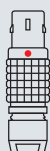


F Series Compact Push-Pull connectors



LEMO Solutions Portfolio



1 ORIGINALS

Your configurable solution

- Self-Latching Push-Pull locking
- Wide & modular range
- Broad application reach
- Indoor & outdoor

Series	B, K, T
	S, E



2 REDEL

Your trusted medical solution

- Medical and Industrial grade plastics
- Device ergonomics
- Electrical safety
- High density & modularity

Series	P
	SP
	MP



3 OPTIMA

Your optimised solution

- Compact & miniature
- Lightweight & low-profile
- High vibration resistance
- IP68 & MIL-STD tested

Series	M
	F
	D



4 SUPREME

Your extreme solution

- High/Low pressure
- Radiation & corrosion
- High Voltage
- Regulated environments

Series	N
	W
	Y



5 SPECIALTIES

Your specialised solution

- Industry standards
- Special configurations
- Historical products

Series	3K.93C.Y, 00 Nim-Camac
	V, 2G/2C, R, ...



6 CABLES

Your unique cable solution

- Design expertise
- In house prototype to production
- Custom cables
- Conductive & hybrid

Series	Technical cables
	Biocompatibility
	Automation & high-flex
	Retractable coil cords
	Ruggedised

SERVICES

Cable assembly services (single-end, double-end, custom harness, overmolding, ...)

Custom solution (connector, cable, device)

Signal integrity end-to-end services

Understanding LEMO's product selection benefits:

Standard versus Special.

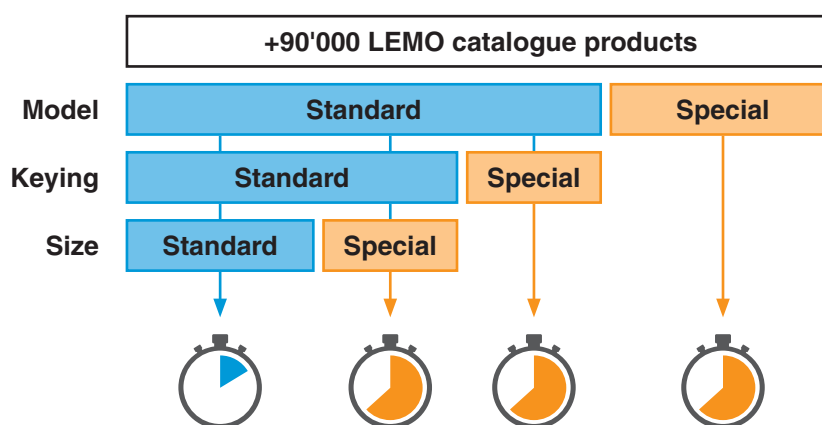
LEMO has a +80 years history of developing custom connectivity solutions. Our very broad offering of models combined with our modular insert design results in a range of over 90'000 connector solutions. This vast product portfolio enables you to select the ideal connector configuration to suit almost any specific requirement in the most demanding markets, including yours.

In this product catalogue we have structured our product offering into two categories:

- **STANDARD** products (in blue) – Most commonly used products for which we can ensure the best availability and shorter lead times. For these products a 10 pcs minimum order quantity (MOQ) applies.
- **SPECIAL** products (in orange) – More niche products designed for customers with specific requirements. For these products a higher minimum order quantity (MOQ) will apply, prices might be higher and lead times are typically longer.

And this differentiation between **STANDARD** and **SPECIAL** applies on three different levels:

1. **MODEL** – Outershell / Backshell shape
2. **KEYING** – Alignment key for differentiated mating
3. **SIZE** – Physical dimensions of the connector



Only if Model + Keying + Size are all within the STANDARD product offering, you will have the best availability and shorter lead time. We recommend you find as much as possible the right solution for your connectivity challenge within our standard product offer.

For all other, special products, we recommend you contact your local LEMO representative to discuss your overall project's life span and long-term needs, so we can align your forecast with applicable MOQ quantities.

By clearly distinguishing between Standard and Special products, LEMO ensures maximum flexibility while still offering the perfect solution to fully meet our customer needs.

Introduction

This catalogue provides a complete description of the LEMO F Series portfolio. F Series connectors are ultra-compact and extremely lightweight push-pull connectors designed for space, aerospace, and other high-reliability applications.

Featuring an aluminium outer shell, the F Series combines minimal weight with excellent mechanical strength and high resistance to vibration and shock, making it particularly suited for demanding environments such as satellites, launchers, spacecraft and other harsh environment light weight application.

LEMO's commitment to innovation and quality is reflected in the F Series, offering a highly reliable interconnect solution for critical missions where weight reduction and robustness are essential. This enables customers to improve system efficiency while ensuring long-term performance.

The LEMO quality arises from years of expertise in design, manufacturing, and quality systems. Each connector is identified with an engraved part number, and full traceability is ensured through production batch identification on the packaging, from raw materials to fully assembled product.

The F Series is available in a wide range of configurations to support signal, power, and data transmission needs, while its compact and lightweight design makes it ideal for applications where space and mass are critical constraints.



Product safety notice & disclaimers

Please read and follow all instructions specified on the last page or on our [website](https://www.lemo.com) 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.

LEMO products and services are provided "as is." LEMO makes no warranties or representations with regard to LEMO product & services or use of them, express, implied or statutory, including for accuracy, completeness, or security.

In no event shall LEMO be liable for any direct, indirect, punitive, incidental, special consequential damages, to property or life, whatsoever arising out of or connected with the use or misuse of LEMO's products.

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OPTIMA's F Series

Ultra-lightweight and compact connector for extreme environments

OPTIMA F Series has been designed to meet the demanding requirements of space and aerospace applications where weight reduction is critical and failure is not an option.

Featuring an aluminium outer shell with excellent EMI shielding performance and a compact push-pull latching system, this connector achieves extremely low weight while maintaining high mechanical strength and excellent resistance to vibration and shock.

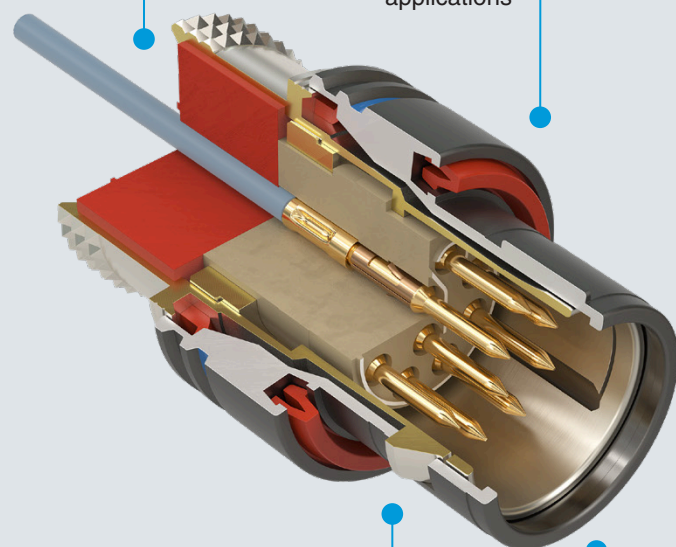
The proven push-pull latching system is engineered to withstand severe dynamic conditions and fulfills stringent MIL test requirements, ensuring secure and reliable connections in the most demanding environments.

The OPTIMA F Series offers a wide range of multipole configurations to support various signal and power transmission needs, while maintaining minimal size and weight.

Grommet or potting:
Ensures consistent electrical connectivity in vibrating environments

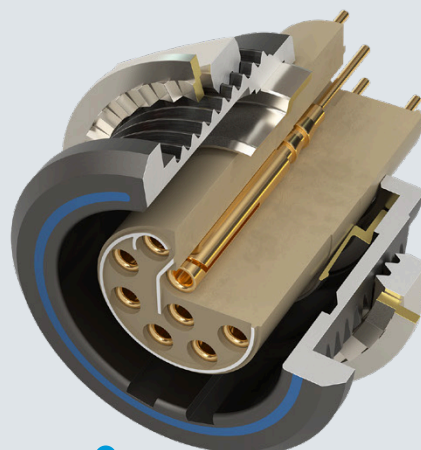
Ultra lightweight and compact design:
Optimized to save weight and space for aerospace applications

Watertight in unmated condition (HE● model):
Enhance protection for sensitive equipment in harsh environment



Push-Pull latching:
Provides a secure and reliable connection in high shock and vibration environment

Dark and non reflective surface treatment:
ideal choice for defense and security application



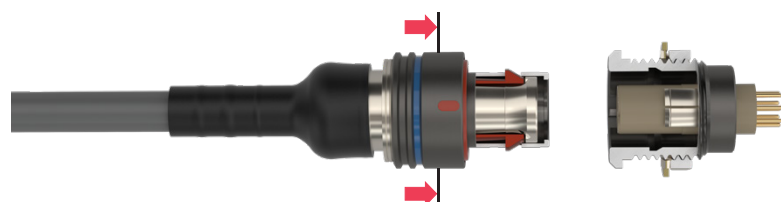
Extended temperature range (-55°C/+200°C):
Allows deployment in a wide operational scenarios according to military & aerospace standards

LEMO Push-Pull self-latching system

Compact precision for high-performance connectivity: In applications where every gram and every millimeter matter, reliability, speed, and precision are essential. LEMO's compact Push-Pull self-latching system, as implemented in the F Series, delivers secure and efficient connectivity in an ultra-lightweight and space-saving design.

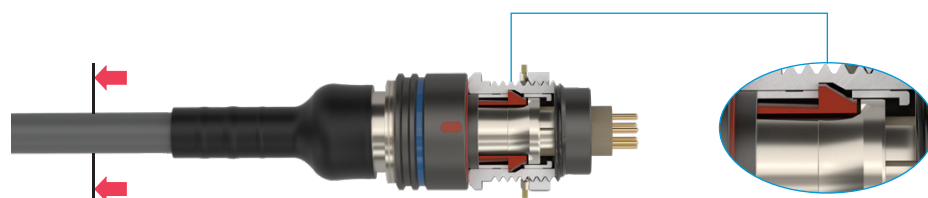
What is Push-Pull self-latching technology ?

LEMO's Push-Pull latching system enables connectors to lock instantly with a simple push and release easily with a controlled pull. Optimized for compact integration, the F Series mechanism combines minimal size and weight with high retention force and resistance to vibration and shock.



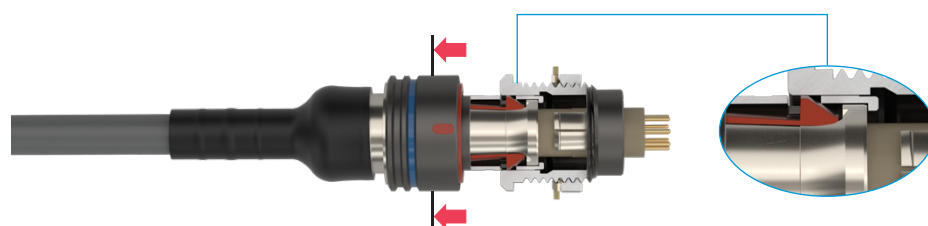
Fast and easy connections

The LEMO self-latching system allows the connector to be mated by simply pushing the plug axially into the socket.



Secure latching system

Once firmly latched, connection cannot be broken by pulling on the cable or any other component part other than the outer release sleeve.



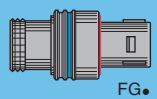
Easy release

When required, the connector is disengaged by a single axial pull on the outer release sleeve. This first disengages the latches and then withdraws the plug from the socket.

