eco|mate RM/RSSM Mounting Instructions

Mounting instruction male & female Plugs with 180° Backshell (example RT0L-14CG-S1)

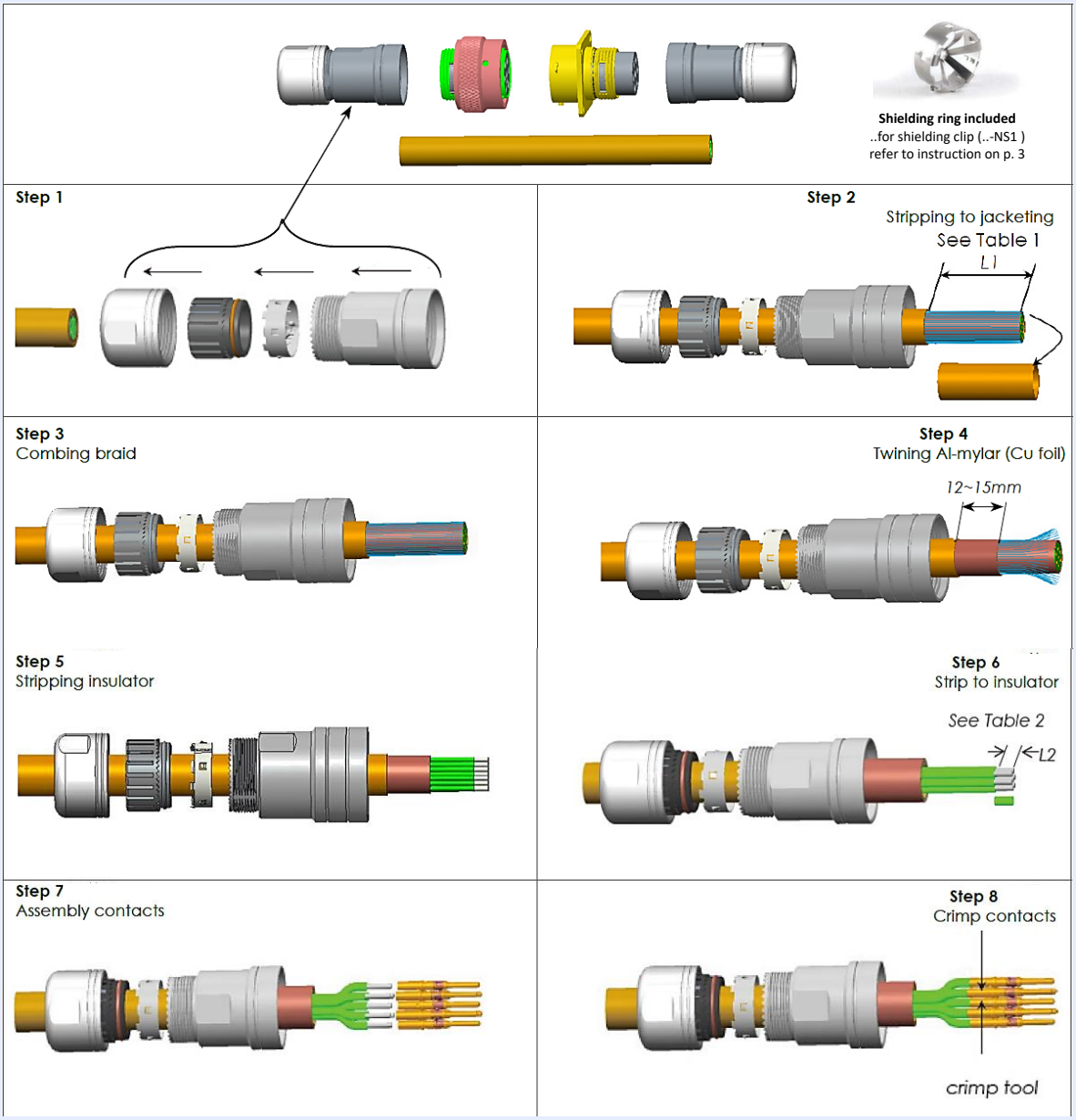


Table 1

Shell size	L1 (long back shell)		L1 (short back shell)	
	Pin (Receptacle)	Socket (Plug)	Pin (Receptacle)	Socket (Plug)
10	32~37mm	40~45mm	22~27mm	30~35mm
12	35~40mm	43~48mm	25~30mm	33~38mm
14	35~40mm	43~48mm	25~30mm	33~38mm
16	38~43mm	46~51mm	28~33mm	36~41mm
18	38~43mm	46~51mm	28~33mm	36~41mm
20	40~45mm	50~55mm	N/A	N/A
22	59~64mm	67~72mm	N/A	N/A

Table 2

Contact size		L2 (stamped)	L2 (machined)
3.6mm		NA	8.0 mm
2.5mm		NA	7.0 mm
2.5mm		5.8 mm	NA
1.6mm	18~14AWG	4.5 mm	7.2 mm
	26~20AWG	4.0 mm	
1.0mm		4.0 mm	6.0 mm

