



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

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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

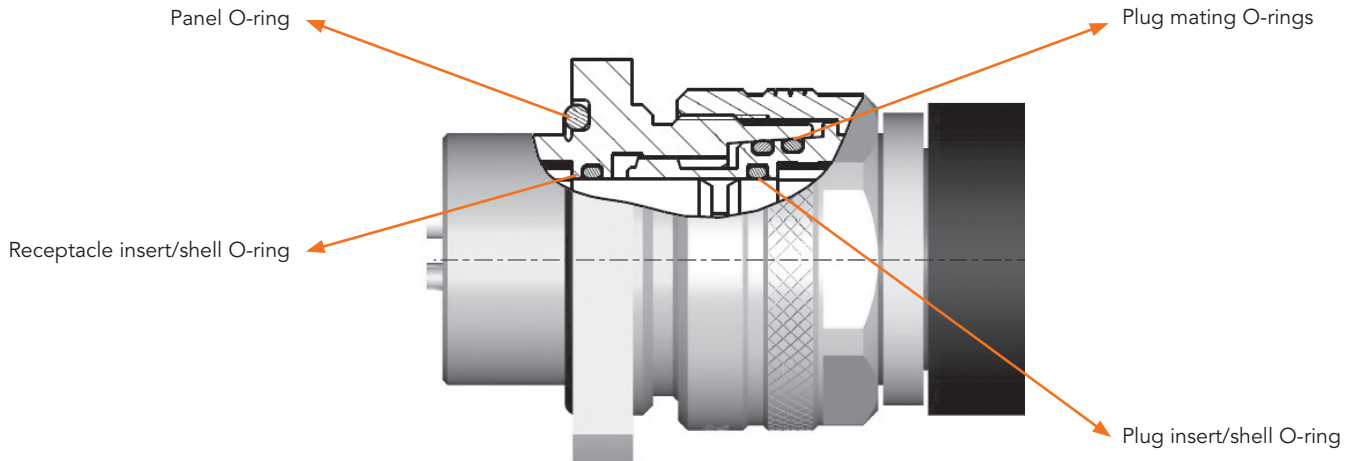
Keying and Easy Coupling

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

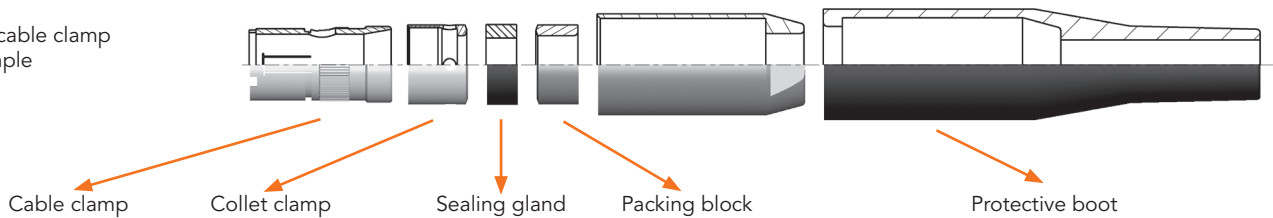
- ▶ Field proven « Harpoon » contact technology for contact to insert sealing
- ▶ O-ring for insert to shell sealing on both receptacle and plug
- ▶ Redundancy with 2 O-rings on plug taper seat
- ▶ Conical coupling interface to reduce the stress on O-rings



