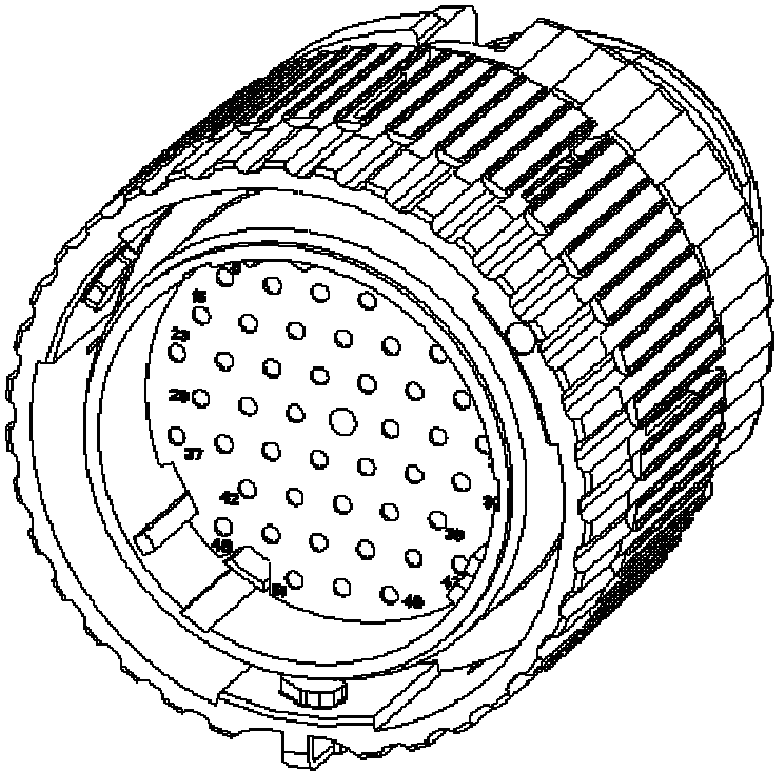
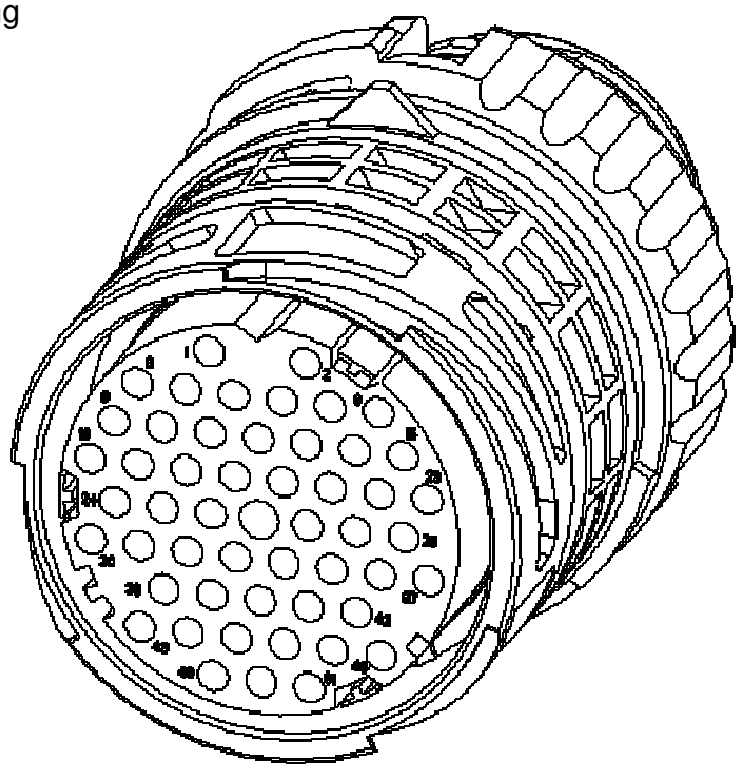
ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

Assembly manual for 51-way Secondary locking



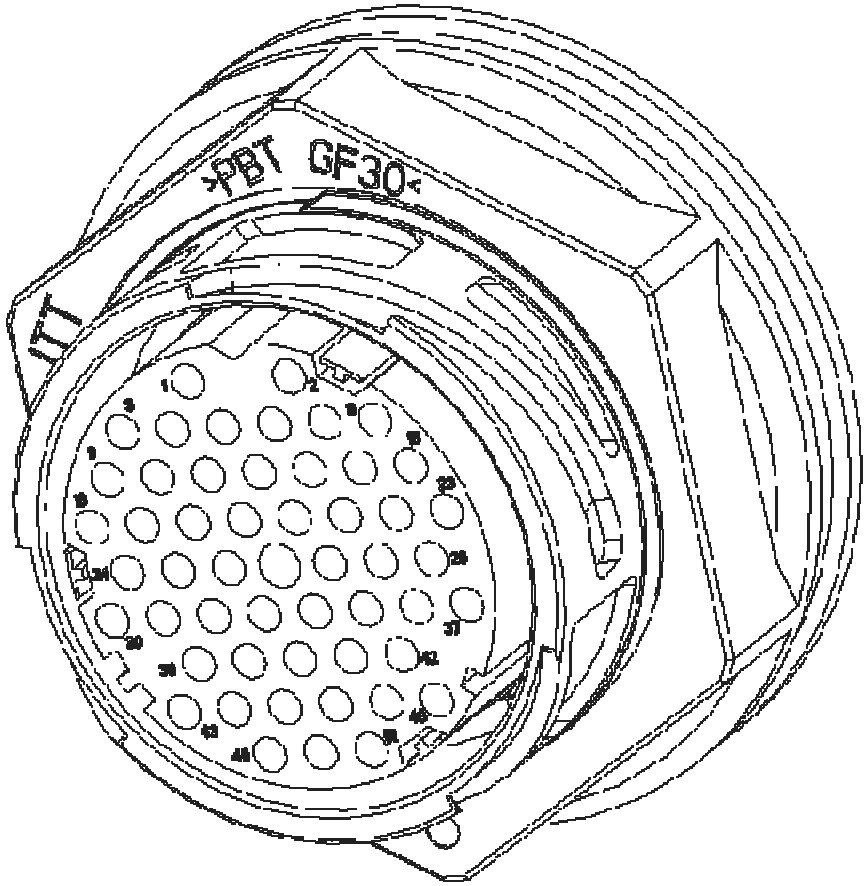
Straight plug,
bayonett coupling



Snap-in receptacle

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
10.02.11 STR	10.02.11 HAG		C 4119W	10.02.2011

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E



Jamnut receptacle

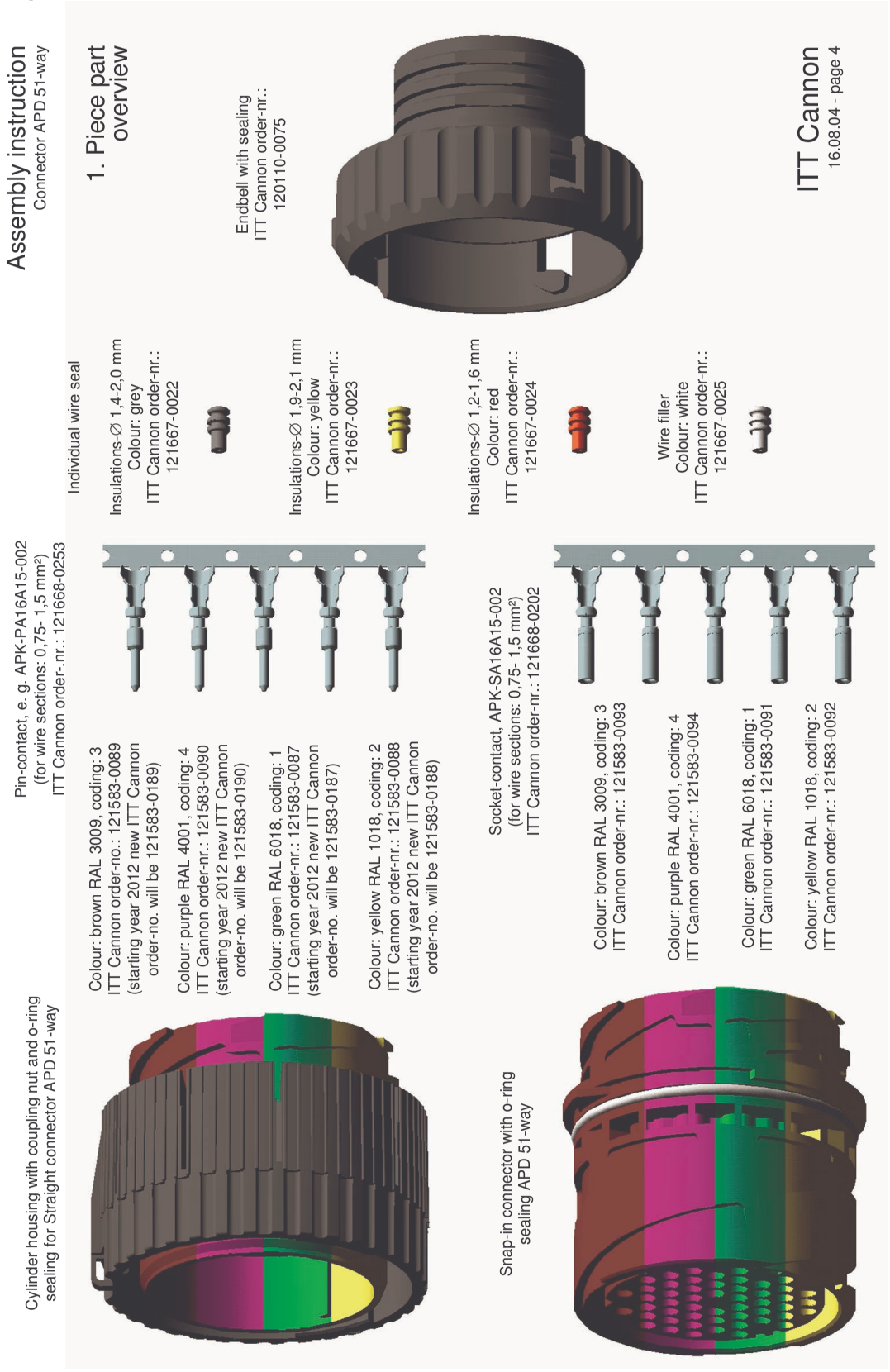
Please read the assembly instructions completely and make yourself aware of the content.
Only trained personal are allowed to do the assembly.
Pay attention to the method of assembly, the order of assembly, as well as hints and specifications to guarantee proper function of the assembly.
Only the recommended parts, sub-assemblies and fixtures should be used for the assembly and disassembly of a plug connector.
If the parts, sub-assemblies and aids, are used inappropriately, negligently and abusively, the liability of the manufacturer becomes void.
The manufacturer also assumes no liability for resulting damages to property and person.
Changes on parts, sub-assemblies and aids as well as deviation from the prescribed assembly process, require the written consent of the manufacturer.
The manufacturer reserves the right to make changes without notice.
For a clearer understanding, “to the right“ means as seen from the top you have to turn clockwise, “to the left“ means as seen from the top you have to turn counter-clockwise.
Unused or left-over parts have to separated for recycling.

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

1.	Piece part over view	page 4
2.	Crimping tools	page 5
3.	Assembly aids	page 6
4.	Preparation of wires	page 7
5.	Crimping of pin and socket-contacts	page 8
5.1.	Crimping with handtool	page 8
5.2.	Crimping with electropress	page 11
5.3.	Crimpspecification	page 13
6.	Assembly of Jamnut receptacle	page 14
6.1.	Insertion of wire-filler	page 15
6.2.	Insertion of contacts	page 16
6.3.	Locking of connector insert	page 17
6.4.	Assembly of the endbell	page 18
7.	Assembly of the snap-in receptacle	page 19
7.1.	Insertion of wire-filler	page 20
7.2.	Insertion of contacts	page 20
7.3.	Assembly of the endbell	page 21
7.4.	Assembly of the alignment disc	page 22
8.	Assembly of the straight plug connector	page 23
8.1.	Insertion of wire-filler	page 24
8.2.	Insertion of contacts	page 24
8.3.	Assembly of the endbell	page 25
8.4.	Assembly of the endbell	page 26
9.	Disassembly of the endbell	page 27
10.	Disassembly of contacts of jam nut and snap-in receptacle connector	page 28
11.	Disassembly of contacts of plug connector	page 31
12.	Product safety and warranty	page 36

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

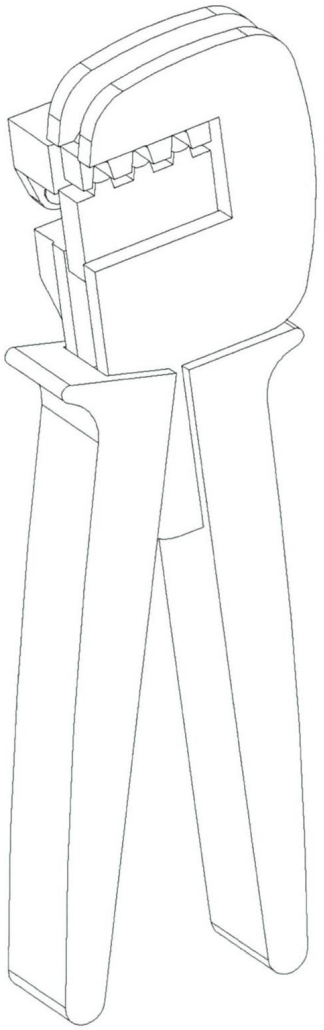
1. piece part overview



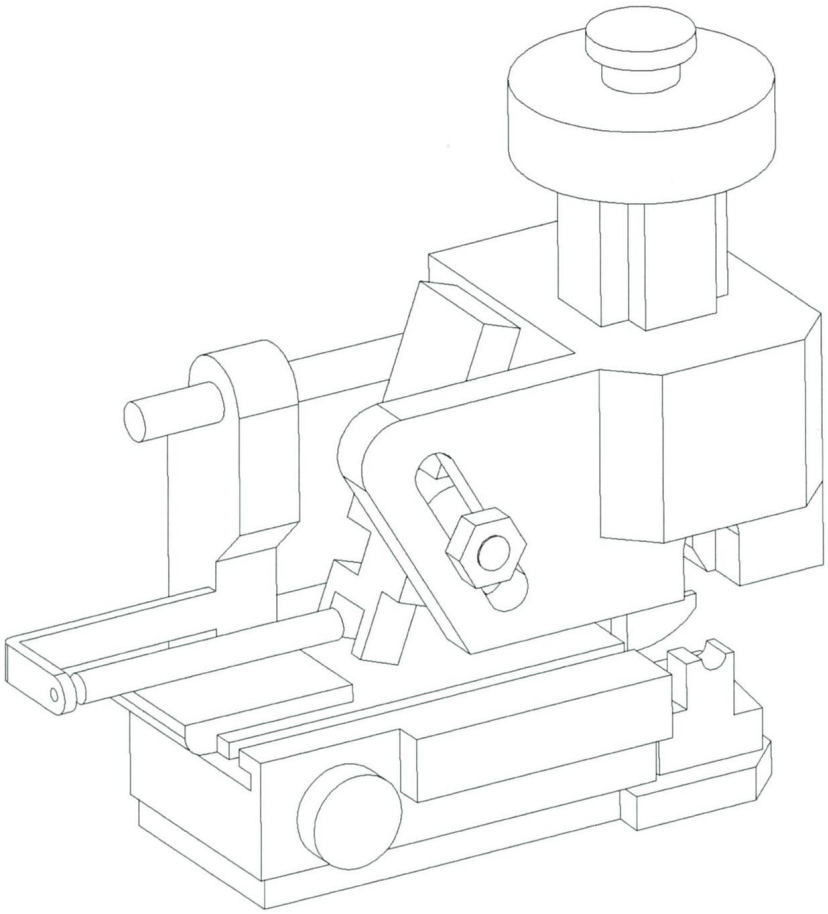
ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

