ODU MINI-SNAP

Miniature Circular Connectors with Push-Pull Locking Series L, K, B

www.odu.de

Miniature Circular Connectors with Push-Pull Locking, Series L, K, B

Applications

– Medical devices
– Test and laboratory
– Measurement instrumentation
– Data and telecom systems
– Audio and video applications
– Military and security
– Industrial controls
– Nuclear technology.

Features

– Quick and easy mating and demating
– Blind mating in difficult-to-reach places
– Less panel space required
– Definite and secure locking condition
– Robotic mating and demating possible
– Easy cleaning of housing possible
– High connector density
– Low space requirements.

All shown connectors are according to DIN EN 61984:2009 connectors without breaking capacity (COC).

All dimensions in mm.
Most of the pictures are illustrations.
All data and specifications subject to change without notice.

ODU MINI-SNAP is UL-listed under File E110586 00RT03566. MIL-Specification: Tests carried out (see page 115).

Table of Contents (Part I)

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Product Description
ODU MINI-SNAP Series L, K, B

The ODU MINI-SNAP Family of Miniature Circular Connectors Features Push-Pull Locking

Circular connectors are generally available with several locking mechanisms.

The most frequently used are

– Threaded-locking sleeve
– Bayonet-locking
– Push-Pull locking.

Push-Pull connectors have a very simple locking mechanism

– As the plug is pushed into the receptacle, locking fingers on the plug snap into the receptacle creating a reliable connection between plug and receptacle.
– Pulling on the cable or the rear of plug causes the locking fingers to grab harder and a separation of plug and receptacle is almost impossible. Pulling on the outer plug housing causes the locking fingers to retract and the plug and receptacle separate easily.

ODU MINI-SNAP series L (see page 9)

ODU MINI-SNAP series K (see page 29)

ODU MINI-SNAP series B (see page 47)

Important Issues at a Glance

Certification
The series is certified acc. RoHS 2011/65/EC and VDE.

8 sizes
Connector with metal shells available in 8 sizes.
Outside diameter between 6.5 mm and 42 mm.
Number of contact positions: 1 to 40 positions, mixed insert arrangements.

Extensive range of termination possibilities
Plugs and in-line receptacles are offered with solder and crimp termination. Receptacles are available for solder, crimp, and PCB termination.

Applications

	Insulation body material PEEK	Contact material Ms
General application requirements (– 40° C to +120° C)	●	●
Connectors which are autoclavable (+134° C, see page 114)	●	●

Termination style

	Insulation body material PEEK	Contact material Ms
Crimp termination	●	
Solder termination	●	
Printed circuit board (PCB) termination	●	

Environmental protection classification
IP 50 up to IP 68 are available

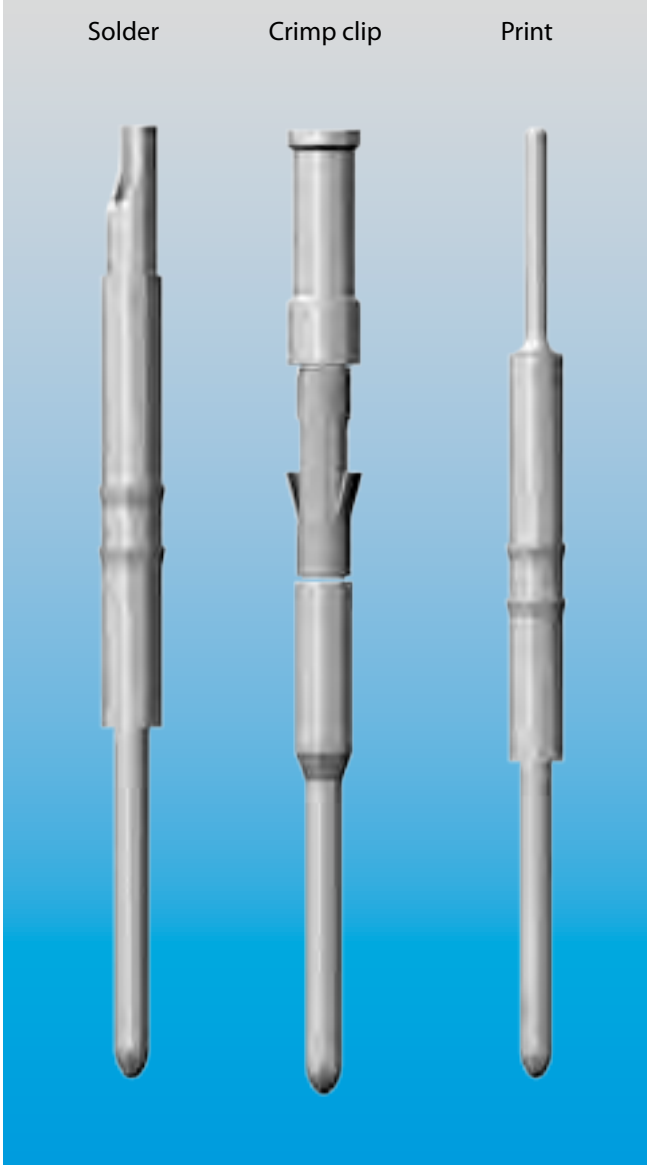
Turned Contact

Turned contacts are available in the diameters 0.5 to 4.0 mm.
The contacts are available with following terminations:
Solder, crimp and print.

Mating cycles	> 5,000
Material	Brass
Treatment processing	At least 1.25 µm Ni; at least 0.75 µm Au on the mating area

For information regarding diameter, termination style and current load please see the contact configuration section.

Termination standard pin contacts

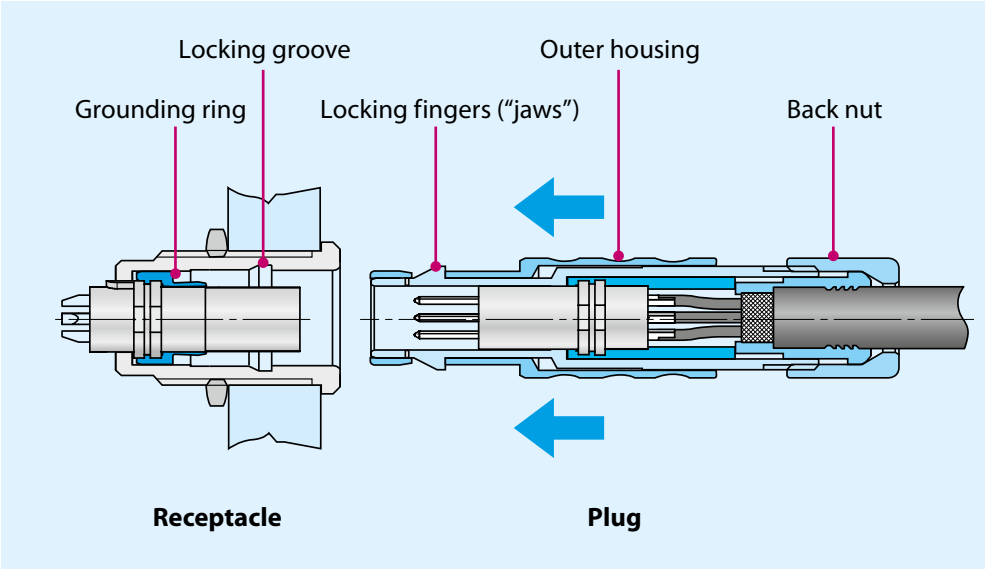


Series L, IP 50 (and IP 68)

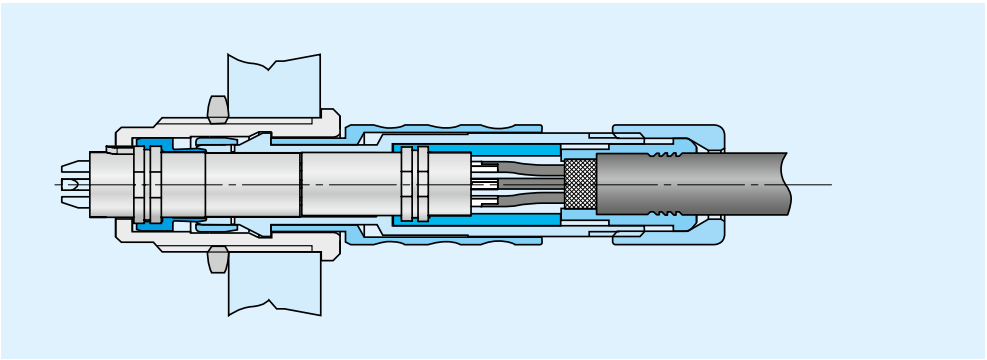
LP Locking Principle
Keying with Pin and Groove

Push-Pull Locking Principle LP

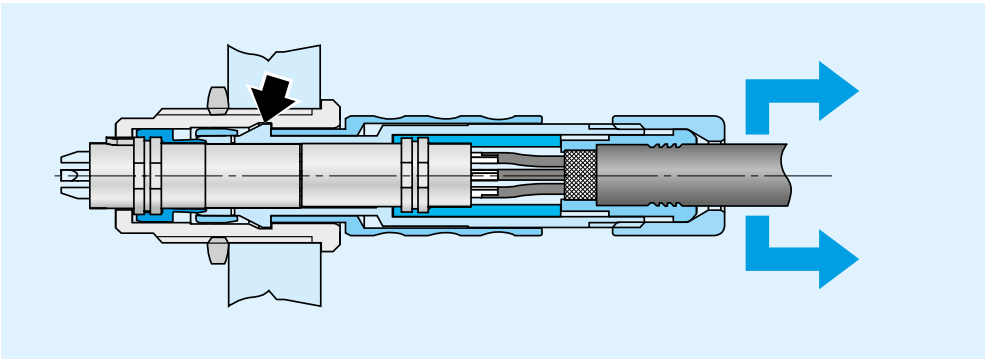
Connector in **unmated** condition.



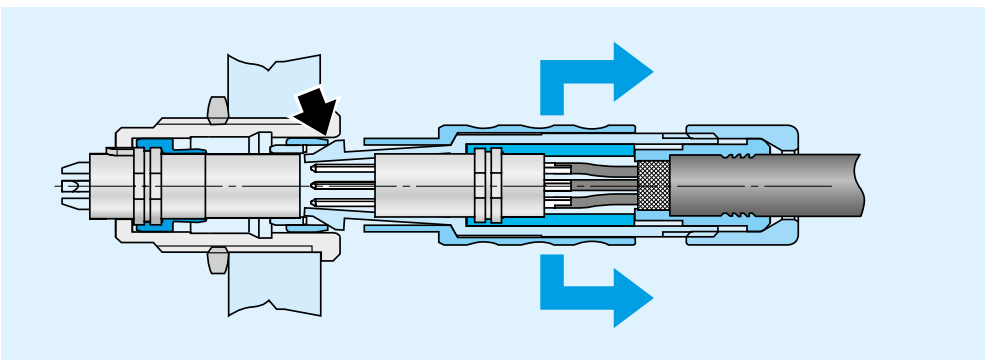
Connector in **mated** condition.



Pulling on the cable or on the back nut causes the “jaws” to grip harder into the groove in the receptacle. A separation is virtually impossible.

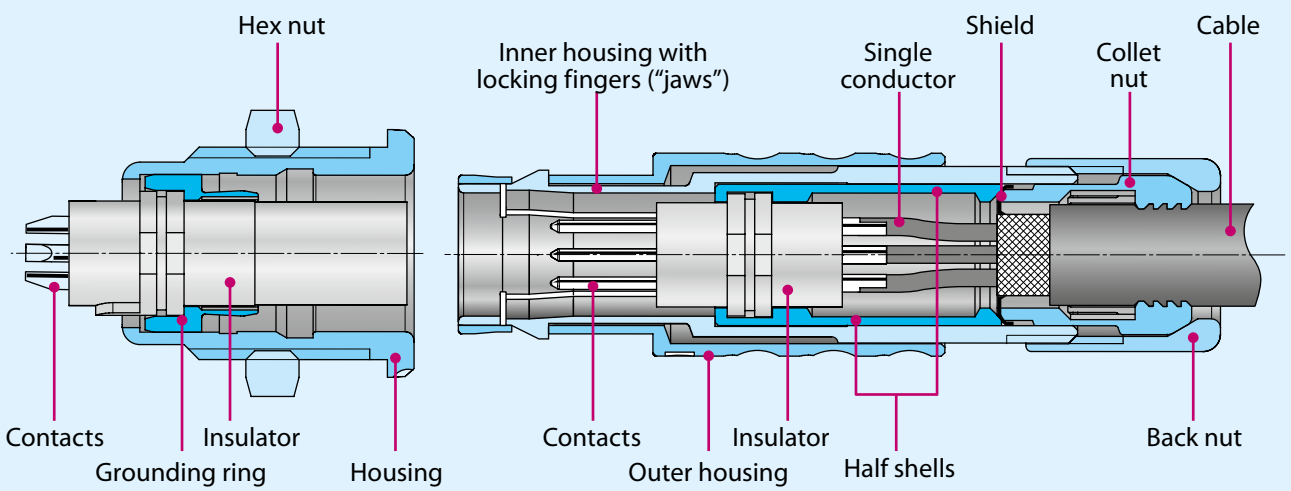


Pulling on the outer plug housing disengages the “jaws” from the receptacle groove and the connector separates easily.

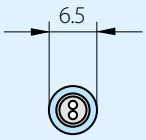
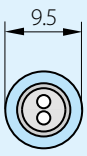
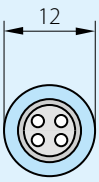


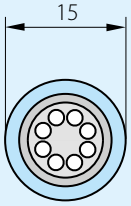
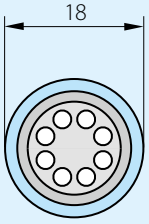
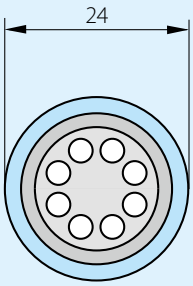
ODU MINI-SNAP L

with LP Locking Scheme in Cross Section



Available Housing Sizes

Outside diameter (Plug)	6.5	9.5	12
Scale 1 :1			
Size	00	0	1

Outside diameter (Plug)	15	18	24
Scale 1 :1			
Size	2	3	4

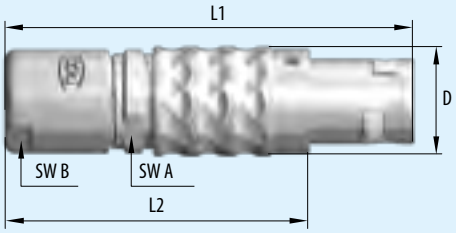
Straight Plug

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	

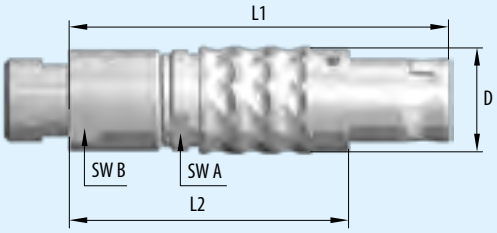
S 1

Style 1: IP 50, with standard back nut



S 2

Style 2: IP 50, with back nut for cable bend relief [1)]



	Size	Dimensions in mm				S1	S2
		L1	L2	D	SW A	SW B	SW B
C	00	~ 28.0	~ 20.0	6.4	5.5	5	5
0	0	~ 36.0	~ 26.0	9.0	8	7	7
1	1	~ 43.0	~ 32.0	11.5	10	10	10
2	2	~ 50.0	~ 38.0	14.5	13	12	13
3	3	~ 61.0	~ 46.0	17.5	15	14	15
4	4	~ 76.0	~ 58.0	25.0	21	20	20

Technical data

– Contact configuration see page 61.

[1] Cable bend reliefs have to be ordered separately (see page 92).

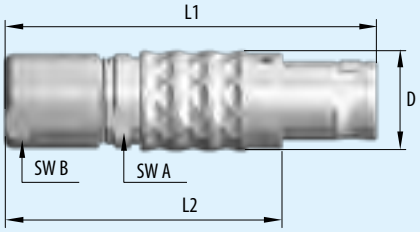
[2] only S1

Break-Away Plug (with Latching)

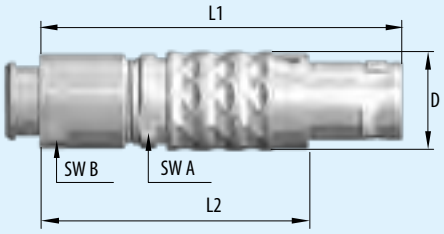
Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	

A 1 Style 1: IP 50, with standard back nut



A 2 Style 2: IP 50, with back nut for cable bend relief [1)]



	Size	Dimensions in mm				A1	A2
		L1	L2	D	SW A	SW B	SW B
C	00	~ 28.0	~ 20.0	6.4	5.5	5	5
0	0	~ 36.0	~ 26.0	9.0	8	7	7
1	1	~ 43.0	~ 32.0	11.5	10	10	10
2	2	~ 50.0	~ 38.0	14.5	13	12	13
3	3	~61.0	~46.0	17.5	15	14	15

Technical data
– Contact configuration see page 61
– Connector can be separated by pulling the cable.

[1] Cable bend reliefs have to be ordered separately (see page 92).

Panel-Mounted Plug

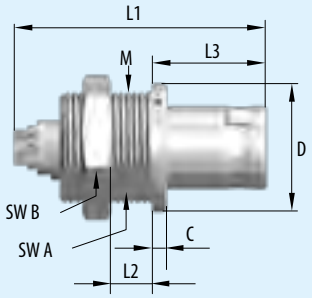
Created to Build Up a Docking Connection Between 2 Instruments (E.g. a Charging Station)

Connector type

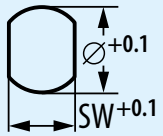
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	0

A A

Style A: IP 50, with hex nut, non-latching, installation from front of panel



Blueprint panel cut-out



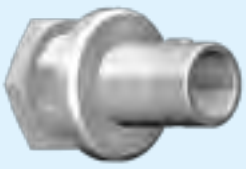
	Size	Dimensions in mm								Panel cut-out	
		L1[1)]	L2	L3	C	D	SW A	SW B	M	SW	∅
C	00	~ 17.5	~ 4.5	9.0	1.0	8.0	6.3	9	7×0.5	6.4	7.1
0	0	~ 21.0	~ 3.5	11.2	1.2	10.0	8.2	11	9×0.5	8.3	9.1
1	1	~ 26.2	~ 7.0	12.3	1.5	14.0	10.5	14	12×1	10.6	12.1
2	2	~ 27.5	~ 7.0	13.8	1.8	18.0	13.5	17	15×1	13.6	15.1
3	3	~ 34.5	~ 9.0	17.0	2.0	22.0	16.5	22	18×1	16.6	18.1
4	4	~ 37.1	~ 8.0	20.5	2.5	28.0	23.5	30	25×1	23.6	25.1

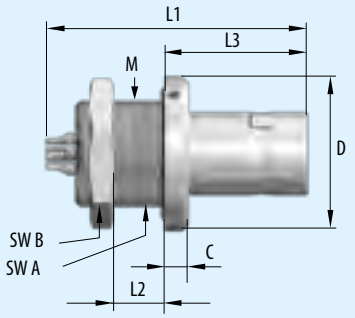
Technical data
- IP 50 in mated condition
- Anti-rotation feature
- Contact configuration and PCB layout see page 61.

[1] L1 = max. length incl. contact insert

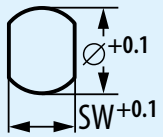
A D

Style D: IP 50, with hex nut, non-latching, installation from front of panel





Blueprint panel cut-out



	Size	Dimensions in mm								Panel cut-out	
		L1[1)]	L2	L3	C	D	SW A	SW B	M	SW	∅
0	0	~ 23.5	~ 5.5	12.0	2.0	13.0	8.2	11	9×0.5	8.3	9.1
1	1	~ 29.5	~ 8.0	13.3	2.5	17.0	10.5	14	12×1	10.6	12.1
2	2	~ 30.5	~ 7.0	14.8	2.8	19.5	13.5	17	15×1	13.6	15.1
3	3	~ 35.0	~ 7.5	18.0	3.0	24.0	16.5	22	18×1	16.6	18.1

Technical data
- IP 68 in mated and unmated condition
- Anti-rotation feature
- Contact configuration and PCB layout see page 61
- No crimp contacts possible.

[1] L1 = max. length incl. contact insert

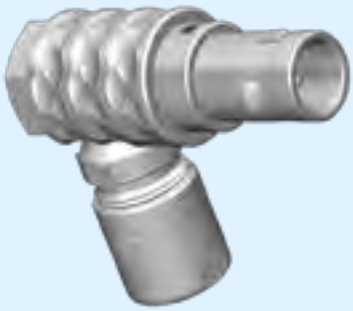
Right-Angled Plug

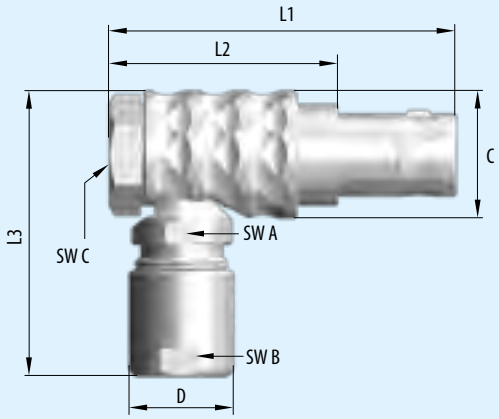
Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	

W 1

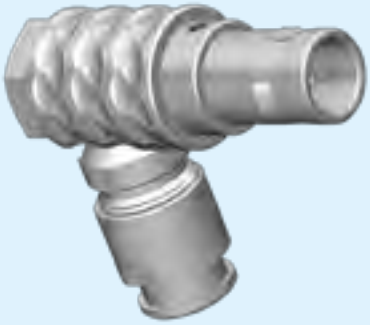
Style 1: IP 50, with standard back nut

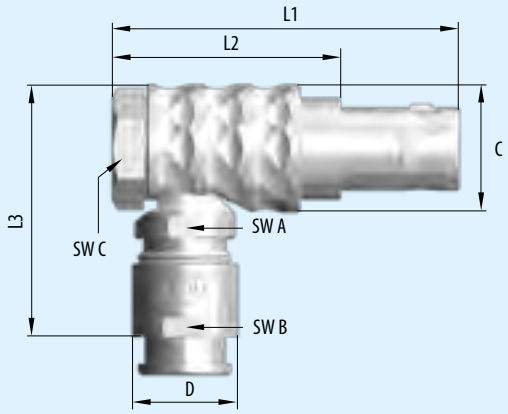




W 2

Style 2: IP 50, with back nut for cable bend relief [1)]





	Size	Dimensions in mm								
		L1	L2	L3	C	D	SW A	W1 SW B	W2 SW B	SW C
C	00	~ 24.3	16.3	~ 18.5	7.8	6.4	5.5	5	5	7
0	0	~ 30.0	20.0	~ 22.5	11.0	9.0	8	7	7	9
1	1	~ 36.0	25.0	~ 29.0	13.5	11.0	10	10	10	11
2	2	~ 41.5	29.5	~ 35.0	16.5	14.0	13	12	13	14
3	3	~ 50.0	35.0	~ 36.5	19.0	16.5	15	14	15	17
4	4	~ 65.0	47.0	~ 52.0	25.0	23.0	21	20	20	22

Technical data

– Contact configuration see page 61.

[1] Cable bend reliefs have to be ordered separately (see page 92).

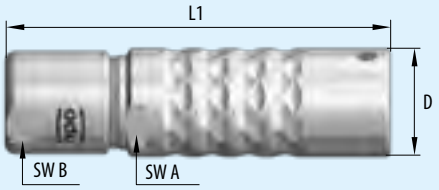
In-Line Receptacle

Connect to Plug for Cable to Cable Connection

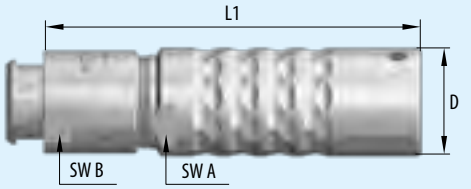
Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	

K 1 Style 1: IP 50, with standard back nut



K 2 Style 2: IP 50, with back nut for cable bend relief [1)]



	Size	Dimensions in mm				
		L1	D	SW A	K1 SW B	K2 SW B
C	00	~ 27.0	6.4	5.5	5	5
0	0	~ 35.0	9.4	8	7	7
1	1	~ 41.0	11.5	10	10	10
2	2	~ 47.0	14.5	13	12	13
3	3	~ 57.0	17.5	16	14	15
4	4	~ 74.0	23.5	21	20	20

Technical Data
– Contact configuration see page 61.

[1] Cable bend reliefs have to be ordered separately (see page 92).

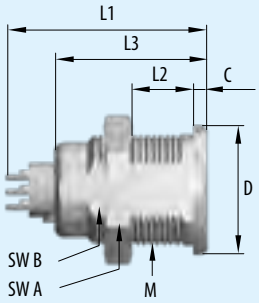
Receptacle

Connector type

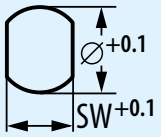
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	0

G 1

Style 1: IP 50, installation from front of panel



Blueprint panel cut-out



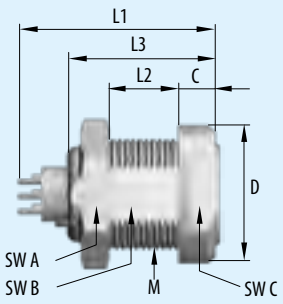
	Size	Dimensions in mm L1[1]	L2	L3[2]	M	D	SW A	SW B	C	Panel cut-out SW	∅
C	00	~ 16.0	~ 7.0	12.0	7×0.5	8.0	9.0	6.3	1.0	6.4	7.1
0	0	~ 20.0	~ 9.0	14.5	9×0.5	10.0	11.0	8.2	1.5	8.3	9.1
1	1	~ 24.0	~ 8.0	16.5	12×1	14.0	14.0	10.5	1.5	10.6	12.1
2	2	~ 27.0	~10.0	18.5	15×1	18.0	17.0	13.5	1.8	13.6	15.1
3	3	~ 30.5	~13.0	22.5	18×1	22.0	22.0	16.5	2.0	16.6	18.1
4	4	~ 35.0	~13.0	27.0	25×1	28.0	30.0	23.5	2.5	23.6	25.1

Technical data
– IP 50
– Anti-rotation feature
– Contact configuration and PCB layout see page 61.

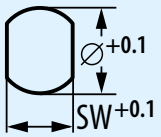
[1] L1 = max. length incl. contact insert
[2] L3 = length of housing.

G 5

Style 5: IP 50, continuous thread, installation from rear or front of panel. Front extension adjustable.



Blueprint panel cut-out



	Size	Dimensions in mm L1[1]	L2	L3[2]	M	D	SW A	SW B	SW C	C	Panel cut-out SW	∅
C	00	~16.0	~ 6.0	12.0	7×0.5	9.0	9.0	6.3	8.0	2.0	6.4	7.1
0	0	~20.0	~ 8.0	14.5	9×0.5	11.5	11.0	8.2	10.0	2.5	8.3	9.1
1	1	~24.0	~ 8.0	16.5	12×1	15.0	14.0	10.5	13.0	4.0	10.6	12.1
2	2	~27.0	~10.0	18.5	15×1	20.0	17.0	13.5	17.0	3.8	13.6	15.1
3	3	~30.5	~12.0	22.5	18×1	23.0	22.0	16.5	20.0	5.0	16.6	18.1
4	4	~35.0	~10.5	27.0	25×1	30.0	30.0	23.5	27.0	4.5	23.6	25.1

Technical data
– IP 50
– Anti-rotation feature
– Contact configuration and PCB layout see page 61.

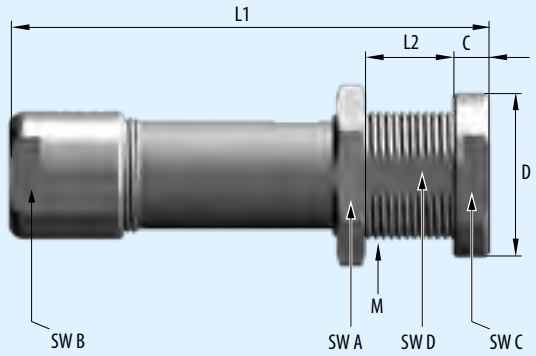
[1] L1 = max. length incl. contact insert
[2] L3 = length of housing.

Receptacle Style 6

Connector type

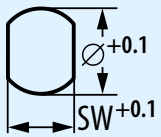
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	0
G	6																	
		0																
		1																
		2																
		3																

Style 6: IP 50, with round nut,
installation from rear or front of panel



Size	Dimensions in mm									Panel cut-out	
	L1	L2	M	D	SW A	SW B	SW C	SW D	C	SW	∅
0	~35.0	~6.0	9×0.5	11.5	11.0	7.0	10.0	8.2	2.5	8.3	9.1
1	~41.0	~5.0	12×1	15.0	14.0	10.0	13.0	10.5	4.0	10.6	12.1
2	~47.0	~6.5	15×1	20.0	17.0	12.0	17.0	13.5	3.8	13.6	15.1
3	~58.0	~9.0	18×1	23.0	22.0	14.0	20.0	16.5	5.0	16.6	18.1

Blueprint panel cut-out



Technical data

– IP 50
– Anti-rotation feature
– Contact configuration see page 61.