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



RECSC

Feedthroughs



TER



TEC

In-Line Receptacles

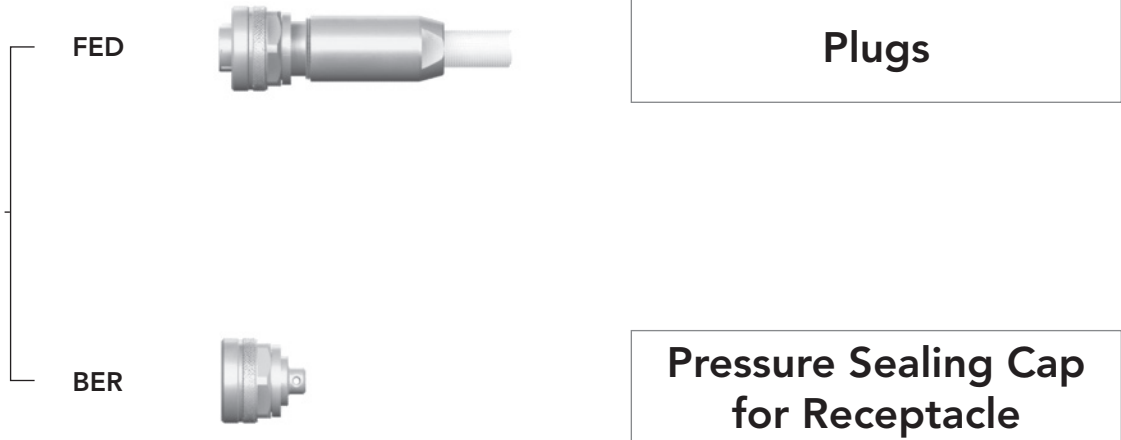


PCE

Pressure Sealing Cap
for Plug



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

- **Current rating and contact resistance:**

Shell size	Contact size	Current rating per contact (A)	Contact resistance (m Ω)
8TP 10TP 14TP 20TP	20	7	≤ 4
	16	14	≤ 3
	14	20	≤ 2.5
	12	26	≤ 2
	6	65	≤ 1
10TP	2	115	≤ 0.6
	Coaxial 50 Ω	20	≤ 2.5
10TP 20TP	Coaxial 75 Ω	7	≤ 4
	Triaxial 50 Ω	7	≤ 4
10TP 20TP	Coaxial 50 Ω	4	≤ 5
	Coaxial 75 Ω	4	≤ 5
14TP	Coaxial 50 Ω	40	≤ 1.5
	Triaxial 50 Ω	26	≤ 2
	Triaxial 75 Ω	14	≤ 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>Watertightness of the TP Series connectors</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"> . Hardness (shore A hardness > 70 is recommended) . Cylindricity and circularity . Roughness . Cable outer diameter tolerance (maximum tolerance of 1 mm on outer diameter is recommended)

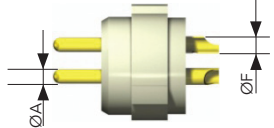
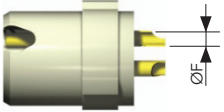


TP Series connectors part numbers

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

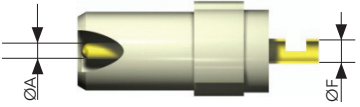
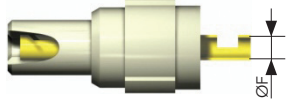


Pressure sealing cap part numbers

	BER	C	10TP
Cap type			
BER: For receptacles			
BEF: For plugs			
Cord set			
C: With cord			
-: Without cord (no mention)			
Shell size			
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 ²)	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	
						Socket 

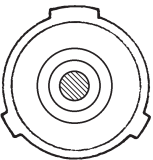
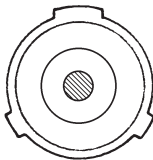




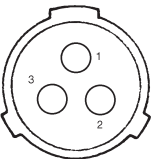

Contacts - Coaxial, triaxial*

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

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

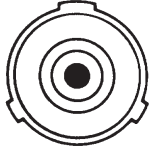
*Please consult us for coax and triax layouts

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

Contact layouts

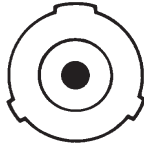
Size 14TP

TX75*
TX50*



1TX#75 or 1TX#50
Service 2

1C50*



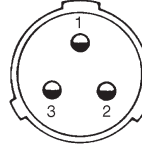
1C#50
Service 2

0106



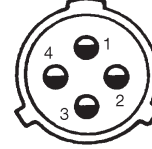
1#06
Service 2

0312



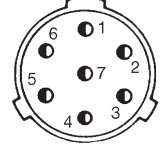
3#12
Service 2

0412



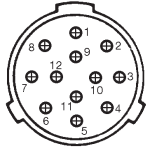
4#12
Service 2

0714



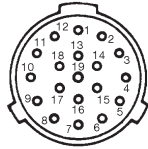
7#14
Service 2

1216



12#16
Service 2

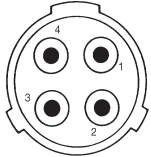
1920



19#20
Service 1

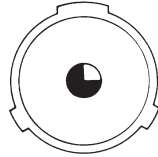
Size 20TP

4C75*
4C50*



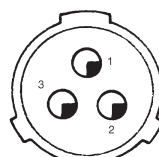
4C#50 or 4C75Ω
Service 1

0102



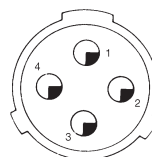
1#02
Service 2

0306



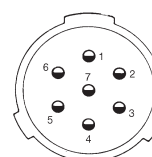
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Service 2

0406



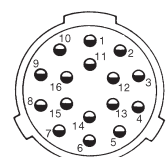
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Service 2

