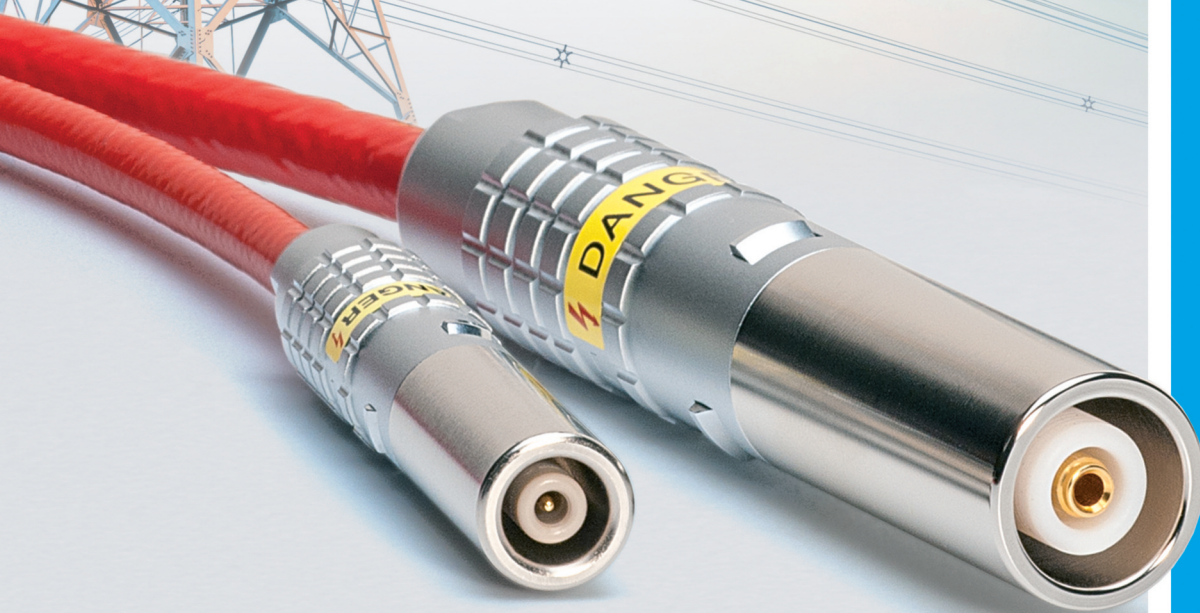


**HIGH VOLTAGE  
SINGLE CONTACT  
CONNECTORS  
Y, S, E AND 05 SERIES**



## Precision modular connectors to suit your application

Since its creation in Switzerland in 1946 the LEMO Group has been recognized as a global leader of circular Push-Pull connectors and connector solutions. Today LEMO and its affiliated companies, REDEL and COELVER, are active in more than 80 countries with the help of over 40 subsidiaries and distributors.

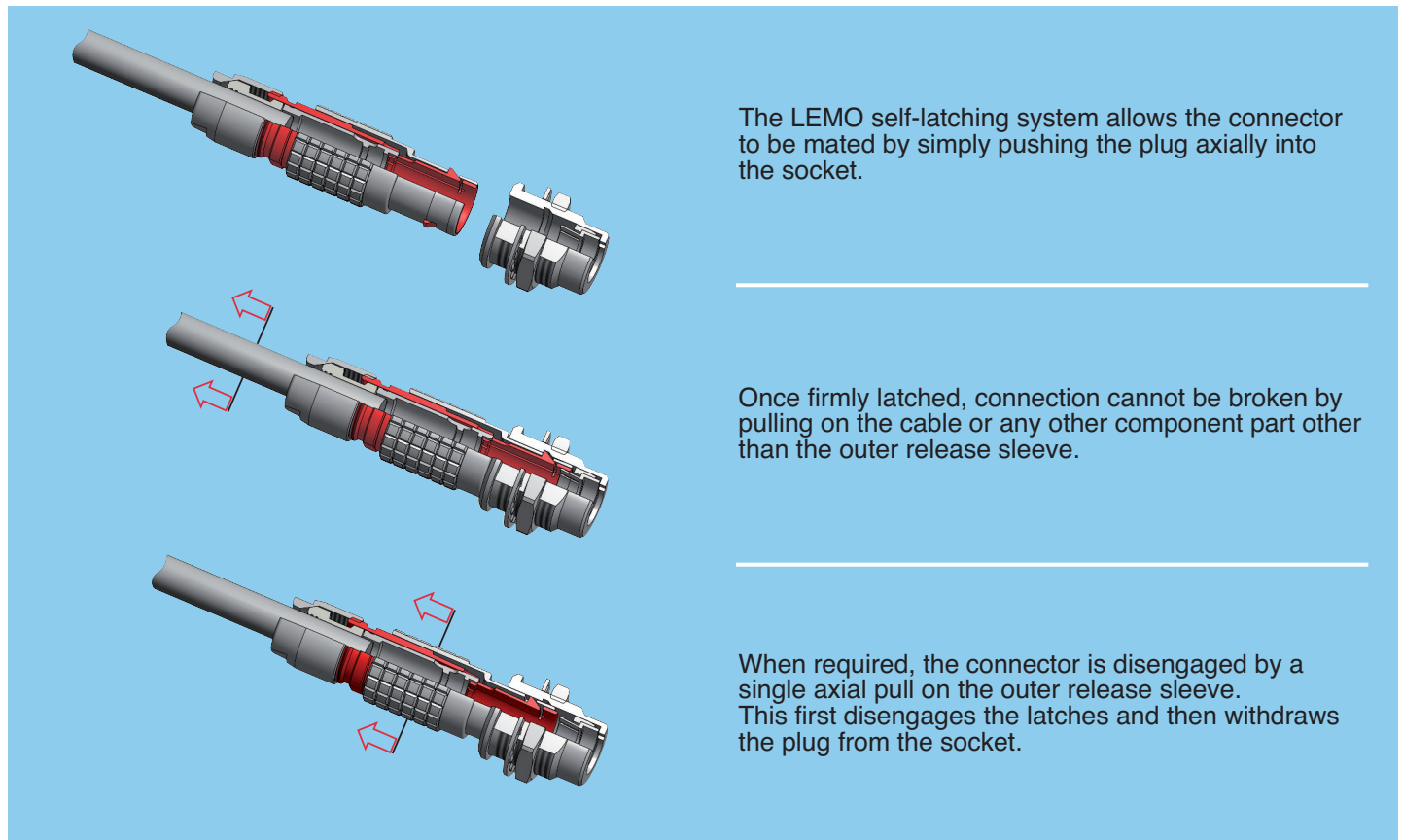
## Over 75000 connectors

The modular design of the LEMO range provides over 75000 connectors from miniature  $\varnothing$  3 mm to  $\varnothing$  50 mm, capable of handling cable diameters up to 30 mm and for up to 114 contacts.

This vast portfolio enables you to select the ideal connector configuration to suit almost any specific requirement in most markets, including medical devices, test and measurement instruments, machinery, audio video broadcast, telecommunications and military.

## LEMO's Push-Pull Self-Latching Connection System



This self-latching system is renowned worldwide for its easy and quick mating and unmating features. It provides absolute security against vibration, shock or pull on the cable, and facilitates operation in a very limited space.



## UL Recognition

LEMO connectors are recognized by the Underwriters Laboratories (UL). The approval of the complete system (LEMO connector, cable and your equipment) will be easier because LEMO connectors are recognized.

## CE marking

CE marking  means that the appliance or equipment bearing it complies with the protection requirements of one or several European safety directives. CE marking  applies to complete products or equipment, **but not to electromechanical components, such as connectors.**

## RoHS

LEMO connector specifications conforms the requirements of the RoHS directive (2011/65/EU) of the European Parliament and the latest amendments. This directive specifies the restrictions of the use of hazardous substances in electrical and electronic equipment marketed in Europe.

## LEMO high voltage connectors (single contact)

LEMO's High Voltage Y series connector have been designed in the 70's for the CERN, European Organization for Nuclear Research, one of the largest and most respected centers for scientific research.

All the series presented in this catalogue (S series, E series, Y series and 05 series) are Push-Pull connectors that offer reliable construction, made of high grade materials. The design of these product increases the creepage distance of the interconnection enabling to guarantee high voltage working conditions

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# Y series (HV single contact)

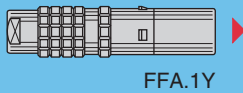
This family of single contact connectors are high voltage connectors designed for operating voltages ranging from 5 to 50 kV. They offer a great deal of security. The long housing permits a mechanical mating long before the contacts are engaged, thus ensuring safe mating. Furthermore, the socket in the series 3Y can be provided with a microswitch to prevent power from being turned on before the plug is mated.

## Models without safety locking ring

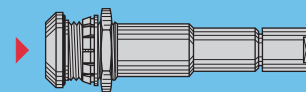
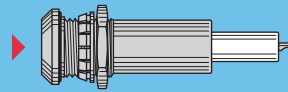
### 405-410 type

Models (page 9)

Straight plugs



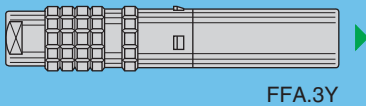
Fixed sockets



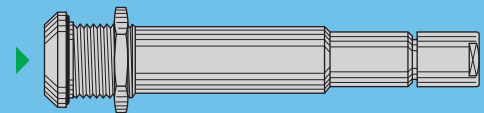
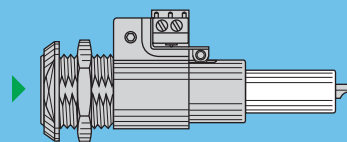
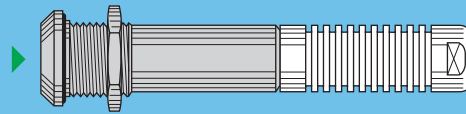
### 415-430 type

Models (page 9)

Straight plugs



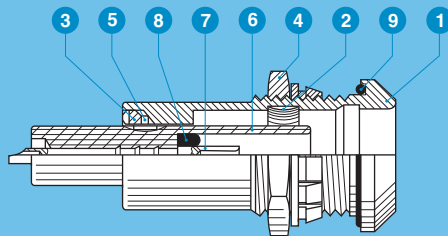
Fixed sockets



## Part Section Showing Internal Components

Fixed socket

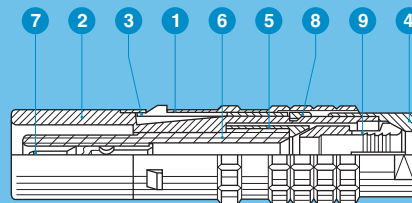
- 1 shell
- 2 earthing crown
- 3 castellated nut
- 4 hexagonal ring
- 5 circlip
- 6 insulator
- 7 female contact
- 8 silicone ring
- 9 o-ring



ERA.1Y

Straight plug

- 1 outer shell
- 2 inner shell
- 3 latch sleeve
- 4 collet nut
- 5 centre-piece
- 6 insulator
- 7 male contact
- 8 circlip
- 9 collet



FFA.1Y

**Note:** other connector shells are available on request.

Requirements in the field of nuclear research have given LEMO the opportunity to design a new generation of high voltage unipole connector in this Y series. They are mainly characterized by their extremely favourable size/test voltage ratio. The use of insulating material such as PEEK and silicone rubber in a new design of insulators allows to propose connectors withstanding up to 52 kVDC in the 3Y series.

## Models with safety locking ring

### 416-425 type

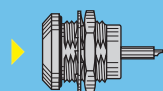
Models (page 13)

Straight plug

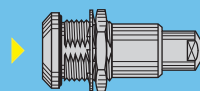


FFR.1Y/3Y

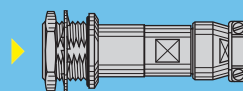
Fixed sockets



ERA.1Y/3Y



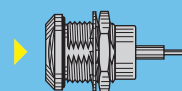
ERA.1Y/3Y



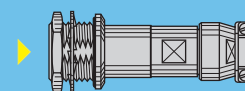
PEP.1Y/3Y

Watertight or vacuumtight models (page 15)

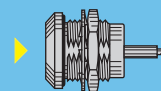
Fixed sockets



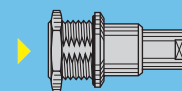
EWB.1Y



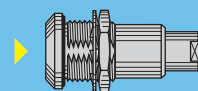
VPP.1Y/3Y



HGP.1Y/3Y



VCP.3Y

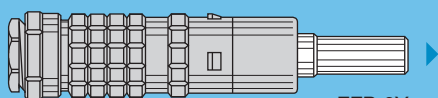


HGP.1Y

### 450 type

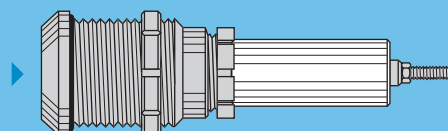
Models (page 14)

Straight plug



FFB.6Y

Fixed socket

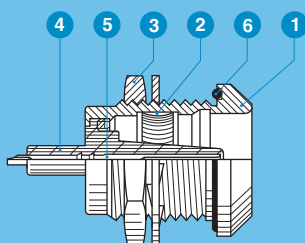


ERA.6Y

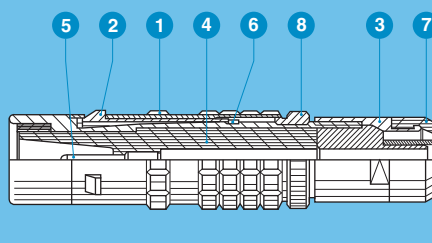
## Part Section Showing Internal Components

Fixed socket

- 1 shell
- 2 earthing crown
- 3 hexagonal ring
- 4 insulator
- 5 female contact
- 6 o-ring



ERA.1Y



FFR.1Y

Straight plug

- 1 outer shell
- 2 latch sleeve
- 3 collet nut
- 4 insulator
- 5 male contact
- 6 circlip
- 7 bend relief
- 8 safety locking ring

**Note:** other connector shells are available on request.

## Technical characteristics

### Materials and treatments

Component	Material (Standard)	Thickness of surface treatment ( $\mu\text{m}$ )								
		chrome			nickel		gold			
		Cu	Ni	Cr	Cu	Ni	Cu	Ni	Au	
Outer shell, collet nut, conical nut	Brass (UNS C 38500)	0.5	3	0.3						
Innershell	Brass (UNS C 38500)				0.5	3				
Earthing crown	Beryllium Copper (UNS C 17300)							2	0.1	
Latch sleeve	Special bronze/brass	0.5	3	0.3						
Locking washer	Bronze (UNS C 52100)				0.5	3				
Hexagonal nut	Brass (UNS C 38500)				0.5	3				
Other metallic components	Brass (UNS C 38500)				0.5	3				
Male contact	Brass (UNS C 34500)						0.5	3	1.0	
Female contact	Bronze (UNS C 54400) or Cu-Be (UNS C 17300)						0.5	3	1.5	
Clips	Cu-Be or special steel	without treatment								
Insulator	PTFE, PEEK									
	Silicone rubber (LSR)									
O-ring and gaskets	Silicone MQ/MVQ									

### Mechanical and Climatical

Characteristics	Value	Standard
Endurance	> 1000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60° C	
Operating temperature	- 40° C to +80° C <sup>1)</sup>	
	- 55° C to +230° C <sup>2)</sup>	
Salt spray corrosion test	1000 h	IEC 60512-6 test 11f
Protection index (mated)	IP 50	IEC 60529
Climatical category		IEC 60068-1

**Notes:** <sup>1)</sup> with «F» silicone insulator. <sup>2)</sup> with «L» PEEK insulator or «T» Teflon insulator (PTFE).

### Electrical

Characteristics	Value	Standard
Test voltage	See page 17	
Shell electrical continuity	1Y	1.0 m $\Omega$   IEC 60512-2 test 2f
	3Y	0.7 m $\Omega$   IEC 60512-2 test 2f
	6Y	0.1 m $\Omega$   IEC 60512-2 test 2f
Contact resistance <sup>1)</sup>	$\varnothing$ 0.9 mm	< 4.5 m $\Omega$   IEC 60512-2 test 2a
	$\varnothing$ 1.3 mm	< 3.5 m $\Omega$   IEC 60512-2 test 2a
	$\varnothing$ 1.6 mm	< 3.5 m $\Omega$   IEC 60512-2 test 2a
	$\varnothing$ 4.5 mm	< 2 m $\Omega$   IEC 60512-2 test 2a
	$\varnothing$ 7.0 mm	< 0.4 m $\Omega$   IEC 60512-2 test 2a

**Notes:** Insulation resistance > 10<sup>12</sup>  $\Omega$  IEC 60512-2 test 3a. <sup>1)</sup> after 1000 mating cycles and the salt spray test according to IEC 60512-6 test 11 f.

### Maximum operating voltage

	5kV	10kV	15kV	16kV <sup>1)</sup>	25kV <sup>1)</sup>	30kV	50kV <sup>1)</sup>
1Y series	●	●		●			
3Y series			●		●	●	
6Y series							●

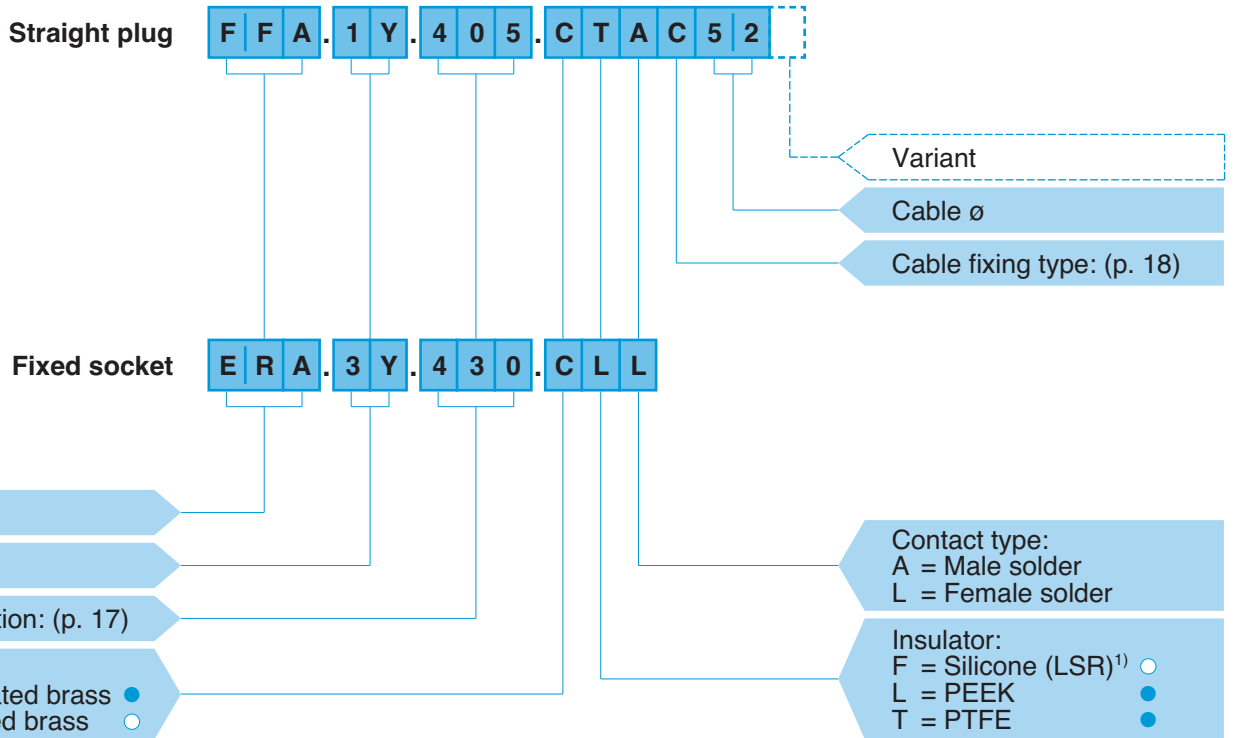
**Notes:** <sup>1)</sup> with safety locking ring.

