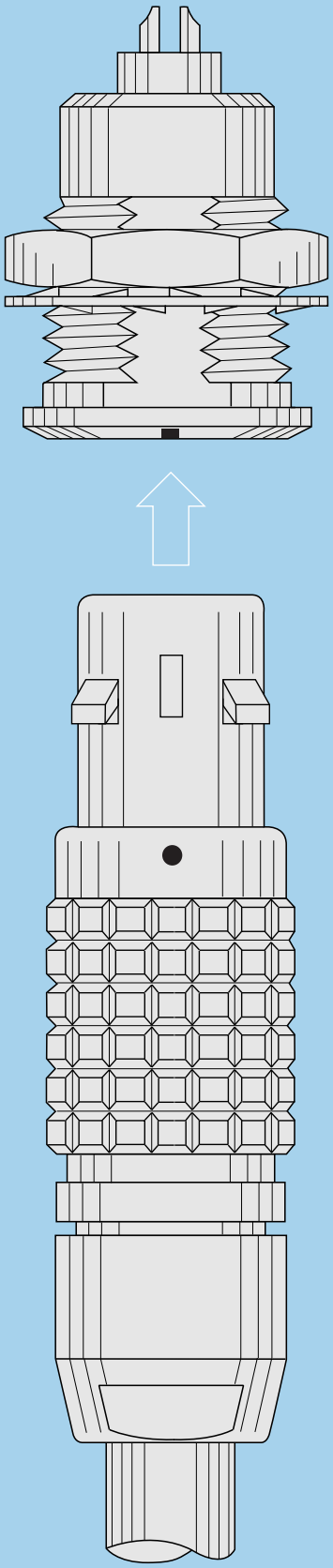
Cable Assembly Instructions

B series

Multipole

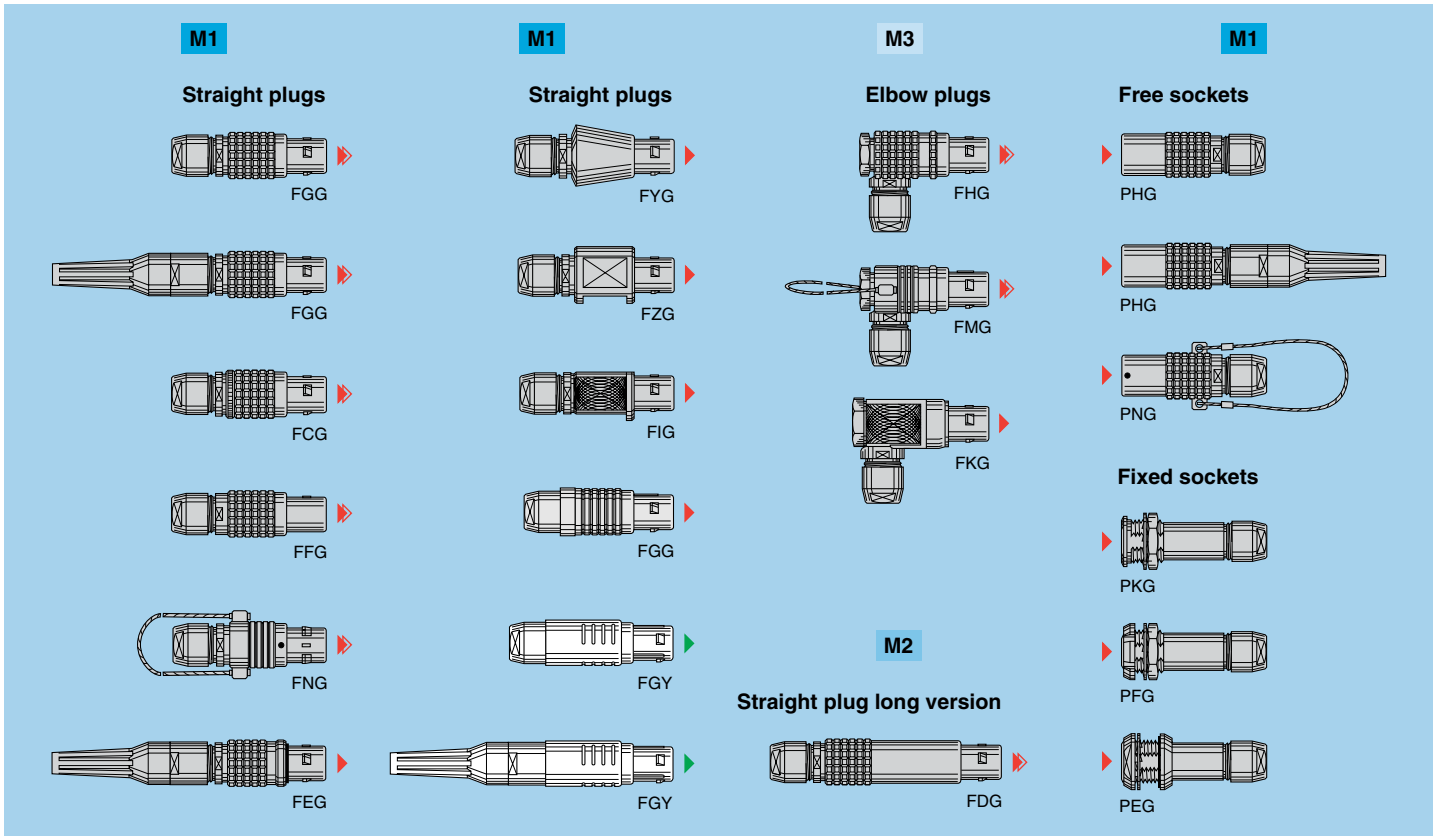


This document describes cable assembly instructions of B Series multipole connectors.
Specific instructions are to be followed for models with cable collet.