2. Crimping tools

Handcrimp tool
Description: Strato-Standard
ITT Cannon order no.: 121586-5156



Crimping tool
Description: WWZ-20.100-APK16-15-002
ITT Cannon order no.: 121586-5132



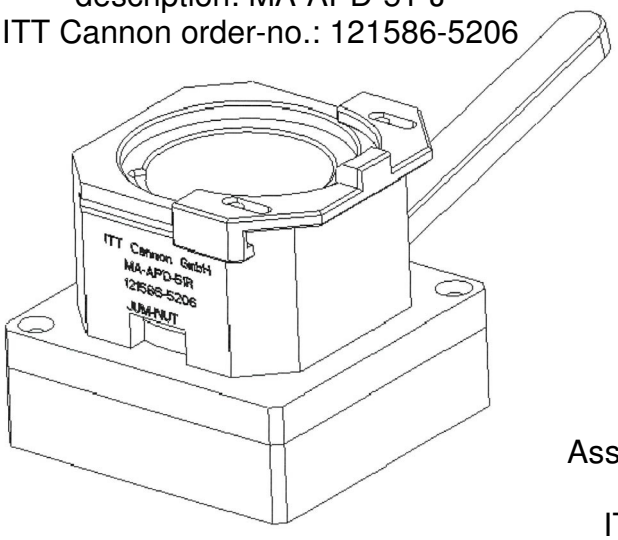
Crimp inserts for hand tool
ITT Cannon order no.: 121586-5197

On demand: Electro Crimp - press
ITT Cannon

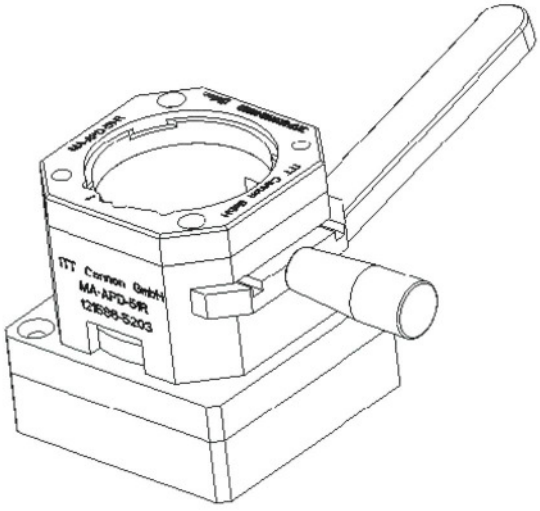
ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

3. Assembly aids

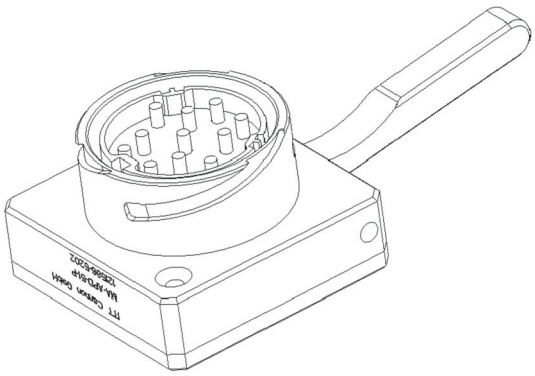
Assembly fixture for Jam nut connector
description: MA-APD-51-J
ITT Cannon order-no.: 121586-5206



Assembly fixture for receptacle connector
description: MA-APD-51-R
ITT Cannon order-no.: 121586-5203



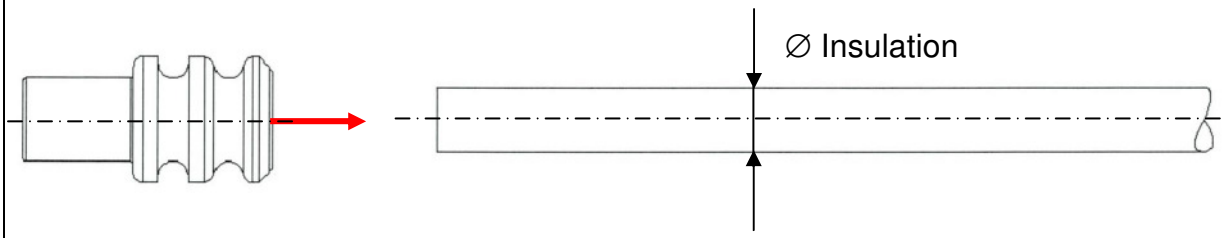
Assembly fixture for plug connector
description: MA-APD-51-P
ITT Cannon order-no.: 121586-5202



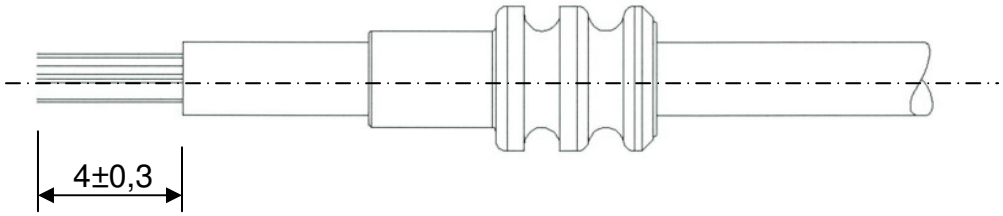
ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

4. Preparation of wires

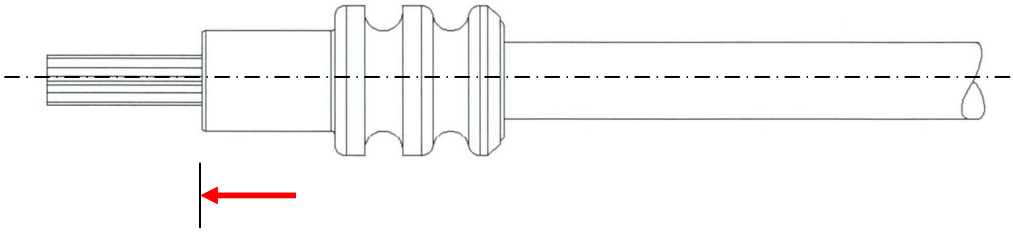
Select single-wire seal acc. wire diameter (see page 4)
Move single-wire seal as shown on the wire. Leave sufficient space that the single-wire seal won't be damage while stripping the insulation and crimping the contacts.



Strip wire on a length of 4±0,3mm.



Move single-wire seal back to the end of the insulation until ist even.



ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

5. Crimping of pin- and socket-contacts

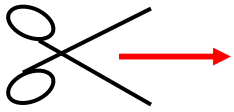
shown on pin-contacts

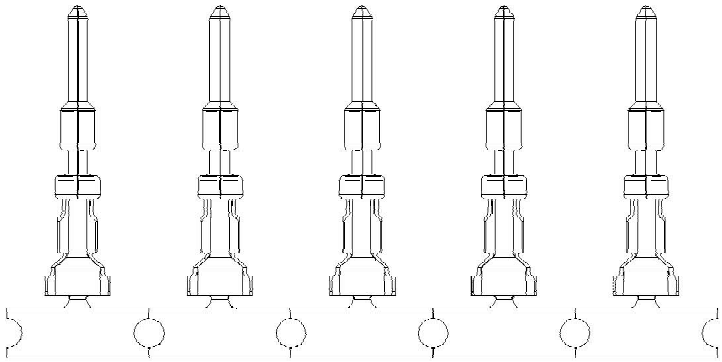
5.1. Crimping with hand-tool

Choose contact acc. application.
E. g. : pin-contact, ITT Cannon order no.: 121668-0253 (APK-PA16A15-002)
Socket- contact, ITT Cannon order no.: 121668-0202 (APK-SA16A15-002)

Mount inserts ITT Cannon order no.: 121586-5197
into crimp-tool ITT Cannon order no.: 121586-5156
regarding the crimp-tool manual

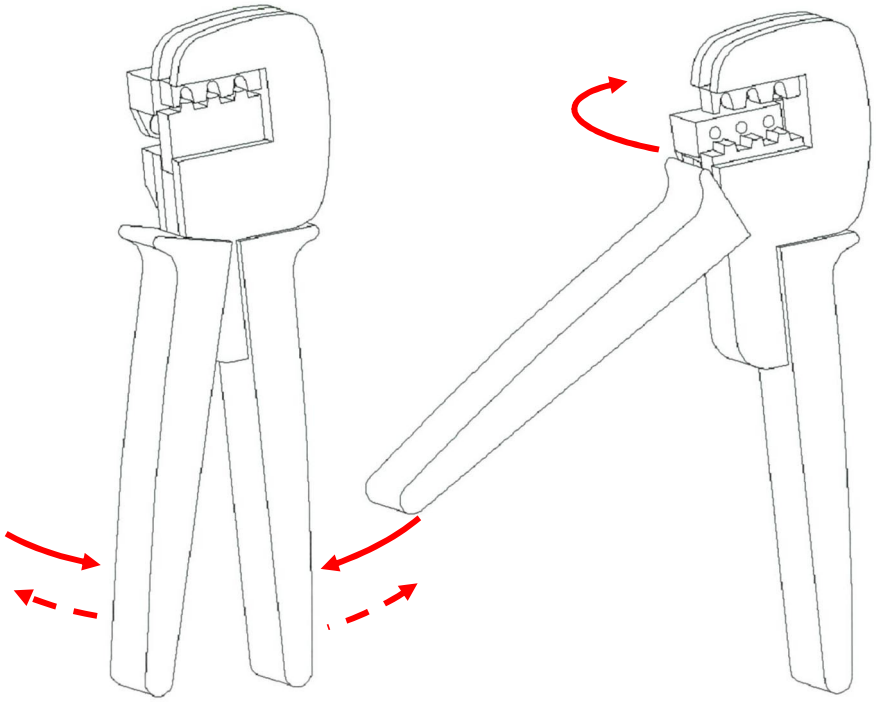
Use a cutter to separate contacts
from support strip





Open crimp-tool be complet pressing

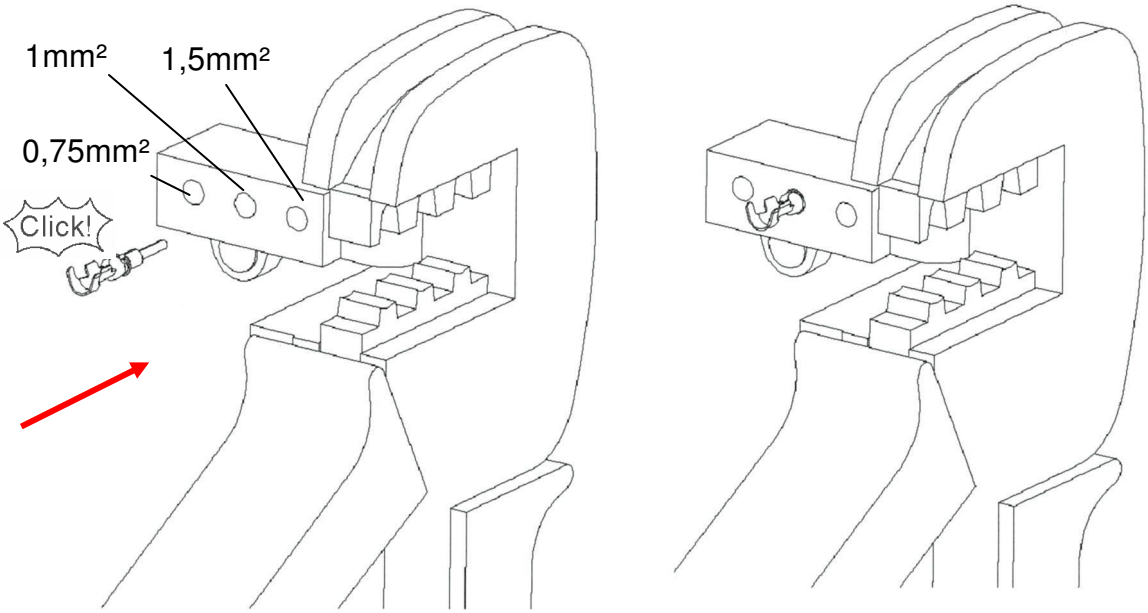
Swing out of contact-positionier.



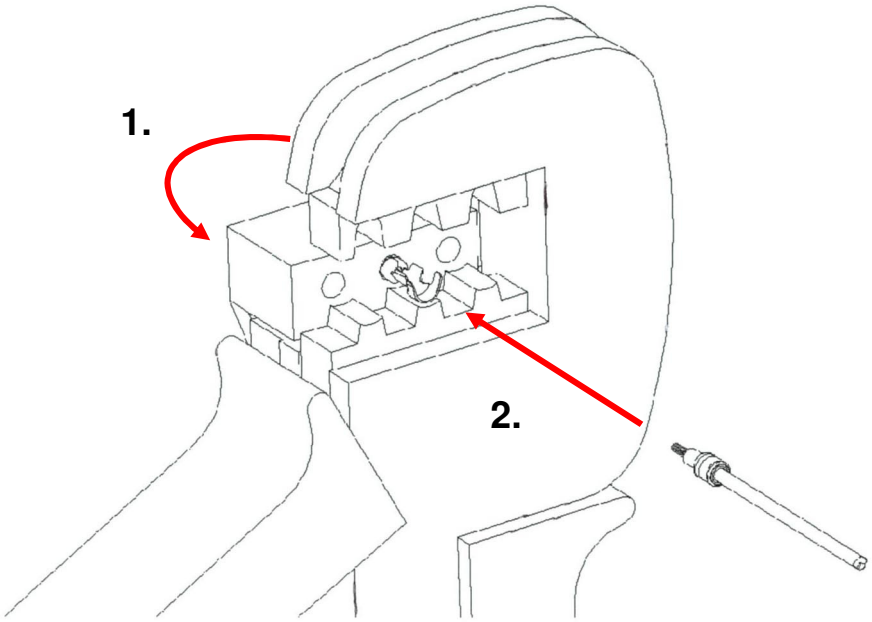
ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

Place contact acc. wire gauge in contact-positionier and push until the tactil and audible click.

