

Technical Information

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Tooling

Crimp Tool Table

Standard contacts

Contact size	Part number	Head	Handles	Extraction tools	
#20 Ø 1mm	RM/RC 24W3K	S2ØRCM	SHANDLES (endurance of SHANDLES tool = 5,000 cycles)	RX2ØD44	
	RM/RC 20W3K				
	RM/RC 18W3K				
	SM 24WL3S*(1)				
	SC 24WL3S*(1)				
#16 Ø 1.6mm	SM/SC 2ØWL3S*(1)	S2ØSCM2Ø		SHANDLES (endurance of SHANDLES tool = 5,000 cycles)	RX2Ø25GE1
	RM/RC 28M1*	S16RCM2Ø			
	RM/RC 24M9*				
	RM/RC 2ØM13*				
	RM/RC 2ØM12*				
	RM/RC 16M23*	S16RCM16			
	RM/RC 14M3Ø*	S16RCM14			
	SM/SC 24ML1*	S16SCM2Ø			
	SM/SC 2ØML1*	S16SCML1			
	SM/SC 16ML1*				
SM/SC 14ML1*					
	SM/SC 16ML11*	S16SCML11			

(1) loose contact

Contact size	Part number	Tool with separate locator			Extraction tools
		Hand tool	Positioner + locator setting		
#12 Ø 2.4mm	82911457N* / 82911456*	M317	VGE1ØØ77A	1-2	51Ø6Ø21Ø924
	82911459N* / 82911458*			2	
	82911461N* / 8291146Ø*			2	
	82911463N* / 82911462*			3	
	82911465N* / 82911464*			3	
	82911467N* / 82911466*			4	
#8 Ø 3.6mm	829136Ø1A / 829136ØØA	M317	VGE1ØØ78A	3	51Ø6Ø21Ø936
	829136Ø3A / 829136Ø2A			3	
	829136Ø5A / 829136Ø4A			4	
	829136Ø7A / 829136Ø6A			5	
	829136Ø9A / 829136Ø8A			6/7	

* see page 129 for plating options and other contact details

Specific contacts (First mate Last break contacts)

Contact size	Part number*	Hand tools (SHANDLES) head	Tool with separate locator			Extraction tools
			Hand tool	Positioner + locator setting		
#16 Ø 1.6mm Longer RM contact	RM28M1GE1K	S16RCM2Ø	MH86Ø	MH86186	6/8	RX2Ø25GE1
	RM24M9GE1K					
	RM2ØM13GE1K					
	RM16M23GE1K					
	RM2ØM12GE1K					
RM14M3ØGE1K	S16RCM14					
#16 Ø 1.6mm Shorter RC contact	RC28M1GE7K	S16RCM2Ø	MH86Ø	MH86164G	4/6	
	RC24M9GE7K				5/6	
	RC2ØM13GE7K				5/7	
	RC2ØM12GE7K	6/8				
	RC16M23GE7K					
	RC14M3ØGE7K	S16RCM14			M317	UH25




* see page 130 for plating options and other contact details

Coaxial contacts

See coax contacts details on page 131 and cabling notice pages 170 to 174 on the UTO catalog Europe.

Crimping Instructions

Wire Stripping Crimp Version

	Part number		Stripping length L (mm)
	Male	Female	
Machined contact 	#20 - Ø 1mm		
	RM24W3- / RM20W3- RM18W3-	RC24W3- / RC20W3- RC18W3-	4.8
	#16 - Ø 1.6mm		
	RM28M1- / RM24M9- RM20M13- / RM20M12-	RC28M1- / RC24M9- RC20M13- / RC20M12-	4.8
	RM16M23- / RM14M30-	RC16M23- / RC14M30-	7.1
	#12 - Ø 2.4mm		
	8291 1457- / 8291 1459- 8291 1461- / 8291 1463- 8291 1465- / 8291 1467-	8291 1456- / 8291 1458- 8291 1460- / 8291 1462- 8291 1464- / 8291 1466-	7 to 8
#8 - Ø 3.6mm			
8291 3601- / 8291 3603- 8291 3605- / 8291 3607- 8291 3609-	8291 3600- / 8291 3602- 8291 3604- / 8291 3606- 8291 3608-	6.5 to 7.5	
Stamped & formed With insulation support 	#16 - Ø 1.6mm		
	SM24M1- / SM24ML1- SM20M1- / SM20ML1-	SC24M1- / SC24ML1- SC20M1- / SC20ML1-	4
	SM16M11- / SM16ML11-	SC16M11- / SC16ML11-	4.65
	#20 - Ø 1mm		
	SM24W3- / SM24WL3- SM20W3- / SM20WL3-	SC24W3- / SC24WL3- SC20W3- / SC20WL3-	4
Without insulation support 	#16 - Ø 1.6mm		
	SM16M1- / SM16ML1-	SC16M1- / SC16ML1-	6.35
	SM14M1- / SM14ML1-	SC14M1- / SC14ML1-	6.35

Note: See page 129 for plating options and other contact details

Crimping

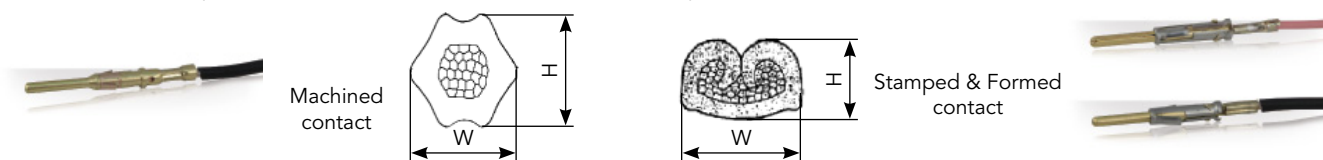
One of the key factors which affects the performance of a connector is the way contacts are terminated. Crimped connections are nowadays seen as the best solution to ensure quality throughout the lifetime of the product. Here are some reasons why we recommend this method of termination for UTO connectors:

Advantages (Extract from the IEC 60352-2):

- Efficient processing of connections at each production level
- Processing by fully-automatic or semi- automatic crimping machines, or with hand operated tools
- No cold-soldered joints
- No degradation of the spring characteristic of female contacts by the soldering temperature

- No health risk from heavy metal and flux steam
- Preservation of conductor flexibility behind the crimped connection
- No burnt, discolored and overheated wire insulation
- Good connections with reproducible electrical and mechanical performances
- Easy production control.