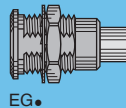
F Series (standard models)

Standard models (page 10)

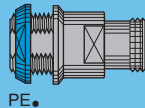
Straight plugs



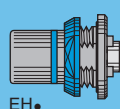
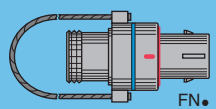
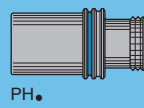
Sockets



Fixed cable socket

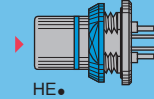


Free cable socket



Watertight model (page 12)

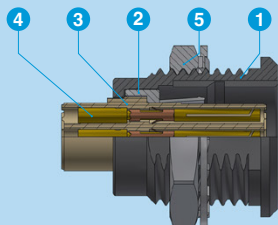
Socket



Part Section Showing Internal Components

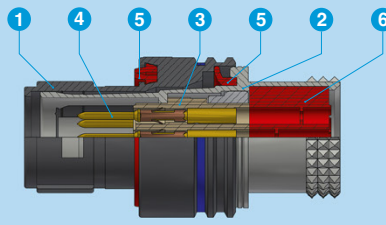
Fixed cable socket

- 1 outer shell
- 2 earthing crown
- 3 insulator
- 4 female contact
- 5 hexagonal nut



Straight plug

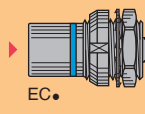
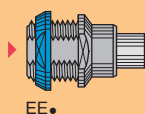
- 1 outer shell
- 2 latch sleeve
- 3 insulator
- 4 male contact
- 5 gasket
- 6 rear seal



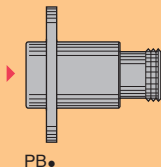
F Series (special models)

Special models (page 13)

Sockets

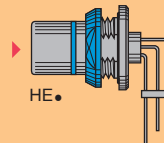


Fixed cable socket



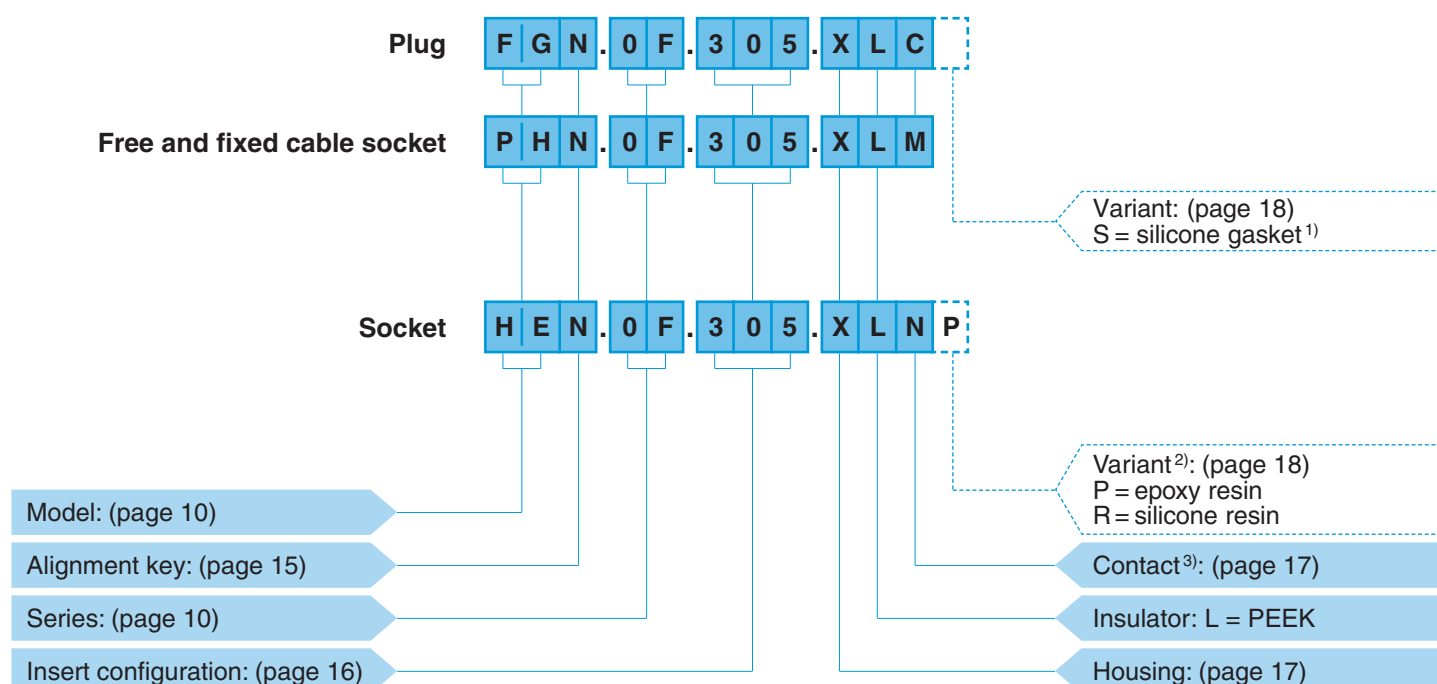
Watertight model (page 14)

Socket



Part numbering system

Standard models part numbering system



FGN.0F.305.XLC = straight plug with key (N), 0F series, multipole type with 5 contacts, outer shell in anthracite nickel-plated aluminium alloy, PEEK insulator, male crimp contacts.

PHN.0F.305.XLM = free cable socket with key (N), 0F series, multipole type with 5 contacts, outer shell in anthracite nickel-plated aluminium alloy, PEEK insulator, female crimp contacts.

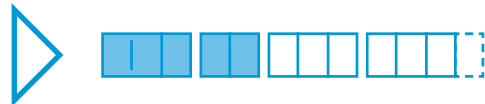
HEN.0F.305.XLNP = socket, nut fixing, with key (N), 0F series, multipole type with 5 contacts, outer shell in anthracite nickel-plated aluminium alloy, PEEK insulator, female print contacts, watertight.

Note:

¹⁾ with shell material code X or Y.

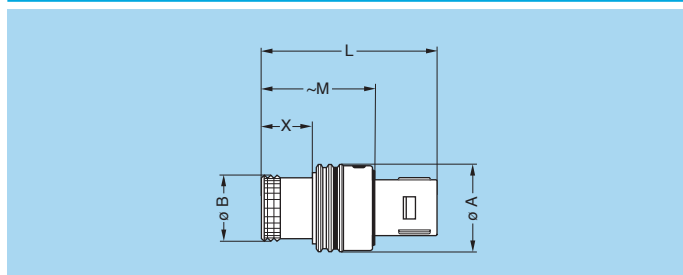
²⁾ potting for HE● only.

³⁾ HE● available only with print contacts (straight or elbow).



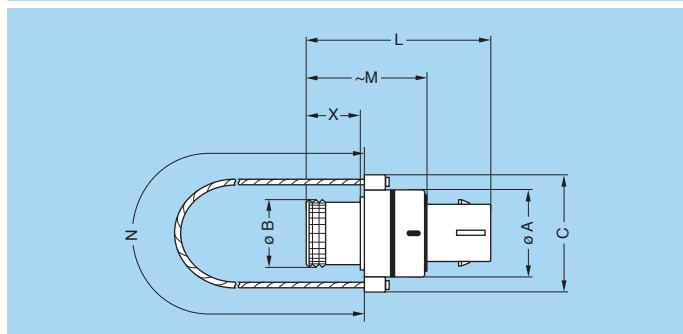
Standard models

FG● Straight plug, key (N or P to T)



Reference		Dimensions (mm)				
Model	Series	A	B	L	M	X
FG●	FF	8.5	6.3	21.6	13.8	5.7
FG●	0F	12.0	9.0	27.5	17.8	8.0
FG●	1F	14.0	10.7	27.8	17.9	8.0
FG●	2F	17.0	14.0	27.8	17.9	8.0
FG●	3F	19.0	16.0	27.8	17.9	8.0

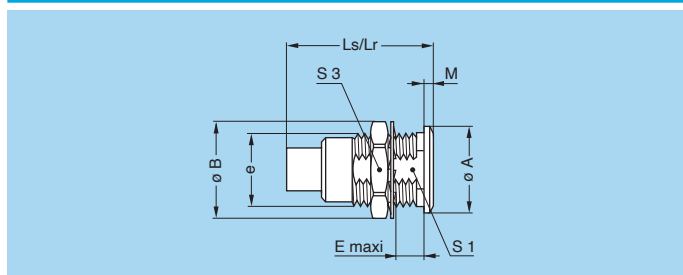
FN● Straight plug, key (N or P to S) and lanyard release



Reference		Dimensions (mm)						
Model	Series	A	B	C	L	M	N	X
FN●	0F	12.0	9.0	18.0	27.5	17.8	140	8.0
FN●	1F	14.0	10.7	20.0	27.8	17.9	140	8.0
FN●	2F	17.0	14.0	23.0	27.8	17.9	160	8.0
FN●	3F	19.0	16.0	25.0	27.8	17.9	190	8.0

Note: cable material: stainless steel with protective sheath.

EG● Socket, nut fixing, key (N or P to T) (IP50) (front panel mounting)

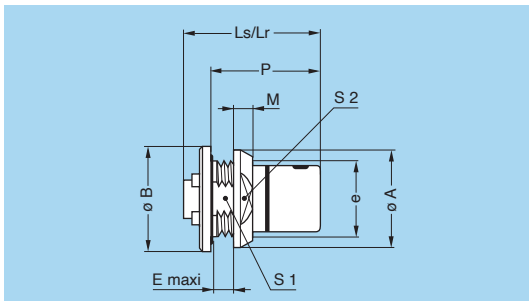


Reference		Dimensions (mm)								
Model	Series	A	B	e	E	Ls	Lr	M	S1	S3
EG●	0F	10	12.4	M9x0.6	7.0	19.0	19.0	1.2	8.2	11
EG●	1F	14	15.8	M12x1.0	6.5	19.0	19.0	1.5	10.5	14
EG●	2F	18	19.2	M15x1.0	6.5	19.0	19.0	1.8	13.5	17
EG●	3F	22	25.0	M18x1.0	5.5	19.0	20.5	2.0	16.5	22

Panel cut-out (page 28)

Note: Ls = standard gender, Lr = reverse gender (see page 15 for standard/reverse gender options).

EH● Socket, nut fixing, key (N or P to T) (back panel mounting)



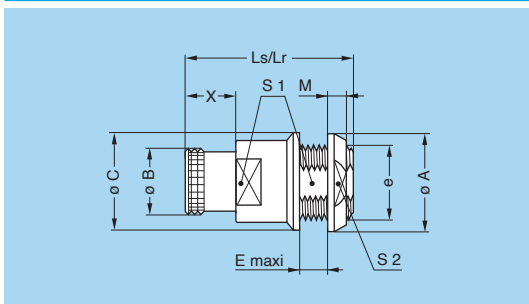
Reference		Dimensions (mm)									
Model	Series	A	B	e	E	Ls	Lr	M	P	S1	S2
EH●	FF	10	11	M7x0.50	3.0	15.0	15.0	2.5	12.0	6.4	8
EH●	0F	13	14	M10x0.75	3.0	19.0	19.0	2.5	14.5	9.0	11
EH●	1F	17	17	M13x0.75	3.0	19.0	19.0	3.2	14.5	11.5	14
EH●	2F	20	20	M16x1.00	3.0	19.0	19.0	4.0	14.5	14.5	17
EH● ¹⁾	3F	22	23	M18x1.00	3.0	19.0	20.5	4.0	14.5	16.5	19

Panel cut-out (page 28)

Note: ¹⁾ for reverse gender P = 16.0.

Ls = standard gender, Lr = reverse gender (see page 15 for standard/reverse gender options).

