

K Series

K series connectors have been specifically designed for outdoor applications.

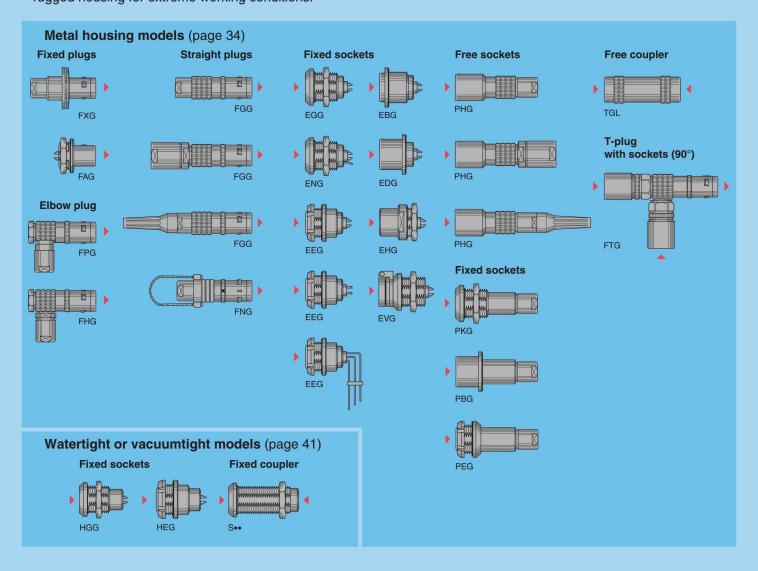
They include an inner sleeve and two seals to prevent penetration of solids or liquids into the housing formed by the plug, free socket, fixed socket or coupler. All models of this series are watertight when mated to give a protection index of IP68 as per IEC 60529 standard (in mated condition) when correctly assembled to an appropriate cable (IP66 otherwise).

K series connectors have the same insulators as the B series and have the following main features:

— security of the Push-Pull latching system

— watertight connection (IP 68/IP 66)

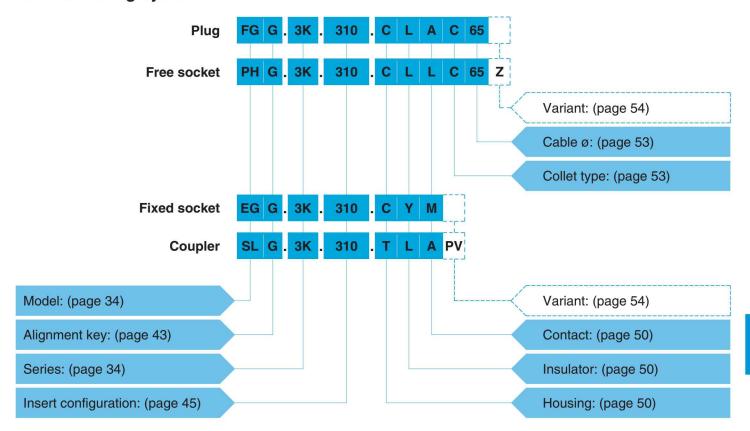
- security of the Push-Pull latching system
 multipole types 2 to 64 contacts
- keying system («G» key standard) for connector alignment
- 360° screening for full EMC shielding
- rugged housing for extreme working conditions.
- solder, crimp or print (straight or elbow) contacts
- multiple key options to avoid cross mating of similar connectors
- high packing density for space savings





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Part Numbering System



Part Number Example

Straight plug with cable collet:

FGG.3K.310.CLAC65 = straight plug with key (G) and cable collet, 3K series, multipole type with 10 contacts, outer shell in chrome-plated brass, PEEK insulator, male solder contacts, C type collet for 6.5 mm diameter cable.

Free socket

PHG.3K.310.CLLC65Z = free socket with key (G) and cable collet, 3K series, multipole type with 10 contacts, outer shell in chrome-plated brass, PEEK insulator, female solder contacts, C type collet for 6.5 mm diameter cable and nut for fitting a bend relief.

