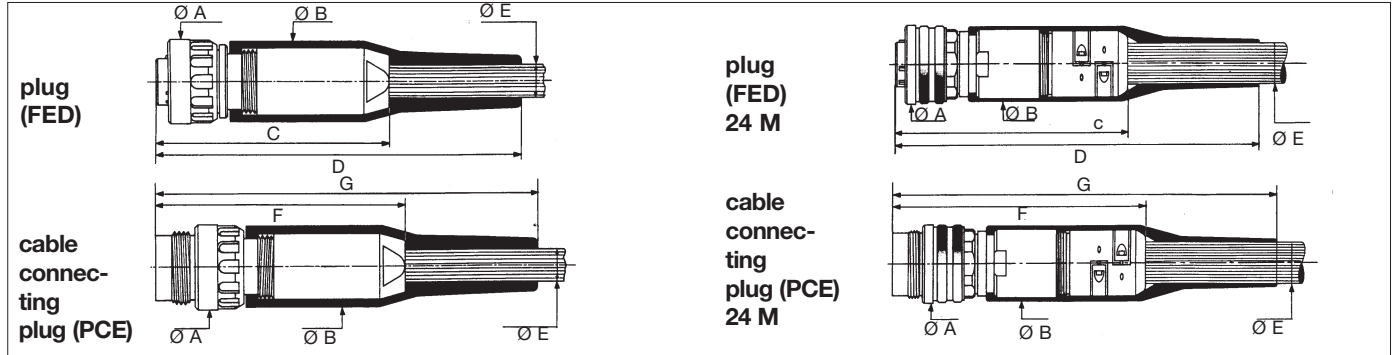
- RER receptacle with round flange, front fitting and rear axial nut
- REC receptacle with square flange, front fitting with 4 screws
- TER bulkhead with round flange, front fitting and rear axial nut
- TEC bulkhead with square flange

# M Series



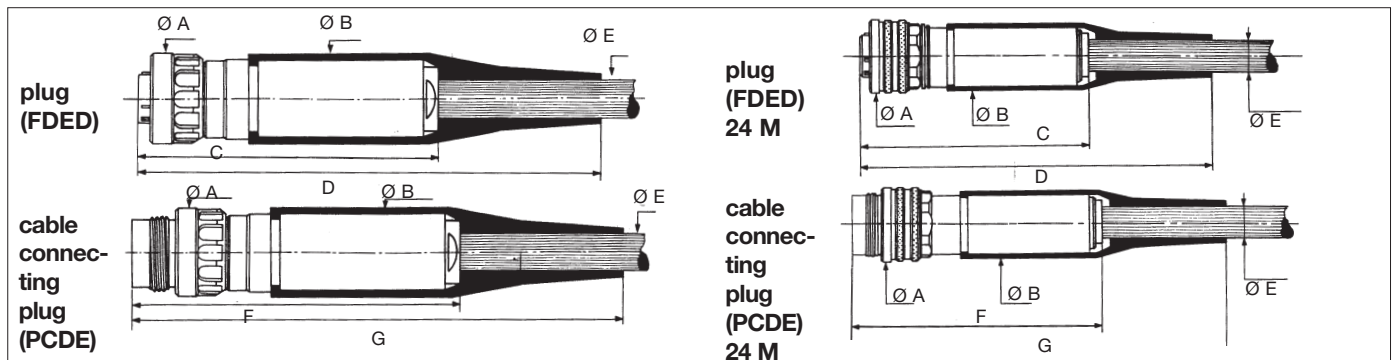
## Dimensions

### Single watertightness version



| Shell size | Ø A            | Ø B            | Ø C             | Ø D              | Ø E Max        | Ø F             | Ø G              |
|------------|----------------|----------------|-----------------|------------------|----------------|-----------------|------------------|
| 9 M        | 20.00<br>.787  | 18.00<br>.709  | 53.00<br>2.087  | 79.00<br>3.110   | 6.20<br>.244   | 57.00<br>2.244  | 83.00<br>3.268   |
| 10 M       | 24.50<br>.965  | 21.00<br>.827  | 72.00<br>2.835  | 110.00<br>4.331  | 13.00<br>.512  | 81.50<br>3.209  | 119.00<br>4.685  |
| 14 M       | 33.50<br>1.319 | 30.00<br>1.181 | 90.00<br>3.543  | 144.00<br>5.669  | 16.00<br>.630  | 99.50<br>3.917  | 153.00<br>6.024  |
| 20 M       | 46.00<br>1.811 | 42.00<br>1.654 | 114.00<br>4.488 | 186.00<br>7.323  | 26.00<br>1.024 | 126.00<br>4.961 | 198.00<br>7.795  |
| 24 M       | 68.00<br>2.677 | 62.00<br>2.441 | 200.00<br>7.874 | 310.00<br>12.205 | 31.00<br>1.220 | 220.00<br>8.661 | 330.00<br>12.992 |