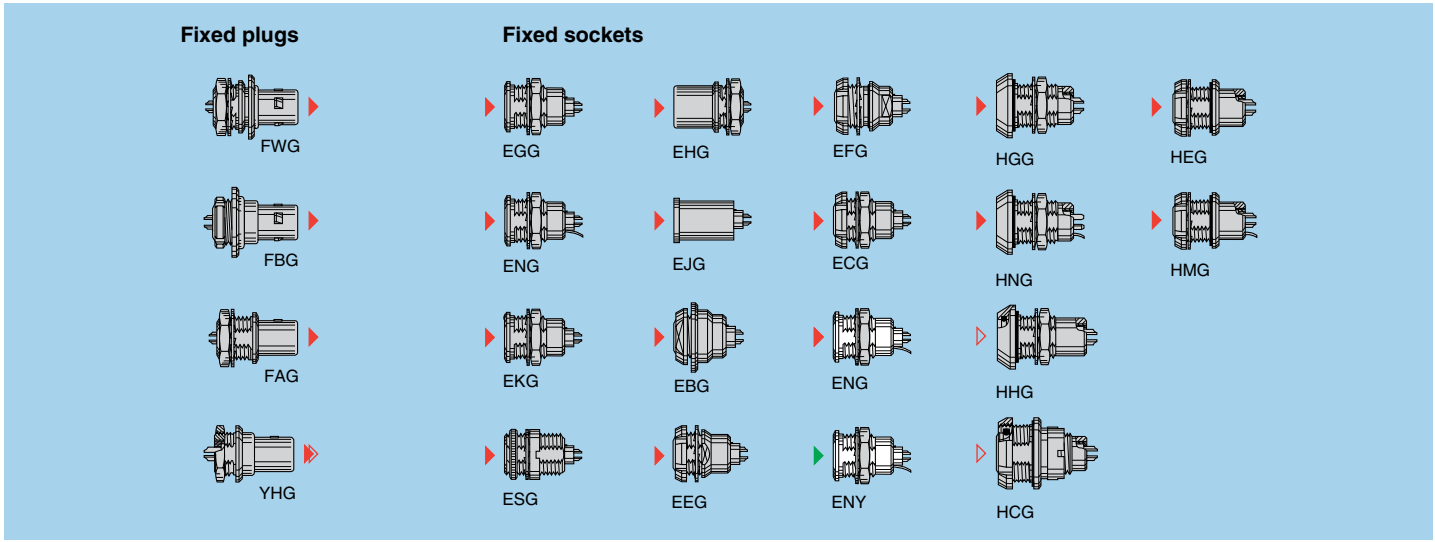
M1 **straight plugs and sockets with cable collet, clamping type D or M (solder or crimp contacts)**

M2 **straight plug, long version, clamping type D or M (solder or crimp contacts)**

M3 **elbow plugs (90°) with cable collet, clamping type D or M (solder or crimp contacts)**



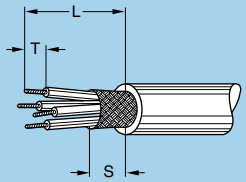
Fixed sockets or plugs with solder or crimp contacts are designed to fit individual conductors.
The stripping length for conductor «T» should be according to the indications on the following pages.



Cable stripping lengths

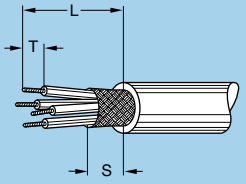
M1 **straight plugs and sockets with cable collet, clamping type D or M (solder or crimp contacts)**

M3 **elbow plugs (90°) with cable collet, clamping type D or M (solder or crimp contacts)**



Connector		ø contact A (mm)	Cable stripping lengths (mm)											
			M1						M3					
			Solder			Crimp			Solder			Crimp		
Series	Type		L	S	T	L	S	T	L	S	T	L	S	T
00	302/303/304	0.5	7.0	4	2.5	10.0	4	3.0	9.5	4	2.5	12.5	4	3.0
0B[1]	302/303	0.9	13.0	7	3.0	17.0	7	4.0	18.0	7	3.0	22.0	7	4.0
	304/305	0.7	13.0	7	3.0	17.0	7	4.0	18.0	7	3.0	22.0	7	4.0
	306/307/309[2]	0.5	14.0	7	2.5	18.0	7	3.0	19.0	7	2.5	23.0	7	3.0
1B[1]	302/303	1.3	14.0	8	3.5	18.0	8	4.0	25.0	8	3.5	28.0	8	4.0
	304/305	0.9	14.0	8	3.0	18.0	8	4.0	25.0	8	3.0	28.0	8	4.0
	306/307/308	0.7	14.0	8	3.0	18.0	8	4.0	25.0	8	3.0	28.0	8	4.0
	310/314/316	0.5	16.5	8	2.5	–	–	–	27.5	8	2.5	–	–	–
2B	302	2.0	19.0	9	4.0	22.0	9	5.5	30.0	9	4.0	33.0	9	5.5
	303	1.6	19.0	9	3.5	22.0	9	5.5	30.0	9	3.5	33.0	9	5.5
	304/305/306/307	1.3	18.0	9	3.5	20.0	9	4.0	29.0	9	3.5	31.0	9	4.0
	308/310	0.9	17.0	9	3.0	20.0	9	4.0	28.0	9	3.0	31.0	9	4.0
	312/314/316/318/319	0.7	17.0	9	3.0	20.0	9	4.0	28.0	9	3.0	31.0	9	4.0
	326/332	0.5	17.0	9	2.5	–	–	–	28.0	9	2.5	–	–	–
3B	302	3.0	24.0	10	4.5	28.0	10	5.5	35.0	10	4.5	39.0	10	5.5
	303/304	2.0	23.0	10	4.0	27.0	10	5.5	34.0	10	4.0	38.0	10	5.5
	305/306/307	1.6	23.0	10	3.5	27.0	10	5.5	34.0	10	3.5	38.0	10	5.5
	308/310	1.3	22.0	10	3.5	25.0	10	4.0	33.0	10	3.5	36.0	10	4.0
	309	1.3	22.0	10	3.5	25.0	10	4.0	33.0	10	3.5	36.0	10	4.0
		2.0			4.0			5.5			4.0			5.5
	312/314/316/318	0.9	21.0	10	3.0	25.0	10	4.0	32.0	10	3.0	36.0	10	4.0
	320/322/324/326/330	0.7	21.0	10	3.0	25.0	10	4.0	32.0	10	3.0	36.0	10	4.0
4B	304	3.0	33.0	12	4.5	36.0	12	5.5	41.0	12	4.5	45.0	12	5.5
	306/307	2.0	32.0	12	4.0	36.0	12	5.5	41.0	12	4.0	45.0	12	5.5
	310	1.6	32.0	12	3.5	36.0	12	5.5	39.0	12	3.5	43.0	12	5.5
	312	1.3	32.0	12	3.5	36.0	12	4.0	39.0	12	3.5	43.0	12	4.0
	316/320/324/330	0.9	32.0	12	3.0	34.0	12	4.0	39.0	12	3.0	43.0	12	4.0
	340/348	0.7	32.0	12	3.0	34.0	12	4.0	39.0	12	3.0	43.0	12	4.0
5B[1]	302	6.0	42.0	18	7.5	–	–	–	70.0	18	7.5	–	–	–
	304	4.0	47.0	18	5.5	50.0	18	7.0	75.0	18	5.5	78.0	18	7.0
	310	3.0	47.0	18	4.5	50.0	18	7.0	75.0	18	4.5	78.0	18	7.0
	314/316	2.0	46.0	18	4.0	49.0	18	5.5	74.0	18	4.0	77.0	18	5.5
	320	1.6	46.0	18	3.5	49.0	18	5.5	74.0	18	3.5	77.0	18	5.5
	330/340/348	1.3	45.0	18	3.5	48.0	18	4.0	74.0	18	3.5	77.0	18	4.0
	350/354/364	0.9	45.0	18	3.0	48.0	18	4.0	74.0	18	3.0	77.0	18	4.0

