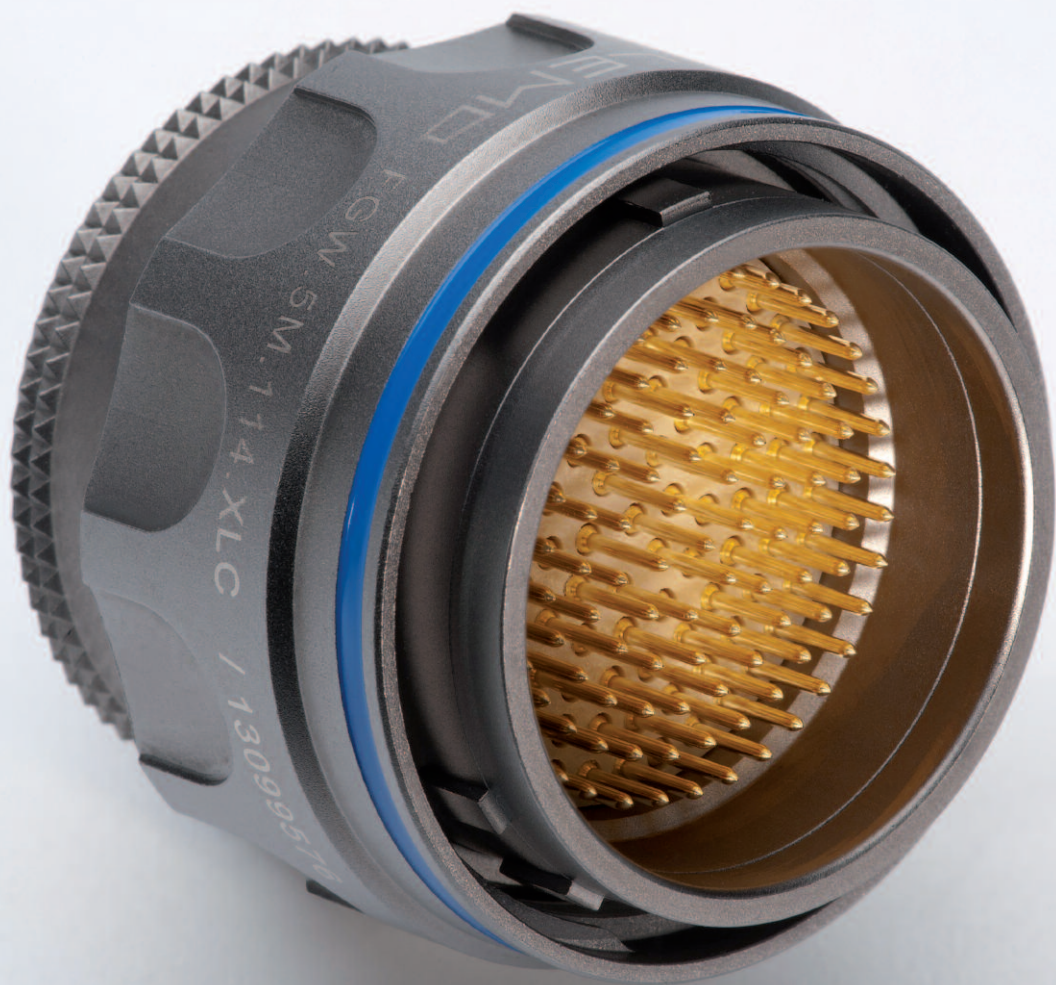


M SERIES CONNECTORS RATCHET COUPLING

m SERIES



 **LEMO**



Introduction

This catalogue gives the complete description of LEMO M series connectors. M series connectors are lightweight triple-start ratchet coupling type connectors designed for avionics, aerospace, military, security, motorsport and heavy duty applications.

The LEMO manufacturing programme has been extended to almost 40 series divided into 7 product families with specific mating and environmental characteristics. Each series includes a wide variety of plug, socket and coupler models, available in contact configurations adapted to all round cables. Watertight models are also available. Since LEMO connectors are perfectly screened and designed to guarantee very low resistance to shell electrical continuity, they are particularly adapted to applications where electromagnetic compatibility (EMC) is important.

Technical Characteristics

Materials and Treatments

Component	Shell material code		Material (Standard)	Surface treatment (µm)							Notes	
	X	C		chrome			nickel		gold			
				Cu	Ni	Cr	Cu	Ni	Cu	Ni		Au
Outer shell			Brass (UNS C 38500)	0.5	3	0.3	—	—	—	—	—	1)
			Aluminium alloy (AA 6262A or AA 6023)	—	—	—	—	5	—	—	—	
Conical nut			Brass (UNS C 38500)	0.5	3	0.3	—	—	—	—	—	1)
			Aluminium alloy (AA 6262A or AA 6023)	—	—	—	—	5	—	—	—	
Earthing crown			Bronze (UNS C 54400) or special brass	—	—	—	—	—	0.5	—	1.5	
Coupling nut			Brass (UNS C 38500)	—	—	—	0.5	3	—	—	—	
			Aluminium alloy (AA 6262A or AA 6023)	—	—	—	0.5	3	—	—	—	
Ratchet			Special PEEK	—								
Hexagonal nut			Brass (UNS C 38500)	—	—	—	0.5	3	—	—	—	
			Aluminium alloy (AA 6262A or AA 6023)	—	—	—	—	5	—	—	—	
Male crimp contact			Brass (UNS C 34500)	—	—	—	—	—	0.5	3	1.0	
Female crimp contact			Bronze (UNS C 54400)	—	—	—	—	—	0.5	3	1.5	
Clips			Cu-Be or special steel	without treatment								
Insulator			PEEK	—								
O-ring			Silicone	—								
			FPM/FKM (Viton®)	—								
Sealing resin			Epoxy (Araldite® or Stycast®)	—								
Cable rear seal			Fluorosilicone	—								
Spring			Stainless steel	—								

Notes: standards for surface treatment are as follows: chrome-plated FS QQ-C-320B; nickel-plated FS QQ-N-290A or MIL DTL 32119; gold-plated ISO 27874.

1) anthracite colour.

Environmental performance

Characteristics	Value	IEC international	MIL-spec tests
Operating temperature (mated)	- 55° C/+200° C		
Ingress protection index	IP 68 (at 2 m, 15Hr)	IEC 60529	
Fungus	Satisfied - by material analysis		MIL-STD 810F-508.5
Flammability	60 sec. front and back face		EIA-364-104A
Fluid contamination 1)	Fuels, gasoline, hydraulic oils, solvents, de-icing		MIL-STD-810F method 504
Sand and dust 2)	6 hr, 55° C, blowing < 150 µm dust		MIL-STD 810F-510.4
Lightning strike	10 K amps - 6 times		EIA-364-75
Altitude-low temp 3)	-65° C; 40'000 feet and 400 VAC		EIA-364-105A
Salt fog 4)	Alum. shell (slight pitting after 48Hr), Brass shell (500Hr)	IEC 60512-6 test 11f	EIA-364-26
Thermal shock	5 cycles: -65° C to +150° C	IEC 60512-11-4	EIA-364-32 test condition IV
Altitude immersion	No moisture on contacts		EIA-364-03
Air leakage 5)	< 10 ⁻⁷ mbar. l/sec (Helium)	IEC 60512-7 14 b	MIL-STD-1344 method 1008.1
Humidity	21 days at 95%	IEC 60068-2	EIA-364-31 method IV

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.

2) No signs of damage, connectors opened and closed without difficulty. Dust or sand was not inside connector.

3) Wired mated connectors = no voltage breakdown, shell to all contacts (connected together) w/400 VAC after 1 hour at 65° C at 40'000 feet altitude.

4) Corrosion resistance. Inspection: salt deposits shall be removed by gentle wash in running water with light brushing using soft brush. Aluminium Shell (material code: X) max: 96 hours. Brass shell (material code: C) over 500 hours.

5) Only for vacuumtight model (HE•)

Electrical performance

Characteristics	Value	IEC international	MIL-spec tests
Insulation resist. (at ambient temp.) ⁶⁾	> 10 ¹² Ω, > 10 ¹⁰ Ω (after humidity)	IEC 60512-2 test 3a	EIA-364-21
Dielectric withstanding volt. (sea level)	See table page 16-17	IEC 60512-2 test 4a	EIA-364-20
Contact resistance	See table below ⁷⁾	IEC 60512-2 test 2a	EIA-364-06
Current rating	See insulator configuration page 16-17	IEC 60512-3 test 5a	
Shell to shell conductivity	< 1.5 mΩ	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

Note: ⁶⁾ After humidity test: 21 days at 95% RH according to IEC 60068-2. Insulation resistance measured between the contacts and contact/shell.

Contact resistance ⁷⁾ IEC 60512-2 test 2a				Value
0.5	0.7	0.9	1.3	∅ A (mm)
≤ 8.7	≤ 6.1	≤ 4.8	≤ 3.6	mΩ

Notes: ⁷⁾ after 5000 mating cycles and the salt spray test according to IEC 60512-6 test 11 f.

Mechanical performance

Characteristics	Value	IEC international	MIL-spec tests
Endurance	3000 cycles	IEC 60512-5 test 9a	EIA-364-09
Gunfire vibration	25 to 2000 Hz, 3 axis (Apache helicopter)		MIL-STD-810F method 519.5
Vibration-Sine ⁸⁾	30 g, 3 axis, 12 hr		MIL-STD-202 method 204-G
Vibration-Random	50-2000 Hz, 37.8 g rms-3 axes; 4h amb	IEC 60512-6-4	EIA-364-28 test cond. V letter I
Shock	300 g - 3 msec	IEC 60512-6-3	EIA-364-27 condition D
Acceleration	50 g acceleration		MIL-STD-1344 - 2011-1, A
Contact retention	> 22 N (∅ 0.7 mm), > 30 N (∅ 0.9 mm)	IEC 60512-8 test 15a	
Torque	See table below		

Note: ⁸⁾ Amplitude: 30G. Frequency: 10 to 2000 Hz. Time per axis: 4 hours (X, Y, Z). No signal discontinuity above 1 μs.

Series	Coupling torque tightning (N.cm)	Coupling torque untightning (N.cm)	Series	Coupling torque tightning (N.cm)	Coupling torque untightning (N.cm)
0M	4	5	TM	26	30
1M	10	11	4M	26	25
2M	20	14	LM	48 ⁹⁾	43
3M	34	29	5M	91 ⁹⁾	54

Note: ⁹⁾ Higher contact density = larger torque force.

M Series

The M Series connector offers a new innovative design for avionics, aerospace, military, security, motorsport and heavy duty applications.

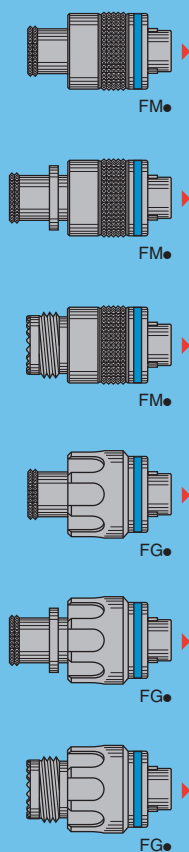
Made of high-strength aluminium, this connector is one of the lightest and most compact of the LEMO product line. A one-grip ratchet screw system enables quick and secure coupling of the connectors. The arctic grip makes it easy to manipulate the connector while wearing gloves or when the connector is located in a difficult to access area.

Features

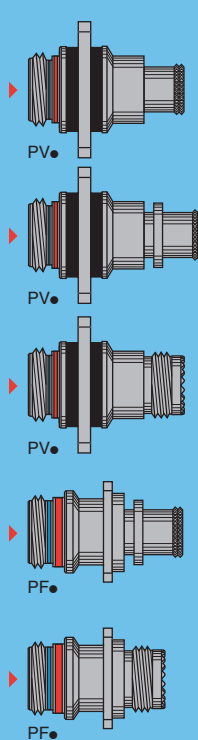
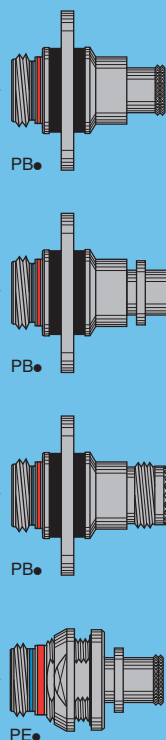
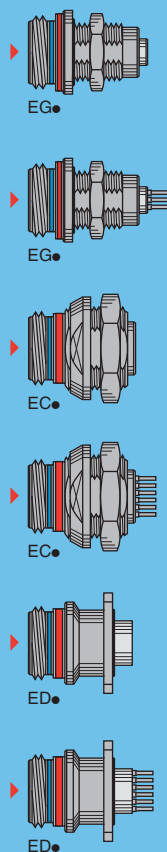
- Ratchet-coupling mechanism
- Compact design for space savings
- Oil and fuel resistant
- 360° screening for full EMC shielding
- Colour coding / keying
- Scoop proof
- Threaded for MIL-DTL-38999L backshell
- Quick mating: less than 3/4 turn to seat
- Lightweight
- High vibration and shock resistance
- Sealed to IP68 when mated
- Reverse sex configuration
- Pin configuration from 2 to 114 contacts

Metal housing models (page 5)