### Double watertightness version

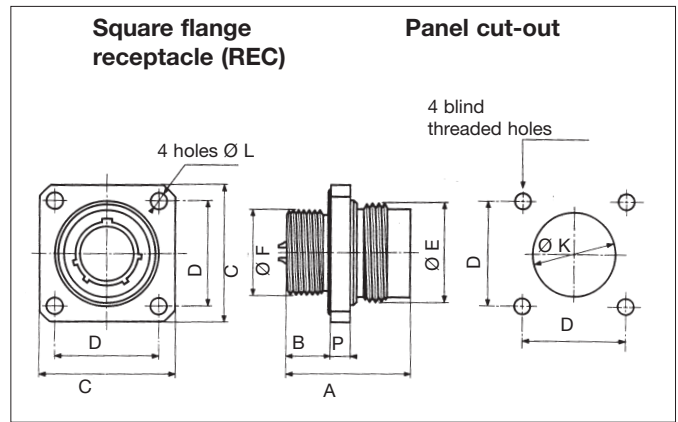
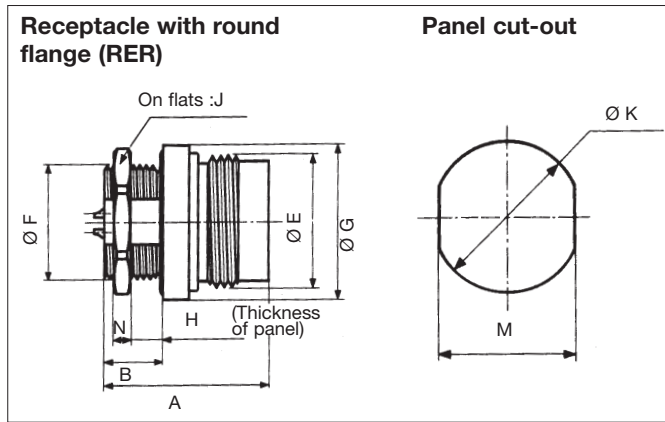


| Shell size | Ø A            | Ø B            | Ø C             | Ø D              | Ø E Max        | Ø F             | Ø G              |
|------------|----------------|----------------|-----------------|------------------|----------------|-----------------|------------------|
| 14 M       | 33.50<br>1.319 | 33.50<br>1.319 | 115.00<br>4.528 | 188.00<br>7.402  | 16.00<br>.630  | 124.00<br>4.882 | 197.00<br>7.756  |
| 20 M       | 46.00<br>1.811 | 51.00<br>2.008 | 185.00<br>7.283 | 275.00<br>10.827 | 22.00<br>.866  | 197.00<br>7.756 | 287.00<br>11.299 |
| 24 M       | 68.00<br>2.677 | 56.50<br>2.224 | 200.00<br>7.874 | 310.00<br>12.205 | 28.50<br>1.122 | 220.00<br>8.661 | 330.00<br>12.992 |