M2 **straight plug, long version, clamping type D or M (solder or crimp contacts)**

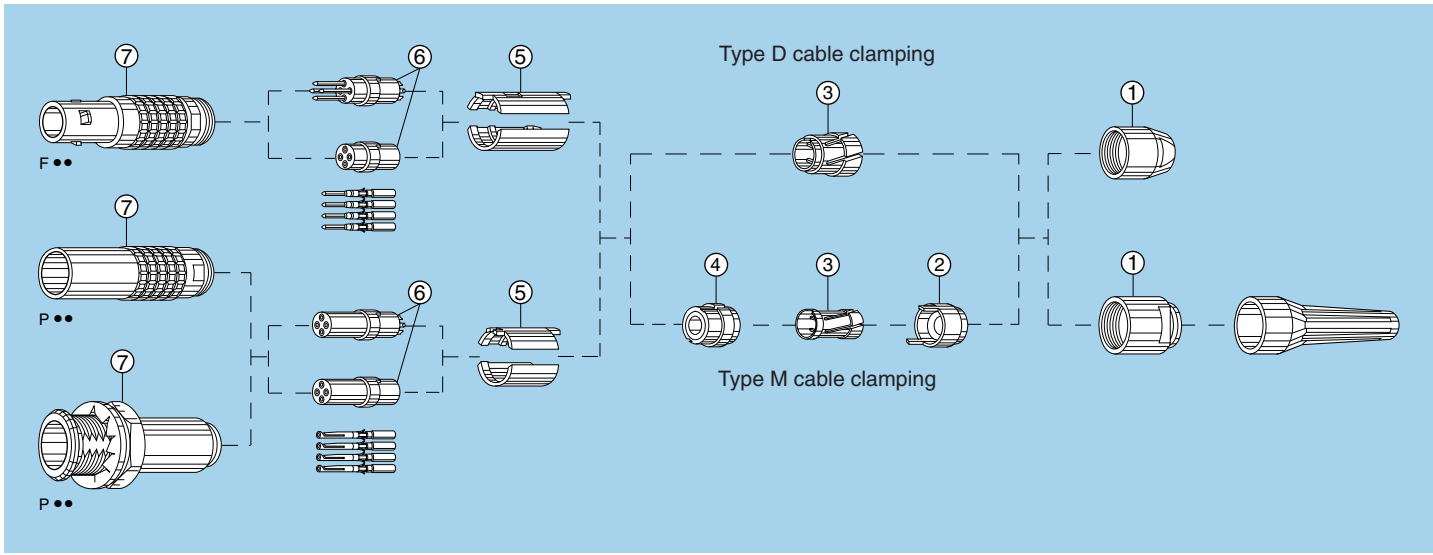


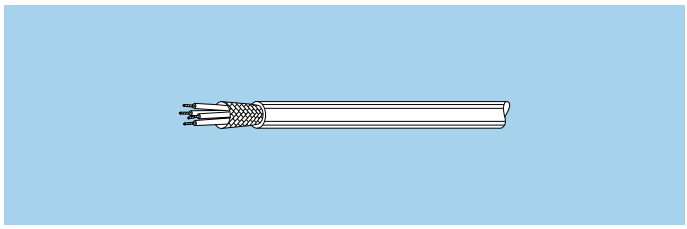
Connector		ø contact A (mm)	Cable stripping lengths (mm)					
			M2					
			Solder			Crimp		
Series	Type		L	S	T	L	S	T
1B[1]	302/303	1.3	39.0	8	3.5	43.0	8	4.0
	304/305	0.9	39.0	8	3.0	43.0	8	4.0
	306/307/308	0.7	39.0	8	3.0	43.0	8	4.0
	310/314/316	0.5	42.0	8	2.5	–	–	–
2B	302	2.0	49.0	9	4.0	53.0	9	5.5
	303	1.6	49.0	9	3.5	53.0	9	5.5
	304/305/306/307	1.3	48.0	9	3.5	50.0	9	4.0
	308/310	0.9	47.0	9	3.0	49.0	9	4.0
	312/314/316/318/319	0.7	47.0	9	3.0	49.0	9	4.0
	326/332	0.5	47.0	9	2.5	–	–	–

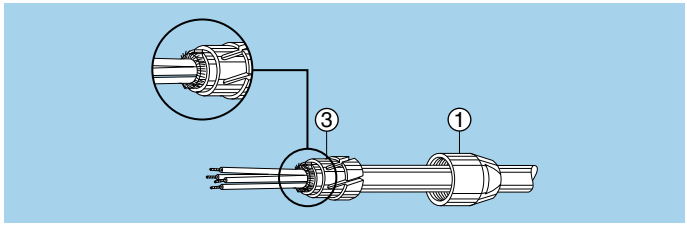
Note:
the tolerances on these dimensions are: L: ± 0.5 mm
S: ± 0.5 mm
T: ± 0.2 mm

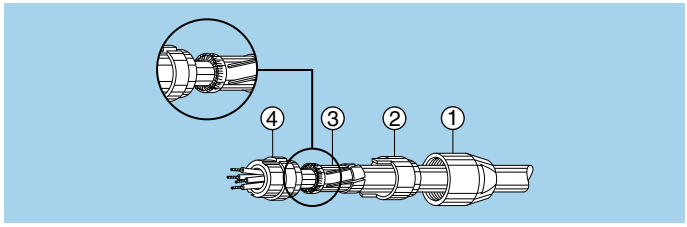
Note: [1] In 0B and 1B series, «L» and «S» dimensions shall be increased by 2 mm for the largest collet (D56 in 0B series; D76 in 1B series).
In 5B series, «L» and «S» dimensions shall be increased by 13 mm for the largest collet (D25).
[2] Crimp contacts are available only for connectors fitted with male contacts.