Step 9
Assembly contacts into connector

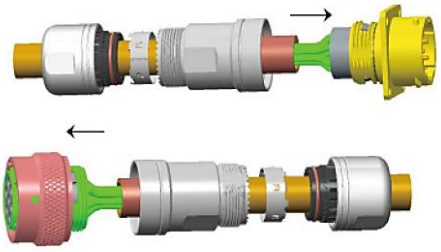
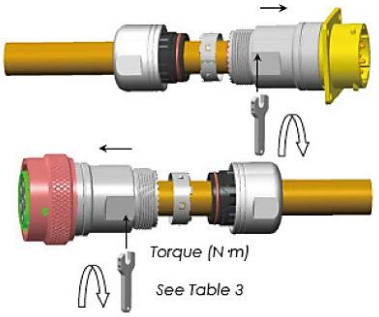


Table 3	
Size	Torque=T1 (N.m)
10	1.5~2.5 N.m
12	2.5~4.0 N.m
14	2.5~4.0 N.m
16	3.0~4.5 N.m
18	3.0~4.5N.m

Step 10
Assembly back shell



Step 11
Assembly shielding clip

Step 12
Assembly plastic clamp

Step 13
Assembly metal nut

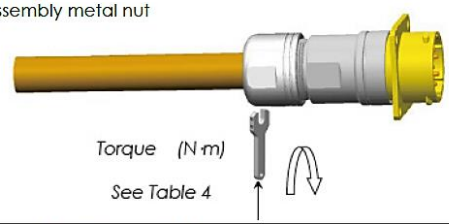
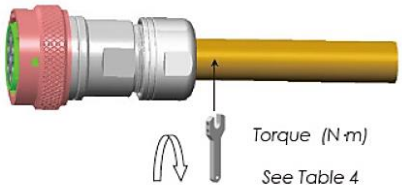
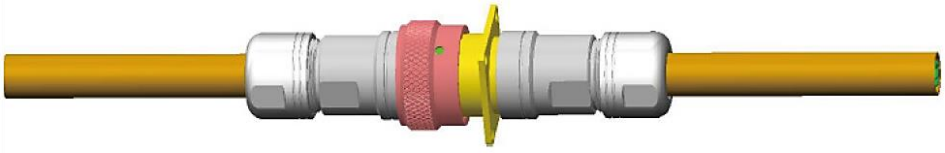


Table 4	
Size	Torque=T2 (N.m)
10	2.0~3.0 N.m
12	3.0~5.0 N.m
14	3.5~5.5 N.m
16	4.0~6.0 N.m
18	5.0~8.0 N.m

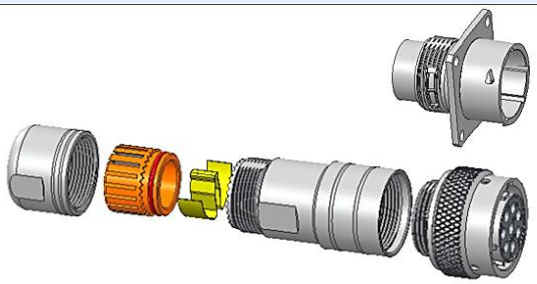


Step 14
Male receptacle & plug (align the master key)

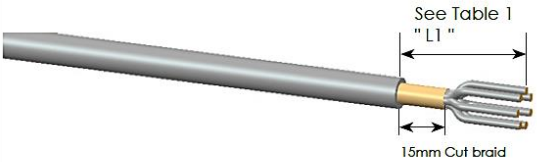


Mounting instruction for 180° Backshell (new version, example RT0L-14CG-NS1)

Shielding clip included



Step 1
Stripping to jacketing and cut braid



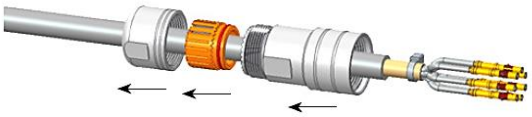
Step 2
Assembly cable tie

Step 3
Cut cable tie

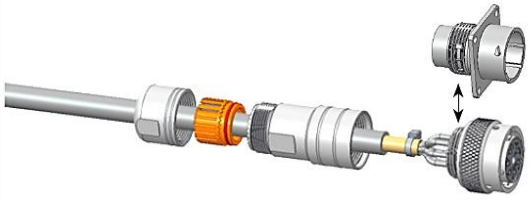
Step 4
Strip insulator

Step 5
Crimp contacts(Pin or Socket)

Step 6
Cord grip into cable



Step 7
Assembly contacts into plug&receptacle



Step 8
Assembly back shell

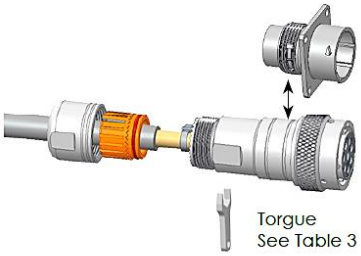


Table 1

Shell size	L1(long back shell)		L1(short back shell)	
	Pin (Receptacle)	Socket (Plug)	Pin (Receptacle)	Socket (Plug)
10	32~37mm	40~45mm	22~27mm	30~35mm
12	35~40mm	43~48mm	25~30mm	33~38mm
14	35~40mm	43~48mm	25~30mm	33~38mm
16	38~43mm	46~51mm	28~33mm	36~41mm
18	38~43mm	46~51mm	28~33mm	36~41mm
20	40~45mm	50~55mm	N/A	N/A
22	59~64mm	67~72mm	N/A	N/A