## Recommended cables

Models	Recommended cables	Colour	Outer diameter (mm)	Standard	Operating voltage (kV DC)
FFA.1Y.410.CTAC57	TV-20 Sumitomo	Red	5.75	UL 3239	
FFA.1Y.410.CTLC57	TV-20 Sumitomo	Red	5.75	UL 3239	
FFR.1Y.416.CFAE55R	CHT.99.574.710				
HGP.1Y.416.CLL37	CHT.99.574.710				
PEP.1Y.416.CLLY10	CHT.99.574.710				
FFR.3Y.425.CFAE55Z	JJC40003 / LEDE cable 130660	Red	5.40	UL 11152	30
FFR.1Y.416.CFAE55Z	JJC40003 / LEDE cable 130660	Red	5.40	UL 11152	30
FFR.1Y.416.CFAE55G	JJC40019 / LEDE cable 130666	Red	6.00		30
FFR.1Y.416.CFAE55B	JJC40003 / LEDE cable 130660	Red	5.40	UL 11152	30
FFR.1Y.416.CFAE63	NEK 20KV (07506)				
FFR.1Y.416.CFAE64	Lynenwerk 2YCH 20KV				
FFR.1Y.416.CFAE67G	HTC 50-5-1	Red	3.20	CERN/DESY	5
FFR.3Y.425.CFAE55G	Belden 8866	Red	5.30	–	40
FFR.3Y.425.CFAE76	Lynenwerk 2YCH 30KV				
FFR.3Y.425.CFAE88	CHH.99.NEK.HTC				
	CHT.99.554.075				
	CHT.02.053.048				
	CHT.40.090.38060RB				40
	CHT.18.150.65088GB / LEDE 315650				18
FFA.1Y.405.C●●C32	LEDE 140470	Red	2.90		3
FFA.1Y.405.C●●C42	CHT.03.075.20040RB / LEDE 150470	Red	4.00		3
FFA.1Y.410.CLLC47	CHT.09.060.28046RB / LEDE 106330		4.60		9

**Notes:** Outer insulation cable diameter (mm) must be adapted to the inner silicone insulator diameter (mm).

## Part Numbering System



**Notes:** <sup>1)</sup> only for the plugs of the 1Y.416 and 3Y.425 series.

**FFA.1Y.405.CTAC52** = straight plug with cable collet, 1Y series, high voltage type, 10.5 kVDC test voltage, chrome-plated brass housing, PTFE insulator, male solder contact, C type collet for 5.2 mm max diameter cable.

**ERA.3Y.430.CLL** = fixed socket, nut fixing, 3Y series, high voltage type, 42 kVDC test voltage, chrome-plated brass housing, PEEK insulator, female solder contact.

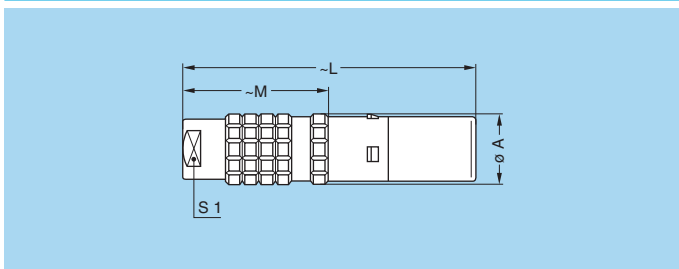
**Note:** As standard, plugs are fitted with a male contact and sockets with a female contact. Some of these series Y models can be supplied with a female contact for plugs and a male contact for sockets.





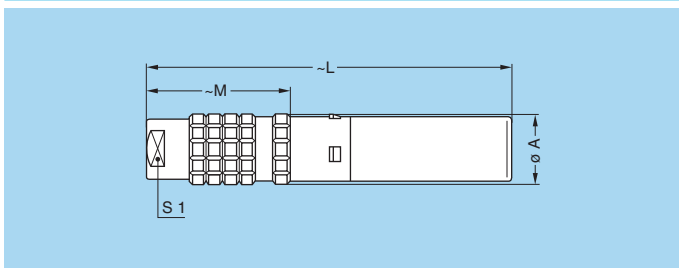
## Models without safety locking ring

### FFA.1Y Straight plug, cable collet



Part number	Dimensions (mm)				Cable $\phi$	
	A	L	M	S1	min.	max.
<b>FFA.1Y.405.C●AC--</b>	13	54.0	27.5	9	1.2	6.8
<b>FFA.1Y.405.C●LC--</b>	13	67.0	30.5	9	1.2	6.8
<b>FFA.1Y.410.C●AC--</b>	13	63.7	27.7	9	1.2	6.8
<b>FFA.1Y.410.C●LC--</b>	13	85.0	39.3	9	1.2	6.8

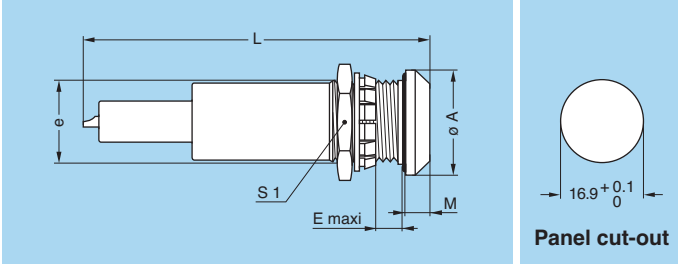
### FFA.3Y Straight plug, cable collet



Part number	Dimensions (mm)				Cable $\phi$	
	A	L	M	S1	min.	max.
<b>FFA.3Y.415.C●AC--</b>	19	98	42	15	2.6	10.5
<b>FFA.3Y.415.C●LC--</b>	19	116	52	15	2.6	10.5
<b>FFA.3Y.430.C●AC--</b>	19	115	42	15	2.6	10.5
<b>FFA.3Y.430.C●LC--</b>	19	200	105	15	2.6	10.5

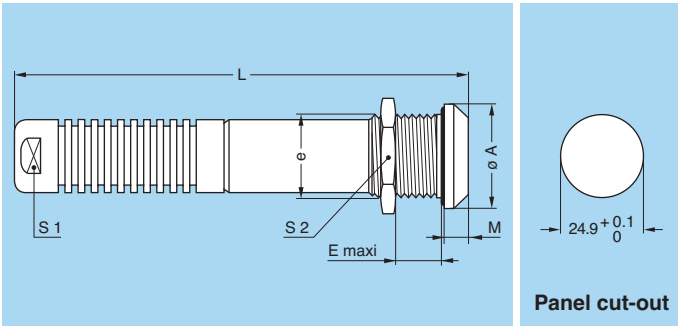


**ERA.1Y Fixed socket, nut fixing**



Part number	Dimensions (mm)					
	A	e	E	L	M	S1
<b>ERA.1Y.405.C●A</b>	20	M16x1.0	6.5	61.0	4.5	19
<b>ERA.1Y.405.C●L</b>	20	M16x1.0	6.5	51.0	4.5	19
<b>ERA.1Y.410.C●A</b>	20	M16x1.0	6.5	79.5	4.5	19
<b>ERA.1Y.410.C●L</b>	20	M16x1.0	6.5	69.8	4.5	19

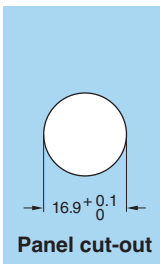
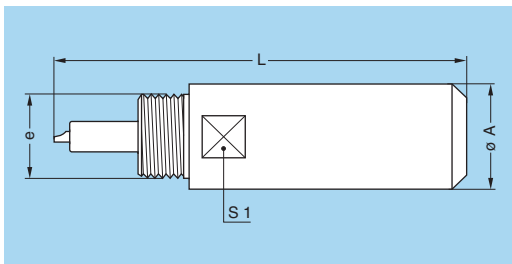
**ERA.3Y Fixed socket, nut fixing**



Part number	Dimensions (mm)						
	A	e	E	L	M	S1	S2
<b>ERA.3Y.415.C●A<sup>1)</sup></b>	31	M24x1.0	12	77	6.5	20	30
<b>ERA.3Y.415.C●L</b>	31	M24x1.0	12	103	6.5	20	30
<b>ERA.3Y.430.C●A<sup>1)</sup></b>	31	M24x1.0	12	108	6.5	20	30
<b>ERA.3Y.430.C●L</b>	31	M24x1.0	12	151	6.5	20	30

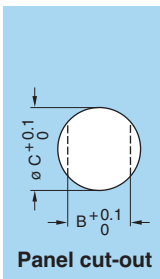
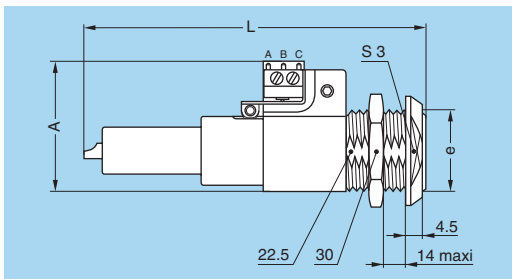
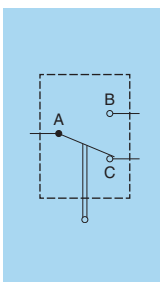
**Note:** <sup>1)</sup> Male contact version does not include extended Teflon® tube.

### ERY.1Y Fixed socket, screw fixing, visible shell



Part number	Dimensions (mm)			
	A	e	L	S1
<b>ERY.1Y.410.CTA</b>	20	M16x1.0	79.5	18

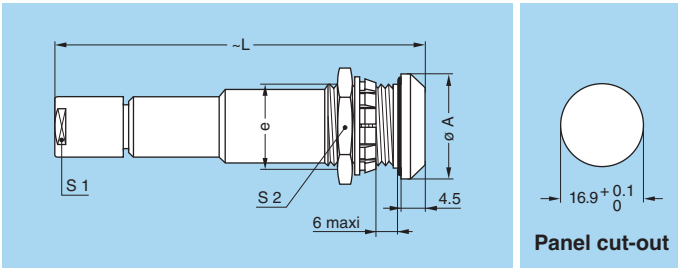
### ERD.3Y Fixed socket with two nuts and microswitch (back panel mounting)



Part number	Dimensions (mm)				Panel cut-out	
	A	e	L	S3	B	C
<b>ERD.3Y.415.CTLM</b>	40	M24x1.0	103.5	27	22.6	24.1
<b>ERD.3Y.415.CTYM</b>	40	M24x1.0	77.0	27	22.6	24.1

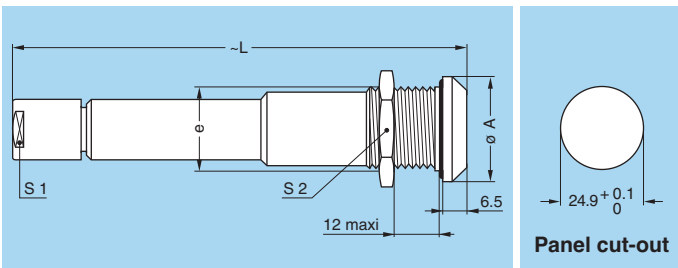


**PSA.1Y Fixed socket, nut fixing, cable collet**



Part number	Dimensions (mm)					Cable ø	
	A	e	L	S1	S2	min.	max.
<b>PSA.1Y.405.C●AC--</b>	20	M16x1.0	71	9	19	1.2	6.8
<b>PSA.1Y.405.C●LC--</b>	20	M16x1.0	74	9	19	1.2	6.8
<b>PSA.1Y.410.C●AC--</b>	20	M16x1.0	81	9	19	1.2	6.8
<b>PSA.1Y.410.C●LC--</b>	20	M16x1.0	93	9	19	1.2	6.8

**PSA.3Y Fixed socket, nut fixing, cable collet**

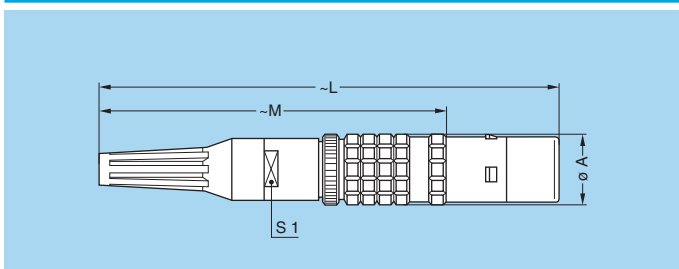
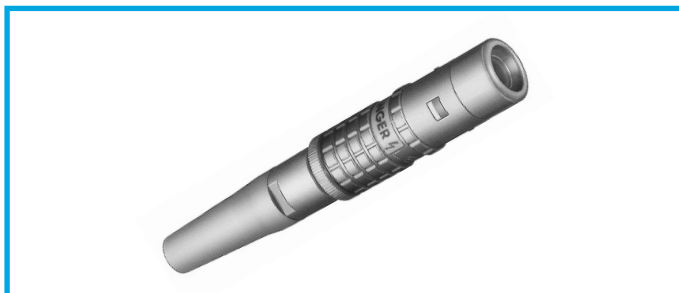


Part number	Dimensions (mm)					Cable ø	
	A	e	L	S1	S2	min.	max.
<b>PSA.3Y.430.C●LC--</b>	31	M24x1.0	150	15	30	2.6	10.5



## Models with safety locking ring

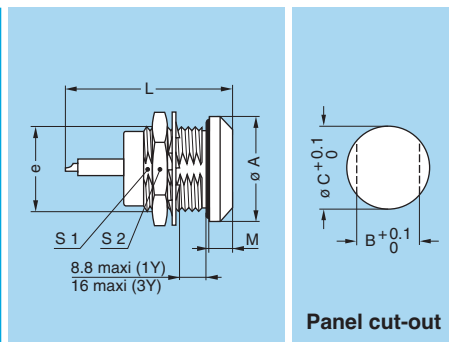
### FFR Straight plug for cable crimping with bend relief and safety locking ring



Part number	Dimensions (mm)				Cable $\phi$	
	A	L	M	S1	min.	max.
<b>FFR.1Y.416.CFAE----</b>	13	83	64.7	9	3.3	6.6
<b>FFR.1Y.416.CFAE67G</b>	13	100	82.0	12	–	9.0
<b>FFR.3Y.425.CFAE----</b>	19	120	92.0	15	3.0	10.5

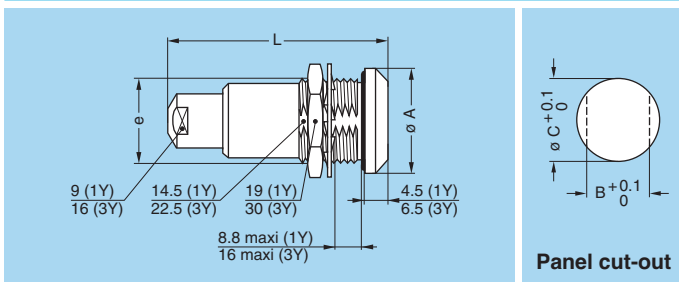
**Note:** FFR.1Y.416.CFAE52R is delivered with red bend relief (page 18). Some specific model may accept larger dimensions.

### ERA Fixed socket, nut fixing



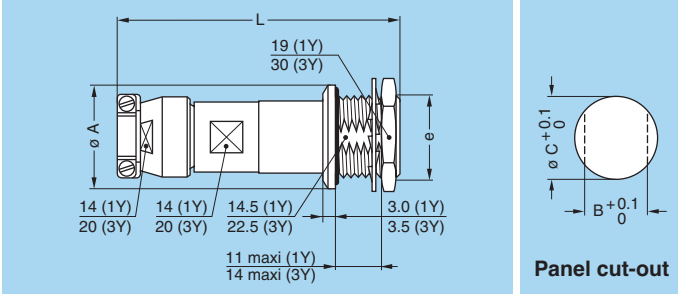
Part number	Dimensions (mm)						Panel cut-out	
	A	e	L	M	S1	S2	B	C
<b>ERA.1Y.416.CLL</b>	20	M16x1.0	34	4.5	14.5	19	14.6	16.9
<b>ERA.3Y.425.CLL</b>	31	M24x1.0	50	6.5	22.5	30	22.6	24.1

### ERA Fixed socket, nut fixing, for non-screened cable



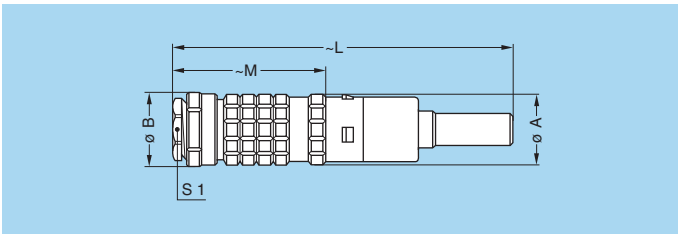
Part number	Dim. (mm)			Panel cut-out		Cable $\phi$
	A	e	L	B	C	
<b>ERA.1Y.416.CLL37</b>	20	M16x1.0	42	14.6	16.9	3.7 $\pm$ 0.1
<b>ERA.3Y.425.CLL47</b>	31	M24x1.0	60	22.6	24.1	4.7 $\pm$ 0.1

### PEP Fixed socket, nut fixing, with cable clamp nut (back panel mounting)



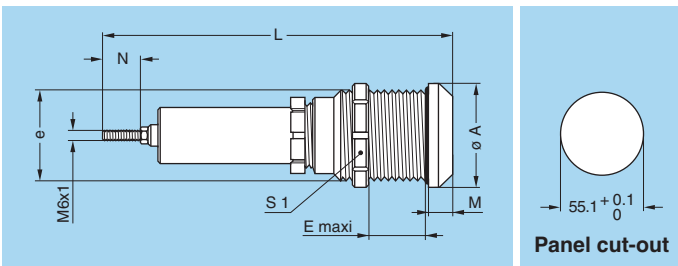
Part number	Dimensions (mm)			Panel cut-out		Cable $\phi$	
	A	e	L	B	C	min.	max.
<b>PEP.1Y.416.CLLY--</b>	20	M16x1.0	70.5	14.6	16.9	7	10
<b>PEP.3Y.425.CLLY--</b>	31	M24x1.0	85.0	22.6	24.1	7	15

### FFB.6Y Straight plug with cable collet and safety locking ring



Part number	Dimensions (mm)					Cable $\phi$	
	A	B	L	M	S1	min.	max.
<b>FFB.6Y.450.CLAC--</b>	47	50	215	89.2	36	11.0	31.3

### ERA.6Y Fixed socket, nut fixing



Part number	Dimensions (mm)						
	A	e	E	L	M	N	S1
<b>ERA.6Y.450.CLL</b>	65	M55x2.0	45	206	10	29	65



## Watertight or vacuumtight models

HGP, EWB, VPP, VCP socket models allow the device on which they are fitted to reach a protection index of IP68 as per IEC 60529.

They are fully compatible with plugs of the same series and are widely used for portable radios, military, laboratory equipment, aviation, research institutes, etc.