To ensure that the crimp tooling is performing according to original specifications, it is important to carry out regular checks. A common way to check the performance of tooling is with a simple pull test, ideally using a dedicated electric pull tester. Minimum recommended pull forces are indicated in the tables below:



Active contact part	Contact type	Die location on heads	Wire section range	Section (mm ²)	Tensile straight test (mini)	Height (mm) H (±0.075)	Width (mm) W (±0.075)	Tooling head p/n		
Machined contacts size #20 Ø 1 mm	RM24W3K RC24W3K	26/24	AWG 26	0.12 min	15 N	0.95	1.27	S20RCM		
			AWG 24	0.25 max	32 N					
	RM20W3K RC20W3K	22/20	AWG 22	0.32 min	40 N	1.26	1.78			
			AWG 20	0.50 max	60 N					
	RM18W3K RC18W3K	20/18	AWG 20	0.50 max	60 N	1.35	1.86			
			AWG 18	0.82 max	90 N					
S & F contacts size #20 Ø 1 mm	SM24WL3TK6* SC24WL3TK6*	26/24	AWG 26	0.12 min	15 N	0.80	1.49	S20SCM20		
			AWG 24	0.25 max	32 N					
	SM20WL3TK6* SC20WL3TK6*	22/20	AWG 22	0.32 min	40 N	1.01	1.53			
			AWG 20	0.50 max	60 N					
	Machined contacts size #16 Ø 1.6 mm	RM28M1K* RC28M1K*	30/28	AWG 30	0.05 min	11 N	1.14		1.41	S16RCM20
				AWG 28	0.08 max	11 N				
RM24M9K* RC24M9K*		26/24	AWG 26	0.12 min	15 N	1.15	1.41			
			AWG 24	0.25 max	32 N					
RM20M13K* RC20M13K*		22/20	AWG 22	0.32 min	40 N	1.26	1.76			
			AWG 20	0.50 max	60 N					
	AWG 20		0.32 min	40 N						
RM20M12K* RC20M12K*	22/20	AWG 20	0.50 max	60 N	1.66	2.18				
		20	AWG 20	0.50 max			60 N			
		18	AWG 18	0.82 max			90 N			
RM16M23K* RC16M23K*	16	AWG 16	1.50 max	150 N	1.96	2.43	S16RCM16			
		16	AWG 16	1.50 min	150 N	2.10	2.68			
RM14M30K* RC14M30K*	14	AWG 14	2.50 min	230 N	2.30	2.78	S16RCM14			
		14	AWG 14	2.50 min	230 N	2.30	2.78			
S & F contacts size #16 Ø 1.6 mm	SM24ML1TK6* SC24ML1TK6*	26/24	AWG 26	0.12 min	15 N	0.84	1.50	S16SCM20		
			AWG 24	0.25 max	32 N					
	SM20ML1TK6* SC20ML1TK6*	22/20	AWG 22	0.32 min	40 N	1.02	1.54			
			AWG 20	0.50 max	60 N					
	SM16ML11TK6* SC16ML11TK6*	18	AWG 18	0.82 min	90 N	1.32	2.09	S16SCML11		
			16	AWG 16	1.50 max	150 N	1.36		2.10	
	SM16ML1TK6* SC16ML1TK6*	18	AWG 18	0.82 min	90 N	1.49	2.02	S16SCML1		
			16	AWG 16	1.50 max	150 N	1.7		2.05	
	SM14ML1TK6* SC14ML1TK6*	14	AWG 14	2.50 max	230 N	1.79	2.58			

*: example of plating options, for other plating see page 129

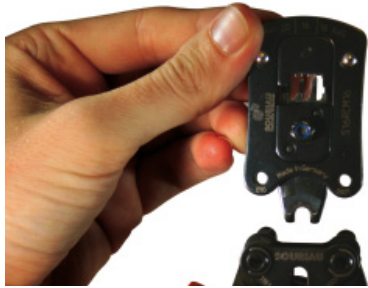
Handle & Interchangeable Heads

User Guide

- 1) Fully close then release the tool, keep it open.
Open the 2 pins.



- 2) Choose the adapter head (sold separately), keep vertical and slide it into the handle until the mechanical end.



- 3) Close the two pins simultaneously to maintain the head.



- 4) Strip the cable properly checking the size recommended in the catalog on page 140.



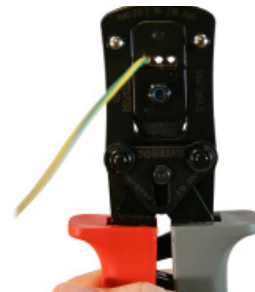
- 5) Place conductors, with no deteriorations, in the bucket contact. All strands to be located in the crimp bucket.



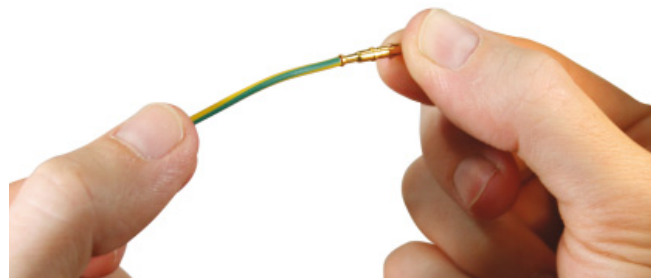
- 6) Position the contact in the bottom of the tool by checking its orientation.