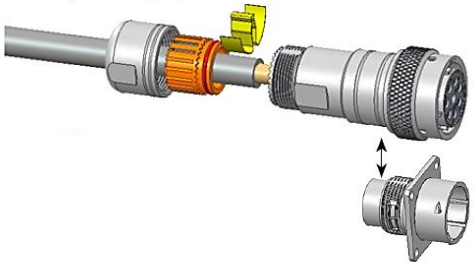
Table 2

Contact size		L2 (stamped)	L2 (machined)
3.6mm		NA	8.0 mm
2.5mm		NA	7.0 mm
2.5mm		5.8 mm	NA
1.6mm	18~14AWG	4.5 mm	7.2 mm
	26~20AWG	4.0 mm	
1.0mm		4.0 mm	6.0 mm

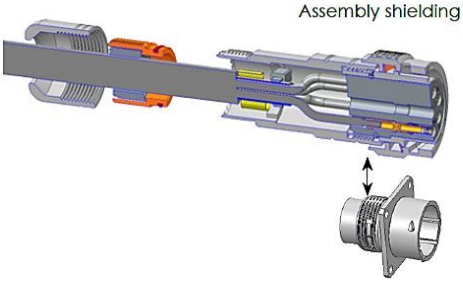
Table 3

Shell size	Torque=T1 (N.m)
10	1.5~2.5
12	2.5~4.0
14	2.5~4.0
16	3.0~4.5
18	3.0~4.5
20	4.0~5.5
22	4.0~5.5

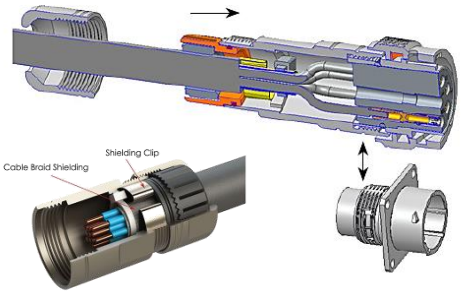
Step 9
Assembly shielding clip



Step 10
Assembly shielding clip



Step 11
Assembly plastic clamp



Step 12
Assembly metal nut

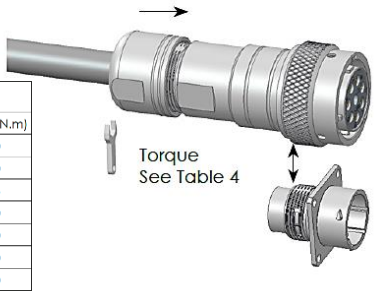


Table 4

SShell size	Torque=T2 (N.m)
10	2.0~3.0
12	3.0~5.0
14	3.5~5.5
16	4.0~6.0
18	5.0~8.0
20	5.0~8.0
22	5.0~8.0

Mounting instruction for 90° Backshell (example RT0B-14CG-S1)

Shielding ring included
..for shielding clip (..-NS1)
refer to instruction above

Step 1

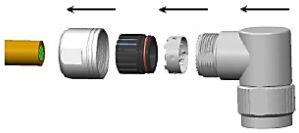
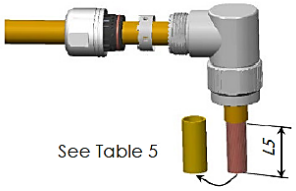


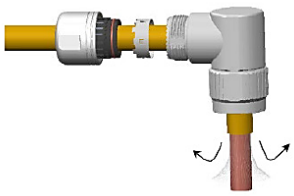
Table 5

Size	L5 (90° cord grip)	
	Pin	Socket
10	NA	NA
12	45 mm	50 mm
14	45 mm	53 mm
16	47 mm	55 mm
18	NA	NA

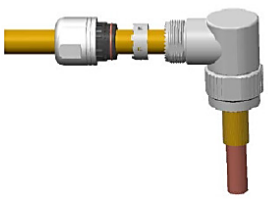
Step 2
Strip jacket



Step 3
Combing braid



Step 4
Bend braid



Step 5
Wrap aluminum or copper foil

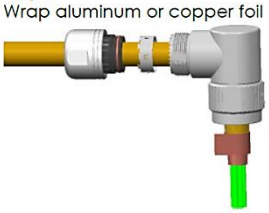
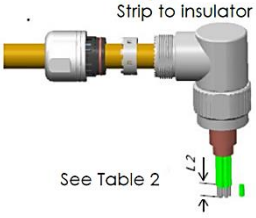


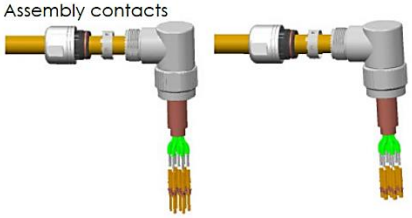
Table 2

Contact size		L2 (stamped)	L2 (machined)
3.6mm		NA	8.0 mm
2.5mm		NA	7.0 mm
2.5mm		5.8 mm	NA
1.6mm	18~14AWG	4.5 mm	7.2 mm
	26~20AWG	4.0 mm	
1.0mm		4.0 mm	6.0 mm