PE● Fixed cable socket, nut fixing, key (N or P to T) (back panel mounting)



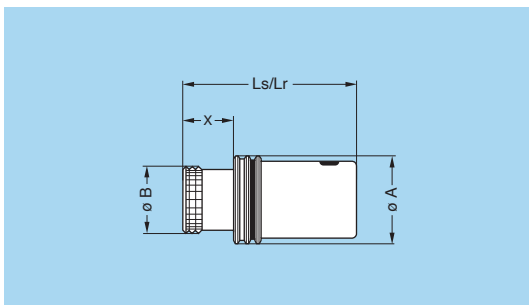
Reference		Dimensions (mm)										
Model	Series	A	B	C	e	E	Ls	Lr	M	S1	S2	X
PE● ¹⁾	FF	10	6.3	11	M7x0.50	6.0	20.7	20.7	2.5	6.4	—	5.7
PE●	0F	13	9.0	13	M10x0.75	6.0	26.7	26.7	2.5	9.0	11	8.0
PE●	1F	17	10.7	17	M13x0.75	6.2	26.7	26.7	3.2	11.5	14	8.0
PE●	2F	20	14.0	20	M16x1.00	6.4	26.7	26.7	4.0	14.5	17	8.0
PE●	3F	22	16.0	22	M18x1.00	6.4	26.7	28.2	4.0	16.5	19	8.0

Panel cut-out (page 28)

Note: ¹⁾ fitted with notched nut GEG.

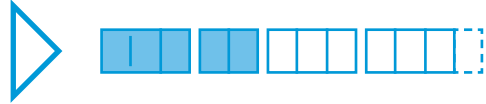
Ls = standard gender, Lr = reverse gender (see page 15 for standard/reverse gender options).

PH● Free cable socket, key (N or P to T)



Reference		Dimensions (mm)				
Model	Series	A	B	Ls	Lr	X
PH●	FF	8.5	6.3	20.7	20.7	5.7
PH●	0F	12.0	9.0	26.7	26.7	8.0
PH●	1F	14.0	10.7	26.7	26.7	8.0
PH●	2F	17.0	14.0	26.7	26.7	8.0
PH●	3F	19.0	16.0	26.7	28.2	8.0

Note: Ls = standard gender, Lr = reverse gender (see page 15 for standard/reverse gender options).



Watertight model (unmated)

HE● sockets allow the device on which they are fitted to reach a protection index of IP68 as per IEC 60529 (unmated). These models are identified by a letter «P» at the end of the reference for epoxy resin and «R» for silicone resin. They can be mated with all plugs of the same series to achieve an IP67 protection index between the plug and socket.

Environmental performance

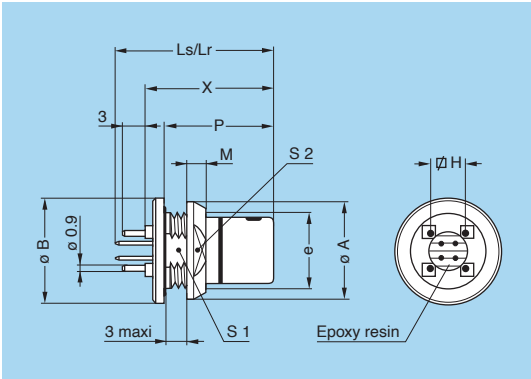
Characteristics	Value	Potting	O-ring	Standard
Operating temperature	-20°C/+80°C	Epoxy	FKM	–
	-65°C/+180°C	Silicone	Silicone	EIA-364-32 1)

Note: 1) Method A, condition IV (5 cycles) / RTCA DO-160G.

Characteristics 2)	Value	Standard
Unmated ingress protection	IP68 3)	IEC 60529
Maximum operating pressure 4)	5 bars	IEC 60512-7 test 14d

Note:
2) see also page 30.
3) IP68 (20 m, 2 h).
4) this value corresponds to the maximum allowed pressure difference for the assembled socket.

HE● Socket, nut fixing, key (N or P to T), for printed circuit, (back panel mounting)



Reference		Dimensions (mm)										
Model	Series	A	B	e	H	Ls	Lr	M	P	S1	S2	X
HE● 1)	FF	10	11	M7x0.50	5.08	18.2	18.2	2.5	12.0	6.4	8.2	15.0
HE●	0F	13	14	M10x0.75	5.08	21.5	21.5	2.5	14.5	9.0	11.0	17.5
HE●	1F	17	17	M13x0.75	7.62	21.5	21.5	3.2	14.5	11.5	14.0	17.5
HE●	2F	20	20	M16x1.00	8.89	21.5	21.5	4.0	14.5	14.5	17.0	17.5
HE● 2)3)	3F	22	23	M18x1.00	11.43	21.5	23.0	4.0	14.5	16.5	19.0	17.5

Panel cut-out (page 28)

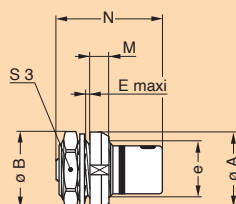
PCB drilling pattern (page 28)

Note:
1) fitted with notched nut GEG.
2) for chrome plated version (material code «C»), A = 24 mm and S2 = 20 mm.
3) for reverse gender P = 16.0 and X = 19.0.
Ls = standard gender, Lr = reverse gender (see page 15 for standard/reverse gender options).



Special models

EC● Socket with two nuts, key (N or S), protruding shell (IP50) (back panel mounting)

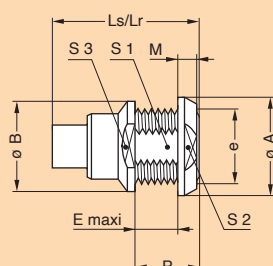


Reference		Dimensions (mm)						
Model	Series	A	B	e	E	M	N	S3
EC●	FF	10	10.2	M7x0.5	1.5	2.5	13.9	9

Panel cut-out (page 28)

Note: this socket can be used without the hexagonal nut. It can be directly fastened into the device, the notched nut is used as a tightening nut.

EE● Socket, nut fixing, key (N or P to T) (IP50) (back panel mounting)

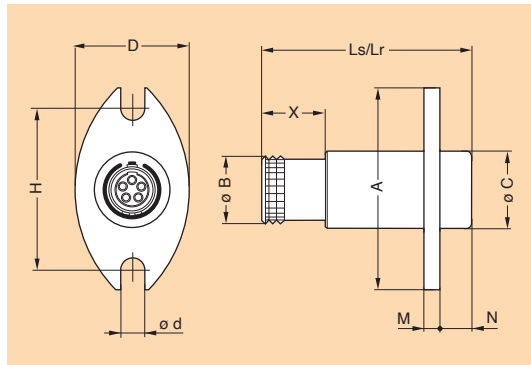


Reference		Dimensions (mm)										
Model	Series	A	B	e	E	Ls	Lr	M	P	S1	S2	S3
EE●	0F	13	12	M10x0.75	6.0	19.0	19.0	2.5	8.5	9.0	11	10.5
EE●	1F	17	15	M13x0.75	6.2	19.0	19.0	3.2	9.4	11.5	14	14.0
EE●	2F	20	19	M16x1.00	6.4	19.0	19.0	4.0	10.4	14.5	17	16.0
EE●	3F	22	22	M18x1.00	6.4	19.0	20.5	4.0	10.4	16.5	19	20.0

Panel cut-out (page 28)

Note: Ls = standard gender, Lr = reverse gender (see page 15 for standard/reverse gender options).

PB● Fixed cable socket with flange, key (N or P to T), 2 holes fixing



Reference		Dimensions (mm)										
Model	Series	A	B	C	d	D	H	Ls	Lr	M	N	X
PB●	0F	27	9.0	11.0	3.2	15	21.4	26.7	26.7	2	4	8
PB●	1F	27	10.7	13.0	3.2	15	21.4	26.7	26.7	2	4	8
PB●	2F	31	14.0	16.0	3.2	18	25.9	26.7	26.7	2	4	8
PB●	3F	38	16.0	17.5	3.2	20	29.0	26.7	28.2	2	4	8

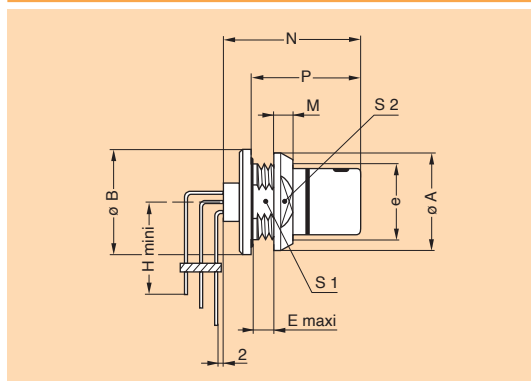
Panel cut-out (page 28)

Note: Ls = standard gender, Lr = reverse gender (see page 15 for standard/reverse gender options).



Watertight model (unmated)

HE● Socket, nut fixing, key (N or P), with elbow (90°) contacts for printed circuit, (back panel mounting)



Reference		Dimensions (mm)									
Model	Series	A	B	e	E	H	M	N	P	S1	S2
HE●	0F	13	14	M10x0.75	3.0	20	2.5	18.5	14.5	9.0	11
HE●	1F	17	17	M13x0.75	3.0	20	3.2	18.5	14.5	11.5	14
HE●	2F	20	20	M16x1.00	3.0	20	4.0	18.5	14.5	14.5	17

Panel cut-out (page 28)

PCB drilling pattern (page 28)



Alignment key

Alignment key and polarized keying system

F series connector model part numbers are composed of three letters. The LAST LETTER indicates the keys corresponding to a particular contact type. For example, straight plugs with N or P keys, are fitted with male contacts; whereas with S or T keys, plugs are fitted with female contacts. Sockets with N or P keys, are fitted with female contacts; whereas with S or T keys, sockets are fitted with male contacts.

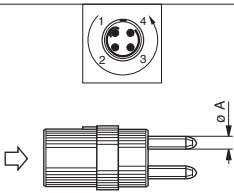
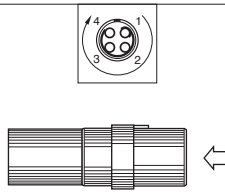
Front view of a socket				Ref.	Nb of spurs	Series					Colour code	Contact type	
N	P	S	T			FF	0F	1F	2F	3F		Plug	Socket
				N	3	●	●	●	●	●	blue	male	female
				P	3	—	●	●	●	●	yellow	male	female
				S	3	●	●	●	●	●	red	female	male
				T	3	—	●	●	●	●	green	female	male

● Standard ● Special



Multipole insert configuration

Multipole

	 Male crimp contacts	 Female crimp contacts	Reference	Number of contacts	ø A (mm)	Contact type			AWG ²⁾	Test voltage (kV DC) ¹⁾ Contact-contact	Test voltage (kV DC) ¹⁾ Contact-shell	Rated current (A) ¹⁾
					Crimp	Print (straight)	Print (elbow)					
FF	 	 	303	3	0.5	●	●	—	28-30-32	1.60	1.30	3.0
			304	4	0.5	●	●	—	28-30-32	1.33	1.27	2.0
0F	   	   	302	2	0.9	●	●	●	20-22-24	2.00	1.40	10.0
			303	3	0.9	●	●	●	20-22-24	1.80	1.40	8.0
			304	4	0.7	●	●	●	22-24-26	1.60	1.30	7.0
			305	5	0.7	●	●	●	22-24-26	1.75	1.40	6.5
1F	   	   	303	3	1.3	●	●	●	18-20	1.50	1.33	12.0
			305	5	0.9	●	●	●	20-22-24	1.70	1.70	9.0
			307	7	0.7	●	●	●	22-24-26	2.00	1.70	7.0
			308	8	0.7	●	●	●	22-24-26	1.50	1.27	5.0
2F	   	   	308	8	0.9	●	●	●	20-22-24	1.70	1.60	10.0
			310	10	0.9	●	●	●	20-22-24	2.00	2.25	8.0
			312	12	0.7	●	●	●	22-24-26	1.70	1.60	7.0
			319	19	0.7	●	●	●	22-24-26	1.70	1.40	5.0
3F	 	 	322	22	0.7	●	●	—	22-24-26	1.70	1.60	5.5
			330	30	0.7	●	●	—	22-24-26	1.54	1.40	3.5

Note: Other types available on request, based on existing contact configurations of the B series.