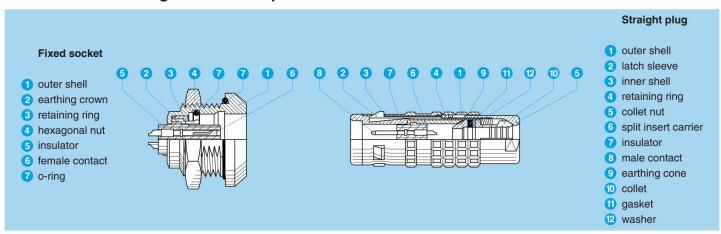
Fixed socket:

EGG.3K.310.CYM = fixed socket, nut fixing, with key (G), 3K series, multipole type with 10 contacts, outer shell in chrome-plated brass, PEEK extended insulator, female crimp contacts.

Fixed coupler:

SLG.3K.310.TLAPV = fixed coupler, nut fixing, keys (L) on the flange end and key (G) at the other end, 3K series, multipole type with 10 contacts, outer shell in stainless steel, PEEK insulator, male-female contacts, vacuumtight.

Part Section Showing Internal Components









Metal housing models

Technical Characteristics

Mechanical and Climatical

Characteristics	Value	Standard
Endurance	> 5000 cycles	IEC 60512-5 test 9a
Humidity	up to 9	95% at 60° C
Temperature range ¹⁾	- 55°	C, +200° C
Resistance to vibrations	10-2000 Hz, 15 g	IEC 60512-4 test 6d
Shock resistance	100 g, 6 ms	IEC 60512-4 test 6c
Salt spray corrosion test	> 1000h	IEC 60512-6 test 11f
Protection index (mated) ²⁾	IP 68/IP 66	IEC 60529
Climatical category	50/175/21	IEC 60068-1

Electrical

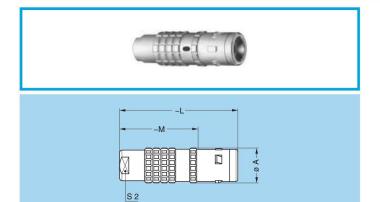
Charac	cteristics	Value	Standard
Shielding	at 10 MHz	> 95 dB	IEC 60169-1-3
efficiency	at 1 GHz	> 80 dB	IEC 60169-1-3

the various tests have been carried out with FGG and EGG connector pairs, with chrome-plated brass shell, PEEK insulator and silicone O-ring. Detailed electrical characteristics, as well as materials and treatment are presented in the chapter Technical Characteristics on page 171.

1) minimum operating temperature is -20°C for sockets fitted with an FPM

(Viton®) O-ring.

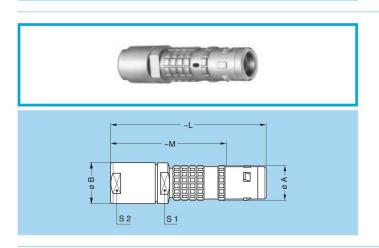
2) IP68 achieved providing that the cable is perfectly circular and that assembly process ensures a high integrity seal.



FGG Straight plug, key (G) or keys (A to F, L and R), cable collet

Refe	rence	Di	mensi	ons (mi	m)
Model	Series	Α	L	М	S2
FGG	0K	11	34	23.0	8
FGG	1K	13	42	28.0	9
FGG	2K	16	52	36.0	12
FGG	3K	19	61	41.0	15
FGG	FGG 4K		71	50.5	19
FGG	5K	38	92	67.0	30

M1 Cable assembly (page 162)

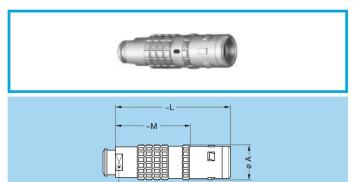


FGG Straight plug, key (G) or keys (A to F, L and R), cable collet and oversize cable collet 1)

Refe	rence		Di	mensio	ns (m	m)	
Model	Series	Α	A B L M				S2
FGG	1K	13	14.5	60.0	46	12	12
FGG	2K	16	17.0	68.0	52	15	15
FGG	3K	19	22.0	85.0	65	19	19
FGG	4K	25	36.0	119.5	99	30	32

M2 Cable assembly (page 163)

Note: ¹⁾ correspond to K type of collet, the fitting of oversize collets onto this model allows them to be fitted to the cables that can be accommodated by the next housing size up (see page 53).