- 7) To crimp contact assembly-cable, tighten sharply the clip to the end of the mechanism.



- 8) To control crimp quality, slightly pull cable with two fingers to control retention.



Extraction Tools

Contact size	Extractor
#20	RX20D44
#16	RX2025GE1
#12	51060210924
#8	51060210936



Contact Extraction Instructions

Place the tool into the cavity from front face of the connector, push on the handle, then remove the contact.

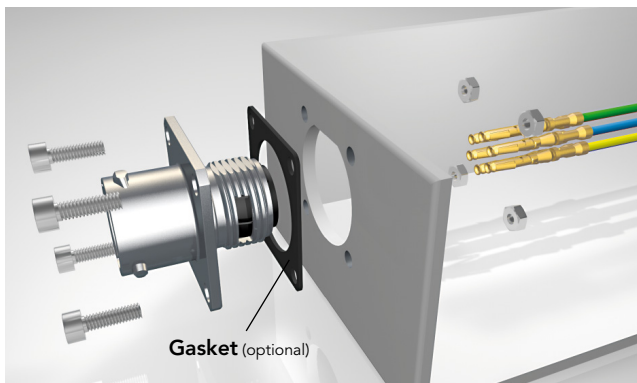


Assembly Instructions

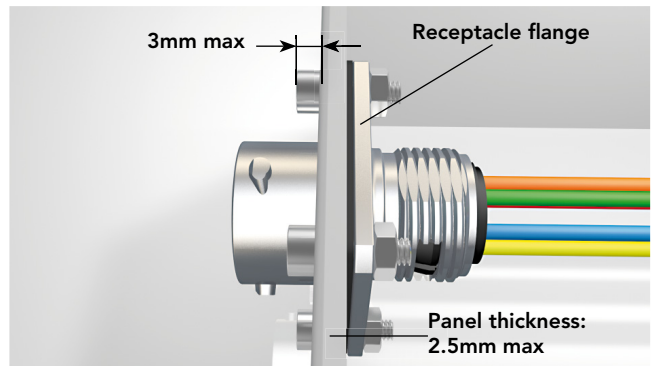
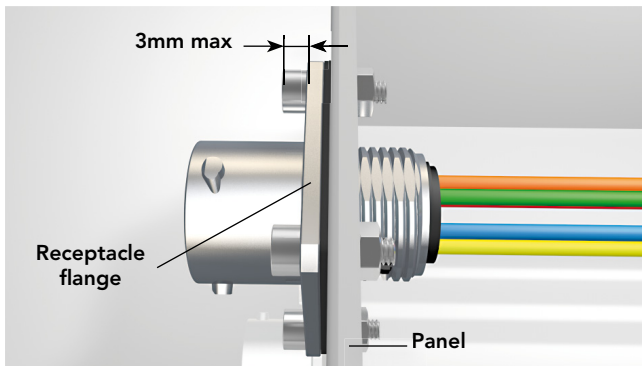
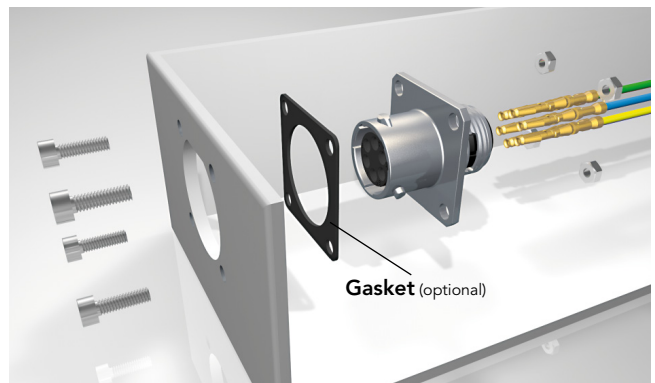
UTO0 Assembly (Mounting Suggestion)

- Strip wires and crimp contacts (see pages 140 & 141)
- Insert contacts into connector cavities (insert manually or use tool RTM205 crimp contacts)
- Place receptacle in the panel cut-out
- Secure receptacle with screws (not supplied)
Tighten screws: M2.5 for size connectors 10 to 22, M3 for size connectors 24 (recommended torque: see table below)
- For complete sealing of the system use optional gasket and sealed screw solution (not sold by SOURIAU).

Front mounting : Crimp version



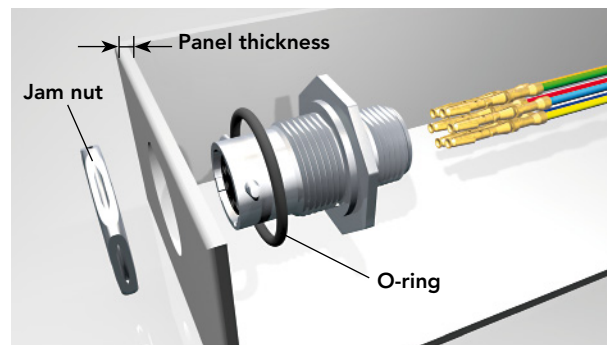
Rear mounting : Crimp version



	Shell size							
	10	12	14	16	18	20	22	24
Screws tightening torque (Nm)	0.30/0.40	0.30/0.40	0.30/0.40	0.30/0.40	0.35/0.45	0.50/0.60	0.55/0.65	0.55/0.65

UTO7 Assembly (Mounting Suggestion)