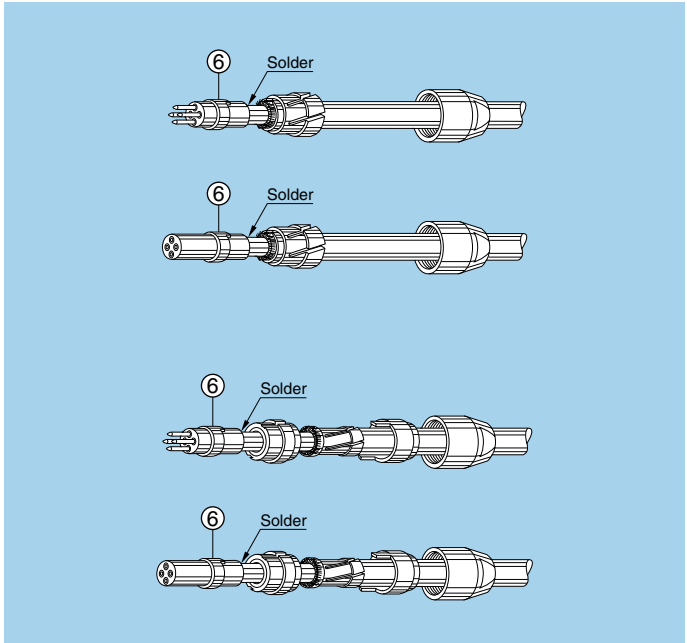
Cable assembly of straight plugs and sockets with cable collet M1 M2











1. Cable stripping

Strip the cable according to the dimensions indicated in the table on page 3.
For connector with solder contacts, the length L should be reduced by few millimeter for the conductors that are fitted to the contacts near the center.

2. Connector preparation

2.1 Connector with type D cable clamping

For all straight models with solder or crimp contacts, slide the following onto the cable: bend relief if provided, collet nut ① and collet ③. In the case of a shielded cable, fold back the shield around the whole of the circumference of the end of the collet (keeping shield clear of keying slot).

2.2 Connector with type M cable clamping

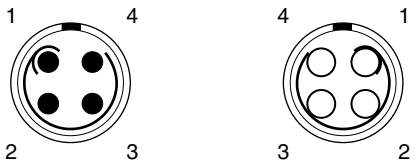
For all straight models with solder or crimp contacts, slide the following onto the cable: bend relief if provided, collet nut ① reducing cone ②, collet of smaller series ③ and reducer ④. In the case of a shielded cable, fold back the shield around the whole of the circumference of the end of the collet (keeping shield clear of keying slot).

3. Soldering of contacts

3.1 Connector with type D and M cable clamping

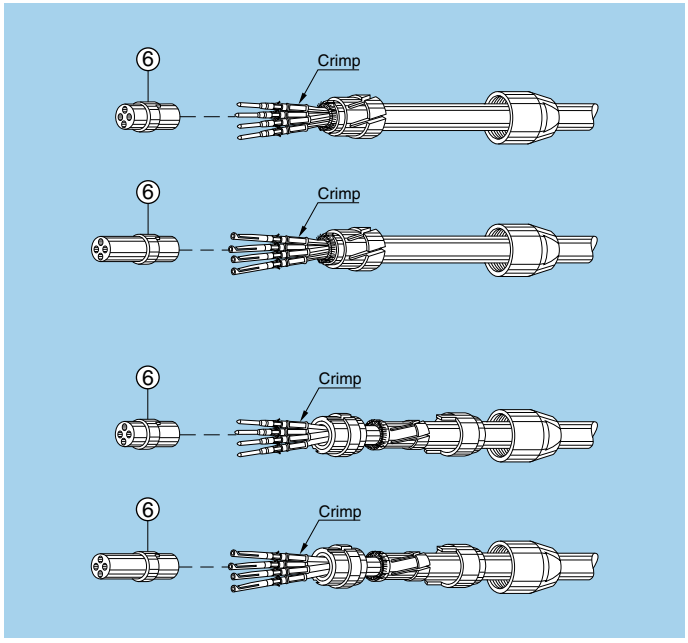
Solder the conductors to the contacts, making sure that the insulator ⑥ and the cable remain clean.

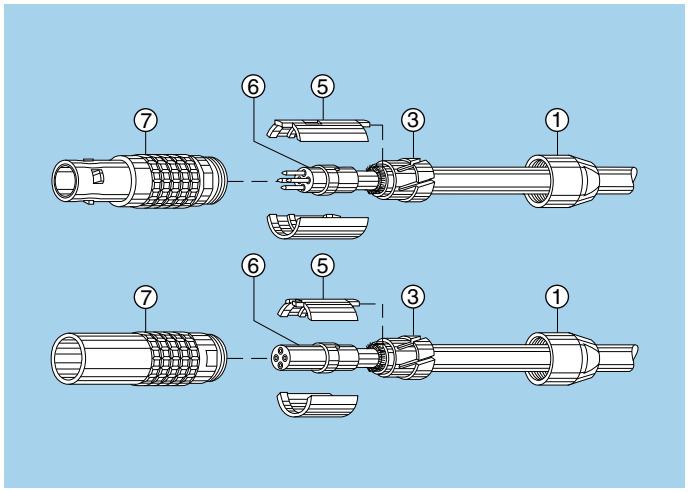
Contact Numbering Example

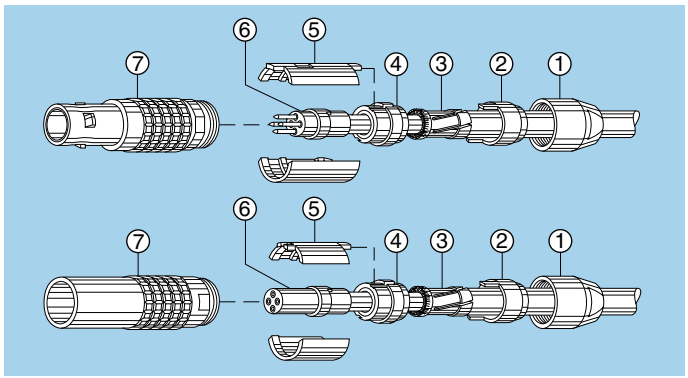


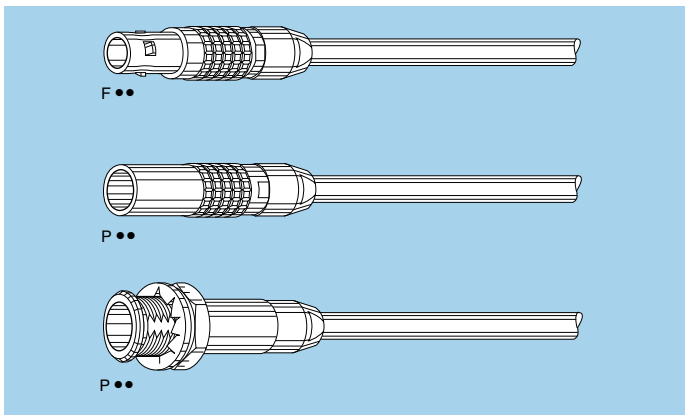
Male Insert Female Insert

Contacts are numbered counterclockwise on the male insert and clockwise in the female insert, as viewed from the termination side. Contact number 1 is marked with a half circle.









