



3P SERIES PLASTIC CONNECTORS

- * *Quick connect/disconnect design*
- * *Lightweight PSU shell material*
- * *Contact arrangements from 6-18 pins,
high voltage combined with 9 signals,
and fiber optic configurations*



LEUIS00014

THE QUALITY CHOICE

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Series 3P

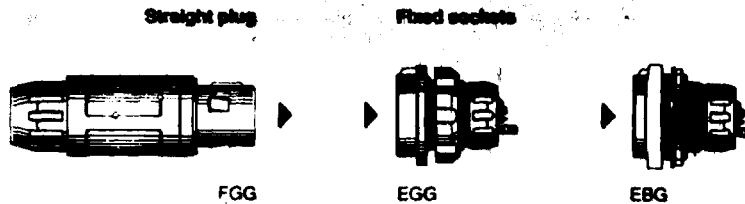
The series 3P, incorporates most technical features of the series B connectors such as the self-latching system, multiple latching system and crimp or solder contacts.

These connectors were specifically designed for all applications requiring maximum strength, maximum electrical insulation values, together with high thermal and mechanical properties, as well as suitability for either vapour or gas sterilization and for cold sterilization with a chemical product (for example 3M Glutaral).

The series 3P are safety connectors and apart from the contacts utilize non-conductive materials and four different systems to prevent accidental cross mating, i.e. color coding, insert polarization and both housing and insert keying.

Also available through LEMO USA is a family of miniature plastic connectors with 2-14 contacts. Please contact LEMO for more information on Redal connectors.

Basic connections



Model description

FGG Straight plug with key and cable clamp

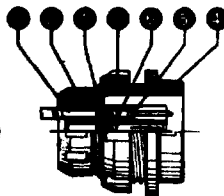
EGG Fixed socket, nut fixing, with key

EBG Fixed socket with key, square flange (screw fixing)

Part section showing internal components

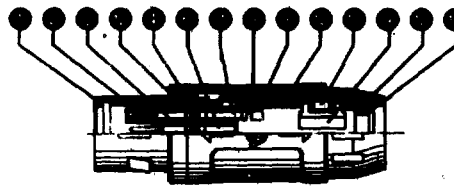
Fixed contact

- shell
- retaining nut
- round nut
- colored ring
- insulator
- female contact
- male contact (earthing)



Straight plug

- outer shell
- latch sleeve
- retaining nut
- colored ring
- insulator
- male contact
- female contact (earthing)
- clamping sleeve
- clamp
- screw
- washer
- gland



Technical characteristics

Material and treatment

Component	Material	Standard
Outer shell, latching sleeve, other parts	Polysulfone (PSU)	MIL-P-46120 MF
Sealing glands	Silicone rubber 70 shore hardness	FS ZZ-R765
Insulator	PEEK	MIL-P-46183

Contact

Component	Material (Standard)	Surface treatment (µm)		
		Cu	Ni	Au
male solder	Brass (ASTM C 385)	0.5	3	0.5
male crimp & male earthing	Brass (ASTM C 345)	0.5	3	0.5
female solder and female crimp and female earthing	Bronze (ASTM C544)	0.5	3	0.5

The surface treatment standards are as follows:
Nickel FS-QQ-N-580A / Gold MIL-G-46204C type 1, class 00

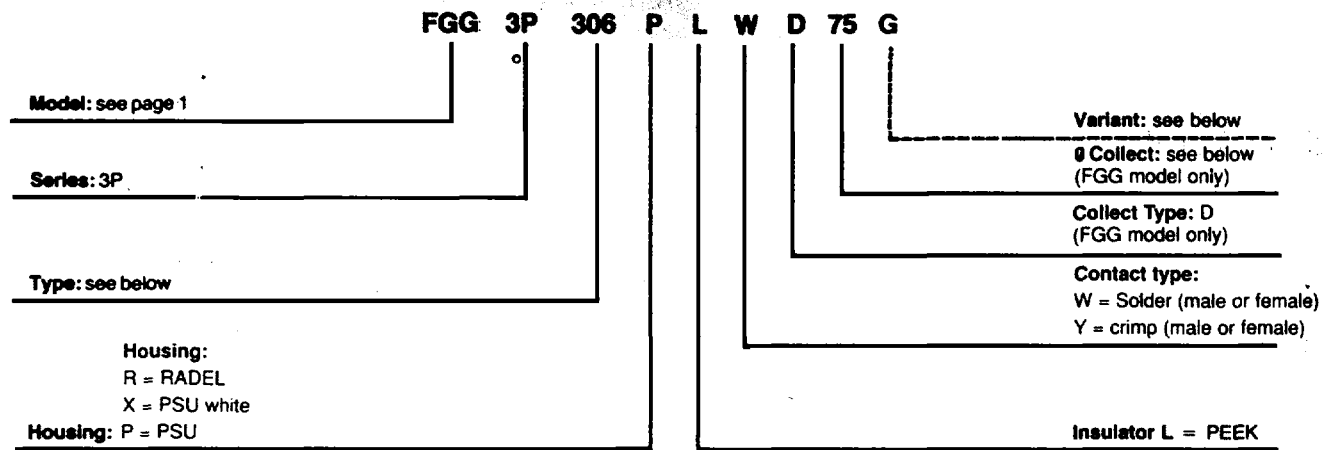
* Please contact LEMO USA for more information.