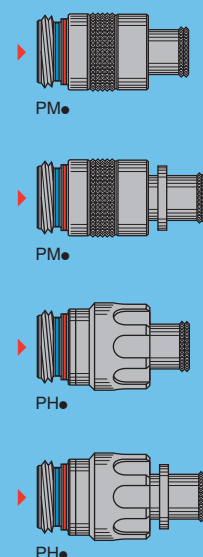
Straight plugs



Fixed sockets

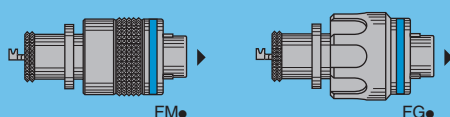


Free sockets

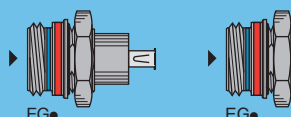


USB models

Straight plugs

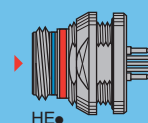


Fixed sockets

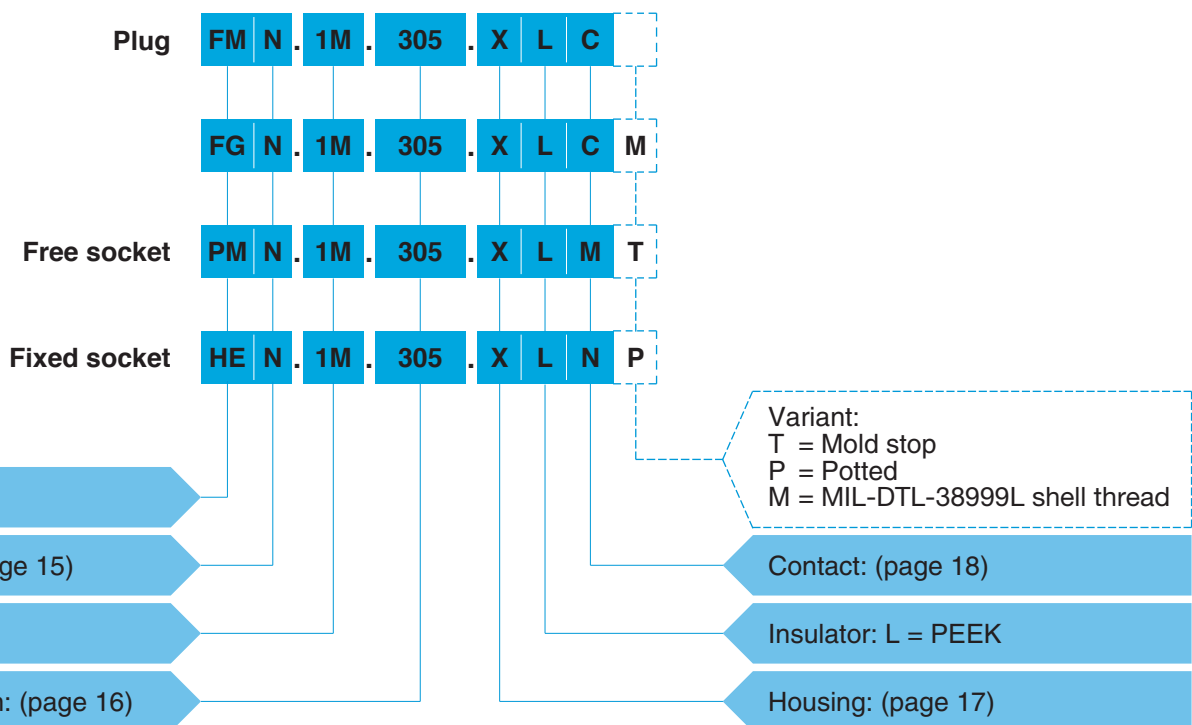


Watertight model (unmated)

Fixed socket



Part Numbering System



Part Number Example

Straight plug:

FMN.1M.305.XLC = straight plug with key (N), 1M series, multipole type with 5 contacts, outer shell in anthracite nickel-plated aluminium alloy, PEEK insulator, male crimp contacts.

Straight plug:

FGN.1M.305.XLCM = straight plug with key (N), arctic grip, 1M series, multipole type with 5 contacts, outer shell in anthracite nickel-plated aluminium alloy, PEEK insulator, male crimp contacts and with MIL-DTL-38999L thread for additional backshell (not supplied).

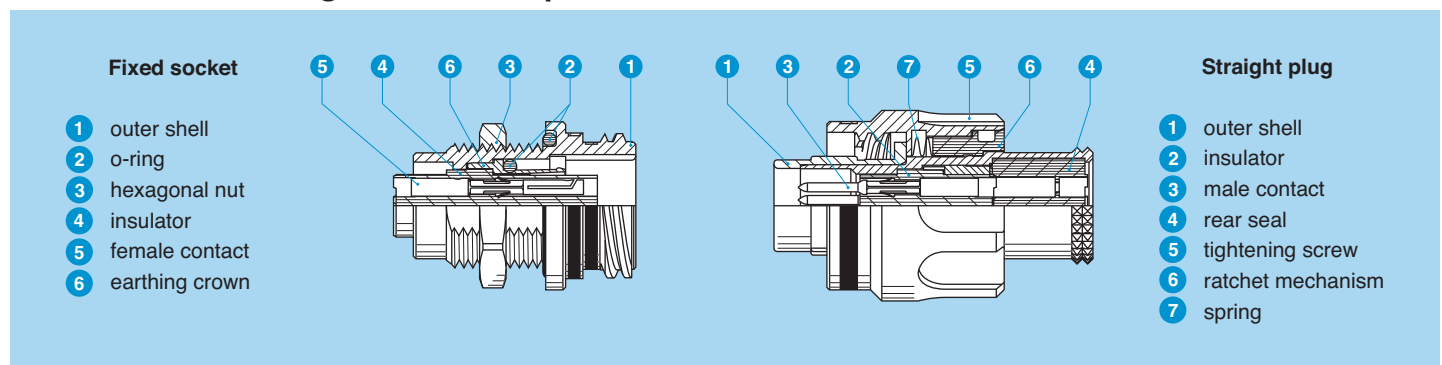
Free socket:

PMN.1M.305.XLMT = free socket with key (N), 1M series, multipole type with 5 contacts, outer shell in anthracite nickel-plated aluminium alloy, PEEK insulator, female crimp contacts and mold stop.

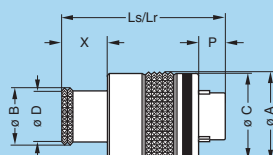
Fixed socket:

HEN.1M.305.XLNP = fixed socket, nut fixing, with key (N), 1M series, multipole type with 5 contacts, outer shell in anthracite nickel-plated aluminium alloy, PEEK insulator, female print contacts, watertight.

Part Section Showing Internal Components



Metal housing models

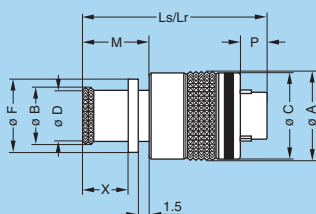


FM● Straight plug, key (N) or keys (P, R, S, T, U, V, W and X) with knurled grip

Reference		Dimensions (mm)							
Model	Series	A	B	C	D	Ls	Lr	P	X
FM●	0M	13.1	8.8	12.7	8.0	24.1	24.1	3.9	6.7
FM●	1M	14.6	10.5	14.2	9.7	24.1	24.1	3.9	6.7
FM●	2M	17.6	14.0	17.2	13.0	24.5	24.5	3.9	7.1
FM●	3M	19.6	16.0	19.2	15.0	24.5	24.5	3.9	7.1
FM●	TM	22.5	17.9	22.0	16.7	28.6	28.6	3.4	7.6
FM●	4M	25.0	20.7	24.5	19.5	28.6	28.6	3.4	7.6
FM●	LM	28.5	23.9	28.0	22.7	28.6	28.6	3.4	7.6
FM●	5M	34.0	29.7	33.5	28.5	28.6	28.6	3.4	7.6

Part number example: FMN.1M.305.XLC

Note: Ls = standard gender, Lr = reverse gender

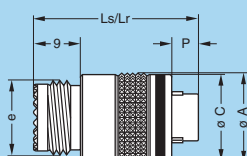


FM● Straight plug, key (N) or keys (P, R, S, T, U, V, W and X) with knurled grip and mold stop

Reference		Dimensions (mm)									
Model	Series	A	B	C	D	F	Ls	Lr	M	P	X
FM●	0M	13.1	8.8	12.7	8.0	10.7	27.1	27.1	9.7	3.9	6.7
FM●	1M	14.6	10.5	14.2	9.7	12.4	27.1	27.1	9.7	3.9	6.7
FM●	2M	17.6	14.0	17.2	13.0	15.5	27.5	27.5	10.1	3.9	7.1
FM●	3M	19.6	16.0	19.2	15.0	17.5	27.5	27.5	10.1	3.9	7.1
FM●	TM	22.5	17.9	22.0	16.7	19.8	31.6	31.6	10.6	3.4	7.6
FM●	4M	25.0	20.7	24.5	19.5	22.6	31.6	31.6	10.6	3.4	7.6
FM●	LM	28.5	23.9	28.0	22.7	25.8	31.6	31.6	10.6	3.4	7.6
FM●	5M	34.0	29.7	33.5	28.5	31.4	31.6	31.6	10.6	3.4	7.6

Part number example: FMN.1M.305.XLCT

Note: Ls = standard gender, Lr = reverse gender

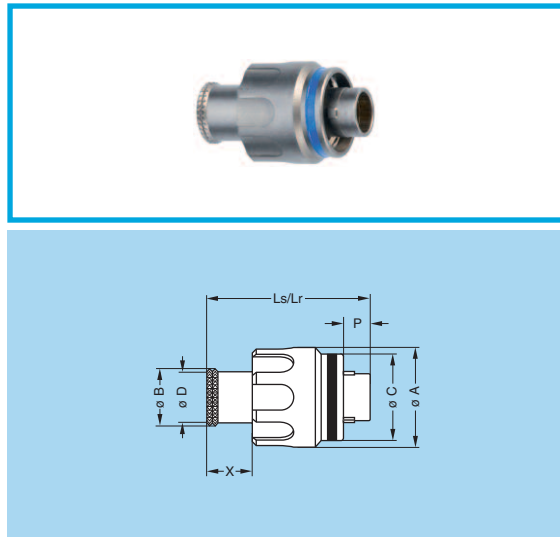


FM● Straight plug, key (N) or keys (P, R, S, T, U, V, W and X) with knurled grip and MIL-DTL-38999L shell thread

Reference		Dimensions (mm)						
Model	Series	A	C	e	Ls	Lr	P	Code ¹⁾
FM●	1M	14.6	14.2	M12x1.0	26.4	26.4	3.9	A
FM●	2M	17.6	17.2	M15x1.0	26.4	26.4	3.9	B
FM●	3M	19.6	19.2	M18x1.0	26.4	26.4	3.9	C
FM●	TM	22.5	22.0	M18x1.0	30.0	30.0	3.4	C
FM●	4M	25.0	24.5	M22x1.0	30.0	30.0	3.4	D
FM●	LM	28.5	28.0	M25x1.0	30.0	30.0	3.4	E
FM●	5M	34.0	33.5	M31x1.0	30.0	30.0	3.4	G

Part number example: FMN.1M.305.XLCM

Note: Ls = standard gender, Lr = reverse gender. ¹⁾ MIL-DTL-38999L shell size code (backshell not supplied)

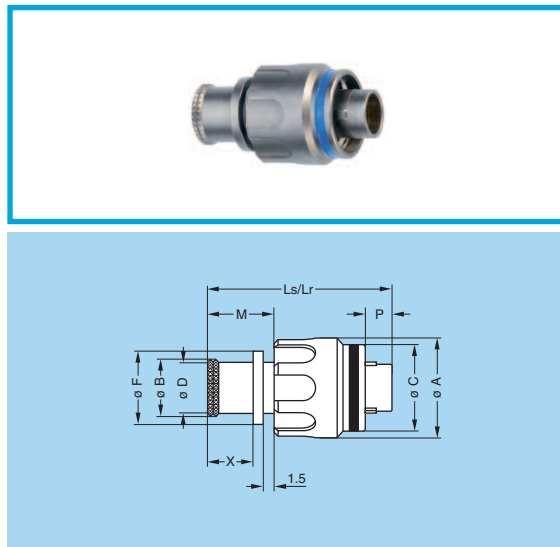


FG● Straight plug, key (N) or keys (P, R, S, T, U, V, W and X) with arctic grip

Reference		Dimensions (mm)							
Model	Series	A	B	C	D	Ls	Lr	P	X
FG●	0M	14.4	8.8	12.7	8.0	24.1	24.1	3.9	6.7
FG●	1M	15.9	10.5	14.2	9.7	24.1	24.1	3.9	6.7
FG●	2M	18.9	14.0	17.2	13.0	24.5	24.5	3.9	7.1
FG●	3M	20.9	16.0	19.2	15.0	24.5	24.5	3.9	7.1
FG●	TM	23.4	17.9	22.0	16.7	28.6	28.6	3.4	7.6
FG●	4M	25.9	20.7	24.5	19.5	28.6	28.6	3.4	7.6
FG●	LM	29.4	23.9	28.0	22.7	28.6	28.6	3.4	7.6
FG●	5M	34.9	29.7	33.5	28.5	28.6	28.6	3.4	7.6

Part number example: FGN.1M.305.XLC

Note: Ls = standard gender, Lr = reverse gender

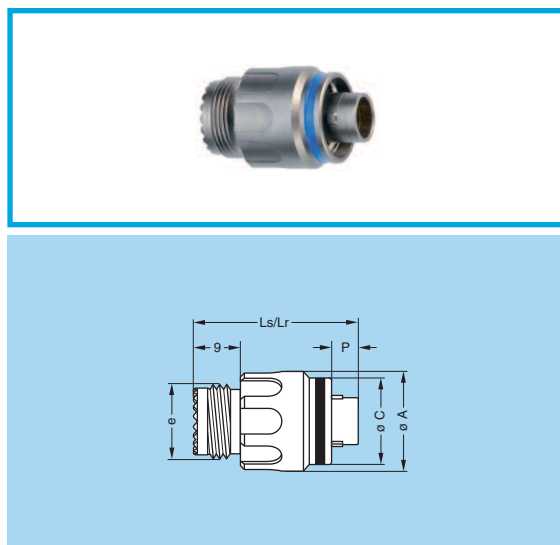


FG● Straight plug, key (N) or keys (P, R, S, T, U, V, W and X) with arctic grip and mold stop

Reference		Dimensions (mm)									
Model	Series	A	B	C	D	F	Ls	Lr	M	P	X
FG●	0M	14.4	8.8	12.7	8.0	10.7	27.1	27.1	9.7	3.9	6.7
FG●	1M	15.9	10.5	14.2	9.7	12.4	27.1	27.1	9.7	3.9	6.7
FG●	2M	18.9	14.0	17.2	13.0	15.5	27.5	27.5	10.1	3.9	7.1
FG●	3M	20.9	16.0	19.2	15.0	17.5	27.5	27.5	10.1	3.9	7.1
FG●	TM	23.4	17.9	22.0	16.7	19.8	31.6	31.6	10.6	3.4	7.6
FG●	4M	25.9	20.7	24.5	19.5	22.6	31.6	31.6	10.6	3.4	7.6
FG●	LM	29.4	23.9	28.0	22.7	25.8	31.6	31.6	10.6	3.4	7.6
FG●	5M	34.9	29.7	33.5	28.5	31.4	31.6	31.6	10.6	3.4	7.6

Part number example: FGN.1M.305.XLCT

Note: Ls = standard gender, Lr = reverse gender

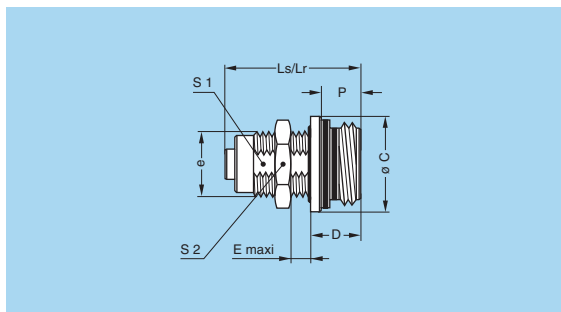


FG● Straight plug, key (N) or keys (P, R, S, T, U, V, W and X) with arctic grip and MIL-DTL-38999L shell thread