4. Crimping of contacts

4.1 Connector with type D and M cable clamping

Fix the appropriate positioner onto the crimping tool (table on page 8 and 9) and set the selector to the number corresponding to the AWG of the conductor used as indicated on the positioner label.
Fit the conductor into the contact; make sure that the conductor is visible through the contact's inspection hole.
Slide the conductor-contact assembly into the open crimping tool; make sure that the contact is pushed fully into the positioner.
Close the tool.
Remove from crimping tool and check that conductor is secure in contact and shows in inspection hole.
Arrange the conductor-contact assemblies according to the marking on the insulator (see numbering example on previous page), avoiding any twisting of the conductors.
Fit the contacts gently into the insulator ⑥, check that no conductor overlaps another and push the contacts into the insulator; check that all the contacts are correctly located in the insulator: 1) by verifying the alignment of the contacts at the front of the insulator and 2) by gently pulling on the insulator; the contact alignment must remain in correct position.

5. Assembling parts inside connector housing

Position the split insert carrier with window ⑤ on the insulator ⑥; the window must be positioned exactly on the insulator's notch.
Position the second split insert carrier, making sure that the two parts form a cylinder.

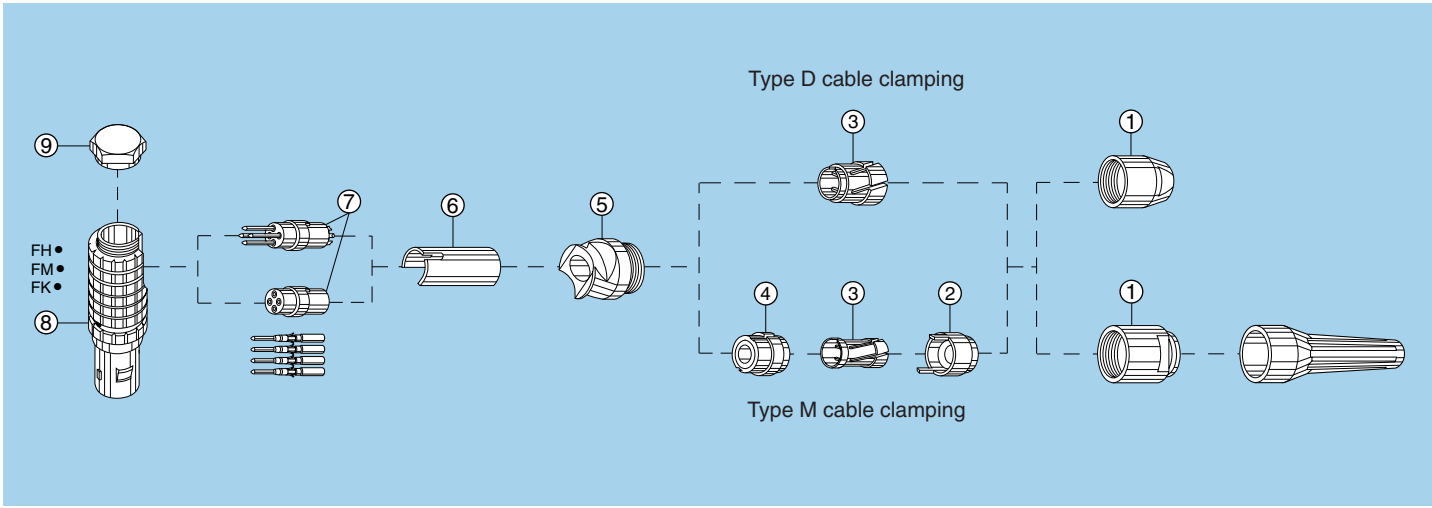
5.1 Connector with type D cable clamping

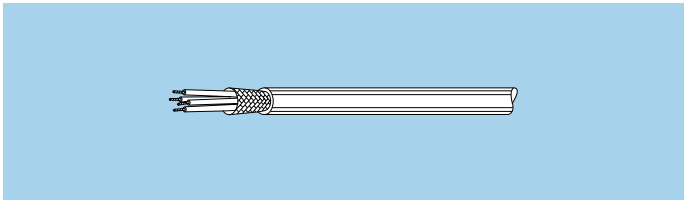
Push the collet ③ so that the tag of the insert carrier is positioned in the slot of the collet. Verify that the shield remains clamped around collet circumference, cut off any surplus.
Fit the pre-assembly into the connector housing ⑦ by holding the collet, giving it a slight rotation and pressure until the split insert carrier's key is inserted into the housing's slot situated under the red keyway dot.
Make sure that the internal components do not turn in the housing and screw on the collet nut ① using the appropriate tooling (see Tooling page 9) and respecting the tightening torque (table on page 9). Fix the bend relief - if provided - onto the collet nut.

5.2 Connector with type M cable clamping

Push the reducer ④ so that the tag of the insert carrier is positioned in the slot of the reducer, push the collet ③ into the reducer ④. Verify that the shield remains clamped around collet circumference, cut off any surplus. Then push reducing cone ② over collet aligning corresponding tags and notches.
Fit the pre-assembly into the connector housing ⑦ by holding the reducing cone, giving it a slight rotation and pressure until the split insert carrier's key is inserted into the housing's slot situated under the red keyway dot.
Make sure that the internal components do not turn in the housing and screw on the collet nut ① using the appropriate tooling (see Tooling page 9) and respecting the tightening torque (table on page 9). Fix the bend relief - if provided - onto the collet nut.

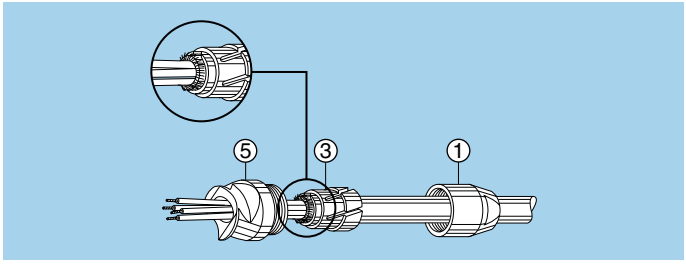
Cable assembly of elbow plugs (90°) with cable collet M3





1. Cable stripping

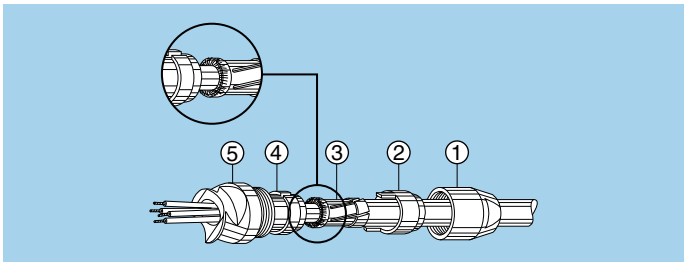
Strip the cable according to the dimensions indicated in the table on page 3.
For connector with solder contacts, the length L should be reduced by few millimeter for the conductors that are fitted to the contacts near the center.