Align U-shape opening of insulation crimp to the top.

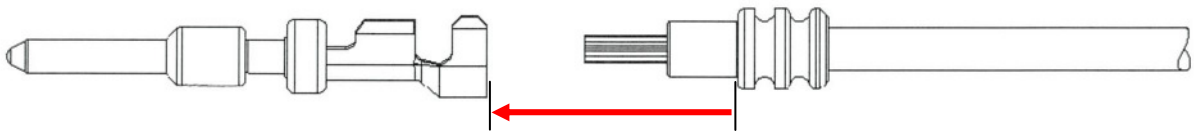


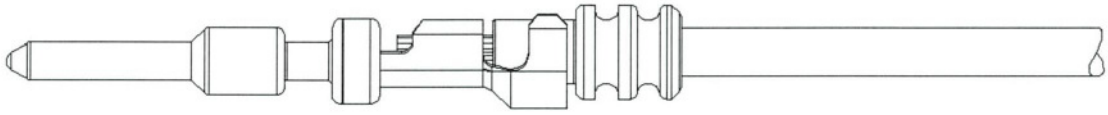
1. Swing back the contact-postionier while keeping the contact-alignment in the hand crimp-tool.
2. Stripped side of the wire (see page 7) has to be placed in contact.



ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

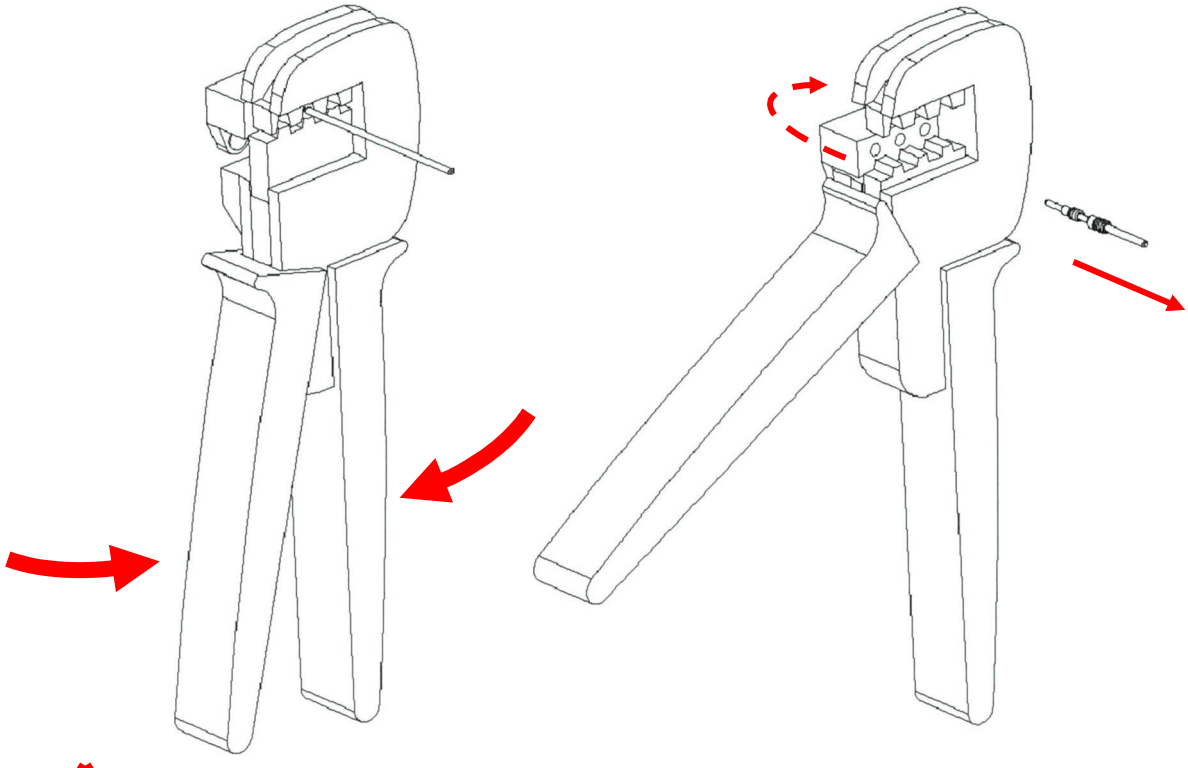
Move the wire (keep the right position of the wire-seal!) until the first sealing lip touches the edge of the insulation-crimp.





Press bars of hand-crimp-tool until stop and assure that the wire is still acc. situation shown above.

After final stop the hand tool will open and the crimped contact can be taken out.
If necessary, the contact-positioner has to be swung out.

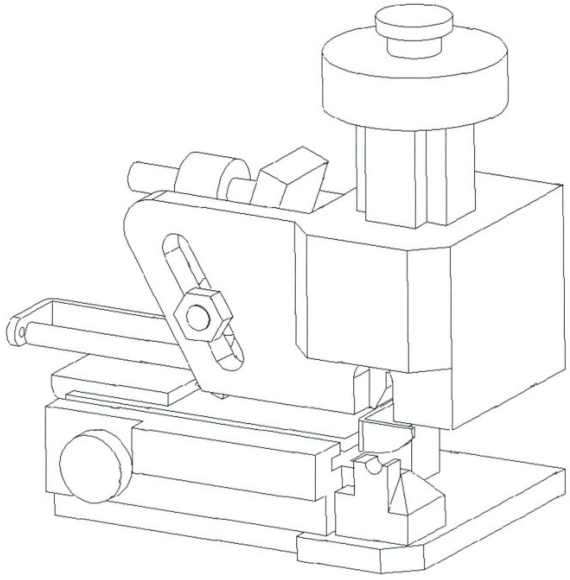


The crimp has to be acc. specification (see page 13)!

ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

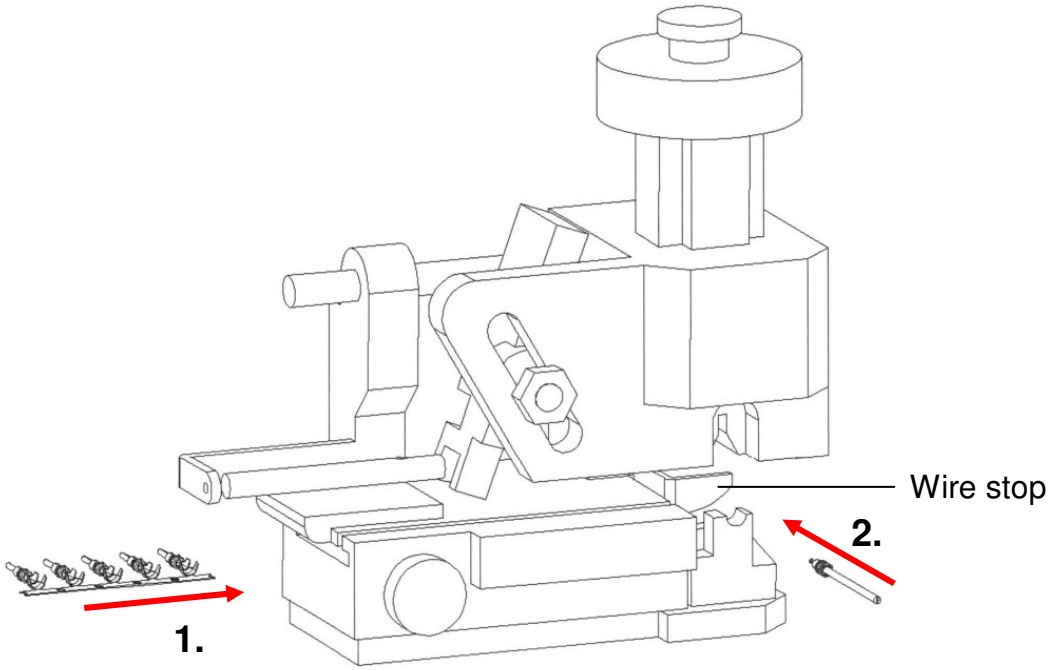
5.2. Crimping with electro press

Crimp-tool,
ITT Cannon order no.: 121586-5132
in electro press (on demand available),
ITT Cannon order no.: 121586-5043
with regard to the crimp-tool manual.



Choose contact acc. application.
E. g. : pin-contact, ITT Cannon order no.: 121668-0253 (APK-PA16A15-002)
Socket- contact, ITT Cannon order no.: 121668-0202 (APK-SA16A15-002)

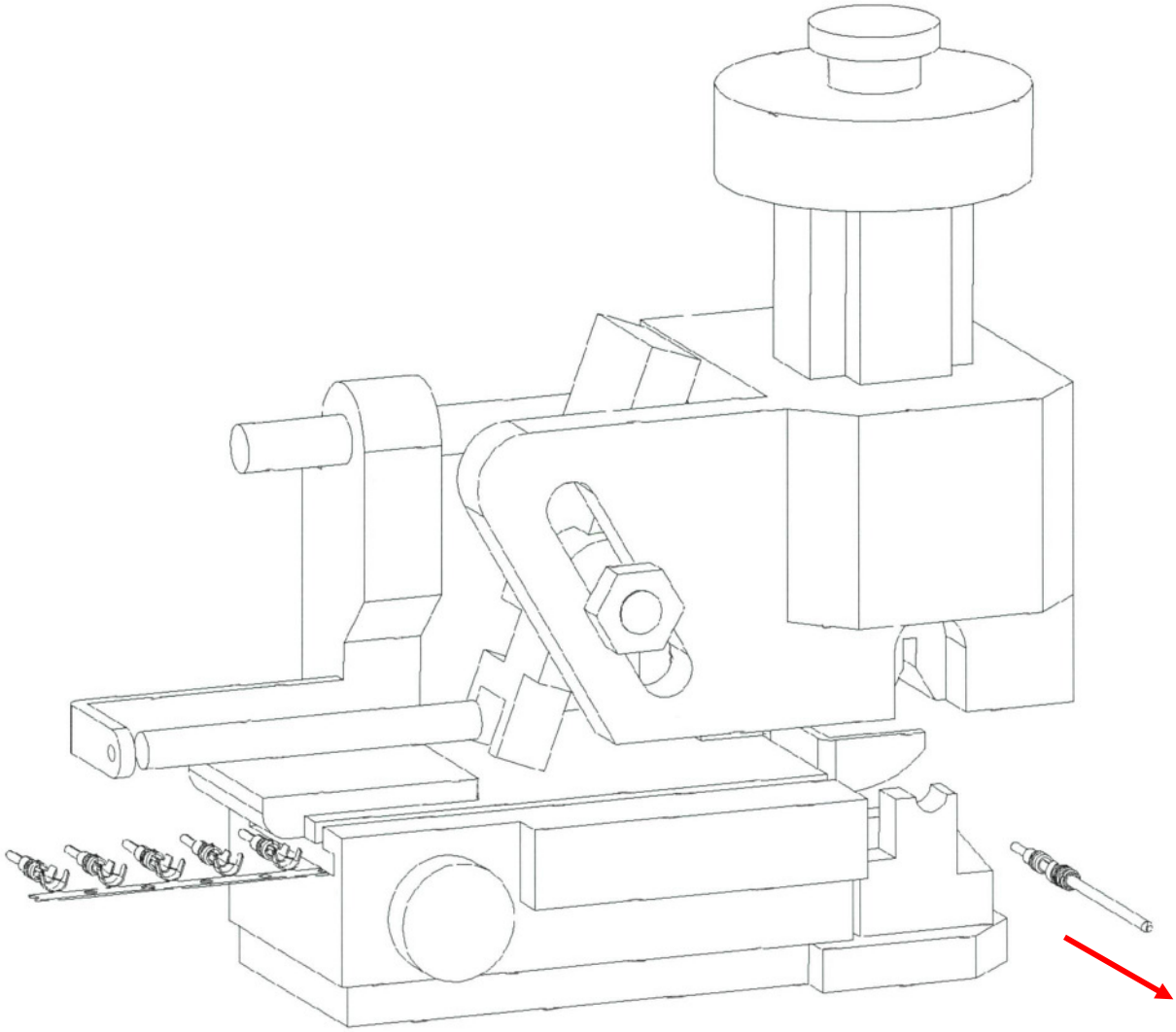
1. Place contact-strip as shown in strip-guiding of the crimp-tool
2. Stripped side of wire (see page 7), to placed against the wire stop.



ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

Start electro press with respect to user manual. Take care on safety instrutions.

The separated and crimped contact can be taken out of tool.

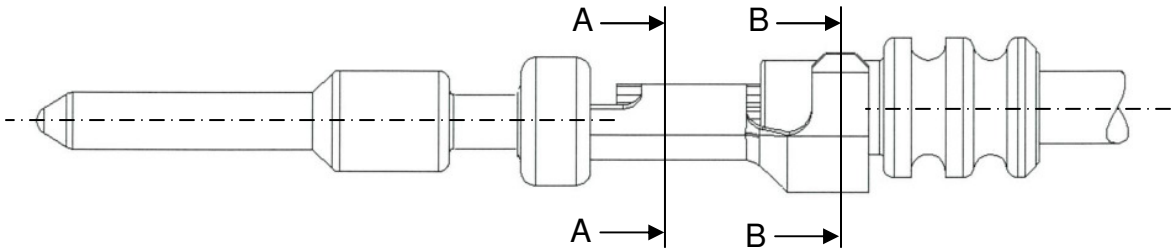


The crimp has to be acc. specification
(see page 13)!

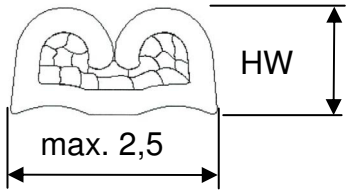
ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

5.3. Crimpspecification

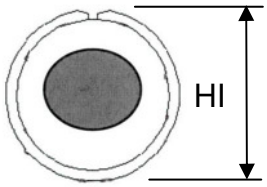
for pin-contact, ITT Cannon order no.: 121668-0...
and socket-contact, ITT Cannon order no.: 121668-0...