Reference		Dimensions (mm)						
Model	Series	A	C	e	Ls	Lr	P	Code ¹⁾
FG●	1M	15.9	14.2	M12x1.0	26.4	26.4	3.9	A
FG●	2M	18.9	17.2	M15x1.0	26.4	26.4	3.9	B
FG●	3M	20.9	19.2	M18x1.0	26.4	26.4	3.9	C
FG●	TM	23.4	22.0	M18x1.0	30.0	30.0	3.4	C
FG●	4M	25.9	24.5	M22x1.0	30.0	30.0	3.4	D
FG●	LM	29.4	28.0	M25x1.0	30.0	30.0	3.4	E
FG●	5M	34.9	33.5	M31x1.0	30.0	30.0	3.4	G

Part number example: FGN.1M.305.XLCM

Note: Ls = standard gender, Lr = reverse gender. ¹⁾ MIL-DTL-38999L shell size code (backshell not supplied)



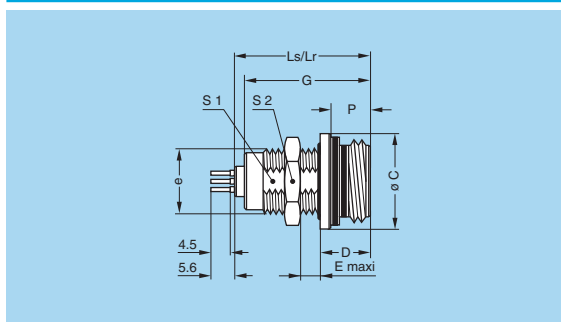
EG● Fixed socket, nut fixing, key (N) or keys (P, R, S, T, U, V, W and X)

Reference		Dimensions (mm)								
Model	Series	C	D	e	E	Ls	Lr	P	S1	S2
EG●	0M	12.7	6.8	M9x0.6	5.0	18.1	18.1	5.3	8.2	11.0
EG●	1M	14.2	6.8	M11x1.0	4.5	18.1	18.1	5.3	9.5	13.0
EG●	2M	17.2	6.8	M14x1.0	4.5	18.1	18.1	5.3	12.5	17.0
EG●	3M	19.2	6.8	M16x1.0	4.0	18.1	18.1	5.3	14.5	19.0
EG●	TM	22.0	9.4	M18x1.0	4.0	19.8	21.7	7.9	16.5	22.0
EG●	4M	24.5	9.4	M21x1.0	4.0	19.8	21.7	7.9	19.5	25.0
EG●	LM	28.0	9.4	M24x1.0	4.0	19.8	21.7	7.9	22.5	30.0
EG●	5M	33.5	9.4	M30x1.0	4.0	19.8	21.7	7.9	28.5	36.0

Part number example: EGN.1M.305.XLM

Panel cut-out (page 23).

Note: Ls = standard gender, Lr = reverse gender



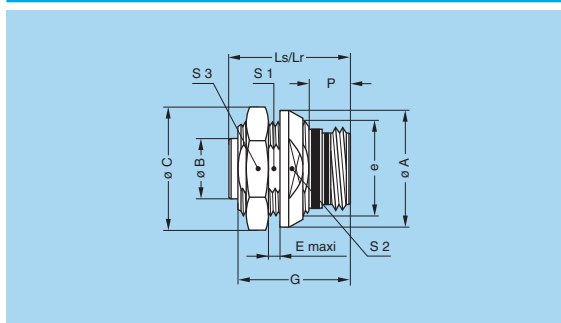
EG● Fixed socket, nut fixing, key (N) or keys (P, R, S, T, U, V, W and X) for printed circuit

Reference		Dimensions (mm)									
Model	Series	C	D	e	E	G	Ls	Lr	P	S1	S2
EG●	0M	12.7	6.8	M9x0.6	5.0	16.8	18.1	18.1	5.3	8.2	11.0
EG●	1M	14.2	6.8	M11x1.0	4.5	16.8	18.1	18.1	5.3	9.5	13.0
EG●	2M	17.2	6.8	M14x1.0	4.5	16.8	18.1	18.1	5.3	12.5	17.0
EG●	3M	19.2	6.8	M16x1.0	4.0	16.8	18.1	18.1	5.3	14.5	19.0
EG●	TM	22.0	9.4	M18x1.0	4.0	18.9	19.8	21.7	7.9	16.5	22.0
EG●	4M	24.5	9.4	M21x1.0	4.0	18.9	19.8	21.7	7.9	19.5	25.0
EG●	LM	28.0	9.4	M24x1.0	4.0	18.9	19.8	21.7	7.9	22.5	30.0
EG●	5M	33.5	9.4	M30x1.0	4.0	18.9	19.8	21.7	7.9	28.5	36.0

Part number example: EGN.1M.305.XLN

Panel cut-out (page 23). PCB drilling pattern (page 24).

Note: Ls = standard gender, Lr = reverse gender



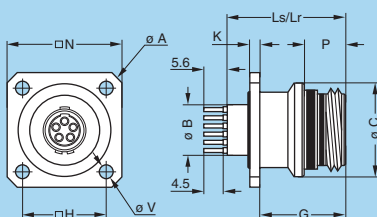
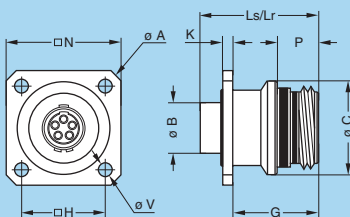
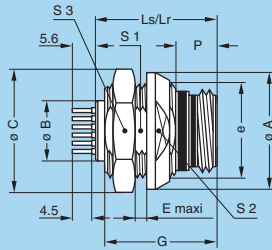
EC● Fixed socket with two nuts, key (N) or keys (P, R, S, T, U, V, W and X)

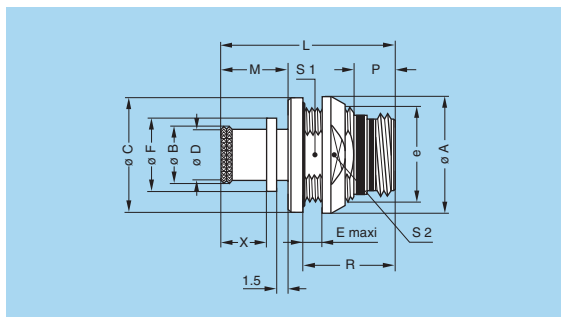
Reference		Dimensions (mm)											
Model	Series	A	B	C	E	e	G	Ls	Lr	P	S1	S2	S3
EC●	0M	17	4.72	18.2	5.0	M13x0.75	16.8	18.1	18.1	5.3	11.5	14.0	16.0
EC●	1M	18	5.95	19.2	5.0	M14x1.00	16.8	18.1	18.1	5.3	12.5	16.0	17.0
EC●	2M	21	8.95	21.5	4.0	M17x1.00	16.8	18.1	18.1	5.3	15.5	18.0	19.0
EC●	3M	23	10.95	25.0	4.0	M19x1.00	16.8	18.1	18.1	5.3	17.5	20.0	22.0
EC●	TM	27	12.30	28.0	2.5	M22x1.00	18.9	19.8	21.7	7.9	20.5	23.0	25.0
EC●	4M	29	13.95	34.0	2.5	M24x1.00	18.9	19.8	21.7	7.9	22.5	25.0	30.0
EC●	LM	33	17.95	36.0	2.5	M28x1.00	18.9	19.8	21.7	7.9	26.5	29.0	32.0
EC●	5M	38	22.90	41.0	2.5	M33x1.00	18.9	19.8	21.7	7.9	31.5	34.0	37.0

Part number example: ECN.1M.305.XLM

Panel cut-out (page 23).

Note: Ls = standard gender, Lr = reverse gender.
This model is not IP68 (no panel sealing).





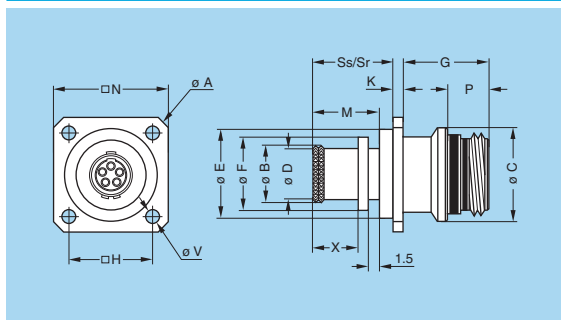
PE● Fixed socket, nut fixing, key (N) or keys (P, R, S, T, U, V, W and X) with mold stop (back panel mounting)

Reference		Dimensions (mm)													
Model	Series	A	B	C	D	E	e	Ls	Lr	M	P	R	S1	S2	
PE●	0M	17	8.8	16.8	8.0	5.0	M13x0.75	25.6	25.6	9.7	5.3	13.8	11.5	14	
PE●	1M	18	10.5	17.8	9.7	5.0	M14x1.00	25.6	25.6	9.7	5.3	13.8	12.5	16	
PE●	2M	21	14.0	20.8	13.0	5.0	M17x1.00	26.0	26.0	10.1	5.3	13.8	15.5	18	
PE●	3M	23	16.0	22.8	15.0	5.0	M19x1.00	26.0	26.0	10.1	5.3	13.8	17.5	20	
PE●	TM	27	17.9	25.8	16.7	4.0	M22x1.00	29.5	30.1	10.6	7.9	16.9	20.5	23	
PE●	4M	29	20.7	27.8	19.5	4.0	M24x1.00	29.5	30.1	10.6	7.9	16.9	22.5	25	
PE●	LM	33	23.9	31.8	22.7	4.0	M28x1.00	29.5	30.1	10.6	7.9	16.9	26.5	29	
PE●	5M	38	29.7	36.8	28.5	4.0	M33x1.00	29.5	30.1	10.6	7.9	16.9	31.5	34	

Part number example: PEN.1M.305.XLMT

Panel cut-out (page 23).

Note: this model is only available with mold stop. The dimensions «F» and «X» are the same as the PB● models. Ls = standard gender, Lr = reverse gender.



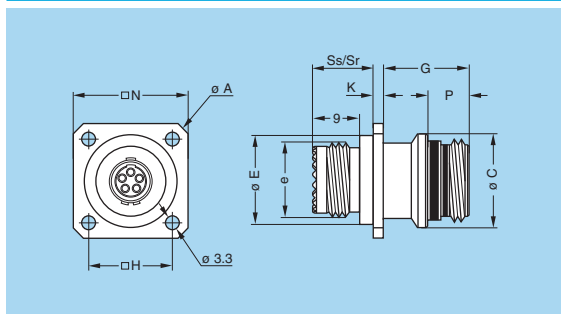
PF● Fixed socket with square flange, key (N) or keys (P, R, S, T, U, V, W and X) with mold stop

Reference		Dimensions (mm)													
Model	Series	A	B	C	D	E	F	G	H	K	N	Ss	Sr	V	
PF●	0M	20.6	8.8	12.7	8.0	10.7	10.7	12.8	11.0	1.5	16.0	11.3	11.3	2.7	
PF●	1M	23.8	10.5	14.2	9.7	12.4	12.4	12.8	12.9	1.5	18.4	11.3	11.3	3.3	
PF●	2M	26.9	14.0	17.2	13.0	15.5	15.5	12.8	15.1	1.5	20.6	11.7	11.7	3.3	
PF●	3M	29.0	16.0	19.2	15.0	17.5	17.5	12.8	16.6	1.5	22.1	11.7	11.7	3.3	
PF●	TM	31.4	17.9	22.0	16.7	19.8	19.8	14.5	18.3	2.0	23.8	13.0	13.6	3.3	
PF●	4M	34.6	20.7	24.5	19.5	22.6	22.6	14.5	20.6	2.0	26.1	13.0	13.6	3.3	
PF●	LM	38.0	23.9	28.0	22.7	25.8	25.8	14.5	23.0	2.0	28.5	13.0	13.6	3.3	
PF●	5M	47.0	29.7	33.5	28.5	33.0	31.4	14.5	29.4	2.0	37.0	13.0	13.6	3.3	

Part number example: PFN.1M.305.XLMT

Panel cut-out (page 23).

Note: this model is only available with mold stop. The dimensions «M», «P» and «X» are the same as the PB● models. Ss = standard gender, Sr = reverse gender.



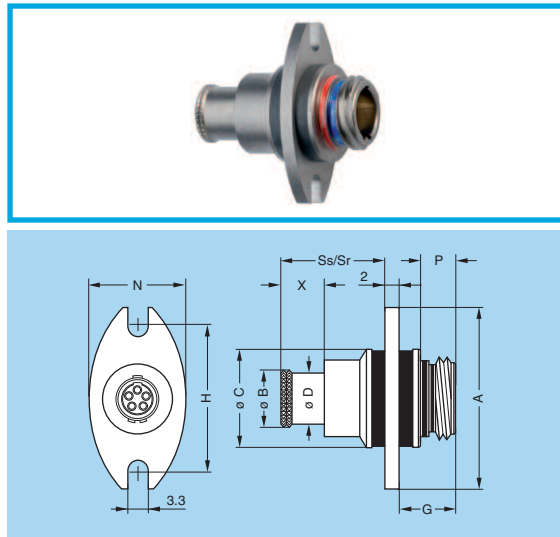
PF● Fixed socket with square flange, key (N) or keys (P, R, S, T, U, V, W and X) with MIL-DTL-38999L shell thread

Reference		Dimensions (mm)										
Model	Series	A	C	e	E	G	H	K	N	Ss	Sr	Code ¹⁾
PF●	1M	23.8	14.2	M12x1.0	12.4	12.8	12.9	1.5	18.4	12.2	12.2	A
PF●	2M	26.9	17.2	M15x1.0	15.5	12.8	15.1	1.5	20.6	12.2	12.2	B
PF●	3M	29.0	19.2	M18x1.0	17.5	12.8	16.6	1.5	22.1	12.2	12.2	C
PF●	TM	31.4	22.0	M18x1.0	19.8	14.5	18.3	2.0	23.8	11.7	13.6	C
PF●	4M	34.6	24.5	M22x1.0	22.6	14.5	20.6	2.0	26.1	11.7	13.6	D
PF●	LM	38.0	28.0	M25x1.0	25.8	14.5	23.0	2.0	28.5	11.7	13.6	E
PF●	5M	47.0	33.5	M31x1.0	33.0	14.5	29.4	2.0	37.0	11.7	13.6	G

Part number example: PFN.1M.305.XLMM

Panel cut-out (page 23).