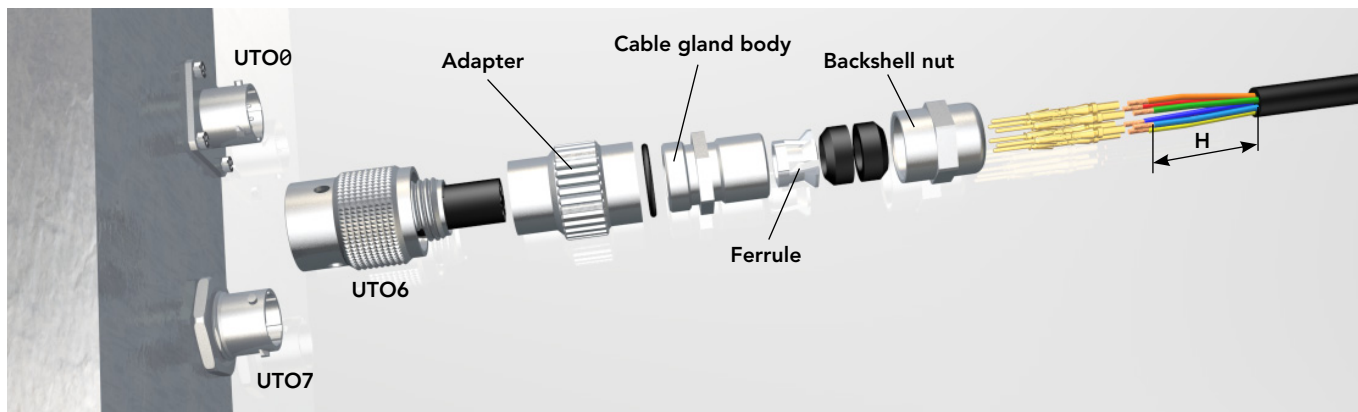
- Strip wires and crimp contacts (see pages 140 & 141)
- Insert contacts into connector cavities (insert manually or use tool RTM205 crimp contacts)
- Seat o-ring, place receptacle in the panel cut-out
- Tighten jam nut



Shell size	Jam nut torque (Nm)	Exterior jam nut dim. (mm)	Ø Wire max (mm)	Panel thickness max (mm)
10	6	22.2	3.2	3.2
12	9	27.0	3.2	3.2
14	10	32.0	3.2	3.2
16	13	33.3	3.2	3.2
18	20	36.5	3.2	3.2
20	23	39.7	3.2	6.4
22	25	42.9	3.2	6.4
24	26	46.0	3.2	6.4

Assembly Instructions (Continued)

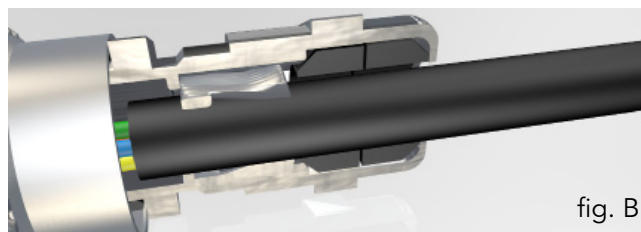
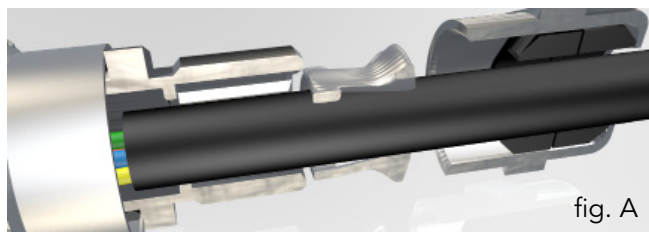
UTO0 or UTO7 with UTO6 + JCS or JC or JCSL or JCL for Unshielded Cable



- Slide accessories onto the cable
- Strip external cable jacket (see dimension H in the table below)
- Strip wires and crimp contacts (see pages 140 & 141)
- Insert contacts into connector cavities (insert manually or use tool RTM205)
- Screw adapter to the rear of the connector body and screw cable

gland body to adapter and tighten (recommended torque: see table below)

- Mate the plug with the receptacle to make the following step easier
- Slide ferrule inside the cable gland body as shown in fig. A
- Tighten backshell nut with cable gland body as shown in fig. B (recommended torque: see below).



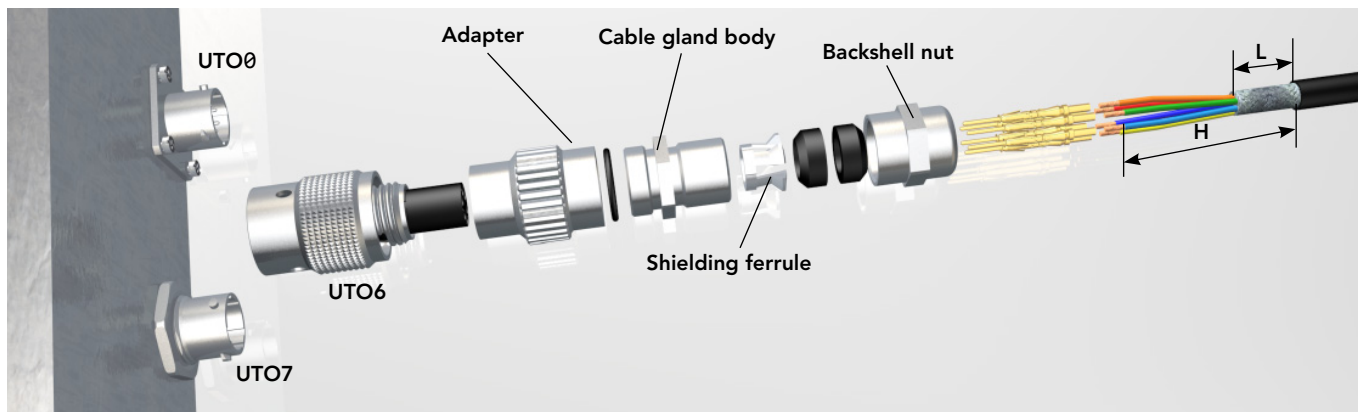
Shell size	Adapter tightening torque (Nm)	Cable gland body tightening torque (Nm)	Backshell nut tightening torque* (Nm)	H min. (mm)			
				JCS/JCSL		JC/JCL	
				Male	Female	Male	Female
10	6	6	5	21	29	32	39
12	10	10	8	21	29	31	39
14	10	10	8	25	33	39	47
16	14	14	12	32	40	43	51
18	14	14	12	37	45	47	55
20	24	24	20	39	47	49	57
22	24	24	20	41	50	53	61
24	24	24	20	47	55	57	65

