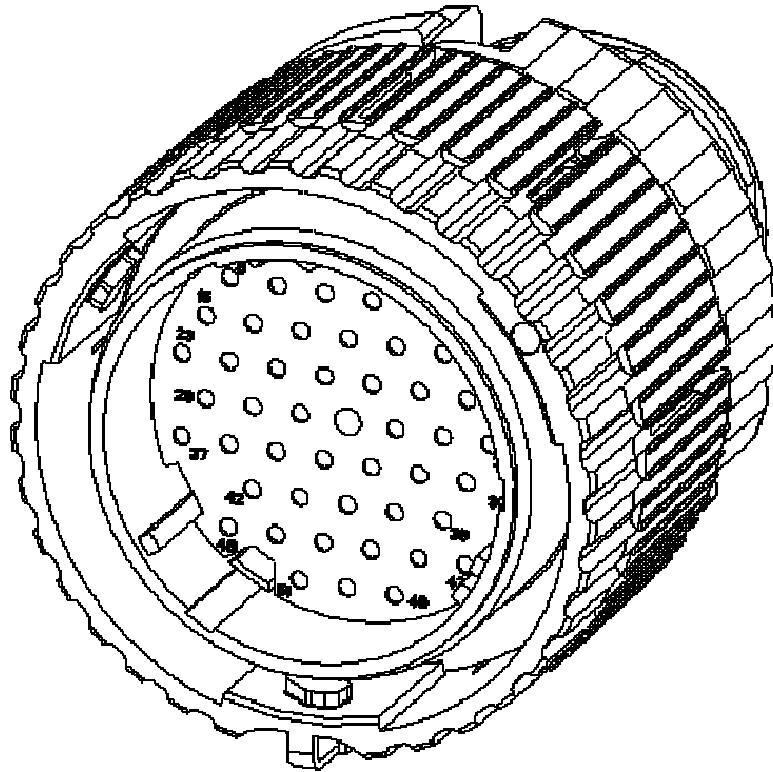


ITT Cannon

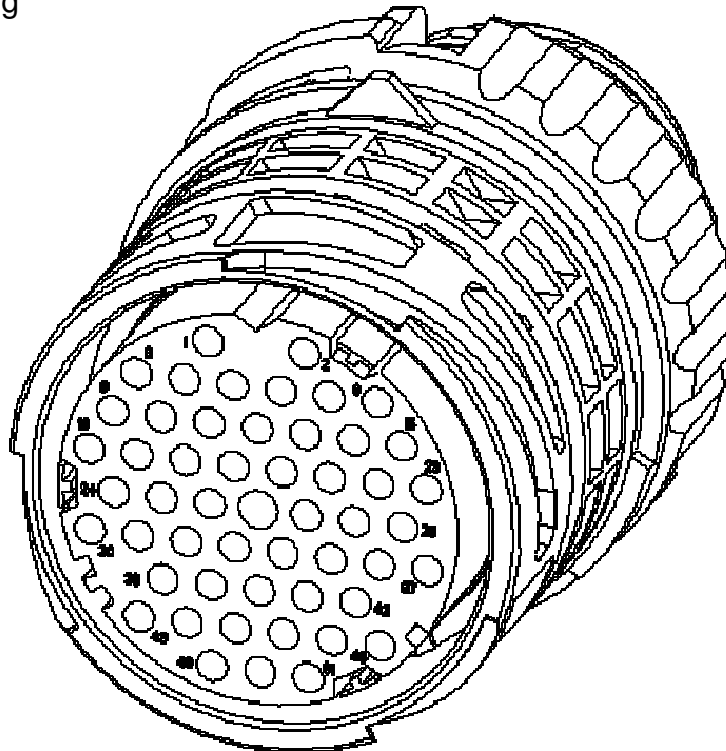
Product Specification
APD 51-way with circular contacts and bayonet
coupling, secondary locking principle; assembly
instructions