S2

FGG Straight plug, key (G) or keys (A to F, L and R), cable collet and nut for fitting a bend relief 1)

Refe	rence	Di	mensi	Dimensions (mm)						
Model	Series	Α	L	М	S2					
FGG	0K	11	34	23.0	7					
FGG	1K	13	42	28.0	9					
FGG	2K	16	52	36.0	12					
FGG	3K	19	60	40.0	15					
FGG	4K	25	71	50.5	19					

M1 Cable assembly (page 162)

Note: 1) to order, add a «Z» at the end of the reference. The bend relief must be ordered separately (see page 141).





Alignment Key (K series)

Alignment Key and Polarized Keying System

K series connector model part numbers are composed of three letters. The LAST LETTER indicates the key position and the contact type (male or female).

Front view of a socket	Reference	Nb of	Angles			Ser	ries			Conta	ct type	Note
α	Refer	keys	Ang	0K	1K	2K	зК	4K	5K	Plug	Socket	Note
	G	1		0°	0°	0°	0°	0°	0°	male	female	
	Α	2		30°	30°	30°	30°	30°	30°	male	female	
→	В	2	α	45°	45°	45°	45°	45°	45°	male	female	
	С	2		60°	60°	60°	60°	60°	60°	male	female	
	D	2	γ	95°	95°	95°	95°	95°	95°	male	female	0
X	Е	2	β	120°	120°	120°	120°	120°	120°	male	female	0
γ	F	2	h	145°	145°	145°	145°	145°	145°	male	female	0
	L	2	γ	75°	75°	75°	75°	75°	75°	female	male	

Front view of a socket	ence	Nb of	Angles			Se	ries			Conta	ct type	Note
d a	Referen	keys	Ang	0K	1K	2K	зк	4K	5K	Plug	Socket	ivote
			α	_	=	_	95°	_	_			
	R	_	β	_	-	_	115°	-	-	male	female	
1	п	5	γ	_	-	_	35°	-	_	maie	lemale	
. X.			δ	_	_	_	25°	7—	_			

Note: S●● and TGL models are not available with all the keys. For S●● models see explanation on page 42. Please consult the pages corresponding to these models.

First choice alternativeSpecial order alternative



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Insert configuration (B and K series)

Multipole

wuitip	30.0													
	Male solder contacts	Female solder contacts					Contac	ct type			lder itact	Cri con	mp tact	
	Male crimp contacts	Female crimp contacts	Reference	Number of contacts	ø A (mm)	Solder	Crimp	Print (straight)	Print (elbow)	Test voltage (kV rms) ¹⁾ Contact-contact	Test voltage (kV rms) ^{1) 5)} Contact-shell	Test voltage (kV rms) ¹⁾ Contact-contact	Test voltage (kV rms) ^{1) 5)} Contact-shell	Rated current (A) ¹⁾
00		8	302	2	0.5				•	1.00	0.95	1.15	1.20	3.5
00			303	3	0.5	•	•		•	0.80	0.95	1.35	1.10	3.0
			304	4	0.5	•	•	•	•	0.80	0.65	1.05	1.05	2.0
			305	5	0.35		-		-	0.70	1.00	-	-	1.7
			306	6	0.35		-	_	_	0.60	0.75	-	-	1.5
0B 0K		8	302	2	0.9		•			1.00	1.05	1.45	1.20	10.02)
UIX			303	3	0.9		•	•		1.20 0.85	0.90	1.70	1.60	7.0 ²)
			305	5	0.7	•		•	•	1.00	0.70	1.25	1.20	6.52)
			306	6	0.5		(4)			0.85	0.65	1.40	1.20	2.5
			307	7	0.5		(4)			0.80	0.70	1.40	1.20	2.5
			309	9	0.5		<u>4</u>)		0	0.60	0.50	1.00	0.85	2.0
			312	12	0.35		_	•	_	0.80	1.00		_	1.5
1B			302	2	1.3		•		•	1.50	1.35	1.70	1.45	15.0 ³⁾
1K			303	3						1.30			1.85	12.0
			303	3	1.3		_			1.30	1.55	1.60	1.00	12.0
			304	4	0.9		•			1.35	1.45	1.70	1.80	10.02)
			305	5	0.9	•			•	1.25	1.15	1.30	1.55	9.02)
			306	6	0.7		•	•	•	1.05	1.20	1.35	1.45	7.02)
			307	7	0.7	•	•	•	•	0.95	1.05	1.45	1.45	7.02)
			308	8	0.7	•	•	•		0.95	1.15	1.30	1.30	5.0
			310	10	0.5	•	<u></u> 4)	•	•	0.90	1.50	1.20	1.80	2.5
			314	14	0.5	•	<u></u> 4)	•	•	0.80	1.20	0.95	1.60	2.0
			316	16	0.5		<u></u> 4)		0	0.80	1.25	0.95	1.60	1.5
										~				