# M Series

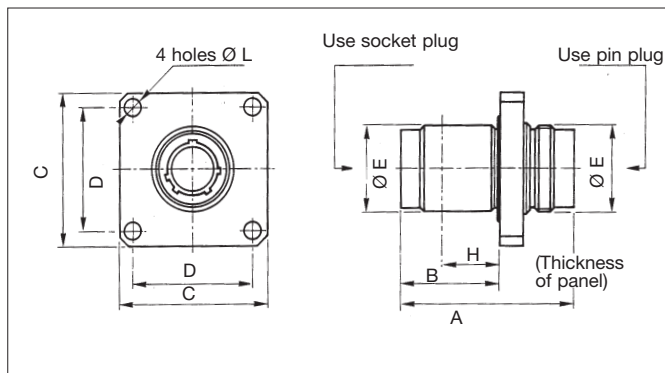


## Receptacle with round flange (RER)

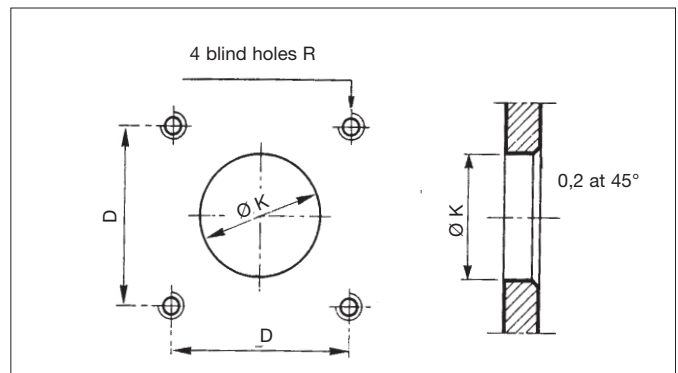


| Shell size | A              | B             | B1            | C              | D              | E          | F           | F1             | G              | H<br>Max      | J              | K              | L            | M              | N            | P            | Q               | R   |
|------------|----------------|---------------|---------------|----------------|----------------|------------|-------------|----------------|----------------|---------------|----------------|----------------|--------------|----------------|--------------|--------------|-----------------|-----|
| 9 M        | 22.00<br>.866  | 6.50<br>.256  | 7.50<br>.295  | 29.00<br>1.142 | 20.00<br>.787  | M 17x0.7   | M 13x0.7    | 13.00<br>.512  | 20.00<br>.787  | 4.00<br>.157  | 15.00<br>.591  | 13.20<br>.520  | 4.50<br>.177 | 12.10<br>.476  | 3.00<br>.118 | 4.00<br>.157 | 40.50<br>1.594  | M 4 |
| 10 M       | 37.00<br>1.457 | 14.00<br>.551 | 14.00<br>.551 | 32.00<br>1.260 | 24.00<br>.945  | M 21 x 1   | M 18x0.75   | 18.00<br>.709  | 25.00<br>.984  | 10.00<br>.394 | 22.00<br>.866  | 18.20<br>.717  | 4.20<br>.165 | 16.20<br>.638  | 4.00<br>.157 | 5.00<br>.197 | 42.50<br>1.673  | M 4 |
| 14 M       | 37.00<br>1.457 | 13.00<br>.512 | 13.00<br>.512 | 40.00<br>1.575 | 31.00<br>1.220 | M 29 x 1   | M 25 x 0.75 | 25.00<br>.984  | 34.00<br>1.339 | 9.00<br>.354  | 30.00<br>1.181 | 25.20<br>.992  | 5.20<br>.205 | 23.20<br>.913  | 4.00<br>.157 | 6.00<br>.236 | 53.50<br>2.106  | M 5 |
| 20 M       | 49.50<br>1.949 | 17.00<br>.669 | 17.00<br>.669 | 52.00<br>2.047 | 42.00<br>1.654 | M 41 x 1   | M 36 x 1    | 36.00<br>1.417 | 46.00<br>1.811 | 12.00<br>.472 | 41.00<br>1.614 | 36.20<br>1.425 | 6.30<br>.248 | 33.20<br>1.307 | 5.00<br>.197 | 8.00<br>.315 | 70.50<br>2.776  | M 6 |
| 24 M       | 58.00<br>2.283 | 20.00<br>.787 | 20.00<br>.787 | 76.00<br>2.992 | 60.00<br>2.362 | M 56 x 1.5 | M 46 x 1.5  | 46.00<br>1.811 | 64.00<br>2.520 | 14.00<br>.551 | 56.00<br>2.205 | 46.20<br>1.819 | 8.50<br>.335 | 42.20<br>1.661 | 6.00<br>.236 | 9.00<br>.354 | 100.50<br>3.957 | M 8 |