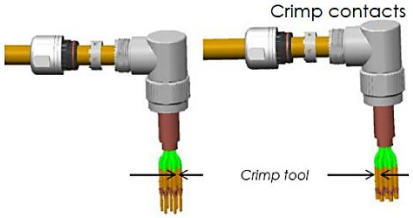
Step 6
Strip to insulator



Step 7
Assembly contacts



Step 8
Crimp contacts



Step 9
Assembly contacts into connectors

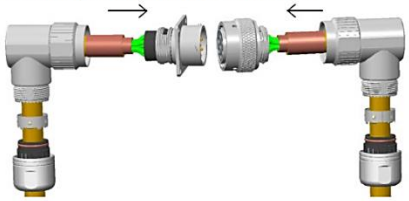
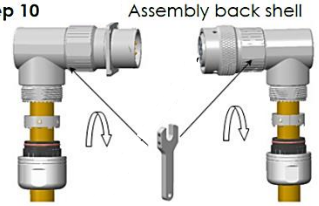
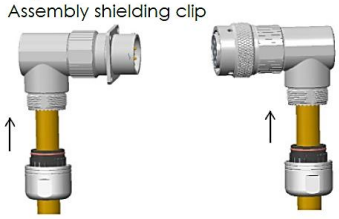


Table 3	
Size	Torque=T1 (N.m)
10	1.5~2.5 N.m
12	2.5~4.0 N.m
14	2.5~4.0 N.m
16	3.0~4.5 N.m
18	3.0~4.5N.m

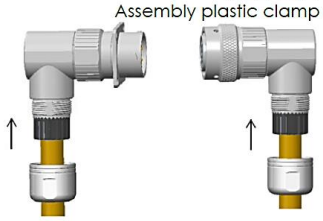
Step 10 Assembly back shell



Step 11
Assembly shielding clip



Step 12
Assembly plastic clamp



Step 13 Assembly metal nut

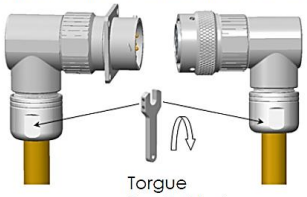
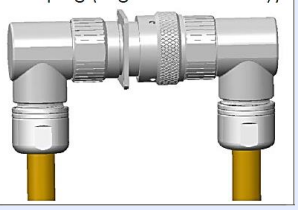


Table 4	
Size	Torque=T2 (N.m)
10	2.0~3.0 N.m
12	3.0~5.0 N.m
14	3.5~5.5 N.m
16	4.0~6.0 N.m
18	5.0~8.0 N.m

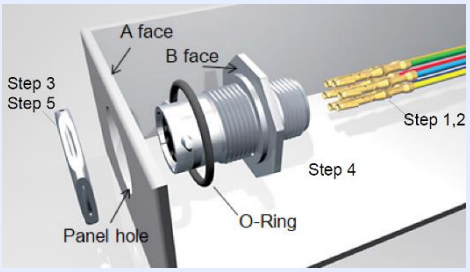
Step 14
Male receptacle & plug (align the master key)



Mounting instruction Jam Nut Receptacles

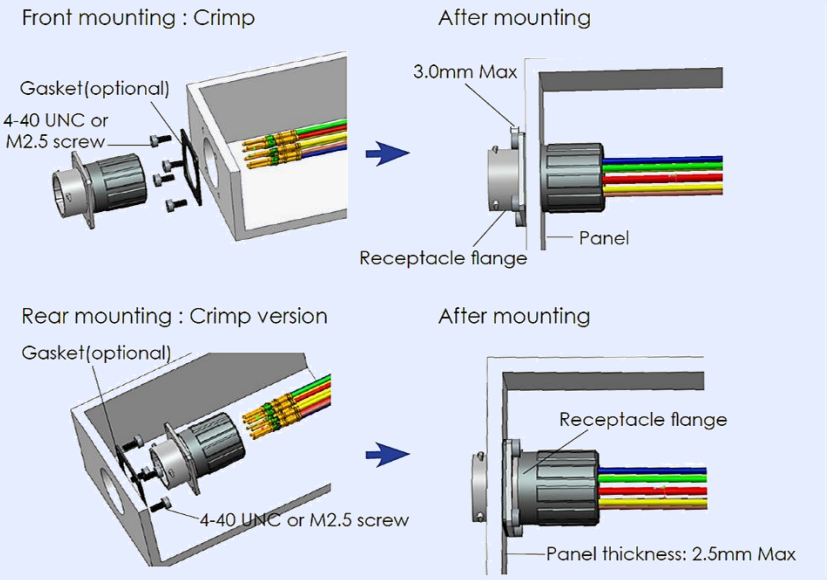
Mounting Instruction:

1. Check drawings for panel cutout dimensions
2. Strip wires and crimp the contacts
   - For PCB contacts wave soldering only, no high temperatures processes; contact us for pin layout
3. Insert the wired contacts into the connector
4. Remove the nut from the connector
5. Lead the connector through the cut out, make sure the o-ring is placed between panel (A face) and flange (B face)
6. Assemble the nut from the front side



Shell size	Tightening Torque (Nm)	Max. panel thickness (mm)	Jam Nut wrench size (mm)
10	5.0~6.0	3.18	22.2
12	8.0~9.0	3.18	27.0
14	9.0~10.0	3.18	30.2
16	11.4~13.0	3.18	33.3
18	18.4~20	3.18	36.5
20	20.8~23.0	6.38	39.7
22	22.8~25.0	6.38	43.0
24	23.8~26.0	6.38	46.0

Mounting instruction Square Flange Receptacles

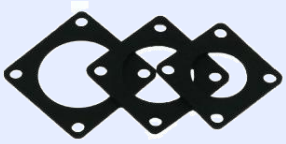


Mounting Instruction:

1. Check drawings for panel cutout dimensions
2. Strip wires and crimp on the contacts
   - For PCB contacts wave soldering only, no high temperatures processes; contact us for pin layout
3. Insert the wired contacts into the connector
4. Place gasket and receptacle in right position
5. Fix the receptacle with screws

Square Flange sealing:

- Has to be ordered separately
- Rear mounting: RTFD*B
- Front mounting: RTFD*B1

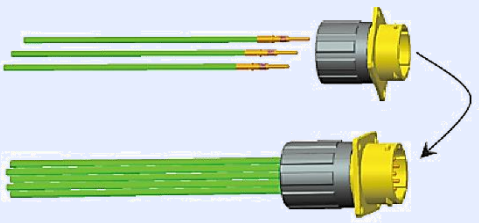


Shell size	Tightening Torque (Nm)	Gasket Compression Distance (mm)
Size 8	0.35~0.45	0.30~0.45
Size 10		
Size 12		
Size 14		
Size 16		
Size 18	0.40~0.50	0.40~0.50
Size 20	0.55~0.65	0.40~0.50
Size 22	0.60~0.70	
Size 24		

Endcaps & Sealing Plugs

Mounting Instruction:

- Endcap versions are shipped pre-assembled.
- For mounting please insert the wired contacts vertically through the sealing pillow into the contact cavities
- In case the contact is difficult to assemble it can be soaked in industrial alcohol to improve the slide in
- Red sealing pillow = standard wire diameter,
  Green sealing pillow = reduced wire diameters



Plug part numbers:
Ø1,60mm: *AT13-204-2005*
Ø1,88mm: *MS27488-16-2*
Ø3,10mm: *A114017*

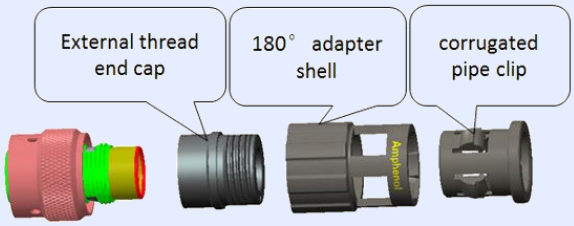
Sealing Plugs:

- In case your application does not require to use all pins within the layout, the empty positions need to be sealed
- Therefore please equip the connector cavity with a unwired contact and insert the dedicated sealing plug into the sealing pillow
- Sealing plugs can not be used for mechanical coding

Corrugated Tube Adapter

How to connect corrugated tube to Ecomate connectors:

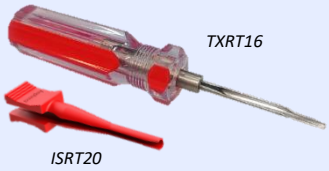
- Ecomate RM part numbers ending with "-TH" come with a special backshell with single wire sealing and an outer thread
- You can use the adapters P81206-12 and P81206-14 to connect corrugated tube to the connector
- P81206-12 is suitable for AD15,5-AD16,2
  P81206-14 is suitable for AD19,5-AD20,5

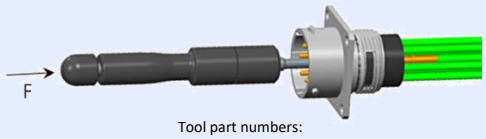


Installing & Removing contacts

Tools for installing contacts:

- Usually no tools are needed to insert the contacts into the connector cavities
- The assembly fixtures ISRT20 (for 1mm contacts, 28-24AWG) and TXRT16 (for 1,6mm contacts) can help to insert the contacts smoothly
- When the contact is fully inserted with a slight click sound, gently pull it back to ensure that it is properly mated





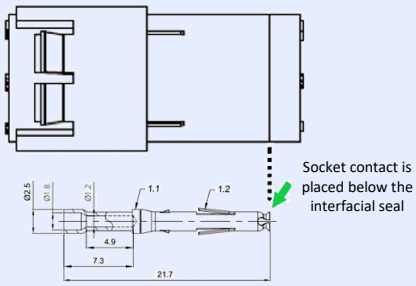
Tool part numbers:
QXRT20 / QXRT16 / QXRT16-Coax / QXRT12S / QXRT08

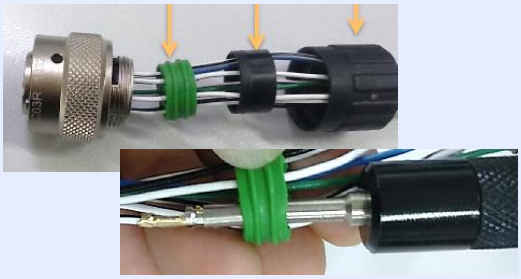
Tools for removing contacts:

- Extraction tools have to be used when removing assembled contacts from the connector, otherwise the contacts/cavities could get damaged
- For removing the contacts insert the tool from the front, push the handle & pull out the contacts with slight force

Removing 1mm socket contacts:

- In case 1mm socket contacts should get removed you may face the problem that the extraction tools' sleeve doesn't fit into the contact cavity
- The diameter seems reduced due to interfacial seals which protect the contacts from being exposed and making them finger touch safe
- The seal is flexible enough to use the extraction tool, Isopropyl alcohol can be used on the tool to reduce friction





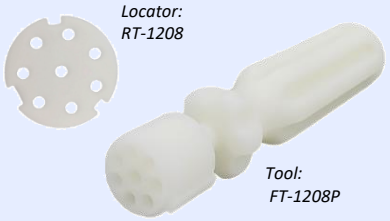
Removing contacts from endcap versions:

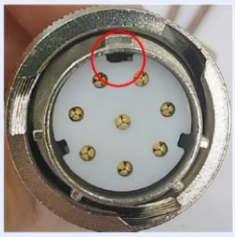
1. Disassemble the endcap components
2. Insert the extraction tool into the mating face of the connector and pull out the contacts
3. Use the same tool to contract the claws of the contacts and lead the contact through the sealing pillow
4. Assemble the endcaps components, consider the correct gap alignment on the sleeve part, torque around 1,0 Nm
5. Equip the connector for final assembly

Contact Locator for pin contacts

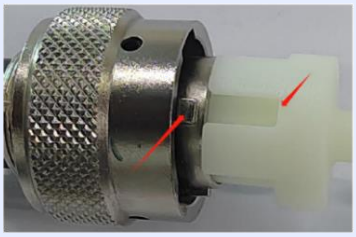
Installing "contact locators"

- Contacts locators are not necessary but recommended to ensure the contact position stability of sensitive pin contacts
- The contact locator is intended to stay in place, it has no effect on the functionality of the connector
- On the right you can see the needed part number for shell size 12 - 8pin as an example

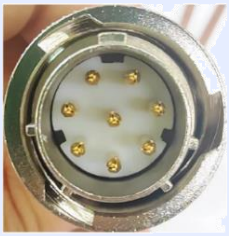




1. Pre-assemble the pin locator into the pin contacts (Align the main key with the main keyslot)



2. Press the pin locator into the connector with the assembly tool (consider key alignment)



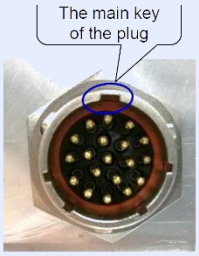
3. The pin locator is completely pushed to the bottom of the connector

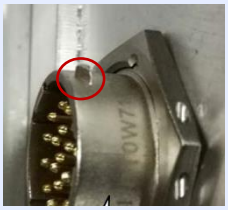
General Mating Advise

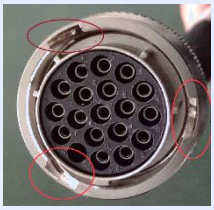
1. Key Alignment:

Align the main keys of the plug and receptacle before mating. Otherwise, below abnormal conditions may be caused:

- The connector cannot be inserted → need to be aligned again
- If the main key is not aligned before turning the closing nut on the plug, the pin contacts of the receptacle could be damaged







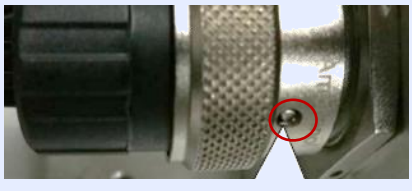
2. Turning the Closing Nut:

After the main key is aligned, turn the closing nut on the plug. When the stuck-point on the receptacle (left picture) is located at the plugs grooves (right pictures), push the plug horizontally towards the receptacle. Do not tilt during this process.

- There is a lot of resistance when pushing the plug → please push the connector horizontally
- In case the pin contacts touches the edge of the socket contact, the contact may crack and fall off. Double check their condition and replace connector and contacts if needed.

3. Closing and open the connection:

- Press the plug towards the receptacle and tighten the closing nut clockwise to close the connection. After mating the stuck-point can be seen at the round holes of the receptacle Please consider, if the stuck-point are not fully inserted, it is not properly assembled.
- If you need to open the connection, press the plug towards the receptacle and unfasten the closing nut counterclockwise.



GuardSafe Locking Clips

Part numbers: 1080391 (* = shell size)*

Easy to Use

- Installation: Locate the clip over the connector coupling nut with the lanyard towards the plug as shown. Close the safety clip.
- Removal: Locate a screwdriver on first latch as shown. Push down the latch then twist the screwdriver. Repeat actions for second latch

Guard Safe Locking Clips

- Electrical connectors must not be opened while they are under voltage or current load
- Unintended opening can lead to electric shocks and a health risk for the users
- Locking Clips Offer an extra layer of protection from an inadvertent uncoupling of the connector

ecomate® Contacts - Machined, Crimp
(Plating Options - Replace "x" in part number with appropriate Symbol from chart below.)