First choice alternativeSpecial order alternative

Note: 1) see calculation method, caution and suggested standard on page 178.
2) rated current = 6A for socket with elbow (90°) contact for printed circuit.
3) rated current = 12A for socket with elbow (90°) contact for printed circuit.
4) available only for connectors fitted with male contacts.
5) test voltage (kV) contact-shell is slightly lower for K series (values here are for B series).





Housings (B and K series)

Ref.	Outer shell a	and collet nut	Latch sleeve +	earthing crown	Other metalli	c components	Remarks	Note
	Material	Surf. treatment	Material	Surf. treatment	Material	Surf. treatment		
С	Brass	chrome	brass/bronze	nickel ²⁾	brass	nickel		
N	Brass	nickel	brass/bronze	nickel 2)	brass	nickel		0
K	Brass	black chrome	brass/bronze	nickel 2)	brass	nickel		
S	Stainless steel	_	brass/bronze	nickel 2)	brass	nickel		
Т	Stainless steel	_	stainless steel	_	brass	nickel		0
U	Stainless steel	_	stainless steel	_	stainless steel	_		0
L	Aluminium alloy	anodized	brass/bronze	nickel ²⁾	brass	nickel	1)	0
X	Aluminium alloy	nickel anthracite	brass/bronze	nickel ²⁾	brass	nickel		0
G	PEEK (natural)	_	brass/bronze	nickel ²⁾	brass	nickel	Only for FGG and ENG (B series)	
Р	PSU	_	brass/bronze	nickel 2)	brass	nickel	Only for FGY and ENY (B series) 1)	
R	PPSU	_	brass/bronze	nickel ²⁾	brass	nickel	Only for FGY and ENY (B series) 1)	
Н	PPS/brass	-/nickel	brass/bronze	nickel ²⁾	brass	nickel	Only for elbow sockets (B series)	
Р	PA.6	_	brass/bronze	nickel ²⁾	brass	nickel	Only for CRF and CRG bridge plug 1)	

Note: detailed characteristics of these materials and treatments are presented on page 171.

1) see «variant» for the colour.

2) in the K series, the latch sleeve is chrome-plated.

- First choice alternative
- O Special order alternative

	Insulators (B and K series)
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Ref.	Material	Contact type	Remarks	Note
Υ	PEEK	Crimp	extended design, with contacts that recess into insulator	
L	PEEK	Solder or print		

Note: detailed characteristics of these materials are presented on page 175.



Contacts (B and K series)

Soldering characteristics

- no need to order specific tools, a simple soldering iron is sufficient
- ideal for very small and fragile conductors
- contacts with solder cups to allow the solder to flow

Crimping characteristics

- practical, quick contact fixing outside the insulator
- possible use at high temperature
- need to order specific tools
- no risk of heating the insulator during the conductorcontact fixing high tensile strength
- high tensile strength totally lead-free solution

Note: see page 176 for more information.