CAS25032E

Assembly manual for 51-way Secondary locking



Straight plug,
bayonett coupling



Snap-in receptacle

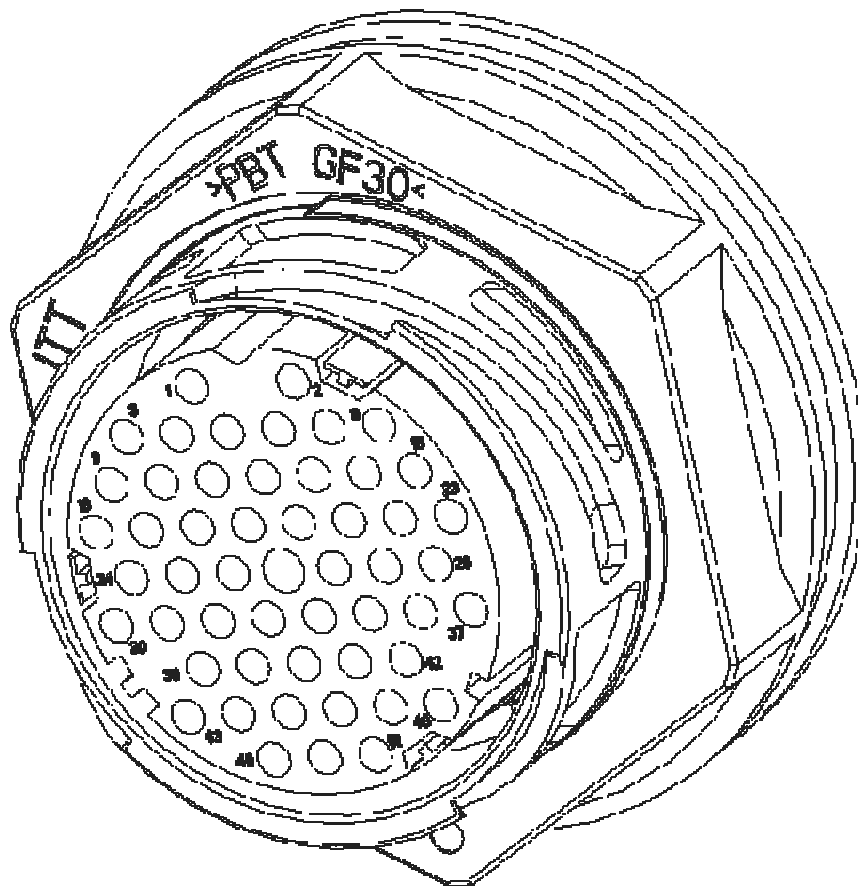
Bearbeitet: 10.02.11 STR	Geprüft: 10.02.11 HAG	Norm:	Änd.-Stand: C 4119W	Änd.-Datum: 10.02.2011
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Product Specification
APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions

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 be separated for recycling.

Bearbeitet: 10.02.11 STR	Geprüft: 10.02.11 HAG	Norm:	Änd.-Stand: C 4119W	Änd.-Datum: 10.02.2011
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	Product Specification APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions	CAS25032E
1. Piece part over view 2. Crimping tools 3. Assembly aids 4. Preparation of wires 5. Crimping of pin and socket-contacts 5.1. Crimping with handtool 5.2. Crimping with electropress 5.3. Crimpspecification 6. Assembly of Jamnut receptacle 6.1. Insertion of wire-filler 6.2. Insertion of contacts 6.3. Locking of connector insert 6.4. Assembly of the endbell 7. Assembly of the snap-in receptacle 7.1. Insertion of wire-filler 7.2. Insertion of contacts 7.3. Assembly of the endbell 7.4. Assembly of the alignment disc 8. Assembly of the straight plug connector 8.1. Insertion of wire-filler 8.2. Insertion of contacts 8.3. Assembly of the endbell 8.4. Assembly of the endbell 9. Disassembly of the endbell 10. Disassembly of contacts of jam nut and snap-in receptacle connector 11. Disassembly of contacts of plug connector 12. Product safety and warranty page 4 page 5 page 6 page 7 page 8 page 8 page 11 page 13 page 14 page 15 page 16 page 17 page 18 page 19 page 20 page 20 page 21 page 22 page 23 page 24 page 24 page 25 page 26 page 27 page 28 page 31 page 36		
Bearbeitet: 10.02.11 STR	Geprüft: 10.02.11 HAG	Norm:
Änd.-Stand: C 4119W	Änd.-Datum: 10.02.2011	

ITT Cannon

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

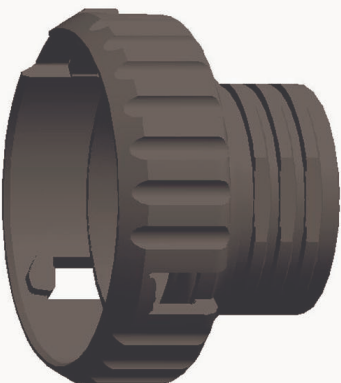
CAS25032E

1. piece part overview

Assembly instruction Connector APD 51-way

1. Piece part overview

Endbell with sealing
 ITT Cannon order-nr.: 120110-0075



ITT Cannon
 16.08.04 - page 4

Individual wire seal

Insulations-Ø 1,4-2,0 mm
 Colour: grey
 ITT Cannon order-nr.: 121667-0022



Insulations-Ø 1,9-2,1 mm
 Colour: yellow
 ITT Cannon order-nr.: 121667-0023



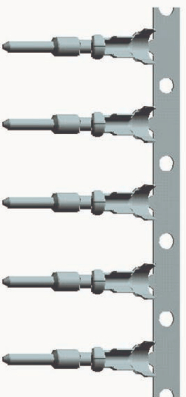
Insulations-Ø 1,2-1,6 mm
 Colour: red
 ITT Cannon order-nr.: 121667-0024