## Square flange bulkhead (TEC)



## Panel cut-out



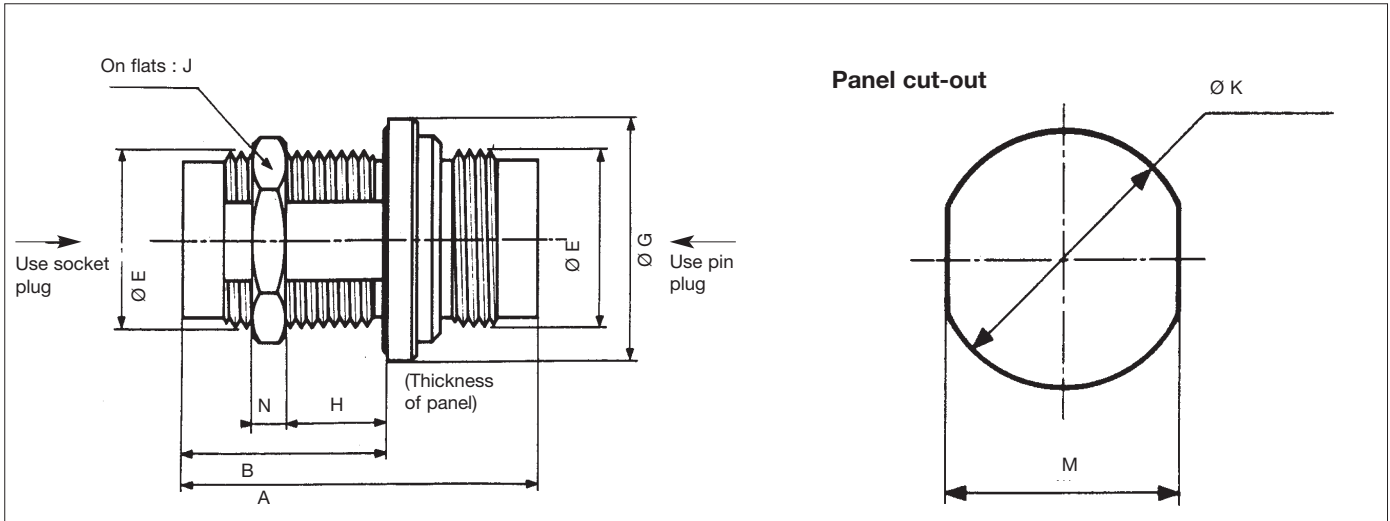
| Shell size | A              | B              | C              | D ±0,1         | E              | H Maxi         | K 0,1          | L            | R   |
|------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|-----|
| 10 M       | 60.00<br>2.362 | 35.50<br>1.398 | 40.00<br>1.575 | 31.00<br>1.220 | 21.00<br>.827  | 20.00<br>.787  | 21.20<br>.835  | 5.30<br>.209 | M 5 |
| 14 M       | 60.00<br>2.362 | 34.50<br>1.358 | 52.00<br>2.047 | 42.00<br>1.654 | 29.00<br>1.142 | 20.00<br>.787  | 29.20<br>1.150 | 6.30<br>.248 | M 6 |
| 20 M       | 82.00<br>3.228 | 47.50<br>1.870 | 76.00<br>2.992 | 60.00<br>2.362 | 41.00<br>1.614 | 27.00<br>1.063 | 41.20<br>1.622 | 8.50<br>.335 | M 8 |