Wire crimp
section: A-A



Insulation crimp
section: B-B



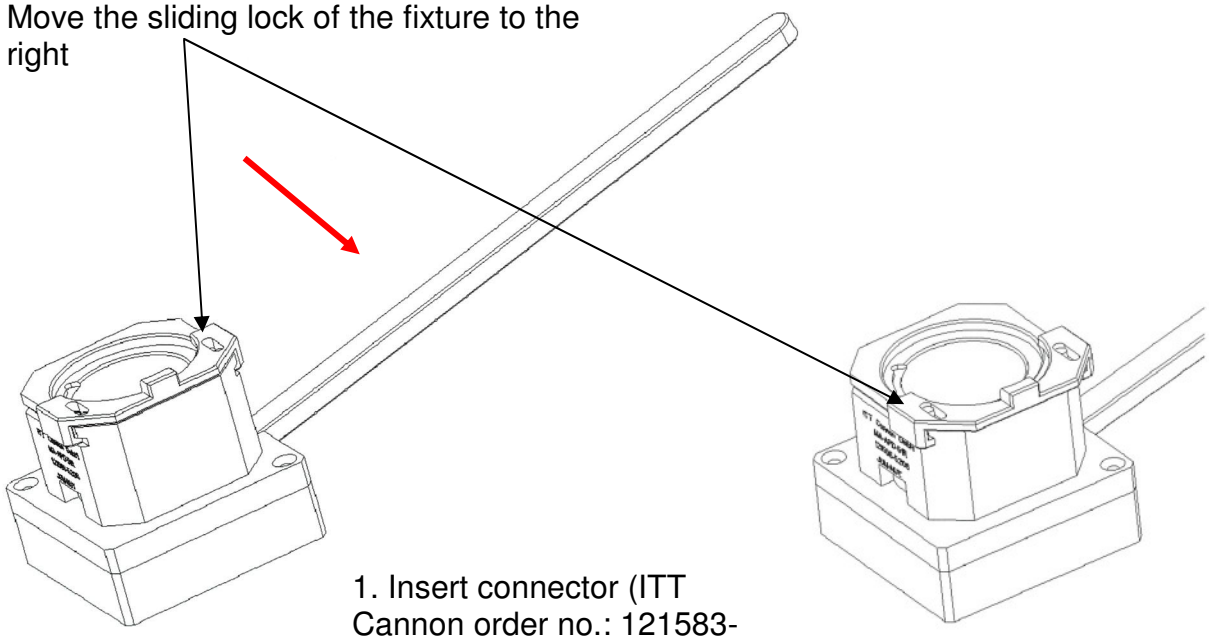
Wire gauge (mm^2)	HW Height of wire crimp (mm)±0,05 recommended	HI Height of Insulation crimps (mm)±0,1	Minimum-Pull-out force (N) acc. IEC 352-2, DIN EN 60352-2
0,75	1,25	3,35	80
1,00	1,27	3,35	105
1,50	1,30	3,45	135

The wire strains have to be visible outside the crimp-area!
All wire strains have to be kept within the crimp!
No single strain is allowed to be out of the crimp!

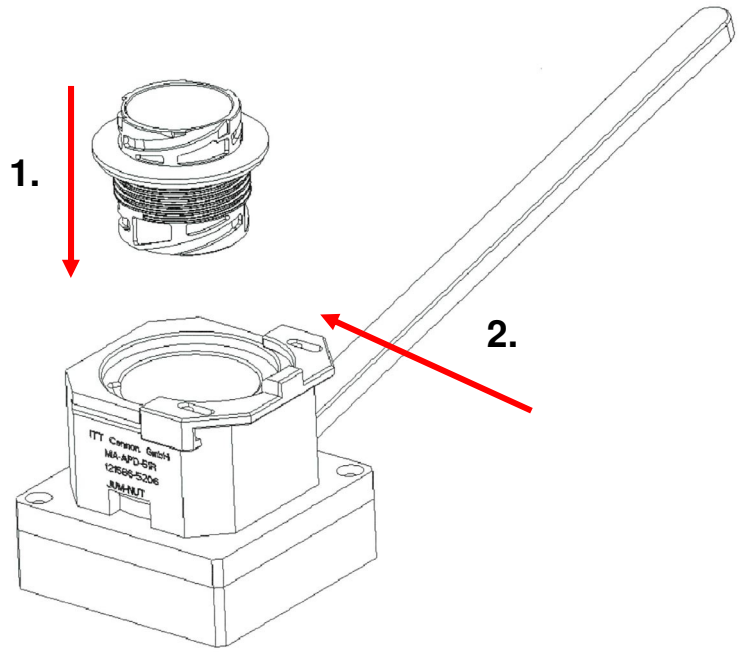
ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

6. Assembly of the Jam-nut receptacle connector

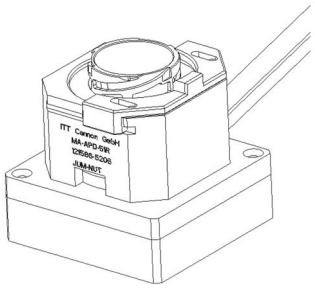
Place and fix the assembly fixture,
ITT Cannon order no.: 121586-520X
firmly on a base.
Move the sliding lock of the fixture to the right



1. Insert connector (ITT Cannon order no.: 121583-0091(-0094) and121583-0103 (-0106)) into fixture.
2. Move sliding lock onto connector.



Attention: Do not press the lever down until you are done with the wire-filler - and contact insertion!

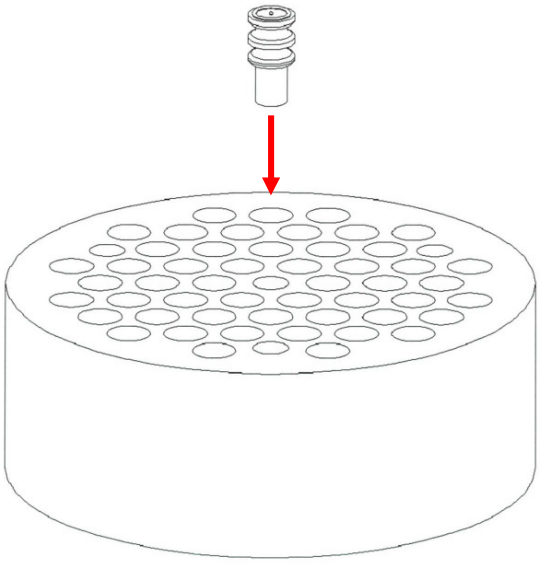


ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

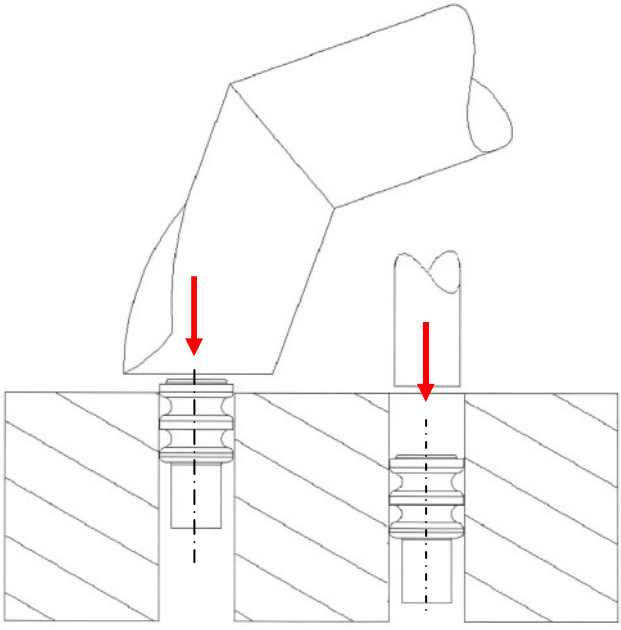
6.1. Insertion of wire fillers

To ensure that the connector is tight if not all contact cavities are loaded with contacts, the remaining cavities have to be sealed with wire fillers.
ITT Cannon order no.: 121667-0025
Because of the easier access we recommend to fill the unused cavities before loading contacts.

Wire fillers to be oriented as shown and inserted in unused cavities acc. layout.



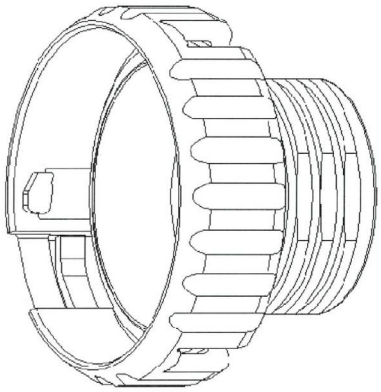
Press wire filler with finger and a blunt device gently in the cavity. Do not damage the sealing lips. The insertion depth is between 5 and 10 mm.

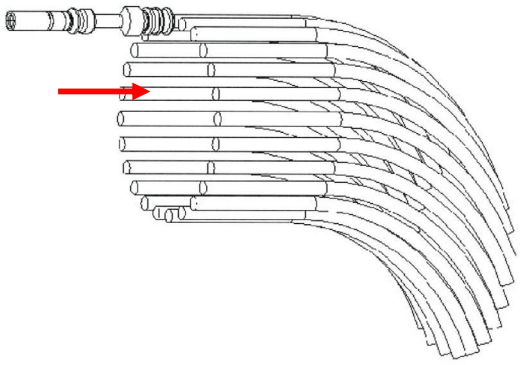


ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

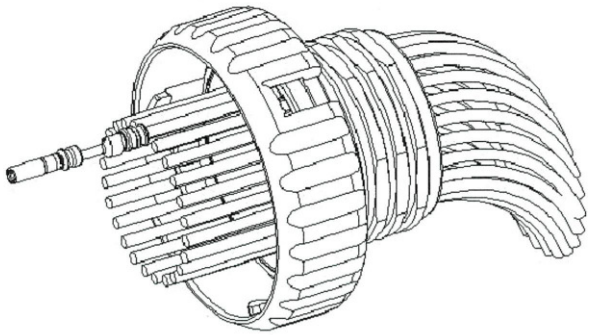
6.2. Insertion of contacts

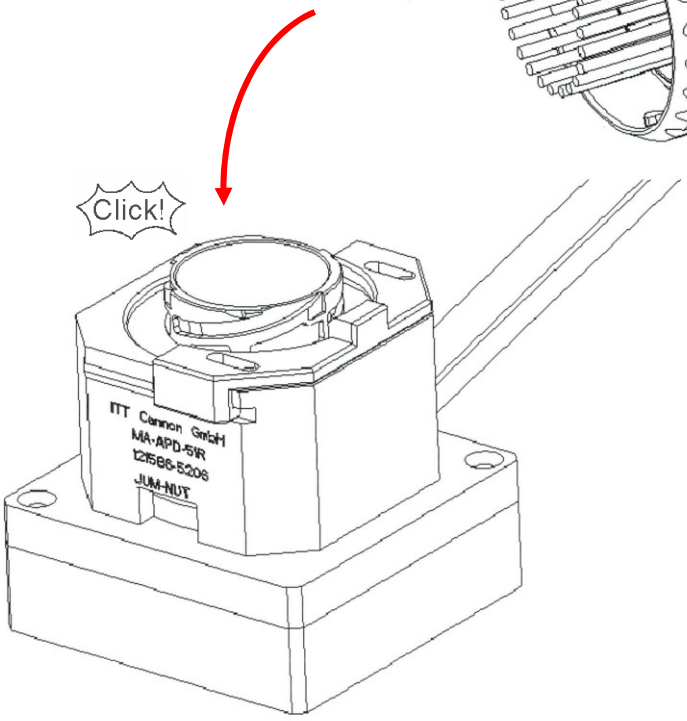
Bunch of wires with crimped contacts (exemplaryly shown with socket-contacts) to be put trough endbell, ITT Cannon order no.: 120110-0075





Insertion of contacts according contact layout and coding.



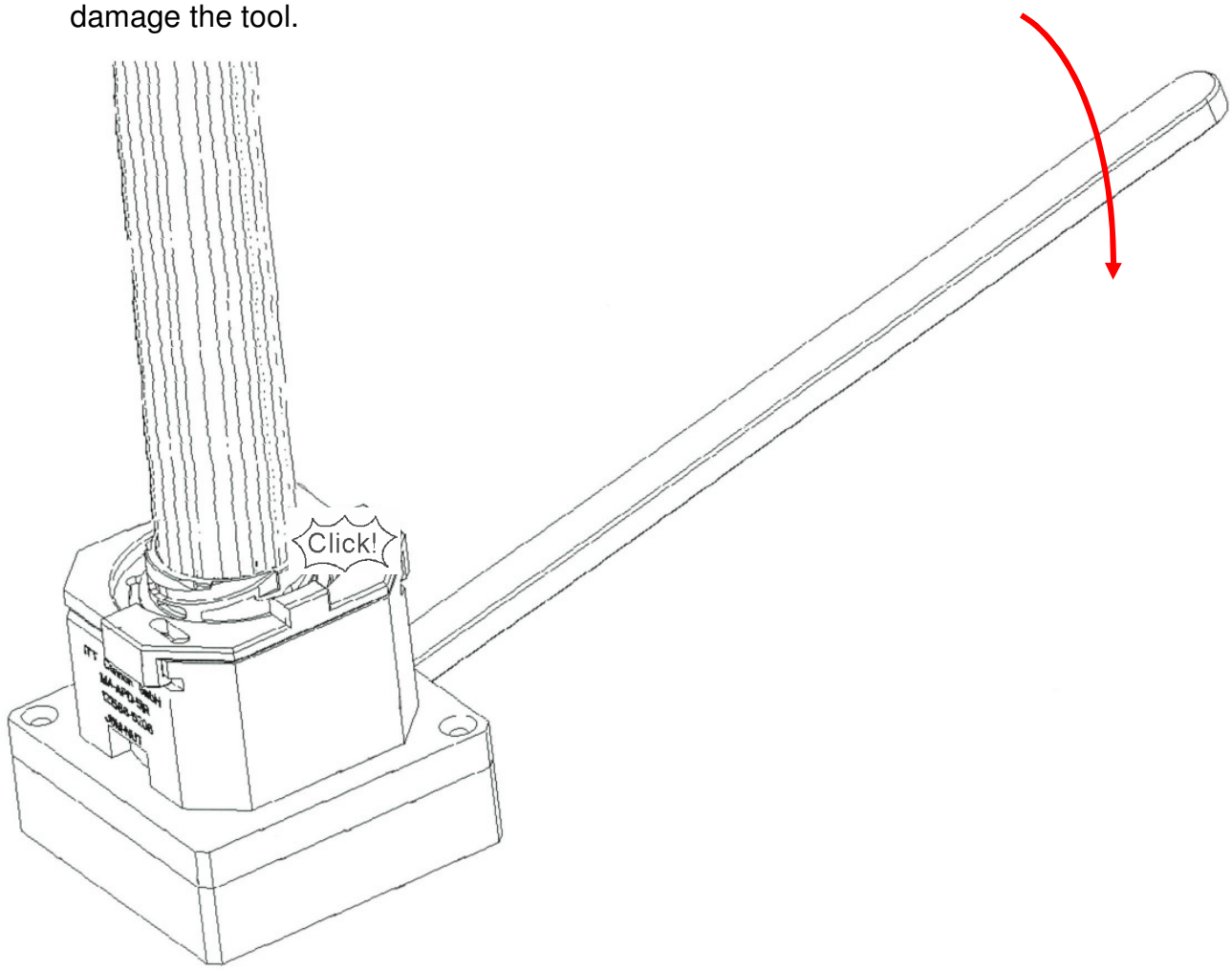


Insert the contacts until you hear an audible click, then gently pull on the wire to verify retention

ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

6.3. Locking of connector insert

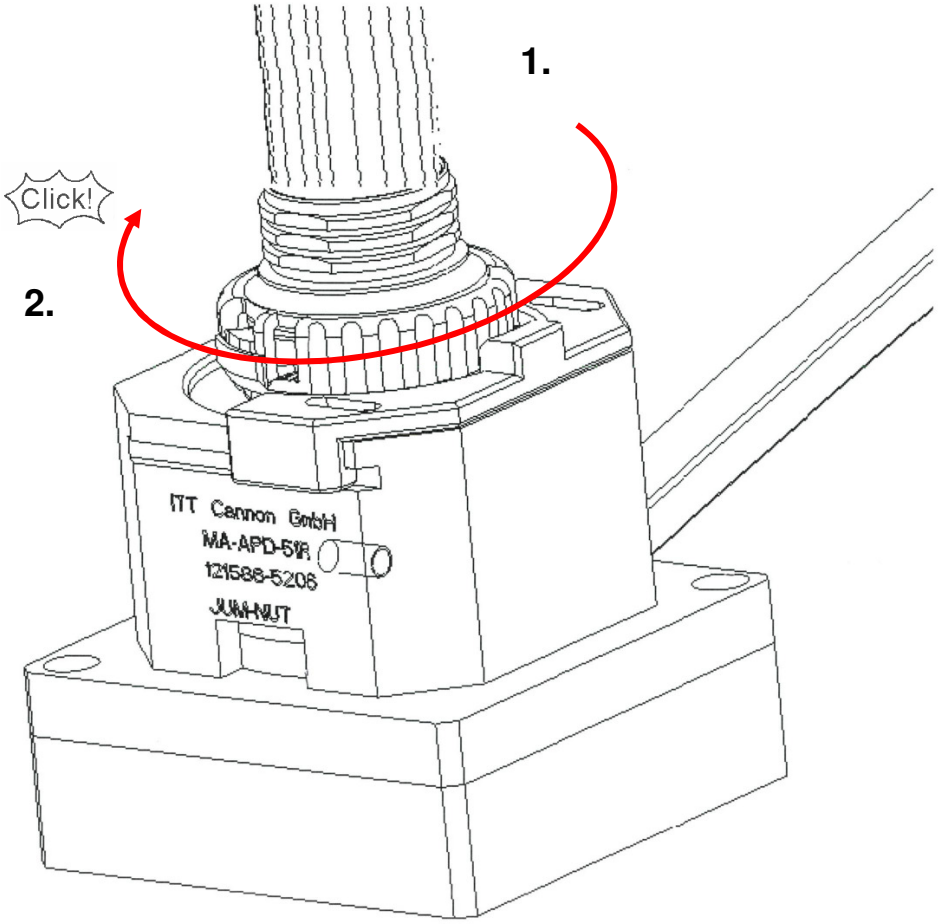
After having checked the position, numbering and pre-locking of contacts, push lever downwards until there is an audible click and a mechanical stop. Do not press beyond this point, you might damage the tool.



ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

6.4. Assembly of endbell

1. Move the endbell which is already on the wires over the connector housing.
2. Turn the endbell to the right until its final locking. In the final position there is an audible click.
For disassembly see chapter 8.

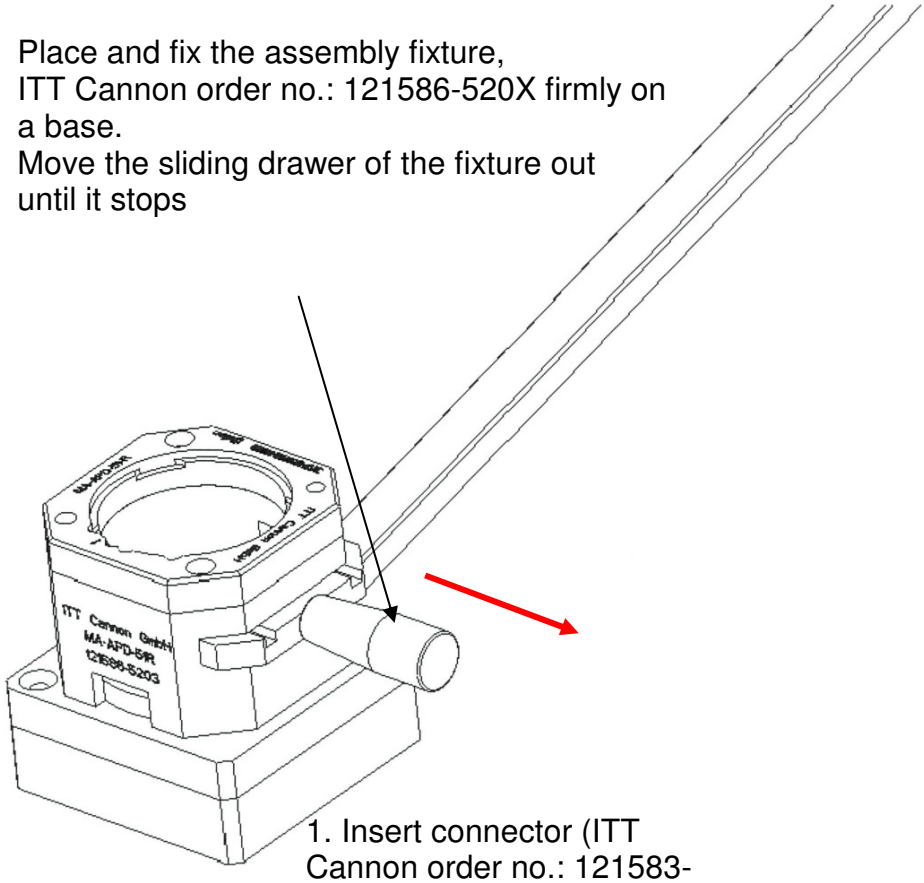


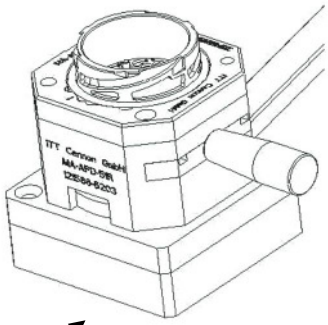
To remove the connector slide the sliding lock in the open position and take the connector out.

ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

7. Assembly of the snap-in receptacle

Place and fix the assembly fixture,
ITT Cannon order no.: 121586-520X firmly on a base.
Move the sliding drawer of the fixture out until it stops





1. Insert connector (ITT Cannon order no.: 121583-0091(-0094) and121583-0103 (-0106))) into fixture.
2. Move drawer into fixture to lock connector.

1.

2.

Attention: Do not press the lever down until you are done with the wire-filler - and contact insertion!

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
10.02.11 STR	10.02.11 HAG		C 4119W	10.02.2011

ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

7.1. Insertion of wire fillers

See chapter 6.1

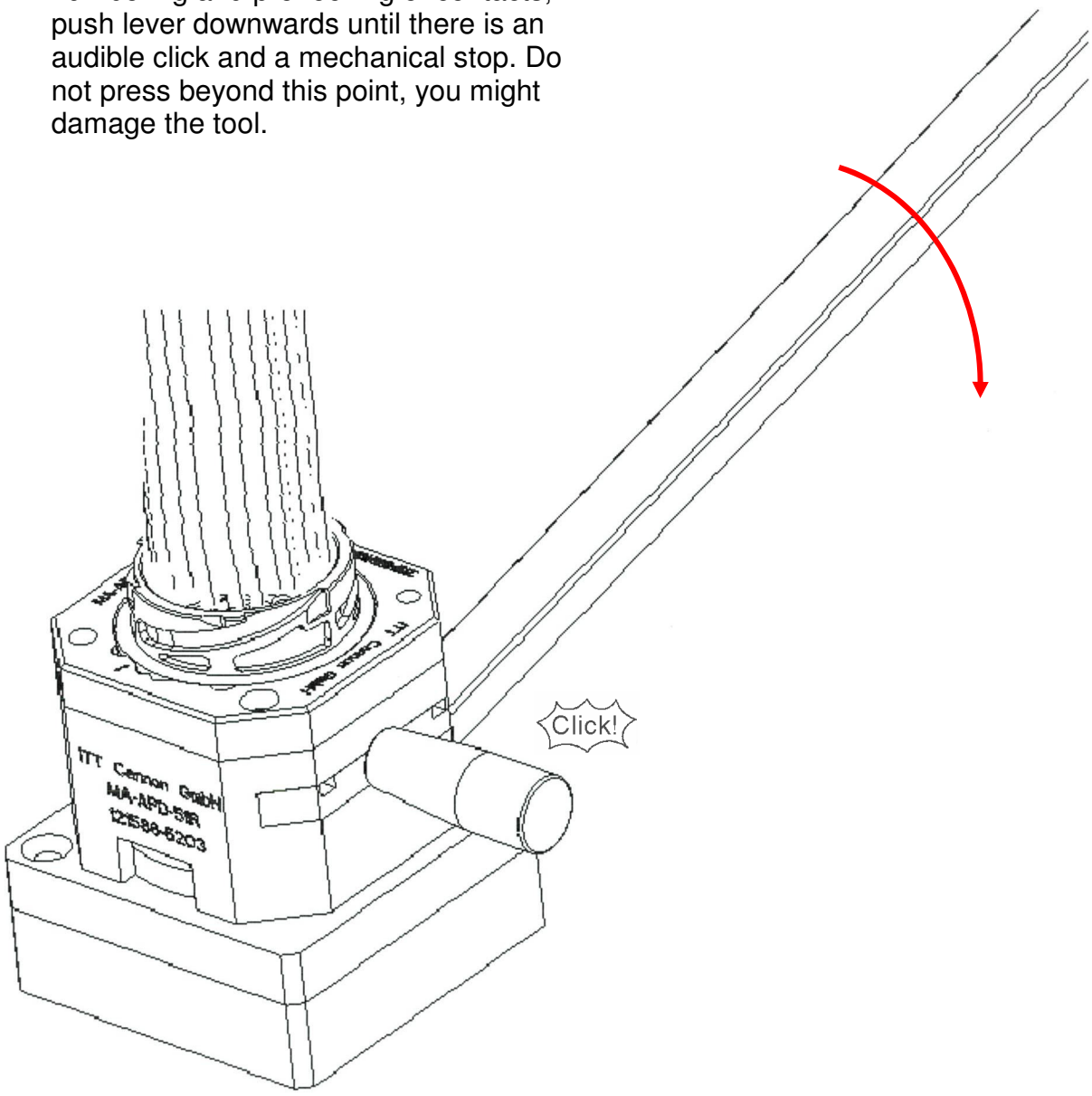
7.2. Insertion of contacts

See chapter 6.2

ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

7.3. Locking of connector insert

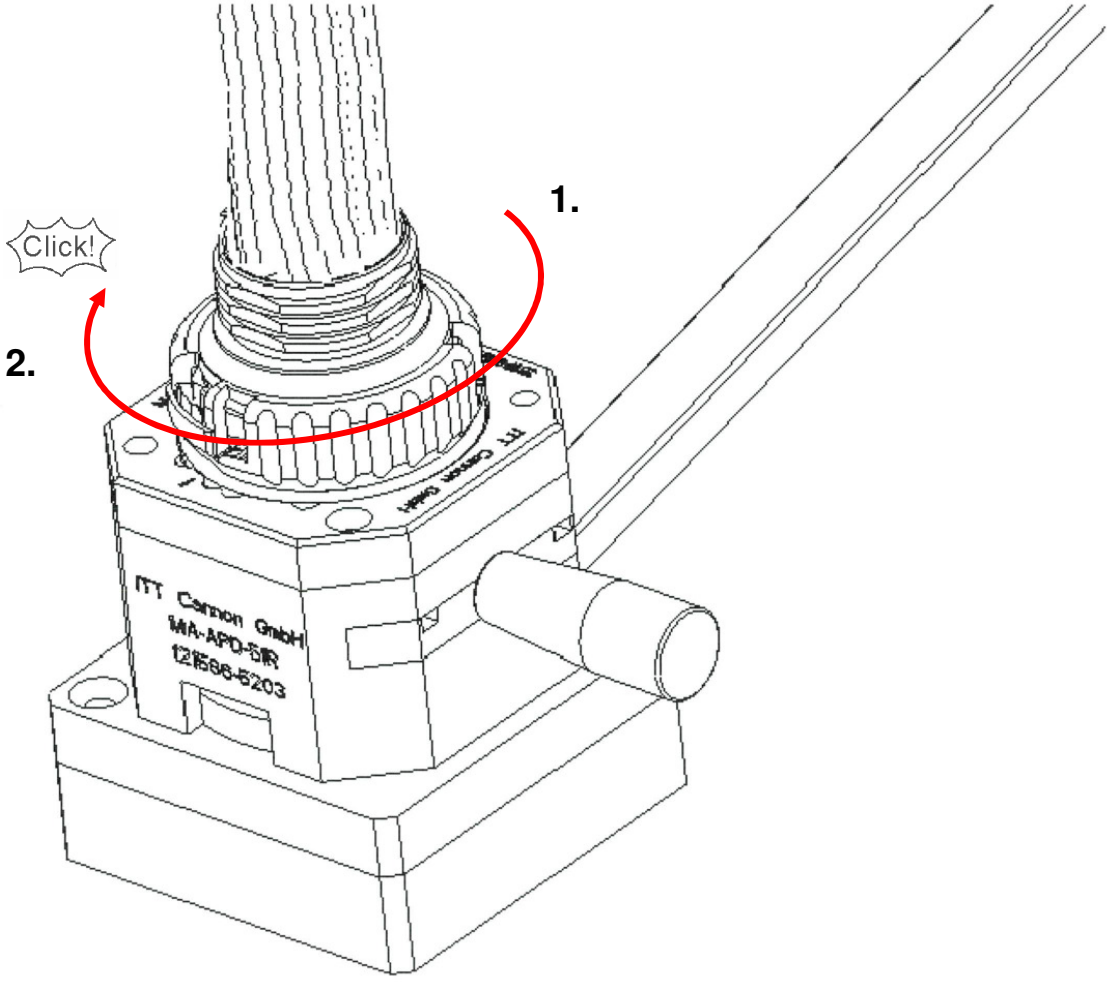
After having checked the position, numbering and pre-locking of contacts, push lever downwards until there is an audible click and a mechanical stop. Do not press beyond this point, you might damage the tool.



ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

7.4. Assembly of endbell

1. Move the end bell which is already on the wires over the connector housing .
2. Turn the endbell to the right until its final locking. In the final position there is an audible click.
To get the connector out of tool pull on the sliding drawer
For disassembly see chapter 8.