0712



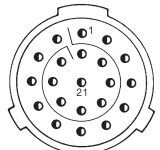
7#12
Service 2

1612



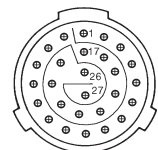
16#12
Service 2

2114



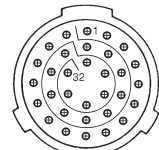
21#14
Service 1

2716



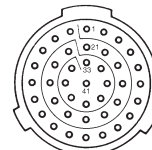
27#16
Service 1

3216



32#16
Service 1

4120



41#20
Service 1

Contact Type



*Please consult us for coax and triax layouts

Cable clamp kits

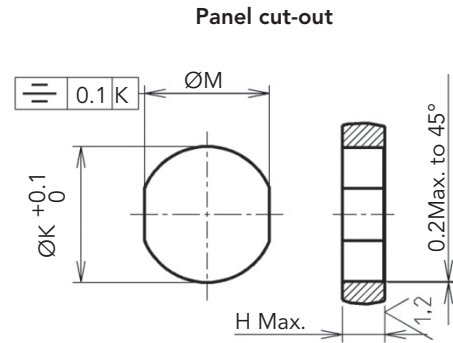
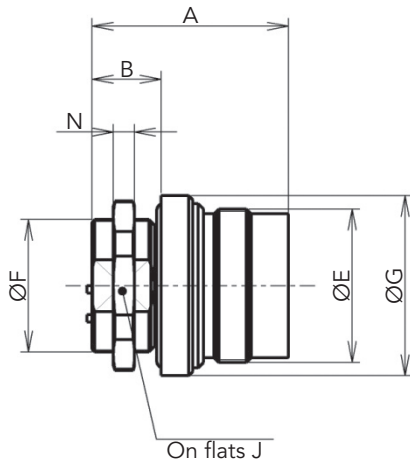
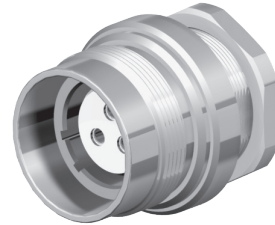
Cable clamp code	Grounding	Size	
U	YES	8TP 10TP 14TP 20TP	

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

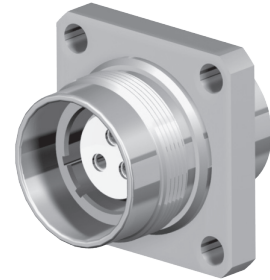
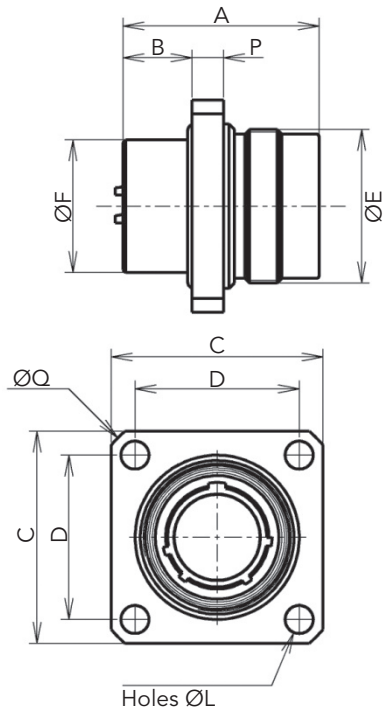


Shell size	8TP	10TP	14TP	20TP
A	23	37	37	49,5
B	8.5	14	13	17
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
Ø F (ISO)	M14 x 0.75	M18 x 0.75	M25 x 0.75	M36 x 1
Ø G	20	25	34	46
H Max.	5	10	9	12
On flats J	17	22	30	41
Ø K ^{+0.1}	14.2	18.2	25.2	36.2
M	13.2	16.2	23.2	33.2
N	3	4	4	5

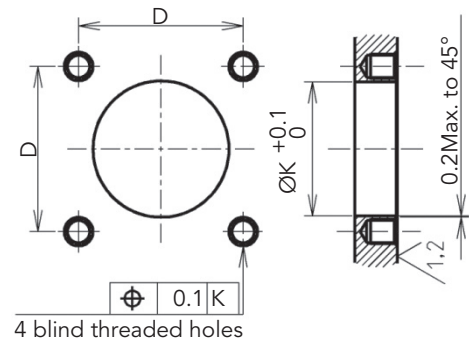
Note: All dimensions are in millimeters (mm)