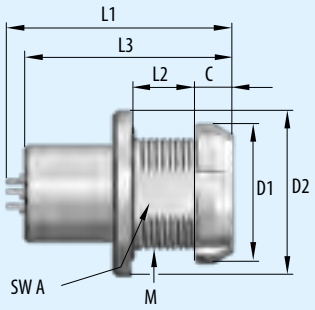
Receptacle Style 8 and A

Connector type

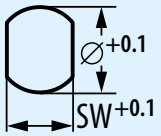
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	0

G 8

Style 8: IP 68 [3] with slotted nut, installation from rear of panel



Blueprint panel cut-out



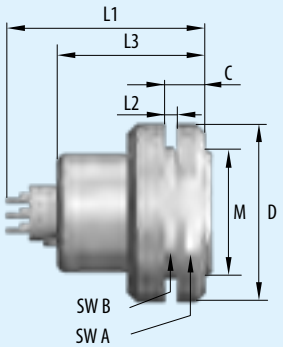
	Size	Dimensions in mm								Panel cut-out	
		L1[1]	L2	L3[2]	M	D1	D2	SW A	C	SW	∅
0	0	~22.5	~6.0	18.5	9×0.5	12.0	14.0	8.2	3.0	8.3	9.1
1	1	~27.0	~7.0	22.5	12×1	15.0	18.0	10.5	4.0	10.6	12.1
2	2	~29.5	~6.0	23.0	15×1	19.0	20.0	13.5	4.0	13.6	15.1
3	3	~32.0	~8.5	26.5	18×1	23.0	24.0	16.5	5.0	16.6	18.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Reference: potted receptacle
see page 107.

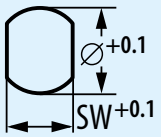
Technical data
– IP 68 to the panel in mated or unmated condition
– Anti-rotation feature
– Contact configuration and PCB layout see page 61
– Nutdriver for slotted mounting nut see page 100
– No crimp contacts possible.

G A

Style A: IP 50, with round nut, installation from rear of panel



Blueprint panel cut-out



	Size	Dimensions in mm								Panel cut-out	
		L1[1]	L2	L3[2]	M	D	SW A	SW B	C	SW	∅
1	1	~ 24.0	~ 2.0	16.5	14×1	19.0	17.0	12.0	5.0	12.1	14.1
2	2	~ 27.0	~ 2.0	18.5	16×1	22.0	19.0	15.0	5.0	15.1	16.1
3	3	~ 30.5	~ 2.0	23.5	20×1	27.0	24.0	18.0	6.0	18.1	20.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing

Technical data
– IP 50
– Anti-rotation feature
– Contact configuration and PCB layout see page 61.

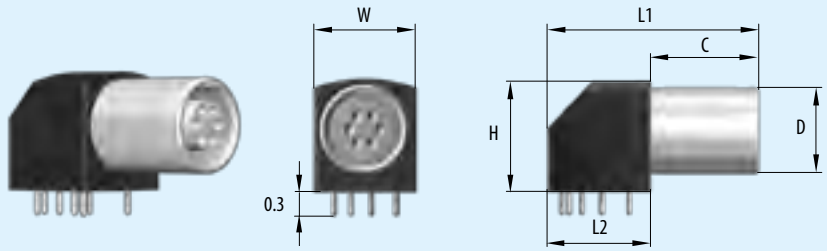
Receptacle Style F and G

Connector type

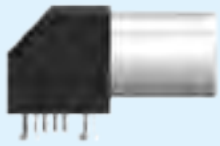
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	0

G F

Style F: right-angled (without thread), IP 50



Receptacle with screw fixing

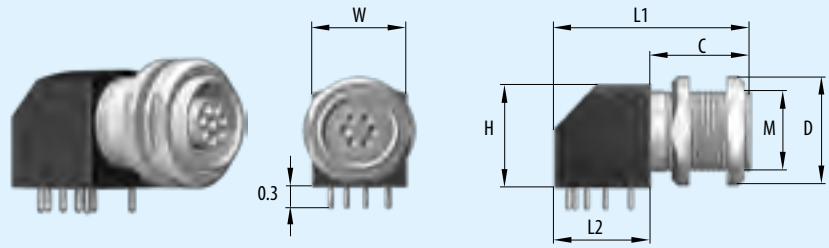


Size	Dimensions in mm						
	L1	L2	C	H	W	D	Max. positions
C 00	17.5	7.0	10.5	7.0	7.0	6.8	4
0 0	24.8	13.2	11.6	12.7	11.6	9.0	7
1 1	26.8	13.2	13.6	14.0	12.6	11.0	10

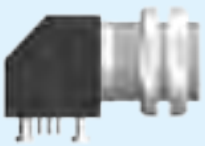
Technical data
- IP 50
- Contact configuration see page 61
- PCB layout see page 75
- Order information to the screw mounting see page 26.

G G

Style G:right-angled (with thread), IP 50



Receptacle with screw fixing



Size	Dimensions in mm							
	L1	L2	C	H	W	M	D	Max. positions
0 0	24.8	13.2	11.6	12.7	11.6	9×0.5	11.5	7
1 1	26.8	13.2	13.6	14.0	12.6	11×0.5	14.9	10

Technical data
- IP 50
- Contact configuration see page 61
- PCB layout see page 75
- Order information to the screw mounting see page 26.

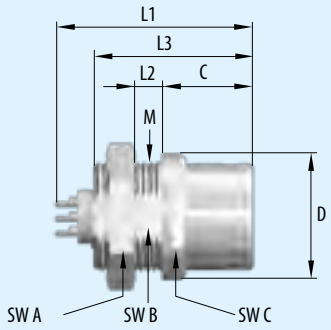
Receptacle Style H and K

Connector type

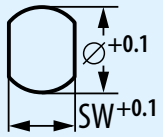
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	0

G H

Style H: IP 50, with low rear profile



Blueprint panel cut-out



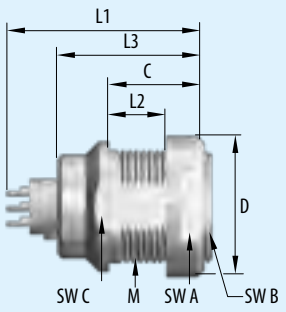
Size	Dimensions in mm									Panel cut-out	
	L1[1]	L2	L3[2]	M	D	SW A	SW B	SW C	C	SW	∅
C 00	~16.0	~2.5	12.5	7×0.5	9.0	9.0	6.3	8.0	8.0	6.4	7.1
0 0	~20.0	~4.0	15.0	9×0.5	11.5	11.0	8.2	10.0	9.0	8.3	9.1
1 1	~24.0	~4.5	17.5	12×1	14.0	14.0	10.5	12.0	10.0	10.6	12.1
2 2	~27.0	~6.0	19.5	15×1	18.0	17.0	13.5	16.0	11.0	13.6	15.1
3 3	~30.5	~6.0	22.5	18×1	22.0	22.0	16.5	–	12.5	16.6	18.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing

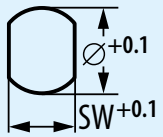
Technical data
– IP 50
– Anti-rotation feature
– Contact configuration and PCB layout see page 61.

G K

Style K: IP 50, with round nut, installation from rear of panel



Blueprint panel cut-out



Size	Dimensions in mm									Panel cut-out	
	L1[1]	L2	L3[2]	M	D	SW A	SW B	SW C	C	SW	∅
0 0	~20.0	~3.8	14.5	9×0.5	11.5	10.0	8.2	9.0	6.3	8.3	9.1
1 1	~24.0	~7.0	16.5	12×1	15.0	13.0	10.5	13.0	11.0	10.6	12.1
2 2	~27.0	~5.0	18.5	15×1	20.0	17.0	13.5	15.0	9.0	13.6	15.1
3 3	~30.5	~7.0	22.5	18×1	23.0	20.0	16.5	20.0	12.0	16.6	18.1
4 4	~35.0	~10.0	27.0	25×1	30.0	27.0	23.5	27.0	14.5	23.6	25.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing

Technical data
– IP 50
– Anti-rotation feature
– Contact configuration and PCB layout see page 61.

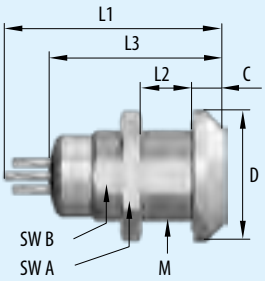
Receptacle Style L and P

Connector type

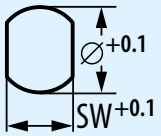
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	0

G L

Style L: IP 68 [3], installation from front of panel



Blueprint panel cut-out



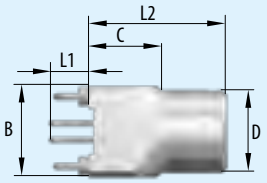
	Size	Dimensions in mm								Panel cut-out	
		L1[1]	L2	L3[2]	M	D	SW A	SW B	C	SW	∅
C	00	~18.0	~8.0	14.5	7×0.5	11.0	9.0	6.3	1.5	6.4	7.1
0	0	~22.5	~7.5	16.5	9×0.5	13.0	11.0	8.2	3.0	8.3	9.1
1	1	~27.0	~9.0	21.5	12×1	16.0	14.0	10.5	4.5	10.6	12.1
2	2	~29.5	~8.0	24.5	15×1	20.0	17.0	13.5	4.0	13.6	15.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Reference: Potted receptacle see page 107.

Technical data
– IP 68 to the panel in mated or unmated condition
– Anti-rotation feature
– Contact configuration and PCB layout see page 61
– No crimp contacts possible.

G P

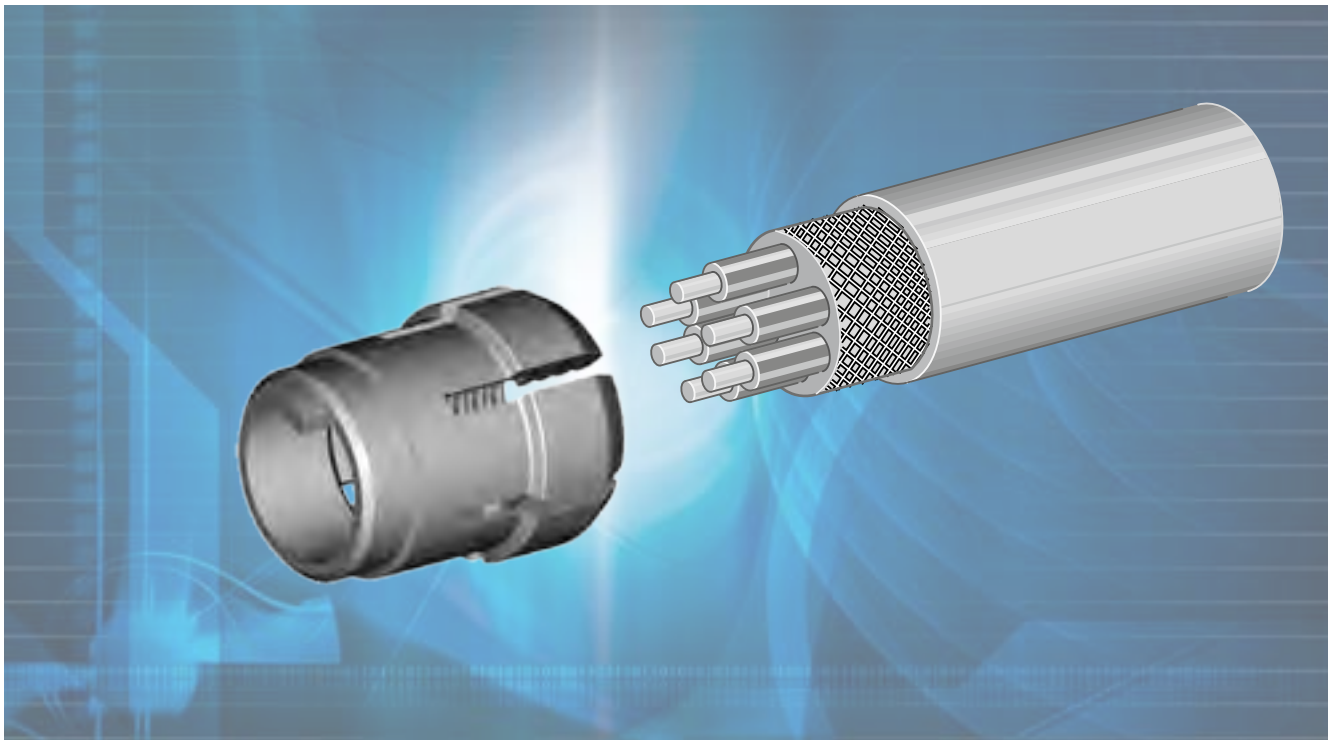
Style P: PCB Version IP 50



	Size	Dimensions in mm				
		L1	L2	B	C	D
0	0	4.5	15.0	10.0	8.0	9.0
1	1	3.6	19.0	12.0	8.0	11.0

Technical data
– IP 50
– Contact configuration see page 61
– PCB layout on request.

Details for the Part Number Key Series L



Keyings

Housing Materials / Surfaces

Collet System

Bend Protection Sleeves

Keying Possibilities

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	

Angle	Keying	Receptacle front view	Size					
			00	0	1	2	3	4
0°	0		●	●	●	●	●	●
0°	0							
30°	A		●	●	●	●	●	❍
37.5°	B					●	●	❍
45°	C					●	●	❍
–45°	C		●	●	●			
60°	F		●	●	●	●	●	❍
90°	J			●	●			
95°	K					●	●	❍
120°	Q					●	●	❍
135°	V			❍	●			
145°	W			❍	❍	●	❍	❍
155°	Y			●	●			

● Standard
❍ On request

Housing Material

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	

	Housing material	
Standard	C	Cu-alloy / matt chromate
	S	Cu-alloy / black chromate

Special materials and surfaces on request.

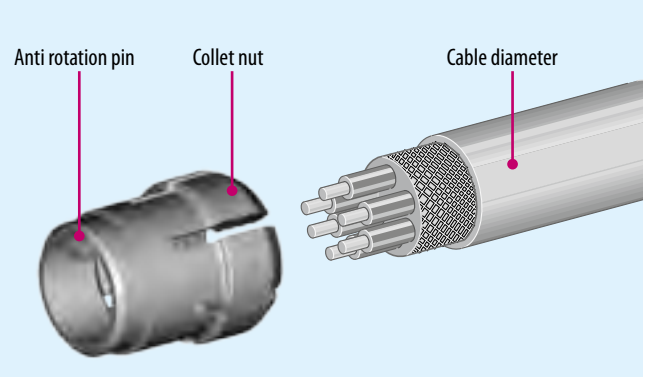
Collet System

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	

Cable diameter in mm	Size 00	0	1	2	3	4		
> 0.5 – 1.0	●						1	0
> 1.0 – 1.5	●						1	5
> 1.5 – 2.0	●						2	0
> 1.5 – 2.2		●	●				2	2
> 2.0 – 2.5	●						2	5
> 2.5 – 3.0	●						3	0
> 2.0 – 3.2		●	●	●			3	2
> 3.0 – 3.5	●*						3	5
> 3.0 – 4.2		●	●	●	●		4	2
> 4.0 – 5.2		●*	●	●	●		5	2
> 5.0 – 5.6		●*					5	6
> 5.0 – 6.2			●	●	●	●	6	2
> 6.0 – 7.2			●*	●	●	●	7	2
> 7.0 – 7.7			●*				7	7
> 7.0 – 8.0						●	8	0
> 7.0 – 8.2				●	●		8	2
> 8.0 – 9.2				●*	●	●	9	2
> 9.0 – 9.9				❍*			9	9
> 9.0 – 10.2					●		0	2
> 9.1 – 10.5						●	0	2
> 10.0 – 11.0						●	1	1
> 10.0 – 11.2					●*		1	2
> 11.0 – 11.9					❍*	●	1	9
> 12.0 – 13.0						●	1	3
> 13.0 – 14.0						●	1	4
> 14.0 – 15.0						●*	1	5
> 15.0 – 16.0						●*	1	6
without collet system							0	0

❍ Reference: This diameters are not deliverable for applications with cable bend relief.

Useable for all plugs and in-line receptacles and receptacle style 6.
Application: Collet nut for strain relief.



* It's possible that the collet nut cannot be covered completely over the cable.

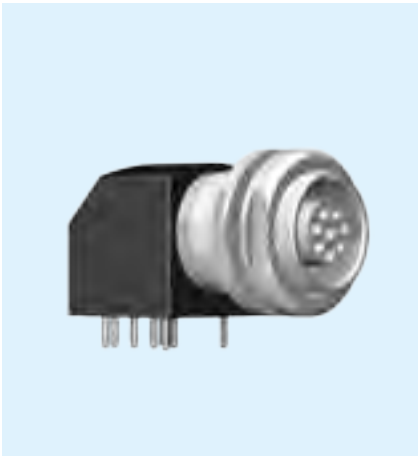
Right-Angled Print Contacts in the Receptacle

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–				Q		0	0	–			0	0

Right-angled print contact **A**

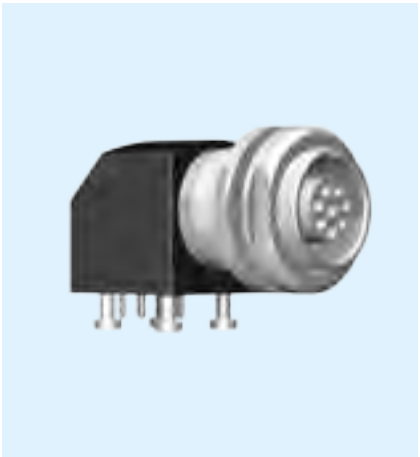
Technical data
– PCB layout
see page 75
– Pin version on request

Receptacle style F and G with 4 solder pins
(see page 20) **0**



Technical data
– Pin version on request

Receptacle style F and G for screw mounting
(see page 20) **S**



Technical data
– Max. tightening torque of the screws
M1.4 : 0.1 Nm

Definition of the Back Nut

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			L			–								–			0	

Standard back nut **0**

Back nut for silicone cable bend reliefs **S**

Useable for all straight-angled Break-Away plugs, in-line receptacles, receptacles style 6.

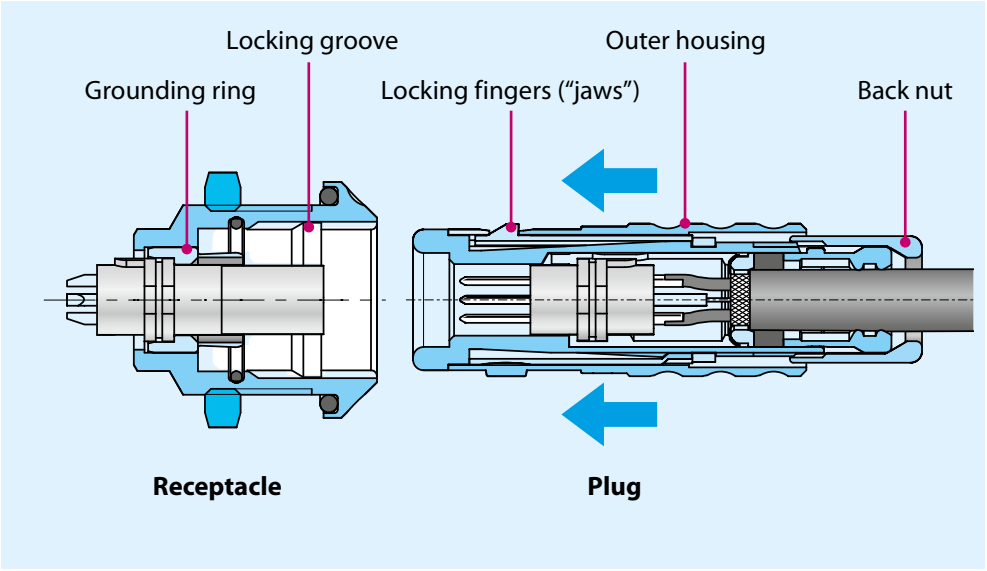
Cable bend reliefs see page 92.

Series K, IP 68

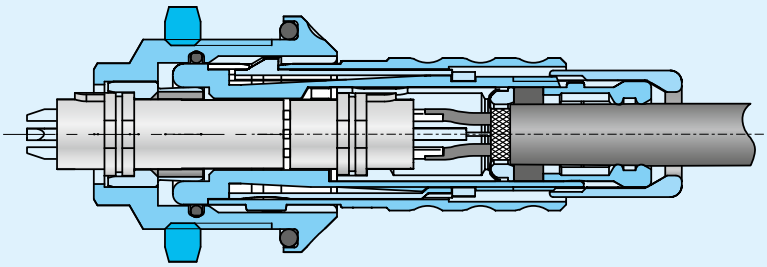
LP Locking Principle
Keying with Pin and Groove

Push-Pull Locking Principle LP

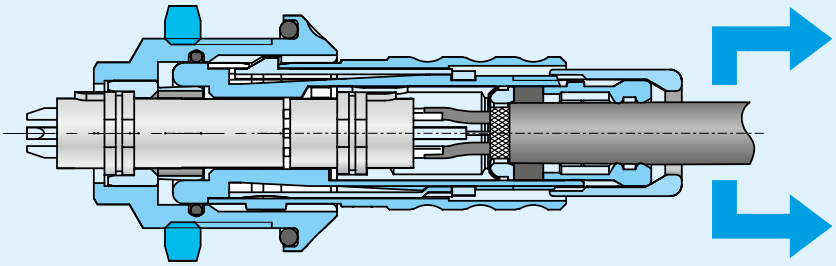
Connector in **unmated** condition.



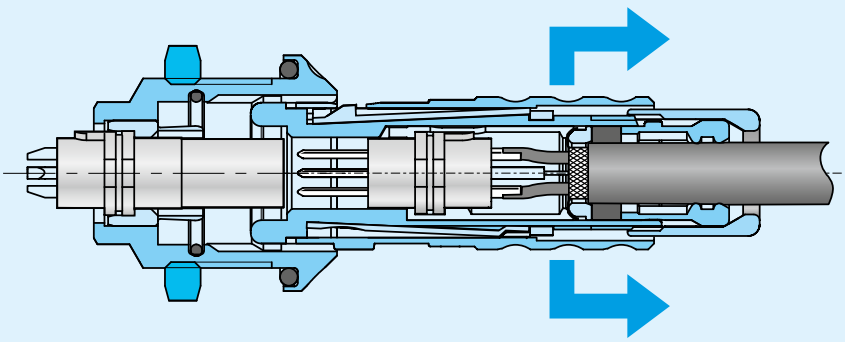
Connector in **mated** condition.



Pulling on the cable or on the back nut causes the “jaws” to grip harder into the groove in the receptacle. A separation is virtually impossible.

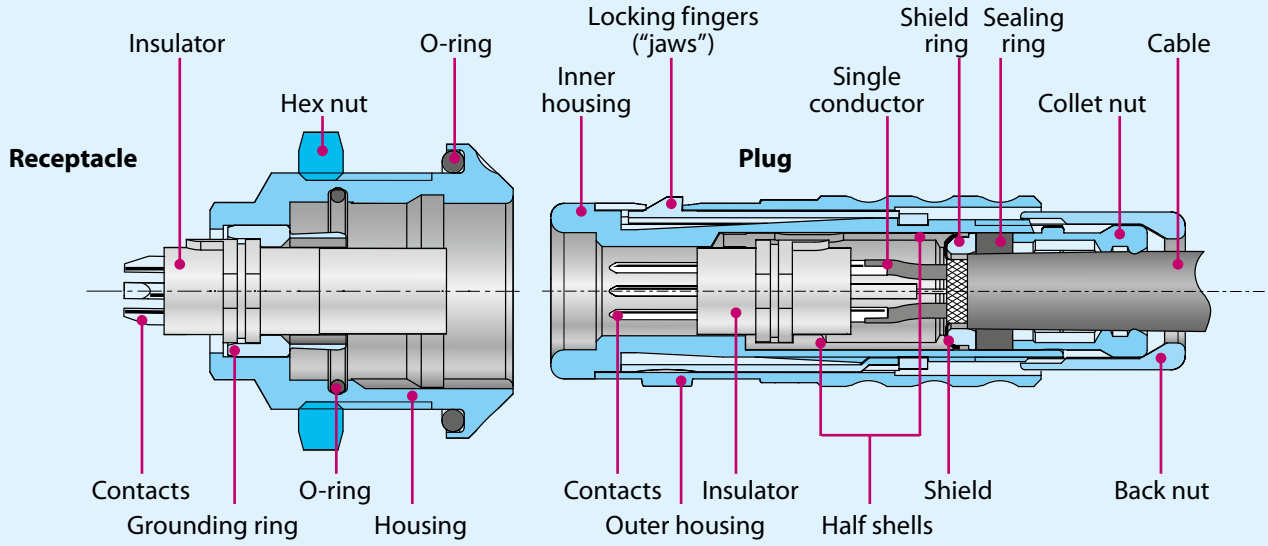


Pulling on the outer plug housing disengages the “jaws” from the receptacle groove and the connector separates easily.



ODU MINI-SNAP K

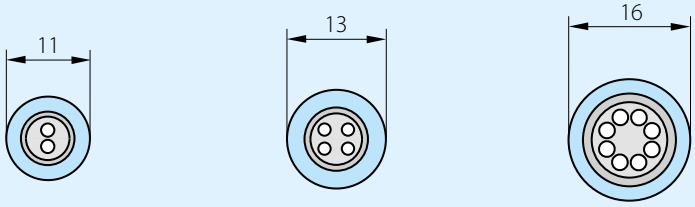
with LP Locking Scheme in Cross Section



Available Housing Sizes

Outside diameter (Plug)

Scale 1:1

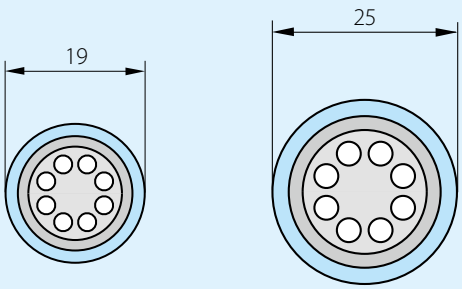


Size

0 1 2

Outside diameter (Plug)

Scale 1:1



Size

3 4

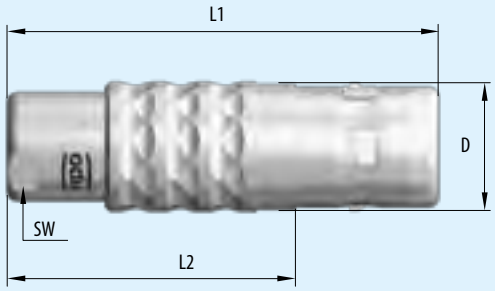
Straight Plug

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	

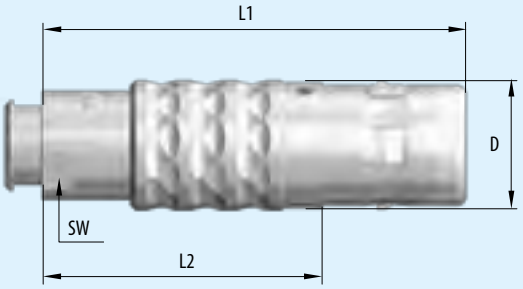
S 1

Style 1: IP 68, with standard back nut



S 2

Style 2: IP 68, with back nut for cable bend relief [1)]



	Size	Dimensions in mm			S1	S2
		L1	L2	D	SW B	SW B
0	0	~ 37.0	~26.0	11.0	7	7
1	1	~ 44.0	~30.0	13.0	10	10
2	2	~ 50.0	~34.0	16.0	12	13
3	3	~ 60.0	~40.0	19.0	14	15
4	4	~ 73.0	~52.0	25.0	20	20

Technical data

– Contact configuration see page 61.

[1] Cable bend reliefs have to be ordered separately (see page 92).

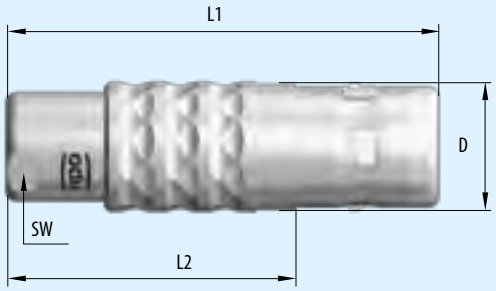
Break-Away Plug

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	

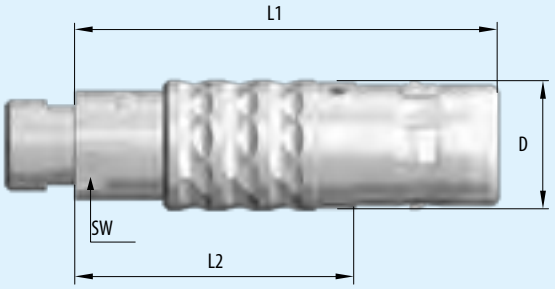
A 1

Style 1: IP 68, with standard back nut



A 2

Style 2: IP 68, with back nut for cable bend relief [1)]



	Size	Dimensions in mm L1	L2	D	A1 SW	A2 SW
0	0	~ 37.0	~ 26.0	11.0	7	7
1	1	~ 44.0	~ 30.0	13.0	10	10
3	3	~ 60.0	~ 40.0	19.0	14	15

Technical data
– Contact configuration see page 61
– Connector can be separated by pulling the cable.

[1] Cable bend reliefs have to be ordered separately (see page 92).

Panel-Mounted Plug

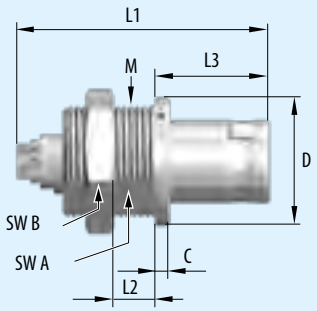
Created to Build Up a Docking Connection Between 2 Instruments (E.g. a Charging Station)

Connector type

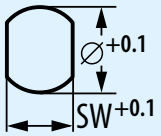
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	0

A **A**

Style A: IP 68, with hex nut, non-latching, installation from front of panel



Blueprint panel cut-out



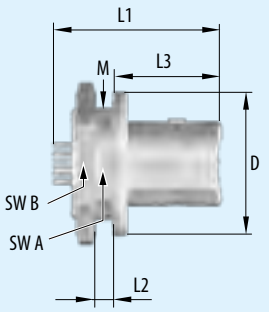
Size	Dimensions in mm							Panel cut-out	
	L1[1)]	L2	L3	M	D	SW A	SW B	SW	∅
1 1	28.0	~ 4.0	16.3	16 × 1	20.0	14.5	18.5	14.6	16.1
2 2	32.0	~ 4.5	19.0	20 × 1	25.0	18.5	25.0	18.6	20.1

[1] L1 = max. length incl. contact insert

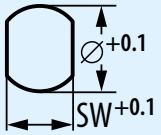
Technical data
- IP 68 in mated condition
- Anti-rotation feature
- Contact configuration and PCB layout see page 61.