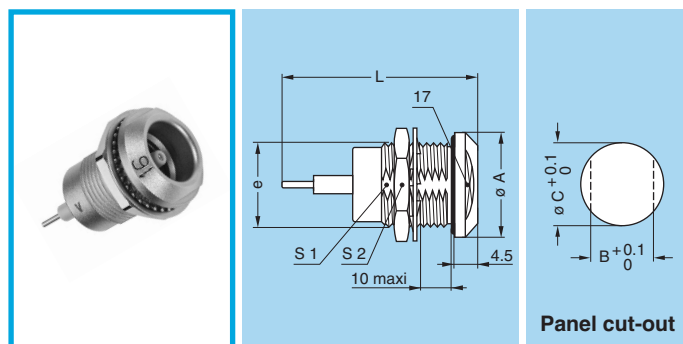
## Technical Characteristics

### Mechanical and Climatical

Characteristics	Value	Standard
Endurance	> 1000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range	-40°C to +80°C	
Salt spray corrosion test	1000 h	IEC 60512-6 test 11f
Climatical category	20/80/21	IEC 60068-1
Leakage rate (He) <sup>1)</sup>	< 10 <sup>-7</sup> mbar.l.s <sup>-1</sup>	IEC 60512-7 test 14b

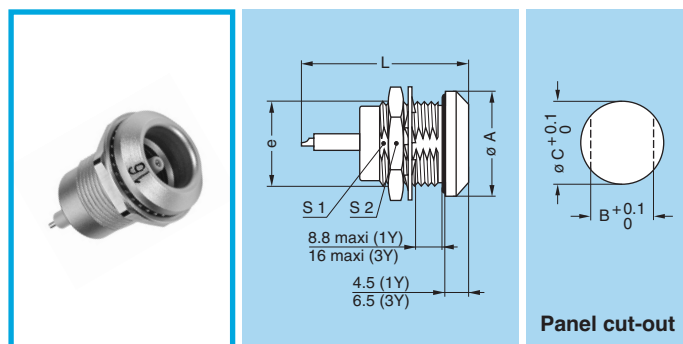
Note: <sup>1)</sup> only for vacuumtight models.

### EWB.1Y Fixed socket, nut fixing, vacuumtight, for print



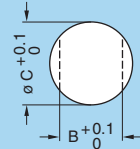
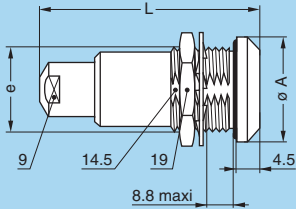
Part number	Dimensions (mm)					Panel cut-out	
	A	e	L	S1	S2	B	C
<b>EWB.1Y.416.CLN</b>	20	M16x1.0	37.5	14.5	19	14.6	16.9

### HGP Fixed socket, nut fixing, vacuumtight



Part number	Dimensions (mm)					Panel cut-out	
	A	e	L	S1	S2	B	C
<b>HGP.1Y.416.CLL</b>	20	M16x1.0	34	14.5	19	14.6	16.9
<b>HGP.3Y.425.CLL</b>	31	M24x1.0	50	22.5	30	22.6	24.1

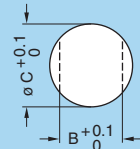
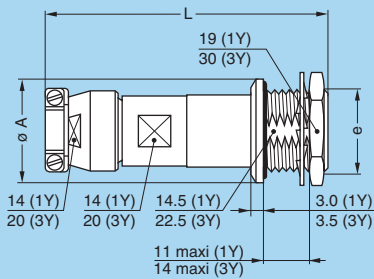
### HGP Fixed socket, nut fixing, vacuumtight



Panel cut-out

Part number	Dim. (mm)			Panel cut-out		Cable $\phi$
	A	e	L	B	C	
<b>HGP.1Y.416.CLL37</b>	20	M16x1.0	42	14.6	16.9	3.7 $\pm$ 0.1

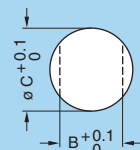
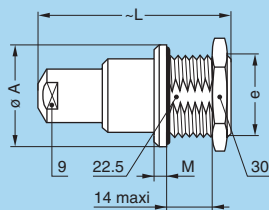
### VPP Fixed socket, nut fixing, with cable clamp nut, vacuumtight (back panel mounting)



Panel cut-out

Part number	Dimensions (mm)			Panel cut-out		Cable $\phi$	
	A	e	L	B	C	min.	max.
<b>VPP.1Y.416.CLLY10</b>	20	M16x1.0	70.5	14.6	16.9	7	10
<b>VPP.3Y.425.CLLY--</b>	31	M24x1.0	85.0	22.6	24.1	7	15

### VCP.3Y Fixed socket, nut fixing, vacuumtight, for non-screened cable (back panel mounting)



Panel cut-out

Part number	Dimensions (mm)				Panel cut-out		Cable $\phi$
	A	e	L	M	B	C	
<b>VCP.3Y.425.CLL47</b>	31	M24x1	59	3.5	22.6	24.1	4.7 $\pm$ 0.1





## Insert configuration

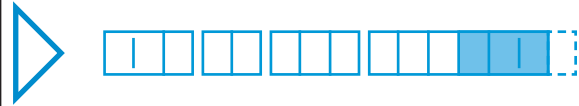
### Single High Voltage

Male solder contacts		Female solder contacts		Reference	Series	Contact ø (mm)	Contact gender for plug	Conductor ø maxi (mm) <sup>1)</sup>	Dielectric ø maxi (mm) <sup>1)</sup>	Cable sheath ø maxi (mm) <sup>1)</sup>	Standard insulator material	Creepage distance min. (mm) <sup>3)</sup>	Test voltage Ue (kV DC) <sup>2)</sup>	Test voltage Ue (kV rms) <sup>2)</sup>	Rated current (A)
Male solder contacts	Female solder contacts	Male solder contacts	Female solder contacts												
				405	1Y	1.3	A/L	1.45	3.2	6.7	T	16.0	10.5	7.5	8.0
					410	1Y	1.3	A/L	1.45	4.1	6.7	T	24.5	15.0	10.5
				415		3Y	4.5	A/L	2.45	7.3	10.5	T	40.0	22.5	16.0
					416	1Y	0.9	A	0.75	4.5	6.6	F/L	14.0	35.0	25.0
				425		3Y	1.6	A	1.35	5.5	10.5	F/L	25.5	52.0	37.0
					430	3Y	4.5	A/L	2.45	7.3	10.5	T	58.0	42.0 <sup>4)</sup>	29.0 <sup>4)</sup>
				450		6Y	7.0	A	6.60	23.0	31.3	L	86.4	tbd	70.0 <sup>5)</sup>

**WARNING:** Depending on the application specific safety standard apply regarding determination of the operating voltage  $U_s$ . That shall be considered carefully when selecting connectors.

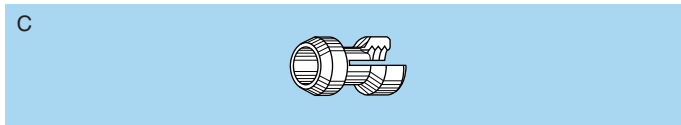
In low duty operations operating voltage  $U_s$  can be as high as  $U_s = \frac{U_e}{1.5}$ . For severe applications operating voltage can be as low as  $U_s = \frac{U_e}{3}$ .

**Note:** <sup>1)</sup> some specific model may accept larger dimensions, please contact us. <sup>2)</sup> test voltage  $U_e$  is measured according to IEC 60512-2 test 4a, in mated condition and at see level. <sup>3)</sup> creepage distance is measured in the mated condition. <sup>4)</sup> value for male contact plug mated with female contact socket. <sup>5)</sup> peak value for 1.2/50µs normalized voltage shock.



## Collets

### Type C collets



#### 1Y.405 / 3Y.410

Type	Cable ø	
	min.	max.
C22	1.2	2.2
C32	2.3	3.2
C42	3.5	4.2
C52	4.2	5.2
C62	5.4	6.2
C66	6.5	6.6
C68	6.7	6.8

#### 3Y.415 / 3Y.430

Type	Cable ø	
	min.	max.
C42	2.6	4.2
C57	4.2	5.7
C72	5.7	7.2
C87	7.2	8.7
C97	8.5	9.7
C10	9.7	10.5

#### 6Y.450

Type	Cable ø	
	min.	max.
C12	11.0	12.0
C21	20.0	21.0
C29	27.9	28.8
C30	29.0	30.0
C31	30.3	31.3

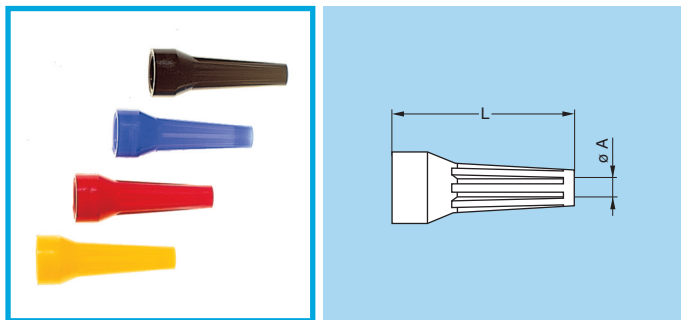
### Fixing system type E or Y (1Y.416 and 3Y.425, for FFR, PEP and VPP models)



Type	Cable dimension				
	Sheath ø		Max. dielec. Ø (±0.1)	Max. cond. ø	
	Min.	Max.			
1Y	E52	–	6.6	3.6	0.75
	E55	–	6.0	3.9	0.75
	E63	–	6.6	3.6	0.75
	E64	–	6.6	3.6	1.35
	E67	–	9.0	4.5	1.35
	Y10	7.0	10.0	–	0.75
	3Y	E55	–	6.0	4.0
E76		–	8.0	4.6	1.65
E88		–	9.0	5.5	1.65
E10		–	10.5	4.6	1.65
Y90		7.0	9.0	–	1.35
Y15		12.0	15.0	–	1.35

## Accessories

### GMA Bend relief (TPU)



A bend relief made from thermoplastic polyurethane elastomer can be fitted over LEMO plugs and sockets that are supplied with nut for fitting such bend relief. Use the part numbers shown below to order this accessory separately.

#### Main characteristics

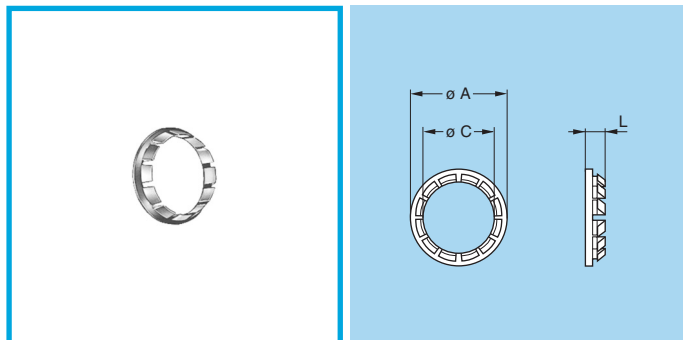
- Material: TPU (Thermoplastic Polyurethane)
- Temperature range in dry atmosphere: -40°C +80°C

Part number	Bend relief		Cable ø	
	A	L	min.	max.
GMA.1B.054.DG	5.4	30	5.4	6.0
GMA.1B.065.DG <sup>1)</sup>	6.5	30	6.5	7.0
GMA.1Y.087.DG	8.7	30	8.7	9.0

Ref.	Colour	Ref.	Colour	Ref.	Colour
A	blue	J	yellow	R	red
B	white	M	brown	S	orange
G	grey	N	black	V	green

**Note:** All dimensions are in millimetres. <sup>1)</sup> Design may differ from other bend relief, model without stripes. The last letter «G» of the part number indicates the grey colour of the bend relief. For ordering a bend relief with another colour, see table below and replace the letter «G» by the letter of the required colour.

## GBB Tapered washers



Part number	Dimensions (mm)		
	A	C	L
<b>GBB.1E.250.LN</b>	19	16.2	4

- Material: Nickel-plated brass (3  $\mu$ m)

**Note:** To order this accessory separately, use the above part numbers. The panel cut out diameter is larger when using tapered washer.

## Tooling

### DP● Crimping tool with die

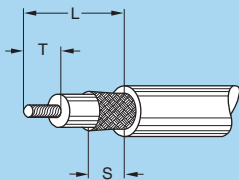


This tool is needed for the termination of the cable, (crimping over the screen) of the plug FFR.

Part number	Series	Crimp collet ref.
<b>DPE.99.007.0K</b>	1Y.416	E55
<b>DPE.99.127.4K</b>	1Y.416	E52, E63, E64, E67
<b>DPE.99.007.0K</b>	3Y.425	E55
<b>DPA.99.209.5K</b>	3Y.425	E76
<b>DPA.99.011.6K</b>	3Y.425	E10
<b>DPD.91.010.5K</b>	3Y.425	E88

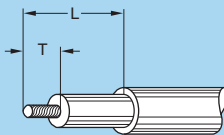
## Cable assembly

### Cable stripping lengths for shielded cable



Models	Cable stripping lengths (mm)		
	L	S	T
<b>FFA.1Y.405.CTAC--</b>	34.5	8	8.0
<b>PSA.1Y.410.CTLC62</b>	45.0	6	8.0
<b>PEP.1Y.416.CLLY10</b>	17.9	8	3.9
<b>VPP.1Y.416.CLLY10</b>	24.0	8	4.0
<b>FFA.3Y.415.CTAC--</b>	79.0	6	15.0
<b>FFA.3Y.415.CTYC77</b>	73.0	6	15.0
<b>PEP.3Y.425.CLLY15</b>	41.3	12	4.3
<b>VPP.3Y.425.CLLY15</b>	41.3	12	4.3
<b>FFA.3Y.430.CTAC--</b>	97.0	12	14.0
<b>FFA.3Y.430.CTLC--</b>	92.0	12	11.0
<b>PSA.3Y.430.CTLC--</b>	56.0	7	8.0
<b>FFB.6Y.450.CLAC--</b>	119.0	12	30.0

### Cable stripping lengths for non shielded cable

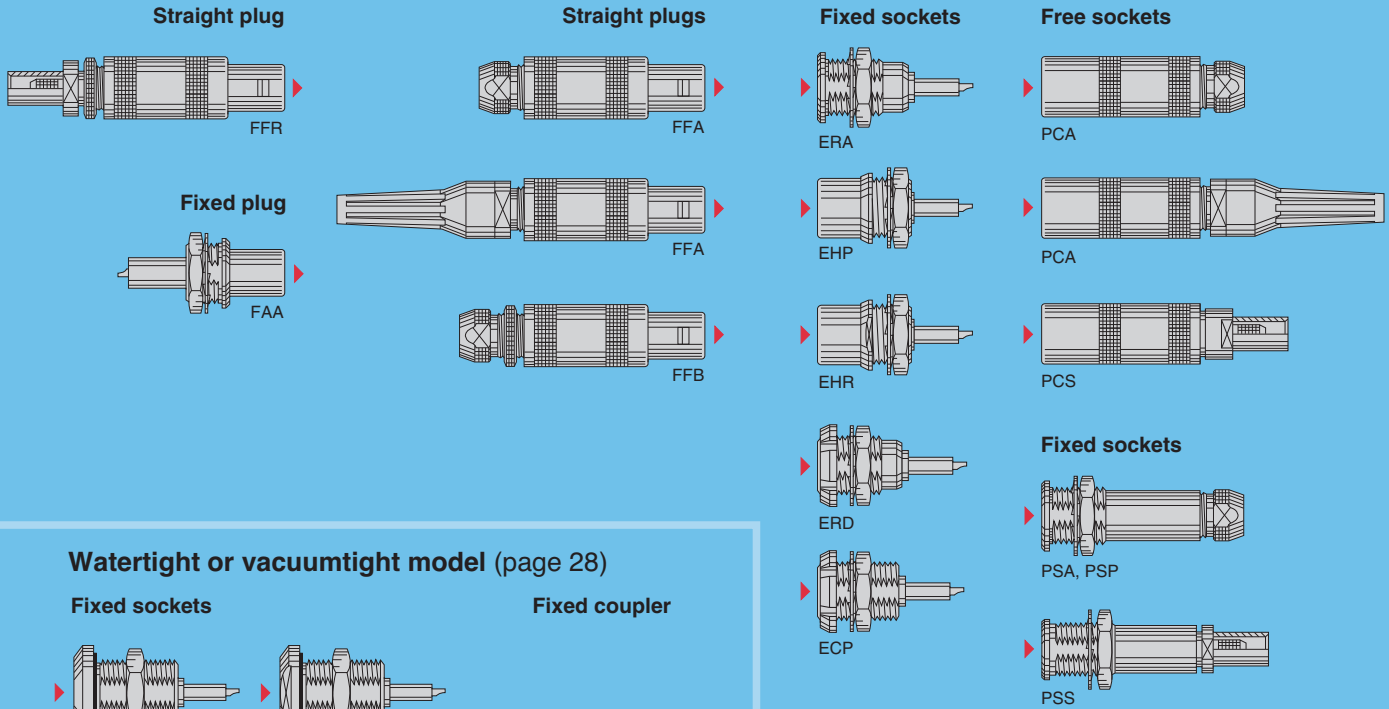


Models	Cable stripping lengths (mm)	
	L	T
<b>ERD.1Y.416.CLL</b>	33.9	3.9
<b>ERA.3Y.425.CLL</b>	32.0	4.5
<b>HGP.3Y.425.CLL</b>	32.0	4.5
<b>ERA.3Y.430.CTA</b>	85.5	14.5
<b>ERA.3Y.430.CLL</b>	–	6.5
<b>ERA.3Y.430.CTL</b>	–	6.5

# S series (HV single contact)

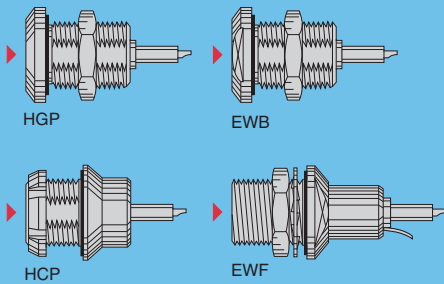
- S series connectors have main features as follows:
- security of the Push-Pull self-latching system
  - solder contacts
  - 360° screening for full EMC shielding
  - wide range of models satisfying most applications.