Note: Ss = standard gender, Sr = reverse gender. ¹⁾ MIL-DTL-38999L shell size code (backshell not supplied)



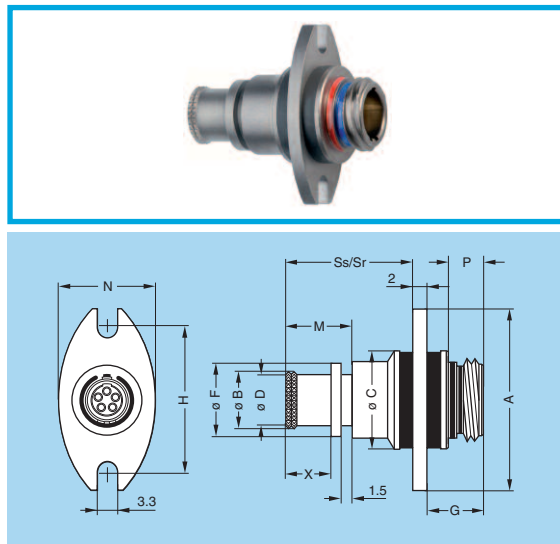
PB● Fixed socket with antivibration flange, key (N) or keys (P, R, S, T, U, V, W and X), 2 holes fixing

Reference		Dimensions (mm)										
Model	Series	A	B	C	D	G	H	N	P	Ss	Sr	X
PB●	0M	27.0	8.8	14.5	8.0	8.3	21.4	16.0	5.3	15.3	15.3	6.7
PB●	1M	29.0	10.5	16.5	9.7	8.3	23.4	18.0	5.3	15.3	15.3	6.7
PB●	2M	32.0	14.0	19.5	13.0	8.3	26.4	21.0	5.3	15.7	15.7	7.1
PB●	3M	35.0	16.0	21.5	15.0	8.3	29.0	23.0	5.3	15.7	15.7	7.1
PB●	TM	38.5	17.9	24.5	16.7	11.0	32.5	26.0	7.9	15.2	17.1	7.6
PB●	4M	41.0	20.7	27.5	19.5	11.0	35.0	29.0	7.9	15.2	17.1	7.6
PB●	LM	44.0	23.9	30.5	22.7	11.0	38.0	32.0	7.9	15.2	17.1	7.6
PB●	5M	51.0	29.7	37.5	28.5	11.0	45.0	39.0	7.9	15.2	17.1	7.6

Part number example: PBN.1M.305.XLM

Panel cut-out (page 23).

Note: Ss = standard gender, Sr = reverse gender



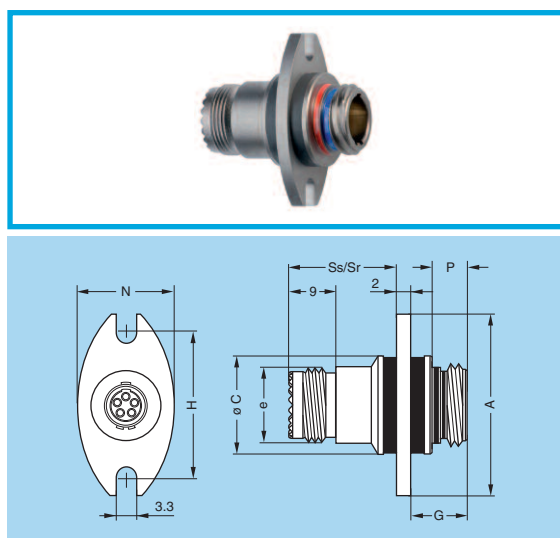
PB● Fixed socket with antivibration flange, key (N) or keys (P, R, S, T, U, V, W and X), 2 holes fixing with mold stop

Reference		Dimensions (mm)												
Model	Series	A	B	C	D	F	G	H	M	N	P	Ss	Sr	X
PB●	0M	27.0	8.8	14.5	8.0	10.7	8.3	21.4	9.7	16	5.3	18.3	18.3	6.7
PB●	1M	29.0	10.5	16.5	9.7	12.4	8.3	23.4	9.7	18	5.3	18.3	18.3	6.7
PB●	2M	32.0	14.0	19.5	13.0	15.5	8.3	26.4	10.1	21	5.3	18.7	18.7	7.1
PB●	3M	35.0	16.0	21.5	15.0	17.5	8.3	29.0	10.1	23	5.3	18.7	18.7	7.1
PB●	TM	38.5	17.9	24.5	16.7	19.8	11.0	32.5	10.6	26	7.9	18.2	18.2	7.6
PB●	4M	41.0	20.7	27.5	19.5	22.6	11.0	35.0	10.6	29	7.9	18.2	18.2	7.6
PB●	LM	44.0	23.9	30.5	22.7	25.8	11.0	38.0	10.6	32	7.9	18.2	18.2	7.6
PB●	5M	51.0	29.7	37.5	28.5	31.4	11.0	45.0	10.6	39	7.9	18.2	18.2	7.6

Part number example: PBN.1M.305.XLMT

Panel cut-out (page 23).

Note: Ss = standard gender, Sr = reverse gender



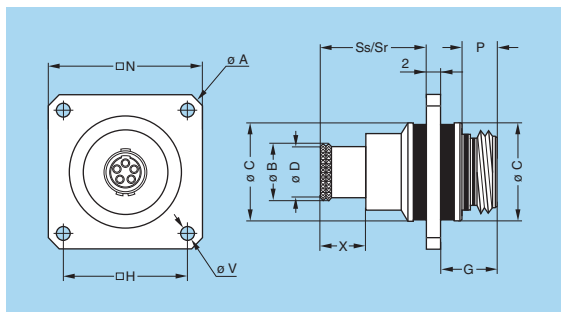
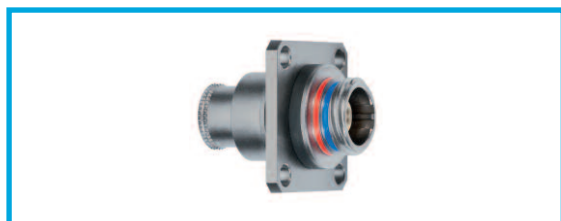
PB● Fixed socket with antivibration flange, key (N) or keys (P, R, S, T, U, V, W and X), 2 holes fixing with MIL-DTL-38999L shell thread

Reference		Dimensions (mm)									
Model	Series	A	C	e	G	H	N	P	Ss	Sr	Code ¹⁾
PB●	1M	29.0	16.5	M12x1.0	8.3	23.4	18.0	5.3	17.2	17.2	A
PB●	2M	32.0	19.5	M15x1.0	8.3	26.4	21.0	5.3	17.2	17.2	B
PB●	3M	35.0	21.5	M18x1.0	8.3	29.0	23.0	5.3	17.2	17.2	C
PB●	TM	38.5	24.5	M18x1.0	11.0	32.5	26.0	7.9	16.2	17.1	C
PB●	4M	41.0	27.5	M22x1.0	11.0	35.0	29.0	7.9	16.2	17.1	D
PB●	LM	44.0	30.5	M25x1.0	11.0	38.0	32.0	7.9	16.2	17.1	E
PB●	5M	51.0	37.5	M31x1.0	11.0	45.0	39.0	7.9	16.2	17.1	G

Part number example: PBN.1M.305.XLMM

Panel cut-out (page 23).

Note: Ss = standard gender, Sr = reverse gender. ¹⁾ MIL-DTL-38999L shell size code (backshell not supplied)



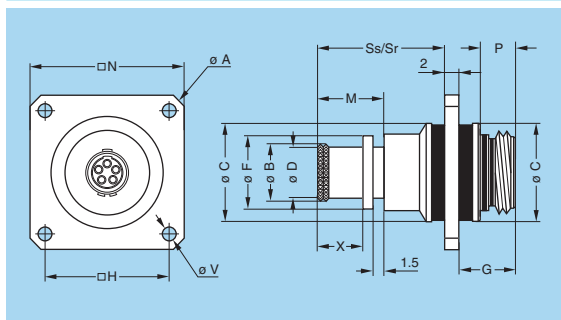
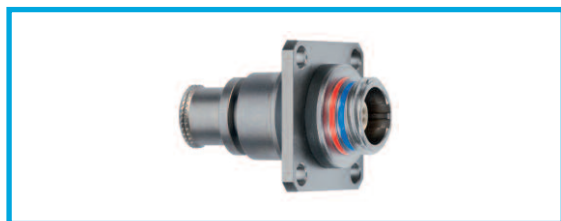
PV● Fixed socket with antivibration square flange, key (N) or keys (P, R, S, T, U, V, W and X)

Reference		Dimensions (mm)											
Model	Series	A	B	C	D	G	H	N	P	Ss	Sr	V	X
PV●	0M	26.9	8.8	14.5	8.0	8.3	15.1	20.6	5.3	15.3	15.3	2.7	6.7
PV●	1M	31.4	10.5	16.5	9.7	8.3	18.3	23.8	5.3	15.3	15.3	3.3	6.7
PV●	2M	34.6	14.0	19.5	13.0	8.3	20.6	26.1	5.3	15.7	15.7	3.3	7.1
PV●	3M	38.0	16.0	21.5	15.0	8.3	23.0	28.5	5.3	15.7	15.7	3.3	7.1
PV●	TM	40.3	17.9	24.5	16.7	11.0	24.6	30.1	7.9	15.2	17.1	3.3	7.6
PV●	4M	43.7	20.7	27.5	19.5	11.0	27.0	32.5	7.9	15.2	17.1	3.3	7.6
PV●	LM	47.1	23.9	30.5	22.7	11.0	29.4	34.9	7.9	15.2	17.1	3.3	7.6
PV●	5M	54.9	29.7	37.5	28.5	11.0	34.9	40.4	7.9	15.2	17.1	3.3	7.6

Part number example: PVN.1M.305.XLM

Panel cut-out (page 23).

Note: Ss = standard gender, Sr = reverse gender



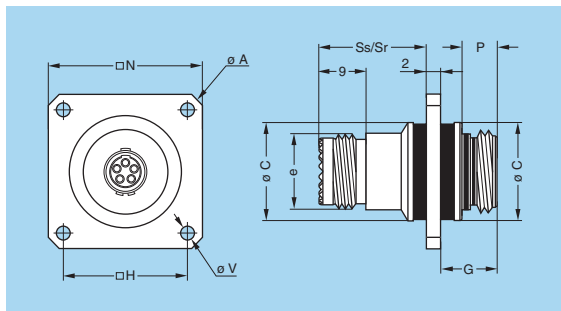
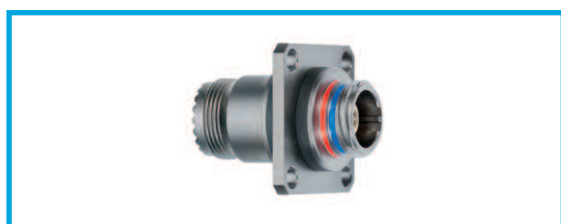
PV● Fixed socket with antivibration square flange, key (N) or keys (P, R, S, T, U, V, W and X) with mold stop

Reference		Dimensions (mm)												
Model	Series	A	B	C	D	F	G	H	M	N	P	Ss	Sr	X
PV●	0M	26.9	8.8	14.5	8.0	10.7	8.3	15.1	9.7	20.6	5.3	18.3	18.3	6.7
PV●	1M	31.4	10.5	16.5	9.7	12.4	8.3	18.3	9.7	23.8	5.3	18.3	18.3	6.7
PV●	2M	34.6	14.0	19.5	13.0	15.5	8.3	20.6	10.1	26.1	5.3	18.7	18.7	7.1
PV●	3M	38.0	16.0	21.5	15.0	17.5	8.3	23.0	10.1	28.5	5.3	18.7	18.7	7.1
PV●	TM	40.3	17.9	24.5	16.7	19.8	11.0	24.6	10.6	30.1	7.9	18.2	18.2	7.6
PV●	4M	43.7	20.7	27.5	19.5	22.6	11.0	27.0	10.6	32.5	7.9	18.2	18.2	7.6
PV●	LM	47.1	23.9	30.5	22.7	25.8	11.0	29.4	10.6	34.9	7.9	18.2	18.2	7.6
PV●	5M	54.9	29.7	37.5	28.5	31.4	11.0	34.9	10.6	40.4	7.9	18.2	18.2	7.6

Part number example: PVN.1M.305.XLMT

Panel cut-out (page 23).

Note: Ss = standard gender, Sr = reverse gender.
The dimension «V» is the same as the PV● models without mold stop.



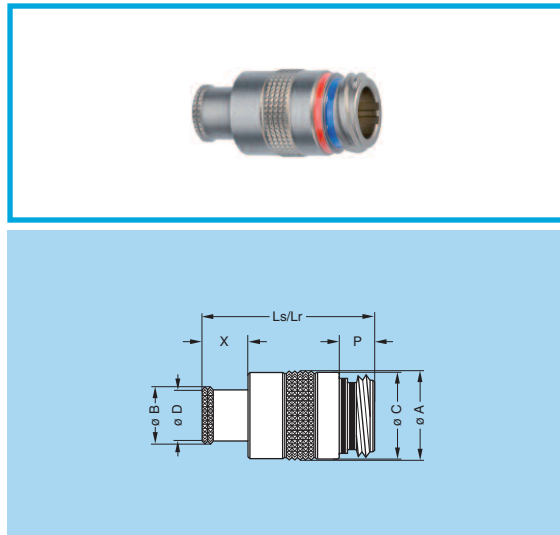
PV● Fixed socket with antivibration square flange, key (N) or keys (P, R, S, T, U, V, W and X) with MIL-DTL-38999L shell thread

Reference		Dimensions (mm)											
Model	Series	A	C	e	G	H	N	P	Ss	Sr	V	Code ¹⁾	
PV●	1M	31.4	16.5	M12x1.0	8.3	18.3	23.8	5.3	17.2	17.2	3.3	A	
PV●	2M	34.6	19.5	M15x1.0	8.3	20.6	26.1	5.3	17.2	17.2	3.3	B	
PV●	3M	38.0	21.5	M18x1.0	8.3	23.0	28.5	5.3	17.2	17.2	3.3	C	
PV●	TM	40.3	24.5	M18x1.0	11.0	24.6	30.1	7.9	16.2	17.1	3.3	C	
PV●	4M	43.7	27.5	M22x1.0	11.0	27.0	32.5	7.9	16.2	17.1	3.3	D	
PV●	LM	47.1	30.5	M25x1.0	11.0	29.4	34.9	7.9	16.2	17.1	3.3	E	
PV●	5M	54.9	37.5	M31x1.0	11.0	34.9	40.4	7.9	16.2	17.1	3.3	G	

Part number example: PVN.1M.305.XLMM

Panel cut-out (page 23).