# M Series

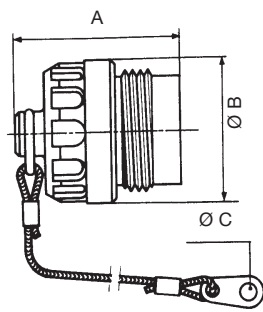


## Jam-nut bulkhead (TER)

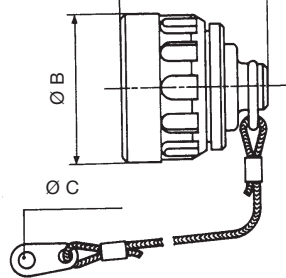


| Shell size  | A              | B              | E        | G              | H Maxi        | J              | M              | K              | N            |
|-------------|----------------|----------------|----------|----------------|---------------|----------------|----------------|----------------|--------------|
| <b>9 M</b>  | 50.00<br>1.969 | 34.00<br>1.339 | M 17 x1  | 23.00<br>.906  | 20.00<br>.787 | 20.00<br>.787  | 14.20<br>.559  | 17.20<br>.677  | 4.00<br>.157 |
| <b>10 M</b> | 60.00<br>2.362 | 35.50<br>1.398 | M 21 x1  | 28.00<br>1.102 | 16.00<br>.630 | 24.00<br>.945  | 19.20<br>.756  | 21.20<br>.835  | 4.00<br>.157 |
| <b>14 M</b> | 60.00<br>2.362 | 34.50<br>1.358 | M 29 x 1 | 40.00<br>1.575 | 14.00<br>.551 | 34.00<br>1.339 | 27.20<br>1.071 | 29.20<br>1.150 | 5.00<br>.197 |
| <b>20 M</b> | 82.00<br>3.228 | 47.50<br>1.870 | M 41 x 1 | 52.00<br>2.047 | 22.00<br>.866 | 46.00<br>1.811 | 39.20<br>1.543 | 41.20<br>1.622 | 6.00<br>.236 |
| <b>24 M</b> | 98.00<br>3.858 | 57.00<br>2.244 | M 56x1.5 | 70.00<br>2.756 | 24.00<br>.945 | 63.00<br>2.480 | 50.20<br>1.976 | 56.20<br>2.213 | 8.00<br>.315 |

### Plug cap (BEFC)

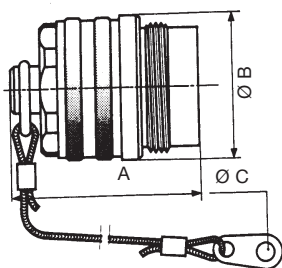


### Receptacle and cable connecting plug cap (BERC)

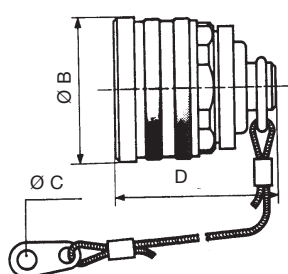


| Shell size  | PART NUMBER |              |                                     |              |
|-------------|-------------|--------------|-------------------------------------|--------------|
|             | Plug        |              | Receptacle or cable connecting plug |              |
|             | with cord   | without cord | with cord                           | without cord |
| <b>9 M</b>  | BEFC - 9 M  | BEF - 9 M    | BERC - 9 M                          | BER - 9 M    |
| <b>10 M</b> | BEFC - 10 M | BEF - 10 M   | BERC - 10 M                         | BER - 10 M   |
| <b>14 M</b> | BEFC - 14 M | BEF - 14 M   | BERC - 14 M                         | BER - 14 M   |
| <b>20 M</b> | BEFC - 20 M | BEF - 20 M   | BERC - 20 M                         | BER - 20 M   |
| <b>24 M</b> | BEFC - 24 M | BEF - 24 M   | BERC - 24 M                         | BER - 24 M   |

### Watertight cap for plug FED-24 M



### Watertight cap for round (RER) and square (REC-24 M) receptacles



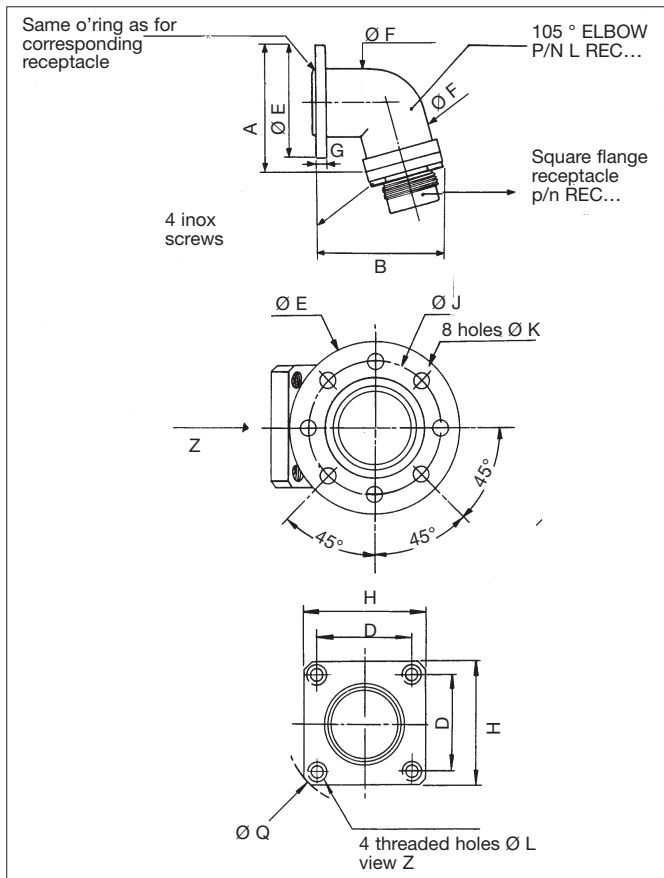
| Shell size  | A           | B                                  | C           | D             |
|-------------|-------------|------------------------------------|-------------|---------------|
| <b>9 M</b>  | 30<br>1.181 | 21<br>.827                         | 4.2<br>.165 | 27<br>1.063   |
| <b>10 M</b> | 39<br>1.535 | 24<br>.945                         | 4.2<br>.165 | 34<br>1.339   |
| <b>14 M</b> | 40<br>1.575 | 34<br>1.339                        | 4.2<br>.165 | 34<br>1.339   |
| <b>20 M</b> | 51<br>2.008 | 46<br>1.811                        | 4.2<br>.165 | 48.5<br>1.909 |
| <b>24 M</b> | 71<br>2.795 | BEF 64<br>2.520<br>BER 68<br>2.677 | 4.2<br>.165 | 69<br>2.717   |