* Indicative torque, needs to be adjusted depending on the cable used

Spanner size

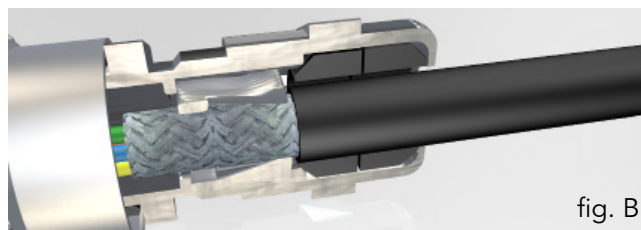
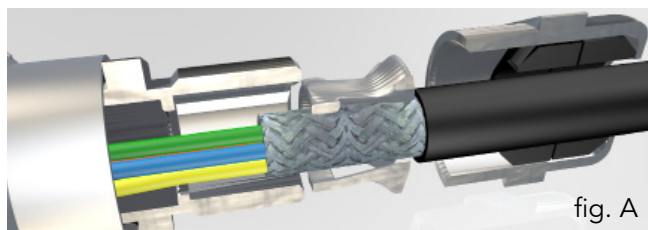
Shell size	JCS/JC		JCSL/JCL	
	Cable gland body	Backshell nut	Cable gland body	Backshell nut
10	17 mm	14 mm	17 mm	17 mm
12 & 14	22 mm	20 mm	22 mm	22 mm
16 & 18	26 mm	24 mm	30 mm	30 mm
20, 22 & 24	33 mm	30 mm	40 mm	40 mm

UTO0 or UTO7 with UTO6 + JCS or JC or JCSL or JCL for Shielded Cable



- Slide accessories onto the cable
- Strip external cable jacket (see dimension H and L in the table below)
- Strip wires and crimp contacts (see pages 140 & 141)
- Insert contacts into connector cavities (insert manually or use tool RTM205)
- Screw adapter to the rear of the connector body and screw cable

- gland body to adapter and tighten (recommended torque: see table below)
- Mate the plug with the receptacle to make the following step easier
- Slide ferrule inside the cable gland body as shown in fig. A
- Tighten backshell nut with cable gland body as shown in fig. B (recommended torque: see below).



Shell size	Adapter tightening torque (Nm)	Cable gland body tightening torque (Nm)	Backshell nut tightening torque (Nm)	H min. (mm)				L min. (inch)
				JCS/JCSL		JC/JCL		
				Male	Female	Male	Female	
10	6	6	5	50	58	61	68	8
12	10	10	8	54	61	65	73	12
14	10	10	8	59	66	73	80	12
16	14	14	12	68	75	79	86	12
18	14	14	12	72	80	83	91	12
20	24	24	20	80	89	90	98	14
22	24	24	20	83	91	94	102	14
24	24	24	20	88	96	98	106	14

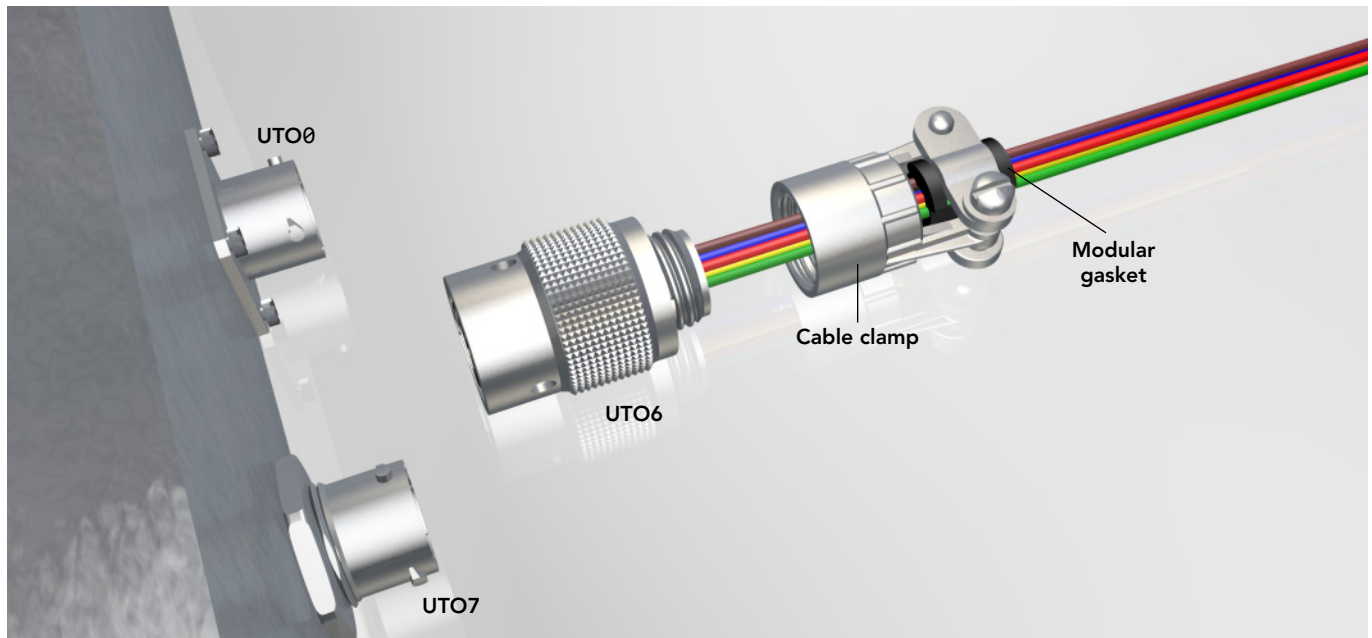
* Indicative torque, needs to be adjusted depending on the cable used