A **D**

Style D: IP 68, with hex nut, non-latching, installation from front of panel



Blueprint panel cut-out



Size	Dimensions in mm							Panel cut-out	
	L1[1)]	L2	L3	M	D	SW A	SW B	SW	∅
3 3	36.0	~ 4.0	23.2	24 × 1.0	31.0	22.5	30	22.6	24.1

[1] L1 = max. length incl. contact insert

Technical data
- IP 68 in mated and unmated condition
- Anti-rotation feature
- Crimp contacts not possible
- Contact configuration and PCB layout see page 61.

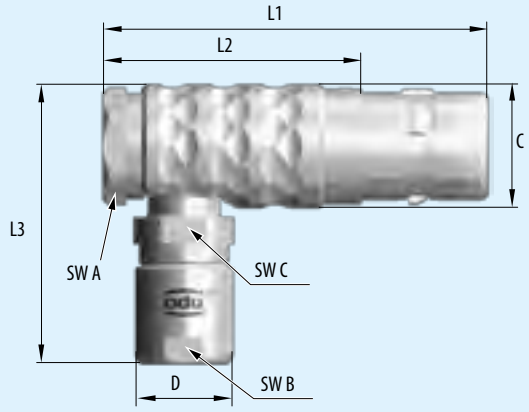
Right-Angled Plug

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	

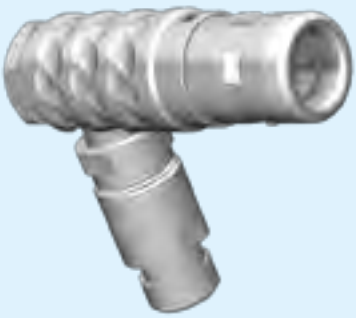
W 1

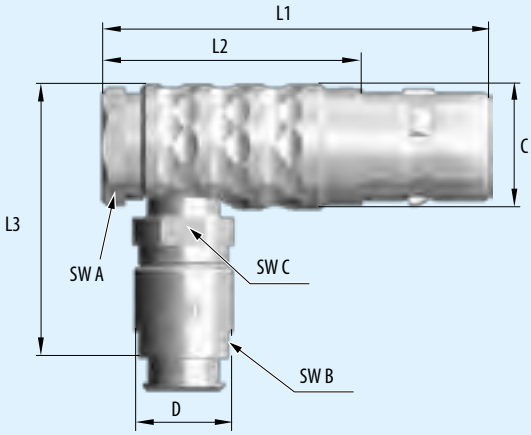
Style 1: IP 68, with standard back nut



W 2

Style 2: IP 68, with back nut for cable bend relief [1)]





	Size	Dimensions in mm								
		L1	L2	L3	C	D	SW A	W1 SW B	W2 SW B	SW C
0	0	~34.7	23.2	~27.0	11.6	9.0	10	7	7	8
1	1	~43.0	28.7	~34.0	14.0	11.0	12	10	10	10
2	2	~51.0	34.7	~36.0	17.5	14.0	15	12	13	13
3	3	~61.0	40.8	~41.0	20.0	16.5	18	14	15	15

Technical data
– Contact configuration see page 61.

[1] Cable bend reliefs have to be ordered separately (see page 92).

In-Line Receptacle

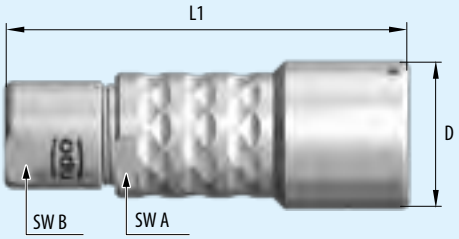
Connect to Plug for Cable to Cable Connection

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	

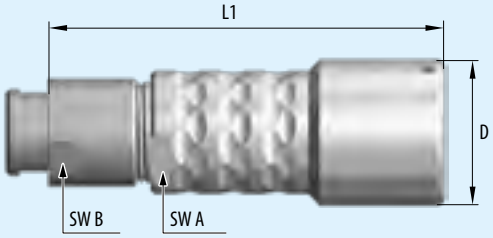
K 1

Style 1: IP 68, with standard back nut



K 2

Style 2: IP 68, with back nut for cable bend relief [1)]



	Size	Dimensions in mm				
		L1	D	SW A	K1 SW B	K2 SW B
0	0	~ 39.0	13.0	9.0	7	7
1	1	~ 47.0	15.0	11.0	10	10
2	2	~ 54.0	19.0	14.0	12	13
3	3	~ 64.0	23.0	16.5	14	15
4	4	~ 79.0	29.0	22.0	20	20

Technical Data
– Contact configuration see page 61.

[1] Cable bend reliefs have to be ordered separately (see page 92).

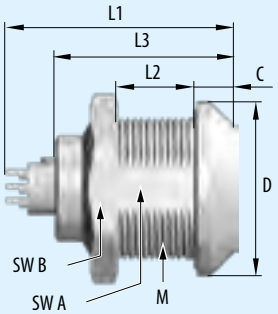
Receptacle

Connector type

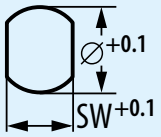
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	0

G 1

Style 1: IP 68, installation from front of panel



Blueprint panel cut-out



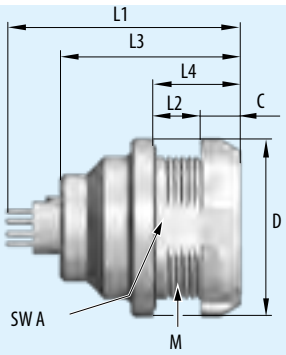
	Size	Dimensions in mm								Panel cut-out	
		L1[1]	L2	L3[2]	M	D	SW A	SW B	C	SW	∅
0	0	~21.0	~5.5	15.5	14×1	18.0	12.5	17.0	4.0	12.6	14.1
1	1	~28.0	~9.0	20.5	16×1	20.0	14.5	19.0	4.5	14.6	16.1
2	2	~31.0	~9.0	23.0	20×1	25.0	18.5	24.0	5.0	18.6	20.1
3	3	~36.0	~11.0	28.0	24×1	31.0	22.5	30.0	6.0	22.6	24.1
4	4	~40.0	~11.0	31.5	30×1	37.0	28.5	36.0	6.5	28.6	30.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing

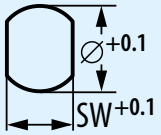
Technical data
– IP 68 in mated condition
– Anti-rotation feature
– Contact configuration and PCB layout see page 61.

G 3

Style 3: IP 68 with slotted mounting nut, installation from rear of panel



Blueprint panel cut-out



	Size	Dimensions in mm								Panel cut-out	
		L1[1]	L2	L3[2]	L4	M	D	C	SW A	SW	∅
0	0	~ 21.0	~ 3.0	15.5	7.0	14×1	18.0	4.0	12.5	12.6	14.1
1	1	~ 28.0	~ 6.0	20.5	10.0	16×1	20.0	3.5	14.5	14.6	16.1
2	2	~ 31.0	~ 6.0	23.0	10.0	20×1	25.0	3.5	18.5	18.6	20.1
3	3[3]	~ 36.0	~ 7.5	28.0	12.0	24×1	31.0	4.5	22.5	22.6	24.1
4	4	~ 40.0	~ 6.5	31.5	13.5	30×1	41.5	7.0	28.5	28.6	30.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Reference: size 3 with round nut SW 27.

Technical data
– IP 68 in mated condition
– Anti-rotation feature
– Contact configuration and PCB layout see page 61
– Nutdriver see page 100.

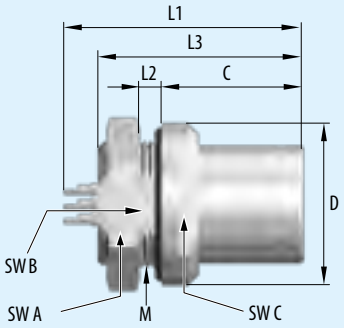
Receptacle

Connector type

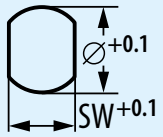
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	0

G 4

Style 4: IP 68 [3], installation from front of panel with low rear profile



Blueprint panel cut-out



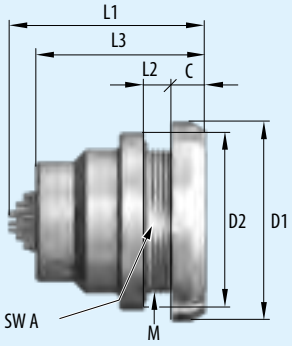
	Size	Dimensions in mm									Panel cut-out	
		L1[1]	L2	L3[2]	M	D	SW A	SW B	SW C	C	SW	∅
1	1	~ 28.0	~ 1.5	20.5	16×1	20.0	19	14.5	17.0	15.5	14.6	16.1
2	2	~ 31.0	~ 2.0	23.0	20×1	25.0	24	18.5	20.0	17.0	18.6	20.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Reference: Potted receptacle see page 107.

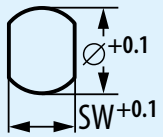
Technical data
– IP 68 in mated und unmated condition
– Anti-rotation feature
– Contact configuration and PCB layout see page 61
– No crimp contacts possible.

G 8

Style 8: IP 68, with slotted mounting nut, installation from rear of panel



Blueprint panel cut-out



	Size	Dimensions in mm								Panel cut-out	
		L1[1]	L2	L3[2]	M	D1	D2	SW A	C	SW	∅
1	1	~ 32.0	~ 6.0	26.6	16×1	20.0	20.0	14.5	3.5	14.6	16.1
2	2	~ 34.0	~ 6.0	27.0	20×1	25.0	25.0	18.5	3.5	18.6	20.1
3	3[3]	~ 39.0	~ 7.0	32.7	24×1	30.0	31.0	22.5	4.5	22.6	24.1
4	4	~ 42.0	~ 6.0	35.5	30×1	41.5	37.0	28.5	7.0	28.6	30.1

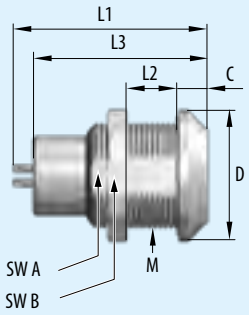
[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Reference: size 3 with round nut SW 27.

Technical data
– IP 68 in mated and unmated condition
– Anti-rotation feature
– Crimp contacts not possible
– Contact configuration see page 61.

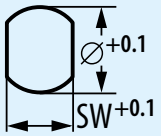
Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	0
G	L																	
		0																
		1																
		2																

Style L: IP 68, installation from front of panel



Blueprint panel cut-out

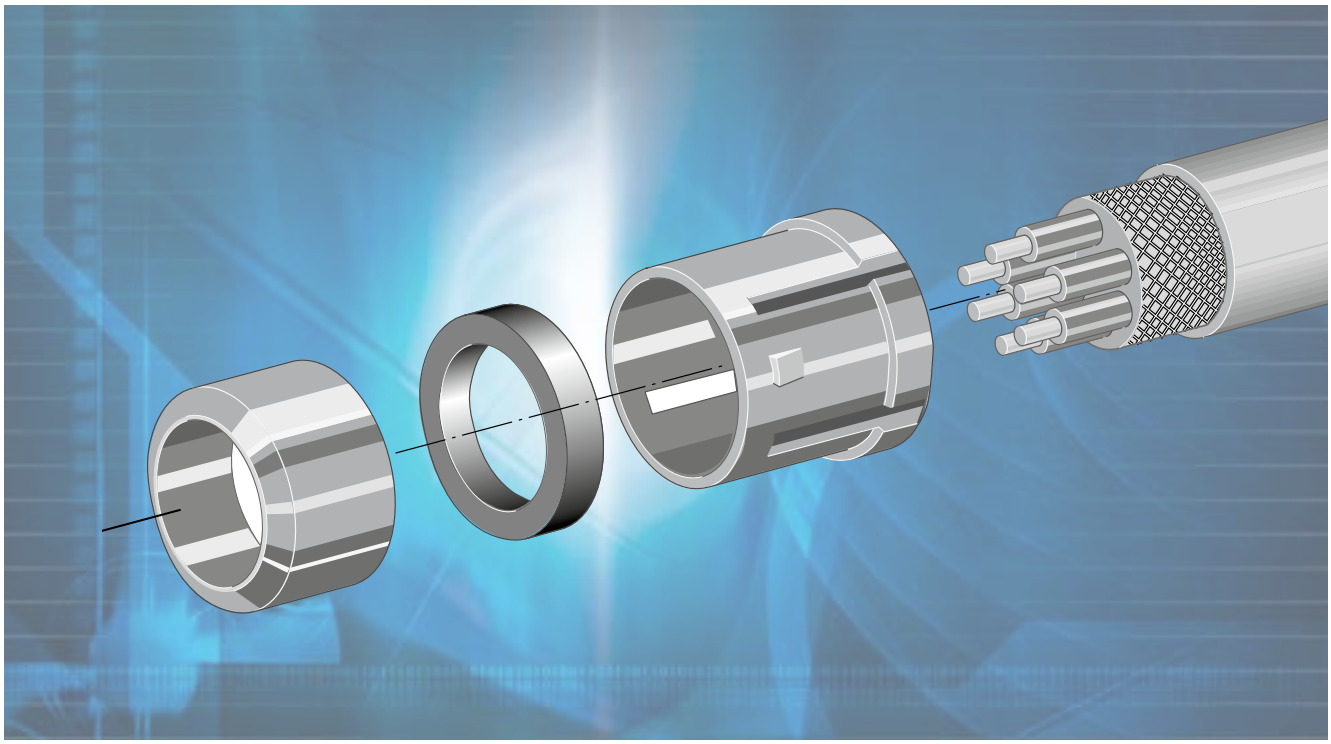


Size	Dimensions in mm								Panel cut-out	
	L1[1]	L2	L3[2]	M	D	C	SW A	SW B	SW	∅
0	~ 24.0	~ 5.0	19.7	14 × 1	18.0	4.0	12.5	17	12.6	14.1
1	~ 32.0	~ 9.0	26.6	16 × 1	20.0	4.5	14.5	19	14.6	16.1
2	~ 32.0	~ 9.0	27.0	20 × 1	25.0	5.0	18.5	24	18.6	20.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing

Technical data
– IP 68 in mated and unmated condition
– Anti-rotation feature
– Crimp contacts not possible
– Contact configuration see page 61.

Details for the Part Number Key Series K



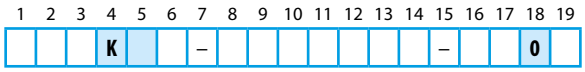
Keyings

Housing Materials

Collet System

Cable Bend Reliefs

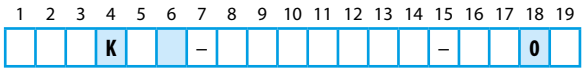
Keying Possibilities



Angle	Keying	Receptacle front view	0	1	2	3	4
0°	0		●	●	●	●	●
30°	A		●	●	●	❍	❍
45°	C		●	●	●	❍	❍
60°	F		●	●	●	❍	❍
75°	H		❍	❍	❍	❍	❍
95°	K		❍	❍	❍	❍	❍
120°	Q		❍	❍	❍	❍	❍
145°	W		❍	❍	❍	❍	❍

● Standard
❍ On Request

Housing Material



	Housing material	
Standard	C	Cu-alloy / matt chromate
	S	Cu-alloy / black chromate

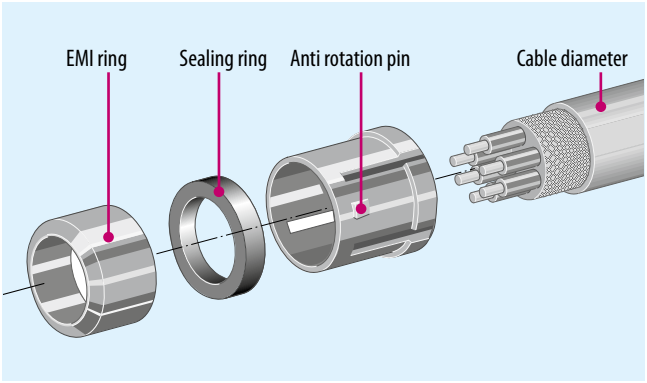
Special materials and surfaces on request.

Collet System

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	

Useable for all plugs and in-line receptacles and receptacles.
Application: Collet nut for strain relief.

Cable diameter in mm	Size 0	1	2	3	4		
> 1.0 – 1.5		●				1	5
> 1.5 – 2.0	●	●				2	0
> 2.0 – 2.5	●	●				2	5
> 2.5 – 3.0	●	●	●			3	0
> 3.0 – 3.5	●	●	●	●		3	5
> 3.5 – 4.0	●	●	●	●		4	0
> 4.0 – 4.5	●	●	●	●		4	5
> 4.5 – 5.0	●	●	●	●		5	0
> 5.0 – 5.5		●	●	●		5	5
> 5.5 – 6.0		●	●	●		6	0
> 6.0 – 6.5		●	●	●		6	5
> 6.5 – 7.0		●	●	●		7	0
> 7.0 – 7.5			●	●	●	7	5
> 7.5 – 8.0			●	●		8	0
> 8.0 – 8.5			●	●	●	8	5
> 8.5 – 9.0			●	●		9	0
> 9.0 – 9.5				●	●	9	5
> 9.5 – 10.0				●		0	1
> 10.0 – 10.5				●	●	0	2
> 10.5 – 11.5					●	0	3
> 13.5 – 14.0					●	1	4
Without collet system						0	0



Right-Angled Print Contacts in the Receptacle

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–				Q		0	0	–			0	0

Right-angled print contact

A

Technical data
– PCB layout
see page 76
– Pin version on request.

Definition of the Back Nut

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			K			–								–			0	

Straight-angled Break-Away plugs, in-line receptacles, receptacles style 6 and 7

Standard back nut **0**

Back nut for silicone cable bend reliefs **S**

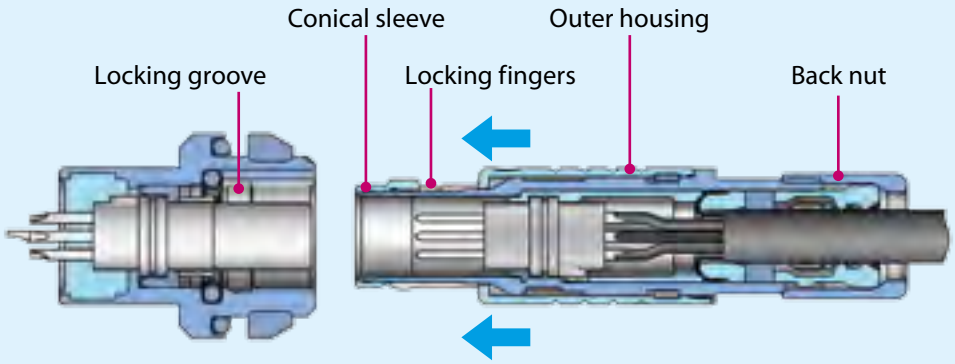
Cable bend reliefs see page 92.

Series B, IP 68

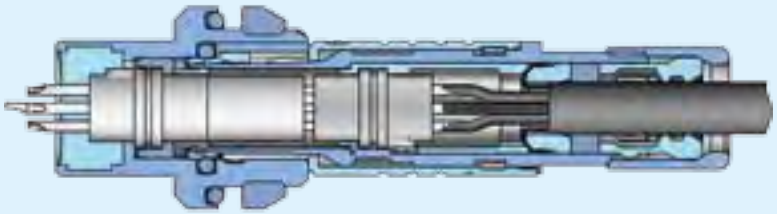
FP Locking Principle
Keying with Pin and Groove

Push-Pull Locking Principle FP

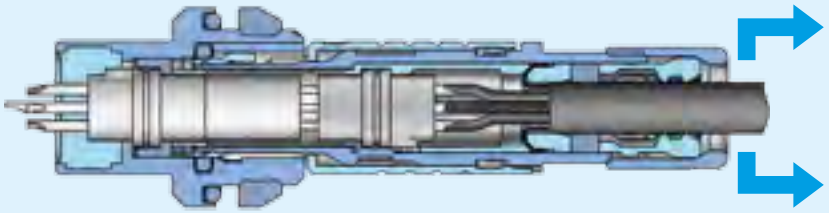
Connector in **unmated** condition.



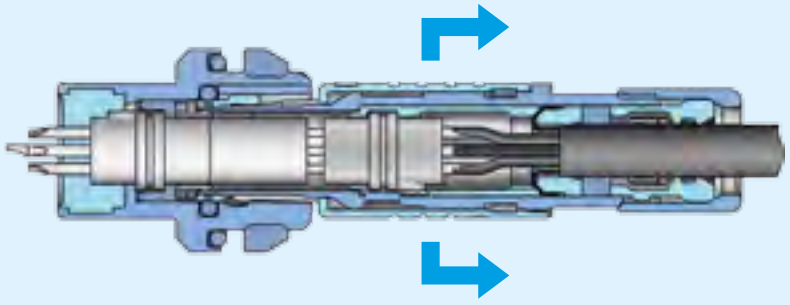
Connector in **mated** condition.



Pulling on the cable or on the back nut causes the locking fingers to grip tighter into the groove inside the receptacle. A separation is virtually impossible.

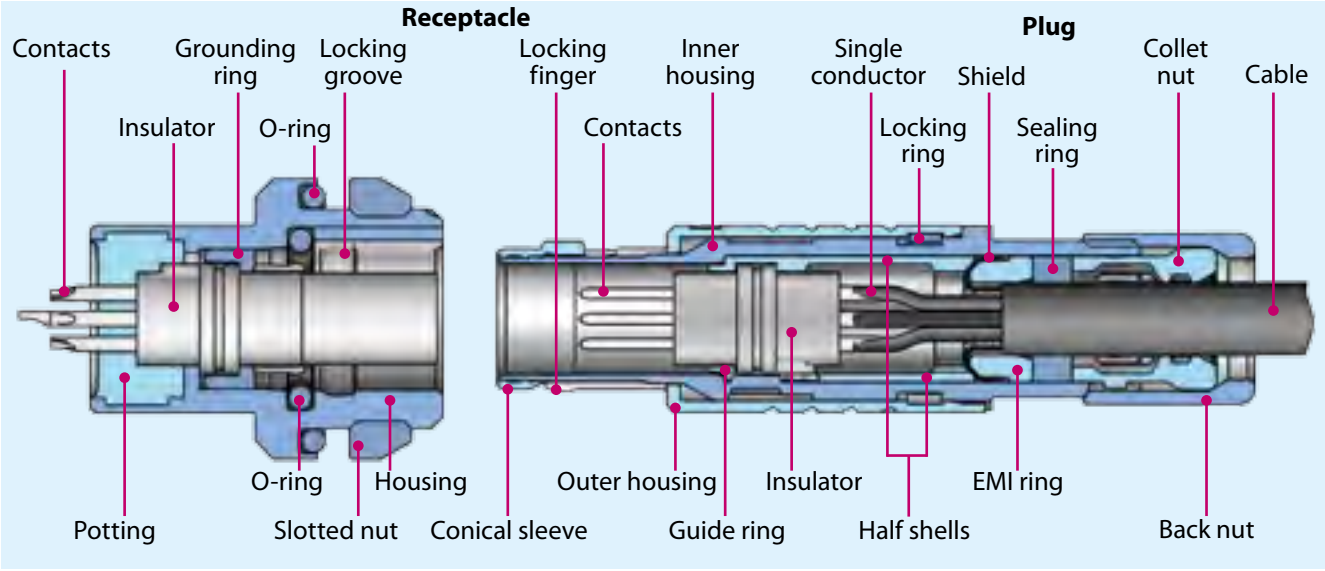


Pulling on the outer plug housing disengages the locking fingers from the receptacle groove and the connector separates easily.

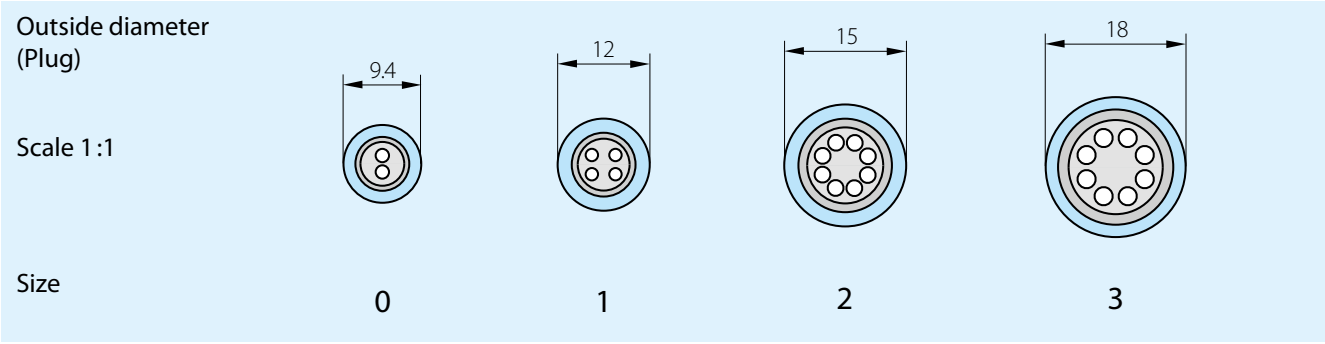


ODU MINI-SNAP B

with FP Locking Scheme in Cross Section



Available Housing Sizes



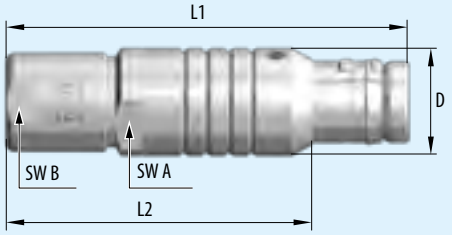
Straight Plug

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	

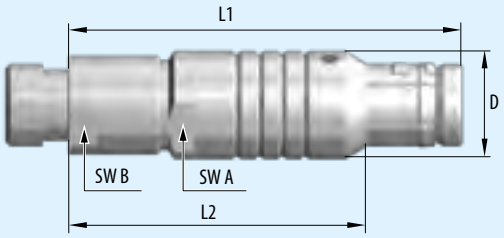
S 3

Style 3: IP 68 with standard back nut



S 4

Style 4: IP 68 with back nut for cable bend relief [1)]



	Size	Dimensions in mm					
		L1	L2	D	SW A	S3 SW B	S4 SW B
0	0	~ 40.0	~30.0	9.4	8	7	7
1	1	~ 49.0	~38.0	12.0	10	10	10
2	2	~ 53.0	~41.0	15.0	13	12	13
3	3	~ 61.0	~46.0	18.0	16	15	15

Technical data

– Contact configuration see page 61.

[1] Cable bend reliefs have to be ordered separately (see page 92).

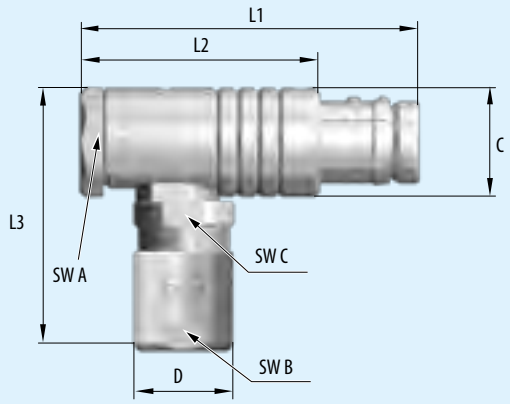
Right-Angled Plug

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	

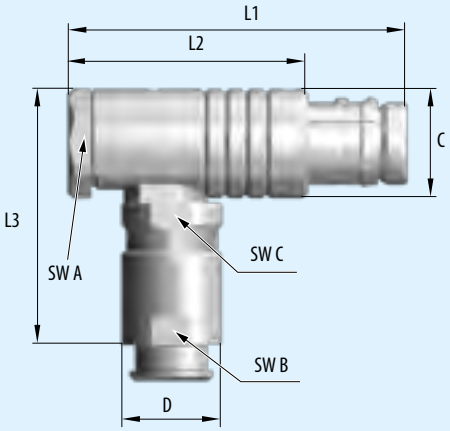
W 3

Style 3: IP 68 with standard back nut



W 4

Style 4: IP 68 with back nut for cable bend relief [1)]



	Size	Dimensions in mm						W3	W4	
		L1	L2	L3	C	D	SW A	SW B	SW B	SW C
0	0	~ 34.3	24.3	~ 30.0	12.0	9.0	10	7	7	8
1	1	~ 42.2	31.4	~ 32.0	12.5	11.0	11	10	10	10
2	2	~ 46.3	34.2	~ 39.0	16.0	14.0	14	12	13	13
3	3	~ 59.7	44.6	~ 41.0	18.0	17.0	16	15	15	16

Technical data
– Contact configuration see page 61
– Assembly tool size 0: part number 700.412.106.000.000.

[1] Cable bend reliefs have to be ordered separately (see page 92).

In-Line Receptacle

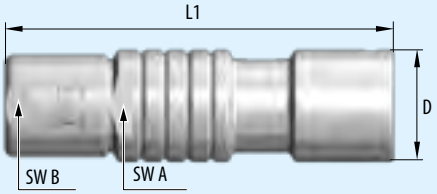
Connect to Plug for Cable to Cable Connection

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	

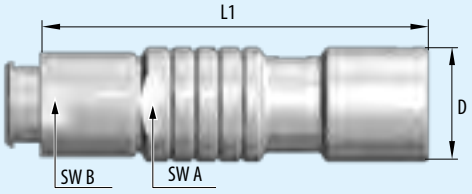
K 3

Style 3: IP 68 with standard back nut



K 4

Style 4: IP 68 with back nut for cable bend relief [1)]



	Size	Dimensions in mm				
		L1	D	SW A	K3 SW B	K4 SW B
0	0	~ 39.0	10.0	8	7	7
1	1	~ 46.0	13.0	10	10	10
2	2	~ 50.0	16.0	13	12	13
3	3	~ 60.0	19.0	16	15	15

Technical data
– Contact configuration see page 61.