## Models (page 23)

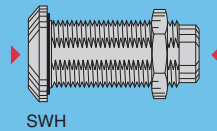


## Watertight or vacuumtight model (page 28)

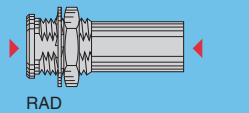
### Fixed sockets



### Fixed coupler



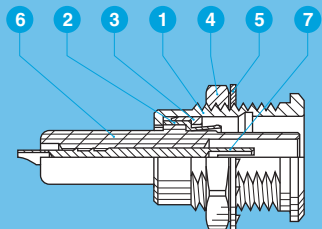
### Fixed coupler



## Part Section Showing Internal Components

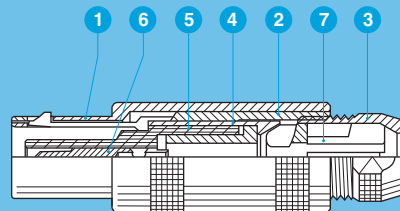
### Fixed socket

- 1 outer shell
- 2 earthing crown
- 3 retaining ring
- 4 hexagonal nut
- 5 locking washer
- 6 insulator
- 7 female contact



### Straight plug

- 1 outer shell
- 2 latch sleeve
- 3 collet nut
- 4 centre-piece
- 5 insulator
- 6 male contact
- 7 collet



**Note:** other connector shells are available on request.

## Technical characteristics

### Materials and treatments

Component	Material (Standard)	Thickness of surface treatment ( $\mu\text{m}$ )								
		chrome			nickel		gold			
		Cu	Ni	Cr	Cu	Ni	Cu	Ni	Au	
Outer shell, collet nut, conical nut	Brass (UNS C 38500)	0.5	3	0.3						
Innershell	Brass (UNS C 38500)				0.5	3				
Earthing crown	Beryllium Copper (UNS C 17300)						0.5	3	1.0	
Latch sleeve	Special bronze/brass	0.5	3	0.3						
Locking washer	Bronze (UNS C 52100)				0.5	3				
Hexagonal nut	Brass (UNS C 38500)				0.5	3				
Other metallic components	Brass (UNS C 38500)				0.5	3				
Male contact	Brass (UNS C 34500)						0.5	3	1.0	
Female contact	Bronze (UNS C 54400) or Cu-Be (UNS C 17300)						0.5	3	1.5	
Clips	Cu-Be or special steel									
Insulator	PTFE, PEEK									
	Silicone rubber (LSR)									
O-ring and gaskets	Silicone MQ/MVQ									

### Mechanical and Climatical

Characteristics	Value	Standard
Endurance	> 1000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range	-55°C +250°C	
Resistance to vibrations	10-2000 Hz, 15 g	IEC 60512-4 test 6d
Shock resistance	100g, 6 ms	IEC 60512-4 test 6c
Salt spray corrosion test	1000 h	IEC 60512-6 test 11f
Protection index (mated)	IP 50	IEC 60529
Climatical category	55/175/21	IEC 60068-1

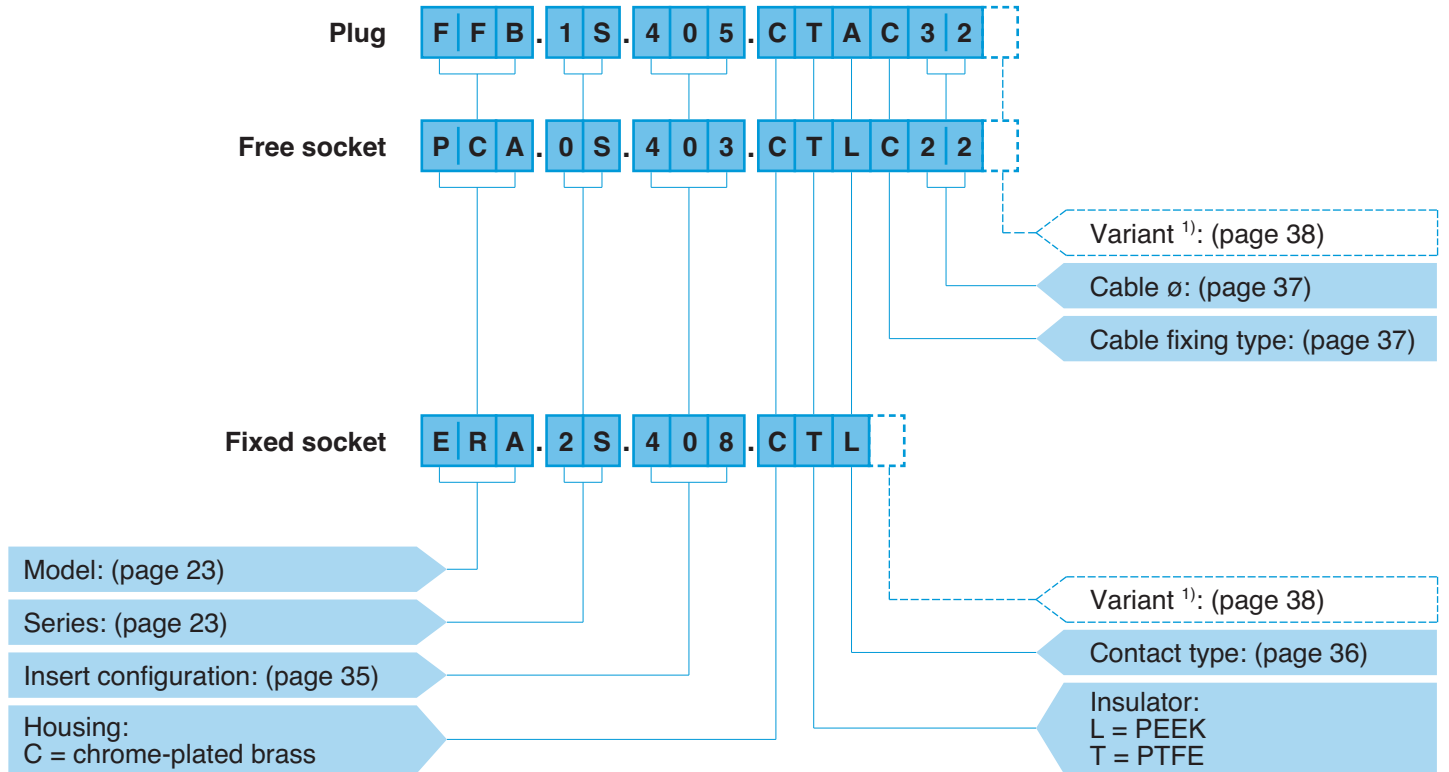
### Electrical

Characteristics	Value	Standard
Shielding efficiency	at 10 MHz	> 75 dB
	at 1 GHz	> 40 dB
		IEC 60169-1-3
		IEC 60169-1-3

### Recommended cables

Type	Series										Type of cable	Operating voltage
	0S.403	0S.405	1S.405	1S.408	2S.408	3S.405	3S.410	3S.415	3S.460	4S.410		
017420	●	●	●								RG174	depending on manufacturer
140470	●										High voltage cable	3kV
150470	●		●	●	●						High voltage cable	3kV
106330		●			●		●				High voltage cable	9kV
158490											RG58	depending on manufacturer
130666			●			●					High voltage cable	30kV
130660			●			●	●	●			High voltage cable	30kV
213000											RG213	depending on manufacturer

## Part Numbering System



**FFB.1S.405.CTAC32** = straight plug with cable collet and safety locking ring, 1S series, high voltage, type 10.5 kVDC test voltage, chrome-plated brass housing, PTFE insulator, male solder contact, C type collet for a 3.2 mm diameter cable.

**PCA.0S.403.CTLC22** = free socket with cable collet, 0S series, high voltage, type 6 kVDC test voltage, chrome-plated brass housing, PTFE insulator, female solder contact, C type collet for a 2.2 mm diameter cable.

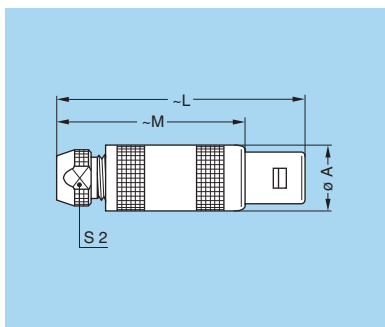
**ERA.2S.408.CTL** = fixed socket, nut fixing, 2S series, high voltage, type 12 kVDC test voltage, chrome-plated brass housing, PTFE insulator, female solder contact.

**Note:** <sup>1)</sup> the «Variant» position of the part number is used to specify the presence of a nut for fitting a bend relief. For models with collet nut for fitting a bend relief, a «Z» should be indicated and a bend relief can be ordered separately as indicated in the «Accessories» section. An order for a connector with bend relief should thus include two part numbers.



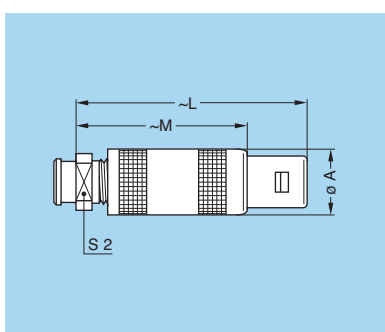
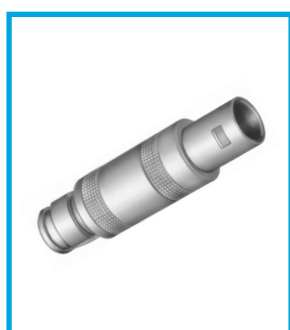
## Models

### FFA Straight plug, cable collet



Reference			Dimensions (mm)				Cable $\phi$	
Model	Series	Type	A	L	M	S2	min.	max.
FFA	0S	403	9	34.7	24.7	6.5	1.3	4.4

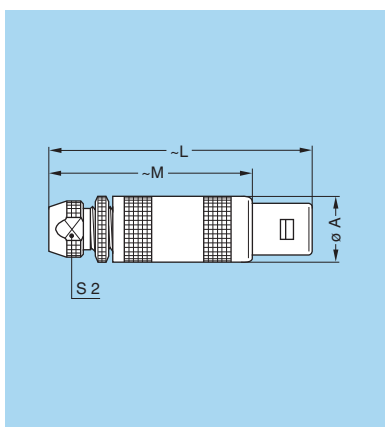
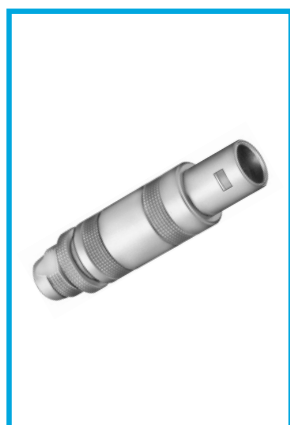
### FFA Straight plug, cable collet and nut for fitting a bend relief <sup>1)</sup>



Reference			Dimensions (mm)				Cable $\phi$	
Model	Series	Type	A	L	M	S2	min.	max.
FFA	0S	403	9	33.5	23.5	7.0	1.3	4.4

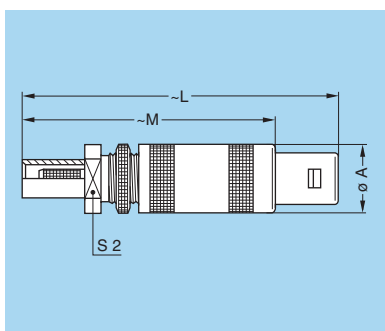
**Note:** <sup>1)</sup> to order, add a «Z» at the end of the reference. The bend relief must be ordered separately (see page 39).

### FFB Straight plug with cable collet and safety locking ring



Reference			Dimensions (mm)				Cable $\phi$	
Model	Series	Type	A	L	M	S2	min.	max.
FFB	0S	403	9.0	36.8	26.8	6.5	1.3	4.4
FFB	1S	405	12.0	45.0	34.0	8.5	1.2	6.8
FFB	2S	408	14.8	55.5	43.5	11.0	1.3	8.7
FFB	3S	405	17.8	65.0	50.0	14.0	2.7	10.7
FFB	3S	410	17.8	75.0	60.0	14.0	2.7	10.7
FFB	3S	415	17.8	75.0	60.0	14.0	2.7	10.7
FFB	3S	460	17.8	65.0	50.0	14.0	2.7	10.7
FFB	4S	410	24.8	89.0	71.0	19.0	4.1	13.0

### FFR Straight plug, safety locking ring, with cable crimping

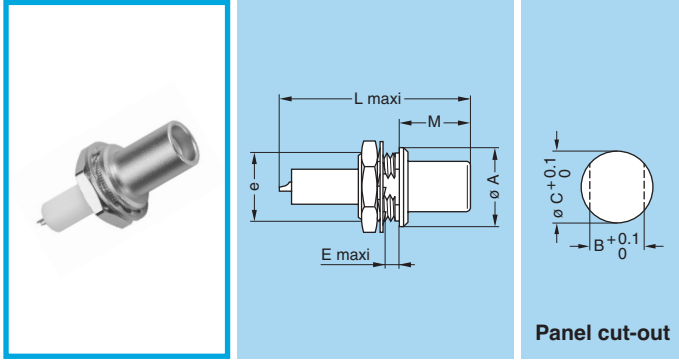


Reference			Dimensions (mm)				Cable $\phi$	
Model	Series	Type	A	L	M	S2	min.	max.
FFR	0S	405	9	42	32	6.5	1.3	4.4
FFR	1S	408	12	53	42	8.5	1.2	6.8

**Note:** Only available with male contact. For crimp ferrules see page 37.



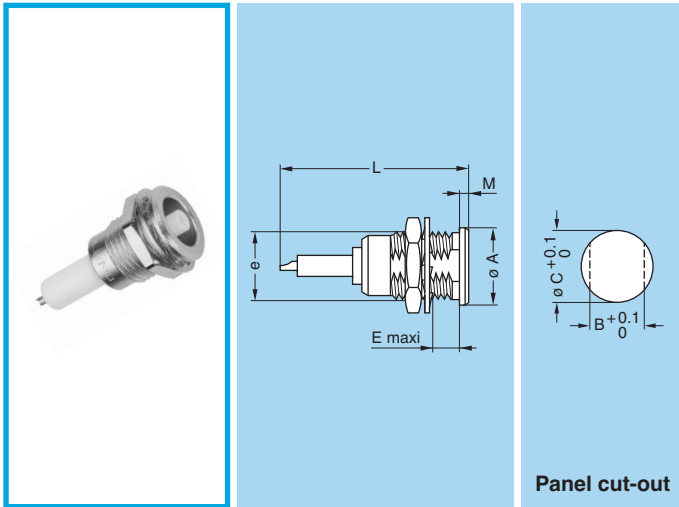
### FAA Fixed plug non-latching, nut fixing



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
FAA	0S	403	10	M9x0.6	2.0	27.0	11.2	8.3	9.1
FAA	1S	405	14	M12x1.0	2.5	34.0	12.5	10.6	12.1
FAA	3S	405	22	M18x1.0	4.0	44.0	17.0	16.6	18.2
FAA	3S	410	22	M18x1.0	4.0	44.5	17.0	16.6	18.2
FAA	3S	415	22	M18x1.0	4.0	45.0	17.0	16.6	18.2

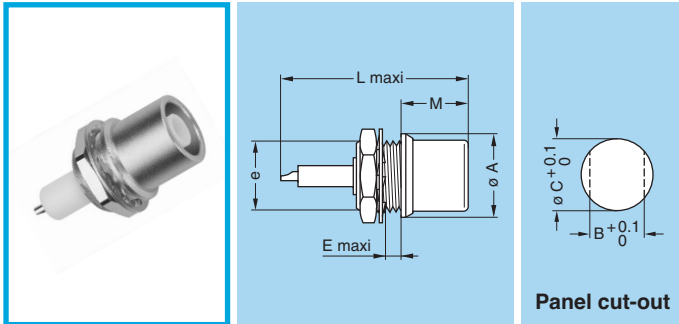
**Note:** For the 3S.410 and 3S.415, the contact solder pot is inside the rear insulator.

### ERA Fixed socket, nut fixing



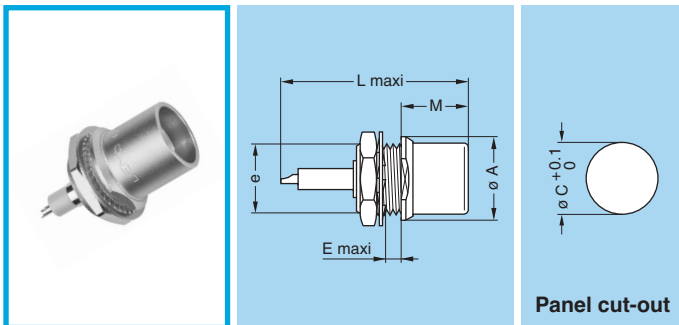
Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
ERA	0S	403	10	M9x0.6	7.0	24.5	1.2	8.3	9.1
ERA	0S	405	10	M9x0.6	7.0	24.5	1.2	8.3	9.1
ERA	1S	405	14	M12x1.0	7.5	31.5	1.5	10.6	12.1
ERA	1S	408	14	M12x1.0	7.5	30.0	1.5	10.6	12.1
ERA	2S	408	18	M15x1.0	8.5	41.5	1.8	13.6	15.1
ERA	3S	405	22	M18x1.0	11.5	41.5	2.0	16.6	18.2
ERA	3S	410	22	M18x1.0	11.5	46.5	2.0	16.6	18.2
ERA	3S	415	22	M18x1.0	11.5	52.0	2.0	16.6	18.2
ERA	3S	460	22	M18x1.0	11.5	38.0	2.0	16.6	18.2
ERA	4S	410	28	M25x1.0	12.0	56.5	2.5	23.6	25.2

### EHP Fixed socket, nut fixing, protruding shell



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
EHP	0S	403	10	M9x0.6	2.0	25.0	12.5	8.2	9.1
EHP	1S	405	14	M12x1.0	3.5	31.5	12.0	10.5	12.1
EHP	3S	460	22	M18x1.0	4.0	38.0	18.7	-	18.2

### EHR Fixed socket, nut fixing, protruding shell



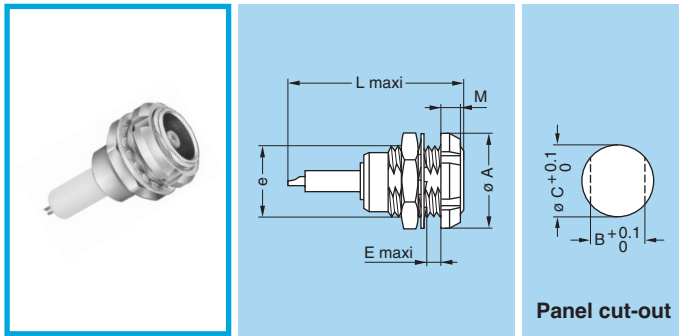
Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
EHR	3S	460	22	M18x1.0	4.4	43.6	18.7	-	18.2

**Note:** Only available with female contact.



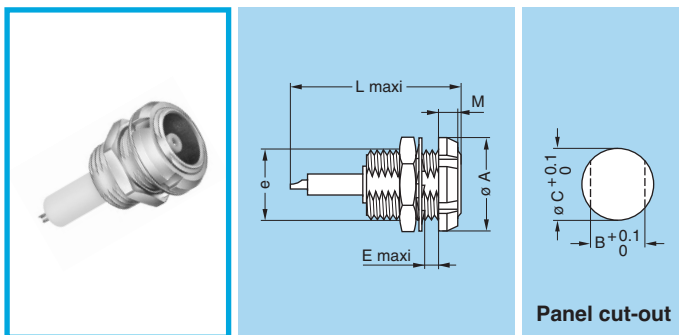


### ERD Fixed socket with two nuts (back panel mounting)



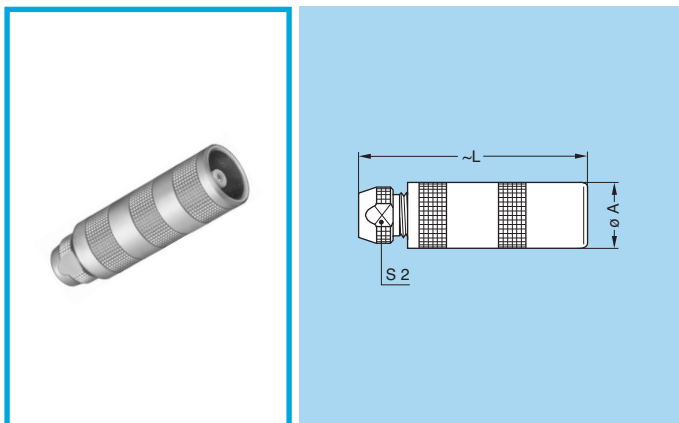
Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
ERD	0S	403	12	M9x0.6	5.5	25.5	2.5	8.3	9.1
ERD	1S	405	16	M12x1.0	6.0	31.5	3.5	10.6	12.1
ERD	1S	408	16	M12x1.0	6.0	30.0	3.5	10.6	12.1
ERD	2S	408	20	M15x1.0	5.5	41.5	3.5	13.6	15.1
ERD	3S	415	24	M18x1.0	9.0	48.5	4.5	16.6	18.2