Mechanical, electrical and climatic

Characteristic	Value	Standard	Method
Water-tightness (mated connectors)	IP 61	IEC 529	
Cable retention force	> 200 N	MIL-STD-1344A	2009.1
Retention force crimped contacts	> 40 N	MIL-STD-1344A	2007.1
Retention force force fit contacts	> 180 N	MIL-STD-1344A	2007.1
Insulation resistance contact/contact	> 10 ¹² Ω	MIL-STD-1344A	3003.1
Insulation resistance contact/screen	> 10 ¹² Ω	MIL-STD-1344A	3003.1
Operating temperature	- 50°C + 150°C (- 58°F + 302°F)		
Sterilization	steam, 130°C (266°F) steam + formal, 70°C (158°F) gas, 60°C (140°F)		

1N = 0.102 kg

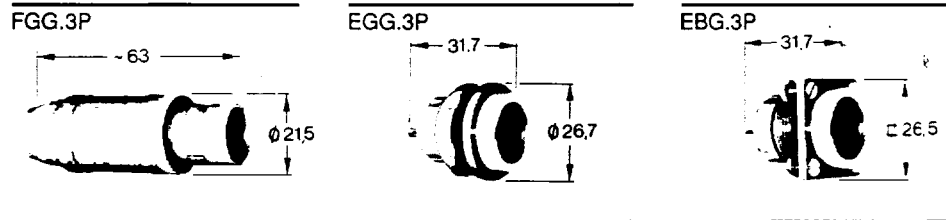
Part number example



FGG.3P.306.PLWD75G Straight plug, Series 3P, polysulfone housing, PEEK insulator, male solder contact, type D collet for 6.7 to 7.5 range dia. cable, grey colored ring on front of shell (other colors available).

Dimensions (See first page for Model Descriptions)

Note: All dimensions are in millimeters



Types

Multipole and Mixed: HV+LV

Reference	Series	Low Voltage (LV)						High Voltage (HV)				Wire AWG Max (Solder)	Wire AWG (Crimp)		
		Contact No. 1)	Contact Ø	Solder Crimp 1)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)	Contact No	Contact Ø			Cond. max. OD	Us (kV rms)
306	3P	6+1	0.9	● ●	0.9	1.3	2.7	3.9	6	-	-	-	-	22	20-22-24
310		10+1	0.9	● ●	0.8	1.1	2.4	3.3	5	-	-	-	-	22	20-22-24
314		14+1	0.9	● ●	0.4	0.6	1.2	1.7	4	-	-	-	-	22	20-22-24
318		18+1	0.7	●	0.6	0.9	1.9	2.7	3	-	-	-	-	26	---
709		9+1	0.9	● ●	0.4	0.6	1.2	1.7	4	1	0.9	0.75	5.6	8.0	22

● Available

Note: 1) The additional contact is a grounding pin.

Note: All dimensions are in millimeters
Us = working voltage
Ue = test voltage

Fiber Optic

Reference		Fiber optic No	Low Voltage contact								
FO contact Type:			Contact No ¹⁾	ø A (mm)	Type		Operating Voltage (AC)	Operating Voltage (DC)	Test Voltage (AC)	Test Voltage (DC)	Rated current (A)
F1	F2				Solder	Crimp					
96H	92H	1	9+1 ¹⁾	0.9	●	●	400	600	1200	1800	4
96K	92K	1	11+1	0.7	●		600	900	1800	2700	3

Note: For further information on fiber optic inserts, please contact LEMO USA.