Spanner size

Shell size	JCS/JC		JCSL/JCL	
	Cable gland body	Backshell nut	Cable gland body	Backshell nut
10	17 mm	14 mm	17 mm	17 mm
12 & 14	22 mm	20 mm	22 mm	22 mm
16 & 18	26 mm	24 mm	30 mm	30 mm
20, 22 & 24	33 mm	30 mm	40 mm	40 mm

Assembly Instructions (Continued)

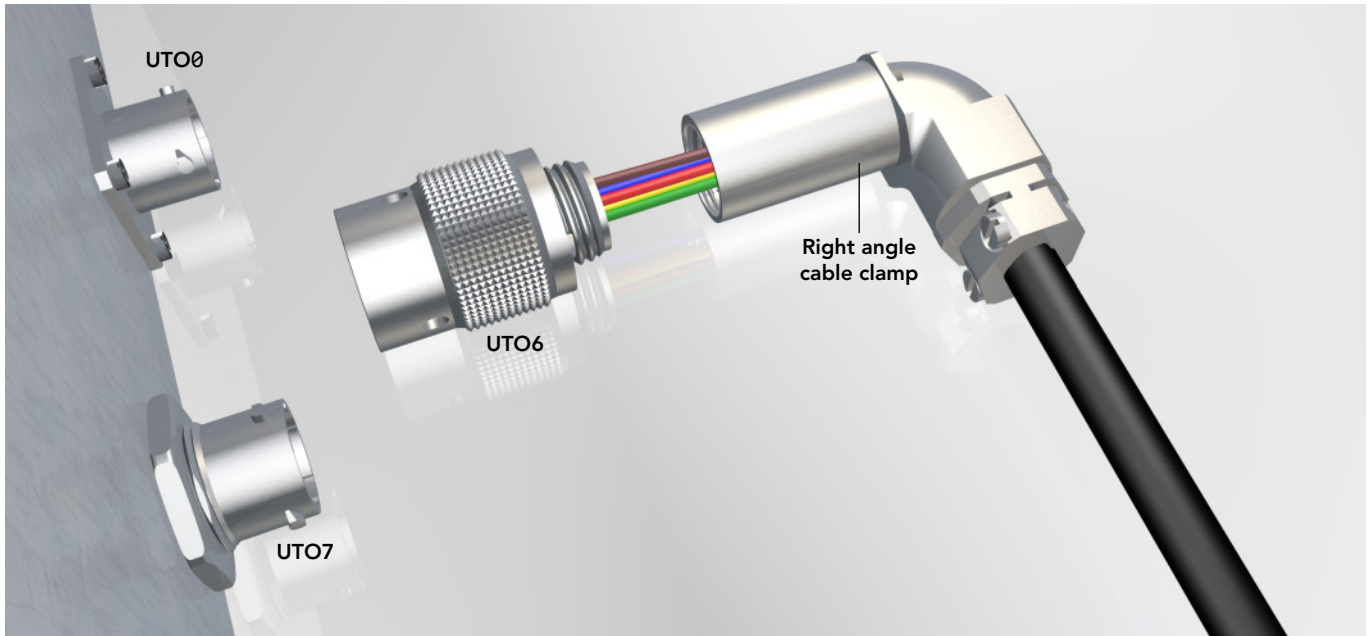
UTO0 or UTO7 with UTO6 + AC Backshell Assembly



- Slide accessories onto the cable
- Strip external cable jacket
- Strip wires and crimp contacts (see pages 140 & 141)
- Insert contacts into connector cavities (insert manually or use tool RTM205)
- Tighten backshell with plug and mate plug with a receptacle (recommended torque values to be applied according to the table below)
- Tighten backshell screws.

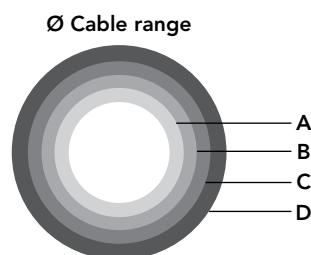
Shell size	Cable clamp tightening torque (Nm)	Clamp (mm)	
		Min	Max
10	4	1.5	5.0
12	5	3.0	8.2
14	5	4.0	10.0
16	9	6.0	13.0
18	9	8.5	16.0
20	11	10.0	16.0
22	13	9.0	19.3
24	15	11.0	20.6