# M Series

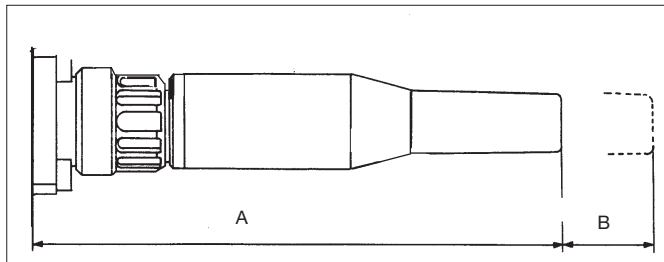


## 105 ° Elbow mounting



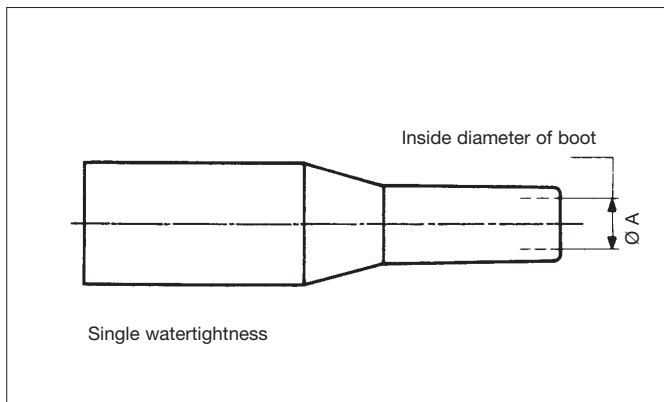
| Shell sizes | A                      | B            | D           | E            | F           | G         | H           | J             | K           | L   | Q             | Part number |
|-------------|------------------------|--------------|-------------|--------------|-------------|-----------|-------------|---------------|-------------|-----|---------------|-------------|
| <b>9 M</b>  | Please consult factory |              |             |              |             |           |             |               |             |     |               |             |
| <b>10 M</b> | 49<br>1.929            | 55<br>2.165  | 24<br>.945  | 42<br>1.654  | 24<br>.945  | 5<br>.197 | 32<br>1.260 | 34<br>1.339   | 4.2<br>.165 | M 4 | 42.5<br>1.673 | L-REC-10 M  |
| <b>14 M</b> | 58<br>2.283            | 66<br>2.598  | 31<br>1.220 | 53<br>2.087  | 33<br>1.299 | 6<br>.236 | 40<br>1.575 | 44<br>1.732   | 5.2<br>.205 | M 5 | 53.5<br>2.106 | L-REC-14 M  |
| <b>20 M</b> | 83<br>3.268            | 86<br>3.386  | 42<br>1.654 | 72<br>2.835  | 45<br>1.772 | 8<br>.315 | 52<br>2.047 | 59.5<br>2.343 | 6.3<br>.248 | M 6 | 70.5<br>2.776 | L-REC-20 M  |
| <b>24 M</b> | 122<br>4.803           | 123<br>4.843 | 60<br>2.362 | 102<br>4.016 | 60<br>2.362 | 9<br>.354 | 76<br>2.992 | 84.9<br>3.343 | 8.3<br>.327 | M 8 |               | L-REC-24 M  |

