



TP Series  
Sealed Connectors





### Presentation

The TP Series connectors meet the highest standards of safety for aquatic environment. It is currently used in many applications: vessels, civil construction, diving, heavy industry...

The TP Series feature a large range of shell styles and layouts. Derived from the widely recognized marine bronze M Series, the TP Series are the perfect trade off between high performances and cost efficiency.

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# TP SERIES

TP Series

# Overview

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## Typical applications



Heavy Industry



Diving



Civil Construction



Geophysics



Water Treatment



Vessels

## Features & Benefits

### FIELD PROVEN

#### Used in Aquatic Environment

Oil and gas services: Geophysics, inspection or instrumentation  
Water treatment: Pumps, valves, sewage system  
Civil construction: Tunnels, dams, buildings  
Underwater instrumentation: Buoys, sensors, cameras, lights

### ROBUST

#### Designed for Harsh Environment

Temporary immersion in sea water  
Prolonged immersion in freshwater and use in presence of mud, sand...  
High resistance to cable pull out or transverse forces  
Repairable connectors with removable inserts

### PERFOR- MANCES

#### High Performance Levels

Waterproof down to 300 meters depth  
No stress on O-rings by conical coupling  
Withstanding 500 mating/unmating cycles

### EASY COUPLING

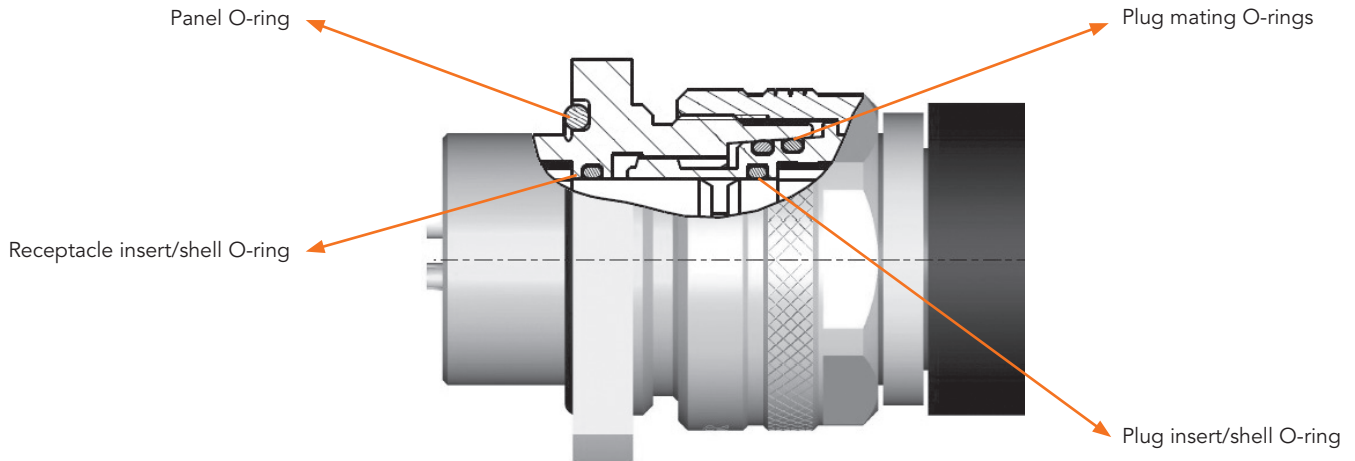
#### Keying and Easy Coupling

Easy coupling/uncoupling operation even with high density layout  
5-key mechanical polarization  
Scoop proof to prevent contact damage

## Features & Benefits

### Sealed and reliable connectors

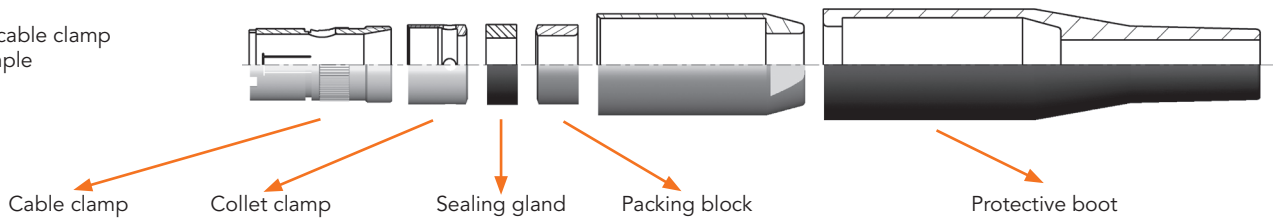
- ▶ Field proven « Harpoon » contact technology for contact to insert sealing
- ▶ O-ring for insert to shell sealing on both receptacle and plug
- ▶ Redundancy with 2 O-rings on plug taper seat
- ▶ Conical coupling interface to reduce the stress on O-rings



### High performance sealing and mechanical retention

- ▶ **Perfect sealing on cable jacket** is achieved with the compression of a pressure gland integrated into the plug's backshell. Robust cable clamp ensures the **mechanical retention of the cable**. A removable protective boot is added on the backshell for additional sealing and cable support.


TP type cable clamp set example





## Features & Benefits

### High grade materials

- ▶ Shells are made of nickel plated brass specially designed for industry requirements regarding watertight products in harsh environment. This material provides a good corrosion resistance in sea environment, a high electrical conductivity along with good mechanical properties and resistance to biological fouling.
- ▶ O-rings are made from Nitrile for excellent fluid compatibility (sea water, mineral oil...) and long durability.
- ▶ Contacts are gold over nickel plated brass.
- ▶ RoHS compliant. 