Note: ¹⁾ The additional contact is an earthing one.

Collet

Ref.	Cable OD	
	min.	max.
75	6.7	7.5
85	7.6	8.5
95	8.6	9.5

Variant

Ref.	Ring color	Ref.	Ring color
A	blue	M	brown
B	white	N	black
G	grey	R	red
J	yellow	V	green

Note:
The variant position of the part number is used to specify the color of the coding ring. The standard color is grey.

Tooling

Spanner with notch for securing collet nut



Part Number
DCP.91.019.HN

Spanner for securing the socket nut

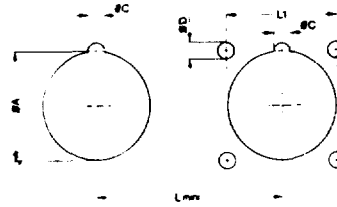


Part Number
DCP.91.026.HN

1N = 0.102 kg

Cut-out and Torque for collet nut

Panel cut-out



Model	Dimensions					Component	Torque (Nm)
	A	C	D	L	L1		
EGG	20.1	3	-	34	-	Panel nut	2.3
EBG	20.1	3	3.1 or M3	31	20	Insert nut	0.5
						Fixing screw	2.5

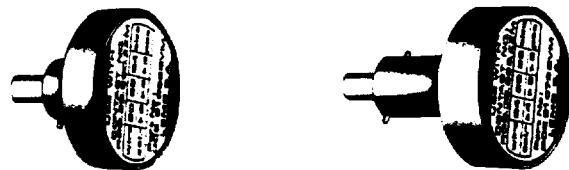
Manual crimping tool



Supplier	Part Number
LEMO	DPC.91.701.V ¹⁾
DANIELS	MH860 ¹⁾

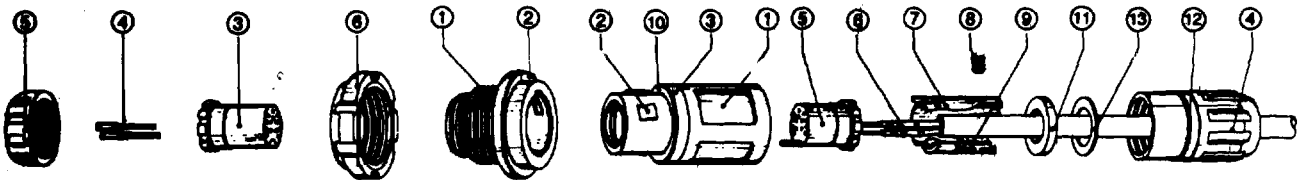
1) According to specification MIL-C-22520/7-01

Positioners



Connector			Positioner	
Series	Contact ϕ	Conductor AWG	For male contact part number	For female contact part number
3P	0.9	20-22-24	DCE.91.093.BVC	DCE.91.093.BVM

Assembly Instructions



Receptacle

1. Outershell
2. Key-Ring
3. Insulator

4. Female Contact
5. Collet Nut
6. Nut
7. Contact

Plug

1. Outershell
2. Inner Latch Sleeve
3. Key-Ring
4. Collet Nut
5. Insulator
6. Contact
7. Cable Clamp Sleeve
8. Screw
9. Clamping Covers
10. Front gasket
11. Rear gasket
12. Sealing Sleeve
13. Washer

1. For the plug, slide collet nut, washer, rear gasket and cable clamp sleeve onto cable. Make sure that the proper clamping covers are used to suit your particular cable jacket diameter.

2. Strip cable to dimensions shown below:

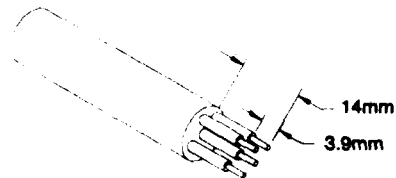
Solder Contacts



3. Terminate contacts using solder method.

4. Assemble the connector. Eleven different keying options are available and must be matched for proper mating. The keying options are labeled A, B, C, D, E, F, G, H, J, K, and L on the rear of the insulators with the standard being key "A". The alignment tab on the plug cable clamp sleeve and receptacle outershell should be inserted into the desired keying slot.