Size 20 (1.0mm), 7.5A				
Part Number		Wire Range (AWG)	Wire Range (mm²)	Use with Endcap
Pin	Socket			
MP18W23x	MS18W23x	20 - 18AWG	0.50 - 0.75 mm²	Yes
MP20W23x	MS20W23x	22 - 20AWG	0.34 - 0.50 mm²	Yes
MP24W23x	MS24W23x	26 - 24AWG	0.13 - 0.25 mm²	Yes
MP28W23x	MS28W23x	30 - 28AWG	0.05 - 0.08 mm²	Yes
Size 16 (1.6mm), 13A				
Part Number		Wire Range (AWG)	Wire Range (mm²)	Use with Endcap
Pin	Socket			
MP14M23x	MS14M23x	16 - 14AWG	1.5 - 2.5 mm²	Yes
MP16M23x	MS16M23x	18 - 16AWG	0.75 - 1.50 mm²	Yes
MP20M23x	MS20M23x	22 - 20AWG	0.34 - 0.50 mm²	Yes
MP24M23x	MS24M23x	26 - 24AWG	0.14 - 0.25 mm²	Yes
MP28M23x	MS28M23x	30 - 28AWG	0.14 - 0.05 mm²	Yes
Size 12 (2.5mm), 35A				
Part Number		Wire Range (AWG)	Wire Range (mm²)	Use with Endcap
Pin	Socket			
MP10B23x	MS10B23x	12-10AWG	4.0 - 6.0 mm²	Yes
Size 8 (3.6mm), 45A - For use with 1403 Layout Only				
Part Number		Wire Range (AWG)	Wire Range (mm²)	Use with Endcap
Pin	Socket			
MP10A23x-10	MS10A23x-10	8AWG	10mm²	No
MP10A23x-63	MS10A23x-63	12 - 10AWG	4.0 - 6.0 mm²	No
-	MS10A23x-63W	12 - 10AWG	4.0 - 6.0 mm²	Yes
MP10A23xL	-	12 - 10AWG	3.0 - 6.0 mm²	Yes
MP10A23x-25	MS10A23x-25	16 - 14AWG	1.5 - 2.5 mm²	No
-	MS10A23x-25W	16 - 14AWG	1.5 - 2.5 mm²	Yes
Size 8 (3.6mm), 45A - For use with 1604 Layout Only				
Part Number		Wire Range (AWG)	Wire Range (mm²)	Use with Endcap
Pin	Socket			
MP10A23x	MS10S23x	12 - 10AWG	3.0 - 6.0 mm²	Yes

ecomate® Contacts - Stamped & Formed, Crimped
(Plating Options - Replace "x" in part number with appropriate Symbol from chart below.)

Size 20 (1.0mm), 5A				
Part Number		Wire Range (AWG)	Wire Range (mm²)	Use with Endcap
Pin	Socket			
SP20W2x	SS20W2x	22 - 18AWG	0.34 - 0.75 mm²	Yes
SP24W2x	SS24W2x	26 - 24AWG	0.13 - 0.25 mm²	Yes
SP28W2x	SS28W2x	30 - 28AWG	0.05 - 0.08 mm²	Yes
Size 16 (1.6mm), 13A				
Part Number		Wire Range (AWG)	Wire Range (mm²)	Use with Endcap
Pin	Socket			
SP14M2x	SS14M2x	16 - 14AWG	1.5 - 2.5 mm²	Yes
SP16M2x	SS16M2x	18 - 16AWG	0.75 - 1.50 mm²	Yes
SP20M2x	SS20M2x	22 - 20AWG	0.34 - 0.50 mm²	Yes
SP24M2x	SS24M2x	26 - 24AWG	0.14 - 0.25 mm²	Yes
Size 12 (2.5mm), 23A				
Part Number		Wire Range (AWG)	Wire Range (mm²)	Use with Endcap
Pin	Socket			
SP12A1T	SS12A1T	14 - 12AWG	2.5 - 3.5 mm²	Yes

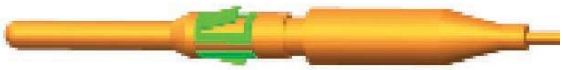
Plating Options - Replace "x" in part number with appropriate Symbol			
Symbol	Plating	Symbol	Plating
T	Tin Plating Over Nickel	G5	Gold Plating (Thickness 5µ")
S	Silver Plating Over Nickel	G10	Gold Plating (Thickness 10µ")
F	Gold Flash Plating	G15	Gold Plating (Thickness 15µ")
		G30	Gold Plating (Thickness 30µ")

ecomate® Contacts - RADSOK® Crimp, Flat Tail or Screw Tail

Part Number	Part Number	Contact Size (AWG)	Contact Size (mm)	Wire Range (AWG)	Wire Range (mm²)	Insert Arrangement	Type	Amperage
Pin	Socket							
MP6ARS8S	MS6ARS8S	8AWG	3.6 mm	8AWG	10 - 16 mm²	12-1 and 20-3	Crimp	86A
HP25BCS	HS25BCS	4AWG	6 mm	4AWG	20 - 25 mm²	14-1	Crimp	120A
HPBHS	N/A	4AWG	6 mm	N/A	N/A	14-1	Flat Tail	120A
HPBSS	N/A	4AWG	6 mm	N/A	N/A	14-1	Screw Tail	120A
HP25CCS	HS25CCS	1/0 AWG	8 mm	4AWG	20 - 25 mm²	16-1	Crimp	120A
HP35CCS	HS35CCS	1/0 AWG	8 mm	2AWG	30 - 35 mm²	16-1	Crimp	130A
HP50SSC	HS50CCS	1/0 AWG	8 mm	4AWG	20 - 25 mm²	16-1	Crimp	180A
HPCHS	N/A	1/0 AWG	8 mm	N/A	N/A	16-1	Flat Tail	180A
HPCSS	N/A	1/0 AWG	8 mm	N/A	N/A	16-1	Screw Tail	180A
HP25DCS	HS25DCS	3/0 AWG	10 mm	4AWG	20 - 25 mm²	20-1	Crimp	120A
HP35DCS	HS35DCS	3/0 AWG	10 mm	4AWG	30 - 35 mm²	20-1	Crimp	130A
HP50DCS	HS50DCS	3/0 AWG	10 mm	2AWG	40 - 50 mm²	20-1	Crimp	180A
HP70DCS	HS70DCS	3/0 AWG	10 mm	2/0 AWG	60 - 70 mm²	20-1	Crimp	250A
HP95DCS	HS95DCS	3/0 AWG	10 mm	3/0 AWG	85 - 95 mm²	20-1	Crimp	300A