Shell dimensions

REC - Square flange receptacle



Panel cut-out

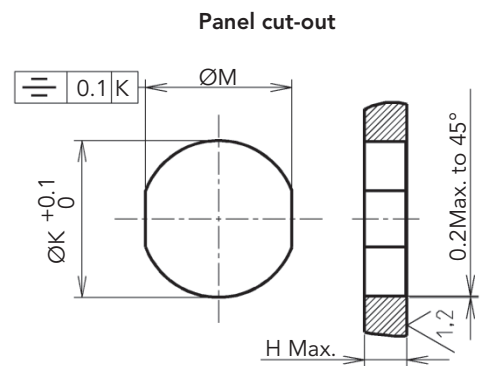
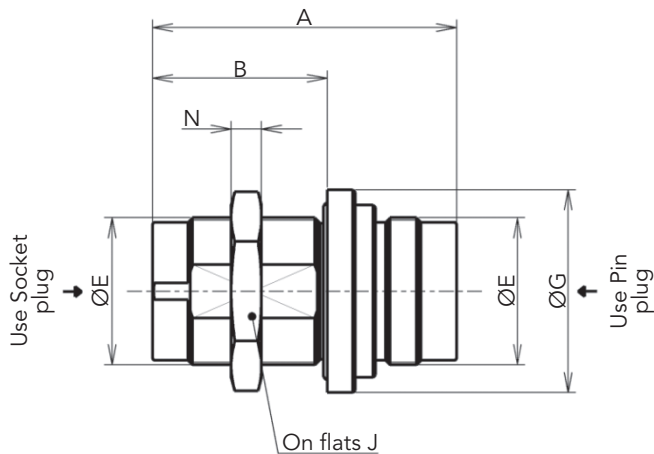
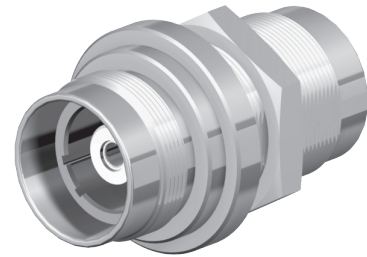


Shell size	8TP	10TP	14TP	20TP
A	23	37	37	49.5
B	4	14	13	17
C	23	32	40	52
D	17.5	24	31	42
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
Ø F	14	18	25	36
Ø K ^{+/-0.1}	14.2	18.2	25.2	36.2
Ø L	3.2	4.3	5.3	6.3
P	3	5	6	8
Ø Q Max.	31.5	42.5	53.5	70.5
R (ISO)	M3	M4	M5	M6

Note: All dimensions are in millimeters (mm)

Shell dimensions

TER - Jam-nut feedthrough

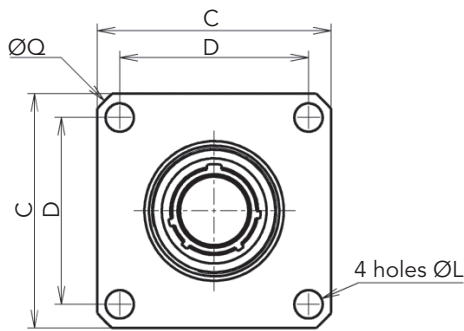
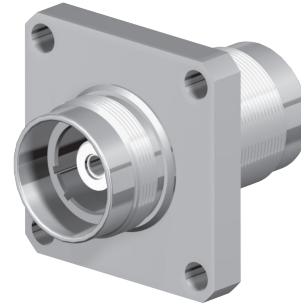
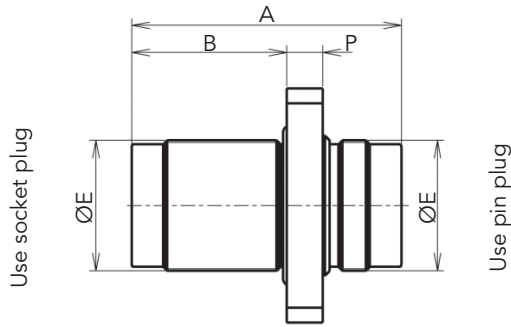


Shell size	8TP	10TP	14TP	20TP
A	50	60	60	82
B	34.5	35.5	34.5	47.5
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
Ø G	23	28	40	52
H Max.	19	16	13	22
On flats J	20	24	34	46
Ø K ^{+/-0.1}	17.2	21.2	29.2	41.2
M	14.2	19.2	27.2	39.2
N	4	4	6	5

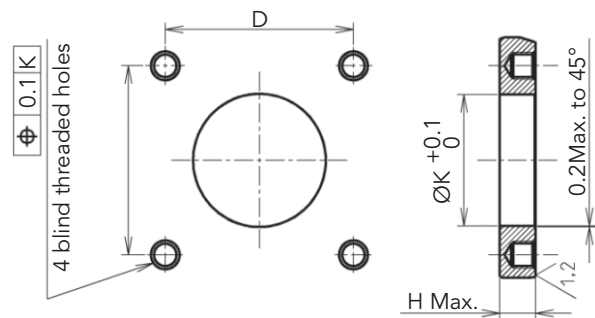
Note: All dimensions are in millimeters (mm)