[1] Cable bend reliefs have to be ordered separately (see page 92).

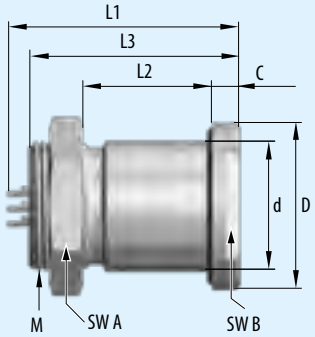
Receptacle

Connector type

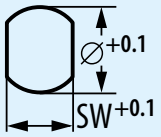
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	0

G 2

Style 2: IP 68 [4], installation from front of panel



Blueprint panel cut-out



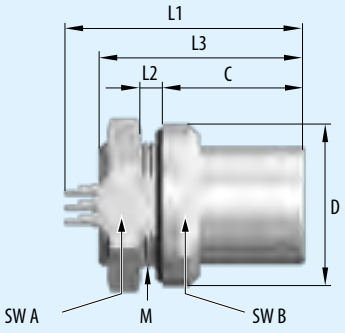
Size	Dimensions in mm									Panel cut-out
	L1[1]	L2[3]	L3[2]	M	D	SW A	SW B	C	d	∅
0	~ 22.5	8.0	18.5	9×0.5	14.5	11.0	11.0	3.0	10.0	10.1
1	~ 27.0	13.0	22.5	14×1	18.0	17.0	14.0	3.0	14.0	14.1
2	~ 29.5	9.0	23.0	16×1	22.0	19.0	17.0	4.0	16.0	16.1
3	~ 32.0	12.0	26.5	20×1	26.0	25.0	24.0	4.0	20.0	20.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Min. wallthickness without using a distance ring
[4] Reference: potted receptacle see page 107 III.

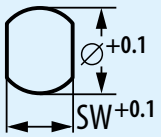
Technical data
– IP 68 in mated and unmated condition
– Contact configuration and PCB layout see page 61
– Distance ring for wall-thickness adjustment see page 94
– No crimp contacts possible.

G 4

Style 4: IP 68 [3], installation from front of panel with low rear profile



Blueprint panel cut-out



Size	Dimensions in mm								Panel cut-out	
	L1[1]	L2	L3[2]	M	D	SW A	SW B	C	SW	∅
0	~ 22.5	~ 4.0	18.5	9×0.5	14.5	11.0	12.0	12.0	8.3	9.1
1	~ 27.0	~ 4.0	22.5	14×1	18.0	17.0	14.0	15.5	12.1	14.1
2	~ 29.5	~ 4.5	23.0	16×1	21.0	19.0	17.0	15.5	13.6	16.1
3	~ 32.0	~ 6.0	26.5	18×1	24.0	22.0	20.0	16.0	16.6	18.1

Technical data
– IP 68 in mated and unmated condition
– Anti-rotation feature
– Contact configuration and PCB layout see page 61
– No crimp contacts possible.

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Reference: potted receptacle see page 107 III.

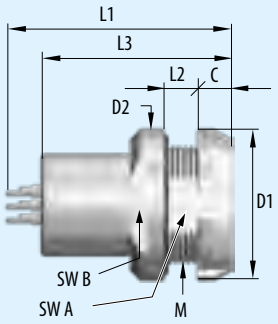
Receptacle

Connector type

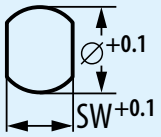
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	0

G 8

Style 8: IP 68 [3], with slotted nut, installation from rear of panel



Blueprint panel cut-out



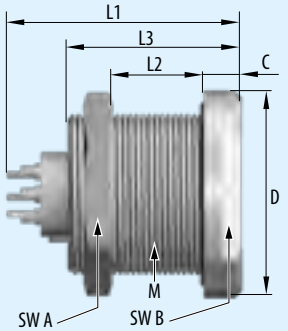
	Size	Dimensions in mm									Panel cut-out	
		L1 [1]	L2	L3 [2]	M	D1	D2	C	SW A	SW B	SW	∅
0	0	~ 22.5	~ 3.5	18.5	10 × 0.5	15.0	14.5	3.0	9	12	9.1	10.1
1	1	~ 27.0	~ 4.0	22.5	14 × 1	18.0	18.0	4.0	12	14	12.1	14.1
2	2	~ 29.5	~ 3.0	23.0	16 × 1	22.0	21.0	5.0	15	18	15.1	16.1
3	3	~ 32.0	~ 6.0	26.5	20 × 1	25.0	26.0	5.0	18	–	18.1	20.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Reference: potted receptacle see page 107 III.

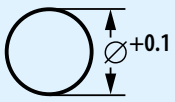
Technical data
– IP 68 in mated and unmated condition
– Anti-rotation feature
– Contact configuration and PCB layout see page 61
– No crimp contacts possible
– Nutdriver for slotted mounting nut see page 100.

G E

Style E: IP 68 [3], installation from front of panel with low rear profile



Blueprint panel cut-out

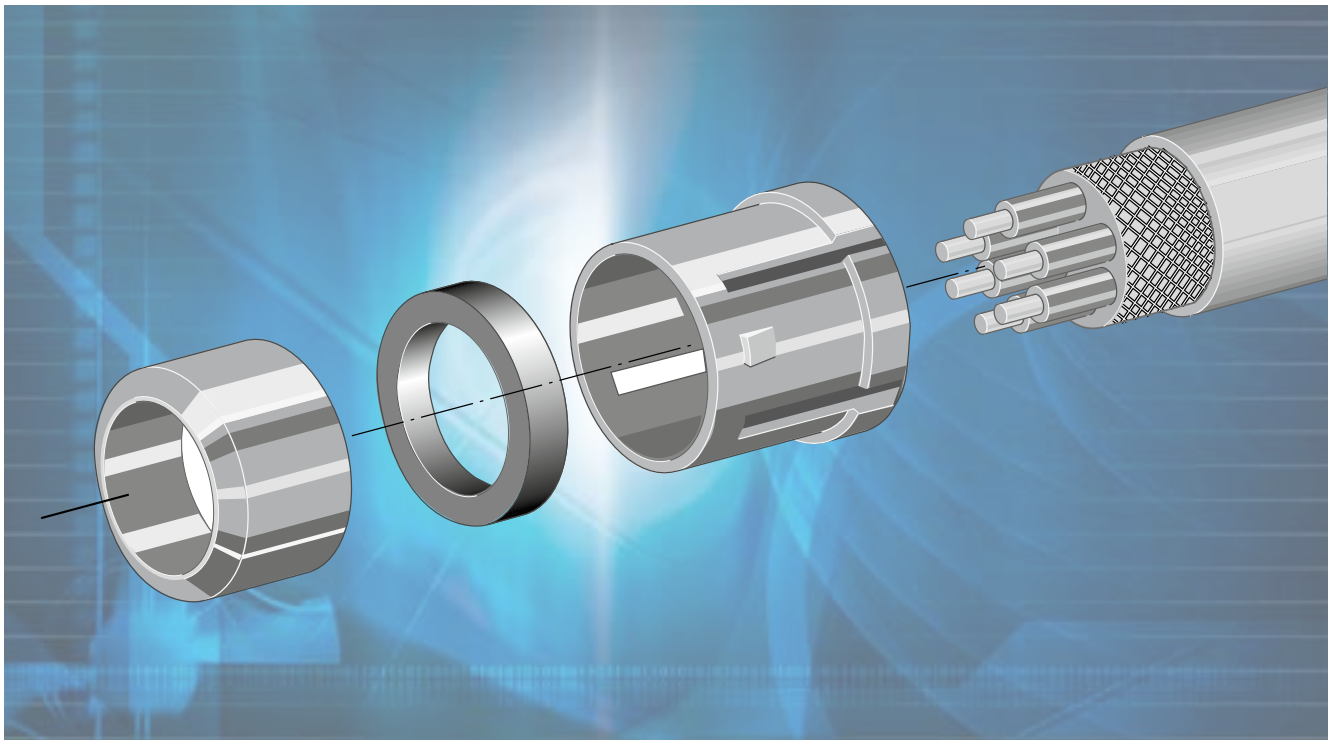


	Size	Dimensions in mm								Panel cut-out
		L1 [1]	L2	L3 [2]	M	D	SW A	SW B	C	∅
0	0	~ 20.0	~ 8.0	14.5	11 × 0.75	15.5	13	12	3.0	11.1
1	1	~ 24.0	~ 10.0	16.5	14 × 1	18.0	17	14	3.0	14.1
2	2	~ 27.0	~ 11.0	18.5	17 × 1	22.0	19	17	4.0	17.1

[1] L1 = max. length incl. contact insert
[2] L3 = length of housing
[3] Reference: Potted receptacle see page 107 III.

Technical data
– IP 68 in mated condition
– Contact configuration and PCB layout see page 61.

Details for the Part Number Key Series B



Keyings

Housing Materials / Surfaces

Collet System

Cable Bend Reliefs

Keying Possibilities

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	

Angle	Keying	Receptacle front view	Size 0	1	2	3
0 °	0		●	●	●	●
30 °	A		●	●	●	●
37.5 °	B				●	❍
45 °	C				●	●
–45 °	C		●	●		
60 °	F		●	●	●	●
75 °	H				●	●
90 °	J		●	●		●
95 °	K				●	●
100 °	M				❍	●
120 °	Q			●	●	❍
125 °	T					●
135 °	V		❍	●		●
145 °	W		❍	❍	●	❍
155 °	Y		●	●		

Housing Material

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	

	Housing material	
Standard	C	Cu-alloy / matt chromate
	S	Cu-alloy / black chromate

Special materials and surfaces on request.

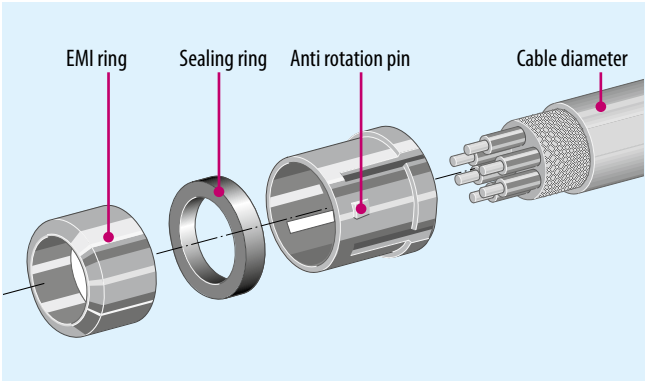
● Standard
❍ On request

Collet System

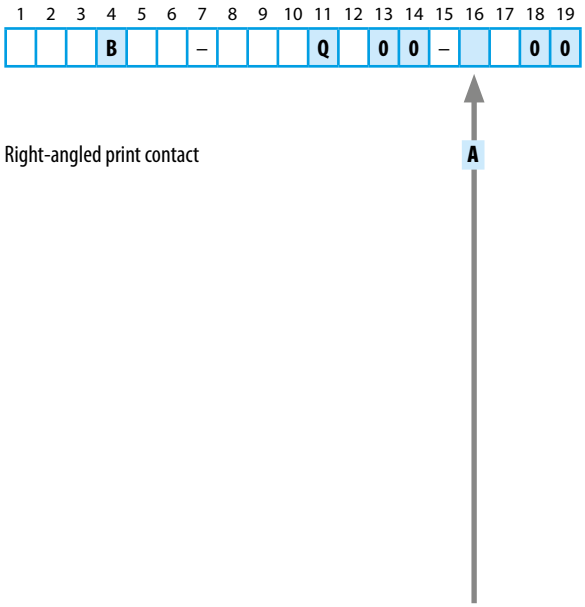
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	

Useable for all plugs and in-line receptacles.
Application: **Collet nut** for strain relief.

Cable diameter in mm	Size 0	1	2	3			
> 1.0 – 1.5		●				1	5
> 1.5 – 2.0	●	●				2	0
> 2.0 – 2.5	●	●	●			2	5
> 2.5 – 3.0	●	●	●			3	0
> 3.0 – 3.5	●	●	●	●		3	5
> 3.5 – 4.0	●	●	●	●		4	0
> 4.0 – 4.5	●	●	●	●		4	5
> 4.5 – 5.0	●	●	●	●		5	0
> 5.0 – 5.5		●	●	●		5	5
> 5.5 – 6.0		●	●	●		6	0
> 6.0 – 6.5		●	●	●		6	5
> 6.5 – 7.0		●	●	●		7	0
> 7.0 – 7.5			●	●		7	5
>7.0 – 8.0			●	●		8	0
> 8.0– 8.5			●	●		8	5
> 8.5 – 9.0			●	●		9	0
> 9.0 – 9.5				●		9	5
> 9.5 – 10.0				●		0	1
> 10.0 – 10.5				●		0	2
Without collet system						0	0



Right-Angled Print Contacts in the Receptacle



Technical data
– PCB layout
see page 76
– Pin version on request.

Definition of the Back Nut

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			B			–								–			0	

Straight-angled Break-Away plugs, in-line receptacles, receptacles style 6 and 7.

Standard back nut **0**

Back nut for silicone cable bend reliefs **S**

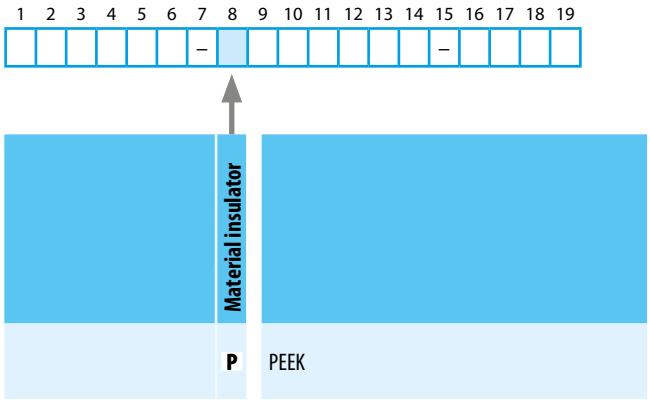
Cable bend reliefs see page 92.

Inserts
Series L, K, B

PCB and solder contacts are factory-installed in the insulation body.

Crimp contacts are shipped separately.

Insulation Body Material



Further materials on request.

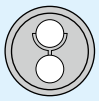
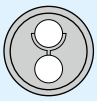
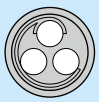
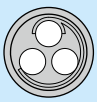
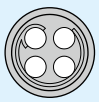
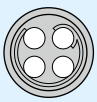
Turned contacts

Termination	PEEK	
Solder	●	
Crimp	●	
PCB	●	

● Available

Contact Configurations
Size 00

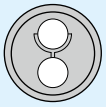
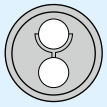
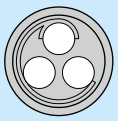
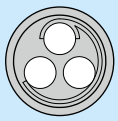
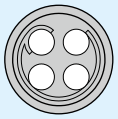
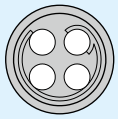
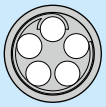
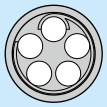
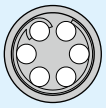
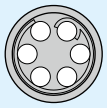
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		C				–								–			0	

	Size		Insulation body	Number of contacts		Contact diameter	Nominal current load per contact[1]	Clearance and creepage distance				Test voltage acc. SAE 13441[2]	Rated voltage[5]	Termination			View on the termination side	
								Series	Contact to contact in mm	Series	Contact to housing in mm			Solder	Crimp[3]	Print[4]	Male contact side	Female contact side
						mm	A					kVeff	kVrms					
	C		P	0	2	0.5	5	L	0.6	L	0.8	1.100	0.366	●		●		
	C		P	0	3	0.5	5	L	0.5	L	0.7	1.100	0.366	●		●		
	C		P	0	4	0.5	5	L	0.4	L	0.6	0.900	0.300	●		●		

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 75.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.

Contact Configurations
Size 0 (Part I)

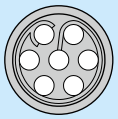
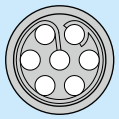
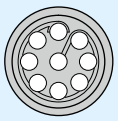
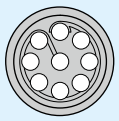
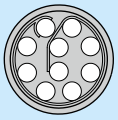
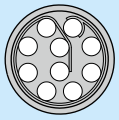
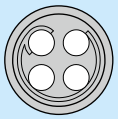
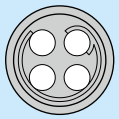
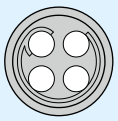
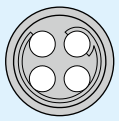
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		0				–								–			0	

	Size		Insulation body	Number of contacts		Contact diameter	Nominal current load per contact[1]	Clearance and creepage distance				Test voltage acc. SAE 13441[2]	Rated voltage[5]	Termination			View on the termination side	
								Series	Contact to contact in mm	Series	Contact to housing in mm			Solder	Crimp[3]	Print[4]	Male contact side	Female contact side
						mm	A					kVeff	kVrms					
	0		P	0	2	0.9	10	L K B	1.0 1.0 1.0	L K B	1.0 0.9 1.0	1.500	0.500	●	●	●		
	0		P	0	3	0.9	10	L K B	0.8 0.8 0.8	L K B	1.0 0.8 1.0	1.200	0.400	●	●	●		
	0		P	0	4	0.7	7	L K B	0.8 0.8 0.8	L K B	1.0 0.8 1.0	0.900	0.300	●	●	●		
	0		P	0	5	0.7	7	L K B	0.7 0.7 0.7	L K B	0.8 0.7 0.8	1.100	0.366	●	●	●		
	0		P	0	6	0.5	5	L K B	0.9 0.9 0.9	L K B	0.8 0.7 0.8	0.900	0.300	●		●		

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 75.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.
[6] Not compatible to the competitors. Position 14 of order number = 9.

Contact Configurations
Size 0 (Part II)

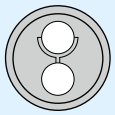
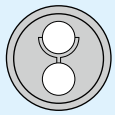
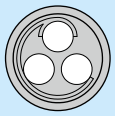
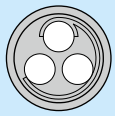
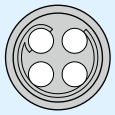
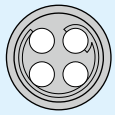
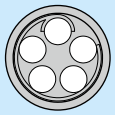
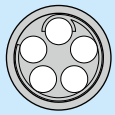
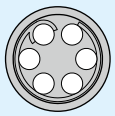
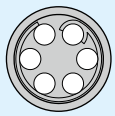
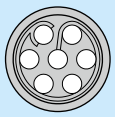
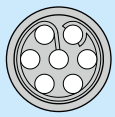
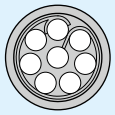
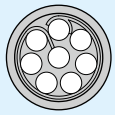
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		0				–								–			0	

	Size		Insulation body	Number of contacts		Contact diameter mm	Nominal current load per contact[1] A	Clearance and creepage distance Series	Contact to contact in mm	Series	Contact to housing in mm	Test voltage acc. SAE 13441[2] kVeff	Rated voltage[5] kVrms	Termination Solder	Crimp[3]	Print[4]	View on the termination side Male contact side	Female contact side
	0		P	0	7	0.5	5	L K B	0.7 0.7 0.7	L K B	0.8 0.7 0.8	0.900	0.300	●		●		
	0		P	0	9	0.5	5	L K B	0.4 0.4 0.4	L K B	0.8 0.7 0.8	0.600	0.200	●		●		
	0		P	1	0[6]	0.5	5	L K B	0.3 0.3 0.3	L K B	0.7 0.5 0.7	0.600	0.200	●		●		
High speed inserts																		
		Ethernet[7] Type CAT5 up to 100 Mbit				0.7	7	L K B	0.8 0.8 0.8	L K B	1.0 0.8 1.0	0.900	0.300	●	●	●		
		USB 2.0[8]	P U 4 Male contact side P 0 4 Female contact side			0.7	7	L K B	0.8 0.8 0.8	L K B	1.0 0.8 1.0	0.900	0.300	●	●	●		

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 75.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.
[6] Not compatible to the competitors. Position 14 of order number = 9.
[7] Acc. IEC 11801:2010. Additional information on request.
[8] Acc. USB spec. rev. 2.0:2000. Additional information on request.

Contact Configurations
Size 1 (Part I)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1				–								–			0	

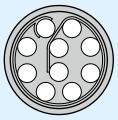
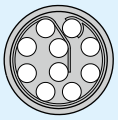
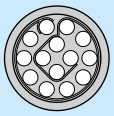
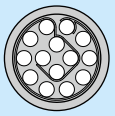
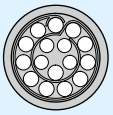
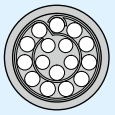
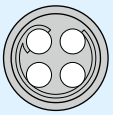
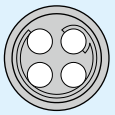
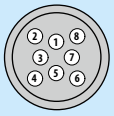
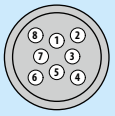
	Size		Insulation body	Number of contacts		Contact diameter	Nominal current load per contact[1]	Clearance and creepage distance				Test voltage acc. SAE 13441[2]	Rated voltage[5]	Termination			View on the termination side	
								Series	Contact to contact in mm	Series	Contact to housing in mm			Solder	Crimp[3]	Print[4]	Male contact side	Female contact side
						mm	A					KVeff	kVrms					
	1		P	0	2	1.3	14	L K B	1.3 1.3 1.3	L K B	1.4 1.0 1.4	1.650	0.550	●	●	●		
	1		P	0	3	1.3	14	L K B	1.1 1.1 1.1	L K B	1.3 0.9 1.3	1.500	0.500	●	●	●		
	1		P	0	4	0.9	10	L K B	1.0 1.0 1.0	L K B	1.4 1.1 1.4	1.500	0.500	●	●	●		
	1		P	0	5	0.9	10	L K B	0.9 0.9 0.9	L K B	1.2 0.9 1.2	1.350	0.450	●	●	●		
	1		P	0	6	0.7	7	L K B	0.9 0.9 0.9	L K B	1.2 0.9 1.2	1.200	0.400	●	●	●		
	1		P	0	7	0.7	7	L K B	0.9 0.9 0.9	L K B	1.2 0.9 1.2	1.200	0.400	●	●	●		
	1		P	0	8	0.7	7	L K B	0.6 0.6 0.6	L K B	1.1 0.8 1.1	1.000	0.333	●	●	●		

Continue next page

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 78.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.

Contact Configurations
Size 1 (Part II)

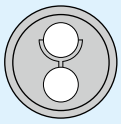
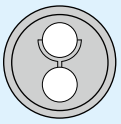
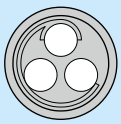
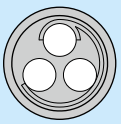
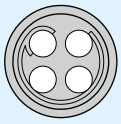
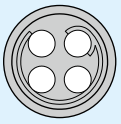
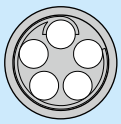
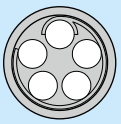
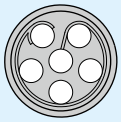
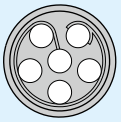
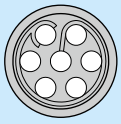
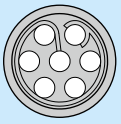
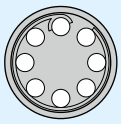
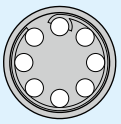
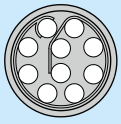
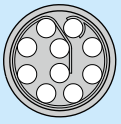
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1				–								–			0	

	Size		Insulation body	Number of contacts		Contact diameter	Nominal current load per contact[1]	Clearance and creepage distance				Test voltage acc. SAE 13441[2]	Rated voltage[5]	Termination			View on the termination side	
								Series	Contact to contact in mm	Series	Contact to housing in mm			Solder	Crimp[3]	Print[4]	Male contact side	Female contact side
						mm	A					KVeff	kVrms					
	1		P	1	0	0.5	5	L K B	0.5 0.5 0.5	L K B	1.2 0.9 1.2	1.000	0.333	●		●		
	1		P	1	4	0.5	5	L K B	0.5 0.5 0.5	L K B	0.9 0.6 0.9	0.900	0.300	●		●		
	1		P	1	6	0.5	5	L K B	0.4 0.4 0.4	L K B	0.9 0.6 0.9	0.900	0.300	●		●		
High speed inserts																		
	1	Ethernet[6] Type CAT5 up to 100 Mbit	P	0	4	0.9	10	L K B	1.0 1.0 1.0	L K B	1.4 1.1 1.4	1.500	0.500	●	●	●		
	1	Ethernet[6] Type CAT5 up to 100 Mbit	M	D	8	0.5	5	L K B	0.5 0.5 0.5	L K B	1.0 0.7 1.0	1.000	0.333	●		●		

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 78.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.
[6] Acc. IEC 11801:2010. Additional information on request.

Contact Configurations
Size 2 (Part I)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2				–								–			0	

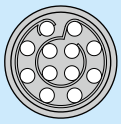
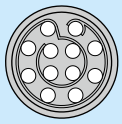
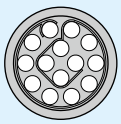
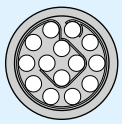
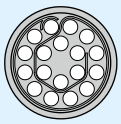
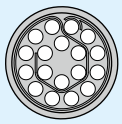
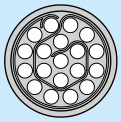
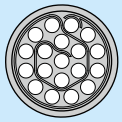
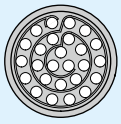
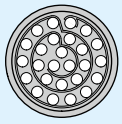
	Size		Insulation body	Number of contacts		Contact diameter	Nominal current load[1]	Clearance and creepage distance				Test voltage acc. SAE 13441[2]	Rated voltage[5]	Termination			View on the termination side	
								Series	Contact to contact in mm	Series	Contact to housing in mm			Solder	Crimp[3]	Print[4]	Male contact side	Female contact side
						mm	A					KVeff	kVrms					
	2		P	0	2	2.0	22	L K B	2.0 2.0 2.0	L K B	1.6 1.4 1.4	2.100	0.700	●		●		
	2		P	0	3	1.6	17	L K B	1.9 1.9 1.9	L K B	1.7 1.5 1.6	2.100	0.700	●	●	●		
	2		P	0	4	1.3	14	L K B	2.0 2.0 2.0	L K B	1.8 1.4 1.6	1.950	0.650	●	●	●		
	2		P	0	5	1.3	14	L K B	1.6 1.6 1.6	L K B	1.7 1.3 1.5	1.800	0.600	●	●	●		
	2		P	0	6	1.3	14	L K B	1.3 1.3 1.3	L K B	1.5 1.1 1.3	1.500	0.500	●	●	●		
	2		P	0	7	1.3	14	L K B	1.3 1.3 1.3	L K B	1.4 1.0 1.2	1.800	0.600	●	●	●		
	2		P	0	8	0.9	10	L K B	1.3 1.3 1.3	L K B	1.2 0.9 1.1	1.500	0.500	●	●	●		
	2		P	1	0	0.9	10	L K B	1.0 1.0 1.0	L K B	1.2 0.9 1.1	1.500	0.500	●	●	●		

Continue next page

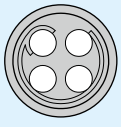
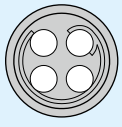
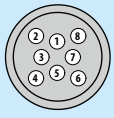
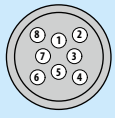
[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 80.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.

Contact Configurations
Size 2 (Part II)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2				–								–			0	

	Size		Insulation body	Number of contacts		Contact diameter	Nominal current load[1]	Clearance and creepage distance				Test voltage acc. SAE 13441[2]	Rated voltage[5]	Termination			View on the termination side	
								Series	Contact to contact in mm	Series	Contact to housing in mm			Solder	Crimp[3]	Print[4]	Male contact side	Female contact side
						mm	A					KVeff	kVrms					
	2		P	1	2	0.7	7	L K B	1.0 1.0 1.0	L K B	1.3 1.0 1.1	1.350	0.450	●	●	●		
	2		P	1	4	0.7	7	L K B	0.9 0.9 0.9	L K B	1.2 0.9 1.1	1.200	0.400	●	●	●		
	2		P	1	6	0.7	7	L K B	0.8 0.8 0.8	L K B	1.2 0.9 1.1	1.100	0.366	●	●	●		
	2		P	1	8	0.7	7	L K B	0.7 0.7 0.7	L K B	1.2 0.9 1.1	0.900	0.300	●	●	●		
	2		P	1	9	0.7	7	L K B	0.7 0.7 0.7	L K B	1.2 0.9 1.1	1.000	0.333	●	●	●		
	2		P	2	6	0.5	5	L K B	0.6 0.6 0.6	L K B	1.1 0.8 1.0	0.900	0.300	●		●		

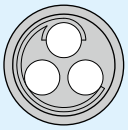
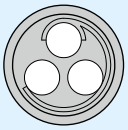
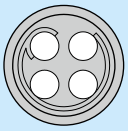
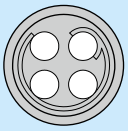
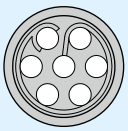
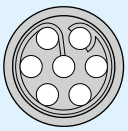
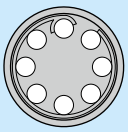
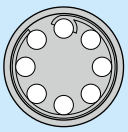
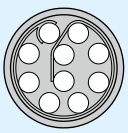
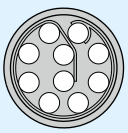
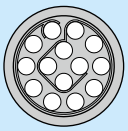
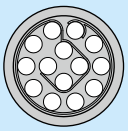
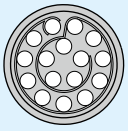
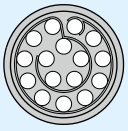
High speed inserts

	2	 Ethernet[6] Type CAT5 up to 100 Mbit	P	0	4	1.3	14	L K B	2.0 2.0 2.0	L K B	1.8 1.4 1.6	1.950	0.650	●	●	●		
	2	 Ethernet[6] Type CAT5 up to 100 Mbit	P	D	8	0.9	10	L K B	1.1 1.1 1.1	L K B	1.3 1.0 1.1	1.500	0.500	●	●	●		

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 80.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.
[6] Acc. IEC 11801:2010. Additional information on request.