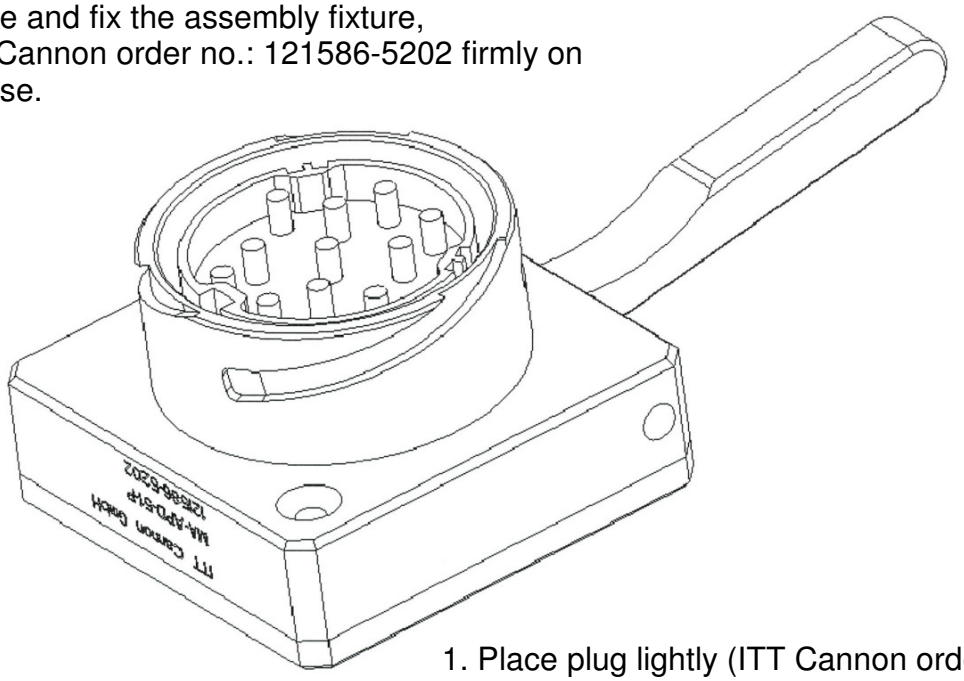


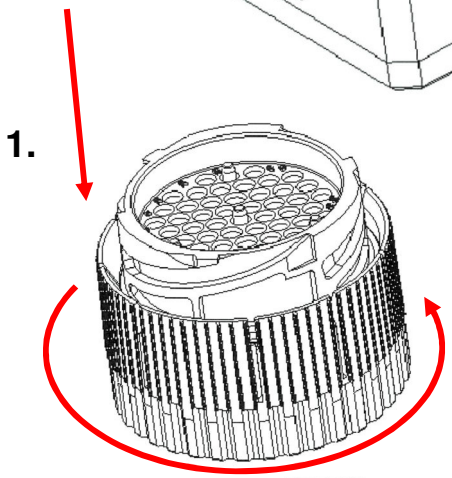
To remove the connector slide the drawer back in the open position and take the connector out.

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

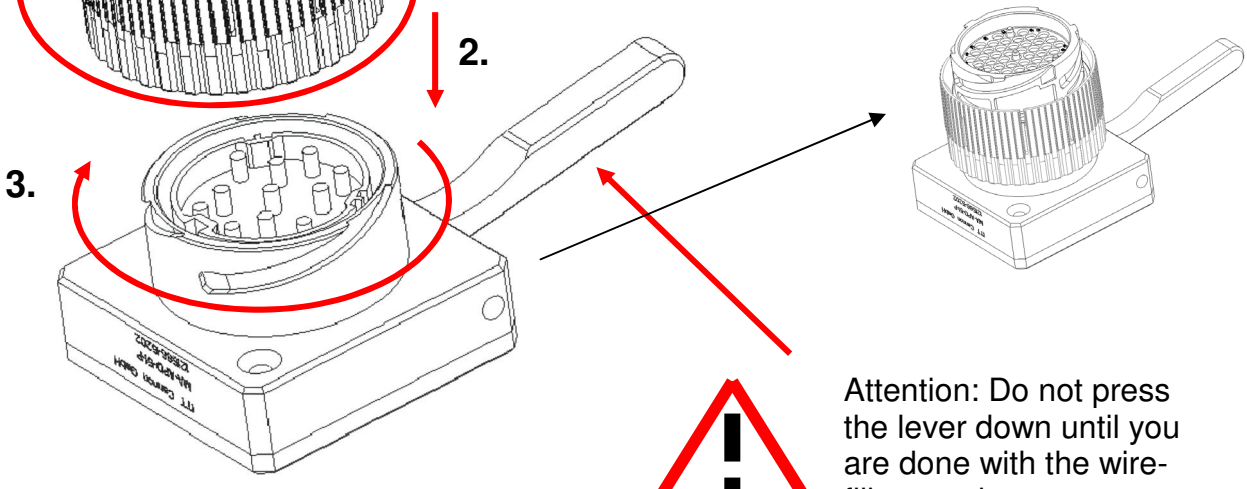
8. Assembly of the straight plug connector

Place and fix the assembly fixture,
ITT Cannon order no.: 121586-5202 firmly on a base.





1. Place plug lightly (ITT Cannon order no.: 121583-0087(-0090) and 121583-0099 (-0102)) onto fixture.
2. Rotate the the whole plug assembly counterclockwise until the key-ways line up and the plug-assembly drops into position.
3. Once the plug-assembly is in position, rotate the couping ring clockwise to fix the assembly.



Attention: Do not press the lever down until you are done with the wire-filler - and contact insertion!

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

8.1. Insertion of wire fillers

See chapter 6.1

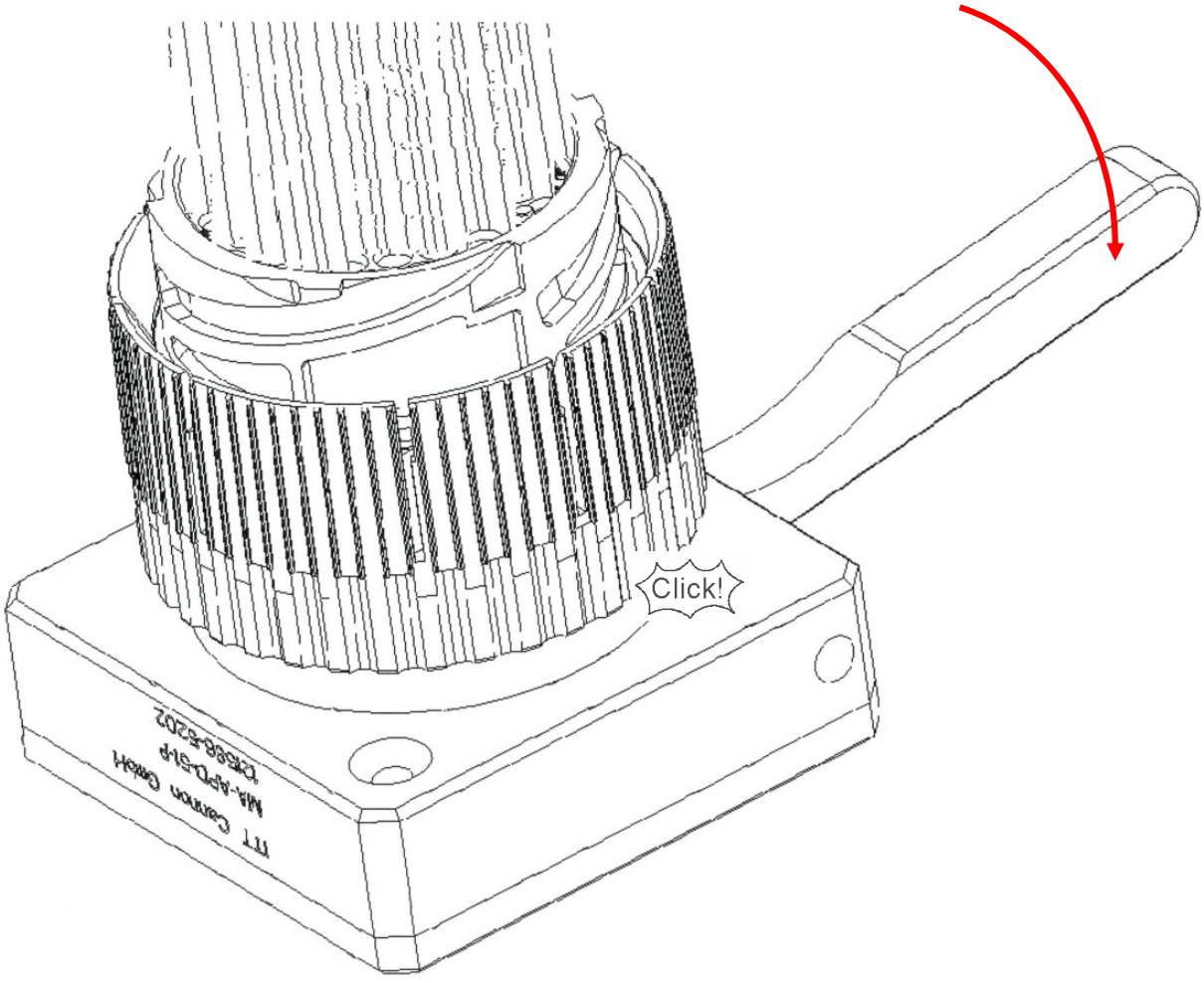
8.2. Insertion of contacts

In the straight plug connector there are pin-contacts to be inserted.
See chapter 6.2 for further instruction

ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

8.3. Locking of connector insert

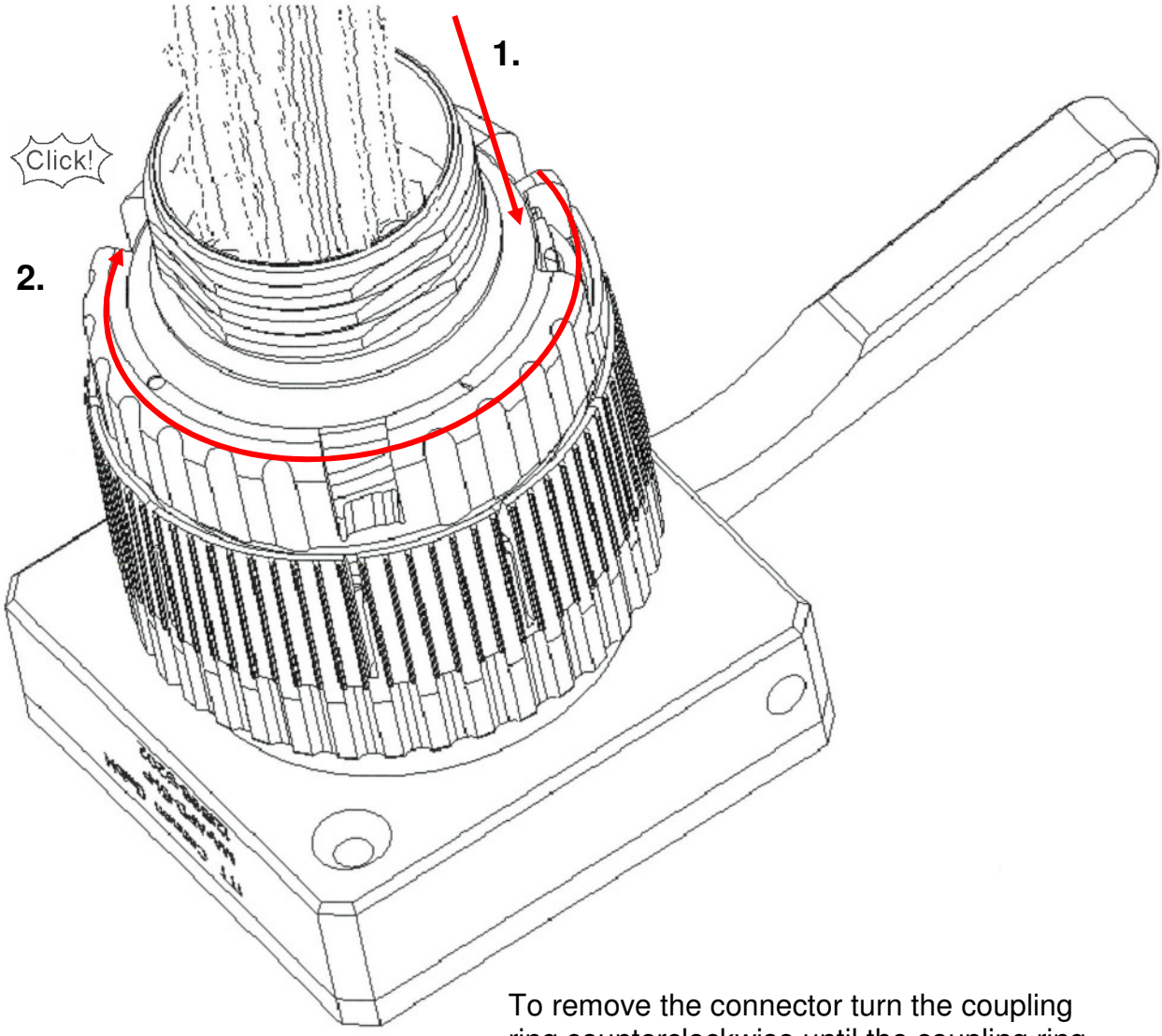
After having checked the position, numbering and pre-locking of contacts, push lever downwards until there is an audible click and a mechanical stop. Do not press beyond this point, you might damage the tool.



ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

8.4. Assembly of endbell

1. Move the endbell which is already on the wires over the connector housing .
2. Turn the endbell to the right until its final locking. In the final position there is an audible click.
For disassembly see chapter 9.

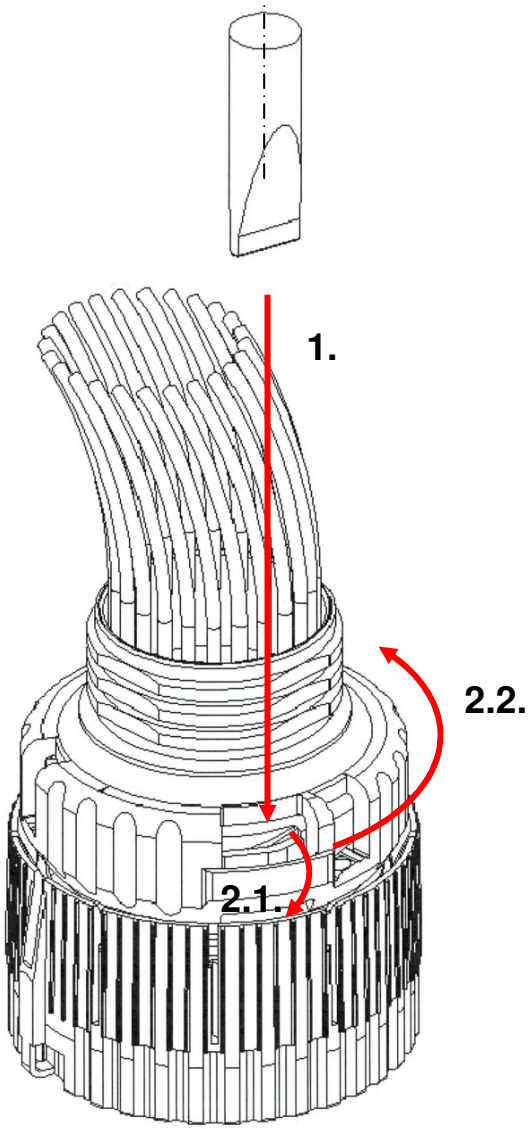


To remove the connector turn the coupling ring counterclockwise until the coupling ring will lock in the pre-locking.
Take the plug-connector out of fixture.