2. Connector preparation

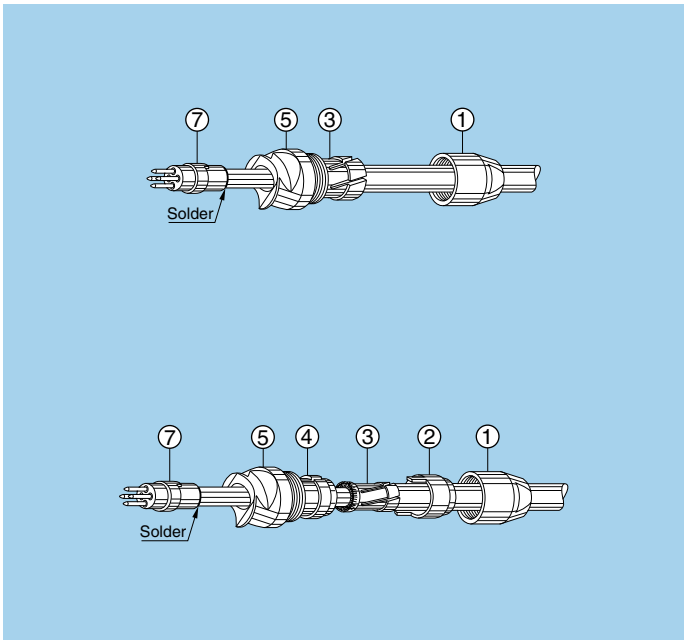
2.1 Connector with type D cable clamping

For all the elbow plug models with solder or crimp contacts, slide the following onto the cable: bend relief if provided, collet nut ①, collet ③ and elbow outlet ⑤. In the case of a shielded cable, fold back the shield around the whole of the circumference of the end of the collet (keeping shield clear of keying slot).



2.2 Connector with type M cable clamping

For all elbow plug models with solder or crimp contacts, slide the following onto the cable: bend relief if provided, collet nut ①, reducing cone ②, collet of smaller series ③, reducer ④ and the elbow outlet ⑤. In the case of a shielded cable, fold back the shield around the whole of the circumference of the end of the collet (keeping shield clear of keying slot).

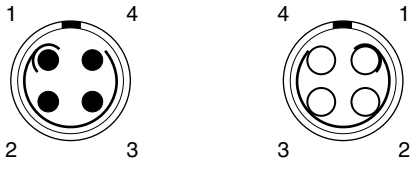


3. Soldering of contacts

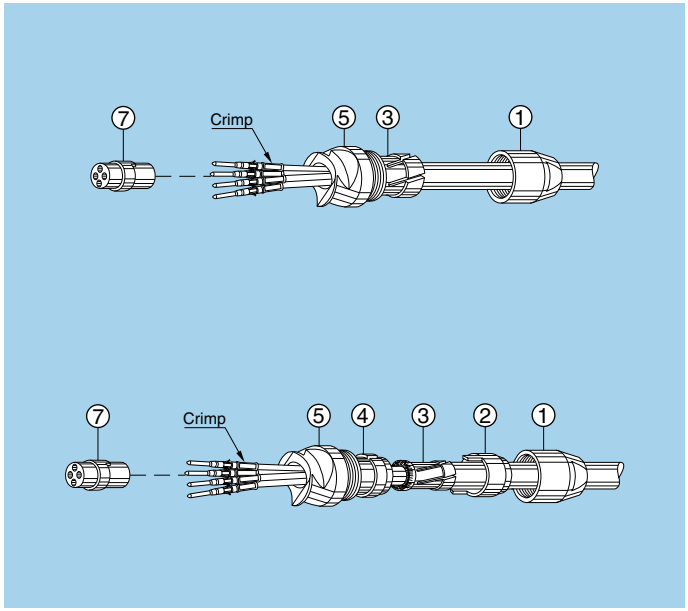
3.1 Connector with type D and M cable clamping

Solder the conductors to the contacts making sure that the insulator ⑦ and the cable remain clean.

Contact Numbering Example



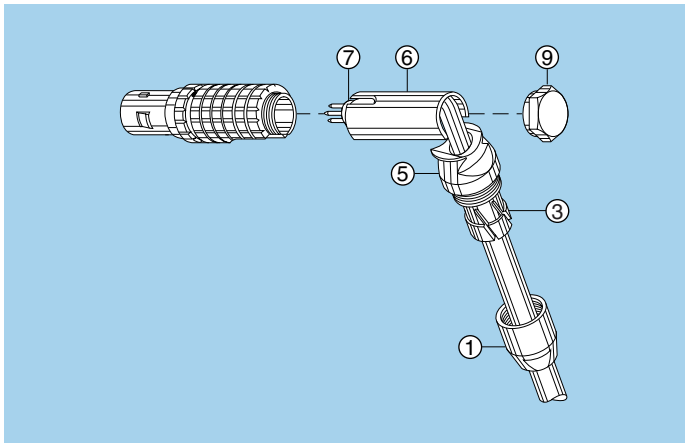
Contacts are numbered counterclockwise on the male insert and clockwise in the female insert, as viewed from the termination side. Contact number 1 is marked with a half circle.



4. Crimping of contacts

4.1 Connector with type D and M cable clamping

Fix the appropriate positioner onto the crimping tool (table on page 8 and 9) and set the selector to the number corresponding to the AWG of the conductor used as indicated on the positioner label.
Fit the conductor into the contact; make sure that the conductor is visible through the contact's inspection hole.
Slide the conductor-contact assembly into the open crimping tool; make sure that the contact is pushed fully into the positioner.
Close the tool.
Remove from crimping tool and check that conductor is secure in contact and shows in inspection hole.
Arrange the conductor-contact assemblies according to the marking on the insulator (see numbering example on previous page), avoiding any twisting of the conductors.
Fit the contacts gently into the insulator ⑦ check that no conductor overlaps another and push the contacts into the insulator; check that all the contacts are correctly located in the insulator: 1) by verifying the alignment of the contacts at the front of the insulator and 2) by gently pulling on the insulator; the contact alignment must remain in correct position.