### Easy wiring and installation

- ▶ Scoop proof: No risk of damaging contacts during the coupling operation when using a female plug and a male receptacle.
- ▶ Removable insulators: To allow easy wiring and replacement in case of wiring mistakes or servicing.
- ▶ Easy mating: Easy coupling operation thanks to the screw coupling and locking even with a high number of contact
- ▶ Equipment protection: No coupling mistake thanks to the polarization key.

Receptacles



REC

Cable Receptacles



RER

Feedthroughs



RECSC

In-Line Receptacles



TER

Pressure Sealing Cap  
for Plug



TEC



PCE



BEF



# TP SERIES

TP Series

# Product Details

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## Description

- Sealed connectors
- Screw coupling
- Sealing between plug and receptacles performed by 2 O-rings
- Sealing on cable thanks to packing washer

## Technical features

### Mechanical

- **Shell:**  
Nickel plated brass
- **Insulator:**  
PA6/6+MOS2 - Nylatron® (N)  
PTFE – Teflon® (T) (on request for reduced water absorption and increased pressure withstand when unmated)
- **O-rings:**  
Nitrile elastomer
- **Contacts:**  
Brass
- **Contacts:**  
Brass with gold over nickel plated
- **Packing washers and Protection boot:**  
Neoprene® Elastomer
- **Endurance:**  
500 mating/unmating operations
- **Shock:**  
Static acceleration of 120g on each axis
- **Vibration:**  
From 1 to 5 Hz: acceleration = 0.1g  
From 5 to 22 Hz: amplitude = 1mm  
From 22 to 50 Hz: acceleration = 2g  
Duration: 1 hour on each axis

### Electrical

- **Voltage rating (Vrms)**

Voltage Category	SOURIAU recommended service voltage (Vrms 50 Hz)	Dielectric Withstanding Voltage (Vrms 50Hz)
Service 1	600	1500
Service 2	1000	2300

- **Insulation resistance:**  
Unmated connectors :  $\geq 10^4$  M $\Omega$   
Mated connectors :  $\geq 5 \times 10^3$  M $\Omega$  on 500 Vcc
- **Shielding:**  
Connectors mated: Resistance between the receptacle plate and the plug's cable braid :  $\leq 10$  m $\Omega$

- **Current rating and contact resistance:**

Shell size	Contact size	Current rating per contact (A)	Contact resistance (m $\Omega$ )
8TP 10TP 14TP 20TP	20	7	$\leq 4$
	16	14	$\leq 3$
	14	20	$\leq 2.5$
	12	26	$\leq 2$
	6	65	$\leq 1$
10TP	2	115	$\leq 0.6$
	Coaxial 50 $\Omega$	20	$\leq 2.5$
10TP 20TP	Coaxial 75 $\Omega$	7	$\leq 4$
	Triaxial 50 $\Omega$	7	$\leq 4$
10TP 20TP	Coaxial 50 $\Omega$	4	$\leq 5$
	Coaxial 75 $\Omega$	4	$\leq 5$
14TP	Coaxial 50 $\Omega$	40	$\leq 1.5$
	Triaxial 50 $\Omega$	26	$\leq 2$
	Triaxial 75 $\Omega$	14	$\leq 3$

**Environmental**

- **Operating temperature range:**  
- 20°C to + 70°C

- **Watertightness**

Mated	Unmated
30 bar	5 bar

- **Salt spray**
  - 10 x (24h + 24h) alternate salt spray according to EN60068-2-11
  - 500h continuous salt spray according to NFC93422
- **Fluids Resistance**
  - Oil, alcohol, petrol, diesel fuel, sea water
  - Various gases (natural, butane, propane, Freon)
  - Various acids (acetic, boric, citric)

## Ordering information

Product builder			
N°	Criteria	Choices	Pages
1	Wires type and gauge	Minimum contact size	18
2	Number of contact to connect	Contacts layout	19
3	Electrical characteristics	Layout and shell size	14
4	Cable diameters	Size checking	21
5	Shell dimensions	Shell type consistency	10-11

Recommendations
<p><b>Watertightness of the TP Series connectors</b></p> <p>Watertightness is achieved through the use of a packing-block and performance will depend on cable quality:</p> <ul style="list-style-type: none"> <li>. Hardness (shore A hardness &gt; 70 is recommended)</li> <li>. Cylindricity and circularity</li> <li>. Roughness</li> <li>. Cable outer diameter tolerance (maximum tolerance of 1 mm on outer diameter is recommended)</li> </ul>



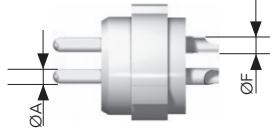
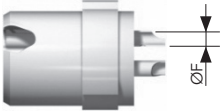

## TP Series connectors part numbers

	PCE	M	14TP	N	04 16	U	095
<b>Shell type</b>							
RER: Jam-nut receptacle							
REC: Screws mounting receptacle							
FED: Straight plug							
PCE: In-line receptacle							
RECSC: Screws mounting cable connecting receptacle							
TER: Jam-nut feedthrough							
TEC: Screws mounting feedthrough							
<b>Type of contacts</b>							
M: Pin contact							
F: Socket contacts							
1: Pin/Socket (for TEC and TER feedthroughs only)							
<b>Shell size</b>							
8TP							
10TP							
14TP							
20TP							
<b>Insulating material</b>							
N: Nylatron® (PA6/6+MOS2)							
T: Teflon® (PTFE) (Available on request)							
<b>Contact layouts</b>							
See layout tables page 19 - 20							
<b>Cable clamp code</b>							
U: Possible braid or armor termination							
<p><b>Maximum cable outer diameter</b> (in tenth of mm, adjusted at upper five tenth). Example: For a 9.2mm outer diameter cable, the code is 095.</p> <p><b>Cable code for coaxial, tri-axial,</b> (Please consult us)</p> <p>Nothing for RER, REC, TER &amp; TEC</p>							