 First choice alternative Special order alternative

Contacts reference for plugs, free or fixed sockets

	Refe	rence		Contact				Cond	ductor				
Comboothing						S	olid		Strar			F _r 1)	N
Contact type	Male	Female	ø A (mm)	ø C (mm)	Form per fig.	AWG max.	Section max. (mm²)	AV min.	VG max.	Section min.	max.	F _r 1) (N)	Notes
								77.511.00					
Solder			0.35	0.40	_	28	0.09	N-	30	8 - 8	0.05	_	-
			0.52)	0.402)		28	0.09	h—-	30	: - :	0.05	_	
ø A ø C			0.5	0.456)		28	0.09	_	28	-	0.09	_	
			0.7	0.80	_	22	0.34	_	223)	_	0.34	_	-
			0.9	0.805)		225)	0.345)	_	223)5)	7	0.345)	_	
ø A ø C	Α	L	1.3	1.00	_	20	0.50	_	203)	* -	0.50	_	
			1.6	1.40	_	16	1.00	-	18	*	1.00	_	
1			2.0	1.80	_	14	1.50	·	16	(-)	1.50		
			3.0	2.70	_	10	4.00	-	12	0-0	4.00	_	4
			4.0	3.70	-	10	6.00	1-	10	-	6.00		
			6.0	5.20			_	n—	8	2,—2	10.00		<u> </u>
fig. 1 Crimp	С	М	0.54)	0.45	1	_	-	32	28	0.035	0.09	12	
ø A ø C	С	М	0.7	0.80	1	-	_	26	223)	0.140	0.34	22	
	В	Р	0.7	0.45	2	_	_	32	28	0.035	0.09	22	0
	С	M		1.10	1	_	_	24	20	0.250	0.50		
Ø A	В	Р	0.9	0.80	2	_	-	26	223)	0.140	0.34	30	0
10	G	U		0.45	2	_	_	32	28	0.035	0.09		0
,	С	М		1.40	1	_	_	20	18	0.500	1.00		
r - 0	В	Р	1.3	1.10	2	_	_	24	20	0.250	0.50	40	0
fig. 2	G	U		0.80	2	_	_	26	223)	0.140	0.34		0
Ø A	С	М	4.0	1.90	1	_	_	18	143)	1.000	1.50		
	В	Р	1.6	1.40	2	=	-	22	18	0.340	1.00	50	0
øA øC	С	М		2.40	1	_	_	16	123)	1.500	2.50		
	В	Р	2.0	1.90	2	_	-	18	14	1.000	1.50	65	0
	С	М	3.0	3.20	1	_	_	14	103)	2.500	4.00	75	
	С	М	4.0	4.00	1	_	_	12	10	4.000	6.00	90	
Print OA OC L L	D	N		L dimen	isions an	d C are c	detailed in See pa	the secti ge 156.	on on PC	B drilling	pattern.		•
Print (elbow)	V	V		L dimensions and C are detailed in the section on PCB drilling pattern. See page 157.									•

Note: 1) contact retention force in the insulator (according to IEC 60512-8 test 15 a).
2) for 00 multipole series.
3) for a given AWG, the diameter of some stranded conductor designs is larger than the solder cup diameter.
Make sure that the maximum conductor diameter is smaller than Ø C.
4) available only for 00 multipole series and connectors fitted with male contacts of the 0B and 1B series.
5) for 0B.302/0B.303 and 0K.302/0K.303 Ø C = 1.0 mm, AWG max 20, section max (mm²) 0.50.
6) for 00 and 1B/1K series, according to manufacturing and plating tolerance Ø C min = 0.43 mm.

Contacts reference for couplers Ree, See and TGL

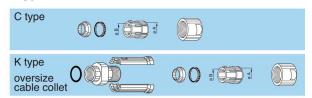
Ref.	Contact type	Remarks
Α	Male - Female contact configuration is explained on page 21, 28,	
L	Female - Male contact configuration is explained on page 21, 28, 4	
M	Female - Female	contact configuration is explained on page 21





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C and K type collets for K series