ITT Cannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

9. Disassembly of endbell

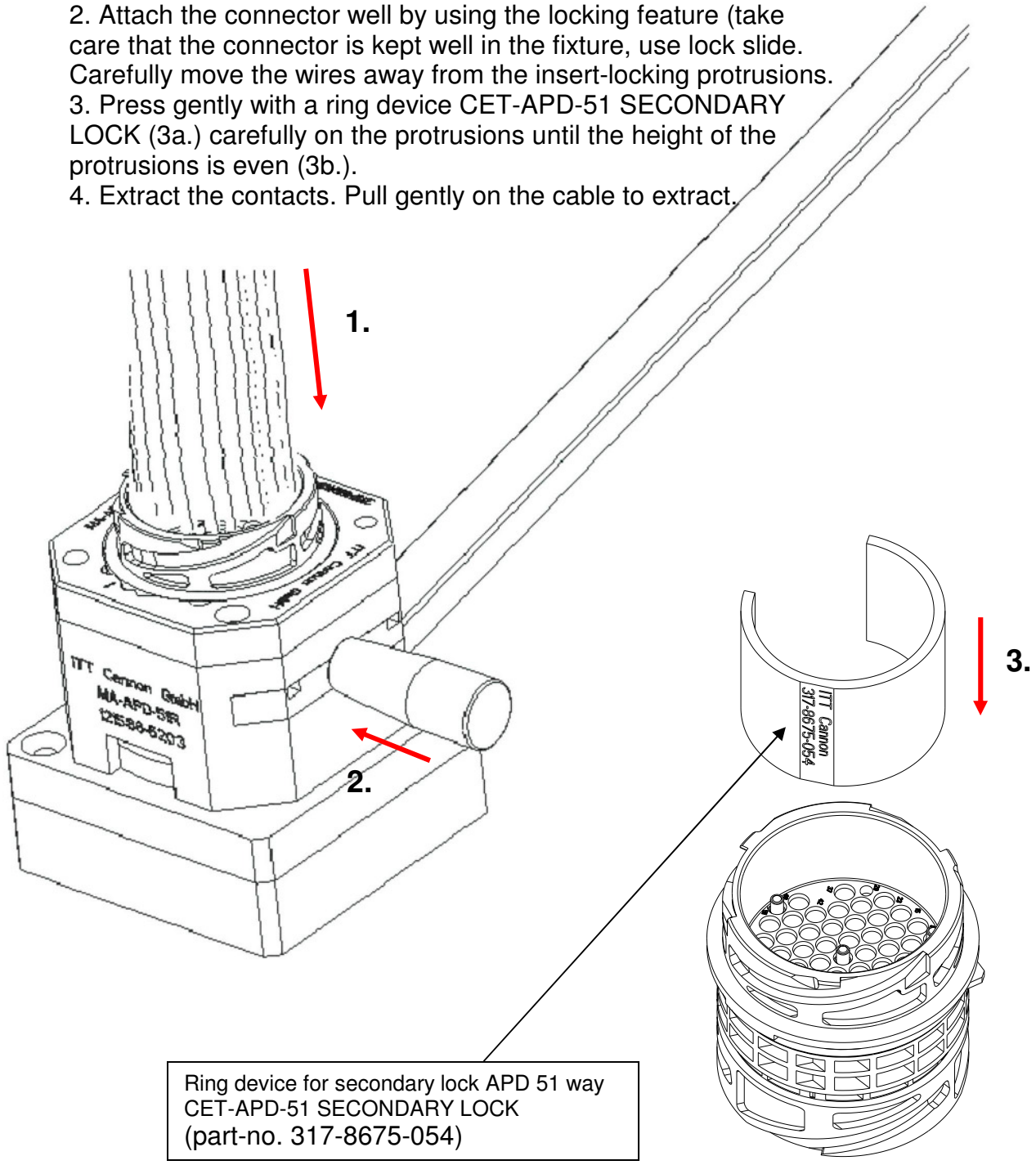
1. Move carefully with a flat tool (preferably the tip of a screw driver) behind the locking latch of the end bell.
2.1. Bend the locking latch gently (without destroying the latch) from inside to outside, until:
2.2. the endbell can be turned to the left (counterclockwise).
For an easier assembly you can put the connector in the appropriate fixture (see chapter 6, 7 and 8).
After sufficient turning the endbell can be lifted.



ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

10. Disassembly of contacts of jam nut and snap-in receptacle connector

1. Put the connector in the appropriate assembly fixture (121586-5206 or –5203).
2. Attach the connector well by using the locking feature (take care that the connector is kept well in the fixture, use lock slide. Carefully move the wires away from the insert-locking protrusions.
3. Press gently with a ring device CET-APD-51 SECONDARY LOCK (3a.) carefully on the protrusions until the height of the protrusions is even (3b.).
4. Extract the contacts. Pull gently on the cable to extract.



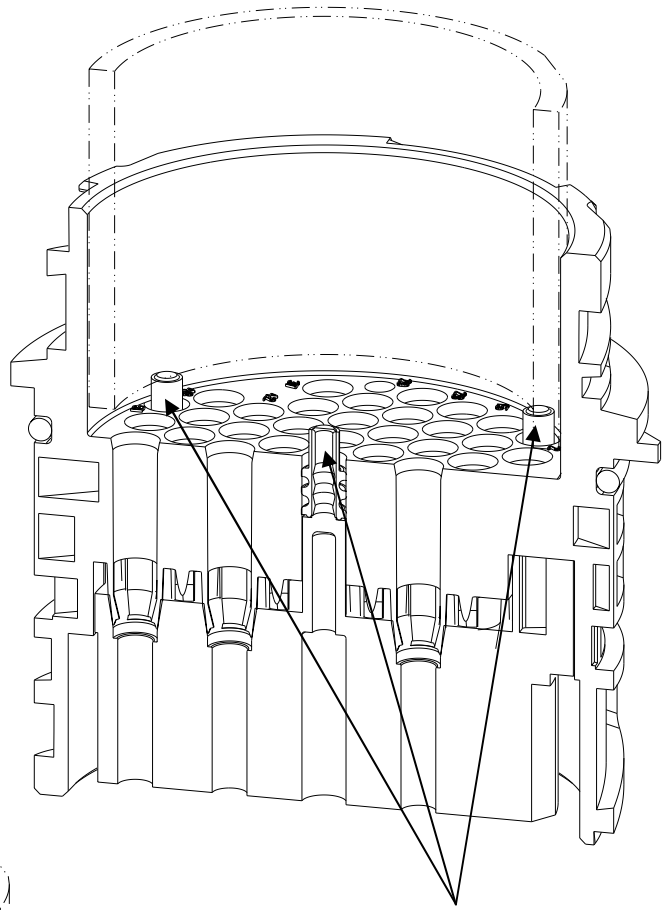
Ring device for secondary lock APD 51 way
CET-APD-51 SECONDARY LOCK
(part-no. 317-8675-054)

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
10.02.11 STR	10.02.11 HAG		C 4119W	10.02.2011

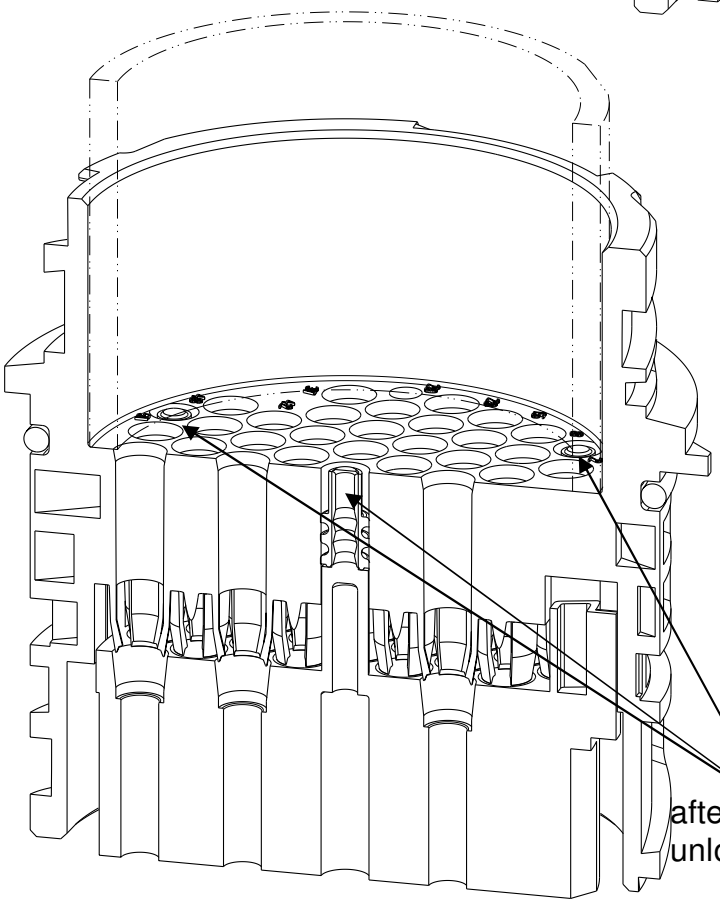
ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

For a better understanding see pictures of the status before and after releasing secondary-lock (shown without wires and without assembly fixture 121586-5206 or -5203).

3a.



before disassembly

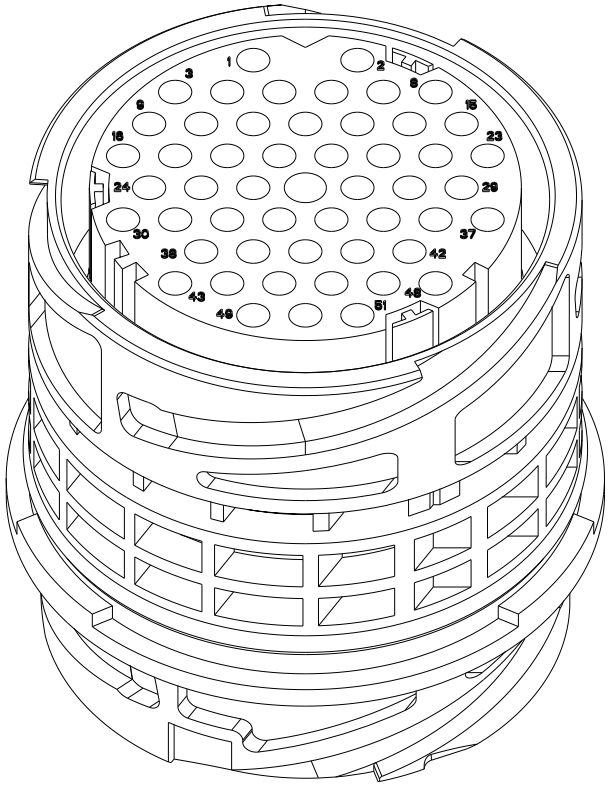


3b.

after unlocking

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
10.02.11 STR	10.02.11 HAG		C 4119W	10.02.2011

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

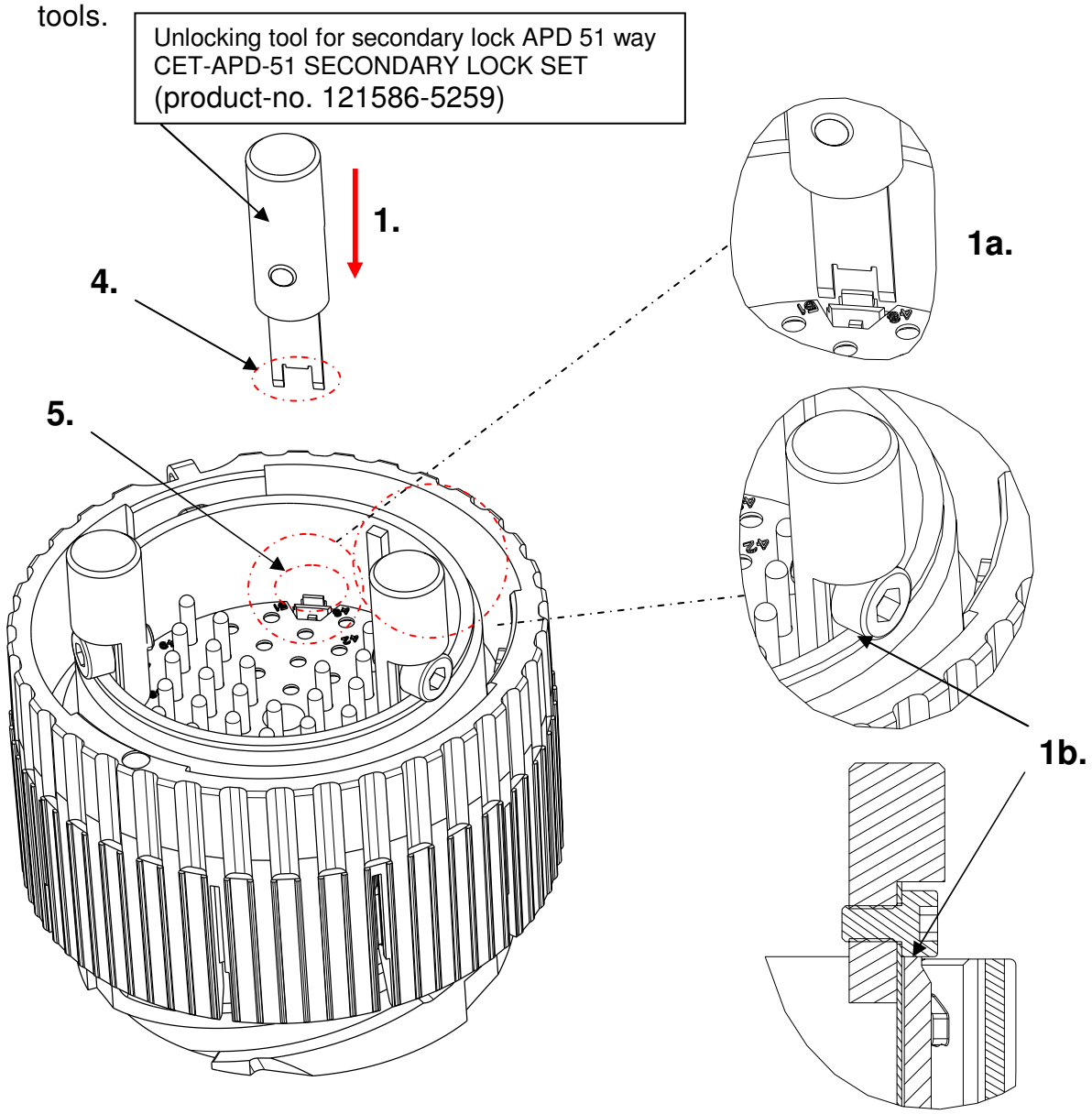


4.