## Pressure sealing cap part numbers

	BER	C	10TP
<b>Cap type</b>			
BER: For receptacles			
BEF: For plugs			
<b>Cord set</b>			
C: With cord			
-: Without cord (no mention)			
<b>Shell size</b>			
8TP			
10TP			
14TP			
20TP			

## Contacts - Size 2 to 20

Shell size	Contact size	Ø A (mm) Active contact OD	Ø F (mm) Contact Termination OD	Gauge AWG	Section (mm <sup>2</sup> )	Definition
8TP	20	1,02	0,9	26 to 22	0,14 to 0,38	Pin 
	16	1,59	1,2	24 to 20	0,21 to 0,60	
10TP 14TP 20TP	20	1,02	0,9	26 to 22	0,14 to 0,38	Socket 
	16	1,59	1,4	22 to 18	0,38 to 0,93	
	14	1,92	1,87	18 to 16	0,93 to 1,34	
	12	2,38	2,3	16 to 14	1,34 to 1,91	Pin 
	6	5	6,2	8 to 6	8,98 to 13,4	
	2	7	9	4 to 2	21,8 to 34,5	

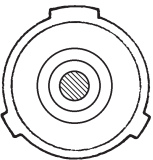
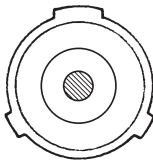




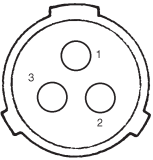

## Contacts - Coaxial, triaxial\*

Shell size	Contact size	Ø A (mm) Front of contact	Ø F (mm) Inside the solder bucket	Removable contact	
10TP	Coaxial 50Ω	1,93	2,4	No	Pin 
	Coaxial 75Ω	1,02	1,5		
14TP	Coaxial 50Ω	3,98	3		Socket 
10TP	Triaxial 50Ω	0,9	1,2	Yes	Pin 
20TP	Coaxial 50Ω				
10TP	Triaxial 50Ω	0,7	0,8		Socket 
20TP	Coaxial 75Ω				
14TP	Triaxial 50Ω	3	2,6	No	
	Triaxial 75Ω	1,59	1,4		

\* Please consult us with your cable specification

## Contact layouts

Size 8TP		Layout caption
<p><b>0416</b></p>  <p>4#16 Service 2</p>	<p><b>0720</b></p>  <p>7#20 Service 1</p>	<p><b>Layout ID for part numbering</b></p>  <p>Number of contacts #Size Voltage Service Rating</p>

Size 10TP					
<p><b>TX75* TX50*</b></p>  <p>1TX#75 or 1TX#50 Service 1</p>	<p><b>1C75* 1C50*</b></p>  <p>1C#75 or 1C#50 Service 1</p>	<p><b>0214</b></p>  <p>2#14 Service 2</p>	<p><b>0314</b></p>  <p>3#14 Service 2</p>	<p><b>0416</b></p>  <p>4#16 Service 2</p>	<p><b>0516</b></p>  <p>5#16 Service 1</p>
<p><b>0320</b></p>  <p>3#20 Service 2</p>	<p><b>0720</b></p>  <p>7#20 Service 1</p>				

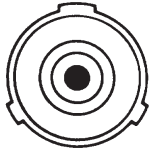
\*Please consult us for coax and triax layouts

Contact Type							
20	16	14	12	6	2	Coax.	Triax.
							

## Contact layouts

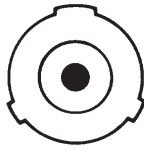
### Size 14TP

**TX75\***  
**TX50\***



1TX#75 or 1TX#50  
Service 2

**1C50\***



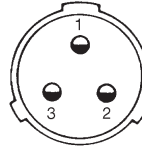
1C#50  
Service 2

**0106**



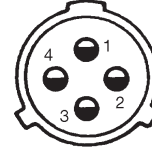
1#06  
Service 2

**0312**



3#12  
Service 2

**0412**



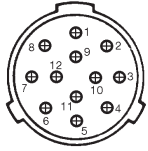
4#12  
Service 2

**0714**



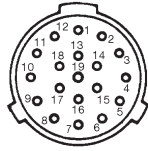
7#14  
Service 2

**1216**



12#16  
Service 2

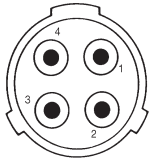
**1920**



19#20  
Service 1

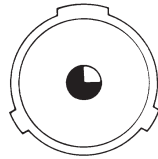
### Size 20TP

**4C75\***  
**4C50\***



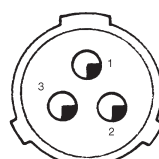
4C#50 or 4C75Ω  
Service 1

**0102**



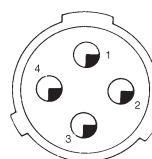
1#02  
Service 2

**0306**



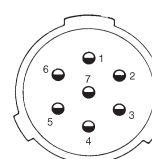
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Service 2

**0406**



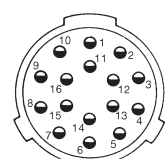
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Service 2