UTO0 or UTO7 with UTO6 + LPGN Backshell Assembly



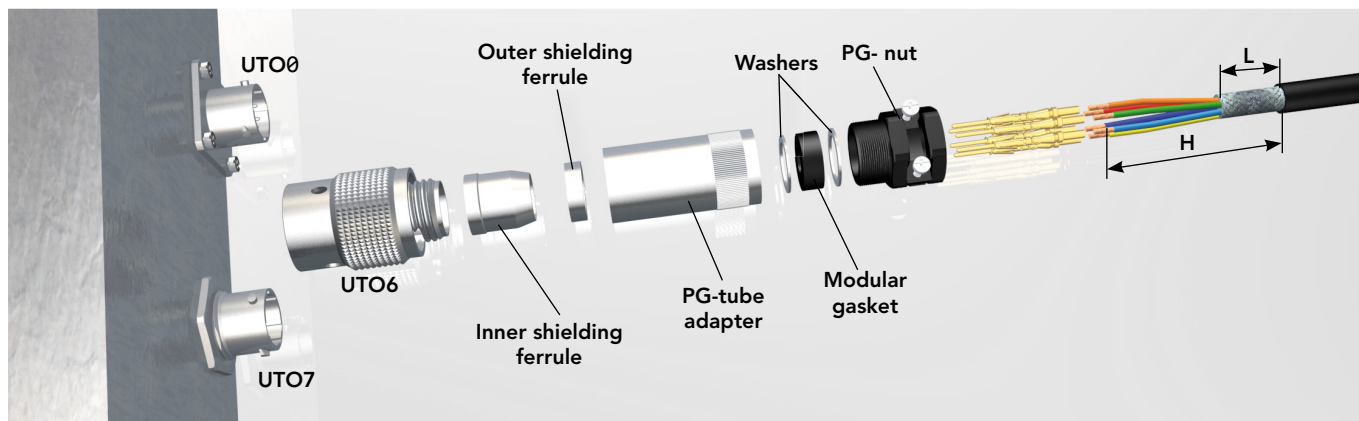
- Remove inner part of the modular gasket to adjust the internal diameter to fit the cable (see table)
- Slide accessories onto the cable
- Strip external cable jacket
- Strip wires and crimp contacts (see pages 140 & 141)
- Tighten backshell with plug and mate plug with a receptacle (recommended torque values to be applied according to the table below)
- Tighten backshell screws.

Shell size	Right angle cable clamp tightening torque (Nm)	Ø Cable range (mm)			
		A	B	C	D
10	6	5	7.5	10	-
12	10	7.5	10	13	-
14	10	7.5	10	13	-
16	14	7.5	11	13.5	16
18	14	10	13.5	17	20
20	24	10	13.5	17	20
22	24	10	13.5	17	20
24	24	18	22	25.5	29



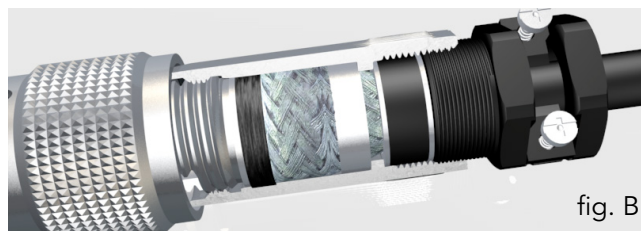
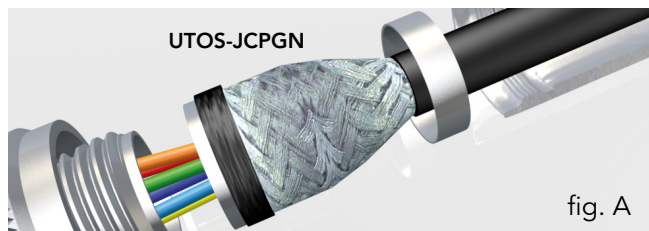
Assembly Instructions (Continued)

UTO0 or UTO7 with UTO6 + JCPGN Backshell Assembly



- Mate UTO6 (plug) with UTO0 or UTO7 already mounted on a panel
- Slide accessories onto the cable
- Strip external cable jacket (see dimension H and L)
- Strip wires and crimp contacts (see pages 140 & 141)
- Insert contacts into connector cavities (insert manually or use RTM205 tool)

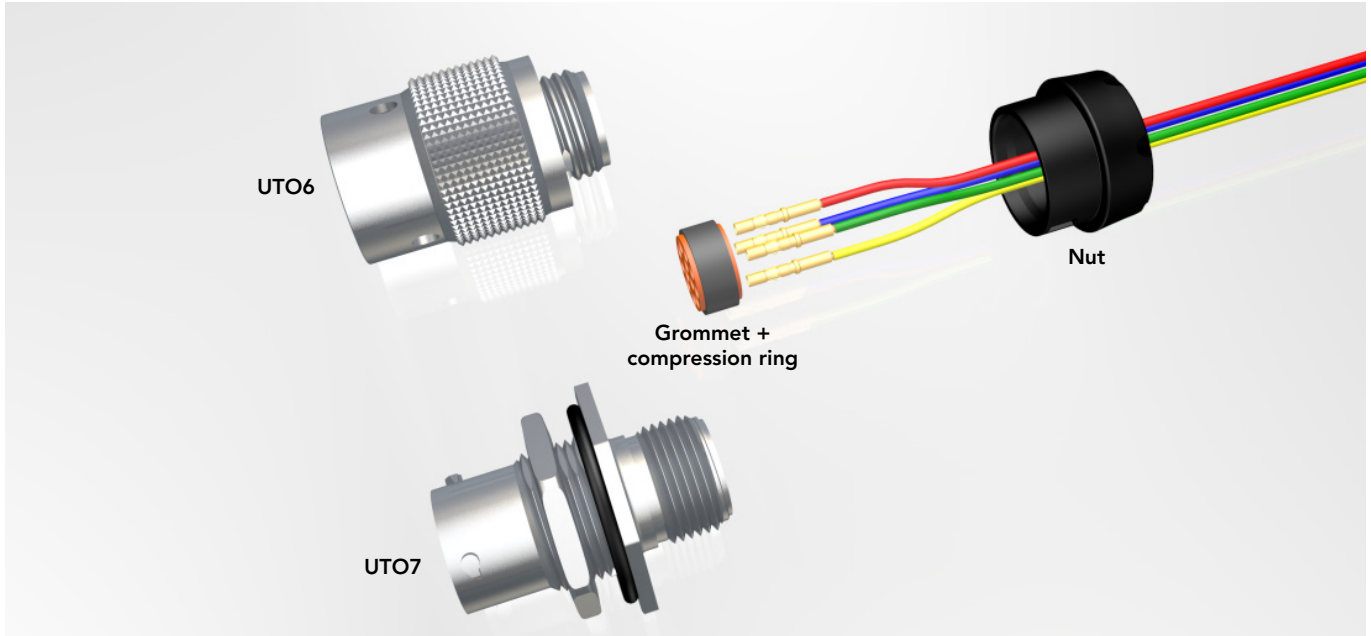
- Place cable braid shield over inner shielding ferrule (See fig. A) and slide the outer ferrule over the braid shield for UTOS-JCPGN
- Screw PG-tube adapter with plug (recommended torque: see below table)
- Tighten PG-nut with PG-tube adapter (See fig. B)
- Tighten PG-nut screws.