### ECP Fixed socket with two nuts, long threaded shell (back panel mounting)



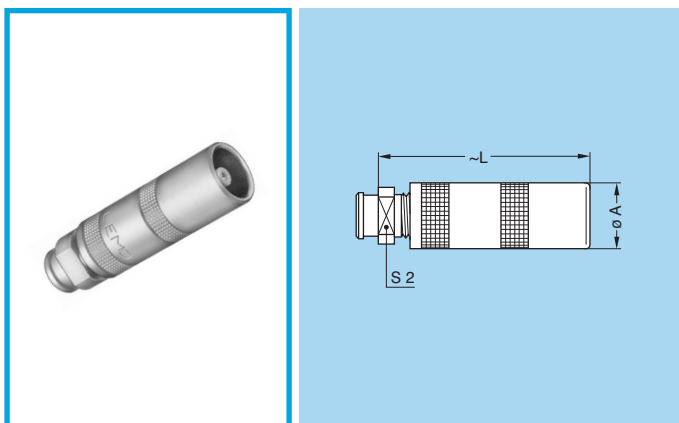
Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
ECP	0S	403	12	M9x0.6	9.0	25.0	2.5	8.3	9.1
ECP	1S	405	16	M12x1.0	9.5	31.5	3.5	10.6	12.1

### PCA Free socket, cable collet



Reference			Dimensions (mm)			Cable ø	
Model	Series	Type	A	L	S2	min.	max.
PCA	0S	403	8.9	33.5	6.5	1.3	4.4
PCA	1S	405	11.9	41.5	8.5	1.2	6.8
PCA	2S	408	14.8	54.0	11.0	1.3	8.7
PCA	3S	405	17.8	59.0	14.0	2.7	10.5
PCA	3S	410	17.8	64.0	14.0	2.7	10.5
PCA	3S	415	17.8	73.0	14.0	2.7	10.5
PCA	3S	460	17.8	65.0	14.0	2.7	10.5
PCA	4S	410	24.8	78.3	19.0	4.1	13.0

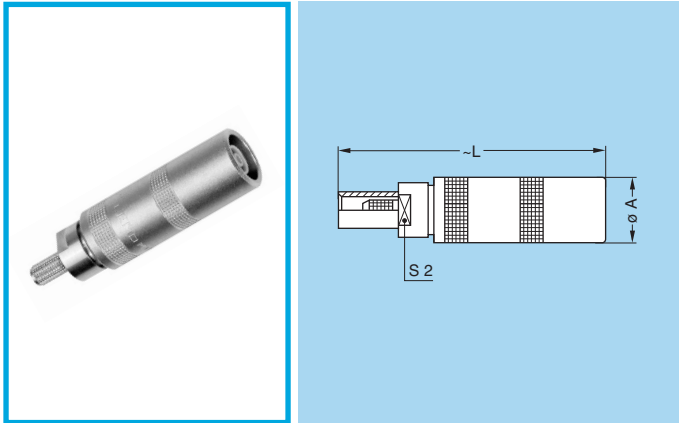
### PCA Free socket, cable collet and nut for fitting a bend relief <sup>1)</sup>



Reference			Dimensions (mm)			Cable ø	
Model	Series	Type	A	L	S2	min.	max.
PCA	0S	403	8.9	36	7	1.3	4.4
PCA	1S	405	11.9	44	9	1.2	6.8

**Note:** <sup>1)</sup> to order, add a «Z» at the end of the reference. The bend relief must be ordered separately (see page 39).

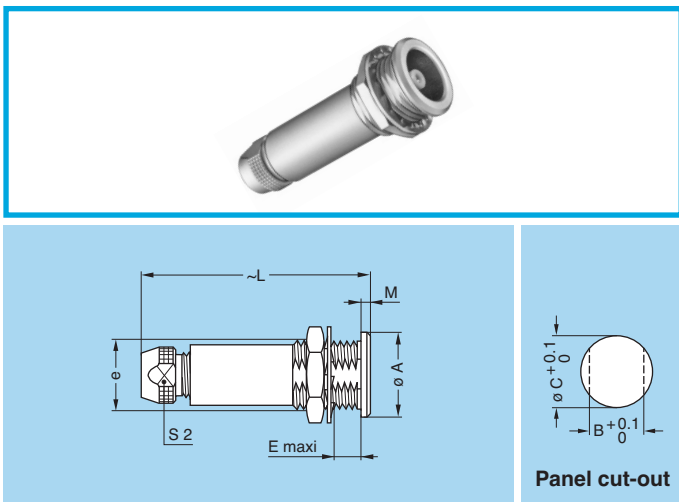
### PCS Free socket with cable crimping



Reference			Dimensions (mm)			Cable $\phi$	
Model	Series	Type	A	L	S2	min.	max.
PCS	0S	405	9	38	6.5	1.7	3.4
PCS	1S	408	12	52	8.5	2.3	4.6

**Note:** Only available with female contact. For crimp ferrules see p. 37.

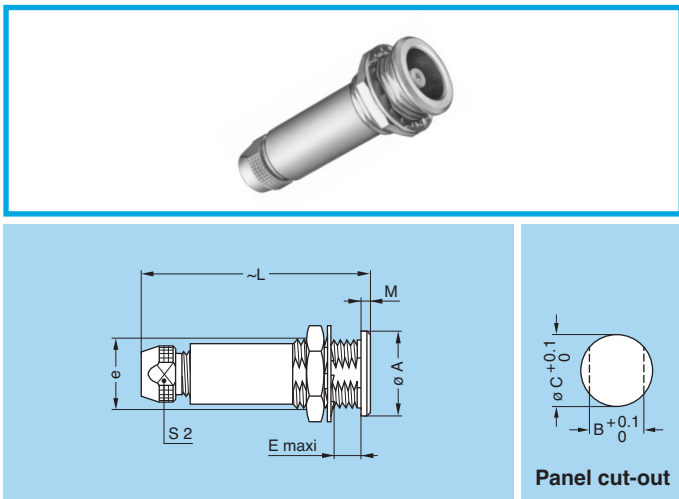
### PSA Fixed socket, nut fixing, cable collet



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
PSA	0S	403	10	M9x0.6	7.0	33.5	1.2	8.3	9.1
PSA	1S	405	14	M12x1.0	7.5	41.5	1.5	10.6	12.1
PSA	2S	408	18	M15x1.0	8.5	54.0	1.8	13.6	15.1
PSA	3S	405	22	M18x1.0	11.5	59.0	2.0	16.6	18.2
PSA	3S	410	22	M18x1.0	11.5	64.0	2.0	16.6	18.2
PSA	3S	415	22	M18x1.0	11.5	73.0	2.0	16.6	18.2
PSA	4S	410	28	M25x1.0	12.0	78.3	2.5	23.6	25.2

**Note:** The dimension «S2» is the same as the PCA models.

### PSP Fixed socket, nut fixing, cable collet and inner anti-rotating device

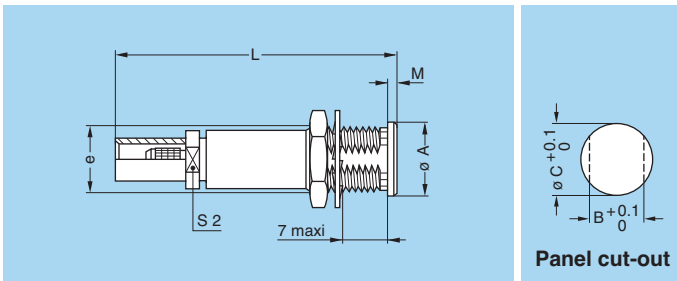


Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
PSP	1S	405	14	M12x1.0	7.5	40.5	1.5	10.6	12.1
PSP	1S	410	14	M12x1.0	7.5	40.5	1.5	10.6	12.1

**Note:** The dimension «S2» is the same as the PCA models.



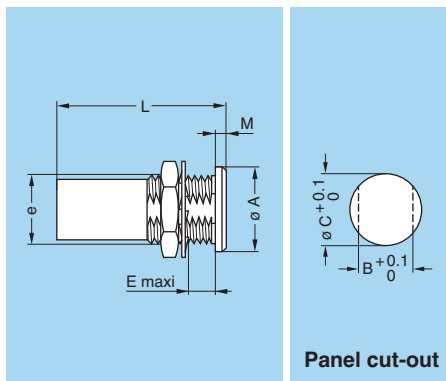
### PSS Free socket, nut fixing for cable crimping



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	L	M	S2	B	C
PSS	0S	405	10	M9x0.6	38	1.2	6.5	8.3	9.1
PSS	1S	408	14	M12x1.0	52	1.5	8.5	10.6	12.1

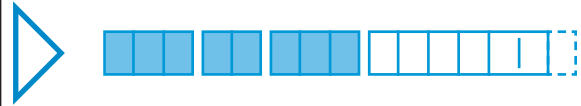
**Note:** Only available with female contact. For crimp ferrules see p. 37.

### RAD Fixed coupler, nut fixing



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
RAD	0S	403	10	M9x0.6	7.0	25.0	1.2	8.3	9.1
RAD	1S	405	14	M12x1.0	7.5	28.5	1.5	10.6	12.1

**Note:** see page 36 for the available plug and contact configuration.



## Watertight or vacuumtight models

HGP, EWB, EWF, HCP, SWH socket or coupler models allow the device on which they are fitted to reach a protection index of IP68 as per IEC 60529.

They are fully compatible with plugs of the same series and are widely used for portable radios, military, laboratory equipment, aviation, etc.

These models are identified by a letter «P» at the end of the reference.

Most of these models are also available in a vacuumtight version. Such models are identified by an additional letter «V» at the end of the part number (certificate on request). Epoxy resin is used to seal these models.

Part number example:

Watertight socket: HGP.1S.405.CTLP

Vacuumtight socket: HGP.1S.405.CTLPV

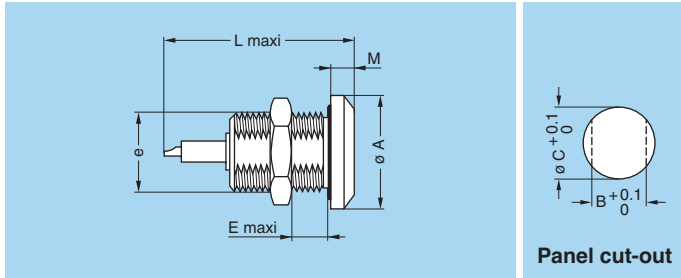
**Note:** <sup>1)</sup> only for vacuumtight models. <sup>2)</sup> this value corresponds to the maximum allowed pressure difference for the assembled socket.

## Technical Characteristics

### Mechanical and Climatical

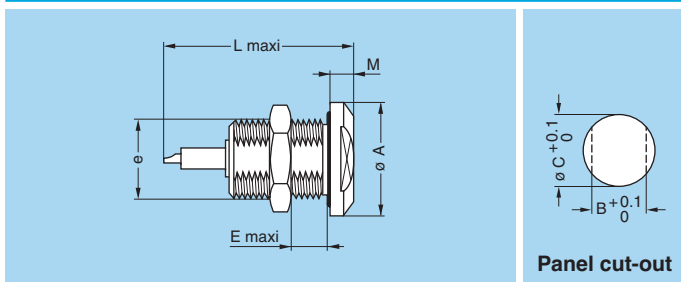
Characteristics	Value	Standard
Endurance	> 1000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range	-20°C to +80°C	
Salt spray corrosion test	1000 h	IEC 60512-6 test 11f
Climatical category	20/80/21	IEC 60068-1
Leakage rate (He) <sup>1)</sup>	< 10 <sup>-7</sup> mbar.l.s <sup>-1</sup>	IEC 60512-7 test 14b
Maximum operating pressure <sup>2)</sup>	0S 60 bars	IEC 60512-7 test 14d
	1S 60 bars	IEC 60512-7 test 14d
	2S 40 bars	IEC 60512-7 test 14d
	3S 30 bars	IEC 60512-7 test 14d

### HGP Fixed socket, nut fixing, watertight or vacuumtight



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
HGP	0S	403	18	M12x1.0	11.0	25.0	4	10.6	12.1
HGP	1S	405	20	M14x1.0	15.5	31.5	4	12.6	14.1
HGP	2S	408	20	M16x1.0	17.0	41.5	4	14.6	16.1
HGP	3S	410	28	M20x1.0	18.0	54.5	6	18.6	20.2
HGP	3S	415	28	M20x1.0	18.0	59.0	6	18.6	20.2

### EWB Fixed socket, nut fixing, with two flats on the flange, watertight or vacuumtight

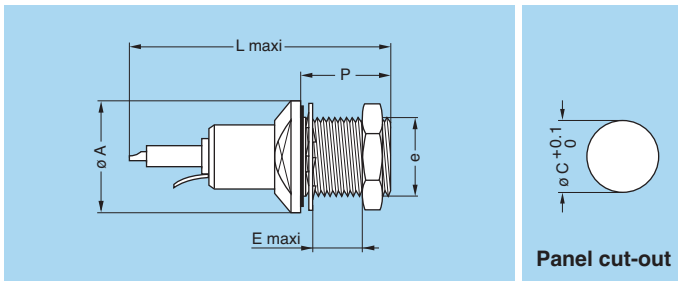
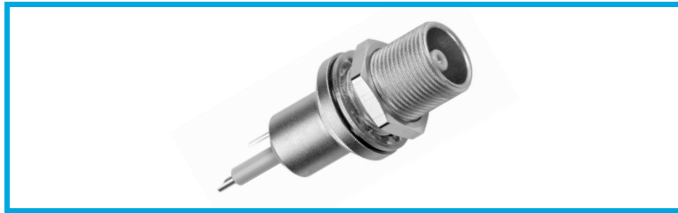


Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
EWB	0S	405	13	M9x0.6	11.0	34.0	3.5	9.1	12.1
EWB	1S	405	20	M14x1.0	15.5	31.5	4.0	12.6	14.1
EWB	1S	408	18	M12x1.0	12.5	40.0	4.0	12.1	14.1

**Note:** Only available with female contact.



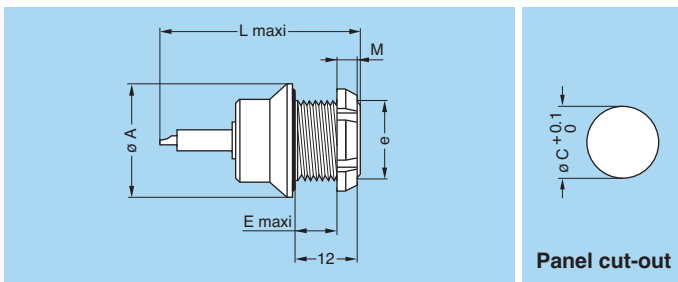
### EWF Fixed socket with earthing tag, nut fixing, vacuumtight (back panel mounting)



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	P	B	C
<b>EWF</b>	<b>0S</b>	<b>405</b>	12.5	M12x1.0	10	34	12.5	-	12.1

**Note:** Only available with female contact.

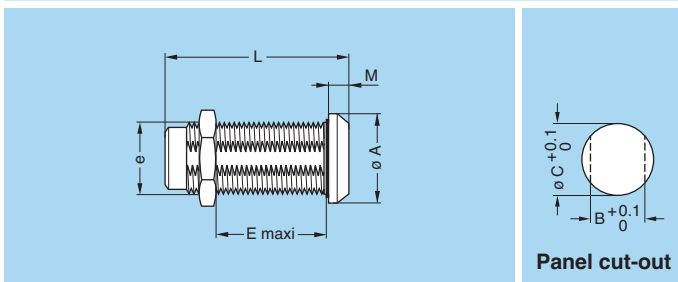
### HCP Fixed socket, nut fixing, watertight or vacuumtight (back panel mounting)



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
<b>HCP</b>	<b>1S</b>	<b>408</b>	18	M14x1.0	8.6	32	3.5	-	14.1

**Note:** Only available with female contact.

### SWH Fixed coupler, nut fixing, watertight or vacuumtight



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
<b>SWH</b>	<b>0S</b>	<b>403</b>	14	M10x0.75	17	34	2.0	9.1	10.1
<b>SWH</b>	<b>1S</b>	<b>405</b>	17	M12x1.00	28	39	2.5	10.6	12.1
<b>SWH</b>	<b>1S</b>	<b>408</b>	17	M12x1.00	28	39	2.5	10.6	12.1
<b>SWH</b>	<b>3S</b>	<b>405</b>	25	M20x1.00	30	53	4.0	18.6	20.2
<b>SWH</b>	<b>3S</b>	<b>410</b>	25	M20x1.00	30	53	4.0	18.6	20.2

**Note:** see page 36 for the available plug and contact configuration.

## E series (HV single contact)

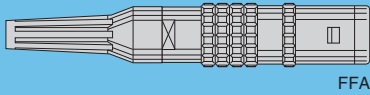
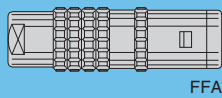
E series connectors have been specifically designed for outdoor applications.

They include an inner sleeve and two seals to prevent penetration of solids or liquids into the housing formed by the plug, free socket, fixed socket or coupler. All models of these series are watertight when mated and give a protection index of IP 68 as per IEC 60529 standard (in mated condition) when correctly assembled to an appropriate cable (IP 66 otherwise).

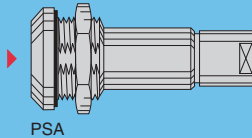
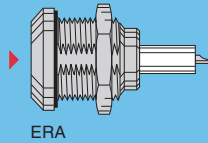
- security of the Push-Pull latching system
- watertight connection (IP 68/IP 66)
- wide range of models satisfying most applications
- 360° screening for full EMC shielding
- rugged housing for extreme working condition.