¹⁾ see BKT catalogue for calculation method, caution and suggested standard.

²⁾ the mentioned AWG range apply to the standard crimp contact of fig.1. Contacts with reduced crimp barrel are available for smaller conductor. See page 17 for explanation and availability.

● Standard ● Special



Housings

Different material are available to meet specific requirements, such as vibration resistance, endurance, or corrosion resistance. See Technical Characteristics on page 30.

Ref.	Availability										Outer shell		Latch sleeve		Gaskets
	for plug					for sockets					Material	Surface treatment	Material	Surface treatment	
	FF	0F	1F	2F	3F	FF	0F	1F	2F	3F					
X	–	●	●	●	●	●	●	●	●	●	Aluminium alloy	Nicke ¹⁾	Special bronze/brass	Nickel	FPM/FKM
Y	●	●	●	●	●	–	–	–	–	–	Aluminium alloy	Nickel ¹⁾	Beryllium copper	Nickel	FPM/FKM
C	–	●	●	●	●	–	●	●	●	●	Brass	Chrome	Special bronze/brass	Nickel	Silicone MQ/MVQ

Note: ¹⁾ anthracite colour. See page 30 for detail on Material and treatments.

● Standard ● Special



Contacts

Contact references for plugs, sockets and free or fixed cable sockets

There are 2 forms of crimp barrels:

- fig. 1, the standard design
- fig. 2, with reduced crimp barrel for small conductors.

Fig. 1

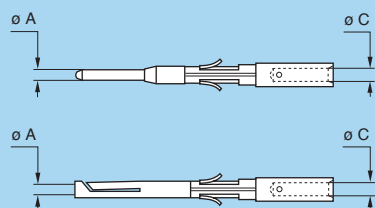
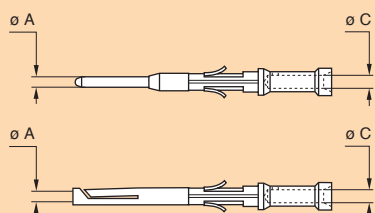


Fig. 2



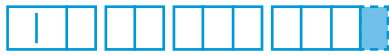
Reference		Contact			Conductor			
Male	Female	ø A (mm)	ø C (mm)	Form per fig.	AWG		Section (mm ²)	
					min.	max.	min.	max.
C	M	0.5	0.45	1	32	28	0.035	0.09
C	M	0.7	0.80	1	26	22 ¹⁾	0.140	0.34
B	P	0.7	0.45	2	32	28	0.035	0.09
C	M	0.9	1.10	1	24	20	0.250	0.50
B	P	0.9	0.80	2	26	22 ¹⁾	0.140	0.34
G	U	0.9	0.45	2	32	28	0.035	0.09
C	M	1.3	1.40	1	20	18	0.500	1.00

Note: ¹⁾ for a given AWG, the diameter of some stranded conductor designs is larger than the solder cup diameter. Make sure that the maximum conductor diameter is smaller than ø C.

Ref.	Contact type
C	Male crimp (fig. 1)
B	Male crimp (fig. 2)
G	Male crimp (fig. 2)
D	Male straight print
V	Male or female elbow print

Ref.	Contact type
M	Female crimp (fig. 1)
P	Female crimp (fig. 2)
U	Female crimp (fig. 2)
N	Female straight print

● Standard ● Special



Variant

Some options are available, they are identified with specific letters in the variant position.

- Connectors with code material X or Y are delivered with FPM/FKM gasket as a standard.
As an option they can be delivered with Silicone gasket. Add the «S» in the variant position.
- P indicated that the watertight models HE● are potted with epoxy resin.
- R indicated that the watertight models HE● are potted with silicone resin.

Characteristics	Model	Reference								
		Shell material	FKM gasket		Silicone gasket		Epoxy potting		Silicone potting	
			Variant	Temp. range ¹⁾	Variant	Temp. range ¹⁾	Variant	Temp. range	Variant	Temp. range ²⁾
Standard models operating temperature	F●●, EH●	X, Y	–	-20°C/+200°C	S	-55°C/+200°C				
	F●●, EH●	C			–	-55°C/+200°C				
	P●●, EG●, EC●, EE●	X, Y, C			–	-55°C/+200°C				
	HE●	X, Y, C					P	-20°C/+80°C	R	-65°C/+180°C

Note:

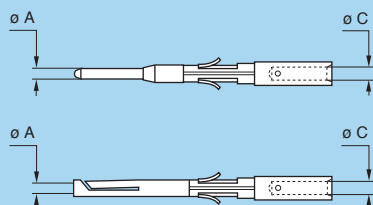
¹⁾ 200°C for short periods of use. Maximum operating temperature = 180°C.

²⁾ Standard EIA-364-32 Method A, condition IV (5 cycles / RTCA DO-160G).

Spare parts

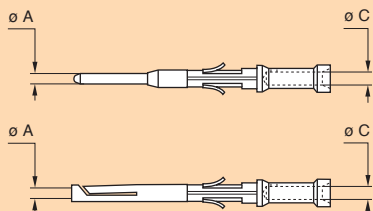
FG-EG Crimp contacts

Fig. 1



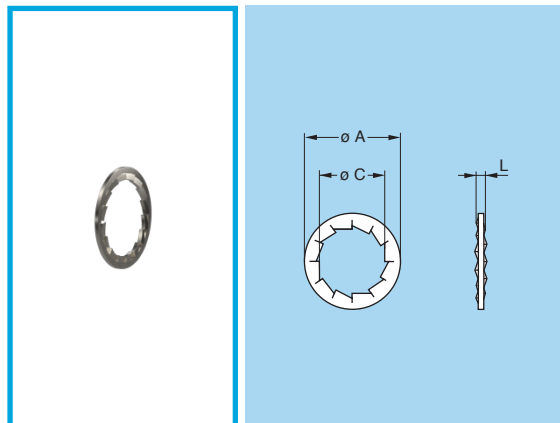
	Contact (mm)		Contact part number			
	ø A	ø C	male for plug	female for socket	male for socket	female for plug
FF	0.5	0.45	FGG.00.554.ZZC	EGG.00.654.ZZM	FGG.00.554.ZZC	EGG.00.654.ZZM
0F	0.9	1.10	FGG.0B.560.ZZC	EGG.0B.660.ZZM	FGG.0B.560.ZZC	EGG.0B.660.ZZM
	0.7	0.80	FGG.0B.555.ZZC	EGG.0B.655.ZZM	FGG.0B.555.ZZC	EGG.0B.655.ZZM
1F	1.3	1.40	FGN.1F.565.ZZC	EGN.1F.665.ZZM	FGN.1F.565.ZZC	EGN.1F.665.ZZM
	0.9	1.10	FGG.0B.560.ZZC	EGG.0B.660.ZZM	FGG.0B.560.ZZC	EGG.0B.660.ZZM
	0.7	0.80	FGG.0B.555.ZZC	EGG.0B.655.ZZM	FGG.0B.555.ZZC	EGG.0B.655.ZZM
2F	1.3	1.40	FGN.1F.565.ZZC	EGN.1F.665.ZZM	FGN.1F.565.ZZC	EGN.1F.665.ZZM
	0.9	1.10	FGG.0B.560.ZZC	EGG.0B.660.ZZM	FGG.0B.560.ZZC	EGG.0B.660.ZZM
	0.7	0.80	FGG.0B.555.ZZC	EGG.0B.655.ZZM	FGG.0B.555.ZZC	EGG.0B.655.ZZM
3F	0.7	0.80	FGG.0B.555.ZZC	EGG.0B.655.ZZM	FGG.0B.555.ZZC	EGN.3F.655.ZZM

Fig. 2



	Contact (mm)		Contact part number			
	ø A	ø C	male for plug	female for socket	male for socket	female for plug
0F	0.9	0.80	FGG.0B.561.ZZC	EGG.0B.661.ZZM	FGG.0B.561.ZZC	EGG.0B.661.ZZM
	0.9	0.45	FGG.0B.562.ZZC	EGG.0B.662.ZZM	FGG.0B.562.ZZC	EGG.0B.662.ZZM
	0.7	0.45	FGG.0B.556.ZZC	EGG.0B.656.ZZM	FGG.0B.556.ZZC	EGG.0B.656.ZZM
1F	0.9	0.80	FGG.0B.561.ZZC	EGG.0B.661.ZZM	FGG.0B.561.ZZC	EGG.0B.661.ZZM
	0.9	0.45	FGG.0B.562.ZZC	EGG.0B.662.ZZM	FGG.0B.562.ZZC	EGG.0B.662.ZZM
	0.7	0.45	FGG.0B.556.ZZC	EGG.0B.656.ZZM	FGG.0B.556.ZZC	EGG.0B.656.ZZM
2F	0.9	0.80	FGG.0B.561.ZZC	EGG.0B.661.ZZM	FGG.0B.561.ZZC	EGG.0B.661.ZZM
	0.9	0.45	FGG.0B.562.ZZC	EGG.0B.662.ZZM	FGG.0B.562.ZZC	EGG.0B.662.ZZM
	0.7	0.45	FGG.0B.556.ZZC	EGG.0B.656.ZZM	FGG.0B.556.ZZC	EGG.0B.656.ZZM
3F	0.7	0.45	FGG.0B.556.ZZC	EGG.0B.656.ZZM	FGG.0B.556.ZZC	EGN.3F.656.ZZM

GBA Locking washers

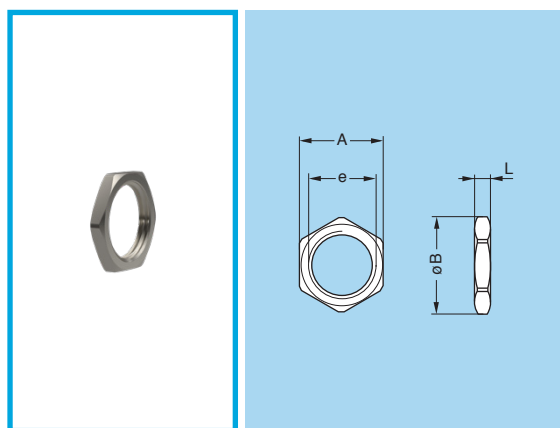


- Material: Nickel-plated bronze (3 µm)

Part number	Series	Dimensions (mm)			For models
		A	C	L	
GBA.00.250.FN	FF	9.5	7.1	1.0	EC●
GBA.0S.250.FN	0F	12.5	9.1	1.0	EG●
GBA.1S.250.FN	1F	16.0	12.1	1.0	EG●
GBA.2S.250.FN	2F	19.6	15.2	1.2	EG●
GBA.3S.250.FN	3F	25.1	18.2	1.4	EG●, PE●, EE●, EH●

Note: to order this accessory separately, use the above part numbers.