Shell dimensions

TEC - Square flange feedthrough



Panel cut-out

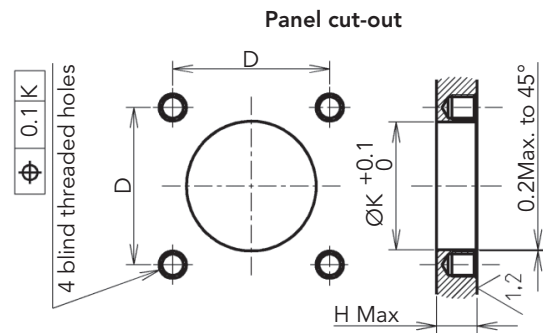
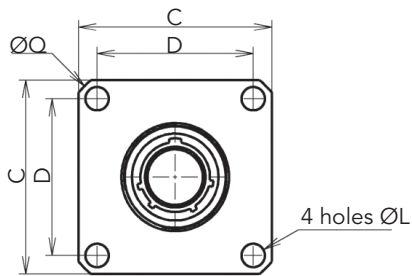
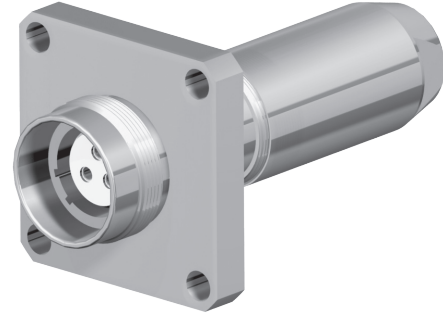
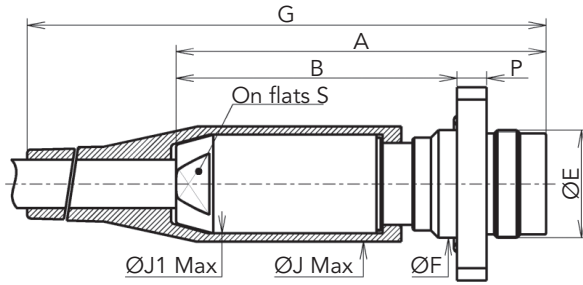


Shell size	8TP	10TP	14TP	20TP
A	50	60	60	82
B	34.5	35.5	34.5	47.5
C	32	40	52	76
D	24	31	42	60
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
H Max.	23	20	19	27
Ø K ^{+0.1}	17.2	21.2	29.2	41.2
Ø L	4.3	5.3	6.3	8.5
P	4	6	8	9
Ø Q Max.	42.5	53.5	70.5	100.5
R (ISO)	M4	M5	M6	M8

Note: All dimensions are in millimeters (mm)

Shell dimensions

RECSC - Square flange cable connecting receptacle

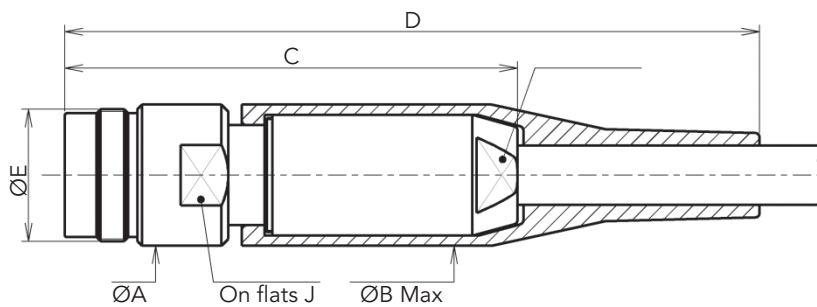
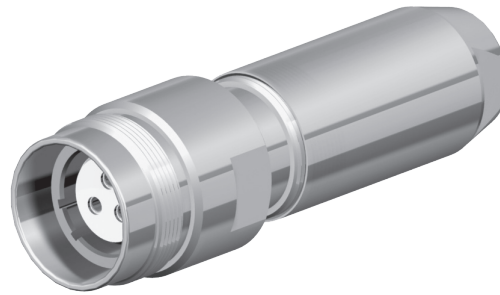


Shell size	8TP	10TP	14TP	20TP
A	57	82	100	126
B	42	58	76	96
C	32	40	52	76
D	24	31	42	60
Ø E	M17 x 1	M21 x 1	M29 x 1	M41 x 1
Ø F	18	22	29	41
G	83	119	153	198
H Max.	10	12	12	20
Ø J Max.	20	23	32	45
Ø J1 Max.	17	20	27	39
Ø K ^{+/-0.1}	18.2	22.2	29.2	41.2
Ø L	4.3	5.3	6.3	8.5
P	4	8	8	9
Ø Q Max.	42.5	53.5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