Contact Configurations
Size 3 (Part I)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		3				–								–			0	

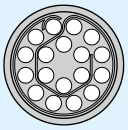
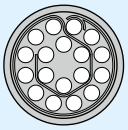
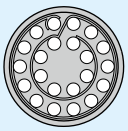
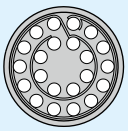
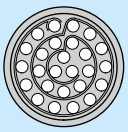
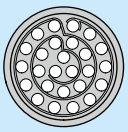
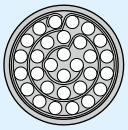
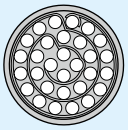
	Size		Insulation body	Number of contacts		Contact diameter mm	Nominal current load per contact[1] A	Clearance and creepage distance Series	Contact to contact in mm	Series	Contact to housing in mm	Test voltage acc. SAE 13441[2] KVeff	Rated voltage[5] kVrms	Termination Solder	Crimp[3]	Print[4]	View on the termination side Male contact side	Female contact side
	3		P	0	3	2.0	22	L K B	2.4 2.4 2.4	L K B	2.1 1.8 2.1	1.800	0.600	●		●		
	3		P	0	4	2.0	22	L K B	2.0 2.0 2.0	L K B	1.8 1.5 1.8	1.650	0.550	●		●		
	3		P	0	7	1.6	17	L K B	1.5 1.5 1.5	L K B	1.6 1.3 1.6	1.800	0.600	●	●	●		
	3		P	0	8	1.3	14	L K B	1.4 1.4 1.4	L K B	1.6 1.2 1.6	1.650	0.550	●		●		
	3		P	1	0	1.3	14	L K B	1.2 1.2 1.2	L K B	1.4 1.0 1.4	1.350	0.450	●		●		
	3		P	1	4	0.9	10	L K B	1.2 1.2 1.2	L K B	1.4 1.1 1.4	1.350	0.450	●	●	●		
	3		P	1	6	0.9	10	L K B	1.1 1.1 1.1	L K B	1.3 1.0 1.3	1.350	0.450	●		●		

Continue next page

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 82.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.

Contact Configurations
Size 3 (Part II)

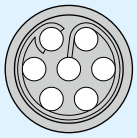
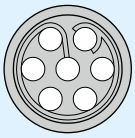
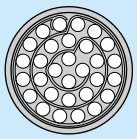
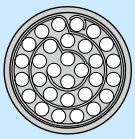
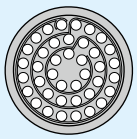
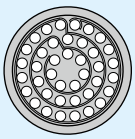
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		3				–								–			0	

Size	Insulation body	Number of contacts	Contact diameter mm	Nominal current load per contact[1] A	Clearance and creepage distance: Series	Contact to contact in mm	Series	Contact to housing in mm	Test voltage acc. SAE 13441[2] KVeff	Rated voltage[5] kVrms	Termination: Solder	Crimp[3]	Print[4]	View on the termination side: Male contact side	Female contact side
3	P	1 8	0.9	10	L K B	1.0 1.0 1.0	L K B	1.2 0.9 1.2	1.350	0.450	●	●	●		
3	P	2 0	0.7	7	L K B	0.9 0.9 0.9	L K B	1.3 1.0 1.3	1.100	0.366	●	●	●		
3	P	2 2	0.7	7	L K B	0.9 0.9 0.9	L K B	1.2 1.9 1.2	1.100	0.366	●	●	●		
3	P	2 6	0.7	7	L K B	0.7 0.7 0.7	L K B	1.1 0.8 1.1	1.000	0.333	●	●	●		
3	P	3 0	0.7	7	L K B	0.6 0.6 0.6	L K B	1.2 0.9 1.2	0.900	0.300	●	●	●		

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 82.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.

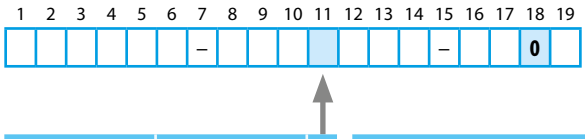
Contact Configurations
Size 4

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			4				–								–			**0**	

	Size		Insulation body	Number of contacts		Contact diameter	Nominal current load per contact[1]	Clearance and creepage distance				Test voltage acc. SAE 13441[2]	Rated voltage[5]	Termination			View on the termination side	
								Series	Contact to contact in mm	Series	Contact to housing in mm			Solder	Crimp[3]	Print[4]	Male contact side	Female contact side
						mm	A					KVeff	kVrms					
	4		**P**	**0**	**7**	2.0	22	L K B	2.1 2.1 2.1	L K B	2.2 1.6 N/A	1.650	0.550	●		●		
	4		**P**	**3**	**0**	0.9	10	L K B	0.8 0.8 0.8	L K B	1.7 1.0 N/A	1.575	0.520	●		●		
	4		**P**	**4**	**0**	0.7	7	L K B	0.8 0.8 0.8	L K B	1.7 1.0 N/A	1.000	0.333	●	●	●		

[1] Derating factor see page 111.
[2] SAE AS13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 97.
[4] PCB layout see page 84.
[5] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 112.

Contact Type / Surface



Termination	Contact type	Contact type/surface	Surface
Solder	Socket	L	0.75 µm Au (min.)
	Pin	M	0.75 µm Au (min.)
Crimp	Socket	N	0.75 µm Au (min.)
	Pin	P	0.75 µm Au (min.)
Print	Socket	Q	0.75 µm Au (min.)
	Pin	R	0.75 µm Au (min.)

Contact Diameter
Termination Cross Section

Crimp contacts

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						–	P							–			0	0

Size	Number of contacts	Contact diameter mm	Contact diameter	Term. cross section		Termination cross section AWG	Termination cross section mm²
0	4 – 5	0.7	F	C	0	28 – 32	0.09 – 0.04
			F	G	0	22 – 26	0.38 – 0.15
	2 – 3	0.9	J	G	0	22 – 26	0.38 – 0.15
			J	H	0	20 – 24	0.50 – 0.25
1	6 – 8	0.7	F	C	0	28 – 32	0.09 – 0.04
			F	G	0	22 – 26	0.38 – 0.15
	4 – 5	0.9	J	G	0	22 – 26	0.38 – 0.15
			J	H	0	20 – 24	0.50 – 0.25
	2 – 3	1.3	P	L	0	18 – 20	1.00 – 0.50
2	12 – 19	0.7	F	C	0	28 – 32	0.09 – 0.04
			F	G	0	22 – 26	0.38 – 0.15
	8 – 10	0.9	J	G	0	22 – 26	0.38 – 0.15
			J	H	0	20 – 24	0.50 – 0.25
	4 – 7	1.3	P	H	0	20 – 24	0.50 – 0.25
			P	L	0	18 – 20	1.00 – 0.50
	3	1.6	S	L	0	18 – 20	1.00 – 0.50
			S	N	0	18	1.50 – 1.00
			S	N	0	14 – 16	1.50 – 1.00
	2	2.0	T	N	0	18	1.50 – 1.00
			T	N	0	14 – 16	1.50 – 1.00
3	20 – 30	0.7	F	C	0	28 – 32	0.09 – 0.04
			F	G	0	22 – 26	0.38 – 0.15
	14 – 18	0.9	J	G	0	22 – 26	0.38 – 0.15
			J	H	0	20 – 24	0.50 – 0.25
	8 – 10	1.3	P	H	0	20 – 24	0.50 – 0.25
			P	L	0	18 – 20	1.00 – 0.50
	7	1.6	S	L	0	18 – 20	1.00 – 0.50
			S	N	0	18	1.50 – 1.00
			S	N	0	14 – 16	1.50 – 1.00

Solder contacts

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						–								–			0	0

Contact diameter mm	Termination diameter mm	Contact diameter	Term. cross section		Termination cross section AWG	Termination cross section mm²
0.5	0.4	C	C	0	28	0.08
0.7	0.6	F	D	0	26	0.15
0.7	0.85	F	G	0	22	0.38
0.9	0.85	J	G	0	22	0.38
1.3	1.1	P	H	0	20	0.50
1.6	1.4	S	N	0	18	1.00
2.0	1.85	T	Q	0	14	1.5
2.0	2.4	T	S	0	12	2.5
5.0	2.7	V	T	0	10	4.0

PCB contacts

0.5	0.5	C	C	0
0.7	0.5	F	0	0
0.9	0.7	J	0	0
1.3	0.7	P	0	0
1.6	0.7	S	0	0
2.0	0.7	T	0	0

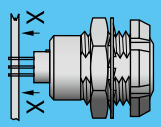
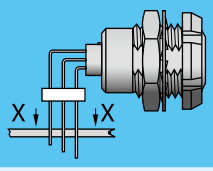
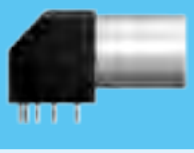
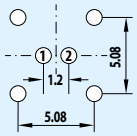
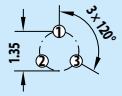
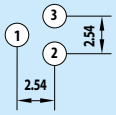
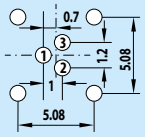
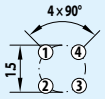
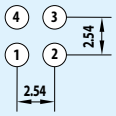
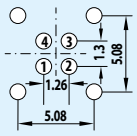
For mixed inserts[1)]

		0	0

[1] Please provide details of termination cross section!

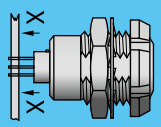
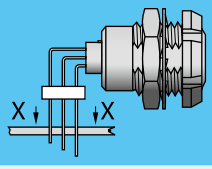
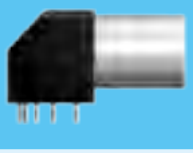
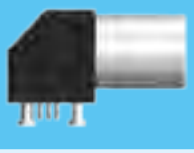
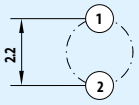
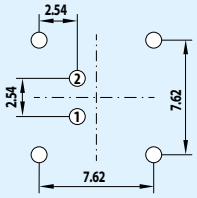
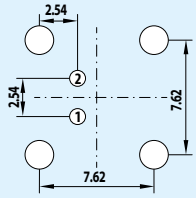
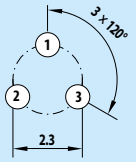
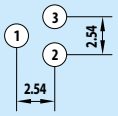
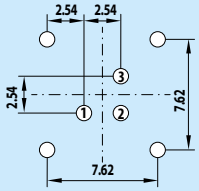
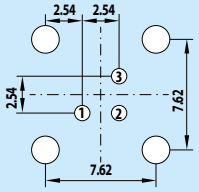
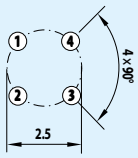
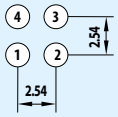
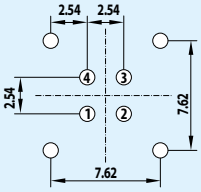
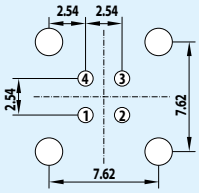
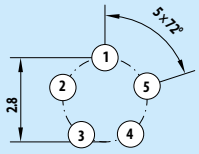
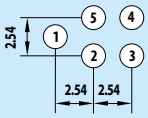
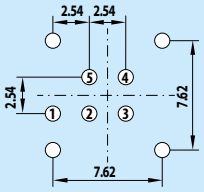
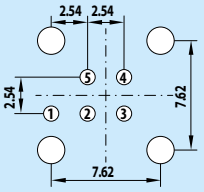
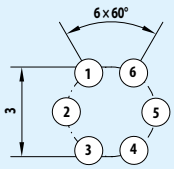
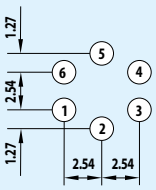
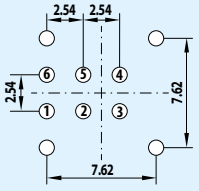
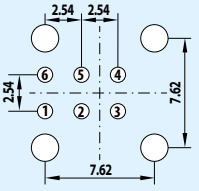
Tools for crimping and their adjustments see page 97.

PCB Layout for Print Contacts
Size 00

Positions	Straight	90° right-angled	Without thread	
				
2	Drill: 0.6 mm 	Drill: 0.6 mm 	Drill-contact: 0.6 mm Drill-mounting: 0.8 mm 	
3	Drill: 0.6 mm 	Drill: 0.6 mm 	Drill-contact: 0.6 mm Drill-mounting: 0.8 mm 	
4	Drill: 0.6 mm 	Drill: 0.6 mm 	Drill-contact: 0.6 mm Drill-mounting: 0.8 mm 	

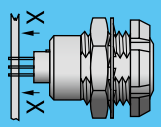
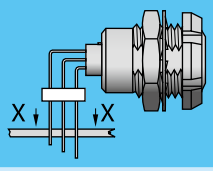
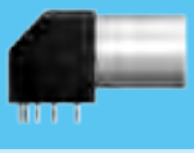
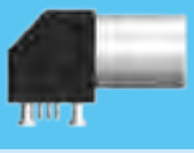
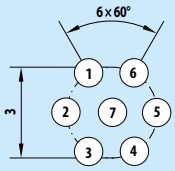
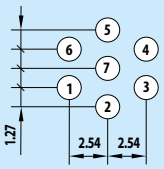
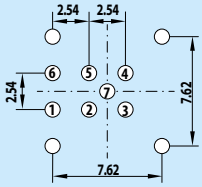
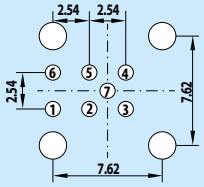
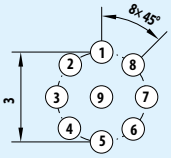
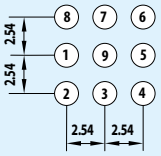
The shown layouts are only considered with sockets in the receptacle.

PCB Layout for Print Contacts
Size 0 (Part I)

Positions	Straight	90° right-angled	Without thread	With thread
				
2	Drill: 0.8 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
3	Drill: 0.8 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
4	Drill: 0.6 mm Standard and high speed version 	Drill: 0.7 mm Standard and high speed version 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm Standard and high speed version 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm Standard and high speed version 
5	Drill: 0.6 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
6	Drill: 0.6 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 

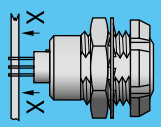
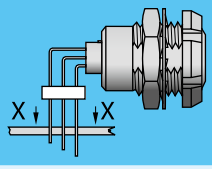
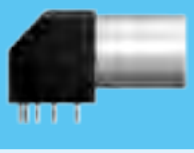
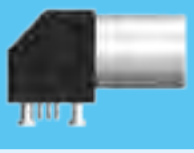
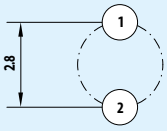
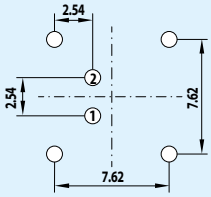
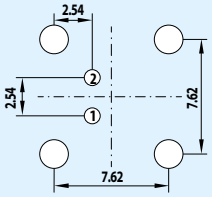
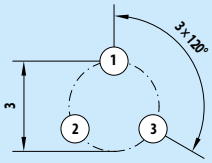
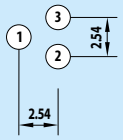
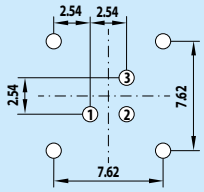
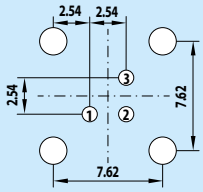
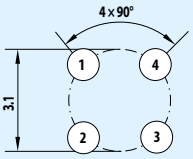
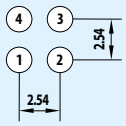
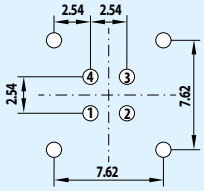
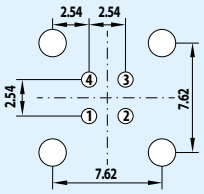
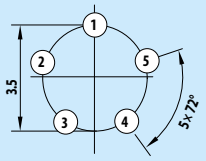
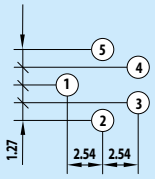
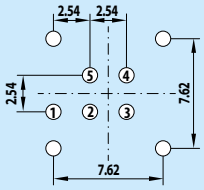
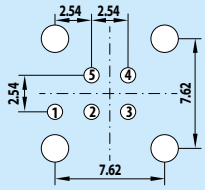
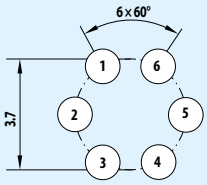
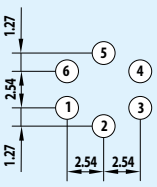
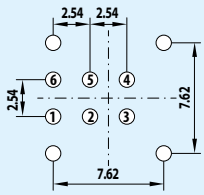
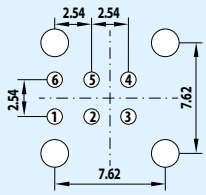
The shown layouts are only considered with sockets in the receptacle.

PCB Layout for Print Contacts
Size 0 (Part II)

Positions	Straight	90° right-angled	Without thread	With thread
				
7	Drill: 0.6 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
9	Drill: 0.6 mm 	Drill: 0.6 mm 		

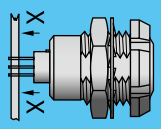
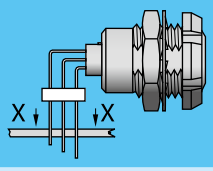
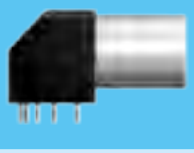
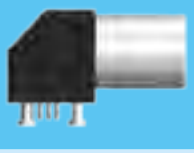
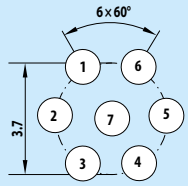
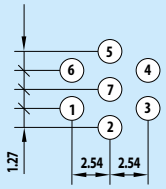
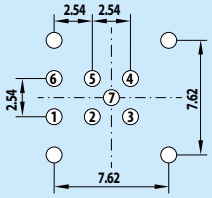
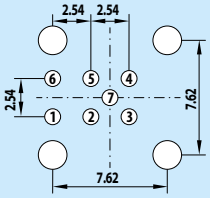
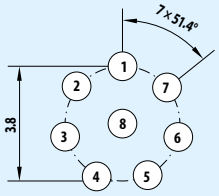
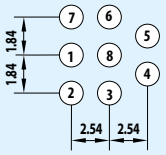
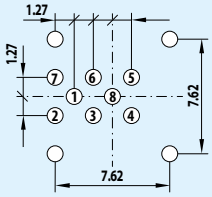
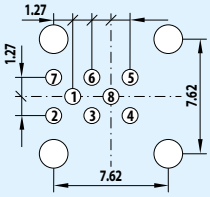
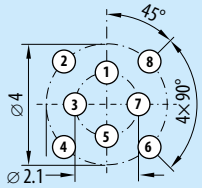
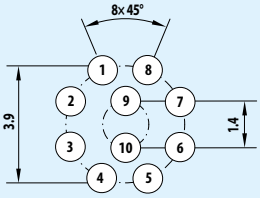
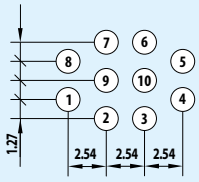
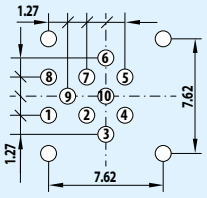
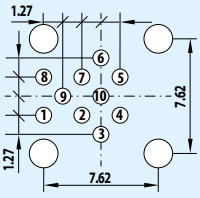
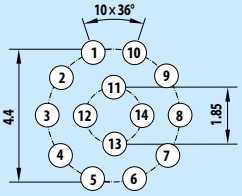
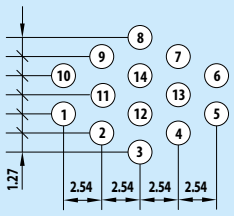
The shown layouts are only considered with sockets in the receptacle.

PCB Layout for Print Contacts
Size 1 (Part I)

Positions	Straight	90° right-angled	Without thread	With thread
				
2	Drill: 0.8 mm 	Drill: 0.9 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
3	Drill: 0.8 mm 	Drill: 0.9 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
4	Drill: 0.6 mm Standard and high speed version 	Drill: 0.7 mm Standard and high speed version 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm Standard and high speed version 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm Standard and high speed version 
5	Drill: 0.8 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
6	Drill: 0.6 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 

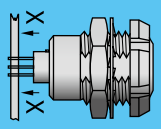
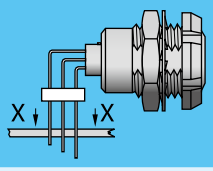
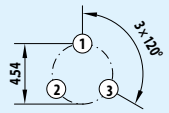
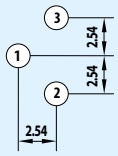
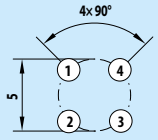
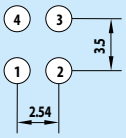
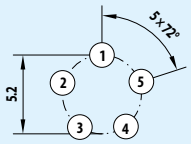
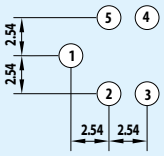
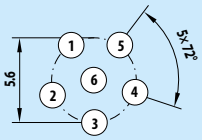
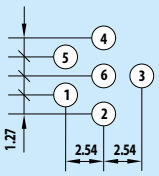
The shown layouts are only considered with sockets in the receptacle.

PCB Layout for Print Contacts
Size 1 (Part II)

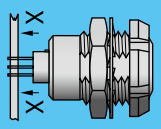
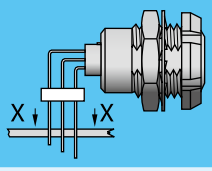
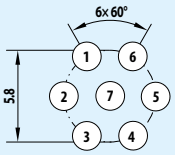
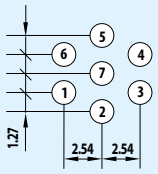
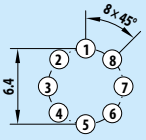
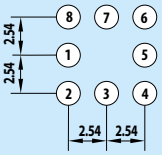
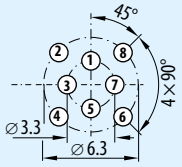
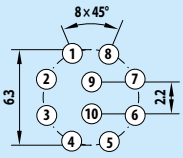
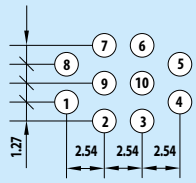
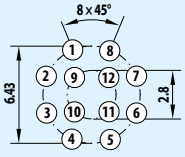
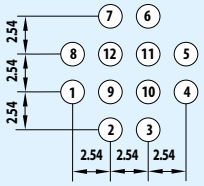
Positions	Straight	90° right-angled	Without thread	With thread
				
7	Drill: 0.6 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
8	Drill: 0.6 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
8	Drill: 0.6 mm Standard and high speed version 			
10	Drill: 0.6 mm 	Drill: 0.7 mm 	Drill-contact: 0.8 mm Drill-mounting: 0.8 mm 	Drill-contact: 0.8 mm Drill-mounting: 1.5 mm 
14	Drill: 0.6 mm 	Drill: 0.7 mm 		

The shown layouts are only considered with sockets in the receptacle.

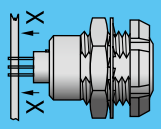
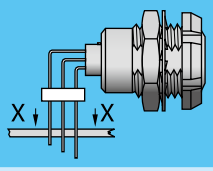
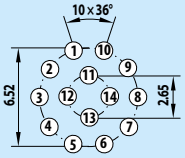
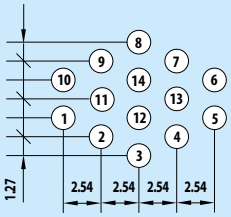
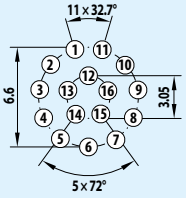
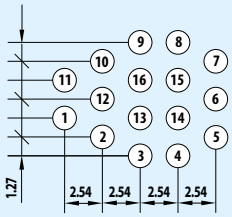
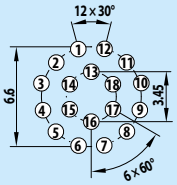
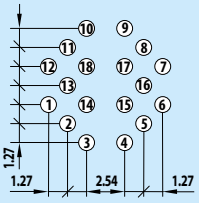
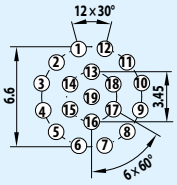
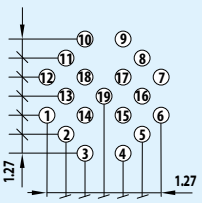
PCB Layout for Print Contacts Size 2 (Part I)

Positions	Straight	90° right-angled
		
3	Drill: 0.8 mm 	Drill: 0.9 mm 
4	Drill: 0.8 mm Standard and high speed version 	Drill: 0.9 mm Standard and high speed version 
5	Drill: 0.8 mm 	Drill: 0.9 mm 
6	Drill: 0.8 mm 	Drill: 0.9 mm 

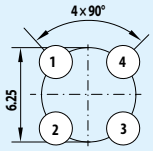
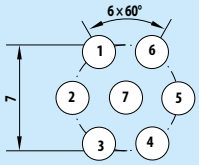
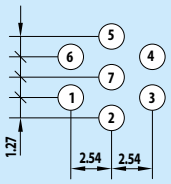
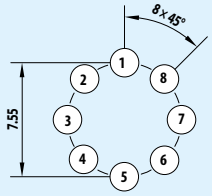
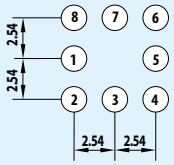
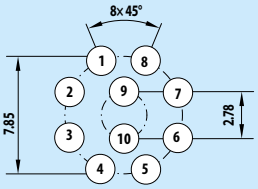
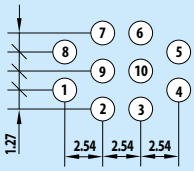
The shown layouts are only considered with sockets in the receptacle.

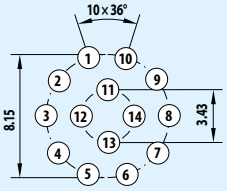
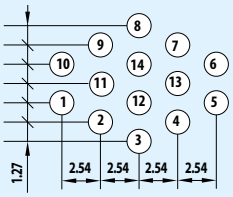
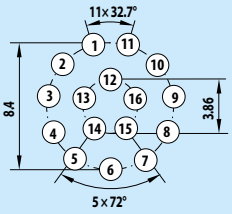
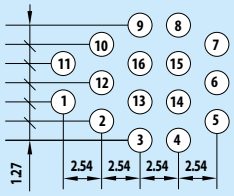
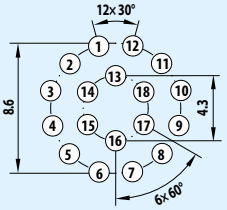
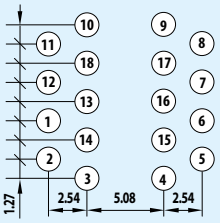
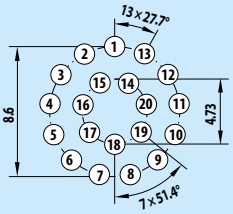
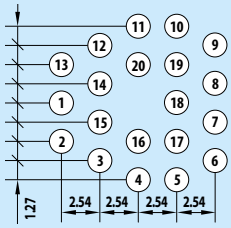
Positions	Straight	90° right-angled
		
7	Drill: 0.8 mm 	Drill: 0.7 mm 
8	Drill: 0.8 mm 	Drill: 0.9 mm 
8	Drill: 0.8 mm High speed version 	
10	Drill: 0.8 mm 	Drill: 0.7 mm 
12	Drill: 0.6 mm 	Drill: 0.7 mm 

PCB Layout for Print Contacts Size 2 (Part II)

Positions	Straight	90° right-angled
		
14	Drill: 0.6 mm 	Drill: 0.7 mm 
16	Drill: 0.6 mm 	Drill: 0.7 mm 
18	Drill: 0.6 mm 	Drill: 0.7 mm 
19	Drill: 0.6 mm 	Drill: 0.7 mm 

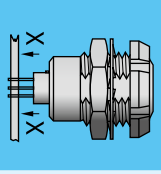
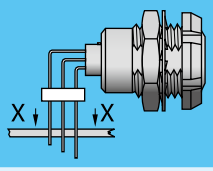
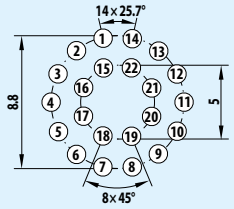
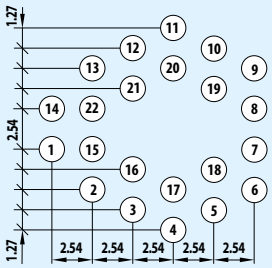
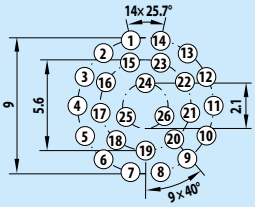
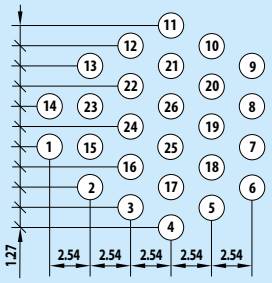
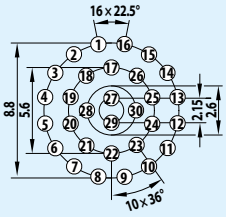
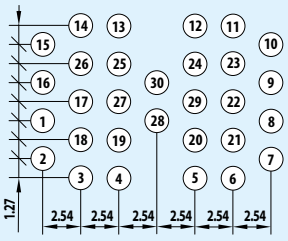
PCB Layout for Print Contacts Size 3 (Part I)

Positions	Straight	90° right-angled
4	Drill: 0.8 mm 	Drill: 0.7 mm
7	Drill: 0.8 mm 	Drill: 0.9 mm 
8	Drill: 0.8 mm 	Drill: 0.9 mm 
10	Drill: 0.8 mm 	Drill: 0.9 mm 

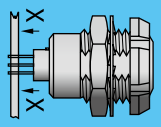
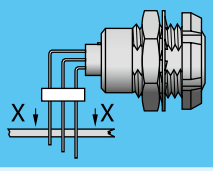
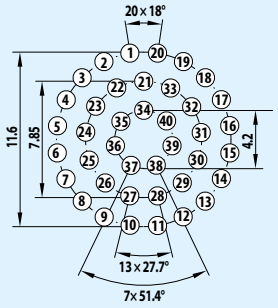
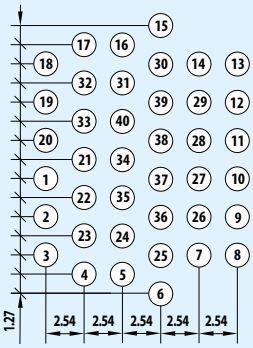
Positions	Straight	90° right-angled
14	Drill: 0.8 mm 	Drill: 0.7 mm 
16	Drill: 0.8 mm 	Drill: 0.7 mm 
18	Drill: 0.8 mm 	Drill: 0.7 mm 
20	Drill: 0.6 mm 	Drill: 0.7 mm 

The shown layouts are only considered with sockets in the receptacle.