Note: Ss = standard gender, Sr = reverse gender. ¹⁾ MIL-DTL-38999L shell size code (backshell not supplied)

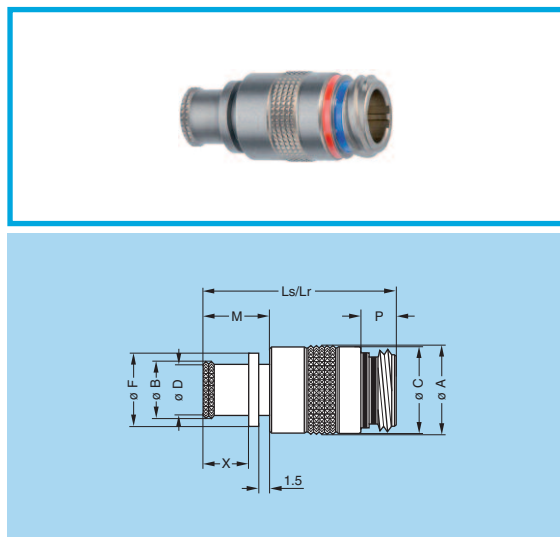


PM● Free socket, key (N) or keys (P, R, S, T, U, V, W and X) with knurled grip

Reference		Dimensions (mm)							
Model	Series	A	B	C	D	Ls	Lr	P	X
PM●	0M	13.1	8.8	12.7	8.0	25.6	25.6	5.3	6.7
PM●	1M	14.6	10.5	14.2	9.7	25.6	25.6	5.3	6.7
PM●	2M	17.6	14.0	17.2	13.0	26.0	26.0	5.3	7.1
PM●	3M	19.6	16.0	19.2	15.0	26.0	26.0	5.3	7.1
PM●	TM	22.5	17.9	22.0	16.7	28.2	30.1	7.9	7.6
PM●	4M	25.0	20.7	24.5	19.5	28.2	30.1	7.9	7.6
PM●	LM	28.5	23.9	28.0	22.7	28.2	30.1	7.9	7.6
PM●	5M	34.0	29.7	33.5	28.5	28.2	30.1	7.9	7.6

Part number example: PMN.1M.305.XLM

Note: Ls = standard gender, Lr = reverse gender

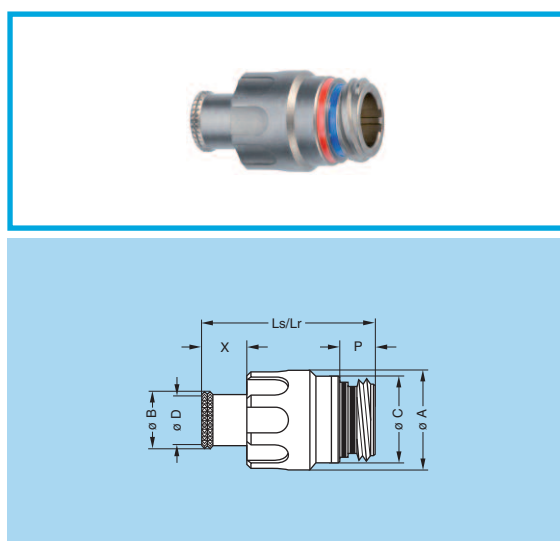


PM● Free socket, key (N) or keys (P, R, S, T, U, V, W and X) with knurled grip and mold stop

Reference		Dimensions (mm)									
Model	Series	A	B	C	D	F	Ls	Lr	M	P	X
PM●	0M	13.1	8.8	12.7	8.0	10.7	28.6	28.6	9.7	5.3	6.7
PM●	1M	14.6	10.5	14.2	9.7	12.4	28.6	28.6	9.7	5.3	6.7
PM●	2M	17.6	14.0	17.2	13.0	15.5	29.0	29.0	10.1	5.3	7.1
PM●	3M	19.6	16.0	19.2	15.0	17.5	29.0	29.0	10.1	5.3	7.1
PM●	TM	22.5	17.9	22.0	16.7	19.8	31.2	31.2	10.6	7.9	7.6
PM●	4M	25.0	20.7	24.5	19.5	22.6	31.2	31.2	10.6	7.9	7.6
PM●	LM	28.5	23.9	28.0	22.7	25.8	31.2	31.2	10.6	7.9	7.6
PM●	5M	34.0	29.7	33.5	28.5	31.4	31.2	31.2	10.6	7.9	7.6

Part number example: PMN.1M.305.XLMT

Note: Ls = standard gender, Lr = reverse gender

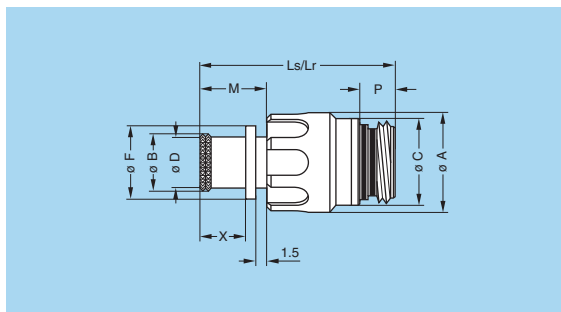


PH● Free socket, key (N) or keys (P, R, S, T, U, V, W and X) with arctic grip

Reference		Dimensions (mm)							
Model	Series	A	B	C	D	Ls	Lr	P	X
PH●	0M	14.4	8.8	12.7	8.0	25.6	25.6	5.3	6.7
PH●	1M	15.9	10.5	14.2	9.7	25.6	25.6	5.3	6.7
PH●	2M	18.9	14.0	17.2	13.0	26.0	26.0	5.3	7.1
PH●	3M	20.9	16.0	19.2	15.0	26.0	26.0	5.3	7.1
PH●	TM	23.4	17.9	22.0	16.7	28.2	30.1	7.9	7.6
PH●	4M	25.9	20.7	24.5	19.5	28.2	30.1	7.9	7.6
PH●	LM	29.4	23.9	28.0	22.7	28.2	30.1	7.9	7.6
PH●	5M	34.9	29.7	33.5	28.5	28.2	30.1	7.9	7.6

Part number example: PHN.1M.305.XLM

Note: Ls = standard gender, Lr = reverse gender

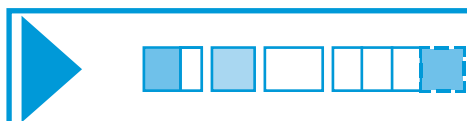


PH● Free socket, key (N) or keys (P, R, S, T, U, V, W and X) with arctic grip and mold stop

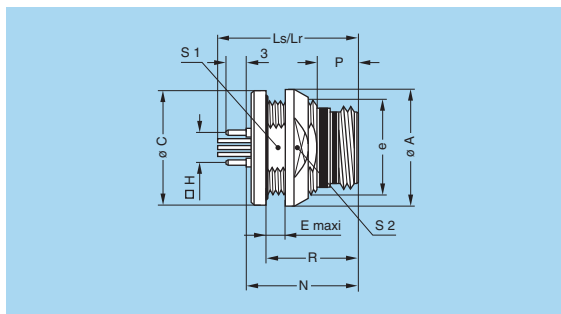
Reference		Dimensions (mm)									
Model	Series	A	B	C	D	F	Ls	Lr	M	P	X
PH●	0M	14.4	8.8	12.7	8.0	10.7	28.6	28.6	9.7	5.3	6.7
PH●	1M	15.9	10.5	14.2	9.7	12.4	28.6	28.6	9.7	5.3	6.7
PH●	2M	18.9	14.0	17.2	13.0	15.5	29.0	29.0	10.1	5.3	7.1
PH●	3M	20.9	16.0	19.2	15.0	17.5	29.0	29.0	10.1	5.3	7.1
PH●	TM	23.4	17.9	22.0	16.7	19.8	31.2	31.2	10.6	7.9	7.6
PH●	4M	25.9	20.7	24.5	19.5	22.6	31.2	31.2	10.6	7.9	7.6
PH●	LM	29.4	23.9	28.0	22.7	25.8	31.2	31.2	10.6	7.9	7.6
PH●	5M	34.9	29.7	33.5	28.5	31.4	31.2	31.2	10.6	7.9	7.6

Part number example: PHN.1M.305.XLMT

Note: Ls = standard gender, Lr = reverse gender



Watertight model (unmated)



HE● Fixed socket, nut fixing, key (N) or keys (P, R, S, T, U, V, W and X) for printed circuit, watertight (back panel mounting)

Reference		Dimensions (mm)											
Model	Series	A	C	e	E	H	Ls	Lr	N	P	R	S1	S2
HE●	0M	17	16.8	M13x0.75	5.0	5.08	20.8	21.0	16.8	5.3	13.8	11.5	14
HE●	1M	18	17.8	M14x1.00	5.0	7.62	20.8	21.0	16.8	5.3	13.8	12.5	16
HE●	2M	21	20.8	M17x1.00	5.0	8.89	20.8	21.0	16.8	5.3	13.8	15.5	18
HE●	3M	23	22.8	M19x1.00	5.0	10.16	20.8	21.0	16.8	5.3	13.8	17.5	20
HE●	TM	27	25.8	M22x1.00	4.0	12.70	24.6	24.6	19.9	7.9	16.9	20.5	23
HE●	4M	29	27.8	M24x1.00	4.0	13.97	24.6	24.6	19.9	7.9	16.9	22.5	25
HE●	LM	33	31.8	M28x1.00	4.0	16.51	24.6	24.6	19.9	7.9	16.9	26.5	29
HE●	5M	38	36.8	M33x1.00	4.0	20.32	24.6	24.6	19.9	7.9	16.9	31.5	34

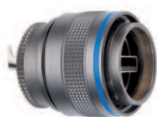
Part number example: HEN.1M.305.XLNP

Panel cut-out (page 23). PCB drilling pattern (page 24).

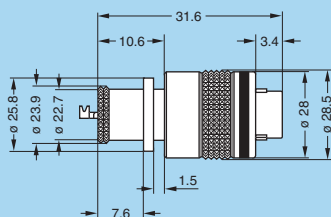
Note: Ls = standard gender, Lr = reverse gender



USB models



FM ● Straight plug, key (W) or key (R)
with knurled grip and mold stop

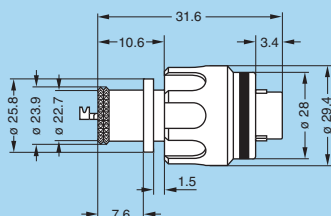


Part number

FM•LM.U2A.XPAT



FG ● Straight plug, key (W) or key (R)
with arctic grip and mold stop

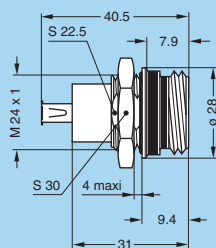


Part number

FG•LM.U2A.XPAT



EG ● Fixed socket, female to female, nut fixing,
key (W) or key (R)

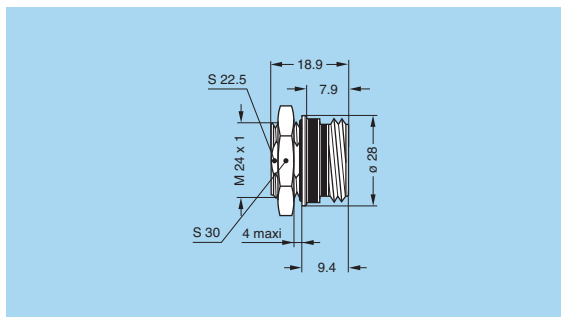


Part number

EG•LM.U2A.XPP



EG● Fixed socket, nut fixing, key (W) or key (R)



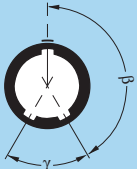
Part number
EG●LM.U2A.XPL

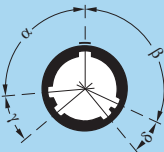
Alignment Key

Alignment Key and Polarized Keying System

M 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, P, R, U or W keys, are fitted with male contacts; whereas with S, T, V or X keys, plugs are fitted with female contacts. Sockets with N, P, R, U or W keys, are fitted with female contacts; whereas with S, T, V or X keys, sockets are fitted with male contacts.

0M to 3M	Front view of a socket 	Model	Nb of keys	Angles		Colour code	Contact type	
				β	γ			Plug
		●●N	3	165°	30°	blue	male	female
		●●P		150°	60°	yellow		
		●●U		130°	100°	green		
		●●S		155°	50°	red	female	male
		●●T		135°	90°	orange		

TM to 5M	Front view of a socket 	Model	Nb of keys	Angles				Colour code	Contact type	
				α	β	γ	δ			Plug
		●●W	5	95°	115°	35°	25°	blue	male	female
		●●R		105°	115°	30°	20°	yellow		
		●●X		100°	125°	40°	20°	red	female	male
		●●V		110°	120°	35°	25°	orange		

Insert configuration

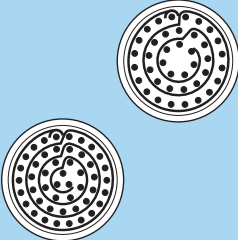
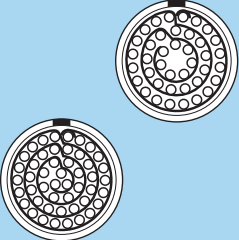
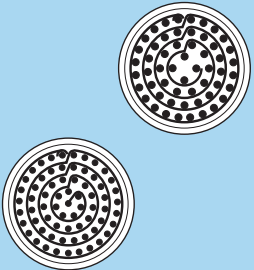
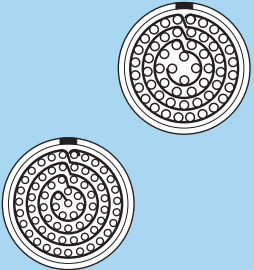
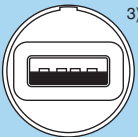
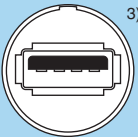
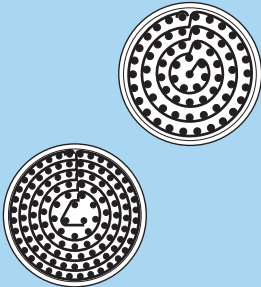
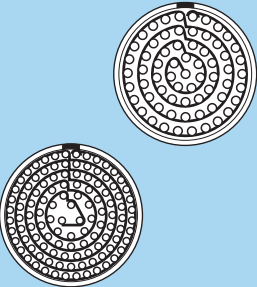
Multipole

	 Male crimp contacts for plug	 Female crimp contacts for sockets	Reference	Number of contacts	ø A (mm)	Contact type		AWG	Test voltage (kV rms) ¹⁾ Contact-contact	Test voltage (kV rms) ¹⁾ Contact-shell	Rated current (A) ¹⁾
0M			302	2	0.9	●	●	20-22-24	1.45	1.00	10.0
			303	3	0.9	●	●	20-22-24	1.70	1.40	8.0
			304	4	0.7	●	●	22-24-26	1.35	0.90	7.0
			305	5	0.7	●	●	22-24-26	1.25	1.00	6.5
1M			305	5	0.9	●	●	20-22-24	1.30	1.30	9.0
			307	7	0.7	●	●	22-24-26	1.45	1.20	7.0
			308	8	0.7	●	●	22-24-26	1.30	1.10	5.0
2M			308	8	0.9	●	●	20-22-24	1.95	1.10	10.0
			310	10	0.9	●	●	20-22-24	1.80	1.20	8.0
			312	12	0.7	●	●	22-24-26	1.65	1.15	7.0
			319	19	0.7	●	●	22-24-26	1.20	1.00	4.0
3M			322	22	0.7	●	●	22-24-26	tbd	tbd	tbd
			330	30	0.7	●	●	22-24-26	1.10	1.00	3.5
TM			325	25	0.9	●	●	20-22-24	1.10	1.25	5.0
			340	40	0.7	●	●	22-24-26	1.05	1.20	3.0

Note: ¹⁾ Test voltage according to IEC 60512-2 test 4a. ²⁾ For EG●, EC●, ED●, HE● socket.