**0712**



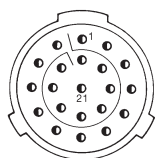
7#12  
Service 2

**1612**



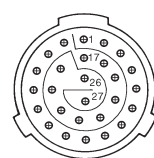
16#12  
Service 2

**2114**



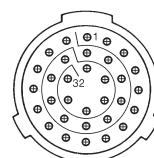
21#14  
Service 1

**2716**



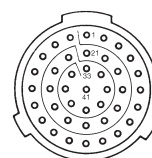
27#16  
Service 1

**3216**



32#16  
Service 1

**4120**



41#20  
Service 1

#### Contact Type



\*Please consult us for coax and triax layouts

## Cable clamp kits

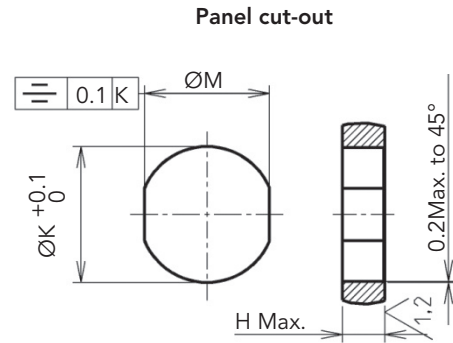
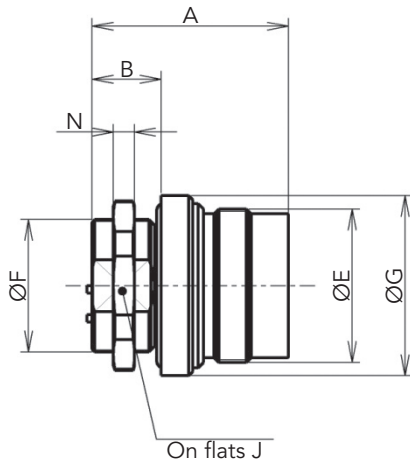
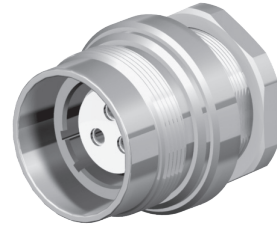
Cable clamp code	Grounding	Size	
U	YES	8TP 10TP 14TP 20TP	

Cable code	Description	Acceptable cable outer diameter			
		8TP	10TP	14TP	20TP
U	Standard cable clamp with braid or armor termination	Ø4 to Ø6,2	Ø5 to Ø11	Ø9 to Ø16	Ø16 to Ø26

CPI	Collet clamp	RGR	Packing block
ESC	Cabling spacer	JPE	Rubber washer
DOS	Outer sleeve	MDP	Protective boot

## Shell dimensions

### RER - Jam-nut receptacle

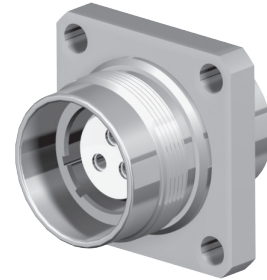
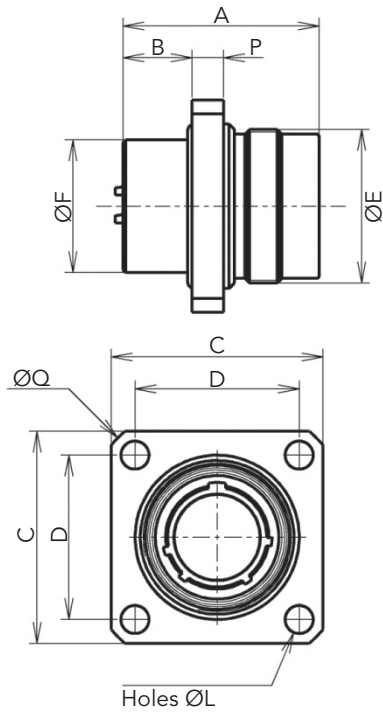


Shell size	8TP	10TP	14TP	20TP
A	23	37	37	49,5
B	8.5	14	13	17
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
Ø F (ISO)	M14 x 0.75	M18 x 0.75	M25 x 0.75	M36 x 1
Ø G	20	25	34	46
H Max.	5	10	9	12
On flats J	17	22	30	41
Ø K <sup>+/-0.1</sup>	14.2	18.2	25.2	36.2
M	13.2	16.2	23.2	33.2
N	3	4	4	5

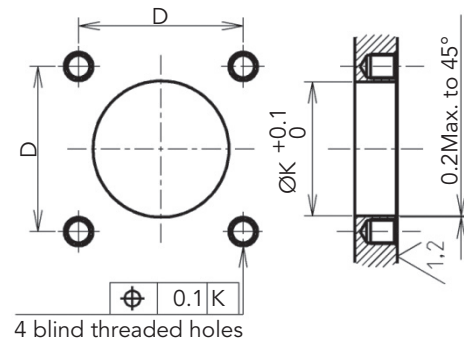
Note: All dimensions are in millimeters (mm)

## Shell dimensions

### REC - Square flange receptacle



Panel cut-out

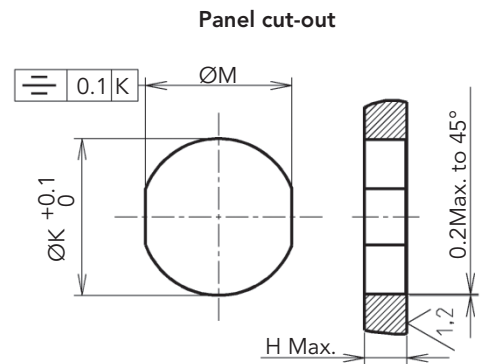
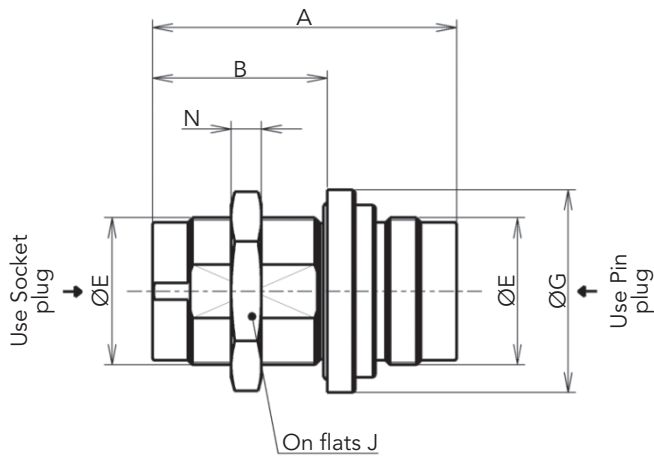
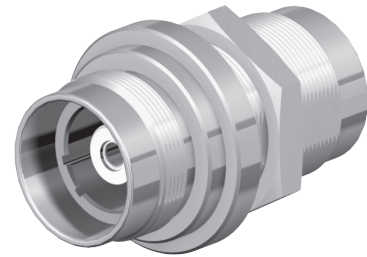