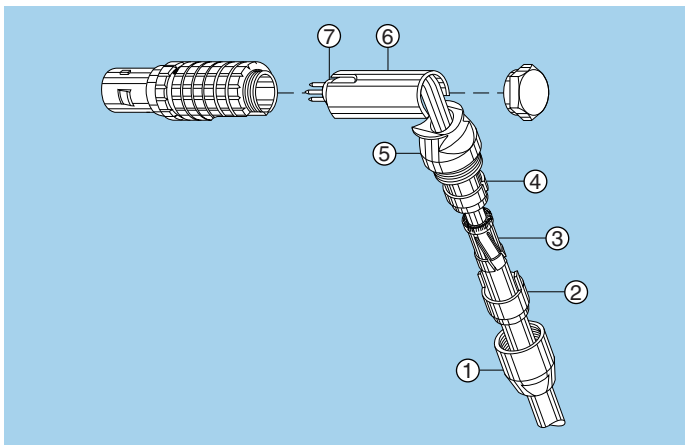


5. Assembling parts inside elbow plug housing

Position the insert carrier ⑥ onto the insulator's ⑦ notch. Fit the pre-assembly into the housing and position it on the housing's opening.
Slide the elbow outlet ⑤ fully into the housing with the milling at the rear as shown. Screw on the hex cap ⑨, respecting the tightening torque (table on page 9).

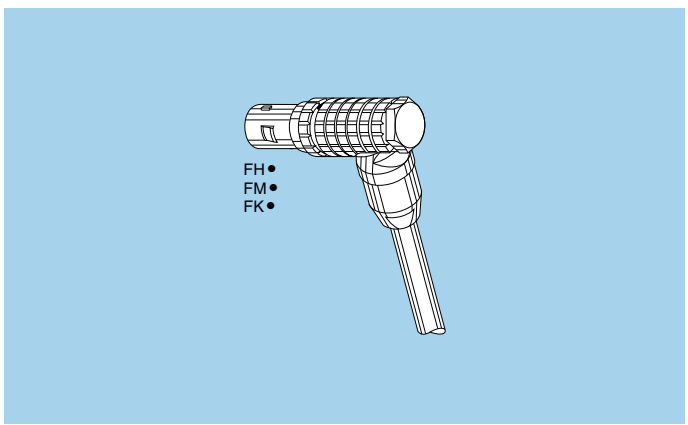
5.1 Connector with type D cable clamping

Fit the collet into the pin of the elbow outlet ⑤. Verify that the shield remains clamped around collet circumference, cut off any surplus.
Screw on the collet nut ① using the appropriate tooling (see Tooling page 9) and respecting the tightening torque (table on page 9). Fix the bend relief - if provided - onto the collet nut.



5.2 Connector with type M cable clamping

Fit the reducer ④ into the pin of the elbow outlet ⑤, push the collet ③ into the reducer. Verify that the shield remains clamped around collet circumference, cut off any surplus.
Then push reducing cone ② over collet aligning corresponding tags and notches. Screw on the collet nut ① using the appropriate tooling (see Tooling page 9) and respecting the tightening torque (table on page 9). Fix the bend relief - if provided - onto the collet nut.



Crimping tools

Fig. 1

Fig. 2

DPC Manual crimping tools

Supplier	Part number		
	contact ø 0.5-0.7 0.9-1.3 (Fig. 1)	contact ø 1.6-2.0 (Fig. 2)	contact ø 3.0-4.0 (Fig. 2)
LEMO	DPC.91.701.V[1)]	DPC.91.101.A[2)]	DPC.91.102.V
DANIELS	MH860[1)]	AF8[2)]	M300BT
ASTRO	616336[1)]	615708[2)]	–

[1)] According to specification MIL-C-22520/7-01.
[2)] According to specification MIL-C-22520/1-01.

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

male

female

Fig. 1

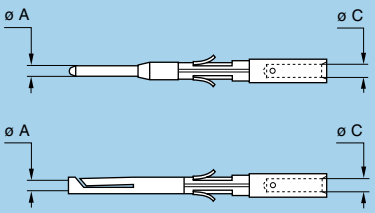
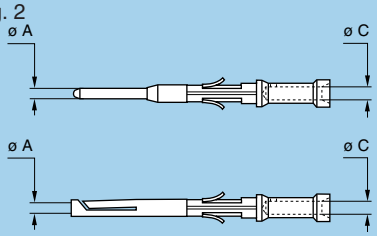


Fig. 2



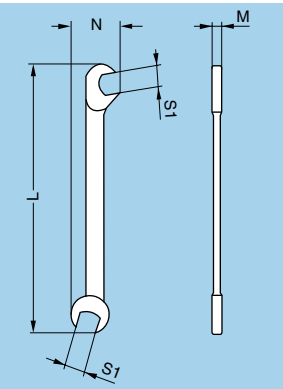
Note: a wide variation of strand number and diameter combinations are quoted as being AWG, some of which do not have a large enough cross section to guarantee a crimp as per either MIL-C-22520/1-01 or /7-01. Our technical department is at your disposal to study and propose a solution to all your applications.