GEA Hexagonal nuts

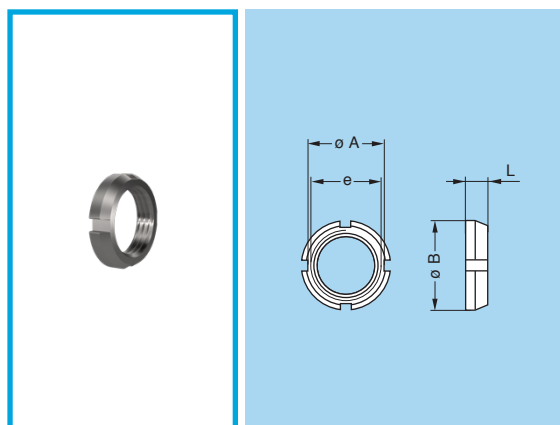


- Material: Nickel-plated brass (3 µm)

Part number	Series	Dimensions (mm)				For models
		A	B	e	L	
GEA.00.240.LN	FF	9	10.2	M7x0.50	2.0	EC●
GEA.0S.240.LN	0F	11	12.4	M9x0.60	2.0	EG●
GEA.1S.240.LN	1F	14	15.8	M12x1.00	2.5	EG●
GEA.2S.240.LN	2F	17	19.2	M15x1.00	2.7	EG●
GEA.3S.240.LN	3F	22	25.0	M18x1.00	3.0	EG●

Note: to order this part separately use the above part numbers.
Also available in aluminium alloy (GEA.●●.240.RT).

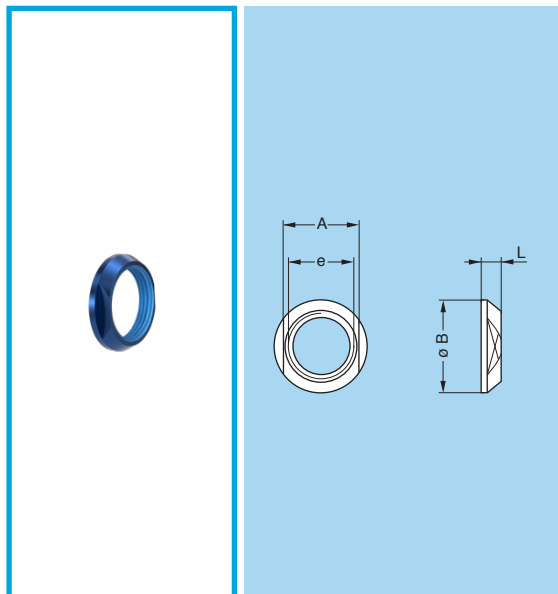
GEG Notched nut



- Material: Nickel-anthracite aluminium alloy

Part number	Series	Dimensions (mm)				For models
		A	B	e	L	
GEG.00.240.RN	FF	8.7	10	M7x0.50	2.5	HE●, EC●, PE●

GEC Conical nuts



Part number	Series	Dimensions (mm)				For models
		A	B	e	L	
GEC.FF.240.R●	FF	8	10	M7x0.50	2.5	PE●, EH●, HE●
GEC.0F.240.R●	0F	11	13	M10x0.75	2.5	PE●, EE●, EH●, HE●
GEC.1F.240.R●	1F	14	17	M13x0.75	3.2	PE●, EE●, EH●, HE●
GEC.2F.240.R●	2F	17	20	M16x1.00	4.0	PE●, EE●, EH●, HE●
GEC.3F.240.R●	3F	19	22	M18x1.00	4.0	PE●, EE●, EH●, HE●

Note: the last position "●" of the part number indicates the colour. To obtain the required colour, refer to the above table and change position "●" of the part number to the corresponding letter.

Ref.	Colour	Keying
A	blue	N
J	yellow	P

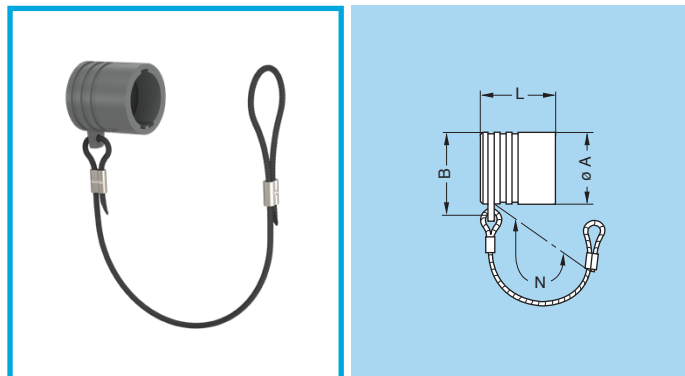
Ref.	Colour	Keying
R	red	S
V	green	T

● Material: Anodized aluminium alloy

● Standard ● Special

Accessories

BF● Plug caps, with keys (N or P)

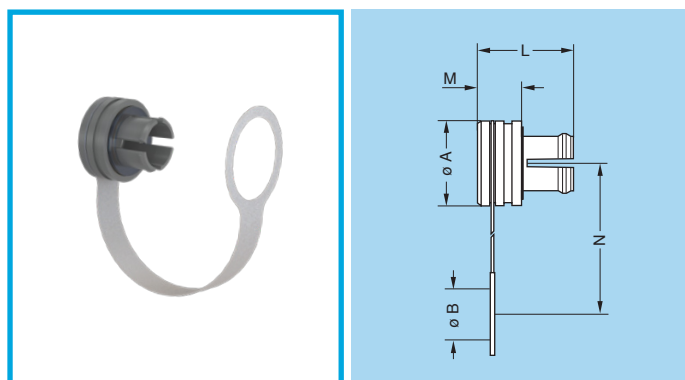


- Body material: PA6.6 grey
- Cord material: Polypropylene core and PVC coat, grey (or black)
- Maximum operating temperature: 100°C
- Protection index: IP51 according to IEC 60529

Part number	Series	Dimensions (mm)			
		A	B	L	N ¹⁾
BF●.1F.100.PCSG	1F	12.0	13.3	12.6	62
BF●.2F.100.PCSG	2F	15.0	16.4	12.8	75

Note: ¹⁾ the tolerance on this dimension is ± 5 mm.

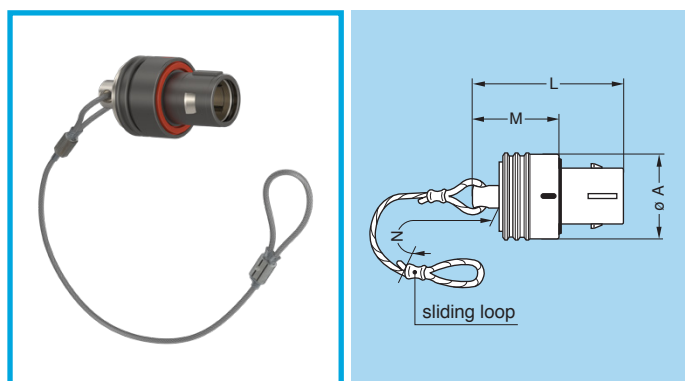
BRA Blanking caps for sockets and fixed cable sockets



- Body material: PA6.6 grey
- Band: PET
- Maximum operating temperature: 100°C
- Protection index: IP51 according to IEC 60529

Part number	Series	Dimensions (mm)				
		A	B	L	M	N
BRA.1F.200.PZSG	1F	14.0	13.7	12.1	5.3	65.5
BRA.2F.200.PZSG	2F	18.0	16.5	12.0	5.6	65.5

BRF Blanking caps, with latching for free cable sockets

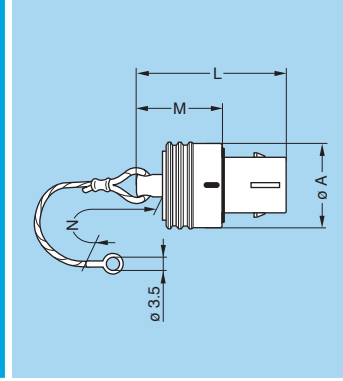


- Lanyard material: Stainless steel
- Crimp ferrule material: Nickel-plated brass + polyolefin
- Maximum operating temperature: 135°C
- Watertightness: IP67 according to IEC 60529

Part number	Series	Dimensions (mm)			
		A	L	M	N ¹⁾
BRF.FF.200.YAV	FF	8.5	20.0	12.0	60
BRF.0F.200.XAV	0F	12.0	25.5	15.6	85
BRF.1F.200.XAV	1F	14.0	25.8	15.7	85
BRF.2F.200.XAV	2F	17.0	25.8	15.6	85
BRF.3F.200.XAV	3F	19.0	27.8	15.6	120

Note: ¹⁾ the tolerance on this dimension is ± 5 mm.
This cap is suitable for use with any alignment key configuration.

BRE Blanking caps, with latching for sockets and fixed cable sockets

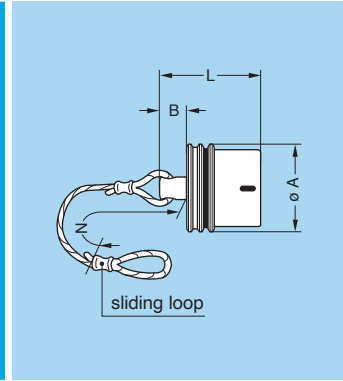


- Lanyard material: Stainless steel
- Crimp ferrule material: Nickel-plated brass + polyolefin
- Maximum operating temperature: 135°C
- Watertightness: IP67 according to IEC 60529

Part number	Series	Dimensions (mm)			
		A	L	M	N ¹⁾
BRE.FF.200.YAV	FF	8.5	20.0	12.0	60
BRE.0F.200.XAV	0F	12.0	25.5	15.6	85
BRE.1F.200.XAV	1F	14.0	25.8	15.7	85
BRE.2F.200.XAV	2F	17.0	25.8	15.6	85
BRE.3F.200.XAV	3F	19.0	27.8	15.6	120

Note: 1) the tolerance on this dimension is ± 5 mm.
This cap is suitable for use with any alignment key configuration. The BRE.0F cap has no keying and can be therefore used with any socket.

BFG Plug caps

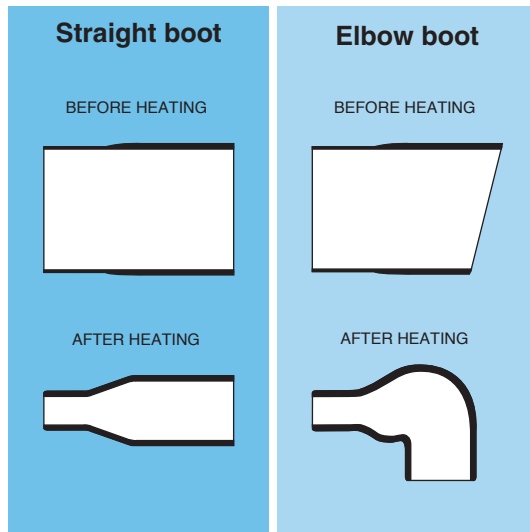


- Lanyard material: Stainless steel
- Crimp ferrule material: Nickel-plated brass + polyolefin
- Maximum operating temperature: 135°C
- Watertightness: IP67 according to IEC 60529

Part number	Series	Dimensions (mm)			
		A	B	L	N ¹⁾
BFG.FF.100.XAZ	FF	8.5	4	14	60
BFG.0F.100.XAZ	0F	12.0	6	18	85
BFG.1F.100.XAZ	1F	14.0	6	18	85
BFG.2F.100.XAZ	2F	17.0	6	18	85
BFG.3F.100.XAZ	3F	19.0	8	20	120

Note: 1) the tolerance on this dimension is ± 5 mm.
This cap is suitable for use with any alignment key configuration.