## Mated connectors



|                                | Shell size | 9 M  | 10 M | 14 M | 20 M | 24 M |
|--------------------------------|------------|------|------|------|------|------|
|                                |            | (mm) | (mm) | (mm) | (mm) | (mm) |
| Single water-tightness version | A          | 84   | 115  | 150  | 195  | 315  |
|                                | B          | 13   | 21   | 21   | 27   | 35   |
| Double water-tightness version | A          | -    | -    | 193  | 283  | 315  |
|                                | B          | -    | -    | 21   | 27   | 35   |

## Inside diameters and part numbers of protection boots

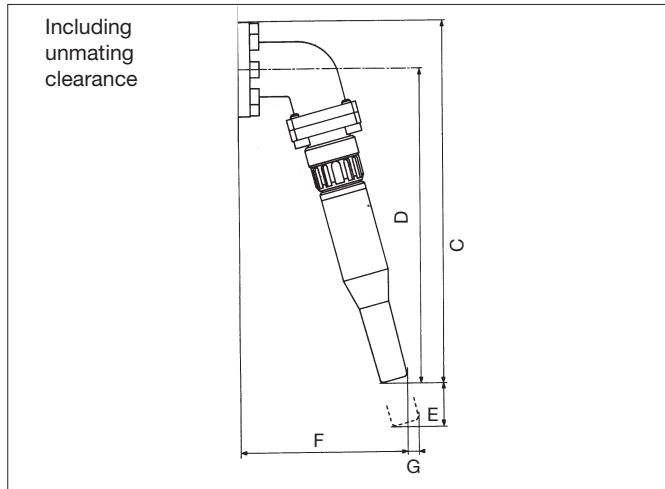


| Shell size | Ø Cable | FOR OTHER DIAMETERS PLEASE CONSULT US |                           |                            |                            |                            |
|------------|---------|---------------------------------------|---------------------------|----------------------------|----------------------------|----------------------------|
|            |         | 6 to 7                                | 7 to 8.5                  | 8.5 to 10                  | 10 to 13                   |                            |
| 9 M        | A       | 4 to 6.2<br>.157 to .244              |                           |                            |                            |                            |
|            |         | 5<br>.197                             |                           |                            |                            |                            |
|            | P.N     | MDP 9 M 050                           |                           |                            |                            |                            |
| 10 M       | Ø Cable | 6 to 7<br>.236 to .276                | 7 to 8.5<br>.276 to .335  | 8.5 to 10<br>.335 to .394  | 10 to 13<br>.394 to .512   |                            |
|            | A       | 5<br>.197                             | 6.8<br>.268               | 8.5<br>.335                | 10<br>.394                 |                            |
|            | P.N     | MDP 10 M 050                          | MDP 10 M 068              | MDP 10 M 085               | MDP 10 M 100               |                            |
| 14 M       | Ø Cable | 9 to 11<br>.354 to .433               | 11 to 13<br>.433 to .512  | 13 to 15<br>.512 to .591   | 15 to 16<br>.591 to .630   |                            |
|            | A       | 9<br>.354                             | 11<br>.433                | 13<br>.512                 | 15<br>.591                 |                            |
|            | P.N     | MDP 14 M 090                          | MDP 14 M 110              | MDP 14 M 130               | MDP 14 M 150               |                            |
| 20 M       | Ø Cable | 16 to 19<br>.630 to .748              | 19 to 23<br>.748 to .906  | 23 to 25<br>.906 to .984   | 25 to 26<br>.984 to 1.024  |                            |
|            | A       | 16<br>.630                            | 19<br>.748                | 22<br>.866                 | 25<br>.984                 |                            |
|            | P.N     | MDP 20 M 160                          | MDP 20 M 190              | MDP 20 M 220               | MDP 20 M 250               |                            |
| 24 M       | Ø Cable | 20 to 24<br>.787 to .945              | 24 to 27<br>.945 to 1.063 | 27 to 28<br>1.063 to 1.102 | 28 to 29<br>1.102 to 1.142 | 29 to 31<br>1.142 to 1.220 |
|            | A       | 20<br>.787                            | 23<br>.906                | 26<br>1.024                | 27.5<br>1.083              | 29<br>1.142                |
|            | P.N     | MDP 24 M 200                          | MDP 24 M 230              | MDP 24 M 260               | MDP 24 M 275               | MDP 24 M 290               |