Shell size	8TP	10TP	14TP	20TP
A	23	37	37	49.5
B	4	14	13	17
C	23	32	40	52
D	17.5	24	31	42
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
Ø F	14	18	25	36
Ø K <sup>+/-0.1</sup>	14.2	18.2	25.2	36.2
Ø L	3.2	4.3	5.3	6.3
P	3	5	6	8
Ø Q Max.	31.5	42.5	53.5	70.5
R (ISO)	M3	M4	M5	M6

Note: All dimensions are in millimeters (mm)

## Shell dimensions

### TER - Jam-nut feedthrough



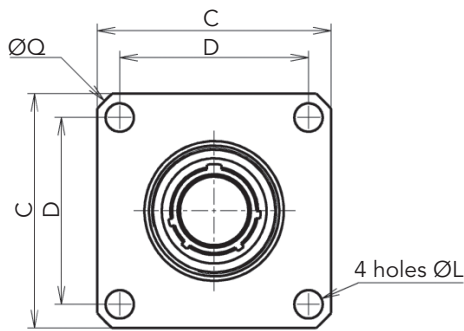
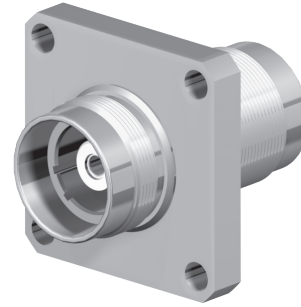
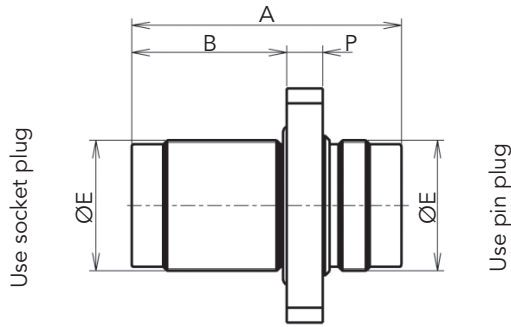
Shell size	8TP	10TP	14TP	20TP
A	50	60	60	82
B	34.5	35.5	34.5	47.5
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
Ø G	23	28	40	52
H Max.	19	16	13	22
On flats J	20	24	34	46
Ø K <sup>+/-0.1</sup>	17.2	21.2	29.2	41.2
M	14.2	19.2	27.2	39.2
N	4	4	6	5

Note: All dimensions are in millimeters (mm)

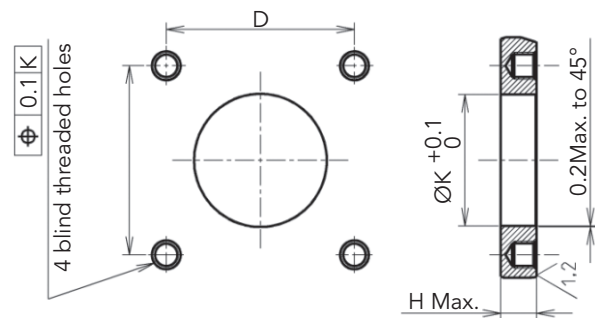


## Shell dimensions

### TEC - Square flange feedthrough



#### Panel cut-out

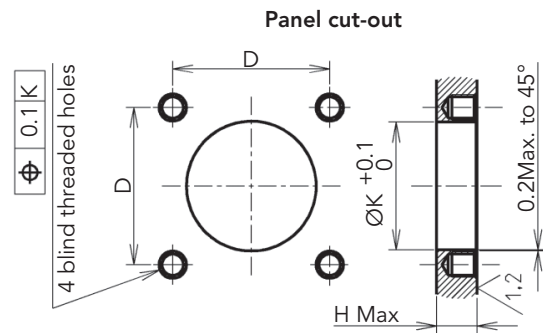
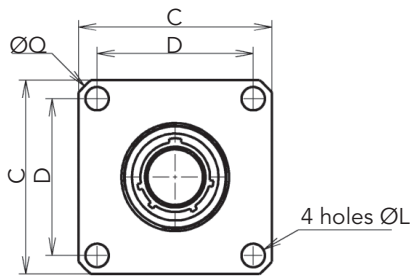
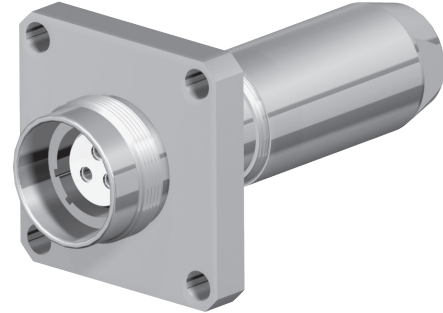
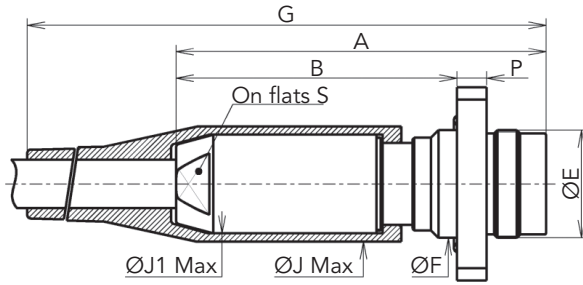