### Models (page 33)

#### Straight plugs

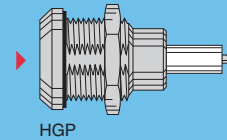


#### Fixed sockets



### Watertight or vacuumtight model (page 34)

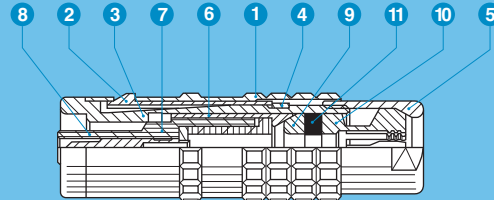
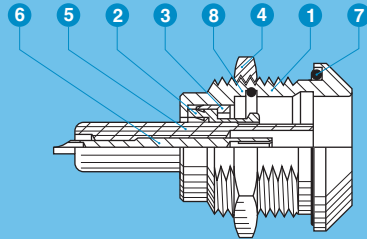
#### Fixed socket



### Part Section Showing Internal Components

#### Fixed socket

- 1 outer shell
- 2 earthing crown
- 3 retaining ring
- 4 hexagonal nut
- 5 insulator
- 6 female contact
- 7 O ring



#### Straight plug

- 1 outer shell
- 2 latch sleeve
- 3 inner shell
- 4 circlip
- 5 collet nut
- 6 centre piece
- 7 insulator
- 8 male contact
- 9 earthing cone
- 10 collet
- 11 gasket

**Note:** other connector shells are available on request.

## Technical characteristics

### Materials and treatments

Component	Material (Standard)	Thickness of surface treatment ( $\mu\text{m}$ )							
		chrome			nickel		gold		
		Cu	Ni	Cr	Cu	Ni	Cu	Ni	Au
Outer shell, collet nut, conical nut	Brass (UNS C 38500)	0.5	3	0.3					
Innershell	Brass (UNS C 38500)				0.5	3			
Earthing crown	Beryllium Copper (UNS C 17300)						0.5	3	1.0
Latch sleeve	Special bronze/brass	0.5	3	0.3					
Locking washer	Bronze (UNS C 52100)				0.5	3			
Hexagonal nut	Brass (UNS C 38500)				0.5	3			
Other metallic components	Brass (UNS C 38500)				0.5	3			
Male contact	Brass (UNS C 34500)						0.5	3	1.0
Female contact	Bronze (UNS C 54400) or Cu-Be (UNS C 17300)						0.5	3	1.5
Clips	Cu-Be or special steel								
Insulator	PTFE, PEEK								
	Silicone rubber (LSR)								
O-ring and gaskets	Silicone MQ/MVQ								

### Mechanical and Climatical

Characteristics	Value	Standard
Endurance	1000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range	-55°C +200°C	
Resistance to vibrations	10-2000 Hz, 15 g	IEC 60512-4 test 6d
Shock resistance	100g, 6 ms	IEC 60512-4 test 6c
Salt spray corrosion test	1000 h	IEC 60512-6 test 11f
Protection index (mated)	IP 68 / IP 66	IEC 60529
Climatical category	50/175/21	IEC 60068-1

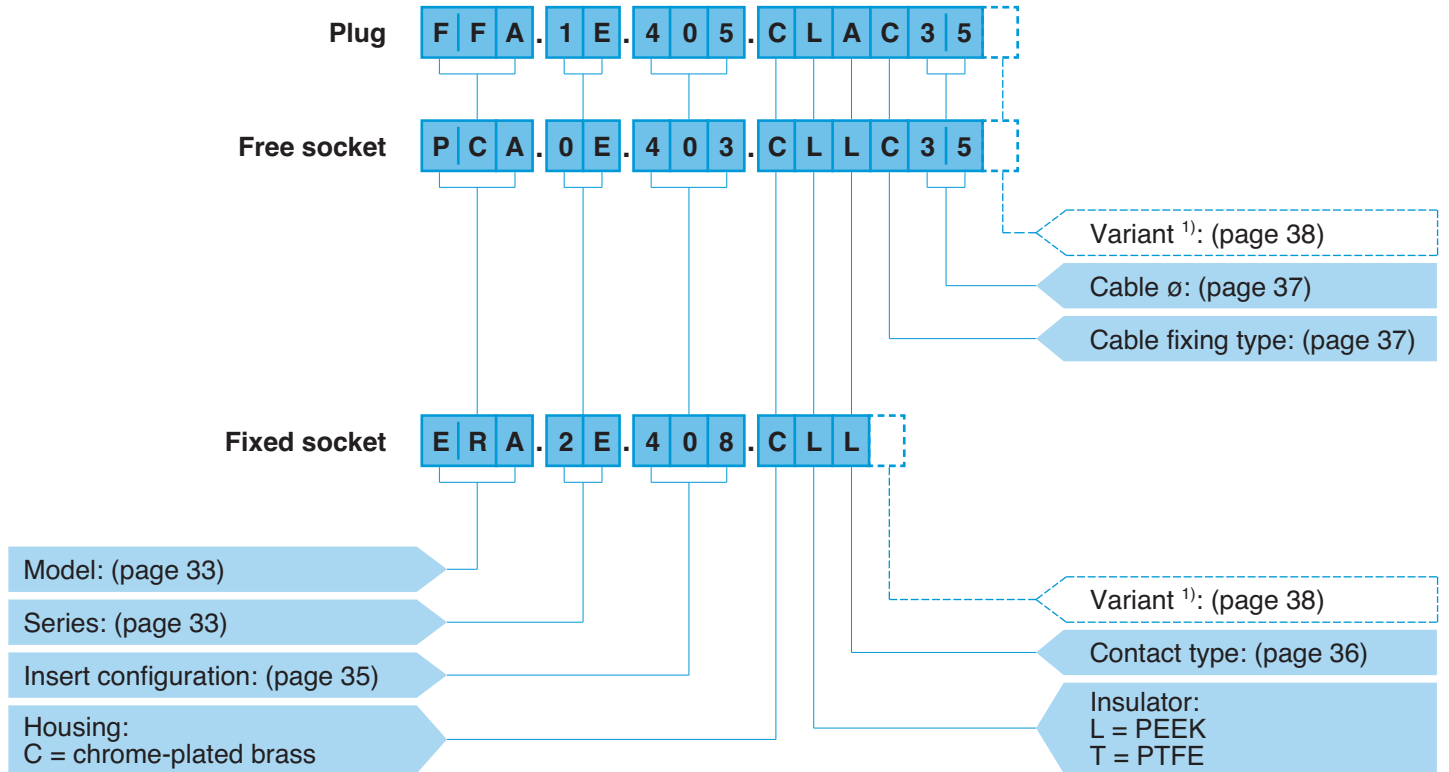
### Electrical

Characteristics	Value	Standard
Shielding efficiency	at 10 MHz	> 95 dB
	at 1 GHz	> 80 dB
		IEC 60169-1-3
		IEC 60169-1-3

### Recommended cables

Type	Series					Type of cable	Operating voltage
	0E.403	1E.405	2E.408	3E.405	3E.410		
017420	●	●				RG174	depending on manufacturer
140470	●					High voltage cable	3kV
150470	●	●	●			High voltage cable	3kV
106330			●			High voltage cable	9kV
158490						RG58	depending on manufacturer
130666		●		●		High voltage cable	30kV
130660		●		●	●	High voltage cable	30kV
213000						RG213	depending on manufacturer

## Part Numbering System



**FFA.1E.405.CLAC35** = straight plug with cable collet, 1E series, high voltage, type 10.5 kVDC test voltage, chrome-plated brass housing, PEEK insulator, male solder contact, C type collet for a 3.5 mm diameter cable.

**PCA.0E.403.CLLC35** = free socket with cable collet, 0E series, high voltage, type 6 kVDC test voltage, chrome-plated brass housing, PEEK insulator, female solder contact, C type collet for a 3.5 mm diameter cable.

**ERA.2E.408.CLL** = fixed socket, nut fixing, 2E series, high voltage, type 12 kVDC test voltage, chrome-plated brass housing, PEEK insulator, female solder contact.

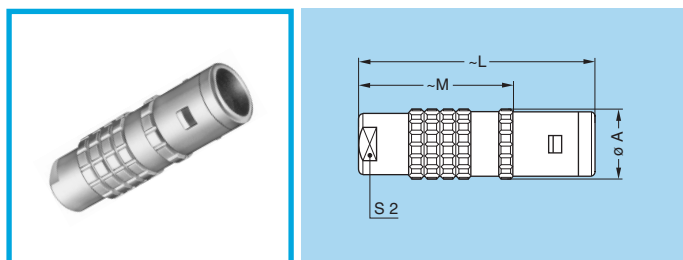
**Note:** <sup>1)</sup> the «Variant» position of the part number is used to specify the presence of a nut for fitting a bend relief. For models with collet nut for fitting a bend relief, a «Z» should be indicated and a bend relief can be ordered separately as indicated in the «Accessories» section. An order for a connector with bend relief should thus include two part numbers.





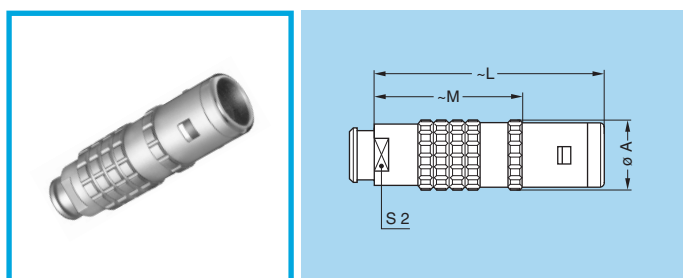
## Models

### FFA Straight plug, cable collet



Reference			Dimensions (mm)				Cable ø	
Model	Series	Type	A	L	M	S2	min.	max.
FFA	0E	403	11	34.0	23.0	8	1.0	5.0
FFA	1E	405	13	43.0	29.0	9	1.3	6.5
FFA	2E	408	16	52.5	36.5	12	1.3	8.5
FFA	3E	410	19	62.5	42.5	15	2.6	10.5

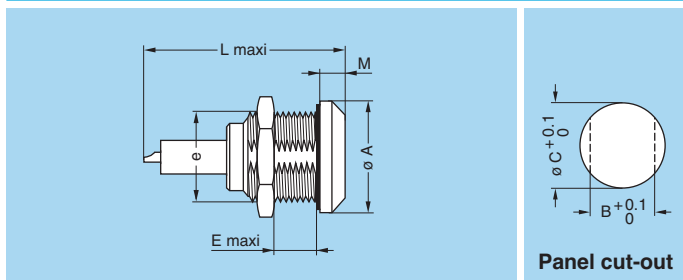
### FFA Straight plug, cable collet and nut for fitting a bend relief <sup>1)</sup>



Reference			Dimensions (mm)				Cable ø	
Model	Series	Type	A	L	M	S2	min.	max.
FFA	0E	403	11	34.0	23.0	7	1.0	5.0
FFA	1E	405	13	43.0	29.0	9	1.3	6.5
FFA	3E	410	19	61.5	41.5	15	2.6	10.5

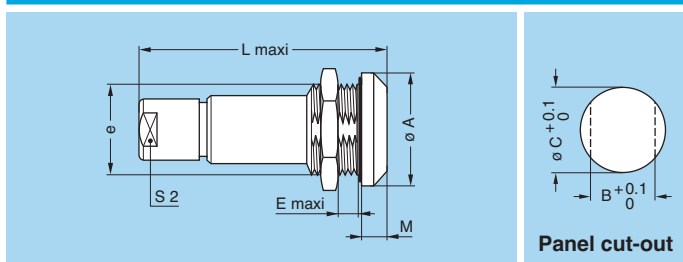
**Note:** <sup>1)</sup> to order, add a «Z» at the end of the reference.  
The bend relief must be ordered separately (see page 39).

### ERA Fixed socket, nut fixing



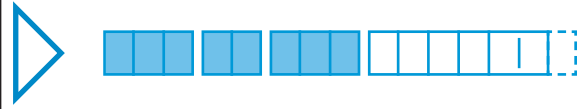
Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
ERA	0E	403	18	M14x1.0	5.5	26.5	4.0	12.6	14.1
ERA	1E	405	20	M16x1.0	9.0	35.5	4.5	14.6	16.1
ERA	2E	408	25	M20x1.0	9.0	45.5	5.0	18.6	20.2
ERA	3E	410	31	M24x1.0	11.0	52.0	6.0	22.6	24.2

### PSA Fixed socket, nut fixing, cable collet



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
PSA	1E	405	20	M16x1.0	9.0	46.0	4.5	14.6	16.1
PSA	3E	410	31	M24x1.0	11.5	67.7	6.0	22.6	24.2

**Note:** The dimension «S2» is the same as the FFA models.



## Watertight or vacuumtight models

HGP and SWH socket or coupler models allow the device on which they are fitted to reach a protection index of IP 68 as per IEC 60529.

They are fully compatible with plugs of the same series and are widely used for portable radios, military, laboratory equipment, aviation, etc.

These models are identified by a letter «P» at the end of the reference.

Most of these models are also available in a vacuumtight version. Such models are identified by an additional letter «V» at the end of the part number (certificate on request). Epoxy resin is used to seal these models.

Part number example:

Watertight socket: HGP.0E.403.CTLP

Vacuumtight socket: HGP.0E.403.CTLPV

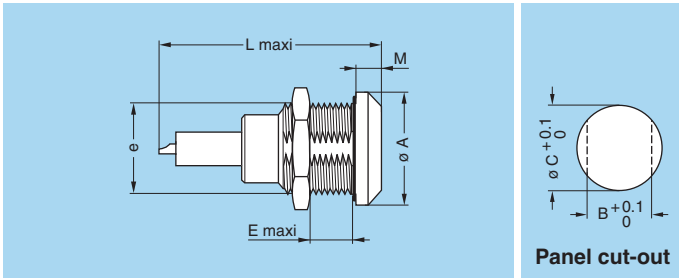
## Technical Characteristics

### Mechanical and Climatical

Characteristics	Value	Standard
Endurance	> 1000 cycles	IEC 60512-5 test 9a
Humidity	up to 95% at 60°C	
Temperature range	-20°C to +80°C	
Salt spray corrosion test	1000 h	IEC 60512-6 test 11f
Climatical category	20/80/21	IEC 60068-1
Leakage rate (He) <sup>1)</sup>	< 10 <sup>-7</sup> mbar.l.s <sup>-1</sup>	IEC 60512-7 test 14b
Max. operating pressure <sup>2)</sup>	60 bars	IEC 60512-7 test 14d

**Note:** <sup>1)</sup> only for vacuumtight models. <sup>2)</sup> this value corresponds to the maximum allowed pressure difference for the assembled socket.

## HGP Fixed socket, nut fixing, watertight or vacuumtight



Reference			Dimensions (mm)					Panel cut-out	
Model	Series	Type	A	e	E	L	M	B	C
<b>HGP</b>	<b>0E</b>	<b>403</b>	18	M14x1.0	5.5	24.5	4	12.6	14.1



## Insert configuration (S and E series)

### High Voltage (single contact)

Male solder contacts	Female solder contacts	Reference	Series		Contact ø (mm)	Contact gender for plug	Conductor ø maxi (mm) <sup>1)</sup>	Dielectric ø maxi (mm) <sup>1)</sup>	Cable sheath ø maxi (mm) <sup>1)</sup>	Standard insulator material	Creepage dist. min. (mm) <sup>3)</sup>	Test voltage Ue (kV DC) <sup>2)</sup>	Test voltage Ue (kV rms) <sup>2)</sup>	Rated current (A)
			Standard	Watertight										
		403	0S	0E	0.9	A/L	0.75	2.9	5.0	T	7.0	6.0	4.2	4
		405	0S	–	0.7	A	1.05	2.9	4.7	L	13.5	12.0	8.4	4
			1S	1E	1.3	A/L	1.05	4.0 <sup>5)</sup>	6.5	T	10.5	10.5	7.5	8
			3S	3E	4.0	A/L	2.95	7.5	10.5	T	12.5	10.5	7.5	15
		408	1S	–	0.9	A	0.95	4.0	6.0	L	20.0	18.0	12.7	6
			2S	2E	2.0	A/L	1.75	5.1 <sup>5)</sup>	8.5	T	11.5	12.0	8.5	10
		410	3S	3E	2.0	A/L	2.15	7.3	10.5	T	16.5	15.0	10.5	10
			4S	–	2.5	A	2.95	9.5	13.0	T	tbd	15.0	10.5	12
		415	3S	–	1.3	A/L	1.30	7.3 <sup>5)</sup>	10.5	T	28.5	21.0	15.0	8
		460	3S	–	1.4	A	1.05	4.2	10.5	L	1.7 5.5	2.25 <sup>4)</sup> 7.50	1.6 <sup>4)</sup> 5.3	10

**WARNING:** Depending on the application specific safety standard apply regarding determination of the operating voltage  $U_s$ .

That shall be considered carefully when selecting connectors.

In low duty operations operating voltage  $U_s$  can be as high as  $U_s = \frac{U_e}{1.5}$ . For severe applications operating voltage can be as low as  $U_s = \frac{U_e}{3}$ .

**Note:**

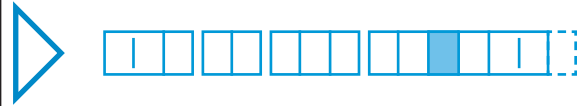
<sup>1)</sup> some specific model may accept larger dimensions, please contact us.

<sup>2)</sup> test voltage  $U_e$  is measured according to IEC 60512-2 test 4a, in mated condition and at see level.

<sup>3)</sup> creepage distance is measured in the mated condition.

<sup>4)</sup> between screen.

<sup>5)</sup> dielectric diameters are linked to the clamping size see page 38.



## Contacts (S and E series)

### Contacts for plugs, free or fixed sockets

Ref.	Contact type
<b>A</b>	Male solder
<b>L</b>	Female solder

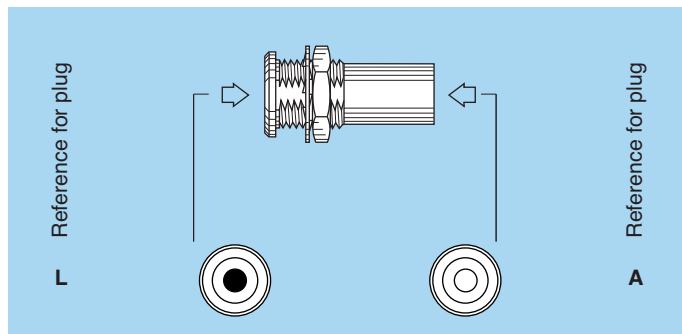
### Contacts for couplers

Ref.	Contact type
<b>C</b>	Male - Male
<b>A</b>	Male - Female

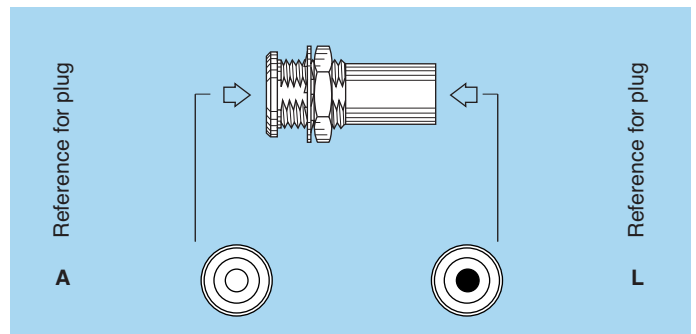
Ref.	Contact type
<b>L</b>	Female - Male
<b>M</b>	Female - Female

### Contacts reference for fixed and free couplers RAD and SWH

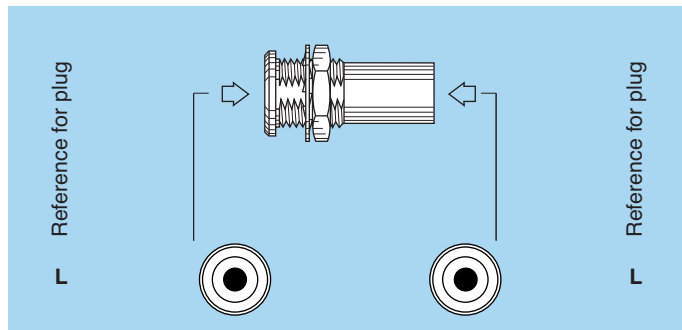
#### **A** Male - Female



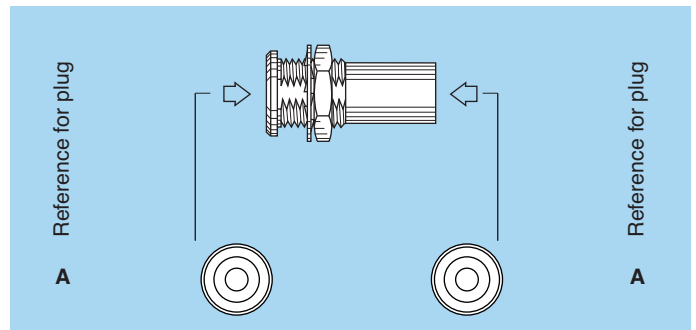
#### **L** Female - Male



#### **C** Male - Male



#### **M** Female - Female



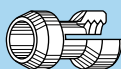
### Use of plugs for mating with RAD and SWH couplers

- Reference M for coupling two identical plugs fitted with male contact (contact reference A).
- Reference L for coupling a plug fitted with male contacts (contact reference A) at the flange end for RAD and SWH and an inverted plug fitted with female contacts (contact reference L) at the other end.
- Reference A for the inverted version of code L.
- Reference C for the inverted version of code M.