Contacts

PCB Contacts

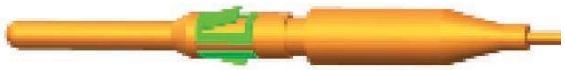


PCB Machined Contact Part Numbers

Contact Size	Description	Plating	PART NUMBER	
			Male	Female
20	Short Version	Gold Flash	MP20W12E06F	MS20W12E06F
20	Short Version	Gold 5µ"	MP20W12E06G5	MS20W12E06G5
20	Short Version	Gold 10µ"	MP20W12E06G10	MS20W12E06G10
20	Short Version	Gold 15µ"	MP20W12E06G15	MS20W12E06G15
20	Short Version	Gold 30µ"	MP20W12E06G30	MS20W12E06G30
20	Long Version	Gold Flash	MP20W12E09F	MS20W12E09F
20	Long Version	Gold 5µ"	MP20W12E09G5	MS20W12E09G5
20	Long Version	Gold 10µ"	MP20W12E09G10	MS20W12E09G10
20	Long Version	Gold 15µ"	MP20W12E09G15	MS20W12E09G15
20	Long Version	Gold 30µ"	MP20W12E09G30	MS20W12E09G30
16	Short Version	Gold Flash	MP16M12E06F	MS16M12E06F
16	Short Version	Gold 5µ"	MP16M12E06G5	MS16M12E06G5
16	Short Version	Gold 10µ"	MP16M12E06G10	MS16M12E06G10
16	Short Version	Gold 15µ"	MP16M12E06G15	MS16M12E06G15
16	Short Version	Gold 30µ"	MP16M12E06G30	MS16M12E06G30
16	Long Version	Gold Flash	MP16M12E09F	MS16M12E09F

Contacts

PCB Machined Contact Part Numbers (con't)



Contact Size	Description	Plating	PART NUMBER	
			Male	Female
16	Long Version	Gold 5µ"	MP16M12E09G5	MS16M12E09G5
16	Long Version	Gold 10µ"	MP16M12E09G10	MS16M12E09G10
16	Long Version	Gold 15µ"	MP16M12E09G15	MS16M12E09G15
16	Long Version	Gold 30µ"	MP16M12E09G30	MS16M12E09G30
2.5 mm	Short Version	Gold Flash	MP10B12E05F	MS10B12E05F
2.5 mm	Short Version	Gold 5µ"	MP10B12E05G5	MS10B12E05G5
2.5 mm	Short Version	Gold 10µ"	MP10B12E05G10	MS10B12E05G10
2.5 mm	Short Version	Gold 15µ"	MP10B12E05G15	MS10B12E05G15
2.5 mm	Short Version	Gold 30µ"	MP10B12E05G30	MS10B12E05G30
2.5 mm	Long Version	Gold Flash	MP10B12E08F	MS10B12E08F
2.5 mm	Long Version	Gold 5µ"	MP10B12E08G5	MS10B12E08G5
2.5 mm	Long Version	Gold 10µ"	MP10B12E08G10	MS10B12E08G10
2.5 mm	Long Version	Gold 15µ"	MP10B12E08G15	MS10B12E08G15
2.5 mm	Long Version	Gold 30µ"	MP10B12E08G30	MS10B12E08G30

Available in Standard Package Sizes: 25 or 1,000 pieces

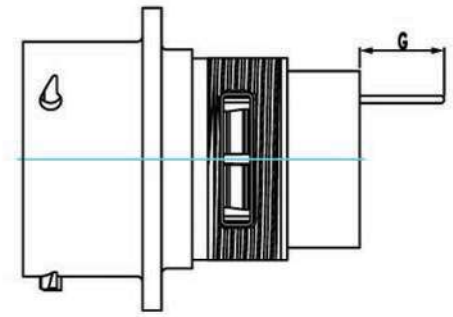
PCB Soldering

The PNPCF series can be used in a wave soldering process, but not in a reflow soldering process. All high temperature processes are prohibited.

Contacts

PCB Contacts Dimensions

Nominal Length G (mm)



Dimensions of dipsolder contacts out of connector (contacts to be ordered separately)

All dimensions are in mm
xx=plating options

Shell Size	Pin Contact					
	MP20W12E06xx	MP20W12E09xx	MP16M12E04xx	MP16M12E06xx	MP10B12E05xx	MP10B12E08xx
10	4.0	9.5	4.0	8.0	--	--
12	4.0	9.5	4.0	8.0	5.0	--
14	4.0	9.5	4.0	8.0	5.2	--
16	4.0	9.5	4.0	8.0	--	--
18	--	9.5	4.0	8.0	--	--
20	--	9.5	4.0	8.0	--	--
24	--	--	--	3.9	--	--

Shell Size	Socket Contact					
	MS20W12E06xx	MS20W12E09xx	MS16M12E04xx	MS16M12E06xx	MS10B12E05xx	MS10B12E08xx
10	3.3	8.5	2.4	3.0	--	--
12	3.3	8.5	2.4	3.0	--	--
14	3.3	8.5	2.4	3.0	--	--
16	3.3	8.5	2.4	3.0	--	--
18	--	8.5	2.4	--	--	--
20	--	8.5	2.4	--	--	--
24	--	--	--	--	--	--