Note: All dimensions are in millimeters (mm)

Shell dimensions

PCE - In-line receptacle

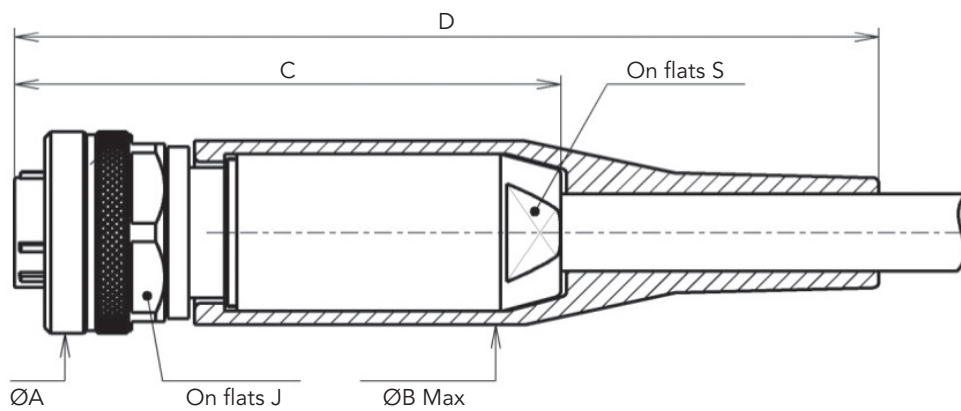
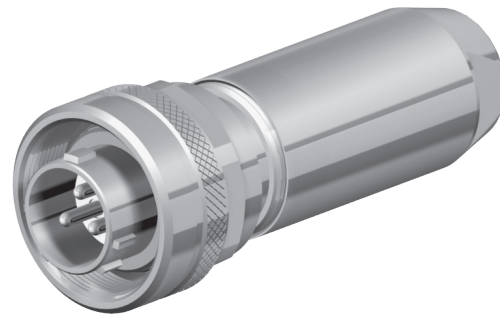


Shell size	8TP	10TP	14TP	20TP
Ø A	19	23	31	43
Ø B Max.	20	23	32	45
C	57	82	100	126
D	83	119	153	198
Ø E (ISO)	M17 x 1	M21 x 1	M29 x 1	M41 x 1
On flats J	17	20	28	38
On flats S	12	16	20	30

Note: All dimensions are in millimeters (mm)

Shell dimensions

FED - Straight plug



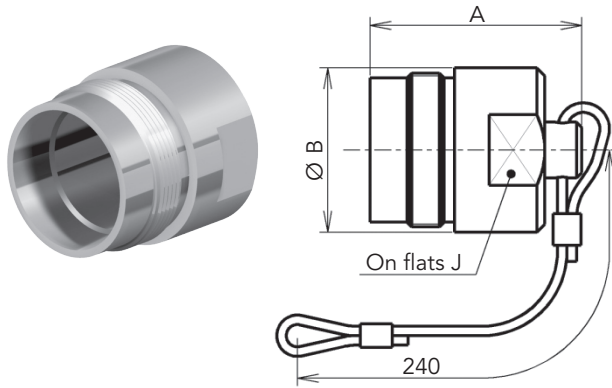
Shell size	8TP	10TP	14TP	20TP
Ø A	20	25	34	46
Ø B Max.	20	23	32	45
C	53	72	90	114
D	79	110	144	186
On flats J	17	22	30	42
On flats S	12	16	20	30

Note: All dimensions are in millimeters (mm)