Shell size	8TP	10TP	14TP	20TP
A	50	60	60	82
B	34.5	35.5	34.5	47.5
C	32	40	52	76
D	24	31	42	60
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
H Max.	23	20	19	27
Ø K <sup>+0.1</sup>	17.2	21.2	29.2	41.2
Ø L	4.3	5.3	6.3	8.5
P	4	6	8	9
Ø Q Max.	42.5	53.5	70.5	100.5
R (ISO)	M4	M5	M6	M8

Note: All dimensions are in millimeters (mm)

## Shell dimensions

### RECSC - Square flange cable connecting receptacle

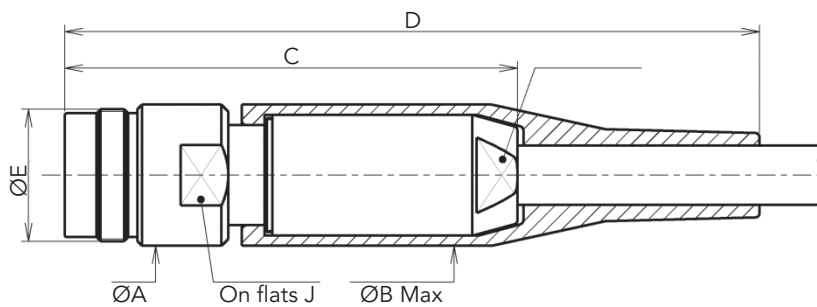
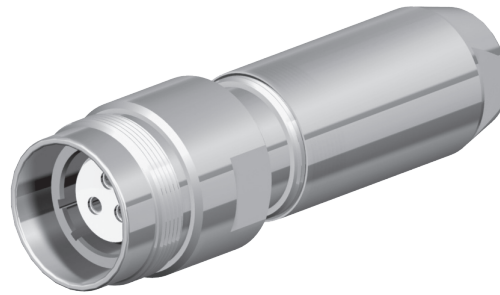


Shell size	8TP	10TP	14TP	20TP
A	57	82	100	126
B	42	58	76	96
C	32	40	52	76
D	24	31	42	60
Ø E	M17 x 1	M21 x 1	M29 x 1	M41 x 1
Ø F	18	22	29	41
G	83	119	153	198
H Max.	10	12	12	20
Ø J Max.	20	23	32	45
Ø J1 Max.	17	20	27	39
Ø K <sup>+/-0.1</sup>	18.2	22.2	29.2	41.2
Ø L	4.3	5.3	6.3	8.5
P	4	8	8	9
Ø Q Max.	42.5	53.5	70.5	100.5
R	M4	M5	M6	M8

Note: All dimensions are in millimeters (mm)

## Shell dimensions

### PCE - In-line receptacle

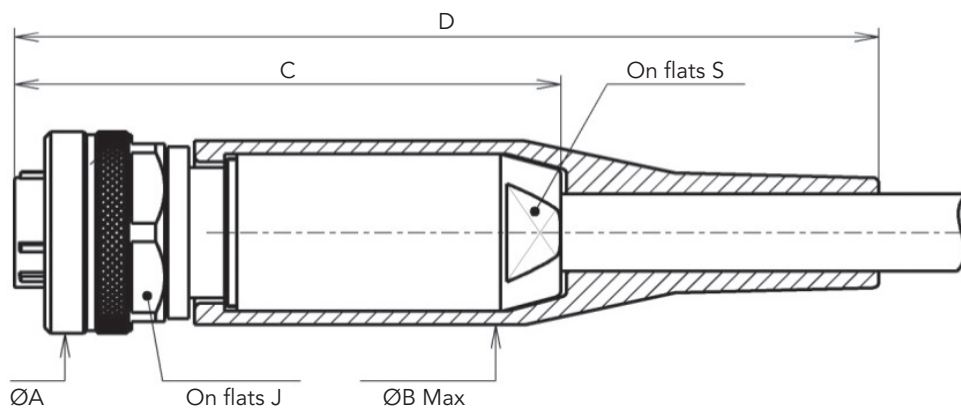
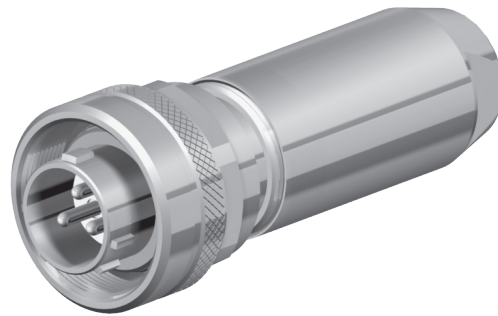


Shell size	8TP	10TP	14TP	20TP
Ø A	19	23	31	43
Ø B Max.	20	23	32	45
C	57	82	100	126
D	83	119	153	198
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
On flats J	17	20	28	38
On flats S	12	16	20	30

Note: All dimensions are in millimeters (mm)