Crimp Contacts



3. Prepare crimp tool (M22520/7-01) by inserting positioner DCE.91.093.BVC for the male contacts, DCE.91.093.BVM for the female contacts, and setting the selector on the proper position number.

AWG	POSITION NUMBER
20	6
22	5
24	4

Crimp the contacts on the conductors making sure that the conductor strands are visible in the circular inspection window located on the side of the crimp contact. After crimping, make sure to carefully remove the crimped contacts from the crimping tool to prevent damage to the spring clips.

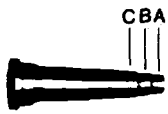
Insert contacts in rear (end with white markings) of insulator until they "click" into position.

Contacts and grounding pin may be removed, if necessary, by gently sliding the extraction tool (DCC.91.090.5LA) over the contact and into the insulator. Once the extraction tool has seated, press the button on the back end of the tool.

* Note: Grounding pin can be soldered or crimped. Handles up to 14 AWG.

Accessories

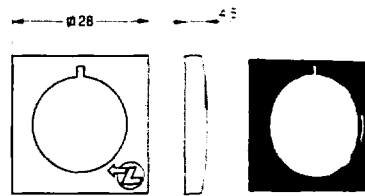
Bend relief



Part Number	Cut	cable OD	
		max.	min.
GMA.3P.050.SN	A4	.9	4
	B5	.9	5
	C6	.9	6

The cable on the FGG plug can be protected by a bend relief accommodating cable outside diameters ranging from 3 to 6 mm. To adapt the bend relief diameter to the cable outside diameter simply cut the conical extremity of the strain relief.

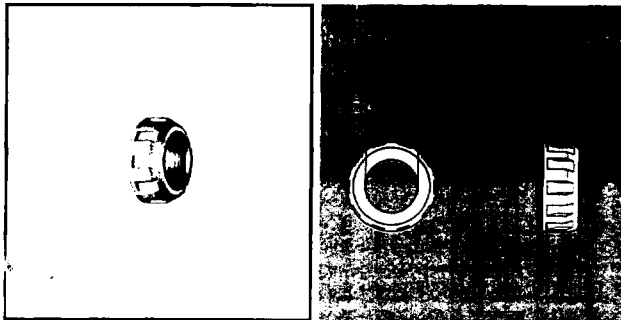
Finishing cover



Part Number
EBG.3P.260.UG

A finishing cover is supplied with all EBG fixed sockets with square flange. To order a spare cover use the above part number.

EGG Retaining nut



Part number



Note: One retaining nut is supplied with all the receptacles model EGG and EBG.

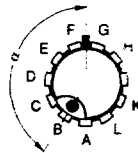
● Material: Gray polysulfone

Insert polarization

The 3P series makes it possible for the user to configure his own keying system. The insert can be located into 11 different angular positions relative to the external alignment key.

Note: The reference letter
 - on the plug insert is placed to the left of the alignment key
 - on the receptacle insert is placed to the right of the alignment key.

Insert code	Angle α	
	Plug	Receptacle
A	180°	180°
B	147° 16'	212° 44'
C	114° 33'	245° 27'
D	81° 49'	278° 11'
E	49° 05'	310° 55'
F	16° 22'	343° 38'
G	343° 38'	16° 22'
H	310° 55'	49° 05'
J	278° 11'	81° 49'
K	245° 27'	114° 33'
L	212° 44'	147° 16'



LEMO's Family of Quality Connectors

LEMO manufactures precision engineered circular self-latching quick connect-disconnect electronic connectors for a wide variety of applications.

Keyed Connectors (multi and mixed contact configurations)

B Series Features:

- Contact arrangements from 2-64 pins and mixed configurations including coaxial, triaxial, fiber optic, fluidic/pneumatic and high voltage.
- Wire gauges range from 10-30 AWG.
- Vacuum Sealed Shells.
- Alignment Key on the shell which prevents errors in alignment.
- Polarized Keying System which enables keying exclusivity and prevents accidental cross mating of similar connectors.
- High contact density in a small amount of space.
- Contact terminations in either solder, crimp, or printed circuit.

S Series Features:

- Contact arrangements from 2-106 pins and mixed configurations including coaxial, triaxial, fiber optic, fluidic/pneumatic and high voltage.
- Wire gauges from 4-26 AWG.
- Hermaphroditic inserts which assure proper contact alignment and quick connect-disconnect design.
- Contact terminations in solder or printed circuit.
- Vacuum Sealed Shells.