	Refe	rence	Coll	et ø	Cab	le ø	
	Туре	Code	ø A	øΒ	max.	min.	Notes
	С	10	1.6	-	1.2	1.0	1)
OK	С	15	1.6	_	1.5	1.3	1)
	С	20	2.1	_	2.0	1.6	1)
	С	25	3.1	-	2.5	2.1	
	С	30	3.1	_	3.0	2.6	
	С	35	4.2	4.2	3.5	3.1	
	С	40	4.2	4.2	4.0	3.6	
	С	45	5.2	5.2	4.5	4.1	
	С	50	5.2	5.2	5.0	4.6	
	С	15	1.6	_	1.5	1.3	
1K	С	20	2.2	_	2.0	1.6	
	С	25	3.2	_	2.5	2.1	
	С	30	3.2	_	3.0	2.6	
	С	35	4.2	_	3.5	3.1	
	С	40	4.2	_	4.0	3.6	
	С	45	5.2	_	4.5	4.1	
	С	50	5.2	_	5.0	4.6	
	С	55	6.2	6.2	5.5	5.1	
	С	60	6.2	6.2	6.0	5.6	
	С	65	7.2	6.7	6.5	6.1	
	K	70	7.2	_	7.0	6.6	
	K	75	8.2	8.2	7.5	7.1	
	K	80	8.2	8.2	8.0	7.6	
	K	85	9.2	8.6	8.5	8.1	
	С	15	2.2	-	1.5	1.3	
2K	С	20	2.2	=	2.0	1.6	
	С	25	3.2		2.5	2.1	
	С	30	3.2	_	3.0	2.6	
	С	35	4.2	_	3.5	3.1	
	С	40	4.2	_	4.0	3.6	
	С	45	5.2	_	4.5	4.1	
	С	50	5.2	_	5.0	4.6	
	С	55	6.2	_	5.5	5.1	
	С	60	6.2	_	6.0	5.6	
	С	65	7.2		6.5	6.1	
	С	70	7.2	_	7.0	6.6	
	С	75	8.2	8.2	7.5	7.1	
	С	80	8.2	8.2	8.0	7.6	
	С	85	9.2	8.6	8.5	8.1	
	K	90	9.2	_	9.0	8.6	
	K	95	10.2	10.2	9.5	9.1	
	K	10	10.2	10.2	10.0	9.6	
	K	11	11.2	10.6	10.5	10.1	
	С	30	3.2	-	3.0	2.6	
3K	С	35	4.2	-	3.5	3.1	
	С	40	4.2	_	4.0	3.6	
	С	45	5.2	_	4.5	4.1	
	С	50	5.2	_	5.0	4.6	
	С	55	6.2	_	5.5	5.1	
	С	60	6.2	_	6.0	5.6	
	С	65	7.2	_	6.5	6.1	

70 75	øΑ	øΒ		Cable ø	
75		~ 5	max.	min.	
	7.2	-	7.0	6.6	
90	8.2	_	7.5	7.1	
80	8.2	-	8.0	7.6	
85	9.2	1-0	8.5	8.1	
90	9.2	_	9.0	8.6	
95	10.2	10.2	9.5	9.1	
10	10.2	10.2	10.0	9.6	
11	11.2	10.6	10.5	10.1	
11	12.3	_	12.0	10.6	
12	13.8	13.8	12.8	12.1	
13	13.8	13.8	13.5	12.9	
14	15.3	15.3	14.0	13.6	
15	15.3	15.3	15.0	14.1	
50	6.3	_	5.0	4.6	
55	6.3	-	5.5	5.1	
60	6.3	a—a	6.0	5.6	
65	7.3	-	6.5	6.1	
70	7.3	_	7.0	6.6	
75	8.3	_	7.5	7.1	
80	8.3	_	8.0	7.6	
85	9.3	_	8.5	8.1	
90	9.3	_	9.0	8.6	
95	10.8	_	9.5	9.1	
10	10.8	_	10.5	9.6	
11	12.3	_	12.0	10.6	
12	13.8	13.8	12.8	12.1	
13	13.8	13.8	13.5	12.9	
14	15.3	15.3	14.0	13.6	
15	15.3	15.3	15.0	14.1	
16	17.8	-	16.5	15.6	
17	17.8	_	17.5	16.6	
18	19.8	_	18.5	17.6	
19	19.8	_	19.5	18.6	
20	21.8	_	20.5	19.6	
21	21.8	_	21.5	20.6	
22	23.8	23.8	22.5	21.6	
23	23.8	23.8	23.5	22.6	
10	11.8	_	10.5	9.6	
11	11.8	_	11.5	10.6	
12	13.8		12.5	11.6	
13	13.8	_	13.5	12.6	
14	15.8	_	14.5	13.6	
15	15.8		15.5	14.6	
		_		15.6	
		_		16.6	
0.000		_		17.6	
				18.6	
		_			
		-		19.6	
		22.0		20.6	
	0.000	20.00	0.000	21.6 22.6	
	16 17 18 19 20 21 22 23	17 17.8 18 19.8 19 19.8 20 21.8 21 21.8 22 23.8	17 17.8 - 18 19.8 - 19 19.8 - 20 21.8 - 21 21.8 - 22 23.8 23.8	17 17.8 - 17.5 18 19.8 - 18.5 19 19.8 - 19.5 20 21.8 - 20.5 21 21.8 - 21.5 22 23.8 23.8 22.5	