Multipole

	 Male crimp contacts for plug	 Female crimp contacts for sockets	Reference	Number of contacts	ø A (mm)	Contact type		AWG	Test voltage (kV rms) ¹⁾ Contact-contact	Test voltage (kV rms) ¹⁾ Contact-shell	Rated current (A) ¹⁾
						Crimp	Print (straight) ²⁾				
4M			340	40	0.7	●	●	22-24-26	1.20	1.35	3.5
			348	48	0.7	●	●	22-24-26	1.10	1.35	3.0
LM			355	55	0.9	●	●	20-22-24	tbd	tbd	tbd
			368	68	0.7	●	●	22-24-26	1.40	1.65	2.5
		 ³⁾	 ³⁾	U2A	4	—	Solder		—	1.20	0.95
5M			366	66	0.9	●	●	20-22-24	1.60	1.70	3.0
			114	114	0.7	●	●	22-24-26	1.37	1.34	2.0

Note: ¹⁾ Test voltage according to IEC 60512-2 test 4a. ²⁾ For EG●, EC●, ED●, HE● socket. ³⁾ Front view.

Housings

Ref.	Outer shell	
	Material	Surface treatment
C	Brass	Chrome
X	Aluminium alloy	Nickel ¹⁾

Note: ¹⁾ anthracite colour.



Contacts

Crimp contacts for plugs, free or fixed sockets

There are 2 forms of crimp barrels:

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

Fig. 1

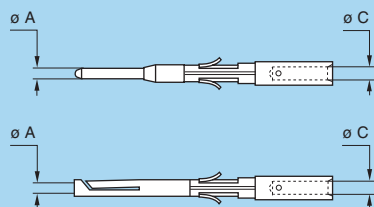
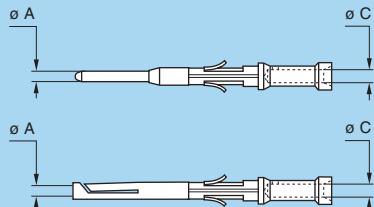


Fig. 2



Ref.	Contact type	Ref.	Contact type
C	Male crimp (fig. 1)	M	Female crimp (fig. 1)
B	Male crimp (fig. 2)	P	Female crimp (fig. 2)
D	Male straight print	N	Female straight print

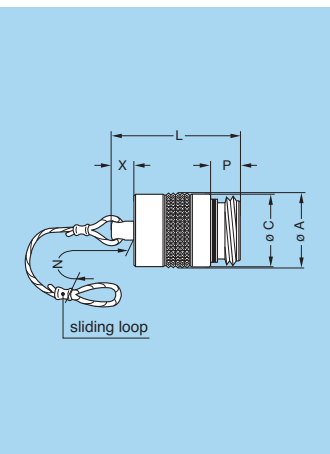
Dimension of crimp barrels

	Type	Contact			Ref. contact type		Conductor				Part number	
		$\varnothing A$ (mm)	$\varnothing C$ (mm)	Form per fig.	Male	Female	AWG		Section (mm ²)		For male contacts	For female contacts
							min.	max.	min.	max.		
0M	302-303	0.9	1.10	1	C	M	24	20	0.204	0.616	FGN.0M.560.ZZC	EGN.0M.660.ZZM
		0.9	0.87	2	B	P	26	22	0.128	0.382	FGN.0M.561.ZZC	EGN.0M.661.ZZM
	304-305	0.7	0.87	1	C	M	26	22	0.128	0.382	FGN.0M.555.ZZC	EGN.0M.655.ZZM
		0.7	0.44	2	B	P	32	28	0.032	0.092	FGN.0M.556.ZZC	EGN.0M.656.ZZM
1M	305	0.9	1.10	1	C	M	24	20	0.204	0.616	FGN.0M.560.ZZC	EGN.0M.660.ZZM
		0.9	0.87	2	B	P	26	22	0.128	0.382	FGN.0M.561.ZZC	EGN.0M.661.ZZM
	307-308	0.7	0.87	1	C	M	26	22	0.128	0.382	FGN.0M.555.ZZC	EGN.0M.655.ZZM
		0.7	0.44	2	B	P	32	28	0.032	0.092	FGN.0M.556.ZZC	EGN.0M.656.ZZM
2M	308-310	0.9	1.10	1	C	M	24	20	0.204	0.616	FGN.0M.560.ZZC	EGN.0M.660.ZZM
		0.9	0.87	2	B	P	26	22	0.128	0.382	FGN.0M.561.ZZC	EGN.0M.661.ZZM
	312-319	0.7	0.87	1	C	M	26	22	0.128	0.382	FGN.0M.555.ZZC	EGN.0M.655.ZZM
		0.7	0.44	2	B	P	32	28	0.032	0.092	FGN.0M.556.ZZC	EGN.0M.656.ZZM
3M	322-330	0.7	0.87	1	C	M	26	22	0.128	0.382	FGN.0M.555.ZZC	EGN.0M.655.ZZM
		0.7	0.44	2	B	P	32	28	0.032	0.092	FGN.0M.556.ZZC	EGN.0M.656.ZZM
TM	325	0.9	1.10	1	C	M	24	20	0.204	0.616	FGN.0M.560.ZZC	EGW.TM.660.ZZM
		0.9	0.87	2	B	P	26	22	0.128	0.382	FGN.0M.561.ZZC	EGW.TM.661.ZZM
	340	0.7	0.87	1	C	M	26	22	0.128	0.382	FGN.0M.555.ZZC	EGW.TM.655.ZZM
		0.7	0.44	2	B	P	32	28	0.032	0.092	FGN.0M.556.ZZC	EGW.TM.656.ZZM
4M	340-348	0.7	0.87	1	C	M	26	22	0.128	0.382	FGN.0M.555.ZZC	EGW.TM.655.ZZM
		0.7	0.44	2	B	P	32	28	0.032	0.092	FGN.0M.556.ZZC	EGW.TM.656.ZZM
LM	355	0.9	1.10	1	C	M	24	20	0.204	0.616	FGN.0M.560.ZZC	EGW.TM.660.ZZM
		0.9	0.87	2	B	P	26	22	0.128	0.382	FGN.0M.561.ZZC	EGW.TM.661.ZZM
	368	0.7	0.87	1	C	M	26	22	0.128	0.382	FGN.0M.555.ZZC	EGW.TM.655.ZZM
		0.7	0.44	2	B	P	32	28	0.032	0.092	FGN.0M.556.ZZC	EGW.TM.656.ZZM
5M	366	0.9	1.10	1	C	M	24	20	0.204	0.616	FGN.0M.560.ZZC	EGW.TM.660.ZZM
		0.9	0.87	2	B	P	26	22	0.128	0.382	FGN.0M.561.ZZC	EGW.TM.661.ZZM
	114	0.7	0.87	1	C	M	26	22	0.128	0.382	FGN.0M.555.ZZC	EGW.TM.655.ZZM
		0.7	0.44	2	B	P	32	28	0.032	0.092	FGN.0M.556.ZZC	EGW.TM.656.ZZM

Note: In order to satisfy crimp pull-test requirements to the IEC 60352-2 standard, the use of single strand cables should be avoided.

Accessories

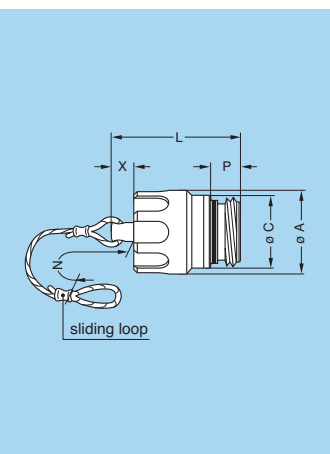
BMF Blanking caps for plugs



Part number	Dimensions (mm)					
	A	C	L	N	P	X
BMF.0M.100.●AV	13.1	12.7	24.6	85.0	5.3	6.0
BMF.1M.100.●AV	14.6	14.2	24.6	85.0	5.3	6.0
BMF.2M.100.●AV	17.6	17.2	24.6	85.0	5.3	6.0
BMF.3M.100.●AV	19.6	19.2	24.6	120.0	5.3	6.0
BMF.TM.100.●AV	22.5	22.0	31.1	120.0	7.9	10.0
BMF.4M.100.●AV	25.0	24.5	31.1	120.0	7.9	10.0
BMF.LM.100.●AV	28.5	28.0	31.1	150.0	7.9	10.0
BMF.5M.100.●AV	34.0	33.5	31.1	150.0	7.9	10.0

Note: this cap is suitable for use with any alignment key configuration. The position «●» of the part number indicates the housing material. See page 17.

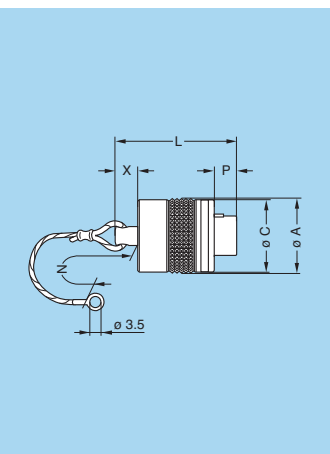
BGF Blanking caps for plugs



Part number	Dimensions (mm)					
	A	C	L	N	P	X
BGF.0M.100.●AV	14.4	12.7	24.6	85.0	5.3	6.0
BGF.1M.100.●AV	15.9	14.2	24.6	85.0	5.3	6.0
BGF.2M.100.●AV	18.9	17.2	24.6	85.0	5.3	6.0
BGF.3M.100.●AV	20.9	19.2	24.6	120.0	5.3	6.0
BGF.TM.100.●AV	23.4	22.0	31.1	120.0	7.9	10.0
BGF.4M.100.●AV	25.9	24.5	31.1	120.0	7.9	10.0
BGF.LM.100.●AV	29.4	28.0	31.1	150.0	7.9	10.0
BGF.5M.100.●AV	34.9	33.5	31.1	150.0	7.9	10.0

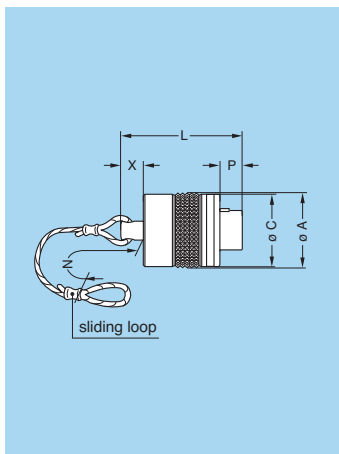
Note: this cap is suitable for use with any alignment key configuration. The position «●» of the part number indicates the housing material. See page 17.

BME Blanking caps for fixed sockets



Part number	Dimensions (mm)					
	A	C	L	N	P	X
BME.0M.200.●AZ	13.1	12.7	23.4	85.0	3.9	6.0
BME.1M.200.●AZ	14.6	14.2	23.4	85.0	3.9	6.0
BME.2M.200.●AZ	17.6	17.2	23.4	85.0	3.9	6.0
BME.3M.200.●AZ	19.6	19.2	23.4	120.0	3.9	6.0
BME.TM.200.●AZ	22.5	22.0	31.0	120.0	3.4	10.0
BME.4M.200.●AZ	25.0	24.5	31.0	120.0	3.4	10.0
BME.LM.200.●AZ	28.5	28.0	31.0	150.0	3.4	10.0
BME.5M.200.●AZ	34.0	33.5	31.0	150.0	3.4	10.0

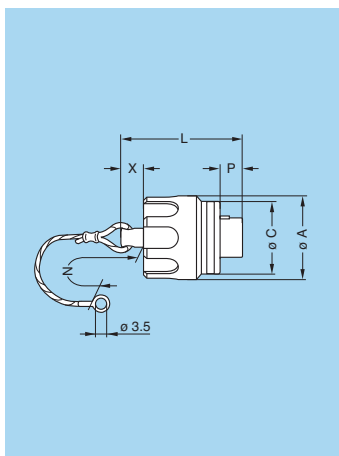
Note: this cap is suitable for use with any alignment key configuration. The position «●» of the part number indicates the housing material. See page 17.



BMF Blanking caps for free sockets

Part number	Dimensions (mm)					
	A	C	L	N	P	X
BMF.0M.200.●AZ	13.1	12.7	23.4	85.0	3.9	6.0
BMF.1M.200.●AZ	14.6	14.2	23.4	85.0	3.9	6.0
BMF.2M.200.●AZ	17.6	17.2	23.4	85.0	3.9	6.0
BMF.3M.200.●AZ	19.6	19.2	23.4	120.0	3.9	6.0
BMF.TM.200.●AZ	22.5	22.0	31.0	120.0	3.4	10.0
BMF.4M.200.●AZ	25.0	24.5	31.0	120.0	3.4	10.0
BMF.LM.200.●AZ	28.5	28.0	31.0	150.0	3.4	10.0
BMF.5M.200.●AZ	34.0	33.5	31.0	150.0	3.4	10.0

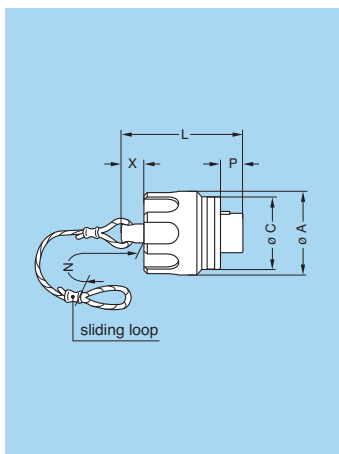
Note: this cap is suitable for use with any alignment key configuration. The position «●» of the part number indicates the housing material. See page 17.