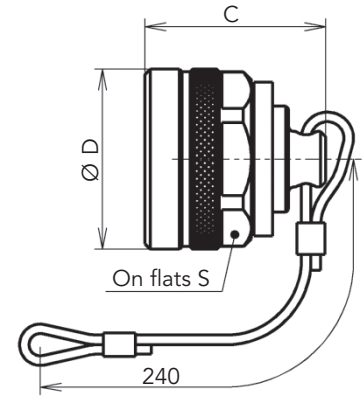
Shell dimensions

Pressure sealing caps

BEF - Cap for plug



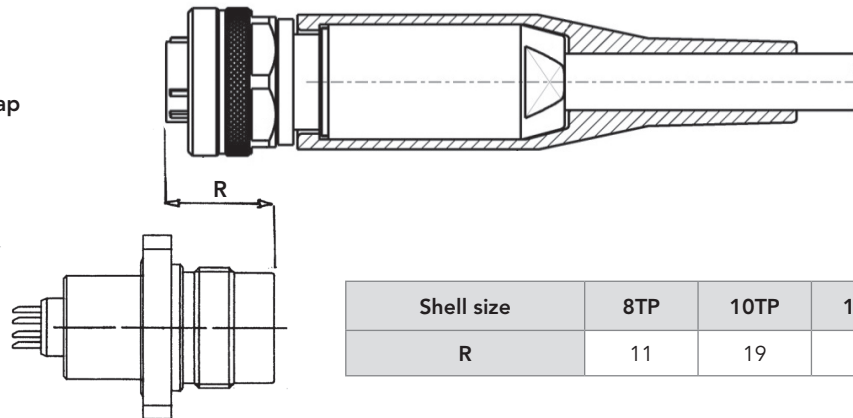
BER - Cap for receptacle



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

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

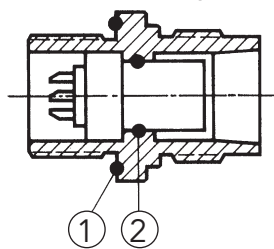
Cable clamp kit part numbers

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

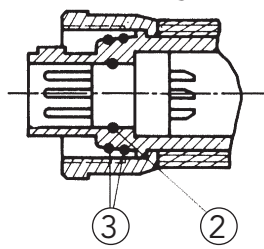
O-ring part numbers

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

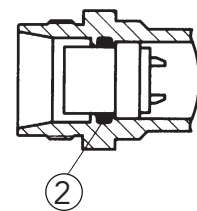
REC-RER Receptacles



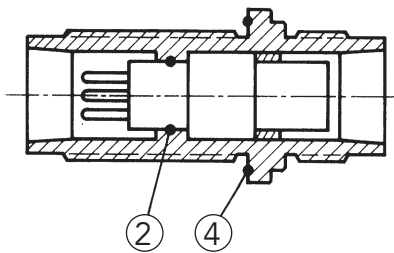
FED Plug



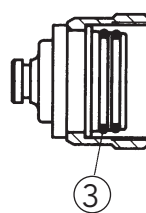
PCE Cable connecting plug



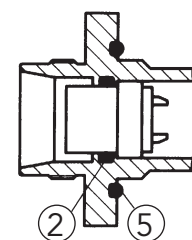
TEC-TER Bulkhead



BER Cap



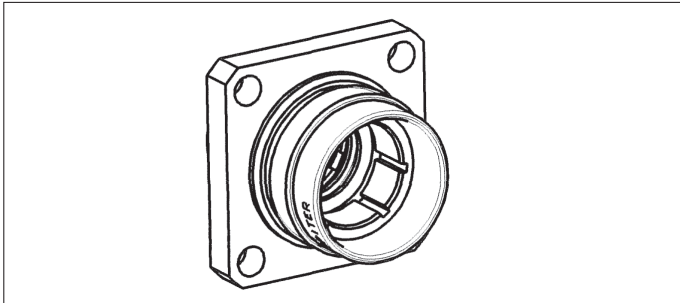
RECSC Square flange in-line receptacle



Tools

Plug wiring tools

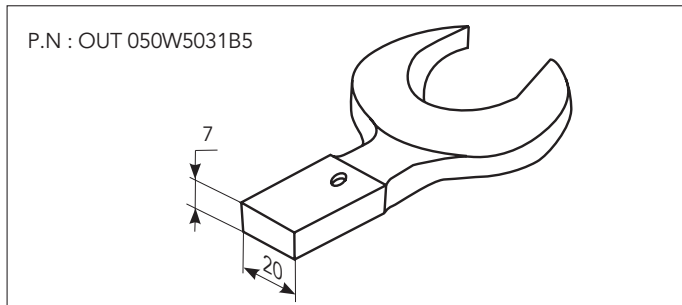
These tools are used to maintain correctly plugs during the final operation of wiring: tightening the tightening sleeve