Shell size	PG-tube tightening torque (Nm)	Ø Cable range (mm)		H min. (mm)		L min. (mm)
		UTO	UTOS	Pin contacts	Socket contacts	
10	4	4 to 10	4 to 8.8	26.5	34.2	17.6
12	6	4 to 11.9	4 to 11.9	26.5	34.2	17.6
14	10	6.5 to 13.5	6.5 to 13.5	29.6	37.2	20.6
16	10	6.5 to 16	6.5 to 16	31.6	39.2	22.6
18	10	6.5 to 16	6.5 to 16	36.9	42.3	26.7
20	15	9 to 21	9 to 21	36.4	41.8	26.1
22	15	9 to 21	9 to 21	43.4	48.8	33.2
24	15	17 to 29.5	17 to 29.5	43.8	49.2	33.6

Ø individual braid shield conductor between 0.3 and 0.5mm
 Torques to be applied with the plug mated with the receptacle.

UTO6 or UTO7 with GN Backshell Assembly



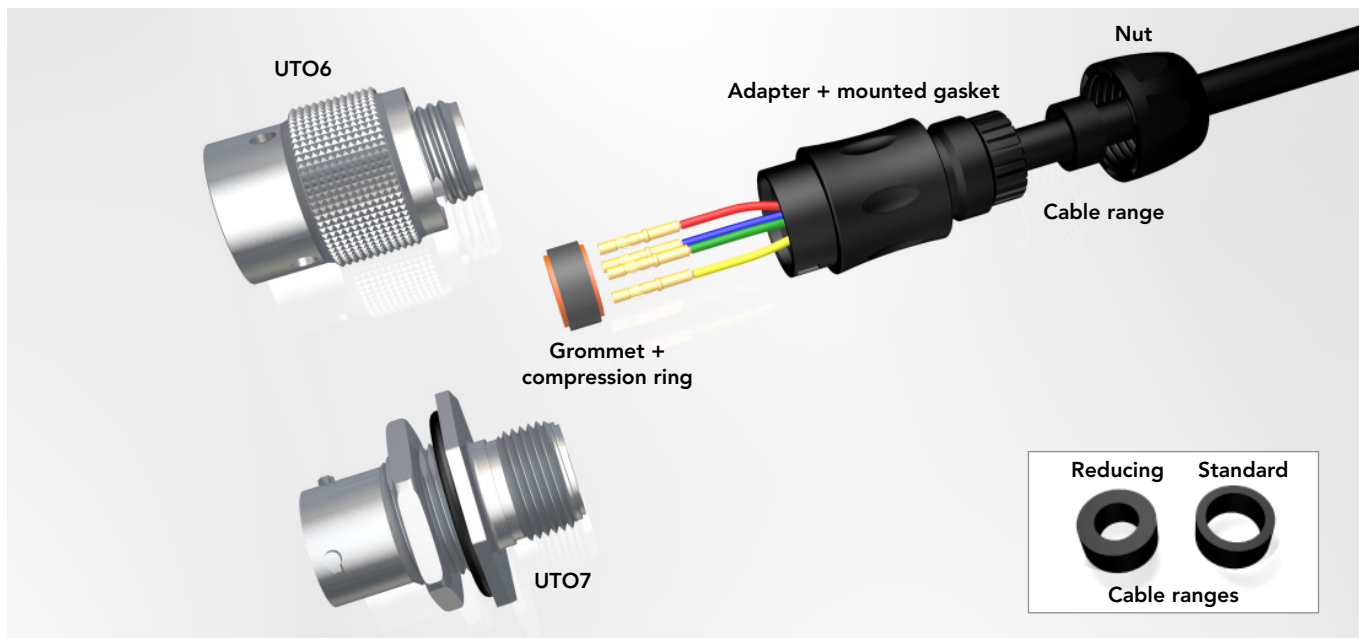
- Strip wires and crimp contacts (see pages 140 & 141)
- Insert first contact into the grommet (first contact in cavity A, no tool is required). Then insert the contact in the connector cavity A (insert manually or use tool RTM205)

- Insert the other contacts
- Tighten the nut to rear of either UTO7 or UTO6 (recommended torque values to be applied according to the table below).

Shell size	layout	Nut tightening torque (Nm)	Ø Wire
10	4	1	From 1.7 mm to 3.0 mm
12	8	1.5	
14	7	1.5	
14	12	1.5	

Assembly Instructions (Continued)

UTO6 or UTO7 with GJC Backshell Assembly



- Strip wires and crimp contacts (see pages 140 & 141)
- Insert first contact into the grommet (first contact in cavity A, no tool is required). Then insert the contact in the connector cavity A (insert manually or use tool RTM205)
- Insert the other contacts
- Tighten adapter with plug, choose right seal (waste the other seal)
- Tighten the nut to rear of either UTO7 or UTO6 (recommended torque values to be applied according to the table below).

Shell size	Layout	Recommended jacket strip length (mm)		Adapter tightening torque (Nm)	Nut tightening torque (Nm)	Ø Cable range Standard seal (mm)	Ø Cable range Reducing seal (mm)	Ø Wire
		Male	Female					
10	4	21	29	1.5	1	2.5/8.0	1.5/5.0	From 1.7 mm to 3.0 mm
12	8	25	33	2	2.5	5.0/12.0	3.0/9.0	
14	7	29	36	3	2.5	7.0/14.0	5.0/12.0	
14	12	29	36	3	2.5	7.0/14.0	5.0/12.0	