Heatshrink boot

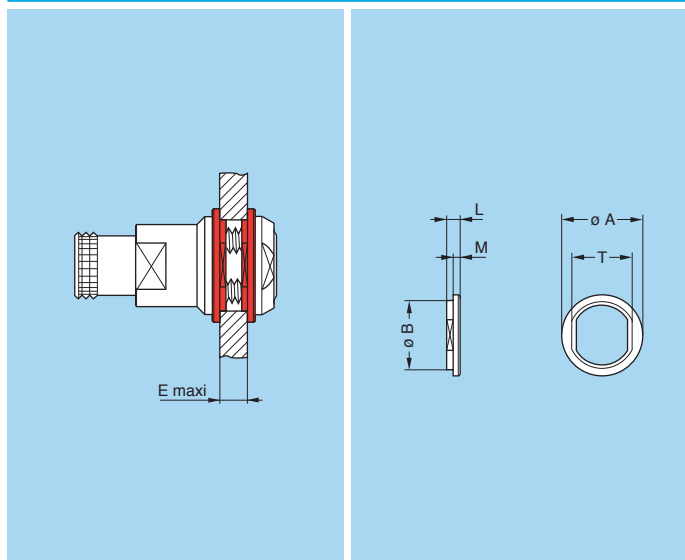


Supplier	Series	Part number		Note	Cable Ø min. (mm)
		Straight	Elbow 90°		
LEMO	FF	GMA.10.290.DN	GHA.10.210.DN	2)	2.2
Raychem®	0F-1F-2F-3F	202 A 111-25/86	222 A 111-25/86	1)	3.8
		202 A 111-25	222 A 111-25	2)	
Raychem®	1F-2F-3F	202 A 121-25/86	222 A 121-25/86	1)	5.3
		202 A 121-25	222 A 121-25	2)	
Hellermann®	0F-1F-2F-3F	104-1-G	1108-1-G	2)	3.8
	1F-2F-3F	105-1-G	1106-1-G	2)	5.6

Note:

- 1) modified elastomer resistant to fluids with hot melt sealant.
2) elastomer resistant to fluids. We recommend a thermosetting sealant with this type of boot.

GRA Insulating washers



● Material: Polyamide

Part number	Series	Dimensions (mm)					
		A	B	E	L	M	T
GRA.0F.269 G●	0F	15	12.0	4	1.8	1.0	11
GRA.1F.269 G●	1F	19	15.0	4	2.0	1.1	14
GRA.2F.269 G●	2F	22	18.5	4	2.2	1.2	17
GRA.3F.269 G●	3F	24	20.5	4	2.2	1.2	19

For EG● sockets with a particular thread dimension, use insulating washers below.

Part number	Series	Dimensions (mm)					
		A	B	E	L	M	T
GRA.0S.269 G●	0F	12.0	10.8	6.0	1.8	1.0	9.9
GRA.1S.269 G●	1F	16.0	13.8	6.5	1.8	1.0	12.2
GRA.2S.269 G●	2F	21.1	17.9	7.3	2.3	1.3	16.2
GRA.3S.269 G●	3F	25.0	21.8	10.3	2.2	1.2	20.2

Note: the last position "●" of the part number indicates the colour. To obtain the required colour, refer to the above table and change position "●" of the part number to the corresponding letter.

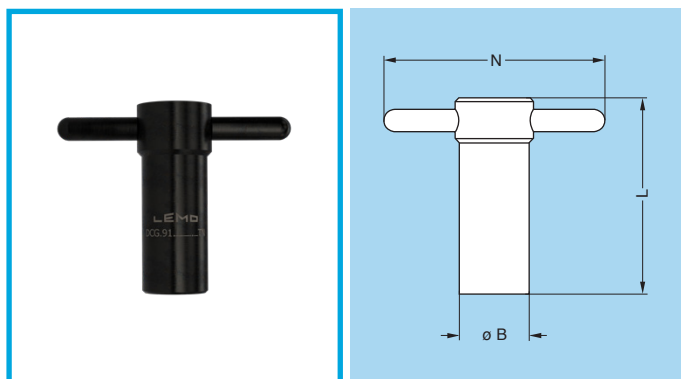
Ref.	Colour	Keying
A	blue	N
J	yellow	P

Ref.	Colour	Keying
R	red	S
V	green	T

● Standard ● Special

Tooling

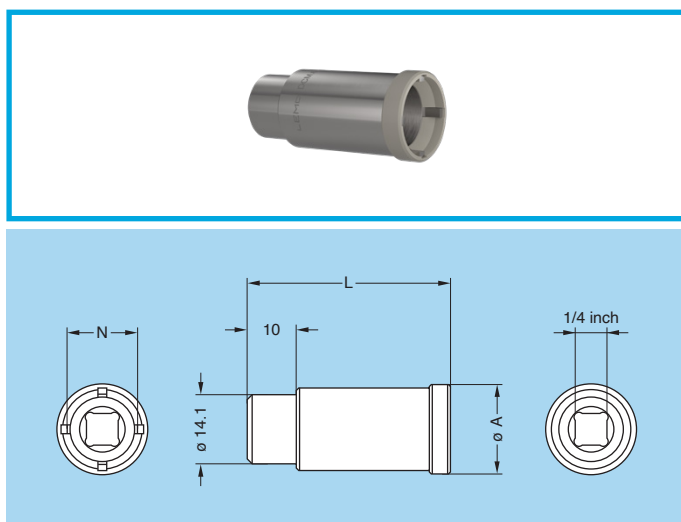
DCG Spanners for hexagonal nuts



Part number	Dimensions (mm)			Part number of the nut (page 20)
	B	L	N	
DCG.91.149.0TN	14	40	50	GEA.00.240.LN
DCG.91.161.1TN	16	45	52	GEA.0S.240.LN
DCG.91.201.4TN	20	52	65	GEA.1S.240.LN
DCG.91.231.7TN	23	62	68	GEA.2S.240.LN
DCG.91.282.2TN	28	76	73	GEA.3S.240.LN

● Material: blackened steel

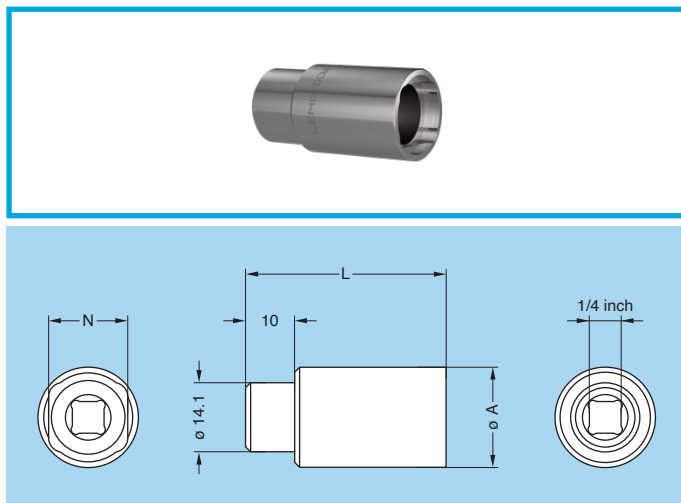
DCM Insert notched nuts tightening tools



Part number	Dimensions (mm)			Part number of the nut (page 20)
	A	L	N	
DCM.65.088.AZ4	13	33.5	8.9	GEG.00.240.RN

Note: for standard 1/4 inch tools adaptor.

DCM Insert conical nut tightening tools



Part number	Dimensions (mm)			Part number of the nut (page 21)
	A	L	N	
DCM.65.110.AZ	16.4	33.0	11.1	GEC.0F.240.R●
DCM.65.140.AZ	19.1	33.0	14.1	GEC.1F.240.R●
DCM.65.170.AZ	22.4	41.0	17.1	GEC.2F.240.R●
DCM.65.190.AZ	24.6	41.0	19.1	GEC.3F.240.R●

Note: for standard 1/4 inch tools adaptor. See conical nut on page 21.

DTA Taps



Part number	Series	Thread
DTA.99.700.5Z	FF	M7 x 0.5
DTA.99.900.6Z	0F	M9 x 0.6

DPC Manual crimping tool



Part number
DPC.91.701.V

According to specification MIL-C-22520/7-01.
For LEMO contacts ø 0.5-0.7-0.9-1.3 mm

Pneumatic crimping tools



Supplier	Part number
LEMO	DPC.91.701.C

According to specification MIL-C-22520/7-01.
For LEMO contacts ø 0.5-0.7-0.9-1.3 mm

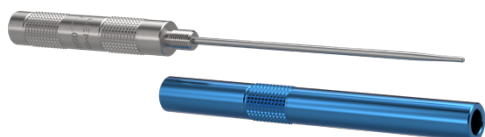
Banding tool



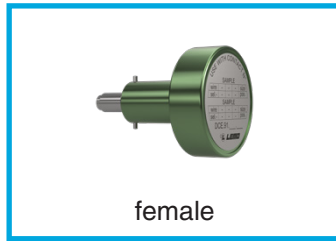
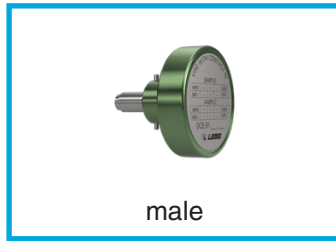
	Part number		
	GLEN-AIR®	TIE-DEX®	AXON®
Banding tool	600-061	A30199	ACDBS100
Tie wrap	600-057	A31189	AXCL0Z

Note: the banding tool is to be used with screened cables to ensure a good ground contact.

DCV Female contact insertion tool



Contact ø	Part number
1.3	DCV.13.05M.LA
0.9	DCV.09.05M.LA
0.7	DCV.07.05M.LA
0.5	DCV.05.05M.LA

DCE Positioners for crimp contacts
 ø 0.5-0.7-0.9 and 1.3 mm


These positioners are suitable for use with both manual and pneumatic crimping tools according to the MIL-C-22520/7-01 standard.

DCC Manual extractors for crimp contact
 ø 0.5-0.7-0.9 and 1.3 mm


	Connector + Contact					Positioners part number				Extractors part number
	Type	ø A	ø C	Fig.	Conductor AWG	For male contacts into plug	For female contacts into socket	For male contacts into socket	For female contacts into plug	
FF	303/304	0.5	0.45	1	28-30-32	DCE.91.050.0VC	DCE.91.050.0VM	DCE.91.050.0VC	DCE.91.050.0VM	DCC.05.02B.LAG
0F	302/303	0.9	1.10	1	20-22-24	DCE.91.090.BVC	DCE.91.090.BVM	DCE.91.090.BVC	DCE.91.090.BVM	DCC.09.05B.LAG
		0.9	0.80	2	22-24-26	DCE.91.090.BVC	DCE.91.090.BVM	DCE.91.090.BVC	DCE.91.090.BVM	DCC.09.05B.LAG
		0.9	0.45	2	28-30-32	DCE.91.090.AVC	DCE.91.090.AVM	DCE.91.090.AVC	DCE.91.090.AVM	DCC.09.05B.LAG
	304/305	0.7	0.80	1	22-24-26	DCE.91.070.BVC	DCE.91.070.BVM	DCE.91.070.BVC	DCE.91.070.BVM	DCC.07.04B.LAG
		0.7	0.45	2	28-30-32	DCE.91.070.BVC	DCE.91.070.BVM	DCE.91.070.BVC	DCE.91.070.BVM	DCC.07.04B.LAG
1F	303	1.3	1.40	1	18-20	DCE.91.131.FVC	DCE.91.131.FVM	DCE.91.131.FVC	DCE.91.131.FVM	DCC.13.15B.LAG
	305	0.9	1.10	1	20-22-24	DCE.91.090.BVC	DCE.91.090.BVM	DCE.91.090.BVC	DCE.91.090.BVM	DCC.09.05B.LAG
		0.9	0.80	2	22-24-26	DCE.91.090.BVC	DCE.91.090.BVM	DCE.91.090.BVC	DCE.91.090.BVM	DCC.09.05B.LAG
		0.9	0.45	2	28-30-32	DCE.91.090.AVC	DCE.91.090.AVM	DCE.91.090.AVC	DCE.91.090.AVM	DCC.09.05B.LAG
	307/308	0.7	0.80	1	22-24-26	DCE.91.070.BVC	DCE.91.070.BVM	DCE.91.070.BVC	DCE.91.070.BVM	DCC.07.04B.LAG
		0.7	0.45	2	28-30-32	DCE.91.070.BVC	DCE.91.070.BVM	DCE.91.070.BVC	DCE.91.070.BVM	DCC.07.04B.LAG
2F	304	1.3	1.40	1	18-20	DCE.91.131.FVC	DCE.91.131.FVM	DCE.91.131.FVC	DCE.91.131.FVM	DCC.13.15B.LAG
	308/310	0.9	1.10	1	20-22-24	DCE.91.090.BVC	DCE.91.090.BVM	DCE.91.090.BVC	DCE.91.090.BVM	DCC.09.05B.LAG
		0.9	0.80	2	22-24-26	DCE.91.090.BVC	DCE.91.090.BVM	DCE.91.090.BVC	DCE.91.090.BVM	DCC.09.05B.LAG
		0.9	0.45	2	28-30-32	DCE.91.090.AVC	DCE.91.090.AVM	DCE.91.090.AVC	DCE.91.090.AVM	DCC.09.05B.LAG
	312/319	0.7	0.80	1	22-24-26	DCE.91.070.BVC	DCE.91.070.BVM	DCE.91.070.BVC	DCE.91.070.BVM	DCC.07.04B.LAG
		0.7	0.45	2	28-30-32	DCE.91.070.BVC	DCE.91.070.BVM	DCE.91.070.BVC	DCE.91.070.BVM	DCC.07.04B.LAG
3F	322/330	0.7	0.80	1	22-24-26	DCE.91.070.BVC	DCE.91.070.BVM	DCE.91.070.BVC	DCE.91.071.FVM	DCC.07.04B.LAG
		0.7	0.45	2	28-30-32	DCE.91.070.BVC	DCE.91.070.BVM	DCE.91.070.BVC	DCE.91.071.FVM	DCC.07.04B.LAG