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

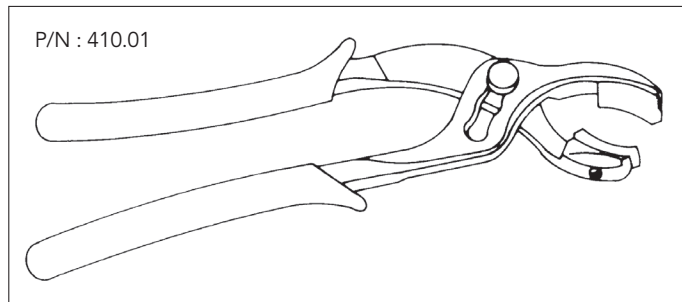
End wrenches

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



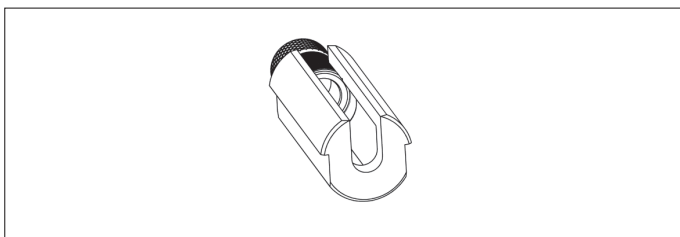
Plastic jaw plier

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

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

Other Series

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 



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 



Other Series

8810 Series

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

High pressure withstand:

- . Down to 3000 meters depth

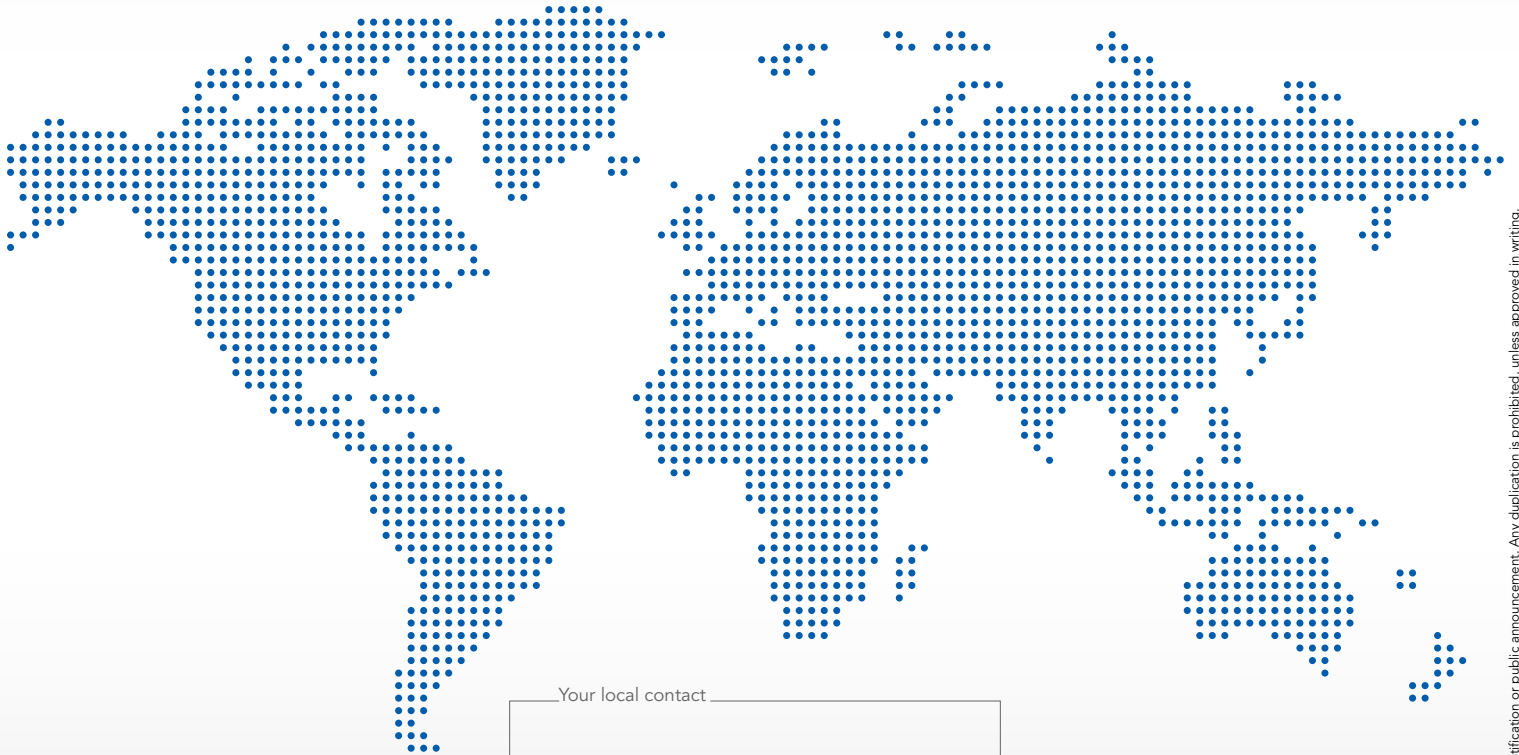
Robust:

- . Marine bronze shells
- . Robust screw coupling mechanism

RoHS compliant 



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