PCB Layout for Print Contacts Size 3 (Part II)

Positions	Straight	90° right-angled
		
22	Drill: 0.6 mm 	Drill: 0.7 mm 
26	Drill: 0.6 mm 	Drill: 0.7 mm 
30	Drill: 0.6 mm 	Drill: 0.7 mm 

PCB Layout for Print Contacts Size 4

Positions	Straight	90° right-angled
		
40	Drill: 0.6 mm 	Drill: 0.7 mm 

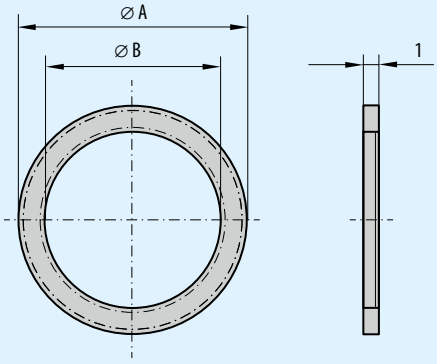
The shown layouts are only considered with sockets in the receptacle.

Accessories

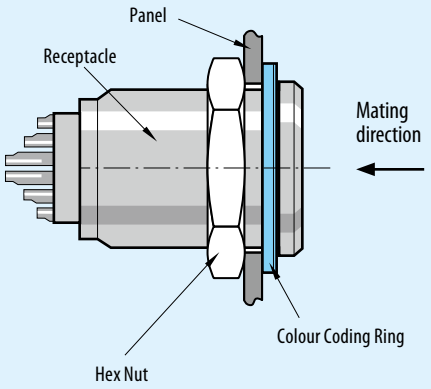
Colour Coding Ring for Series L and B

Size

Size	Part number with colour	∅ A	∅ B
00	713.422._.922.007	11.0	7.1
0	700.422._.922.009	13.5	9.1
0	700.422._.922.010	16.5	10.1
1	701.422._.922.012	17.0	12.1
1	701.422._.922.014	20.0	14.1
2	702.422._.922.015	22.0	15.1
2	702.422._.922.016	23.0	16.1
3	703.422._.922.018	25.0	18.1
3	703.422._.922.020	28.0	20.1



Mounting example



Colours

Please indicate colour code

Part number with colour	Colour	RAL-no.[1] (similar)
... 202 ...	Red	3020
... 203 ...	White	9010
... 204 ...	Yellow	1016
... 205 ...	Green	6029
... 206 ...	Blue	5002
... 207 ...	Grey	7005
... 208 ...	Black	9005

[1] Because of different raw materials the colours may sligthly differ from RAL numbers.

Order example

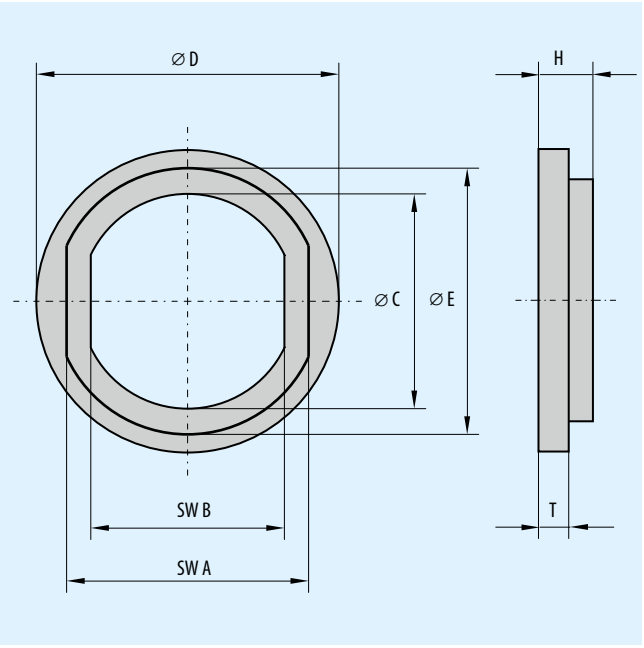
700.422.202.922.009

- Size 0
- Colour red
- Housing ∅M9

Colour Coding Ring for Series L and B

Size

Size	Part number with colour	SW A	SW B	⌀C	⌀D	⌀E	H	T	P max
00	713.423._.922.007	8.0	6.4	7.1	10.0	8.8	1.8	1.0	4.0
0	700.423._.922.009	9.9	8.3	9.1	12.0	10.8	1.8	1.0	6.0
0	700.423._.922.010	10.7	9.1	10.1	16.5	11.8	1.8	1.0	1.5
1	701.423._.922.012	12.2	10.6	12.1	16.0	13.8	1.8	1.0	6.0
1	701.423._.922.014	13.7	12.1	14.1	21.0	15.8	1.8	1.0	2.0
2	702.423._.922.015	16.2	13.6	15.1	21.0	17.8	2.2	1.2	7.5
2	702.423._.922.016	17.7	15.1	16.1	23.0	18.8	2.2	1.2	0.6
3	703.423._.922.018	20.2	16.6	18.2	25.0	21.8	2.2	1.2	10.5
3	703.423._.922.020	21.7	18.1	20.2	28.0	23.8	2.2	1.2	3.5
4	704.423._.922.025	27.2	23.7	25.2	32.0	28.8	2.5	1.5	10.0



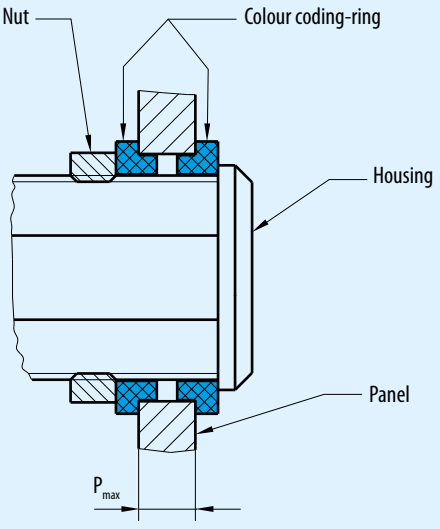
Colours

Please indicate colour code

Part number with colour	Colour	RAL-no.[1] (similar)
... 202 ...	Red	3020
... 203 ...	White	9010
... 204 ...	Yellow	1016
... 205 ...	Green	6029
... 206 ...	Blue	5002
... 207 ...	Grey	7005
... 208 ...	Black	9005

[1] Because of different raw materials the colours may sligthly differ from RAL numbers.

Mounting example



Order example

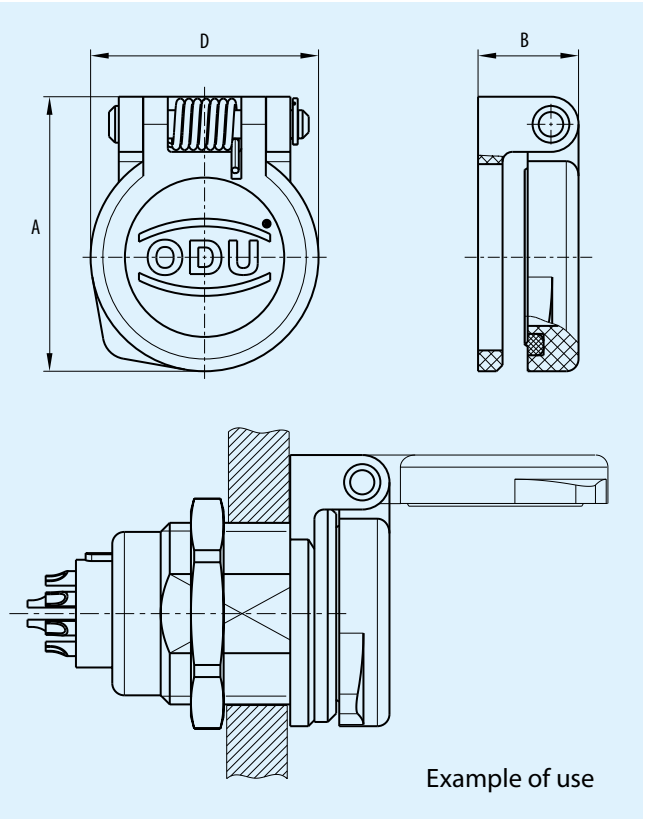
700.423.202.922.009

- Size 0
- Colour red
- Housing ⌀M9

Hinged Cover for Series B and L

Suitable for all receptacle styles G1

Size	Part number	Dimensions in mm		
		A	B	∅D
0	700.096.001.926.007	13.3	5.5	11.0
1	701.096.001.926.007	17.1	6.3	14.2
2	702.096.001.926.007	22.4	8.2	18.5
3	703.096.001.926.007	26.5	8.2	22.5



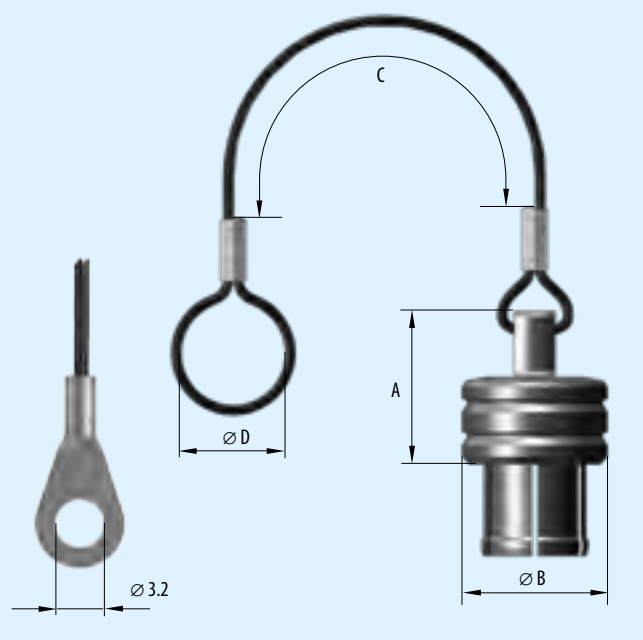
Example of use

Protective Covers for Receptacles (IP 50) in Series L

Size	Part number[1)]	Dimensions in mm A	∅B	C	∅D
0	700.097.003.215._00	10.5	10.0	70.0	8.0
1	701.097.003.215._00	12.5	12.0	75.0	13.0
2	702.097.003.215._00	14.85	15.0	85.0	13.0
3	703.097.003.215._00	16.6	18.0	100.0	16.0
4	704.097.003.215._00	16.9	25.0	110.0	19.5

Surface: Matt chromate

[1] With _ please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug



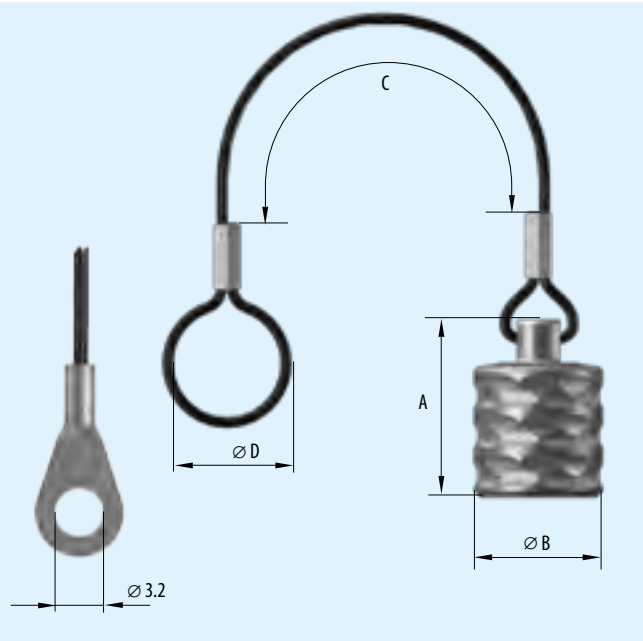
Protective Covers for Plugs (IP 50) in Series L

Size	Part number[1) 2)]	Dimensions in mm A	∅ B	C	∅D
0	750.097.005.215.–0_	15.5	10.0	70.0	8.0
1	751.097.005.215.–0_	16.5	12.0	75.0	10.0
2	752.097.005.215.–0_	18.0	15.0	85.0	13.0
3	753.097.005.215.–0_	20.5	18.0	100.0	16.0

Surface: Matt chromate

[1] With – please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug
[2] With _ please, register desired coding (standard = 0)

Size	Codings (see page 24) 0	A	B	C	F	J	K	Q	V	W	Y
0	●	●		●	●	●					●
1	●	●		●	●	●			●		●
2	●	●	●	●	●		●	●		●	
3	●	●	●	●	●		●	●			

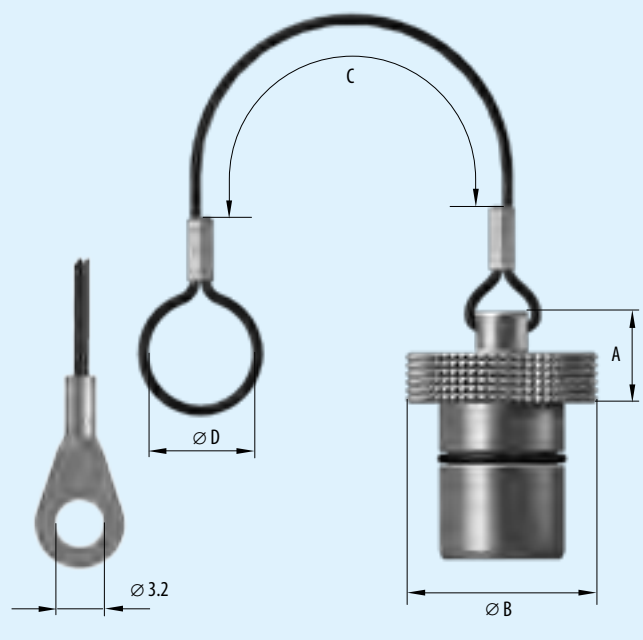


Protective Covers for Receptacles (IP 68) in Series K

Size	Part number[1)]	Dimensions in mm			
		A	∅B	C	∅D
0	720.097.007.215._00	8.0	15.0	70	6
1	721.097.007.215._00	9.0	18.5	75	8
2	722.097.007.215._00	9.0	21.5	85	10
3	723.097.007.215._00	9.6	24.0	120	12
4	724.097.007.215._00	11.2	31.5	140	16

Surface: Matt chromate

[1] With _ please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug



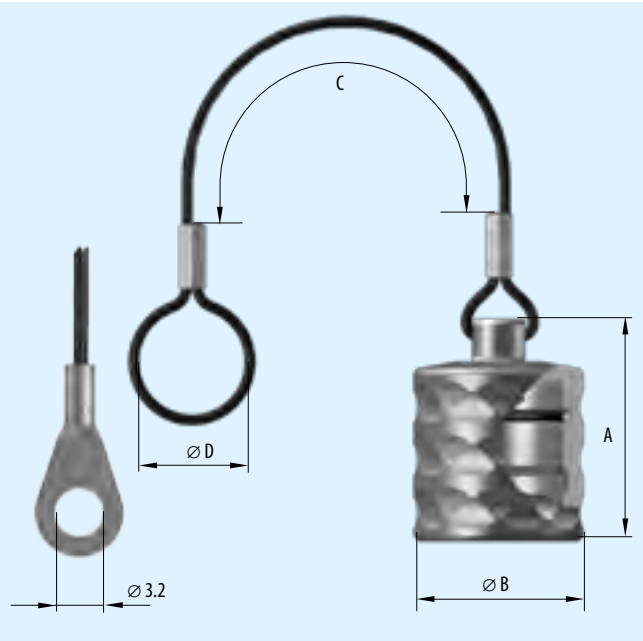
Protective Covers for Plugs (IP 68) in Series K

Size	Part number[1) 2)]	Dimensions in mm			
		A	∅B	C	∅D
0	720.097.004.215.–0_	16.0	14	70	6
1	721.097.004.215.–0_	21.0	16	75	8
2	722.097.004.215.–0_	21.5	20	85	10
3	723.097.004.215.–0_	25.5	24	120	12
4	724.097.004.215.–0_	28	30	140	16

[1] With – please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug
[2] With _ please, register desired coding (standard = 0)

Surface:
Matt chromate

Size	Codings (see page 42)							
	0	A	C	F	H	K	Q	W
0	●	●	●	●				
1	●	●	●	●				
2	●	●	●	●				
3	●							
4	●							

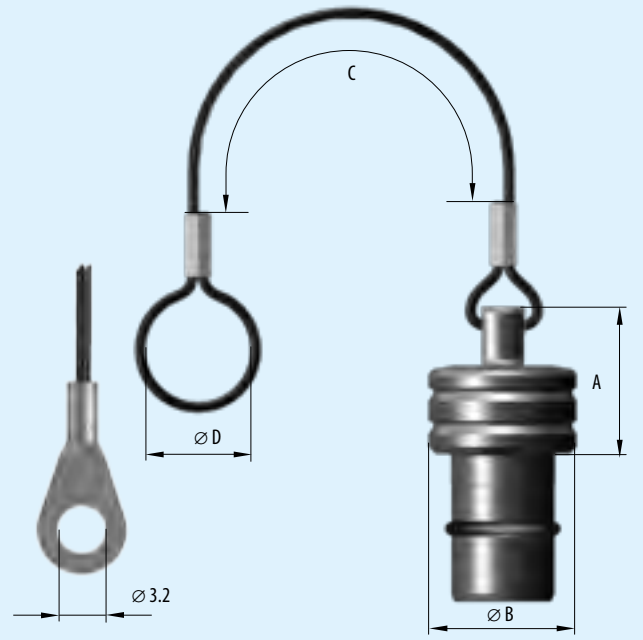


Protective Covers for Receptacles (IP 68) in Series B

Size	Part number[1)]	Dimensions in mm			
		A	∅B	C	∅D
0	700.097.007.215._00	10	10	70	8
1	701.097.007.215._00	12	12	75	10
2	702.097.007.215._00	15	15	85	13
3	703.097.007.215._00	17	18	100	16

Surface: Matt chromate

[1] With _ please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug

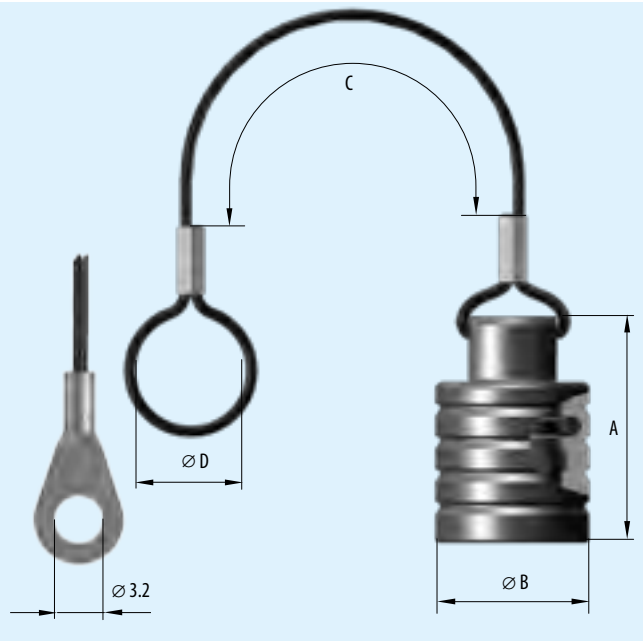


Protective Covers for Plugs (IP 68) in Series B

Size	Part number[1)]	Dimensions in mm			
		A	∅B	C	∅D
0	700.097.004.215._00	15.5	10.5	70	8
1	701.097.004.215._00	16.5	13	75	10
2	702.097.004.215._00	18.5	16	85	13
3	703.097.004.215._00	21	19	100	16

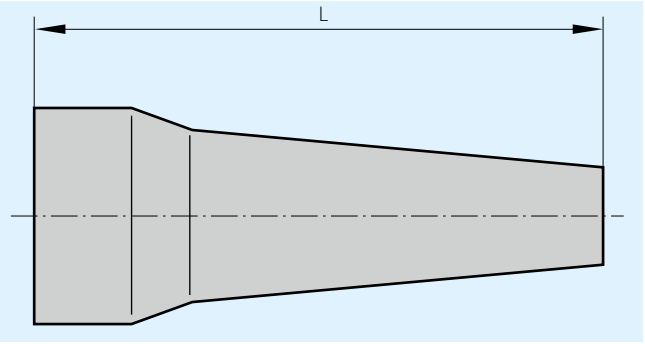
Surface: Matt chromate
Protective covers for A5 and A6 on request.

[1] With _ please register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug



Silicone Cable Bend Relief for All Series

Size	Part number	Dim. L	Cable (outer diameter) min.	max.
00	713.023._.965.005	19	0.5	1.5
	713.023._.965.015		1.5	2.5
	713.023._.965.025		2.5	3.5
0	700.023._.965.020	27	2.0	2.5
	700.023._.965.025		2.5	3.0
	700.023._.965.030		3.0	3.5
	700.023._.965.035		3.5	4.0
	700.023._.965.040		4.0	4.5
	700.023._.965.045		4.5	5.0
1	701.023._.965.025	30	2.5	3.0
	701.023._.965.030		3.0	3.5
	701.023._.965.035		3.5	4.0
	701.023._.965.040		4.0	5.0
	701.023._.965.050		5.0	6.0
	701.023._.965.060		6.0	6.5
	701.023._.965.070		6.5	7.5
2	702.023._.965.030	36	3.0	3.5
	702.023._.965.035		3.5	4.0
	702.023._.965.040		4.0	5.0
	702.023._.965.050		5.0	6.0
	702.023._.965.060		6.0	7.0
	702.023._.965.070		7.0	8.0
	702.023._.965.080		8.0	9.0
3	703.023._.965.040	42	4.0	5.0
	703.023._.965.050		5.0	6.0
	703.023._.965.060		6.0	7.0
	703.023._.965.070		7.0	8.0
	703.023._.965.080		8.0	9.0
	703.023._.965.090		9.0	10.0
	703.023._.965.100		10.0	11.0
	703.023._.965.110		11.0	12.0
4	704.023._.965.080	60	8.0	10.0
	704.023._.965.100		10.0	12.0
	704.023._.965.120		12.0	14.0
	704.023._.965.140		14.0	16.0



Temperature range
Silicone: –50° C up to +200° C, short-term up to +230° C, autoclavable

Colours

Please indicate colour code

Colour code	Colour	RAL-no.[1] (similar)
... 202 ...	Red	3020
... 203 ...	White	9010
... 204 ...	Yellow	1016
... 205 ...	Green	6029
... 206 ...	Blue	5002
... 207 ...	Grey	7005
... 208 ...	Black	9005

[1] Because of different raw materials the colours may sligthly differ from RAL numbers.

Locking Washers for Series L and B

Thread	Part number	Dimensions in mm		
		⌀A	⌀C	L
M7	945.000.001.000.057	9.5	7.1	1.0
M9	945.000.001.000.046	12.5	9.1	1.0
M12	945.000.001.000.047	16.0	12.1	1.1
M14	945.000.001.000.070	19.5	14.2	1.1
M15	945.000.001.000.048	19.3	15.1	1.1
M16	945.000.001.000.072	21.5	16.1	1.1
M18	945.000.001.000.049	25.0	18.1	1.1
M20	945.000.001.000.121	25.0	20.1	1.1
M25	945.000.001.000.086	32.0	25.1	1.4
M35	945.000.001.000.084	41.0	35.5	1.4

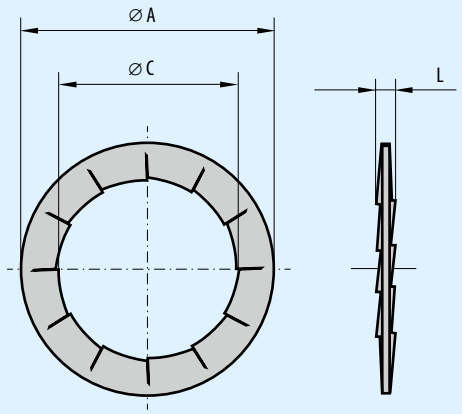
Nickel-plated surface

Solder Lugs for Series L and B

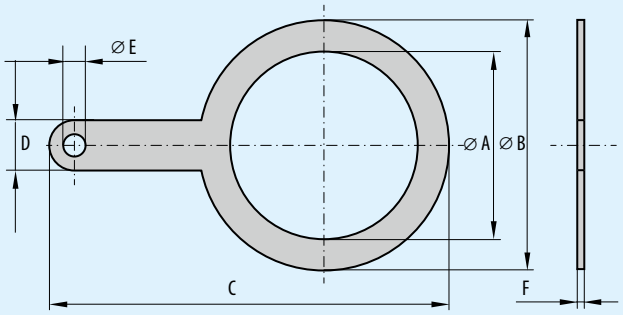
Thread	Part number	Dimensions in mm					
		⌀A	⌀B	C	D	⌀E	F
M7	713.140.246.301.000	7.4	10.0	17.0	4.0	1.8	0.3
M9	700.140.246.301.000	9.7	13.2	21.6	4.0	1.6	0.5
M12	701.140.246.301.000	12.2	17.0	27.5	4.0	1.6	0.5
M14	715.140.246.301.000	14.1	18.0	27.0	4.0	2.0	0.5
M15	702.140.246.301.000	15.2	20.0	32.0	4.0	1.6	0.5
M16	721.140.246.301.000	16.2	20.0	32.0	4.0	1.6	0.5
M18	703.140.246.301.000	18.2	25.0	39.0	4.0	1.6	0.5
M20	722.140.246.301.000	20.2	25.0	39.0	4.0	1.6	0.5
M25	704.140.246.301.000	25.6	35.0	51.0	5.0	2.1	0.6
M35	705.140.246.301.000	35.5	41.0	57.0	5.0	2.1	0.6

Silver-plated surface

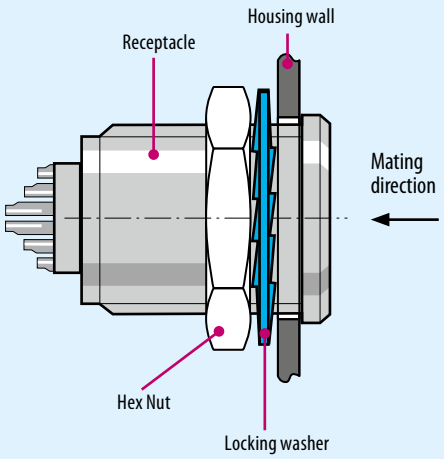
Locking washers



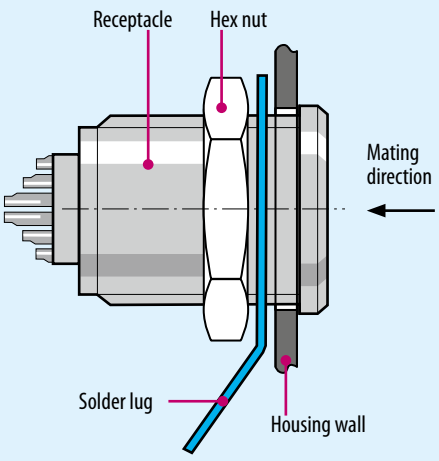
Solder lugs



Mounting example



Mounting example



Distance Ring for Wall Thickness Adjustment for Style 2 in Series B[1)]

Size	Part number	Dimensions in mm			
		Da	Di	L	T
0	700.123.102.304.000	13.0	10.3	7.0	1 – 6
1	701.123.102.304.000	17.0	14.3	12.0	0.5 – 6
1	701.123.102.304.001	17.0	14.3	6.0	6 – 16
2	702.123.102.304.000	21.0	16.3	8.0	1 – 9
3	703.123.102.304.000	25.0	20.3	11.5	0.5 – 7

Material: brass
Surface: nickel

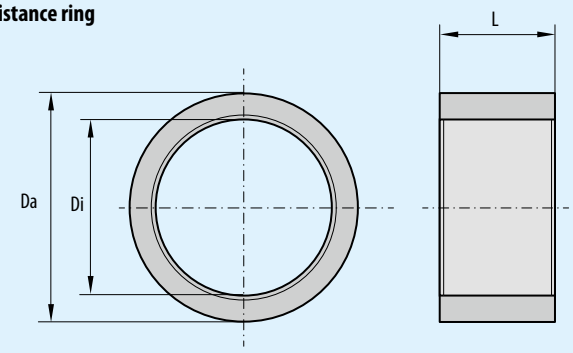
[1] see page 53

Backnut for Silicone Cable Bend Relief

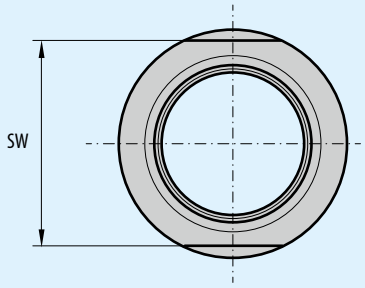
Size	Part number [2)]	Dimensions in mm			Series		
		A	B	SW	L	K	B
00	713.022.117.3_.000	6.0	6.4	5	●		
0	700.022.117.3_.002	8.0	8.9	7	●	●	●
1	701.022.117.3_.002	10.0	10.9	10	●	●	●
2	702.022.117.3_.002	11.5	13.9	13	●	●	●
3	703.022.117.3_.002	11.5	16.9	15			●
3	753.022.117.3_.002	11.5	16.5	15	●	●	
4	704.022.117.3_.002	15.0	23.0	20	●	●	●