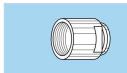
Note: 1) the inner diameter of the smallest bend relief available is 2.5 mm. All dimensions are in millimetres.



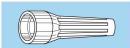


Variant (B and K series)

Bend relief for B series models with collet

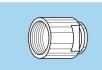


Need to be ordered



Ref.		Collet		Need to be ordered separately
		Туре	Code	(see pages 141 and 142)
00	Z	D	22 to 35	GMA.00.•••.•• GMB.00.•••.••
0B	Z	D	21 to 52	GMA.0B.•••.••
4 D	Z	М	27 and 31	GMA.1B.•••.••
1B z		D	42 to 72	GMA.1B.•••.••
ХВ	Z	D	52 to 72	GMA.1B.•••.••
OD	Z	М	21 and 31	GMA.0B.•••.••
2B z		D	42 to 92	GMA.2B.•••.••
2D	Z	М	52	GMA.1B.•••.••
3B		D	62 to 10	GMA.3B.•••.••
4D		М	62 and 72	GMA.2B.•••.••
4D	4B z	М	92	GMA.4B.•••.••
		D	10 to 15	GMA.4B.•••.••
5B	Z	D	11 to 15	GMA.4B.•••.••

Bend relief for K series models with collet



7	

Need to be ordered

]	Collet			
	Ref.	Туре	Code		
0K	K Z C		10 to 50		
41/	Z	С	15 to 65		
1K		K	70 to 85		
2K	Z	С	15 to 85		
ZN		K	90 to 10		
3K	Z	С	30 to 10		
3N		K	11 to 15		
4K	Z	С	50 to 15		

Need to be ordered separately (see pages 141 and 142)

GMA.0B.•••.••

GMA.1B.•••.••

GMA.2B.•••.••

GMA.3B.•••.••

GMA.3B.•••.••

GMA.4B.•••.••

Note: All dimensions are in millimetres.

Colour of the bridge plug shells and connectors shell made of plastic material and aluminium alloys

	Colour	Bridge plug and plastic shell			Aluminium alloys	
Reference		PSU	PPSU	PA.6	Anodized colour	Anodized colour for bend relief collet nut
Α	blue				•	
В	white					
G	grey					
J	yellow				•	
M	brown					
N	black				•	
R	red				•	
S	orange					
Т	natural				•	
V	green					
L	black					•
X	natural					
F	cream					

Note: other anodizing colours are available for connectors with collet nut for bend relief. Please consult us.

Watertight and vacumtight socket and coupler models (B and K series)

	Model	Reference			
	Wiodei	Watertight	Vacuumtight		
В	YHO, HGO, HNO, HHO, HCO, HEO, HMO, SOO	Р	PV		
K	HG⊕, HE⊕, S⊕⊕	Р	PV		

O-ring and gasket material (K series)

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

O-ring material	Reference
FPM (Viton®)	Н
EPDM	Е
FPM (Viton®) and collet nut for bend relief	D

Mouser Electronics

Authorized Distributor

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LEMO:

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