	Connector + Contact + type reference						Conductor AWG	Crimping tool selector position	Positioners part number	
	Type	ø A	ø C	Fig.	Male	Female			For male contact	For female contact
00	302 303 304	0.5	0.45	1	C	M	28-30-32	4-3-3	DCE.91.050.0VC	DCE.91.050.0VM
0B	302/303	0.9	1.10	1	C	M	20-22-24	6-5-5	DCE.91.090.BVC	DCE.91.090.BVM
		0.9	0.80	2	B	P	22-24-26	6-5-5		
		0.9	0.45	2	G	U	28-30-32	4-3-3	DCE.91.090.AVC	DCE.91.090.AVM
	304/305	0.7	0.80	1	C	M	22-24-26	6-5-5	DCE.91.070.BVC	DCE.91.070.BVM
		0.7	0.45	2	B	P	28-30-32	4-3-3		
	306/307 309	0.5	0.45	1	C	M	28-30-32	4-3-3	DCE.91.050.BVC	–
1B	302/303	1.3	1.40	1	C	M	18-20	8-7	DCE.91.131.BVC	DCE.91.131.BVM
		1.3	1.10	2	B	P	20-22-24	6-5-5		
	304/305	0.9	1.10	1	C	M	20-22-24	6-5-5	DCE.91.091.BVC	DCE.91.091.BVM
		0.9	0.80	2	B	P	22-24-26	6-5-5		
	306/307 308	0.7	0.80	1	C	M	22-24-26	6-5-5	DCE.91.071.BVC	DCE.91.071.BVM
		0.7	0.45	2	B	P	28-30-32	4-3-3		
2B	304/305 306/307	1.3	1.40	1	C	M	18-20	8-7	DCE.91.132.BVC	DCE.91.132.BVM
		1.3	1.10	2	B	P	20-22-24	6-5-5		
		1.3	0.80	2	G	U	22-24-26	6-5-5	DCE.91.132.CVC	DCE.91.132.CVM
	308/310	0.9	1.10	1	C	M	20-22-24	6-5-5	DCE.91.092.BVC	DCE.91.092.BVM
		0.9	0.80	2	B	P	22-24-26	6-5-5		
		0.9	0.45	2	G	U	28-30-32	4-3-3	DCE.91.092.AVC	DCE.91.092.AVM
	312/314 316/318 319	0.7	0.80	1	C	M	22-24-26	6-5-5	DCE.91.072.BVC	DCE.91.072.BVM
		0.7	0.45	2	B	P	28-30-32	4-3-3		
3B	308/309 310	1.3	1.40	1	C	M	18-20	8-7	DCE.91.133.BVC	DCE.91.133.BVM
		1.3	1.10	2	B	P	20-22-24	6-5-5		
	312/314 316/318	0.9	1.10	1	C	M	20-22-24	6-5-5	DCE.91.093.BVC	DCE.91.093.BVM
		0.9	0.80	2	B	P	22-24-26	6-5-5		
	320/322 324/326 330	0.7	0.80	1	C	M	22-24-26	6-5-5	DCE.91.073.BVC	DCE.91.073.BVM
		0.7	0.45	2	B	P	28-30-32	4-3-3		
4B	312	1.3	1.40	1	C	M	18-20	8-7	DCE.91.134.BVC	DCE.91.134.BVM
		1.3	1.10	2	B	P	20-22-24	6-5-5		
	316/320 324/330	0.9	1.10	1	C	M	20-22-24	6-5-5	DCE.91.094.BVC	DCE.91.094.BVM
		0.9	0.80	2	B	P	22-24-26	6-5-5		
	340/348	0.7	0.80	1	C	M	22-24-26	6-5-5	DCE.91.074.BVC	DCE.91.074.BVM
		0.7	0.45	2	B	P	28-30-32	4-3-3		
5B	330/340 348	1.3	1.40	1	C	M	18-20	8-7	DCE.91.135.BVC	DCE.91.135.BVM
	350/354 364	0.9	1.10	1	C	M	20-22-24	6-5-5	DCE.91.095.BVC	DCE.91.095.BVM
		0.9	0.80	2	B	P	22-24-26	6-5-5		

DCE Turret for crimp contacts 1.6-2.0-3.0 and 4.0 mm diameter

male and female

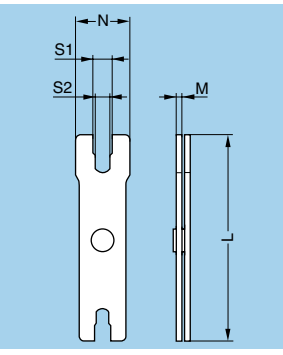
	Connector + Contact + type reference						Conductor AWG	Crimping tool selector position	Positioners
	Type	ø A	ø C	Fig.	Male	Female			Part number
2B	302	2.0	2.4	1	C	M	12-14-16	8-7-6	DCE.91.202.BVCM
		2.0	1.9	2	B	P	14-16-18	7-6-5	
	303	1.6	1.9	1	C	M	14-16-18	7-6-5	DCE.91.162.BVCM
		1.6	1.4	2	B	P	18-20-22	6-5-5	
3B	302	3.0	2.9	1	C	M	10-12-14	3-1-1	DCE.91.303.BVCM
	303/304 309	2.0	2.4	1	C	M	12-14-16	8-7-6	DCE.91.203.BVCM
		2.0	1.9	2	B	P	14-16-18	7-6-5	
	305/306 307	1.6	1.9	1	C	M	14-16-18	7-6-5	DCE.91.163.BVCM
		1.6	1.4	2	B	P	18-20-22	6-5-5	
4B	304	3.0	2.9	1	C	M	10-12-14	3-1-1	DCE.91.304.BVCM
	306/307	2.0	2.4	1	C	M	12-14-16	8-7-6	DCE.91.204.BVCM
		2.0	1.9	2	B	P	14-16-18	7-6-5	
	310	1.6	1.9	1	C	M	14-16-18	7-6-5	DCE.91.164.BVCM
		1.6	1.4	2	B	P	18-20-22	6-5-5	
5B	304	4.0	4.0	1	C	M	10-12	5-3	DCE.91.405.BVCM
	310	3.0	2.9	1	C	M	10-12-14	3-1-1	DCE.91.305.BVCM
	314/316	2.0	2.4	1	C	M	12-14-16	8-7-6	DCE.91.205.BVCM
		2.0	1.9	2	B	P	14-16-18	7-6-5	
	320	1.6	1.9	1	C	M	14-16-18	7-6-5	DCE.91.165.BVCM
		1.6	1.4	2	B	P	18-20-22	6-5-5	



DCP Flat spanners for collet nut

Part number	Series	Dimensions (mm)			
		L	M	N	S1
DCP.99.050.TC	00	78	2	12.6	5.0
DCP.99.055.TC	00	78	2	12.6	5.5
DCP.99.060.TC	00	78	2	12.6	6.0

- Material: chrome-plated steel



Part number	Series	Dimensions (mm)				
		L	M	N	S1	S2
DCP.91.001.TN	0B	95	2.5	21	8.1	7.1
	1B	95	2.5	25	10.1	9.1
DCP.91.023.TN	2B	115	3.0	30	13.1	12.1
	3B	115	3.0	35	15.1	14.1
DCP.91.045.TN	4B	130	3.5	40	21.2	20.2
	5B	130	3.5	45	31.2	30.2

- Material: blackened steel

Maximum metal collet nut tightening torque

	Series						
	00	0B	1B	2B	3B	4B	5B
Torque (Nm)	0.25	0.5	1.5	2.5	4	7	10

Maximum plastic collet nut tightening torque

	Series			
	1B	2B	3B	4B
Torque (Nm)	0.50	0.50	1.00	1.50

1N = 0.102 kg

Maximum elbow plug hex cap tightening torque

	Series						
	00	0B	1B	2B	3B	4B	5B
Torque (Nm)	0.3	0.6	1.0	1.0	1.5	3.0	5.0

Notes:
– We recommend torquing to the maximum value.
– Optimal torque may depend on cable jacket design.
– For applications subject to strong vibration, we recommend fixing the collet nut with epoxy resin.