BGE Blanking caps for fixed sockets

Part number	Dimensions (mm)					
	A	C	L	N	P	X
BGE.0M.200.●AZ	14.4	12.7	23.4	85.0	3.9	6.0
BGE.1M.200.●AZ	15.9	14.2	23.4	85.0	3.9	6.0
BGE.2M.200.●AZ	18.9	17.2	23.4	85.0	3.9	6.0
BGE.3M.200.●AZ	20.9	19.2	23.4	120.0	3.9	6.0
BGE.TM.200.●AZ	23.4	22.0	31.0	120.0	3.4	10.0
BGE.4M.200.●AZ	25.9	24.5	31.0	120.0	3.4	10.0
BGE.LM.200.●AZ	29.4	28.0	31.0	150.0	3.4	10.0
BGE.5M.200.●AZ	34.9	33.5	31.0	150.0	3.4	10.0

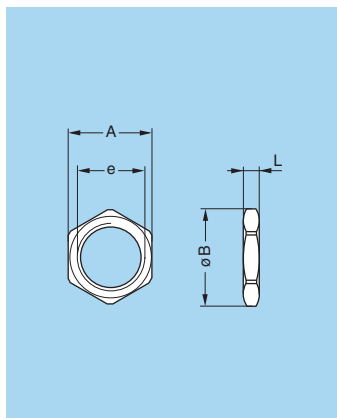
Note: this cap is suitable for use with any alignment key configuration. The position «●» of the part number indicates the housing material. See page 17.



BGF Blanking caps for free sockets

Part number	Dimensions (mm)					
	A	C	L	N	P	X
BGF.0M.200.●AZ	14.4	12.7	23.4	85.0	3.9	6.0
BGF.1M.200.●AZ	15.9	14.2	23.4	85.0	3.9	6.0
BGF.2M.200.●AZ	18.9	17.2	23.4	85.0	3.9	6.0
BGF.3M.200.●AZ	20.9	19.2	23.4	120.0	3.9	6.0
BGF.TM.200.●AZ	23.4	22.0	31.0	120.0	3.4	10.0
BGF.4M.200.●AZ	25.9	24.5	31.0	120.0	3.4	10.0
BGF.LM.200.●AZ	29.4	28.0	31.0	150.0	3.4	10.0
BGF.5M.200.●AZ	34.9	33.5	31.0	150.0	3.4	10.0

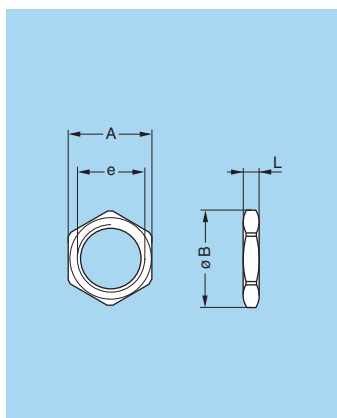
Note: this cap is suitable for use with any alignment key configuration. The position «●» of the part number indicates the housing material. See page 17.



GEA Hexagonal nuts for EC• model

Part number	Series	Dimensions (mm)			
		A	B	e	L
GEA.0M.241.RL	0M	16	18.2	M13x0.75	2.5
GEA.0E.240.RL	1M	17	19.2	M14x1.00	2.5
GEA.2M.241.RL	2M	19	21.5	M17x1.00	3.0
GEA.3M.241.RL	3M	25	22.0	M19x1.00	3.0
GEA.TM.241.RL	TM	25	28.0	M22x1.00	3.0
GEA.4M.241.RL	4M	30	34.0	M24x1.00	3.0
GEA.LM.241.RL	LM	32	36.0	M28x1.00	3.0
GEA.5M.241.RL	5M	37	41.0	M33x1.00	3.0

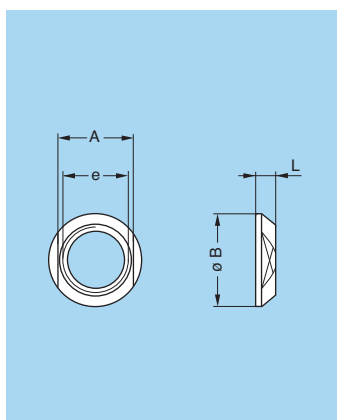
● Material: Nickel-plated aluminium alloy (anthracite colour)



GEA Hexagonal nuts for EG• model

Part number	Series	Dimensions (mm)			
		A	B	e	L
GEA.0S.240.RL	0M	11	12.4	M9x0.60	2.0
GEA.1M.240.RL	1M	13	14.5	M11x1.00	2.5
GEA.0E.240.RL	2M	17	19.2	M14x1.00	2.5
GEA.1E.240.RL	3M	19	21.5	M16x1.00	3.0
GEA.3S.240.RL	TM	22	25.0	M18x1.00	3.0
GEA.4M.240.RL	4M	25	28.0	M21x1.00	4.0
GEA.3E.240.RL	LM	30	34.0	M24x1.00	5.0
GEA.5M.240.RL	5M	36	40.5	M30x1.00	5.0

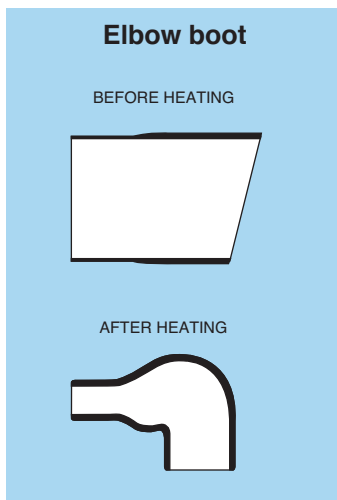
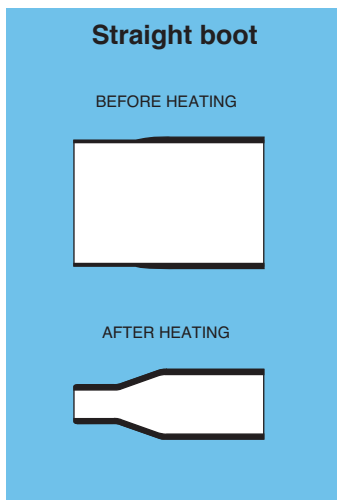
● Material: Nickel-plated aluminium alloy (anthracite colour)



GEC Conical nut for models HE•, EC•, PE•

Part number	Series	Dimensions (mm)			
		A	B	e	L
GEC.0M.240.RN	0M	14	17	M13x0.75	3.2
GEC.0E.240.RN	1M	16	18	M14x1.00	3.0
GEC.2M.240.RN	2M	18	21	M17x1.00	3.2
GEC.3M.240.RN	3M	20	23	M19x1.00	3.2
GEC.TM.240.RN	TM	23	27	M22x1.00	5.0
GEC.4M.240.RN	4M	25	29	M24x1.00	5.0
GEC.LM.240.RN	LM	29	33	M28x1.00	5.0
GEC.5M.240.RN	5M	34	38	M33x1.00	5.0

● Material: Nickel-plated aluminium alloy (anthracite colour)



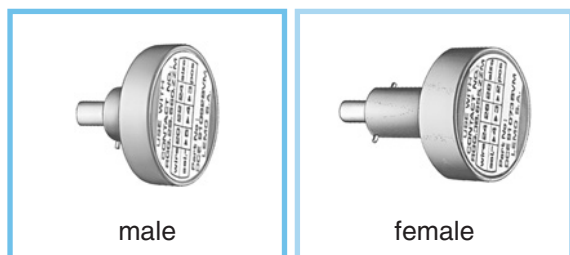
Heatshrink boot

Supplier	Part number		Series	Cable ø min. (mm)
	Straight	Elbow 90°		
Raychem®	202A111-25/86	222A111-25/86	0M-2M	3.8
	202A121-25/86	222A121-25/86	2M-4M	5.3
	202A142-25/86	222A142-25/86	4M-5M	7.4

Note:
request modified elastomer resistant to fluids with hot melt sealant.

Tooling

DCE Positioners for crimp contacts



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

Fig. 1

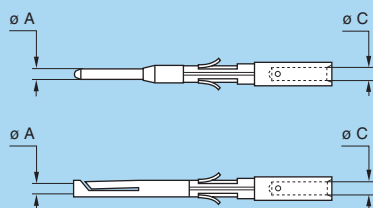
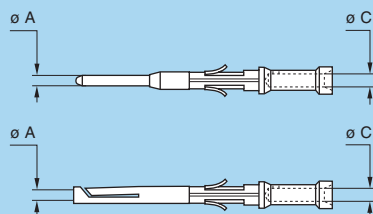
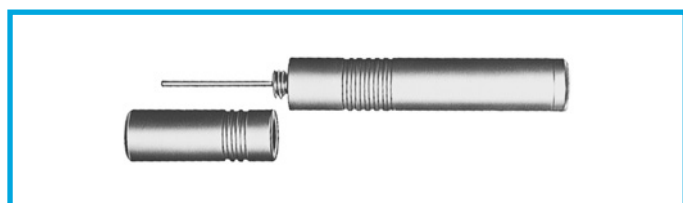


Fig. 2



Note: 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.

	Type	Contact			Positioners part number	
		Ø A (mm)	Ø C (mm)	Form per fig.	For male contacts	For female contacts
0M	302-303	0.9	1.10	1	DCE.91.090.5MVC	DCE.91.090.3MVM
		0.9	0.87	2		
	304-305	0.7	0.87	1	DCE.91.070.5MVC	DCE.91.070.3MVM
		0.7	0.44	2		
1M	305	0.9	1.10	1	DCE.91.090.5MVC	DCE.91.090.3MVM
		0.9	0.87	2		
	307-308	0.7	0.87	1	DCE.91.070.5MVC	DCE.91.070.3MVM
		0.7	0.44	2		
2M	308-310	0.9	1.10	1	DCE.91.090.5MVC	DCE.91.090.3MVM
		0.9	0.87	2		
	312-319	0.7	0.87	1	DCE.91.070.5MVC	DCE.91.070.3MVM
		0.7	0.44	2		
3M	322-330	0.7	0.87	1	DCE.91.070.5MVC	DCE.91.070.3MVM
		0.7	0.44	2		
TM	325	0.9	1.10	1	DCE.91.090.5MVC	DCE.91.09T.5MVM
		0.9	0.87	2		
	340	0.7	0.87	1	DCE.91.070.5MVC	DCE.91.07T.5MVM
		0.7	0.44	2		
4M	340-348	0.7	0.87	1	DCE.91.070.5MVC	DCE.91.07T.5MVM
		0.7	0.44	2		
LM	355	0.9	1.10	1	DCE.91.090.5MVC	DCE.91.09T.5MVM
		0.9	0.87	2		
	368	0.7	0.87	1	DCE.91.070.5MVC	DCE.91.07T.5MVM
		0.7	0.44	2		
5M	366	0.9	1.10	1	DCE.91.090.5MVC	DCE.91.09T.5MVM
		0.9	0.87	2		
	114	0.7	0.87	1	DCE.91.070.5MVC	DCE.91.07T.5MVM
		0.7	0.44	2		



DCF Extractors for crimp contacts

Contact Ø	Part number
0.9	DCF.93.090.4LT
0.7	DCF.93.070.4LT

Note: this model is used for male and female contacts.



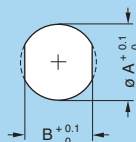
DCM Front conical nut tightening tools

Part number	Series	For models	Torque (Nm)
DCM.04.140.PAZ	0M	EC●, HE●, PE●	1.0
DCM.04.160.PAZ	1M	EC●, HE●, PE●	1.5
DCM.04.180.PAZ	2M	EC●, HE●, PE●	2.0
DCM.04.200.PAZ	3M	EC●, HE●, PE●	2.5
DCM.08.230.PAZ	TM	EC●, HE●, PE●	4.0
DCM.08.250.PAZ	4M	EC●, HE●, PE●	5.0
DCM.08.290.PAZ	LM	EC●, HE●, PE●	6.5
DCM.08.340.PAZ	5M	EC●, HE●, PE●	8.0

Panel Cut-out

Cut-outs

EG●-EC●-HE●-PE●



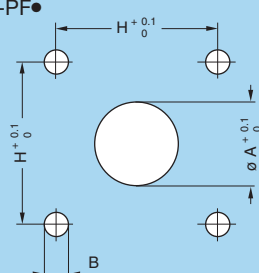
Series	EG●		EC●/HE●/PE●	
	ø A	B	ø A	B
0M	9.1	8.3	13.1	11.6
1M	11.1	9.6	14.1	12.6
2M	14.1	12.6	17.1	15.6
3M	16.1	14.6	19.1	17.6
TM	18.1	16.6	22.1	20.6
4M	21.1	19.6	24.1	22.6
LM	24.1	22.6	28.1	26.6
5M	30.1	28.6	33.1	31.6

Mounting nut torque (on panel)

Series	Torque (Nm)
0M	1.0
1M	1.5
2M	2.0
3M	2.5
TM	4.0
4M	5.0
LM	6.5
5M	8.0

Cut-outs

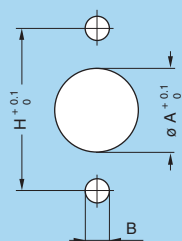
ED●-PV●-PF●



Series	ED●			PV●			PF●		
	ø A	B	H	ø A	B	H	ø A	B	H
0M	5.1	M2.5	11.0	14.8	M2.5	15.1	10.8	M2.5	11.0
1M	6.1	M3.0	12.9	16.8	M3.0	18.3	12.5	M3.0	12.9
2M	9.1	M3.0	15.1	19.8	M3.0	20.6	15.6	M3.0	15.1
3M	11.1	M3.0	16.6	21.8	M3.0	23.0	18.1	M3.0	16.6
TM	12.5	M3.0	18.3	24.8	M3.0	24.6	19.9	M3.0	18.3
4M	14.1	M3.0	20.6	27.8	M3.0	27.0	22.7	M3.0	20.6
LM	18.1	M3.0	23.0	30.8	M3.0	25.4	25.9	M3.0	23.0
5M	23.2	M3.0	27.0	37.8	M3.0	34.9	33.1	M3.0	29.4

Cut-outs

PB●

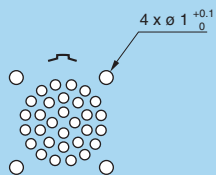


Series	PB●		
	ø A	B	H
0M	14.8	M3.0	21.4
1M	16.8	M3.0	23.4
2M	19.8	M3.0	26.4
3M	21.8	M3.0	29.0
TM	24.8	M3.0	32.5
4M	27.8	M3.0	35.0
LM	30.8	M3.0	38.0
5M	37.8	M3.0	45.0