## Collets (S and E series)

### Type C collets (S series)



	Type	Cable $\phi$		Type	Cable $\phi$		
		min.	max.		min.	max.	
<b>0S</b>	<b>C22</b>	1.3	2.2	<b>3S</b>	<b>C42</b>	2.6	4.2
	<b>C32</b>	> 2.2	3.2		<b>C57</b>	4.3	5.7
	<b>C37</b>	> 3.2	3.7		<b>C72</b>	5.8	7.2
	<b>C44</b>	> 3.7	4.4		<b>C87</b>	7.3	8.7
<b>1S</b>	<b>C22</b>	1.4	2.2	<b>4S</b>	<b>C97</b>	8.8	9.7
	<b>C32</b>	> 2.2	3.2		<b>C11</b>	9.8	10.5
	<b>C42</b>	> 3.2	4.2		<b>C52</b>	4.1	5.0
	<b>C52</b>	> 4.2	5.2		<b>C62</b>	5.1	6.0
	<b>C57</b>	> 5.2	5.7		<b>C72</b>	6.1	7.0
	<b>C62</b>	> 5.7	6.2		<b>C82</b>	7.1	8.0
<b>2S</b>	<b>C27</b>	1.3	2.7	<b>C92</b>	8.1	9.0	
	<b>C32</b>	> 2.5	3.2	<b>C10</b>	9.1	10.0	
	<b>C42</b>	> 3.2	4.2	<b>C11</b>	10.1	11.0	
	<b>C52</b>	> 4.2	5.2	<b>C12</b>	11.1	12.0	
	<b>C62</b>	> 5.2	6.2	<b>C13</b>	12.6	13.0	
	<b>C72</b>	> 6.2	7.2				
	<b>C82</b>	> 7.2	8.2				
	<b>C87</b>	> 8.2	8.7				

### Type C collets (E series)



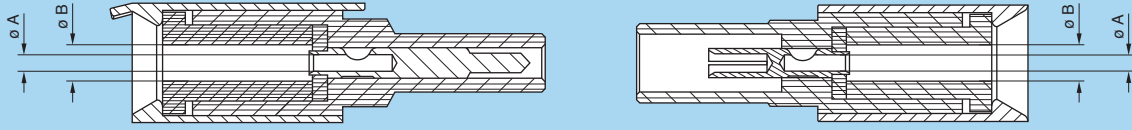
	Type	Cable $\phi$		Type	Cable $\phi$		
		min.	max.		min.	max.	
<b>0E</b>	<b>C10</b>	1.0	1.2	<b>2E</b>	<b>C15</b>	1.3	1.5
	<b>C15</b>	1.3	1.5		<b>C20</b>	1.6	2.0
	<b>C20</b>	1.6	2.0		<b>C25</b>	2.1	2.5
	<b>C25</b>	2.1	2.5		<b>C30</b>	2.6	3.0
	<b>C30</b>	2.6	3.0		<b>C35</b>	3.1	3.5
	<b>C35</b>	3.1	3.5		<b>C40</b>	3.6	4.0
<b>1E</b>	<b>C40</b>	3.6	4.0	<b>C45</b>	4.1	4.5	
	<b>C45</b>	4.1	4.5	<b>C50</b>	4.6	5.0	
	<b>C50</b>	4.6	5.0	<b>C55</b>	5.1	5.5	
	<b>C15</b>	1.3	1.5	<b>C60</b>	5.6	6.0	
	<b>C20</b>	1.6	2.0	<b>C65</b>	6.1	6.5	
	<b>C25</b>	2.1	2.5				
	<b>C30</b>	2.6	3.0				
	<b>C35</b>	3.1	3.5				
	<b>C40</b>	3.6	4.0				
<b>3E</b>	<b>C45</b>	4.1	4.5	<b>C30</b>	2.6	3.0	
	<b>C50</b>	4.6	5.0	<b>C35</b>	3.1	3.5	
	<b>C55</b>	5.1	5.5	<b>C40</b>	3.6	4.0	
	<b>C60</b>	5.6	6.0	<b>C45</b>	4.1	4.5	
	<b>C65</b>	6.1	6.5	<b>C50</b>	4.6	5.0	
				<b>C55</b>	5.1	5.5	
				<b>C60</b>	5.6	6.0	
				<b>C65</b>	6.1	6.5	
				<b>C70</b>	6.6	7.0	
				<b>C75</b>	7.1	7.5	
				<b>C80</b>	7.6	8.0	
				<b>C85</b>	8.1	8.5	

### Crimp ferrules (0S.405 and 1S.408 series)



	Type	Cable dimension			
		Sheath $\phi$		Max. dielec. $\phi (\pm 0.1)$	Max. cond. $\phi$
		Min.	Max.		
<b>0S</b>	<b>E33</b>	2.6	3.3	1.6	0.55
	<b>E34</b>	2.8	3.3	1.6	0.55
	<b>E43</b>	3.5	4.3	2.1	1.00
	<b>E48</b>	4.2	4.8	3.0	1.00
<b>1S</b>	<b>E46</b>	4.0	4.6	2.3	0.90
	<b>E61</b>	5.2	6.1	4.0	0.90

## Barrel contact and dielectric diameter



Sub assembly part number	Barrel contact $\varnothing A$ (mm)	Inner insulator $\varnothing B$ (mm)	Delivered with clamping
0S.403	0.8	3.0	C22 to C44
1S.405	1.1	2.4	C22, C32, C42
		3.1	C52
		4.1	C62
2S.408	1.8	3.2	C27, C32
		5.2	C42 to C87

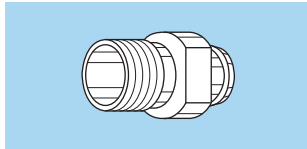
Sub assembly part number	Barrel contact $\varnothing A$ (mm)	Inner insulator $\varnothing B$ (mm)	Delivered with clamping
3S.405	3.0	7.6	C42 to C11
3S.410	2.2	7.4	C42 to C11
3S.415	1.35	4.1	C42 to C57
		4.9	C72 to C87
		6.5	C96 to C11
4S.410	3.0	9.6	C52 to C13

**Note:** please consult us for other inner insulators and clamping arrangements.

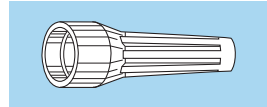


## Variant (S and E series)

### Bend relief for S series models with collet



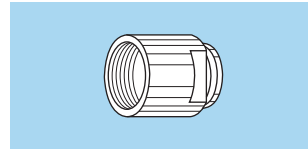
**Need to be ordered**



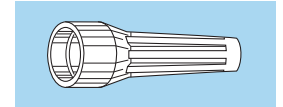
Ref.	Collet		Need to be ordered separately (see page 39)
	Type	Code	
<b>0S</b>	<b>Z</b>	C 32 to 44	GMA.0B.0...D•
<b>1S</b>	<b>Z</b>	C 32 to 62	GMA.1B.0...D•

**Note:** All dimensions are in millimetres.

### Bend relief for E series models with collet



**Need to be ordered**



Ref.	Collet		Need to be ordered separately (see page 39)
	Type	Code	
<b>0E</b>	<b>Z</b>	C 30 to 50	GMA.0B....•••
<b>1E</b>	<b>Z</b>	C 30 to 65	GMA.1B....•••
<b>3E</b>	<b>Z</b>	C 35 to 85	GMA.3B....•••

## Watertight and vacuumtight socket and coupler models (S and E series)

	Reference		Model
	Watertight	Vacuumtight	
<b>S</b>	<b>P</b>	<b>PV</b>	EWB, HCP, HGP, EWF, SWH
<b>E</b>	<b>P</b>	<b>PV</b>	HGP

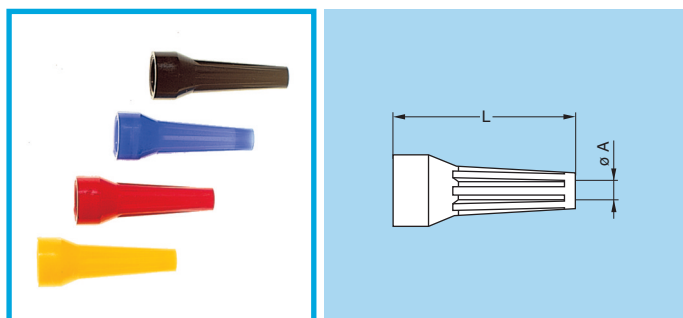
## O-ring and gasket material (E series)

Standard connectors are delivered with silicone o-ring and gaskets. The vacuumtight models, identified with the letter «PV», are delivered with Viton® gaskets. Other gaskets material can be delivered upon special request.

Ref.	O-ring material
<b>H</b>	FPM (Viton®)
<b>E</b>	EPDM
<b>D</b>	FPM (Viton®) and collet nut for bend relief

## Accessories

### GMA Bend relief (TPU)



A bend relief made from thermoplastic polyurethane elastomer can be fitted over LEMO plugs and sockets that are supplied with nut for fitting such bend relief.

Use the part numbers shown below to order this accessory separately.

#### Main characteristics

- Material: TPU (Thermoplastic Polyurethane)
- Temperature range in dry atmosphere: -40°C +80°C

Part number	Series	Bend relief		Cable ø	
		A	L	min.	max.
<b>GMA.0B.025.DG</b>	0S-0E	2.5	24	2.5	2.9
<b>GMA.0B.030.DG</b>		3.0	24	3.0	3.4
<b>GMA.0B.035.DG</b>		3.5	24	3.5	3.9
<b>GMA.0B.040.DG <sup>1)</sup></b>		4.0	24	4.0	4.4
<b>GMA.0B.045.DG <sup>1)</sup></b>		4.5	24	4.5	5.2
<b>GMA.1B.025.DG</b>		1S-1E	2.5	30	2.5
<b>GMA.1B.030.DG</b>	3.0		30	3.0	3.4
<b>GMA.1B.035.DG</b>	3.5		30	3.5	3.9
<b>GMA.1B.040.DG</b>	4.0		30	4.0	4.4
<b>GMA.1B.045.DG</b>	4.5		30	4.5	4.9
<b>GMA.1B.054.DG</b>	5.4		30	5.4	6.0
<b>GMA.1B.065.DG <sup>1)</sup></b>	6.5		30	6.5	7.0

Part number	Series	Bend relief		Cable ø	
		A	L	min.	max.
<b>GMA.3B.050.DG <sup>1)</sup></b>	3E	4.5	42	4.5	5.2
<b>GMA.3B.060.DG</b>		6.0	42	6.0	6.9
<b>GMA.3B.070.DG</b>		7.0	42	7.0	7.9
<b>GMA.3B.080.DG</b>		8.0	42	8.0	8.9
<b>GMA.3B.090.DG</b>		9.0	42	9.0	10.0

**Note:** all dimensions are in millimetres.

Ref.	Colour	Ref.	Colour	Ref.	Colour
<b>A</b>	blue	<b>J</b>	yellow	<b>R</b>	red
<b>B</b>	white	<b>M</b>	brown	<b>S</b>	orange
<b>G</b>	grey	<b>N</b>	black	<b>V</b>	green

**Note:** <sup>1)</sup> Design may differ from other bend relief, model without stripes.

The last letter «G» of the part number indicates the grey colour of the bend relief. For ordering a bend relief with another colour, see table above and replace the letter «G» by the letter of the required colour.

# 05 series (HV single contact)

High voltage connectors of the new 05 miniature series have been specifically developed to meet the requirements of experimental nuclear research programme.

The 05 series contains a miniature HV 12kV DC (test voltage) contacts. This crimp contact is removable from the shell and is inserted in a PEEK insulator. The actual mating is provided by the LEMO Push-Pull system, renowned for its reliability worldwide and a red locking ring to secure the connection.

The compact design of these connectors makes them ideal for applications where minimal mass and space saving are critical factors.

## Interconnections

Models (page 42)

Straight plug

Fixed socket

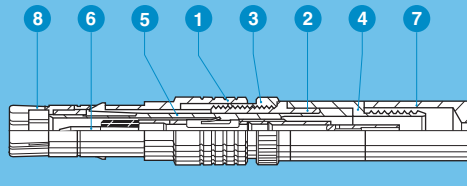
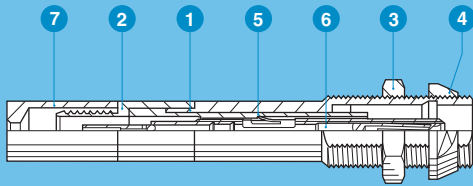


## Part Section Showing Internal Components

Fixed socket

Straight plug

- 1 shell
- 2 crimp back end
- 3 hexagonal nut
- 4 conical nut
- 5 insulator
- 6 HV female contact
- 7 crimp ferrule



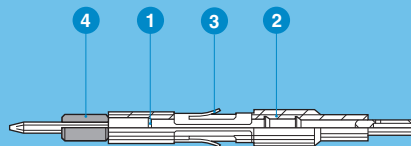
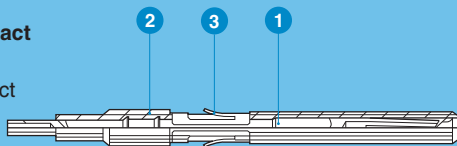
- 1 outer shell
- 2 latch sleeve
- 3 locking ring
- 4 crimp back end
- 5 insulator
- 6 HV male contact
- 7 crimp ferrule
- 8 earthing crown

## HV Contact

Female contact

Male contact

- 1 female contact
- 2 insulator
- 3 clips



- 1 male contact
- 2 insulator
- 3 clips
- 4 sealing gland



## Technical Characteristics

### Materials and Treatments – Connector

Component	Material (Standard)	Surface treat. (µm)		
		Cu	Ni	Au
Outer shell + crimpend	Aluminium (AA 6262A)	5		
Safety nut	Aluminium (AA 6262A)	Anodized red		
Earthing crown	Aluminium special	5		
Latch sleeve	Aluminium special	5		
Hexagonal and conical nut	Aluminium (AA 6262A)	Anodized natural		
Insulator	PEEK	–		
Crimp ferrule	Aluminium (AA 6262A)	5		

### Contact

Component	Material (Standard)	Surface treat. (µm)		
		Cu	Ni	Au
Male contact	Brass (UNS C38500)	0.5	3	1.0
Female contact	Bronze (UNS C54400)	0.5	3	1.5
Contact clips	Cu-Be (QQ-C-530)	–		
Insulator	PEEK	–		
Sealing gland	Silicone PVMQ	–		

### Mechanical and Environmental

Characteristics	Value	Standard
Contact retention force	40 N	IEC 60512-8 test 15a
Working temperature	-20°C +125°C	
Mechanical life	> 200 cycles	IEC 60512-5 test 9a
Climatic class	20/125/21	IEC 60068-1
Radiation resistance	> 10 <sup>6</sup> Gy	

### Electrical

Characteristics	Value	Standard
Test voltage DC	12 kV (1 min.)	IEC 60512-2 test 4a
Rated current	4 A	IEC 60512-3 test 5a
Contact resistance	≤ 8 mΩ	IEC 60512-2 test 2a
Screen resistance	≤ 150 mΩ	IEC 60512-2 test 2f
Insulation resistance	≥ 10 <sup>12</sup> mΩ	IEC 60512-2 test 3a

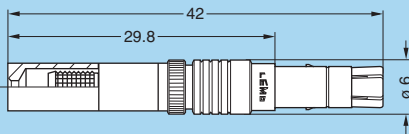
### Recommended cables

Cable group	Manufacturer part number	CERN type	Construction and dimensions									
			Conductor			Dielectric		Screen		Sheath		Corona screen
			Constr.	Mat.	ø	Mat.	ø	Mat.	Mat.	ø		
1	ABBNK - 45/94	HTC 50-1-1	7x0.17	CuSn	0.51	PE solid	1.5	CuSn 16x4x0.1		Polyolefine	3.30	yes
2	HABIA 31789-004-001	HFI 150 mini coax	Mono	Cu	0.16	HFI150	0.5	Drain 2x0.1 + Alu polyester		HFI150	1.15	no

▶

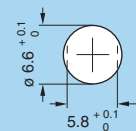
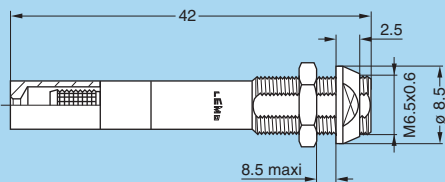
## Models

### FFR.05 Straight plug for cable crimping with locking ring



Part number	Cable group
<b>FFR.05.403.LLAE141</b>	1
<b>FFR.05.403.LLAE142</b>	2

### PES.05 Fixed socket, with two nuts, for cable crimping



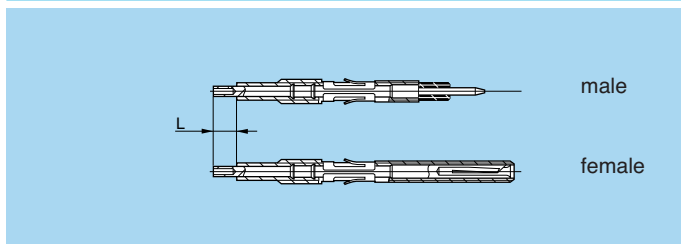
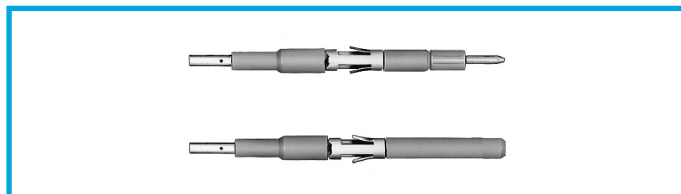
Panel cut-out

Part number	Cable group
<b>PES.05.403.LLLE141</b>	1
<b>PES.05.403.LLLE142</b>	2

Recommended mounting nut torque: 0.8 Nm.