In _ please indicate surface finish:
15 = Cu-alloy / matt chromate
11 = Cu-alloy / black chromate
04 = Cu-alloy / nickel

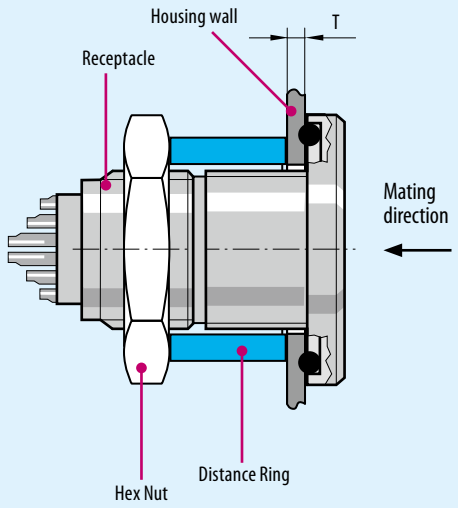
Distance ring



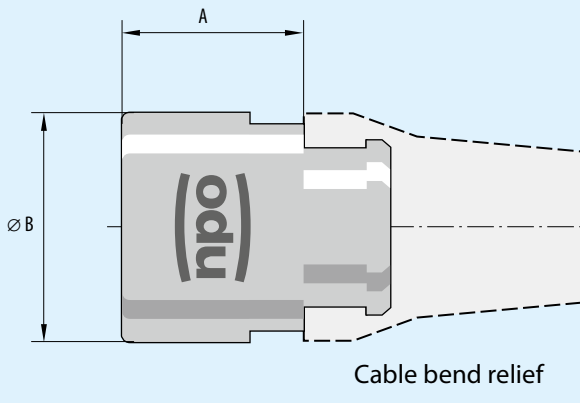
Backnut



Mounting example



Mounting example



Tools

Crimping Tool

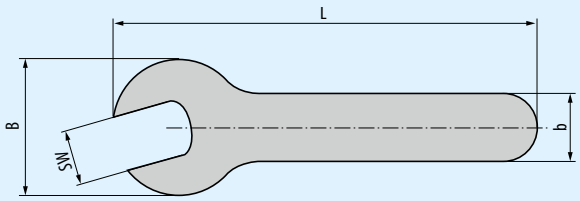
Part number crimping tool	080.000.051.000.000
Part number positioner	see table

Crimping and Removal Tools for Crimp Contacts

Size	Number of contacts	Contact diameter	Cross section		Adjustment	Positioner	Position		Removal tool
			AWG	mm²			for pin	for socket	
0	4 – 5	0.7	28 – 32	0.09 / 0.04	0.57	080.000.051.105.000	1	2	087.7CC.070.001.000
	4 – 5	0.7	22 – 26	0.38 / 0.15	0.67	080.000.051.105.000	1	2	087.7CC.070.001.000
	2 – 3	0.9			0.67	080.000.051.105.000	3	4	087.7CC.090.001.000
	2 – 3	0.9	20 – 24	0.50 / 0.25	0.67	080.000.051.105.000	3	4	087.7CC.090.001.000
1	6 – 8	0.7	28 – 32	0.09 / 0.04	0.57	080.000.051.105.000	1	5	087.7CC.070.001.000
	6 – 8	0.7	22 – 26	0.38 / 0.15	0.67	080.000.051.105.000	1	5	087.7CC.070.001.000
	4 – 5	0.9			0.67	080.000.051.105.000	3	6	087.7CC.090.001.000
	4 – 5	0.9	20 – 24	0.50 / 0.25	0.67	080.000.051.105.000	3	6	087.7CC.090.001.000
	2 – 3	1.3	18 – 20	1.00 / 0.50	1.12	080.000.051.105.000	7	8	087.7CC.130.001.000
2	12 – 19	0.7	28 – 32	0.09 / 0.04	0.57	080.000.051.106.000	1	2	087.7CC.070.001.000
	12 – 19	0.7	22 – 26	0.38 / 0.15	0.67	080.000.051.106.000	1	2	087.7CC.070.001.000
	8 – 10	0.9			0.67	080.000.051.106.000	3	4	087.7CC.090.001.000
	8 – 10	0.9	20 – 24	0.50 / 0.25	0.67	080.000.051.106.000	3	4	087.7CC.090.001.000
	4 – 7	1.3			0.67	080.000.051.106.000	5	6	087.7CC.130.001.000
	4 – 7	1.3	18 – 20	1.0 / 0.50	1.12	080.000.051.106.000	5	6	087.7CC.130.001.000
	3	1.6	18 – 20	1.00 / 0.50	1.12	080.000.051.107.000	1	2	087.7CC.160.001.000
	3	1.6	18	1.50 / 1.00	1.12	080.000.051.107.000	1	2	087.7CC.160.001.000
	3		14 – 16		1.3				
	2	2.0	18		1.12	080.000.051.107.000	3	4	087.7CC.200.002.000
	2		14 – 16		1.3				
3	20 – 30	0.7	28 – 32	0.09 / 0.04	0.57	080.000.051.106.000	1	7	087.7CC.070.001.000
	20 – 30	0.7	22 – 26	0.38 / 0.15	0.67	080.000.051.106.000	1	7	087.7CC.070.001.000
	14 – 18	0.9			0.67	080.000.051.106.000	3	8	087.7CC.090.001.000
	14 – 18	0.9	20 – 24	0.50 / 0.25	0.67	080.000.051.106.000	3	8	087.7CC.090.001.000
	8 – 10	1.3			0.67	080.000.051.106.000	5	9	087.7CC.130.001.000
	8 – 10	1.3	18 – 20	1.00 / 0.50	1.12	080.000.051.106.000	5	9	087.7CC.130.001.000
	7	1.6			1.12	080.000.051.107.000	1	5	087.7CC.160.001.000
	7	1.6	18	1.50 / 1.00	1.12	080.000.051.107.000	1	5	087.7CC.160.001.000
	7		14 – 16		1.3				

Spanner Wrench

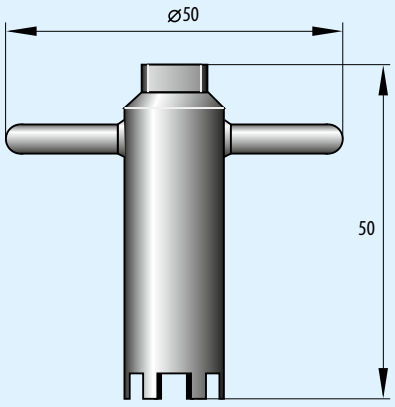
Part number	Dimensions in mm				
	SW	t	B	L	b
598.700.001.016.000	5	1.5	18.5	92	8
598.700.001.015.000	5.5	1.5	18.5	92	8
598.700.001.021.000	6	2	18.5	92	8
598.700.001.011.000	7	2	18.5	92	8
598.700.001.001.000	8	2	18.5	92	8
598.700.001.022.000	9	2	21.5	102	9
598.700.001.002.000	10	2	21.5	102	9
598.700.001.012.000	11	2	24.5	115	10
598.700.001.003.000	12	2.5	24.5	115	10
598.700.001.017.000	12.5	4	24.5	115	10
598.700.001.004.000	13	2.5	30.5	98	16.5
598.700.001.005.000	14	2.5	30.5	98	16.5
598.700.001.006.000	15	3	35.5	145	15
598.700.001.007.000	16	3	35.5	145	15
598.700.001.008.000	17	3	35.5	145	15
598.700.001.023.000	18	3	42	172	16
598.700.001.013.000	19	3	42	172	16
598.700.001.009.000	20	3	42	172	16
598.700.001.018.000	21	3	42	172	16
598.700.001.010.000	22	3	47	119	23.5
598.700.001.014.000	24	3	54	119	23.5
598.700.001.024.000	27	3	55	150	25
598.700.001.019.000	30	3	50	150	25
598.700.001.020.000	31	3	50	150	25



t = thickness

Nutdriver for Slotted Mounting Nut

Part number nutdriver	Thread	
Suitable for style 8 / series L and B:		
700.098.002.000.000	M 9 × 0.5	
700.098.001.000.000	M 10 × 0.5	
700.098.001.000.000	M 12 × 1	
701.098.002.000.000	M 14 × 1	
701.098.001.000.000	M 15 × 1	
702.098.001.000.000	M 16 × 1	
702.098.001.000.000	M 18 × 1	
703.098.001.000.000	M 20 × 1	
Suitable for style 3 / series K:		
701.098.002.000.000	M 14 × 1	
721.098.001.000.000	M 16 × 1	
703.098.001.000.000	M 20 × 1	
724.098.001.000.000	M 30 × 1	

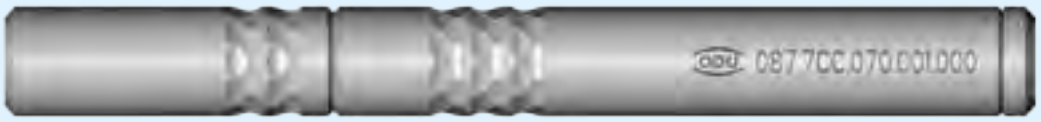


Removal Tool for Crimp-Clip-Contacts

Part number	Contact diameter mm	
087.7CC.070.001.000	0.7	
087.7CC.090.001.000	0.9	
087.7CC.130.001.000	1.3	
087.7CC.160.001.000	1.6	

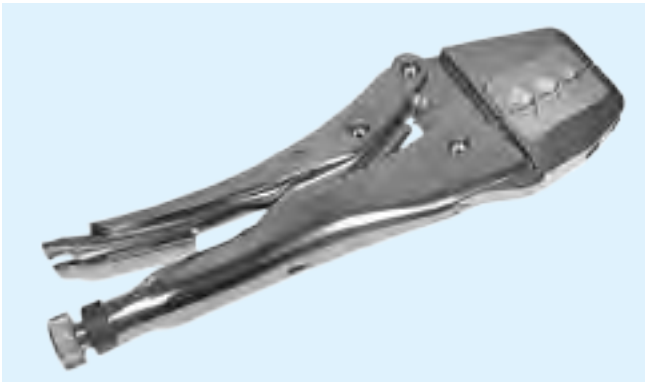
Crimp-clip-contact

Removal tool

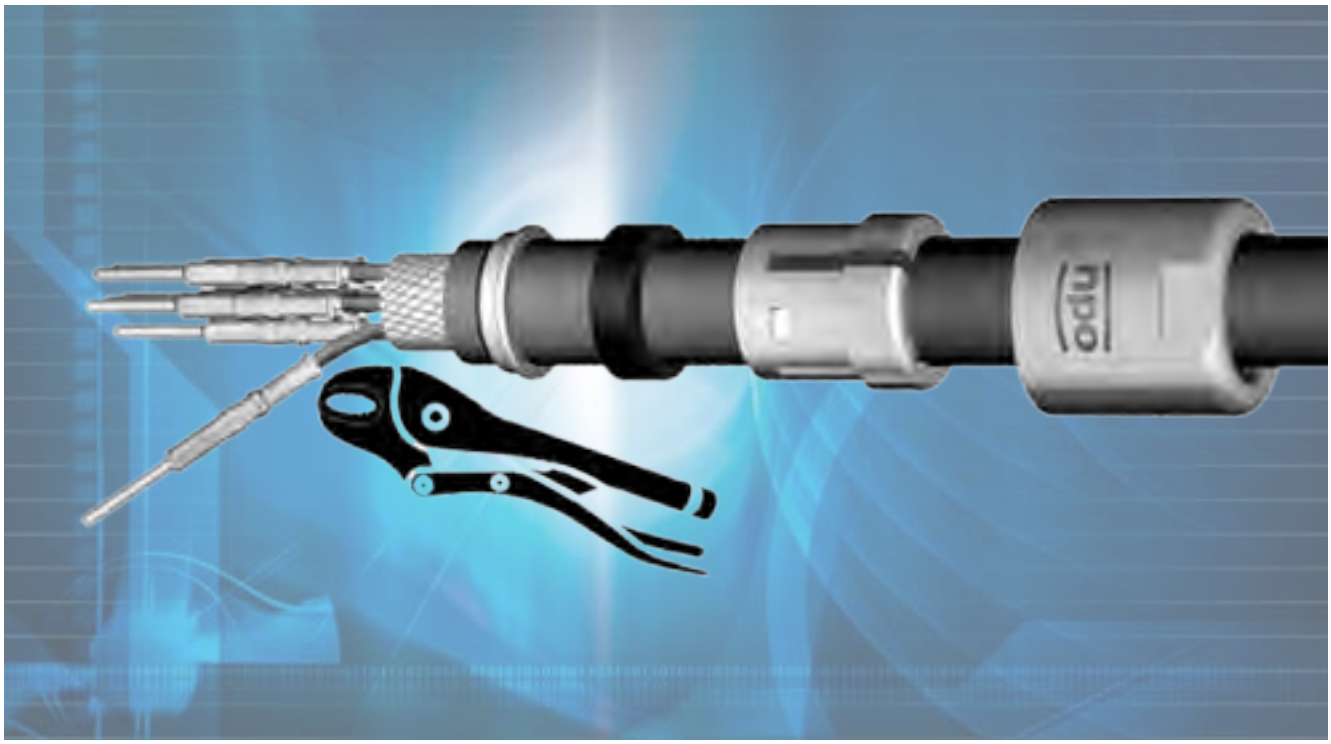


Assembly Tool Series K

Part number: 080.000.055.000.000
– Useable from Size 0 until 4
– To clamp the inner housing for back nut assembly
– Incl. jaws for bench vise fixing for easy handling.



Assembly Instructions



Assembly instructions are available for download on our website: www.odu.de/downloadcenter.html

The following instruction sheets for assembly are available for download:

Serie L

– Unsealed right-angled plug connectors (IP 50).

Serie K

– Sealed connectors (IP 68), crimp termination

– Sealed connectors (IP 68), solder termination

– Sealed right-angled plug connectors (IP 68) .

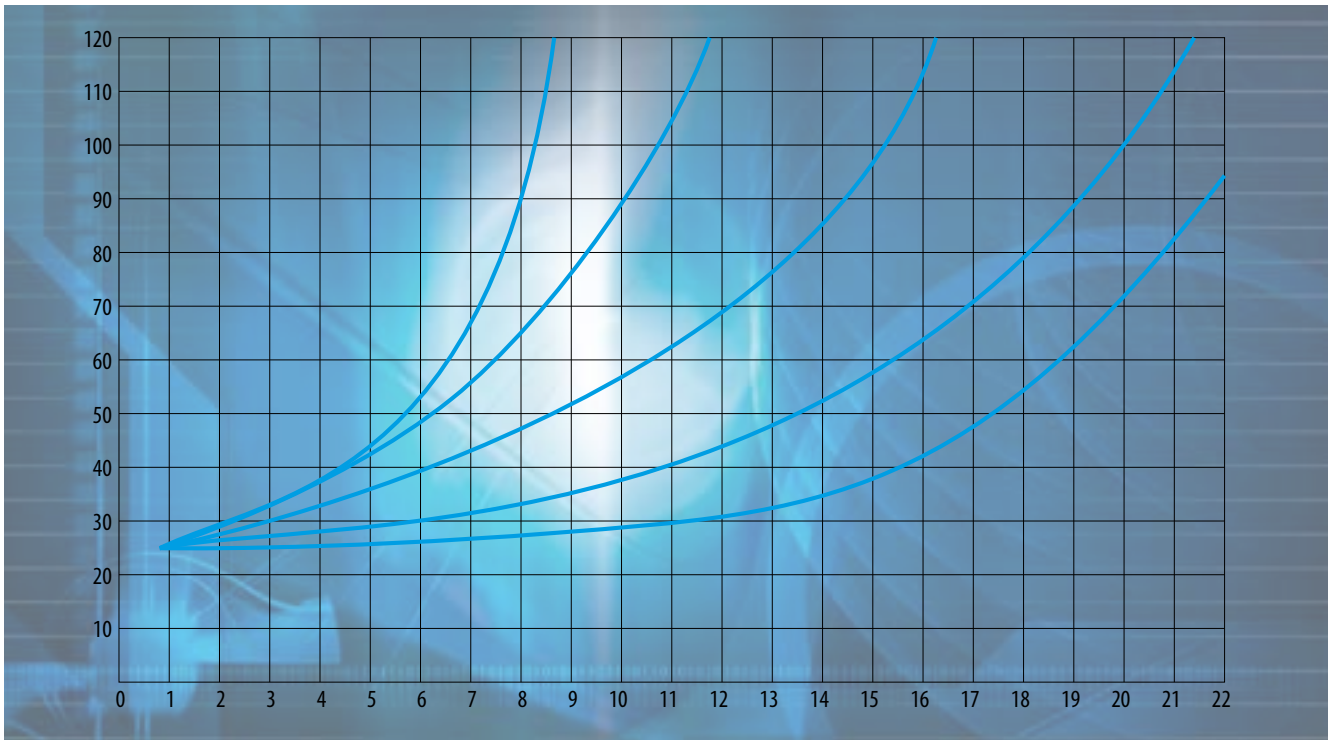
Serie B

– Sealed connectors (IP 68), crimp termination

– Sealed connectors (IP 68), solder termination

– Sealed right-angled plug connectors (IP 68).

Technical Information



International Protection (IP) Classes DIN EN 60 529 (respectively IEC 529 / VDE 0470 T1)

Code letters (International Protection) **IP**

First code number (Protection against solid foreign bodies) **6**

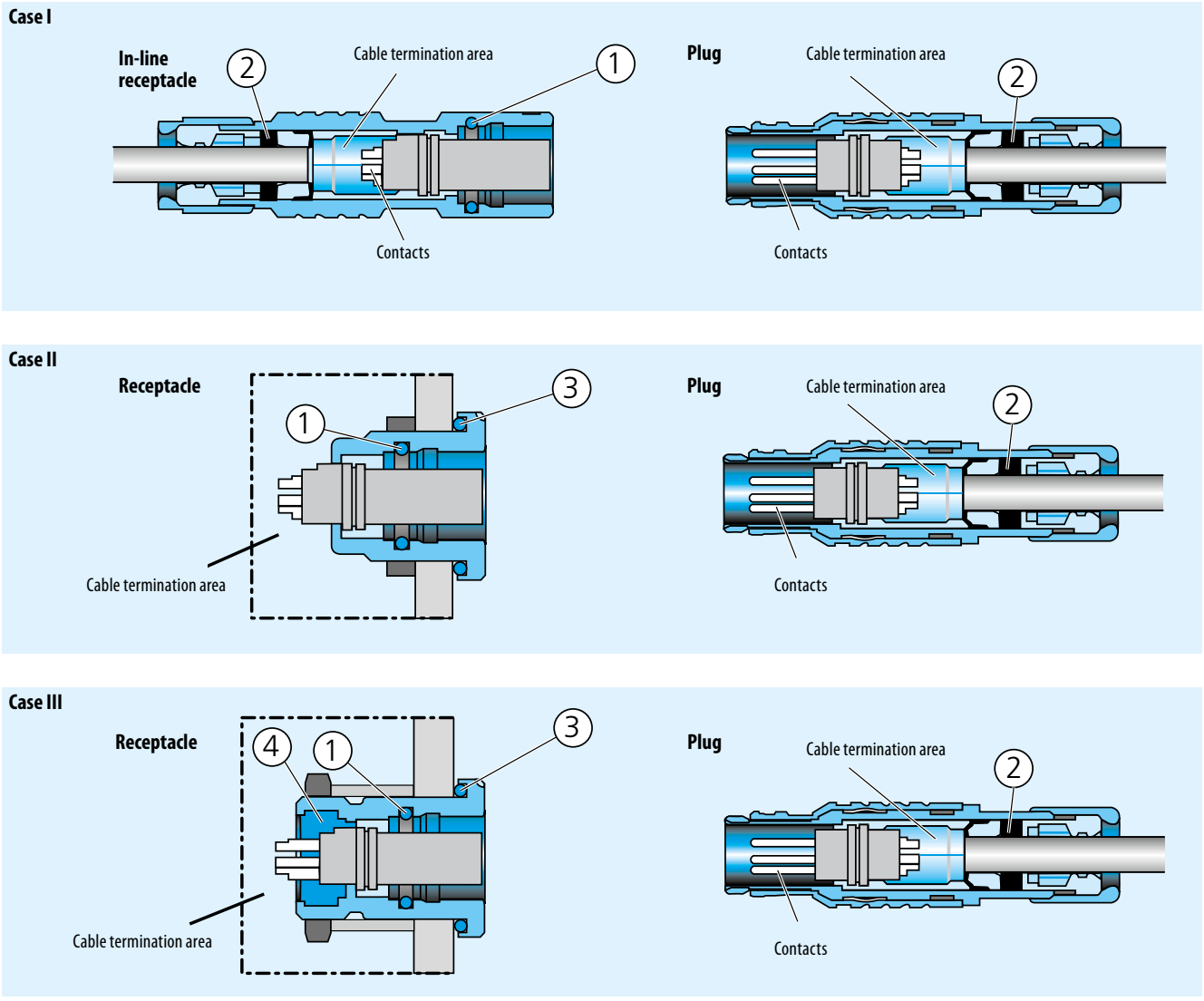
Second code number (Protection against water) **5**

Code number	Extent of protection			Code number	Extent of protection		
0	No protection		No protection against contact, no protection against solid foreign bodies	0	No protection against water		No protection against water
1	Protection against large foreign bodies		Protection against large-surface contact with the back of the hand, protection against foreign bodies ∅ ≥ 50 mm	1	Protection against dripping water		Protection against vertically falling water drops
2	Protection against medium-sized foreign bodies		Protection against contact with the fingers, protection against foreign bodies. ∅ ≥ 12 mm	2	Protection against dripping water when tilted		Protection against falling water drops when tilted (any angle up to 15° from the vertical)
3	Protection against small foreign bodies		Protection against contact with tools, wires, or the like with ∅ ≥ 2.5 mm, protection against foreign bodies ∅ ≥ 2.5 mm	3	Protected against spraying water		Protection against water spraying at any angle up to 60° from the vertical
4	Protection against granular foreign bodies		The same as 3, except ∅ ≥ 1 mm	4	Protection against splashing water		Protection against splashing water from all directions
5	Protection against dust deposits		Protection against contact, protection against harmful dust deposit in the interior	5	Protection against water jet		Protection against water jet (nozzle) from any angle
6	Protection against dust ingress		Protection against foreign bodies ∅ ≥ 1 mm, protection against dust ingress	6	Protection against powerful water jet		Protection against powerful water jet from any angle
				7	Protection against immersion		Protection against water ingress during temporary immersion
				8	Protection against continuous immersion		Protection against pressurized water during continuous immersion
				9k[1]	Protection against high pressure		Protection against water from high-pressure/ steam jet cleaners.

[1] IP x9k is not included in EN 60529 or IEC 60529, but is included in DIN 40 050-9.

Watertightness

ODU offers IP 50 and IP 68 connectors in series B and L in the same outside diameter. Because ODU connectors must be compatible with other manufacturers, the company also offers the series K. These connector is larger in diameter than the standard version (series L).



Protection against water through following seals[1]:

Case	Termination area	Mated		Unmated	
		Sealed	Position	Sealed	Position
I	Cable – termination area	Yes	❶ ❷	No	
II	Device – termination area	Yes	❶ ❷ ❸	No	
III	Device – termination area	Yes	❶ ❷ ❸	Yes	❸ ❹

No.	Sealing Part
❶	O-ring
❷	Sealing ring[2]
❸	O-ring
❹	Potting

[1] Contacts: in mated condition the contacts are protected (in cases I, II, III) .
In unmated condition the contacts can be protected using a protective cover (see page 89).
The cover must be removed before mating the plug with the receptacle.
[2] The sealing ring acts as the cable sealing. It requires exact knowledge of the cable dimension.
Important factors: Diameter tolerance, roundness, cable design and cable jacket hardness.

All IP 68 submersible ODU MINI-SNAP connectors are rated to 2 m water depth (0.2 bar) for 24 hours in accordance with DIN EN 60 529.
A watertight plug requires a cable grommet in the collet. The grommet has to fit tightly over the cable. The cable jacket must be smooth, cylindrical and free of grooves.
The plug should be potted for watertightness in unmated condition.

Housing Materials and Surface Finish

ODU MINI-SNAP housings are made from brass and are nickel-plated with a matt-chromate surface finish (sand-blasted). Nickel-plated or black chromate-finished housings are available on special request.
Inside metal components are made from nickel-plated brass.

Component parts	Material Designation	Surface Thickness of the film
Housing Back nut Slotted nut	Cu-alloy	Cr
Collet EMI ring Half-shells Locking washeer Nut Retainer Ring	Cu-alloy	Ni
Pin (solder or PCB) Socket (solder or PCB) Pin (crimp) Socket (crimp)	Cu-alloy	Au

Insulation Body Material (RoHS 2011/65/EC recognized)

	Norm	Unit	PBT	PTFE [1)]	PEEK
Dialectric strength	DIN 53481	KV/mm	27	> 50	19
Operation temperature	ASTM D-149	°C	– 40/+140	– 100/+260	– 50/+250
Flammability rating	UL–94	–	V-0	V-0	V-0
Creeping distance acc. to CTI	IEC 60 112		275	600	175

[1] PTFE (Teflon) is only used for coax and triax connectors.

Termination Styles

Contact blocks (insulation bodies with contacts) are interchangeable between receptacle and plug. As a rule the socket contact blocks are mounted in the part under power.

ODU offers the following contact termination styles:

– Solder

– Crimp

– PCB.

Termination styles for turned contacts

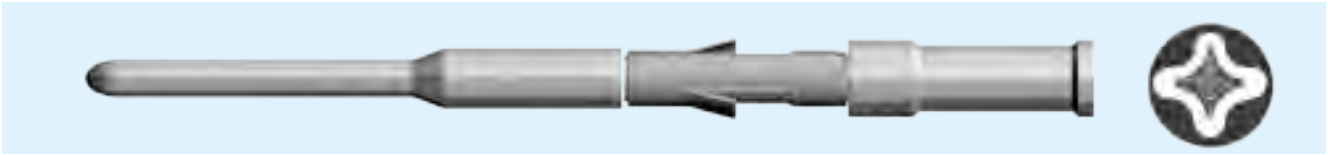
Solder termination
The contacts come mounted by the factory. The insulation body and the pre-assembled contacts are called a contact block.

Crimp termination
A single contact is crimped to a single conductor. Subsequently, the crimped contact is pushed into the insulation body. Crimp contacts and insulation bodies are shipped separately.
Crimping creates a reliable, corrosion-free and durable connection between the contact and the conductor. Crimping causes the crimp barrel of the contact and the conductor material to cold flow. It creates a gas-tight connection between contact and conductor.
The ODU MINI-SNAP generally requires the industry-standard 8-point crimping tool .

Printed circuit board (PCB) termination
PCB pins are used only for receptacles which are mounted directly to the PCB. The contacts are permanently installed in the insulation body.

Solder termination

Crimp termination (Crimp-clip-contact for PEEK Insulator)



Printed circuit board (PCB) termination

Conversions AWG – Cross Section (AWG = American Wire Gauge)

The AWG system describes the cross section of a wire using a gauge number for every 26 % increase in conductor cross section. With larger wire diameters, the AWG gauge numbers decrease; as the wire sizes increase, the AWG gauge numbers decrease. This is only valid for solid conductors.

Most wires are made with **stranded conductors.** Compared to solid conductors stranded wires offer higher durability, higher flexibility and better performance under bending and vibration.

Stranded wires are made from wires with smaller gauge sizes (higher AWG gauge number). The AWG gauge number of the stranded wire is equal to that of a solid conductor of the same size wire. The cross section of the stranded conductor is the sum of cross sections of the single conductors.
For example, a AWG-20 stranded wire of 7 AWG-28 conductors has a cross section of 0.563 mm²; an AWG-20 stranded wire with 19 AWG-32 conductors has a cross section of 0.616 mm².