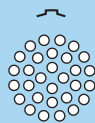
PCB drilling pattern

Fixed socket with straight print contact

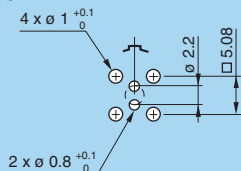
For HE● models



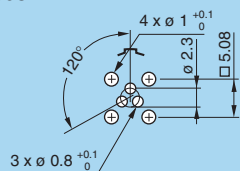
For EG●, EC● and ED● models



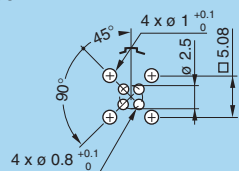
0M.302



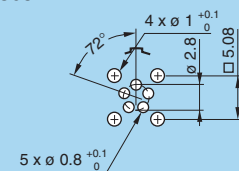
0M.303



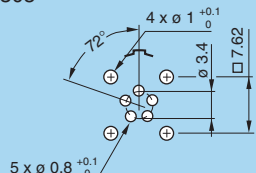
0M.304



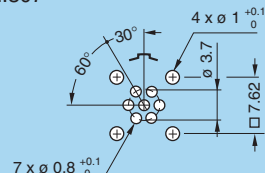
0M.305



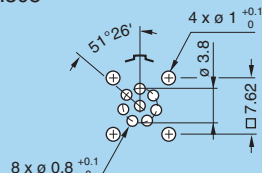
1M.305



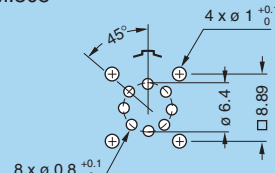
1M.307



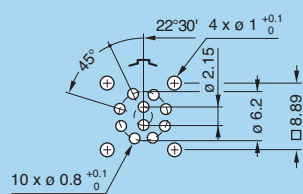
1M.308



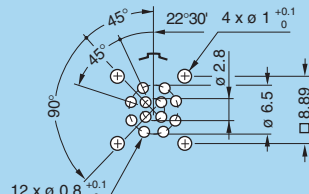
2M.308



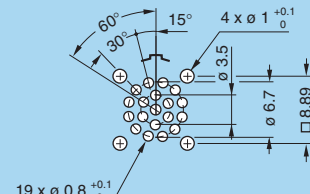
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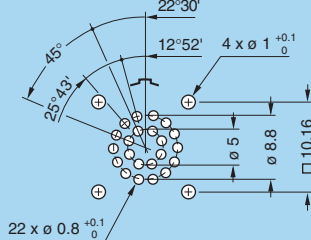
2M.312



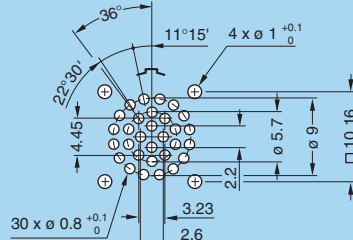
2M.319



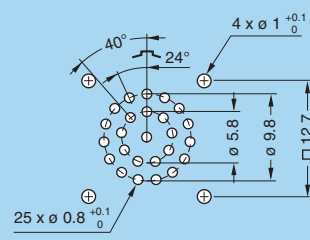
3M.322



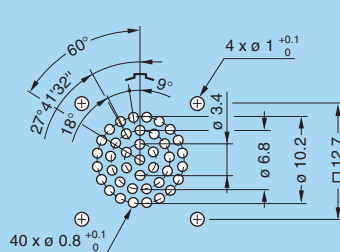
3M.330



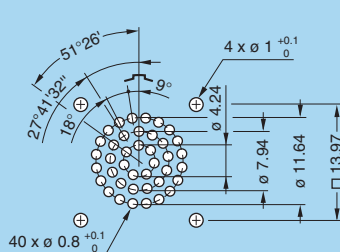
TM.325



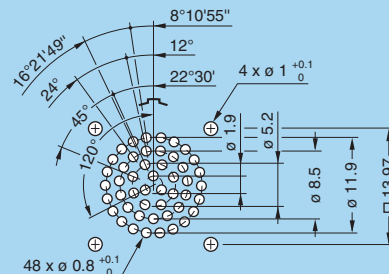
TM.340



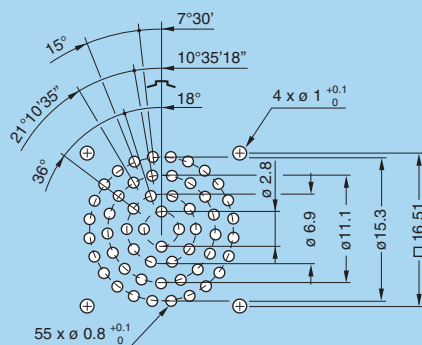
4M.340



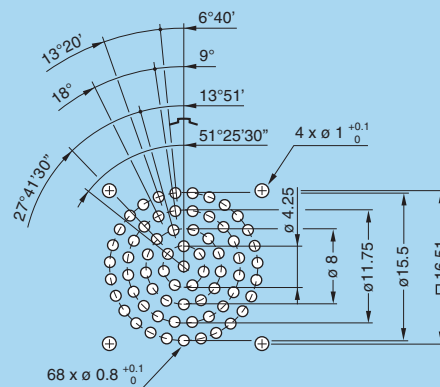
4M.348



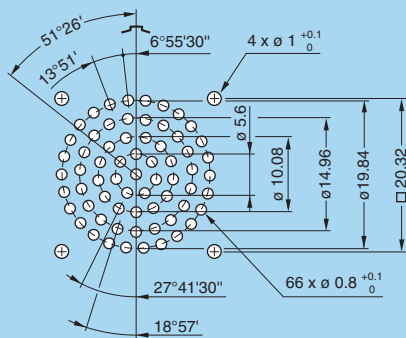
LM.355



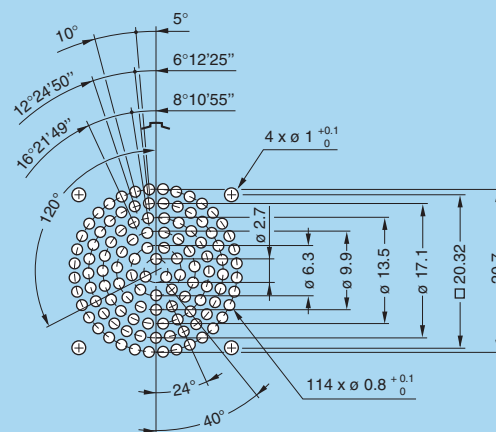
LM.368



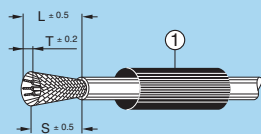
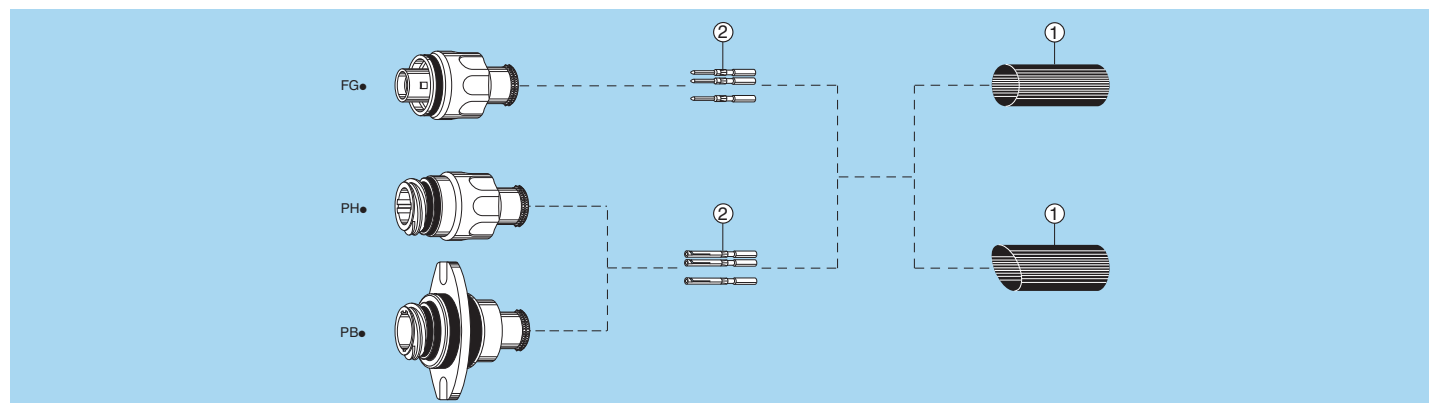
5M.366



5M.114



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
0M to 5M	20	15	3.5

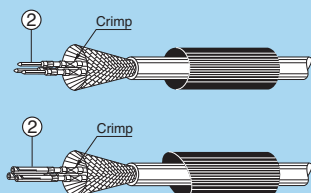
Note: dimensions are in mm.

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.

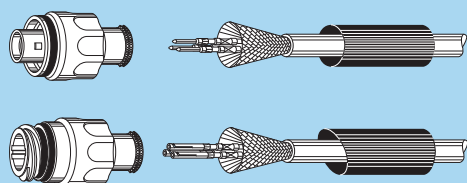
Slide the conductor-contact assembly into the open crimping tool; make sure that the contact is pushed fully into the positioner. Close the tool. Remove from crimping tool and check that conductor is secure in contact and shows in inspection hole.



2.2 Arrange the conductor-contact assemblies according to the markings, into the rear cable seal.

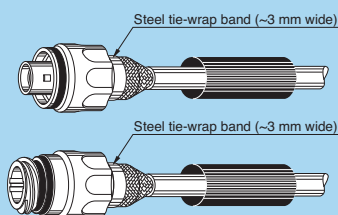
Push them deeply into the insulator, using tweezers if necessary; check that all the contacts are correctly located in the insulator: 1) by verifying the alignment of the contacts at the front of the insulator and 2) by gently pulling on each conductor.

Verification should also be made using the appropriate retention testing tool.

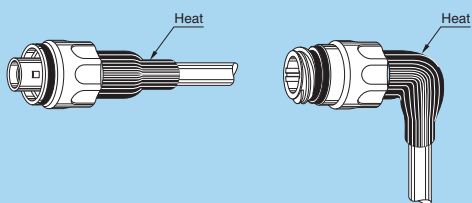


2.3 Bring the shield around the rear of connector.

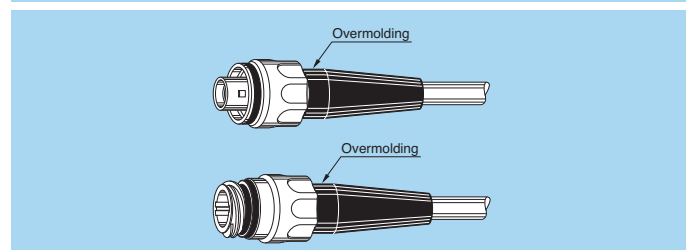
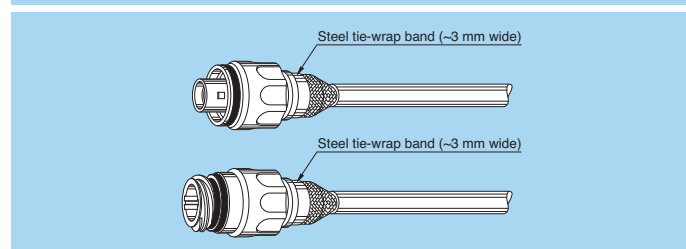
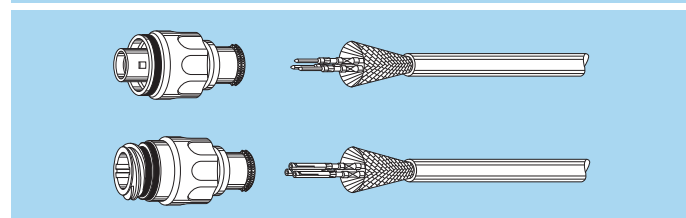
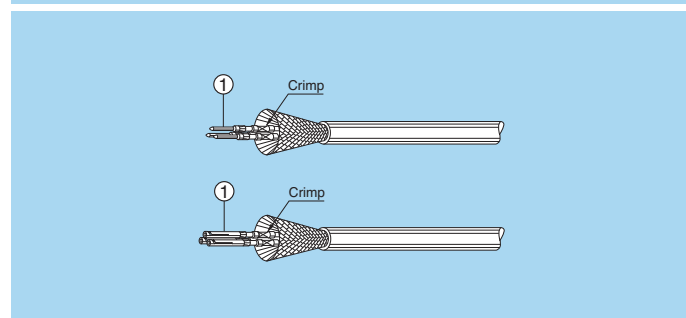
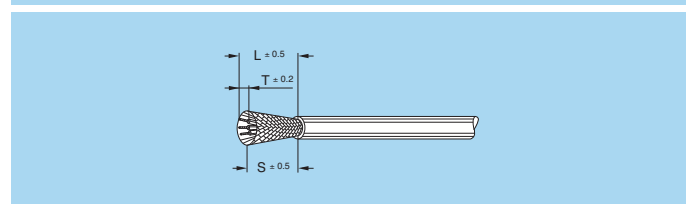
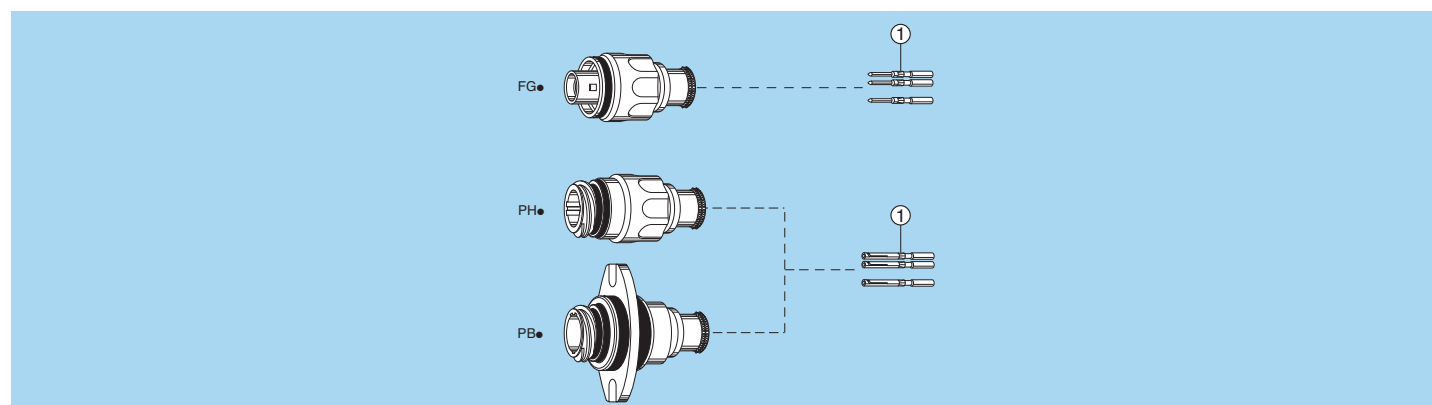
Secure it with a band-it tie-wrap (not furnished) to fix the shield in place. Cut off the possible shield surplus.



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



Assembly instructions for plugs and sockets (with optional mold stop)



1. Cable preparation

Strip the cable according to dimensions of the table, then widen the shield.

Series	L	S	T
OM to 5M	20	15	3.5

Note: dimensions are in mm.

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 ①; 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.

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

2.4 Custom overmold cable assembly.

Notes

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

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