## Shell dimensions

### FED - Straight plug



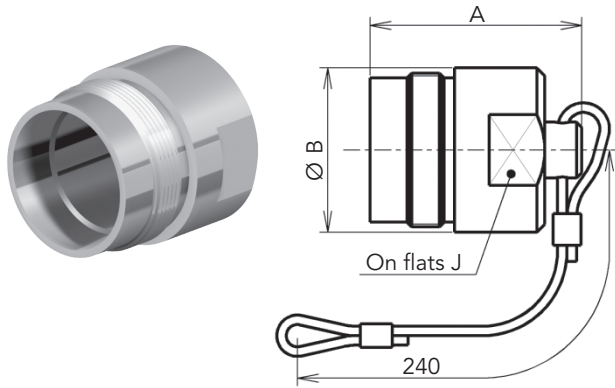
Shell size	8TP	10TP	14TP	20TP
Ø A	20	25	34	46
Ø B Max.	20	23	32	45
C	53	72	90	114
D	79	110	144	186
On flats J	17	22	30	42
On flats S	12	16	20	30

Note: All dimensions are in millimeters (mm)

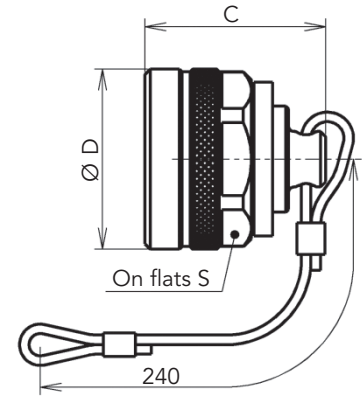
## Shell dimensions

### Pressure sealing caps

BEF - Cap for plug



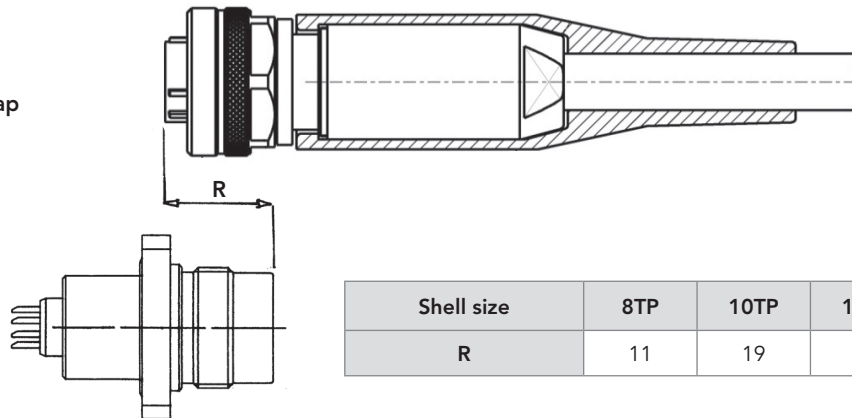
BER - Cap for receptacle



Shell size	8TP	10TP	14TP	20TP
A	30	39	40	51
Ø B	20	25	34	46
C	27	34	34	48.5
Ø D	20	25	34	46
On flats J	17	20	28	38
On flats S	17,46	22	30	42

### Mated/Unmated connectors

R = Mated shells overlap



Shell size	8TP	10TP	14TP	20TP
R	11	19	19	25

Note: All dimensions are in millimeters (mm)

## Insert + Contacts sub assembly part numbers

<b>Insert + Contacts Sub Assembly</b>	<b>BIS</b>	<b>14TP</b>	<b>N</b>	<b>04 12</b>	<b>M</b>
<b>Shell type:</b> 8TP, 10TP, 14TP, 20TP					
<b>Insert material</b> <b>N:</b> Nylatron (PA6/6+MOS2) <b>T:</b> Teflon (Available on request )					
<b>Contact layouts</b> See layout tables pages 19-20					
<b>Type of contacts</b> <b>M:</b> Male contacts <b>F:</b> Female contacts					

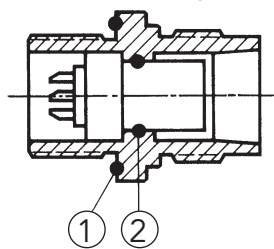
## Cable clamp kit part numbers

<b>Kit type:</b> See page 21 <b>RAE:</b> Full cable clamp kit <b>RAER:</b> Cable clamp kit sub assembly	<b>RAE</b>	<b>14TP</b>	<b>U</b>	<b>100</b>
<b>Shell size:</b> 8TP, 10TP, 14TP, 20TP				
<b>Cable clamp</b> <b>U:</b> With braid or armor termination				
<b>Maximum cable outer diameter</b> (in tenth of mm, adjusted at upper five tenth). Example: For a 9.2mm outer diameter cable, the code is 095. <b>Cable code for coaxial, tri-axial</b> (consult us for coding)				

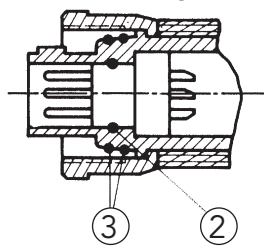
## O-ring part numbers

O-ring Type	8TP	10TP	14TP	20TP
❶ Panel O-ring (for REC-RER)	09-01	10-01	14-01	20-01
❷ Insulator/Shell O-ring	09-02	10-02	14-02	20-02
❸ Taper seat O-ring	09-03	10-03	14-03	20-03
❹ Panel O-ring (for TEC-TER)	09-04	10-04	14-04	20-04
❺ Panel O-ring (for RECSC)	10-01	20-02	14-05	20-04