C Series (compact) Connectors: Multiple and coaxial contact connectors in a specially designed short shell for space saving applications.

Environmentally Sealed Keyed Connectors

K Series Features:

- Environmental connectors with triple wall construction to provide water and dust resistance.
- Mechanically keyed
- Contact configurations identical to the B Series Connectors.

E Series Features:

- Environmental connectors with triple wall construction to provide water and dust resistance.
- Hermaphroditic inserts.
- Contact configurations identical to the S Series Connectors.

NIM-CAMAC Coaxial Miniature Connectors

00-NIMCAMAC - 50 ohm: (Nuclear Instrumentation Module, Computer Automated Measurement and Control).

Recommended cables:

RG.58C/U	RG.180B/U	RG.316/U
RG.174A/U	RG.187A/U	CCE.99.281.505
RG.178B/U	RG.188A/U	CCH.99.281.505
RG.179B/U	RG.196A/U	HF-2114 Dätwyler

Other Coaxial/Triaxial Connectors

01-MINAX Series - 50 ohm: LEMO's smallest coaxial connectors. Recommended cables:

RG.174A/U	RG.316/U
RG.178B/U	CCE.99.281.505
RG.188A/U	CCH.99.281.505
RG.196A/U	

0A-Telecommunications Series 50 & 75 ohm: Designed with contacts to accommodate the following cables:

RG.58C/U	RG.316/U	ZYCCY (0.4/2.5) Siemens
RG.59B/U	CCE.99.281.505 LEMO	0722 102 11 001 Philips
RG.174A/U	CCH.99.281.505 LEMO	0722 102 29 011 Philips
RG.179B/U	ZYCY (0.4/2.5) Siemens	HF-5408/1 Dätwyler

Standard Series Coaxial and Triaxial Connectors: Other 50 and 75 ohm coaxial and triaxial connectors are available to accommodate cables up to .866"/22.0mm. These are also available in an environmentally sealed design.

Video Triax Connectors: LEMO's triaxial series is designed for video camera applications. Recommended cables:

8232-Belden	10069-C-G20-BIW	9232-Belden
HF-2426-Dätwyler	12766400-F&G	10070-C-G14-BIW
12765700-F&G	12766601-F&G	12766700-F&G
9267-Belden	8233-Belden	4.6/1.0EFTX-Fujikura

Other LEMO Connectors

Underwater Connectors - 03 Series:

- Available in 50 ohm coaxial or 2-3 pin contact configurations.
- Measures less than 1 inch long and accommodates a maximum cable of 3mm.
- O-ring seals and locking nut to assure against water penetration and accidental unmating.
- Watertightness and stability guaranteed for up to 870 psi or severe vibration conditions.

High Voltage Series:

- S Series High Voltage Connectors available in a large range of sizes featuring teflon inserts and a time proven design.
- Y Series High Voltage Connector in a long shell design insuring mechanical mating prior to contact engagement.
- 0S and 1S Series High Voltage connectors distinguished by their favorable size to voltage relationship.
- Multi High Voltage Connectors in sizes 4B and 5B for applications where multiple high voltage contacts are desired.

Fiber Optic Connectors: LEMO's fiber optic connectors are designed for multimode transmission on single or multi-fibers. Terminations are made by the cut and epoxy/polish method. **Fibers accommodated:** 50, 100, 200 micron core fibers.

Plastic Connectors: Plastic connectors (3P Series) in autoclaveable PSU shells ranging in contact arrangements from 6-18 contacts accommodating a cable \varnothing of 6-9mm.

Fluidic Connectors: Available in single or multiple tubes as well as mixed with electrical contacts with working pressure up to 20 bar (290 psi).

Thermocouple Series: LEMO's Thermocouple connectors are designed to assure continuous and accurate monitoring of hostile environments where extreme surface or ambient temperatures, gases or liquids must be controlled.

Cable Assemblies: LEMO manufactures complete cable assemblies with both coaxial and multi-conductor cables. Assemblies can be fabricated from customer-owned cables or LEMO can provide all materials. LEMO capabilities include cable assembly design, fabrication, continuity and capacitance testing, and heat stamped cable or shrink marker identification.

Custom Designs: For more information please contact LEMO or feel free to complete and return the Application Data Request Form in the back of this catalog.

Please contact LEMO USA for more information on LEMO's full line of quality connectors.

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