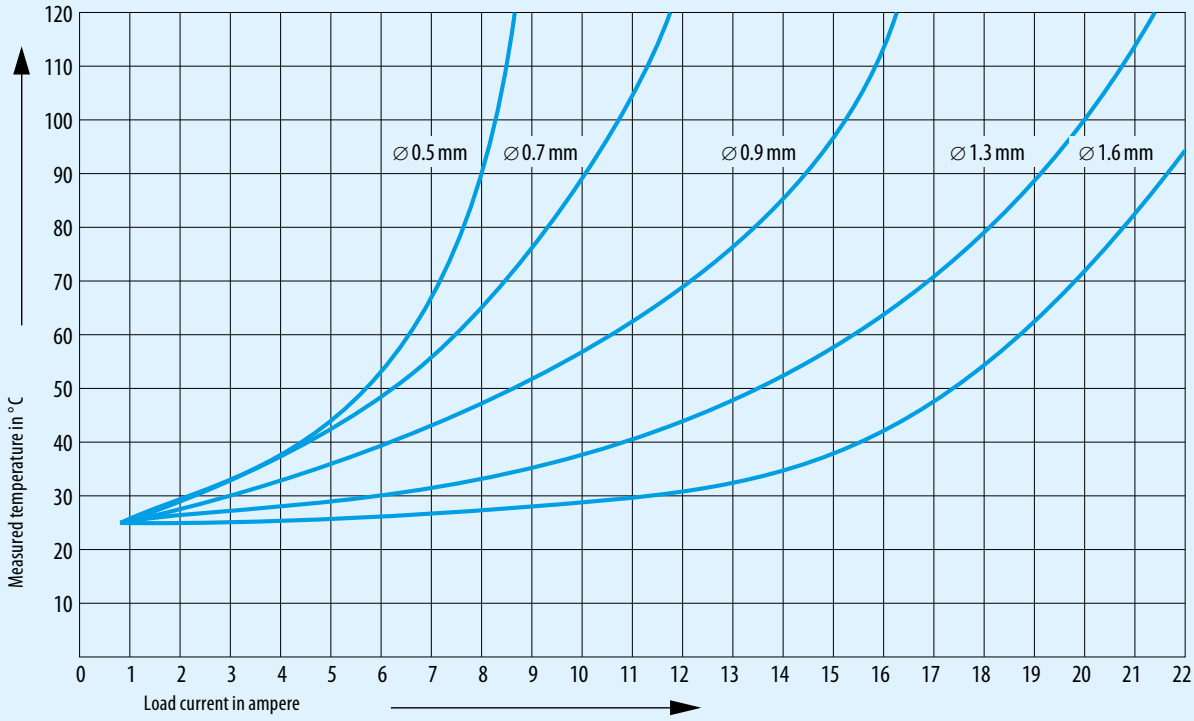
Source: Gore & Associates, Pleinfeld

Conversion table AWG/mm²

Circular wire					
AWG	Diameter		Cross section	Weight	Max. resistance
	Inch	mm	mm²	kg/km	Ω/km
10 (1)	0.1020	2.5900	5.2700	47.000	3.45
10 (37/26)	1.1090	2.7500	4.5300	43.600	4.13
12 (1)	0.0808	2.0500	3.3100	29.500	5.45
12 (19/25)	0.0895	2.2500	3.0800	28.600	6.14
12 (37/28)	0.0858	2.1800	2.9700	26.300	6.36
14 (1)	0.0641	1.6300	2.0800	18.500	8.79
14 (19/27)	0.0670	1.7000	1.9400	18.000	9.94
14 (37/30)	0.0673	1.7100	1.8700	17.400	10.50
16 (1)	0.0508	1.2900	1.3100	11.600	13.94
16 (19/29)	0.0551	1.4000	1.2300	11.000	15.70
18 (1)	0.0403	1.0200	0.8200	7.320	22.18
18 (19/30)	0.0480	1.2200	0.9600	8.840	20.40
20 (1)	0.0320	0.8130	0.5200	4.610	35.10
20 (7/28)	0.0366	0.9300	0.5600	5.150	34.10
20 (19/32)	0.0384	0.9800	0.6200	5.450	32.00
22 (1)	0.0252	0.6400	0.3240	2.890	57.70
22 (7/30)	0.0288	0.7310	0.3540	3.240	54.80
22 (19/34)	0.0307	0.7800	0.3820	3.410	51.80
24 (1)	0.0197	0.5000	0.1960	1.830	91.20
24 (7/32)	0.0230	0.5850	0.2270	2.080	86.00
24 (19/36)	0.0252	0.6400	0.2400	2.160	83.30
26 (1)	0.1570	0.4000	0.1220	1.140	147.00
26 (7/34)	0.0189	0.4800	0.1400	1.290	140.00
26 (19/38)	0.0192	0.4870	0.1500	1.400	131.00
28 (1)	0.0126	0.3200	0.0800	0.716	231.00
28 (7/36)	0.0150	0.3810	0.0890	0.813	224.00
28 (19/40)	0.0151	0.3850	0.0950	0.931	207.00
30 (1)	0.0098	0.2500	0.0506	0.451	374.00
30 (7/38)	0.0115	0.2930	0.0550	0.519	354.00
30 (19/42)	0.0123	0.3120	0.0720	0.622	310.00
32 (1)	0.0080	0.2030	0.0320	0.289	561.00
32 (7/40)	0.0094	0.2400	0.0350	0.340	597.10
32 (19/44)	0.0100	0.2540	0.0440	0.356	492.00
34 (1)	0.0063	0.1600	0.0201	0.179	951.00
34 (7/42)	0.0083	0.2110	0.0266	0.113	1,491.00
36 (1)	0.0050	0.1270	0.0127	0.072	1,519.00
36 (7/44)	0.0064	0.1630	0.0161	0.130	1,322.00
38 (1)	0.0040	0.1000	0.0078	0.072	2,402.00
40 (1)	0.0031	0.0800	0.0050	0.043	3,878.60
42 (1)	0.0028	0.0700	0.0038	0.028	5,964.00
44 (1)	0.0021	0.0540	0.0023	0.018	8,660.00

Current Load – Contacts

Nominal single contact current load for pin / slotted socket (nominal diameter 0.5 mm – 1.6 mm)



Maximum operating temperature for standard contacts: +120° C

Test contact was terminated to largest possible conductor.

Connectors or cables with more than one contact or conductor generate a higher heat than a single contact. Therefore, a **derating factor** must be applied.
For connectors the derating factor is applied according to DIN 57 298 Teil 4 / VDE 0298 Teil 2.
The derating factor is used starting with 5 loaded wires (DIN 41 640 T3).

Derating factor

Number of loaded wires	Derating factor
5	0.75
7	0.65
10	0.55
14	0.50
19	0.45
24	0.40

Operating Voltage acc. to SAE AS 13441-Method 3001.1

The values acc. to SAE AS 13441-method 3001.1 comply with MIL-Std. 1344 – method 3001.
The chart values results are acc. to IEC 60512-2; Test 4. The inserts have been tested in mated condition and the test voltage was applied to the pin insert.

75 % of the measured break-down voltage is the basic for the further calculation. ⅓ of this value is the corresponding operating voltage.

All tests were performed at standard environment conditions (room temperature) and can be applied up to an altitude of 2,000 m.
For any deviations one has to consider the reduction factor acc. to the relevant standards.

Test voltage: **Break-down voltage × 0.75**
Operating voltage: **Break-down voltage × 0.75 × 0.33**

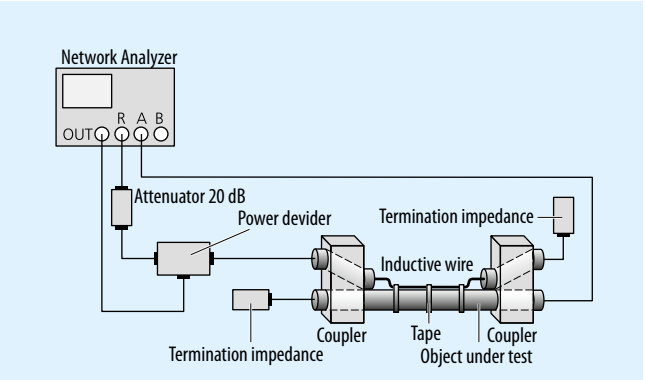
Caution
Electrical appliances: for various applications the safety requirements regarding the operating voltage is even more severe!
The relevant datas in such cases for the operating voltage are the creepage and clearance distances. For any advise how to choose the proper connector please consult us and indicate the safty standard which your product has to meet.

Electromagnetic Compatibility (EMC)

When discussing electromagnetic compatibility (EMC) one should not only consider the device or the circuit, but also include the network and the entire data communication link. This involves all connecting elements such as conductors and connectors. Electromagnetic interference from the outside into the connector can lead to system malfunctioning. The best way to prevent this is by providing a high-quality shield between the cable and the connector. In order to provide reliable EMC data to our customers we engaged the services of a certified test laboratory to investigate the EMC characteristics of the ODU MINI-SNAP. They tested for us size 00, 0, 1, 2 and 3 MINI-SNAP connectors.

Measurements were conducted using the inductive wire or parallel wire method in accordance with test procedure VG 55214-6-2. In this set-up, the mated connector is connected on one end to a network analyzer and terminated on the other end with a suitable impedance. The inductive wire is then mounted in close proximity along the mated connector pair. The induction wire is a ribbon cable which permits to vary the level of induction by using more or less of the ribbon conductors.

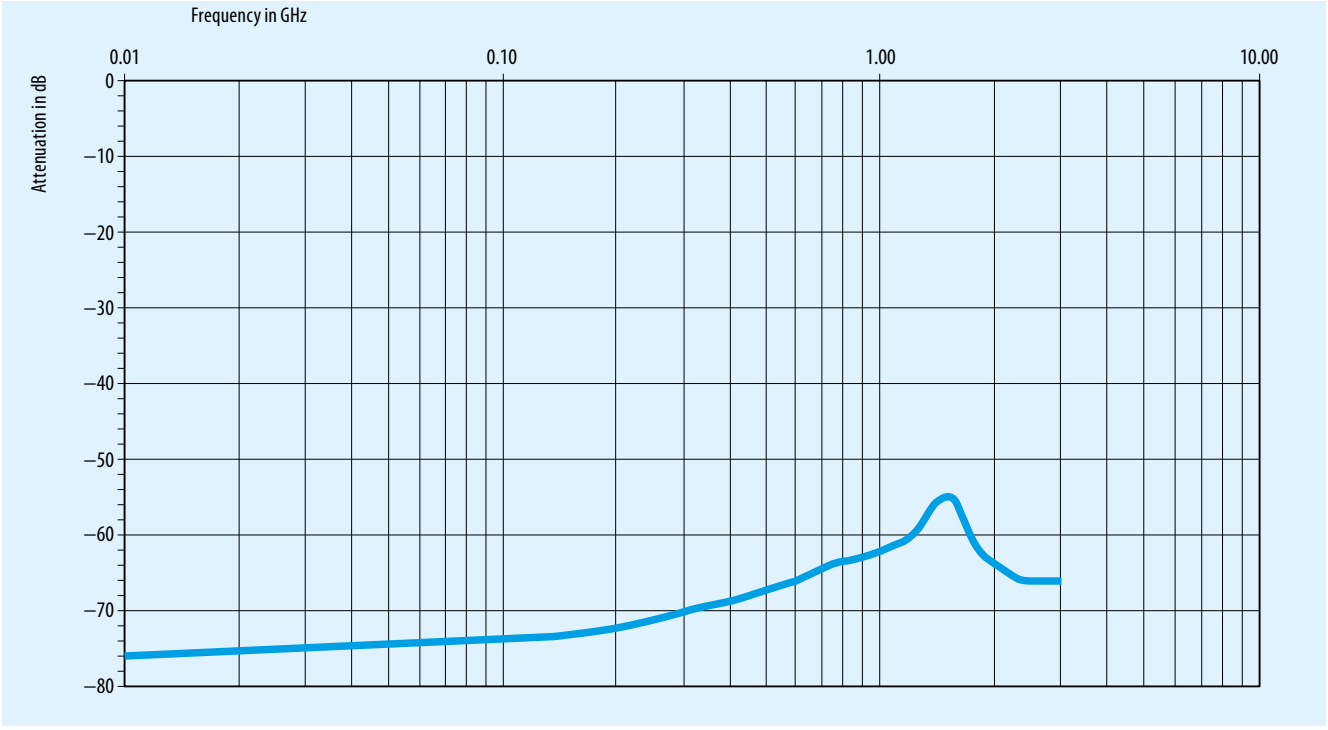
Next, a signal with a frequency range of 10 kHz to 3 GHz is connected to the ribbon cable. The network analyzer is used to measure the amount of signal induced into the



connector circuit. The result is shown as the shielding attenuation AT in dB. It is essential that all leads to the connector are shielded so that no signal can be induced into the circuit at any other place except the connector. The various attenuation values are plotted on a logarithmic scale as attenuation in dB vs. frequency.

An attenuation of better than – 55 dB is generally required for reliable connector and system operation. It can be shown that our connectors will meet this requirement in all applications.

The following diagram is valid for all series and standard sizes.

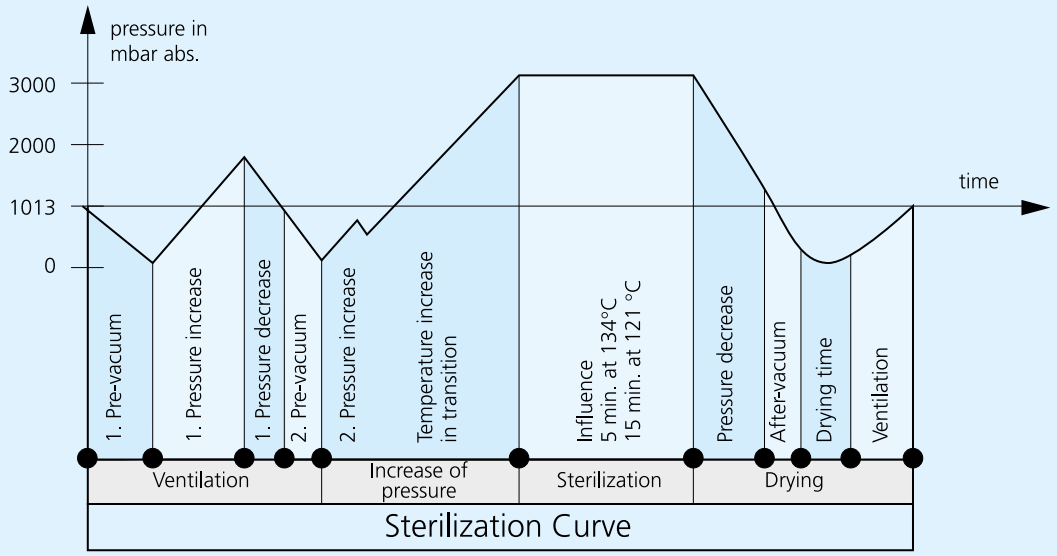


Autoclaving of ODU MINI-SNAP Connectors

If required ODU can deliver MINI-SNAP connectors for the following sterilization process:
Steam-sterilization with pre-vacuum or gravitation-process.

Connectors were tested with autoklave equipment with reference to DIN EN 13060 at 134° C and 500 cycles.
For other sterilization-processes please contact our technical support team.

Sterilization curve



Test Standard

In the scope of quality approval the sizes 0 and 3 have been submitted to environmental and mechanical tests acc. to MIL. All tests have been passed.

Test carried out

Definition	Standard
High temperature	MIL-STD 810 F / PV 501
Low temperature	MIL-STD 810 F / PV 502
Temperature shock	MIL-STD 810 F / PV 503
Humidity	MIL-STD 810 F / PV 507
Salt fog	MIL-STD 810 F / PV 509 and MIL-STD 1344 A / Methode 1001.1
Shock	MIL-STD 810 F / PV 516
Vibration	MIL-STD 1344 A / Methode 2005.1 / IV
Water thigtness IP 68	IEC 60529

Technical Information / Definitions / Terms

Air gap
Shortest distance between two conductive elements through the air.

Autoclavability
See page 114.

AWG
See page 110.

Creepage distance
The distance measured across the surface of a dielectric between two contacts or a contact and a metal part. The longer the distance, the lesser the risk of damage or tracking. Minimum creepage distances are specified according to the operating voltage and the applicable isolation group.

Crimping area
The part of a crimp barrel at which the crimp connection is achieved by pressure deformation or by reshaping the barrel around the conductor.

Crimp barrel
A hollow part of a contact which accepts one or more conductors and which may be crimped through the application of a crimping tool.

Crimp connection
The permanent attachment of a contact to a conductor by pressure deformation or by reshaping the crimp barrel around the conductor so that a good electrical and mechanical connection is established. (See page 109).

Connector
A component which terminates conductors for the purpose of providing connection and disconnection to a suitable mating component. Depending on the fastening to a cabinet, panel, rack etc. or a cable, they are classification.

Delivery
Delivery of the connectors usually as components (that means not assembled).
Exception: Solder contacts are factory-installed in the insulation body.

Fixed connector
A connector for attachment to a rigid surface (panel).

Free connector
A connector for attachment to the free end of a wire or cable. Also called free hanging connector or in-line receptacle.

Insertion or withdrawal force
The force required to fully mate or unmate a set of connectors without the effect of coupling, locking or similar devices. The insertion force is usually greater than the withdrawal force. Also called mating and unmating force.

Insulation body
Non-conductive part of a connector, to electrically and mechanically separate live parts and to protect against accidental touch.

Insulation group
Classification of connectors according to the operating and working conditions (insulation groups according DIN VDE 0110).

Keying
System of projections and grooves on mating connectors which prevent otherwise identical connectors from being mated. This is useful when several connectors of the same style are used in the same application (see page 9, 29, 47).

Lower limit temperature
The lowest permissible temperature which a connector or a plug-in device is allowed to be operated.

Materials
The contacts are made of Cu-alloy and gold-plated. The standard housings are made of Cu-alloy with a matt-chromate surface finish. All other materials and surfaces on special request (see page 108).

Mating cycles
Mechanical operation of connectors and plug-in devices by insertion and withdrawal. One mating cycle comprises one insertion and one withdrawal operation.

Nominal single contact current load
Current load, which can load every single contact (see page 111).

Nominal voltage
Nominal voltage characterizes a component.

Operating temperature of the ODU MINI-SNAP
Range between upper and lower temperature limits.
–40° C to +120° C (see page 7).

Print connection
(see page 109).

Printed circuit board
Boards, typically made of epoxy-filled glass fiber fabric, with conductive pattern on one or both sides, or in case of multilayer boards, also imbedded inside the board. They feature metallized holes for soldering wire-mounted components or for the insertion of insertion of resilient or rigid press-in pins or instead, pads for attaching components using surface mount technology (SMT).

Reference current
The current at which a connector can be operated permanently simultaneously through all contacts without reaching maximum temperature.

Reference voltage
Normal voltage (VDE 0110) for a connector.

Solder termination
(See page 109 termination styles)

Termination cross-section
The indicated cross-sections correspond to a flexible conductor design in accordance with EN 60228:2005 class 5 or to a flexible conductor design (7/19 strands) in accordance with AWG (ASTM B258-02).

Termination techniques
Methods for connecting a wire to an electro-mechanical component, e.g. solderless connection according to IEC 60352: respectively such as crimp, press-in etc. or solder connections.

Test voltage
The voltage the connectors are tested, and are being referred on definite characteristics.

Upper limit temperature
Highest permissible temperature at which a connector or a plug-in device is allowed to operate. This temperature includes the self-heating and the ambient temperature. At ODU MINI-SNAP +120° C (see page 111).

Watertightness
See page 107

Wire
Wires may be provided with an insulation cover, an electrical shielding. Cables or conductors may consist of one or more wires.

Connectors shown in this catalog are designed to operate at high voltages and high frequencies. Care must be taken to assure that no person can come in contact with live conductors during installation or operation of the connectors.

ODU reserves the right to change design and performance of any product to meet changing technical developments without prior notice. ODU reserves the right to discontinue any part in this catalog without prior notice and without obligation to continue production after the change.

Quality Management

ODU has had a powerful quality management system in place for years. ODU has been successfully certified to ISO 9001 since 1994. In addition, the automotive sector of the company group is certified to ISO TS 16949.
The certification process was carried out by the internationally active BVQI (Bureau Veritas Quality International) company.

ODU is also certified according the medical norm ISO 13485 : 2003 + AC : 2007.

Additional to this ODU is certificated to DIN EN ISO 14001 : 2009 as well as to different certifications: VDE, UL, UL wiring harness, SCA, VG, MIL.

Your Partner in All Areas

ODU means quality, flexibility and reliability. That's the reason why customers of all areas trust in our products:

– Automotive
– Energy
– Industrial
– Medical
– Measuring and testing
– Military and security.

Overview – All Push-Pull Connector Series from ODU

	Push-Pull series	Coding	Sizes	No. of mechanical coding	Diameter plug (mm)	Max. cable ∅ (mm)	Max. no. of contacts	Solder	Crimp	Print	IP Protection Class A[1]	IP Protection Class B[2]
ODU MINI-SNAP L		Pin and groove	00	4	6.5	3.5	04	●	●	●	IP 50	up to IP 68
			0	6	9.5	5.6	10					
			1	7	12.0	7.7	16					
			2	8	15.0	9.9	26					
			3	7	18.0	11.9	30					
			4	1	25.0	16.0	40					
ODU MINI-SNAP K		Pin and groove	0	4	11.0	5.0	10	●	●	●	IP 68	up to IP 68
			1		13.0	7.0	16					
			2		16.0	9.0	26					
			3	1	19.0	10.5	30					
			4	1	25.0	14.0	40					
ODU MINI-SNAP B		Pin and groove	0	6	9.4	5.0	10	●	●	●	IP 68	up to IP 68
			1	8	12.0	7.0	16					
			2	8	15.0	9.0	26					
			3	10	18.0	10.5	30					
ODU MINI-SNAP S		Insulation body	0	1	9.4	5.0	04	●	●		up to IP 68	up to IP 68
			1		12.0	7.0	05					
			2		15.0	9.0	10					
ODU MINI-SNAP F		Half shell	0	2	9.4	5.0	09	●	●	●	up to IP 68	up to IP 68
			1	2	12.0	7.5	12					
			1.5	2	13.0	7.5	19					
			2	2	15.0	9.5	19					
			3	3	18.0	11.5	27					
ODU AMC		Pin and groove	0	4	14.0	5.5	10	●		●	up to IP 69K	IP 68
			1		15.9	6.5	16					
			1.5		16.5	8.0	19					
			2		19.6	10.0	26					
			3		23.9	11.5	37					
			4		33.0	17.5	55					
ODU MINI-SNAP PC		Half shell	1	3	12.5	6.0	14	●	●	●	up to IP 67	IP 50
			2		15.7	9.0	19					
			3		18.7	10.5	27					
ODU MEDI-SNAP		Pin and groove	1	6	13.7	6.5	14	●	●	●	up to IP 64	IP 50
			2	1	18.5	9.2	19					

[1] IP Protection Class in mated condition.
[2] IP Protection Class in unmated condition to the end device.

The Complete ODU Product Range

Single contacts (round or flat)			
High current connectors			
Circular connectors with Push-Pull locking			
Modular rectangular connectors			
PCB connectors			
Robust connectors			
Disposable Systems			
Application specific solutions			
AMC – Advanced Military Connector			
Cable assembly			

Everything From One Source

Each connection needs its individual cable. Make no compromises when it comes to the quality of the complete connection system. ODU gives you the complete system solution from one source, with no intermediary suppliers.

Cable assembly is a very complex subject. It requires equal measures of expertise in the areas of connectors, cables and assembly. ODU meets all these requirements in full.

Our competent assembly team tests the complete system according your specifications. Our assembly service promises you the same quality found in our connectors – without compromises.

ODU offers you all from one source

- 100 % final inspections
- Production in clean room acc. to EN ISO14644-1 possible
- Automatic processes (cutting, stripping, attaching)
- Extrusion possible with a hot-melt and high pressure/ temperature process
- Ultrasound welding
- EMC-compatible assembly
- Application specific labeling
- Widest range of potting possibilities for sealed systems
- Extruded cable crossovers.

Advantages for the customer

- Modern manufacturing facilities in Mühldorf (Germany), Shanghai (China) and Sibiu (Romania)
- Reliability thanks to our company-wide quality strategy
- Products with durability and functional reliability
- Production according to UL (file: E333666) possible
- Inspections, such as crimp force monitoring, during production.

Application Specific Connectors

Innovative, dynamic markets call for innovative connectors.

"As an expert for special applications and requirements, we develop forward-looking, appropriate connectors attuned to your needs!"

In spite of the global trend toward standardized connectors, there are always applications that call for an application specific solution. We accept this challenge and develop innovative products for our customers based on our many years of extensive know-how, our creativity and, not least, our high level of vertical integration. Technology access and technology mastery, combined with intensive cooperation with the user, form the basis for achieving success together.

Design-to-cost is joined by design-for-application for the customer's benefit.

Telefax Inquiry ODU MINI-SNAP L, K, B Fax-No.: +49 8631 6156-49

ODU Steckverbindungssysteme
GmbH & Co. KG
Pregelstr. 11
84453 Mühldorf a. Inn
GERMANY

Company: .....

Name: .....

Department: .....

Street: .....

City: .....

Phone: ..... Date .....

ODU MINI-SNAP Summary of Technical Requirements

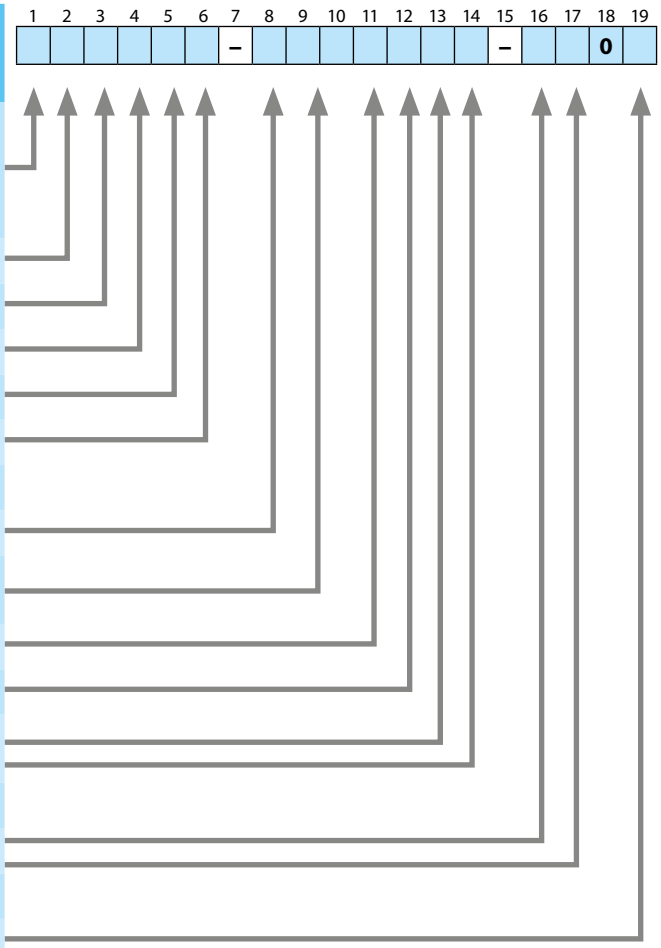
1)	Connector application	_____				
2)	Environment	_____				
		❑ Plug	❑ Receptacle	❑ In-line receptacle		
3)	Connector type	❑ 90° Plug	❑ 90° Receptacle	❑ In-line receptacle		
4)	Special version	_____				
5)	Style	_____				
6)	Size	❑ 00	❑ 0	❑ 1	❑ 2	❑ 3	❑ 4
7)	Series	❑ don't care	❑ L	❑ K	❑ B	
8)	Coding	_____				
9)	Number of positions	_____				
10)	Termination	❑ Solder	❑ Crimp	❑ PCB		
11)	Cross section of wire	_____ mm^2	_____ AWG			
12)	Cable diameter	_____ mm				
13)	Cable bend relief (colour)	_____				
14)	Protection class acc. DIN EN 60 529	❑ IP 50 (standard)	❑ IP 68	❑ other		
15)	Operating temperature	_____ °C max	_____ °C min			
16)	Electrical specs:					
	Operating voltage	_____ V AC	_____ V DC			
	Operating current	_____ A (constant)	_____ A (short-term)	_____ sec.		
17)	Chemical resistance against					
18)	Other requirements					
19)	Autoclavable, 134° C	❑ Yes	❑ No			

→ Required quantity _____

→ Production quantity _____

The Part Number Key

No.	Description	Coding L	Coding K	Coding B
1	Type: A = Break-Away/panel mounted plug G = Receptacle K = In-line receptacle S = Straight plug W = Right-angled plug	A G K S W	A G K S W	A G K S W
2	Style: 1 – 9, A – Z (X = special)	1–8, A–Z	1–8, A–Z	1–8, A–Z
3	Size: 0 – 4, C (C = 00)	0 – 4, C	0 – 4	0 – 3
4	Series	L	K	B
5	Keying			
6	Material/surface of housing			
8	Material insulator			
9 10	Contact configuration (2 positions) e.g. 18-way = 18			
11	Contact type/surface			
12	Contact diameter (M = mixed arrangement)			
13 14	Termination cross section for special contact configurations: 9			
16 17	Collet system			
18		0	0	0
19	Back nut for cable bend relief			



Example plug, series L

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	2	2	L	0	C	–	P	1	6	M	F	G	0	–	7	2	0	S

Plug – Style 2 – Size 2 – Series L – Coding 0° – Brass matt chromate housing – PEEK insulator – 16 pos. – Pin (solder) 0.75 µm Au – Term. cross section AWG 22 – Cable diameter 6.0–7.2 mm – Back nut for silicone cable bend relief (silicone cable bend relief to order separately)

Example receptacle, series L

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	5	2	L	0	C	–	P	1	6	N	F	G	0	–	0	0	0	0

Receptacle – Style 5 – Size 2 – Series L – Coding 0° – Brass matt chromate housing – PEEK insulator – 16 pos. – Socket (crimp) 0.75 µm Au – Term. cross section AWG 22

Example plug, series K

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	2	2	K	0	C	–	P	1	6	M	F	G	0	–	7	0	0	S

Plug – Style 2 – Size 2 – Series K – Coding 0° – Brass matt chromate housing – PEEK insulator – 16 pos. – Pin (solder) 0.75 µm Au – Term. cross section AWG 22 – Cable diameter 6.5–7.0 mm – Back nut for silicone cable bend relief (cable bend relief to order separately)

Example receptacle, series K

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	3	2	K	0	C	–	P	1	6	N	F	G	0	–	0	0	0	0

Receptacle – Style 3 – Size 2 – Series K – Coding 0° – Brass matt chromate housing – PEEK insulator – 16 pos. – Socket (crimp) 0.75 µm Au – Term. cross section AWG 22

Example plug, series B

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	4	2	B	0	C	–	P	1	6	M	F	G	0	–	7	5	0	S

Plug – Style 4 – Size 2 – Series B – Coding 0° – Brass matt chromate housing – PEEK insulator – 16 pos. – Pin (solder) 0.75 µm Au – Term. cross section AWG 22 – Cable diameter 7.0–7.5 mm – Back nut for silicone cable bend relief (cable bend relief to order separately)

Example receptacle, series B

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	2	2	B	0	C	–	P	1	6	L	F	G	0	–	0	0	0	0

Receptacle – Style 2 – Size 2 – Series B – Coding 0° – Brass matt chromate housing – PEEK insulator – 16 pos. – Socket (solder) 0.75 µm Au – Term. cross section AWG 22

Please open

ODU Worldwide

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