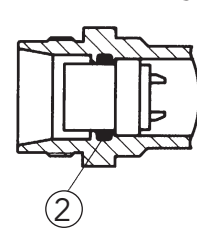
REC-RER Receptacles



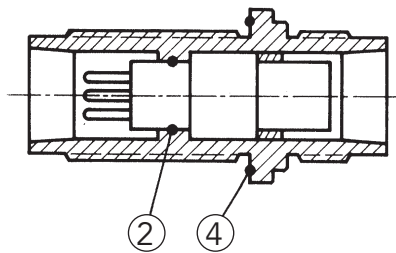
FED Plug



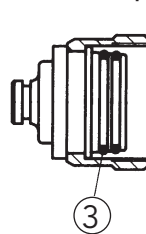
PCE Cable connecting plug



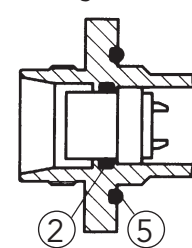
TEC-TER Bulkhead



BER Cap



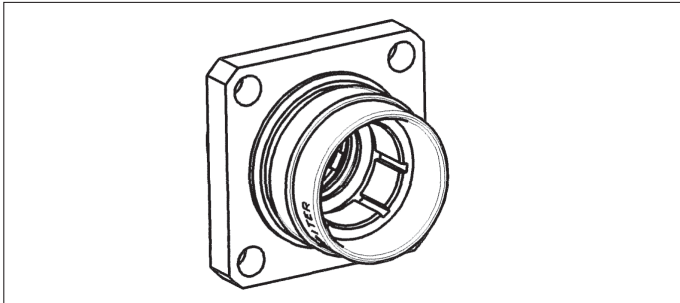
RECSC Square flange in-line receptacle



## Tools

### Plug wiring tools

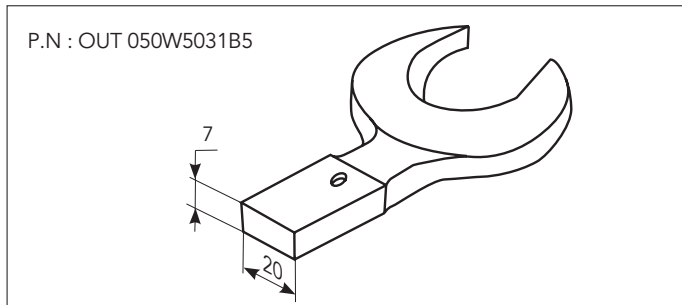
These tools are used to maintain correctly plugs during the final operation of wiring: tightening the tightening sleeve



Plug Size	Tool P/N
8TP	MA1W6010B5
10TP	MA2W6010B5
14TP	MA3W6010B5
20TP	MA4W6010B5

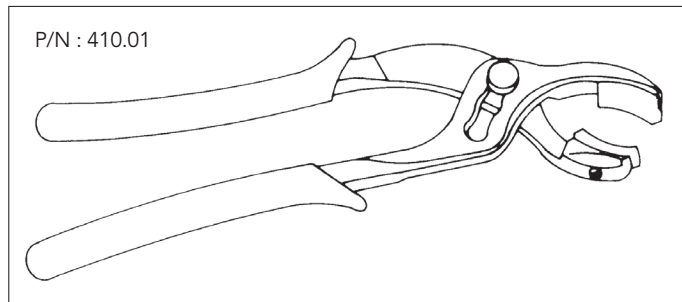
### End wrenches

Used to tighten coupling ring of size 20TP with a torque wrench



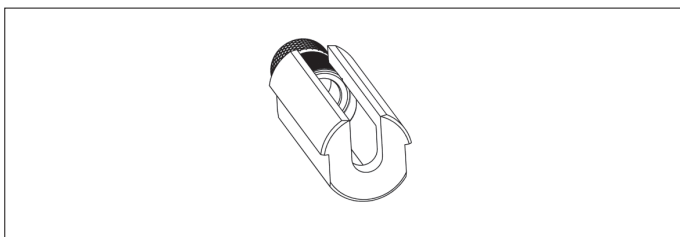
### Plastic jaw plier

This tool is used for holding the cable clamp while tightening the sleeve



### Potting tool

Used to fill with resin cabling spacers



Size	Tool P/N
10TP	OUT330 10M
14TP	OUT330 14M
20TP	OUT330 20M

The wiring and installation instruction for TP Series connectors can be provided upon request.

Note: All dimensions are in millimeters (mm)





# TP SERIES

TP Series

# Other Products

■ SWIM Series .....	36
■ M Series.....	36
■ U Series .....	37
■ 8810 Series.....	37

## Other Series

### SWIM Series

Shallow Water IMmersion


The cost effective and reliable solution for shallow water immersion in high performance thermoplastic construction.

**High sealing performances:**

- . Down to 300 meters depth

**Large range:**

- . 2 sizes: 10PL and 14PL
- . Receptacles, plugs and caps
- . Signal, power and coax

RoHS compliant 



### M Series

Dry mateable connectors for deep immersion. See specific catalog available online.

**High sealing performances:**


- . Down to 3000 meters depth

**Large range:**

- . 5 shell sizes
- . Receptacles, cable receptacles, plugs and feedthroughs.
- . Signal, power, high voltage, coax and triax contacts

**Robust:**

- . High corrosion resistant marine bronze shells
- . Robust screw coupling mechanism

RoHS compliant 



## Other Series

### U Series


Connectors similar to M Series with 316L stainless steel shells and FPM seals. See specific catalog.

**High pressure withstand:**

- . Down to 300 meters depth

**Robust:**

- . High corrosion resistant stainless steel shell (AISI 316L)
- . Robust screw coupling mechanism
- . High temperature resistance (up to 170°C with PTFE insulators)
- . Nylatron, Teflon or Tefzel insulators
- . Radiation withstanding (up to 100 MRads)

RoHS compliant 



### 8810 Series

Wet/underwater mateable connectors for deep immersion. See specific catalog available online.

**High pressure withstand:**

- . Down to 3000 meters depth

**Robust:**

- . Marine bronze shells
- . Robust screw coupling mechanism

RoHS compliant 



**Notes**

A large grid area for taking notes, consisting of 20 columns and 30 rows of small squares.



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