# M Series



## Mated connectors with 105° elbow mounting



|                               | Shell size | C                      | D             | E            | F            | G         |
|-------------------------------|------------|------------------------|---------------|--------------|--------------|-----------|
| Single watertightness version | 9 M        | Please consult factory |               |              |              |           |
|                               | 10 M       | 150<br>5.906           | 134<br>5.276  | 18.5<br>.728 | 68<br>2.677  | 5<br>.197 |
|                               | 14 M       | 194<br>7.638           | 174<br>6.850  | 18.5<br>.728 | 84<br>3.307  | 5<br>.197 |
|                               | 20 M       | 256<br>10.079          | 230<br>9.055  | 25<br>.984   | 110<br>4.331 | 7<br>.276 |
|                               | 24 M       | 403<br>15.866          | 365<br>14.370 | 32<br>1.260  | 166<br>6.35  | 9<br>.354 |
| Double watertightness version | 14 M       | 236<br>9.291           | 216<br>8.504  | 18.5<br>.728 | 92<br>3.622  | 5<br>.197 |
|                               | 20 M       | 323<br>12.717          | 297<br>11.693 | 25<br>.984   | 128<br>5.039 | 7<br>.276 |
|                               | 24 M       | 423<br>16.654          | 385<br>15.157 | 32<br>1.260  | 171<br>6.732 | 9<br>.354 |

## Cable clamping accessories

|                       | PART NUMBER | DESCRIPTION  | 9 M                         | 10 M  | 14 M                            | 20 M                             | 24 M                        |
|-----------------------|-------------|--|-----------------------------|---|---------------------------------|----------------------------------|-----------------------------|
| SINGLE WATERTIGHTNESS | A           | Standard cable clamp without grounding or armor crimping                                       | Ø 4 to 6.2<br>.157 to 0.244 | Ø 5 to 11<br>.197 to .244                         | Ø 9 to 16<br>.354 to .433       | Ø 16 to 26<br>.630 to 1.024      | Ø 20 to 31<br>.787 to 1.220 |
|                       | B           | Standard cable clamp with grounding or armor crimping  | Ø 6.2<br>.244               | Ø 5 to 11<br>.197 to .433                         | Ø 9 to 16<br>.354 to .630       |                                  |                             |
|                       | D           | Crimp spacing sleeve for multipin insert with grounding or armor crimping                      |                             | Ø 11 to 13<br>.433 to .512                        |                                 |                                  |                             |
|                       | E           | Cable clamping sleeve with ligarex and grounding or armor crimping                             |                             | O.D. 9.2/.362<br>O.D. 10.8/.425<br>O.D. 11.8/.465 |                                 |                                  |                             |
|                       | G           | Cable clamping sleeve with 2 half collars with grounding or armor crimping                     |                             |   |                                 | O.D.<br>16 to 20<br>.630 to .787 |                             |
|                       | H           | Cable clamp for coaxial cable  |                             | RG 59 BU<br>RG 213 U<br>RG 11 AU                  | O.D.<br>16<br>.630              |                                  |                             |
|                       | J           | Cable clamp for triaxial cable   |                             | consult us  | consult us                      |                                  |                             |
|                       | K           | Cable clamp for high voltage   |                             | O.D. 11.5<br>.453<br>DSM 40                       | O.D. 14<br>0.551<br>DSM 41      | O.D. 18.5<br>0.728<br>DSM 37     |                             |
|                       | L           | Outside cable clamping sleeve with 2 shifted half collars without grounding and armor crimping |                             |   |                                 |                                  | Ø Max.<br>31<br>1.220       |
|                       | M           | Outside cable clamping sleeve with 2 shifted half collars with grounding or armor crimping     |                             |   | O.D.<br>9 to 14<br>.354 to .551 |                                  | Ø Max.<br>31<br>1.220       |
| DOUBLE WATERTIGHTNESS | P           | Cable clamp with grounding or armor crimping   |                             |   | O.D. 16<br>.630                 | O.D. 22<br>.866                  | O.D. 28.5<br>1.122          |
|                       | S           | Cable clamp without grounding nor armor crimping   |                             |   | O.D. 16<br>.630                 | O.D. 22<br>.866                  | O.D. 28.5<br>1.122          |