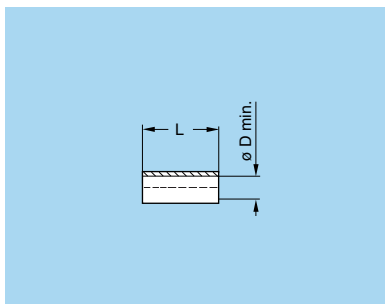
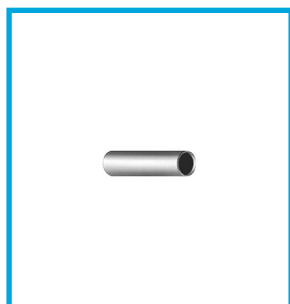
## Accessories

### FFA-ERA High voltage contacts



Contact part number		Cable group	L (mm)
Male contact	Female contact		
<b>FFA.05.403.ZLA1</b>	<b>ERA.05.403.ZLL1</b>	1	4
<b>FFA.05.403.ZLA2</b>	<b>ERA.05.403.ZLL2</b>	2	6

### GMA Heatshrink tube

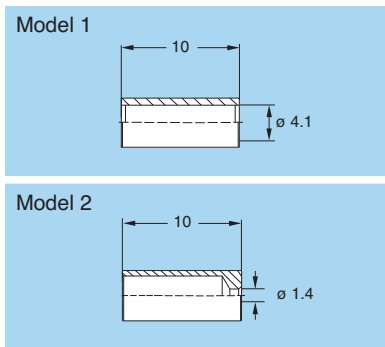
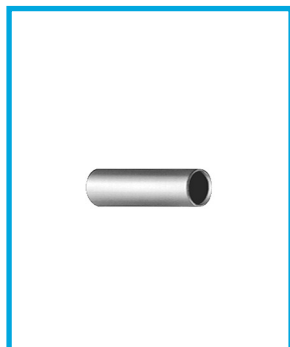


Part number	Cable group	Supplier		ø D	L
		Name	Product ref.		
<b>GMA.30.010.ST</b>	1-2	RAYCHEM®	RNF 3000 3/1	3.0	13
<b>GMA.15.010.ST</b>	2	RAYCHEM®	RNF 3000 1.5/0.5	1.5	9

**Note:** All dimensions are in millimetres. Shall be ordered separately. For cable group 2, the two heatshrink tubes are necessary.

- Material: Polyolefin transparent

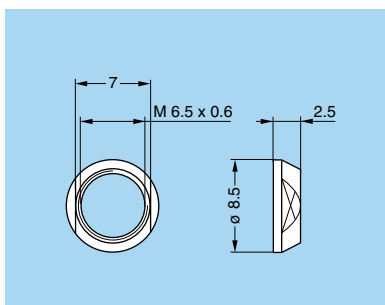
### FFS Crimp ferrule



Part number	Cable group	Model
<b>FFS.05.160.PM</b>	1	1
<b>FFS.05.161.PM</b>	2	2

- Material: Aluminium alloy (AA 6262A) nickel plated

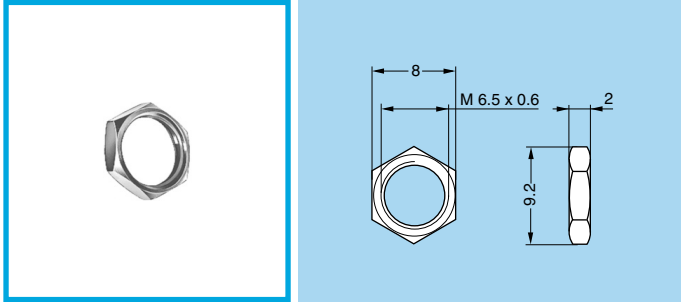
### GEC Conical nut



Part number
<b>GEC.05.241.PT</b>

- Material: Aluminium alloy (AA 6262A) natural anodized.

### GEA Hexagonal nut



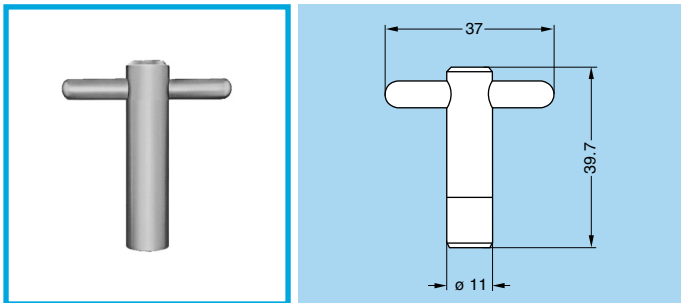
Part number

**GEA.05.241.PT**

- Material: Aluminium alloy (AA 6262A) natural anodized.

## Tooling

### DCH Spanner for conical nut

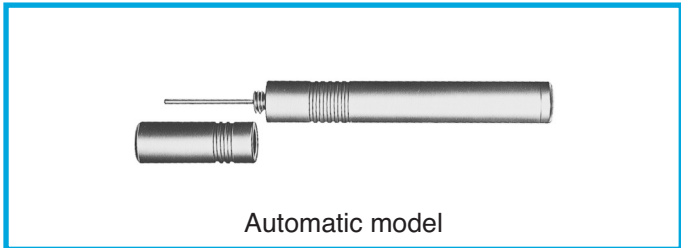


Part number

**DCH.91.113.9TN**

- Material: Blackened steel.

### DCF Extraction tools for HV contacts



Part number

**DCF.91.133.5LT**

### DPH Crimping tool with die



Part number

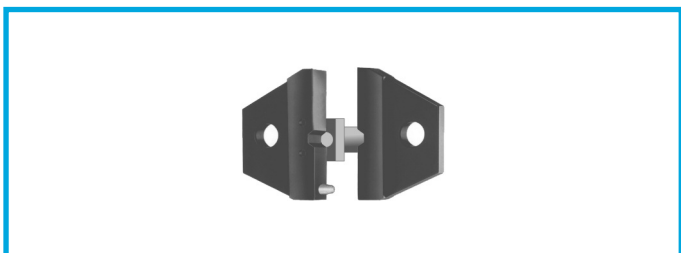
Applications

Cable group

Marking on die

<b>DPH.99.005.2K</b>	Shield	1-2	DPH.91.005.2K
<b>DPH.99.060.11K</b>	Centre contact	1	DPH.91.001.16K
<b>DPH.99.065.11K</b>	Centre contact	2	DPK.91.001.16K

### DPN Dies and positioner



Part number

Applications

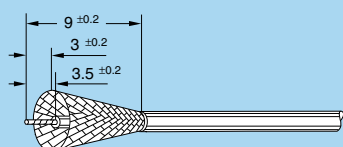
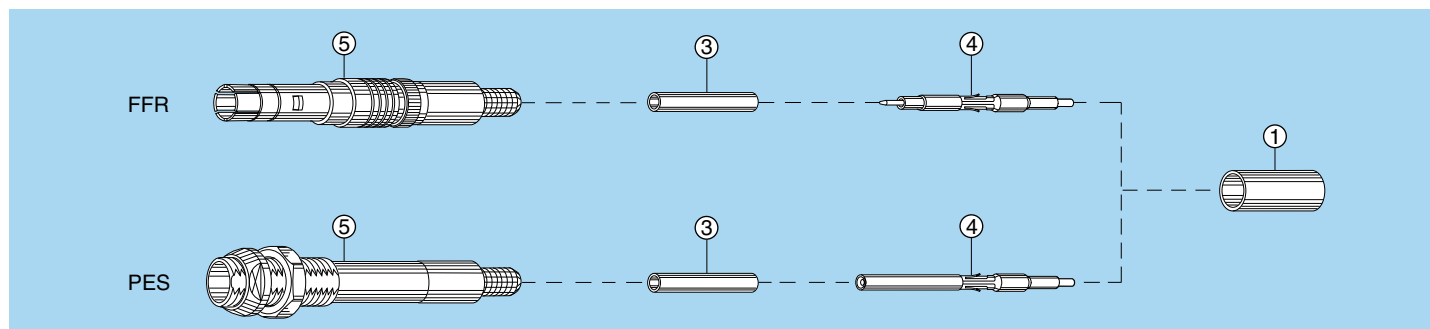
Cable group

Marking on die

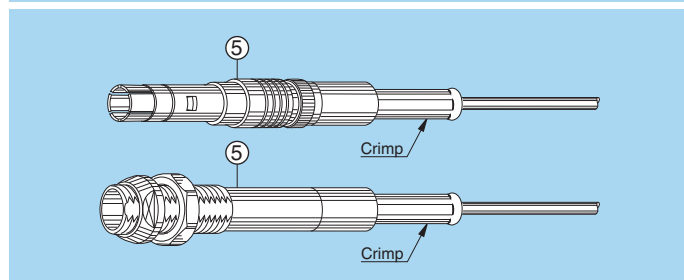
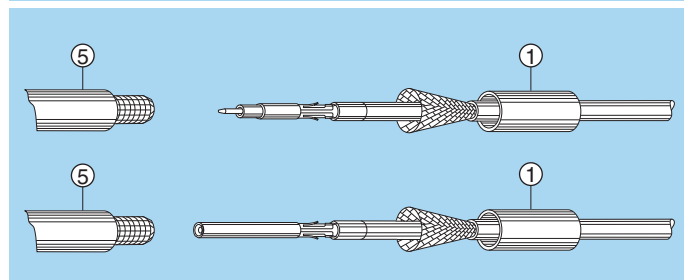
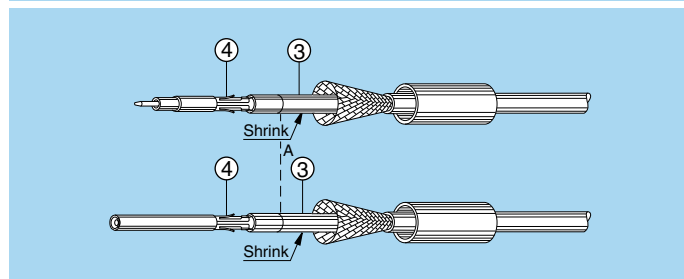
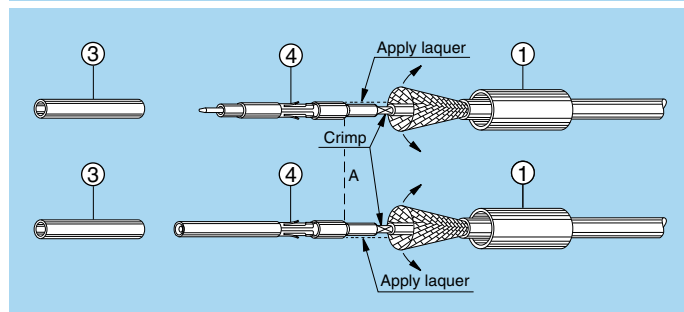
<b>DPN.99.005.2K</b>	Shield	1-2	DPH.91.005.2K
<b>DPN.99.060.11K</b>	Centre contact	1	DPH.91.001.16K
<b>DPN.99.065.11K</b>	Centre contact	2	DPK.91.001.16K

- Dies material: Blackened steel

## Termination instructions cable group 1



Dimensions in mm.



1. Strip the cable according to the given dimensions, remove carefully the cable corona screen, making sure that the cable dielectric is not damaged. Remove also the aluminium foil and the textile tape. Clean the dielectric with isopropyl alcohol.

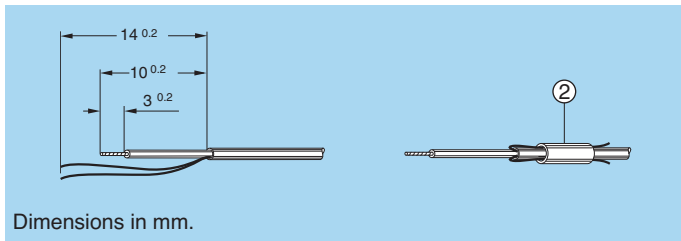
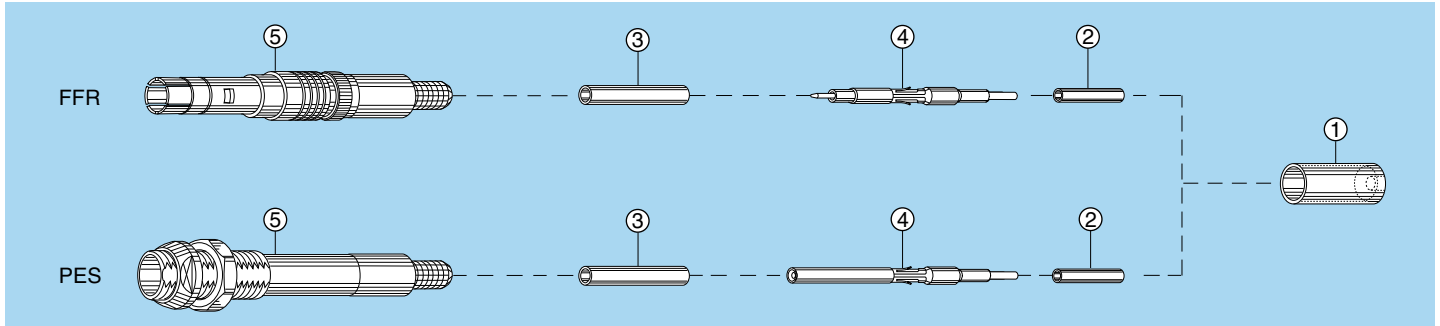
2. Place the crimp ferrule ① on the cable. Widen completely the shield braid and fold it back over the jacket. Introduce the cable center conductor into the HV contact ④ until the contact end rests against the dielectric and the conductor is visible through the contact inspection hole. Crimp with the LEMO crimping tool DPH.99.060.11K. Cover the crimp section of the contact and the Peek end of the HV contact with a layer of insulating laquer. Let the laquer dry, approx. 15 min.  
Note: We recommend the laquer Urethan ref: Cellpack n° 912110

3. Slide the heatshrink tube ③ over the HV contact until it rests against the contact insulator. One end of the heatshrink tube shall be located at the position A of the HV contact insulator. Shrink the tube.

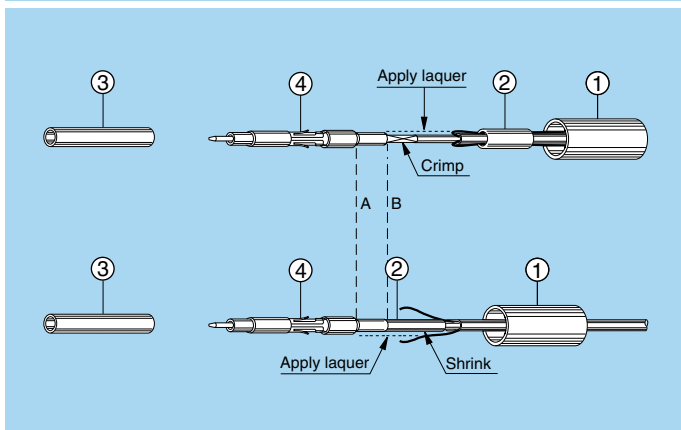
4. Fully introduce the HV contact into the connector shell ⑤. Check that the contact is correctly located and remains in position when given a gentle pull. Place the cable shield braid strand over the shell crimp back end, cut the length of braid in excess.

5. Slide the crimp ferrule over the cable shield until it rests against the connector shell. Crimp with the LEMO crimping tool DPH.99.005.2K.

## Termination instructions cable group 2



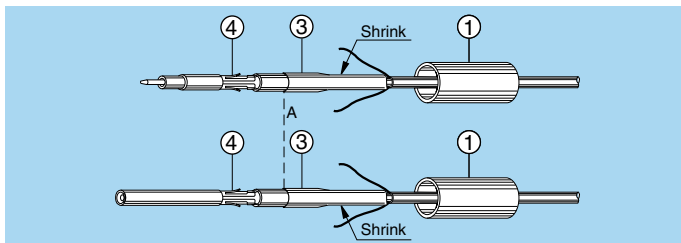
1. Strip the cable according to the given dimensions, cut the aluminium foil making sure that the dielectric is not damaged. Do not damage the 2 drain wires. Fold the drain wires back over the outer jacket and slide over the small heatshrink tube ②. Clean the dielectric with isopropyl alcohol.



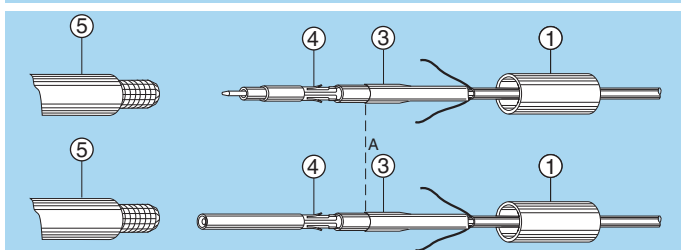
2. Place the crimp ferrule ① introducing first the small diameter on the cable. Introduce the cable center conductor and a part of the dielectric into the HV contact ④ until the conductor is fully visible through the contact inspection hole. Crimp with the LEMO crimping tool DPH.99.065.11K. Cover the crimp section of the contact and a short length of the dielectric with a layer of insulating laquer. Let the laquer dry, approx. 15 min.

Note: We recommend the laquer Urethan  
ref: Cellpack n° 912110

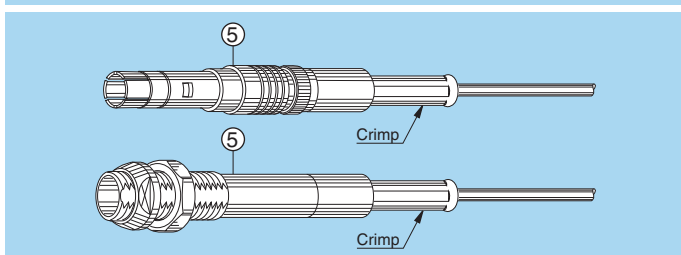
Slide the heatshrink tube ② over the HV contact until it rests against the contact insulator at the position B. Shrink the tube. Cover the Peek end of the HV contact and the first heatshrink tube with a layer of the insulating laquer. Let the laquer dry, approx. 15 min.



3. Slide the heatshrink tube ③ over the HV contact until it rests against the contact insulator. One end of the heatshrink tube shall be located at the position A of the HV contact insulator. Shrink the tube.



4. Fully introduce the HV contact into the connector shell ⑤. Check that the contact is correctly located and remains in position when given a gentle pull. Place the 2 drain wire around the shell crimp back end.



5. Slide the crimp ferrule over the cable shield until it rests against the connector shell. Crimp with the LEMO crimping tool DPH.99.005.2K.

## Product safety notice

**PLEASE READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY AND CONSULT ALL RELEVANT NATIONAL AND INTERNATIONAL SAFETY REGULATIONS FOR YOUR APPLICATION. IMPROPER HANDLING, CABLE ASSEMBLY, OR WRONG USE OF CONNECTORS CAN RESULT IN HAZARDOUS SITUATIONS.**

### 1. SHOCK AND FIRE HAZARD

Incorrect wiring, the use of damaged components, presence of foreign objects (such as metal debris), and / or residue (such as cleaning fluids), can result in short circuits, overheating, and / or risk of electric shock. Mated components should never be disconnected while live as this may result in an exposed electric arc and local overheating, resulting in possible damage to components.

### 2. HANDLING

Connectors and their components should be visually inspected for damage prior to installation and assembly. Suspect components should be rejected or returned to the factory for verification. Connector assembly and installation should only be carried out by properly trained personnel. Proper tools must be used during installation and / or assembly in order to obtain safe and reliable performance.



### 3. USE

Connectors with exposed contacts should never be live (or on the current supply side of a circuit). Under general conditions voltages above 30 VAC and 42 VDC are considered hazardous and proper measures should be taken to eliminate all risk of transmission of such voltages to any exposed metal part of the connector.

### 4. TEST AND OPERATING VOLTAGES

The maximum admissible operating voltage depends upon the national or international standards in force for the application in question. Air and creepage distances impact the operating voltage; reference values are indicated in the catalog however these may be influenced by PC board design and / or wiring harnesses. The test voltage indicated in the catalog is 75% of the mean breakdown voltage; the test is applied at 500 V/s and the test duration is 1 minute.

### 5. CE MARKING

CE marking  means that the appliance or equipment bearing it complies with the protection requirements of one or several European safety directives. CE marking  applies to complete products or equipment, **but not to electromechanical components, such as connectors.**

### 6. PRODUCT IMPROVEMENTS

The LEMO Group reserves the right to modify and improve to our products or specifications without providing prior notification.

### 7. **WARNING (Prop 65 State of California)**

This product may contain one or more substances or chemicals known to the state of California to cause cancer.

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