Note: see table on page 17 for connector selection and the table on page 19 for contact selection. A wide variation of strand number and diameter combinations are quoted as being AWG, some of which do not have a large enough cross section to guarantee a crimp as per either MIL-C-22520/1-01 or /7-01. Our technical department is at your disposal to study and propose a solution to all your applications.

Fig. 1

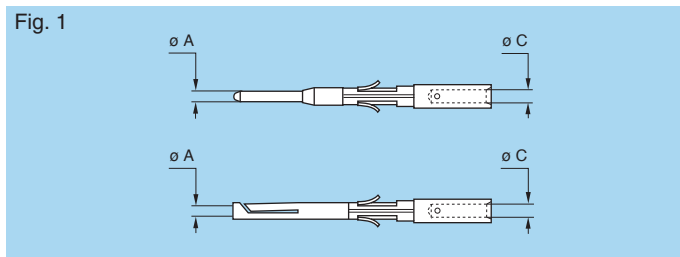
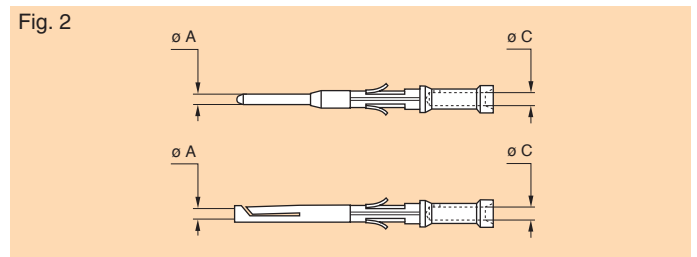


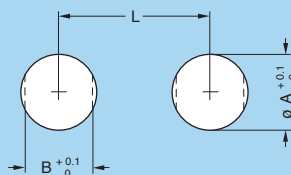
Fig. 2



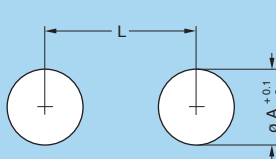
● Standard ● Special

Panel cut-outs

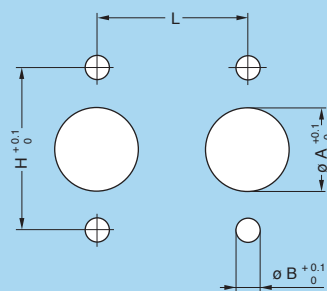
EG●-EE●-EH●-PE●-HE●



EC●



PB●



Models

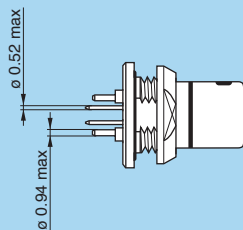
Models				Series	Dimensions (mm)			
					A	B	L	H
EC●				FF	7.1	—	11.5	—
—	EH●	HE●	PE●	FF	7.1	6.5	11.5	—
EE●	EH●	HE●	PE●	0F	10.1	9.1	16.0	—
EE●	EH●	HE●	PE●	1F	13.1	11.6	20.0	—
EE●	EH●	HE●	PE●	2F	16.1	14.6	23.0	—
EE●	EH●	HE●	PE●	3F	18.2	16.6	25.0	—
EG●				0F	9.1	8.3	13.5	—
EG●				1F	12.1	10.6	17.0	—
EG●				2F	15.1	13.6	21.5	—
EG●				3F	18.1	16.6	27.0	—
PB●				0F	11.1	3.2	16.0	21.4
PB●				1F	13.1	3.2	16.0	21.4
PB●				2F	16.1	3.2	19.0	25.9
PB●				3F	17.6	3.2	21.0	29.0

Mounting nut torque

Series	Torque (Nm)
FF	0.25
0F	1.00
1F	1.50
2F	2.00
3F	2.50

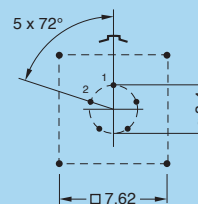
PCB drilling pattern

PCB drilling patterns are available on the corresponding customer drawings.
Please refer to the relevant part number in the LEMO Product Finder on LEMO website for detailed dimensions.



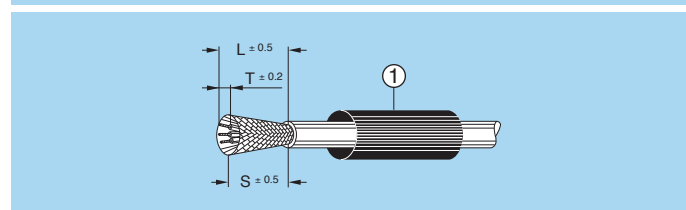
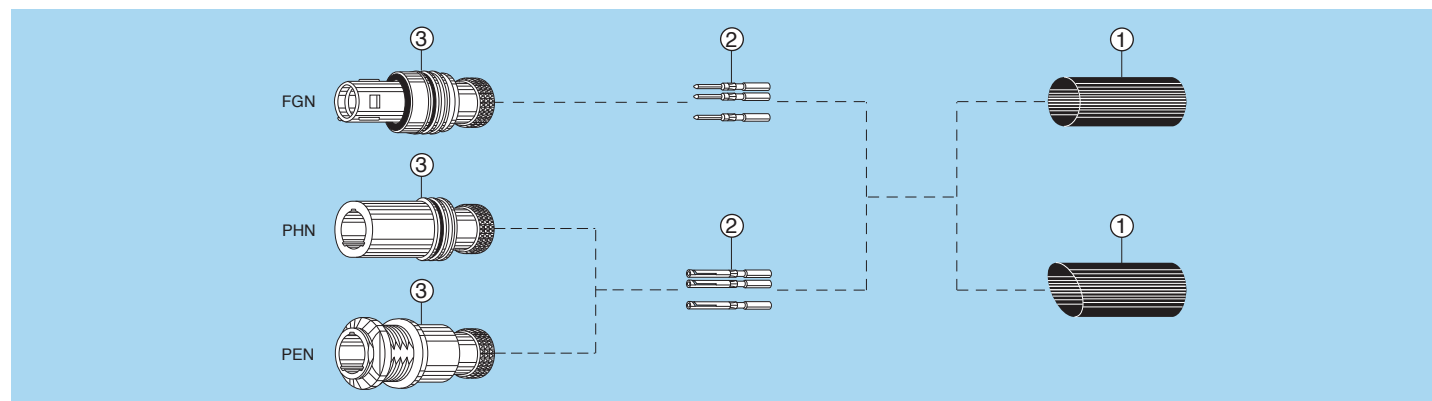
Example: PCB layout for HEN.1F.305.XLNP.

Recommended PCB layout
PCB top view



Assembly instructions

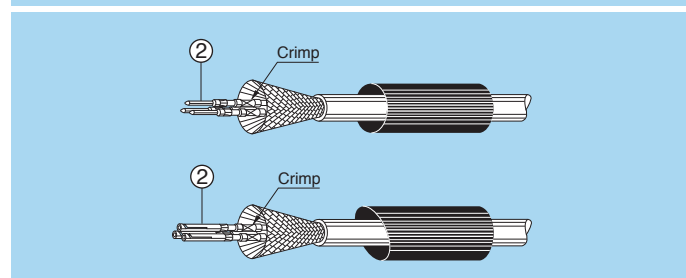
Assembly instructions for plugs and sockets



1. Cable preparation

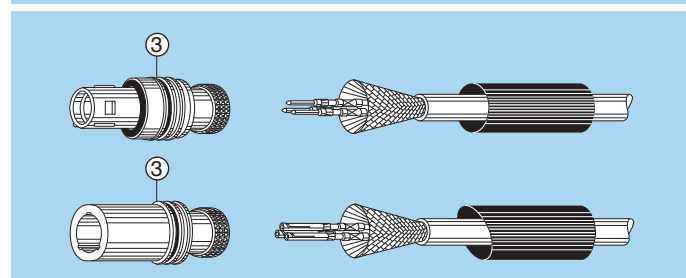
First place the heatshrink boot ① over the cable. Strip the cable according to dimensions of the table, then widen the shield.

Series	L	S	T
FF	14	9	3
0F-3F	20	15	4

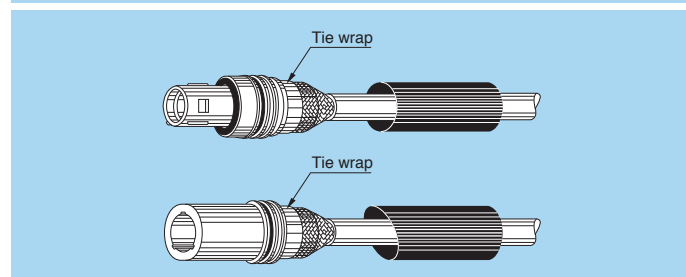


2. Cable termination

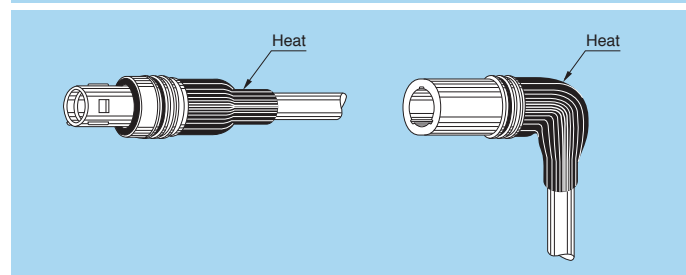
2.1 With shielded cables, widen and pull the shield all the way to the back. Fix the appropriate positioner onto the crimping tool and set the selector to the number corresponding to the AWG of the conductor used as indicated on the positioner label. Fit the conductor into the contact ②; make sure it is visible through the contact's inspection hole. Slide the conductor-contact assembly into the open crimping tool; make sure that the contact is pushed fully into the positioner. Close the tool. Remove from crimping tool and check that conductor is secure in contact and shows in inspection hole.



2.2 Arrange the conductor-contact assemblies according to the markings, into the rear cable seal. Push them deeply into the insulator, using tweezers if necessary; check that all the contacts are correctly located in the insulator: 1) by verifying the alignment of the contacts at the front of the insulator and 2) by gently pulling on each conductor. Verification should also be made using the appropriate retention testing tool. With FF series the rear cable seal can be replaced with a silicone RTV compound that is filled on the rear of the connector once the contacts are correctly installed.