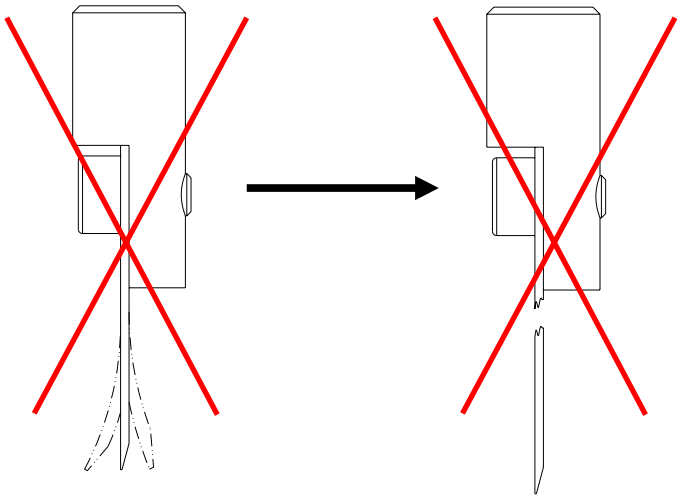
ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

11. Disassembly of contacts of plug connector

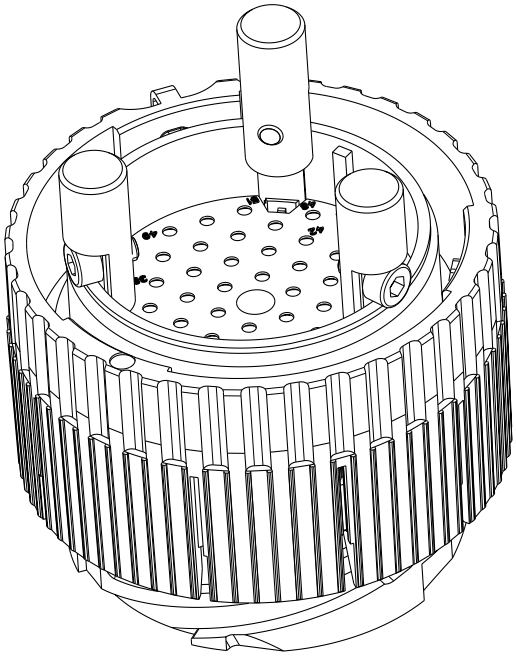
1. Push gently 3 of the unlocking tools CET-APD-51 SECONDARY LOCK FORK behind the 3 snap-fits (1a.) until stop (at the screwhead) touch the plane face (1b.).
Do not overstretch unlocking tool. It can break (1c.).
2. Press gently the whole connector with the 3 protrusions on the ring device CET-APD-51 SECONDARY LOCK (2a.) until the height of the protrusion is even (2b.).
3. Take the 3 unlocking tools out and extract the contacts. Pull gently on the cable to extract. (3a.).
4. **Take care on the sharp edges of the unlocking tool!**
5. Don't scratch the inner wall of the connector with the unlocking tools.



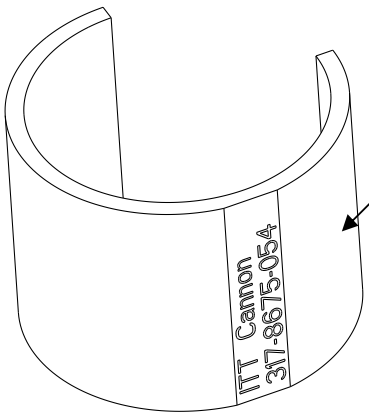
ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E



1c.



2.



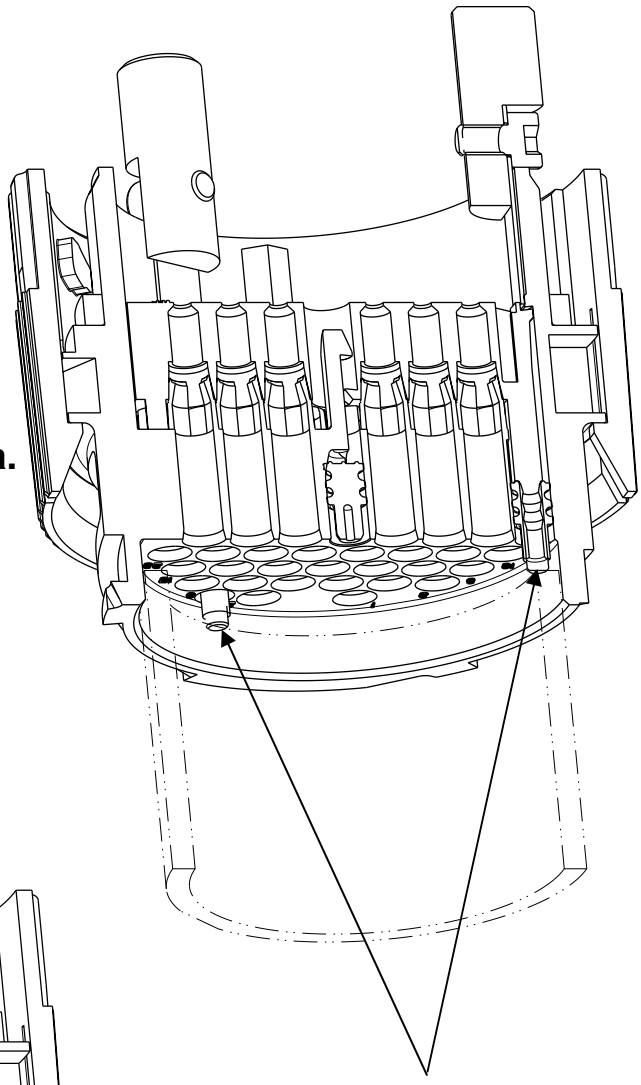
Ring device for secondary lock APD 51 way
CET-APD-51 SECONDARY LOCK
(part-no. 317-8675-054)

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
10.02.11 STR	10.02.11 HAG		C 4119W	10.02.2011

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

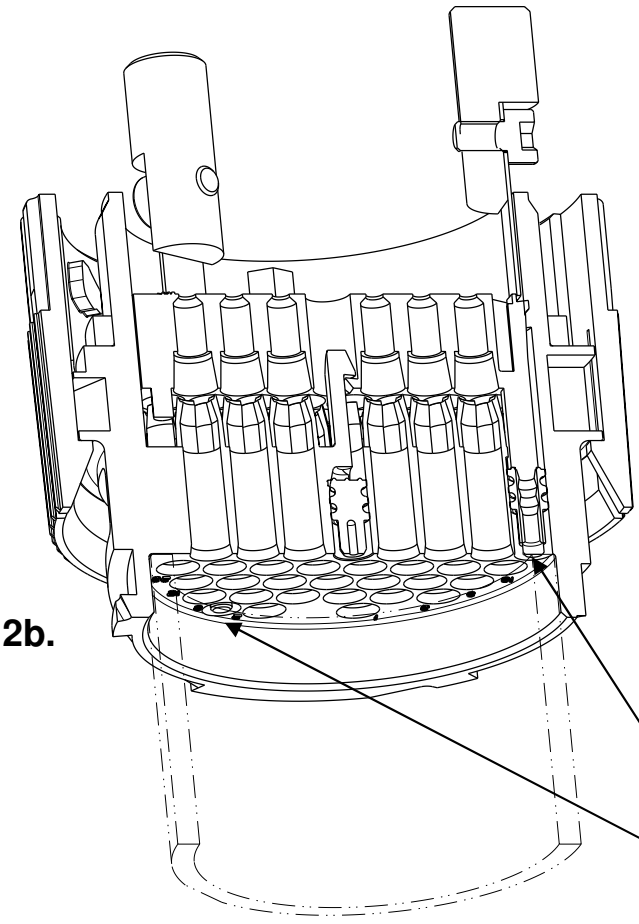
For a better understanding see pictures of the status before and after releasing secondary-lock (shown without wires).

2a.



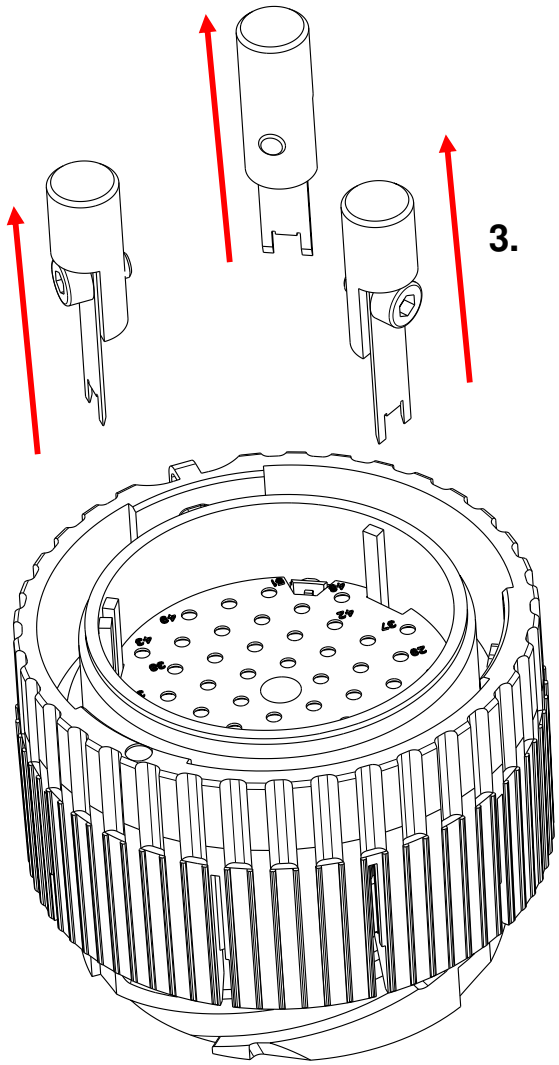
before disassembly

2b.



after unlocking

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E



Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
10.02.11 STR	10.02.11 HAG		C 4119W	10.02.2011

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

From 2012 this specification is valid for APD 51way new design!

Do not unlock the secondary lock feature on each connector more than 2 times. If there is a need to rework again the connector, use a new connector. This applies for all different versions of the secondary locking principle connectors shown in the assembly instruction.

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

12. Product safety and warranty

THIS NOTE MUST BE READ IN CONJUNCTION WITH THE PRODUCT DATA SHEET/CATALOG.

Failure to observe the advice in this information sheet and the operating conditions specified in the Product Data Sheet/Catalog could result in hazardous situations.

MATERIAL CONTENT AND PHYSICAL FORM
Electrical connectors do not usually contain hazardous materials. They contain conducting and non-conducting materials and can be divided into two groups.
a) Printed circuit types and low cost audio types which employ all plastic insulators and casings.
b) Rugged, Fire Barrier and High Reliability types with metal casings and either natural rubber, synthetic rubber, plastic or glass insulating materials. Contact materials vary with type of connector and also application and are usually manufactured from either: Copper, copper alloys, nickel, alumel, chromel or steel. In special applications, other alloys may be specified.

FIRE CHARACTERISTICS AND ELECTRIC SHOCK HAZARD
There is no fire hazard when the connector is correctly wired and used within the specified parameters. Incorrect wiring or assembly of the connector or careless use of metal tools or conductive fluids, or transit damage to any of the component parts may cause electric shock or burns. Live circuits must not be broken by separating mated connectors as this may cause arcing, ionisation and burning. Heat dissipation is greater at maximum resistance in a circuit. Hot spots may occur when resistance is raised locally by damage, e.g. cracked or deformed contacts, broken strands of wire. Local overheating may also result from the use of the incorrect application tools or from poor quality soldering or slack screw terminals. Overheating may occur if the ratings in the product Data Sheet/Catalog are exceeded and can cause breakdown of insulation and hence electric shock.
If heating is allowed to continue it intensifies by further increasing the local resistance through loss of temper of spring contacts, formation of oxide film on contacts and wires and leakage currents through carbonisation of insulation and tracking paths.
Fire can then result in the presence of combustible materials and this may release noxious fumes. Overheating may not be visually apparent. Burns may result from touching overheated components.

HANDLING
Care must be taken to avoid damage to any component parts of electrical connectors during installation and use. Although there are normally no sharp edges, care must be taken when handling certain components to avoid injury to fingers.
Electrical connectors may be damaged in transit to the customers, and damage may result in creation of hazards. Products should therefore be examined prior to installation/use and rejected if found to be damaged.

DISPOSAL
Incineration of certain materials may release noxious or even toxic fumes.

APPLICATION
Connectors with exposed contacts should not be selected for use on the current supply side of an electrical circuit, because an electric shock could result from touching exposed contacts on an unmated connector. Voltages in excess of 30 V ac. or 42.5 V dc are potentially hazardous and care should be taken to ensure that such voltages cannot be transmitted in any way to exposed metal parts of the connector body. The connector and wiring should be checked, before making live, to have no damage to metal parts or insulators, no solder blobs, loose strands, conducting lubricants, swarf, or any other undesired conducting particles.
Insulation resistance should be checked to make certain that no low resistance joints or spurious conducting paths are existing between contacts and exposed metal parts of the connector body. Further, the contact resistance of the connectors should be measured within the electrical circuit in order to identify high resistances, which result in excessive connector heating.
Always use the correct application tools as specified in the Data Sheet/Catalogue. Do not permit untrained personnel to wire, assemble or tamper with connectors. For operation voltage please see appropriate national regulations.

IMPORTANT GENERAL INFORMATION
(i) Air and creepage paths/Operating voltage

ITTCannon	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E

The admissible operating voltages depend on the individual applications and the valid national and other applicable safety regulations.
For this reason the air and creepage path data are only reference values. Observe reduction of air and creepage paths due to PC board and/or harnessing.
(ii) Temperature
All information given are temperature limits.
The operation temperature depends on the individual application.
(iii) Other important information
ITT Industries continuously endeavours to improve their products. Therefore, ITT Industries products may deviate from the description, technical data and shape as shown in this catalog and data sheets.
(iv) Harnessing and Assembly Instructions
If applicable, our special harnessing and/or assembly instruction has to be adhered to.
This is provided on request.

ITT Industries Cannon GmbH
Cannonstrasse 1
D-71384 Weinstadt
Tel. +49 (0) 7151 699-0
Fax. +49 (0) 7151 699-217
info@de.itt.com
www.ittcannon.com