2.3 Bring the shield around the rear of connector. Secure it with a band-it tie-wrap (not furnished) to fix the shield in place. Cut off the possible shield surplus.



2.4 Put the heatshrink boot in place and heat gently until it retracts.

Technical characteristics

Materials and treatments

Component	Shell material code			Material (Standard)	Note
	X	Y	C		
Outer shell			●	Brass	
	●	●		Aluminium alloy	1)4)
Conical nut			●	Brass	
	●	●		Aluminium alloy	2)
Notched nut			●	Brass	3)
	●	●		Aluminium alloy	1)3)
Earthing crown	●	●	●	Bronze or special brass	
Latch sleeve	●		●	Special bronze/brass	
		●		Beryllium Copper	
Locking washer	●	●	●	Bronze	
Hexagonal nut			●	Brass	
	●	●		Aluminium alloy	
Other metallic components	●	●	●	Brass	
Male crimp contact	●	●	●	Brass	6)
Female crimp contact	●	●	●	Bronze	6)
Clips	●	●	●	Cu-Be or special steel	
Insulator	●	●	●	PEEK	
O-ring and gaskets	●	●		FPM/FKM	
	●	●	●	Silicone	5)
Sealing resin	●	●	●	Epoxy	
Cable rear seal	●	●	●	Fluorosilicone	

● Standard ● Special

Notes: standards for surface treatment are as follows: chrome-plated SAE AMS 2460; nickel-plated SAE AMS QQ N 290 or MIL DTL 32119; gold-plated ISO 27874.

1) anthracite colour.

2) the colour match the colour code of the key (see page 15).

3) for the FF series only.

4) FF series available only with material code Y.

5) Silicone gasket are available as a variant for code material X and Y.

6) Thermocouple contact on request.

Mechanical performance

Characteristics	Shell material	Value	IEC international	MIL-spec equivalent
Endurance	code X	1000 cycles	IEC 60512-5 test 9a	EIA-364-09
Endurance	code Y	300 cycles (FF, 0F); 500 cycles (1F to 3F)	IEC 60512-5 test 9a	EIA-364-09
Endurance	code C	5000 cycles	IEC 60512-5 test 9a	EIA-364-09
Humidity	all	up to 95% at 60°C	IEC 60068-2	EIA-36-31 Method IV
Vibration - Sinusoidal	all	10-2000 Hz, 15 g	IEC 60068-2-6 test Fc	MIL-STD-202 Method 204-G
Gunfire vibration	code Y	25 to 2000 Hz, 50g rms, 30 min/axis		MIL-STD-810F Method 519.5
Vibration - Random	code Y	10 to 2000 Hz, 15g rms, 3 h/axis	IEC 60512-6-4	EIA-364-28 test cond. V letter I
Shock resistance	all	100 g, 6 ms	IEC 60068-2-27 test Ea	EIA-364-27 condition D

● Standard ● Special

Electrical performance

Characteristics	Value	IEC international	MIL-spec equivalent
Insulation resist. (at ambient temp.) ¹⁾	> 10 ¹² Ω, > 10 ¹⁰ Ω (after humidity)	IEC 60512-3-1 test 3a	EIA-364-21
Dielectric withstanding volt. (sea level)	See insert configuration	IEC 60512-4-1 test 4a	EIA-364-20
Contact resistance	See table below	IEC 60512-2-1 test 2a	EIA-364-06
Current rating	See insert configuration	IEC 60512-5-1 test 5a	
Shell to shell conductivity (mΩ)	5.0 (FF-0F), 3.0 (1F), 2.5 (2F-3F)	IEC 60512-2-6	EIA-364-83
Shielding effectiveness, low frequency	≥ 80 dB up to 1GHz		EIA-364-66
Shielding effectiveness, high frequency	≥ 70 dB (3GHz), ≥ 58 dB (6GHz), ≥ 40 dB (10GHz)		EIA-364-66

ø A (mm)	Contact resistance ²⁾ IEC 60512-2-1 test 2a			
	0.5	0.7	0.9	1.3
Value (mΩ)	≤ 8.7	≤ 6.1	≤ 4.8	≤ 3.6

Note:

¹⁾ after humidity test: 21 days at 95% RH according to IEC 60068-2. Insulation resistance measured between the contacts and contact/shell.

²⁾ after 5000 mating cycles and the salt spray test according to IEC 60068-2-11 test 11 Ka.

Environmental performance

Characteristics	Model	Reference								
		Shell material	FKM gasket		Silicone gasket		Epoxy potting		Silicone potting	
			Variant	Temp. range ¹⁾	Variant	Temp. range ¹⁾	Variant	Temp. range	Variant	Temp. range ²⁾
Standard models operating temperature	F●, EH●	X, Y	–	-20°C/+200°C	S	-55°C/+200°C				
	F●, EH●	C			–	-55°C/+200°C				
	P●, EG●, EC●, EE●	X, Y, C			–	-55°C/+200°C				
	HE●	X, Y, C					P	-20°C/+80°C	R	-65°C/+180°C

Note:

¹⁾ 200°C for short periods of use. Maximum operating temperature = 180°C.

²⁾ Standard EIA-364-32 Method A, condition IV (5 cycles / RTCA DO-160G).

Characteristics	Shell material	Value	IEC international	MIL-spec equivalent
Salt spray corrosion test	code X or Y	48 h	IEC 60068-2-11 test Ka	EIA-364-26
Salt spray corrosion test	code C	1000 h	IEC 60068-2-11 test Ka	EIA-364-26
Protection index (mated)	all	IP67	IEC 60529	
Protection index (unmated)	all	IP68 (20 m/ 2h) for HE● model only	IEC 60529	
Climatical category	code X or Y	15/200/21	IEC 60068-1	
Climatical category	code C	50/175/21	IEC 60068-1	
Fungus	all	Satisfied - by material analysis		MIL-STD 810F-508.5
Flammability	all	60 sec. front and back face		EIA-364-104A
Fluid contamination ¹⁾	all	Fuels, gasoline, hydraulic oils, solvents, de-icing		MIL-STD 810F meth. 504
Thermal shock (silicone model)	all	5 cycles: -65°C to +150°C	IEC 60512-11-4	EIA-364-32 test cond. IV
Altitude immersion	all	No moisture on contacts		EIA-364-03

Note

¹⁾ connectors immersed at both 70°C and 25°C according to specification. Connectors are then inspected, no visual signs of damage seen.

Fuels: Kerosene, JP4, (Nato F40) at 70°C +/- 2°C. Gasoline: ASTM 4814. Hydraulic oils: Mineral oil based MIL-H-5606.

Solvents: Isopropanol. De-icing fluids: 25% ethylene glycol.

Technical characteristics of plastic materials

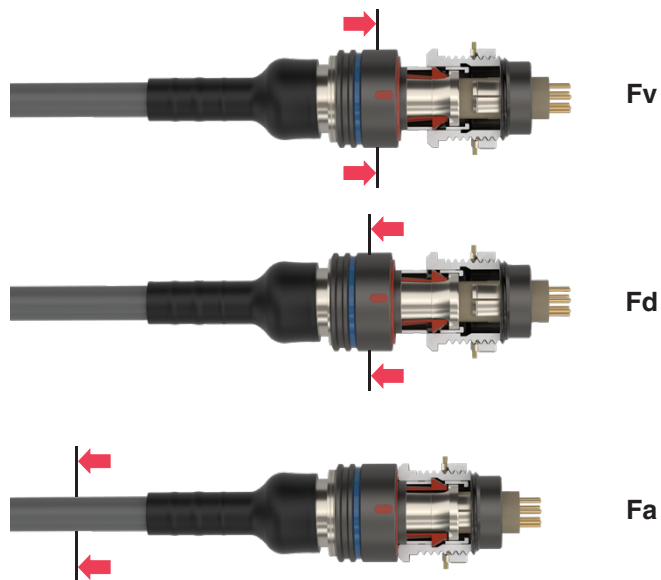
Type	Norme	Units	PEEK	Silicone	FPM/FKM	Epoxy
Density	ASTM D 792	–	1.3-1.4	~1.2	~1.9	1.58
Tensile strength (at 23°C)	ASTM D 638/ ISO R527	MPa	92-142	> 9	> 12	16
Flexural strength (at 23°C)	ASTM D 790/ ISO R178	MPa	170	–	–	24
Dielectric strength	ASTM D 149/IEC 60243	kV/mm	19-25	18-30	–	15
Volume resistivity at 50% HR and 23°C	ASTM D 257/IEC 60093	$\Omega \bullet \text{cm}$	10^{16}	10^{14}	–	10^{14}
Surface resistivity	ASTM D 257	Ω	10^{15}	–	–	–
Thermal conductivity	ASTM C 177	W/K $\bullet$ m	0.25	–	–	0.8
Comparative tracking index	IEC 60112	V	CTI 150	–	–	CTI>600
Dielectric constant (10^6 Hz)	ASTM D 150/IEC 60250	–	3.2-3.5	–	–	–
Dissipation factor (10^6 Hz)	ASTM D 150/IEC 60250	–	< 0.005	–	–	–
Maximum continuous service temperature	UL 746	°C	250	200	200	80
Minimum continuous service temperature	UL 746	°C	-50	-50	-20	-20
Maximum short-time service temperature	–	°C	300	> 250	300	120
Water absorption in 24h at 23°C	ASTM D 570/ISO R62A	%	< 0.3	–	–	0.25
Radiation resistance	–	Gy ¹⁾	10^7	10^5	8×10^4	2×10^6
Flammability rating	ASTM D 635/UL 94	–	V-0/1.5	–	–	V-0/4

Notes: 1) 1 Gy (Gray) = 100 rad

ASTM = American Society for Testing Material
ISO = International Standards Organisation

UL = Underwriters Laboratories
IEC = International Electrotechnical Commission

Mechanical Push-Pull characteristics



F_v: average latching force.

F_d: average unmating force with axial pull on the outer shell.

Latch sleeve in special bronze/brass

Force (N)	Series			
	0F	1F	2F	3F
F_v	10	11	20	18
F_d	11	13	29	20
F_a	160	120	170	210

Latch sleeve in Beryllium copper

Force (N)	Series				
	FF	0F	1F	2F	3F
F_v	16	22	21	29	34
F_d	20	21	23	33	17
F_a	110	300	250	420	400

Notes: forces were measured on outer shells **not fitted with contacts**.

1N = 0.102 kg.
1N = 0.2248 pounds force

F_a: average pull-out force with axial pull on the back shell.

Note

Note

Product safety notice & Disclaimers

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 catalogue however these may be influenced by PC board design and / or wiring harnesses.

The test voltage indicated in the catalogue 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)

Proposition 65 requires businesses to provide warnings to Californians about significant exposures to chemicals that cause cancer, birth defects or other reproductive harm. LEMO products are exempt from proposition 65 warnings because they are manufactured, marketed, and sold solely for commercial and industrial use.

For further information, please visit: <https://web.lemo.com/img/resources/quality/LEMO-Prop-65-compliance-declaration.pdf>

8. UL RECOGNITION

LEMO connectors are components recognized by the Underwriters Laboratories (UL), facilitating the UL approval of the complete system (including LEMO connector, cable and your equipment).

9. REACH AND ROHS

LEMO connector specifications comply with the requirements of the RoHS directive (2011/65/EU) and REACH regulation (1907/2006/EU) of the European Parliament and latest amendments. These REACH and ROHS regulations specify the restrictions of the use of hazardous substances in LEMO products marketed in Europe.

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HEADQUARTERS
Switzerland

LEMO SA
Tel: +41 21 695 16 00
info@lemo.com

Subsidiaries & distributors



Online catalogue



lemo.com