Wire filler
 Colour: white
 ITT Cannon order-nr.: 121667-0025



Pin-contact, e. g. APK-PA16A15-002
 (for wire sections: 0,75- 1,5 mm²)
 ITT Cannon order-nr.: 121668-0253



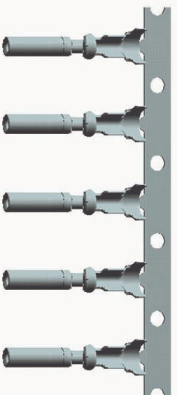
Colour: brown RAL 3009, coding: 3
 ITT Cannon order-no.: 121583-0089
 (starting year 2012 new ITT Cannon order-no. will be 121583-0189)

Colour: purple RAL 4001, coding: 4
 ITT Cannon order-nr.: 121583-0090
 (starting year 2012 new ITT Cannon order-no. will be 121583-0190)

Colour: green RAL 6018, coding: 1
 ITT Cannon order-nr.: 121583-0087
 (starting year 2012 new ITT Cannon order-no. will be 121583-0187)

Colour: yellow RAL 1018, coding: 2
 ITT Cannon order-nr.: 121583-0088
 (starting year 2012 new ITT Cannon order-no. will be 121583-0188)

Socket-contact, APK-SA16A15-002
 (for wire sections: 0,75- 1,5 mm²)
 ITT Cannon order-nr.: 121668-0202



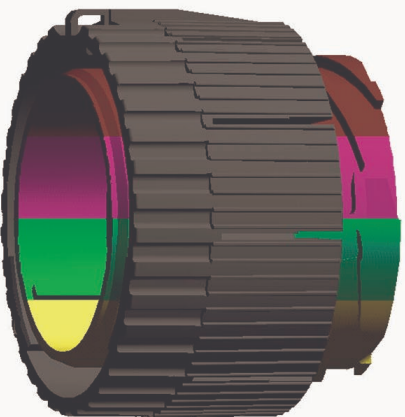
Colour: brown RAL 3009, coding: 3
 ITT Cannon order-nr.: 121583-0093

Colour: purple RAL 4001, coding: 4
 ITT Cannon order-nr.: 121583-0094

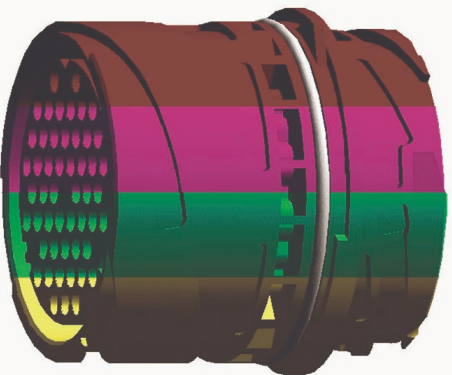
Colour: green RAL 6018, coding: 1
 ITT Cannon order-nr.: 121583-0091

Colour: yellow RAL 1018, coding: 2
 ITT Cannon order-nr.: 121583-0092

Cylinder housing with coupling nut and o-ring
 sealing for Straight connector APD 51-way



Snap-in connector with o-ring
 sealing APD 51-way



Bearbeitet:

10.02.11 STR

Geprüft:

10.02.11 HAG

Norm:

Änd.-Stand:

C 4119W

Änd.-Datum:

10.02.2011

ITT Cannon GmbH, D-71384 Weinstadt

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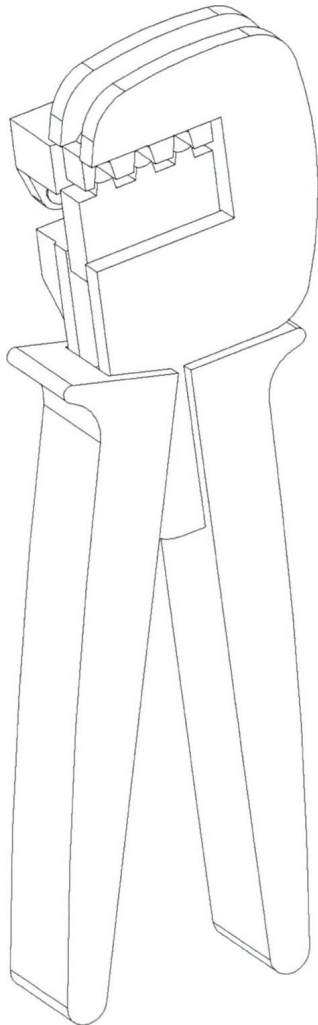
Product Specification
 APD 51-way with circular contacts and bayonet
 coupling, secondary locking principle; assembly
 instructions

CAS25032E

2. Crimping tools

Handcrimp tool

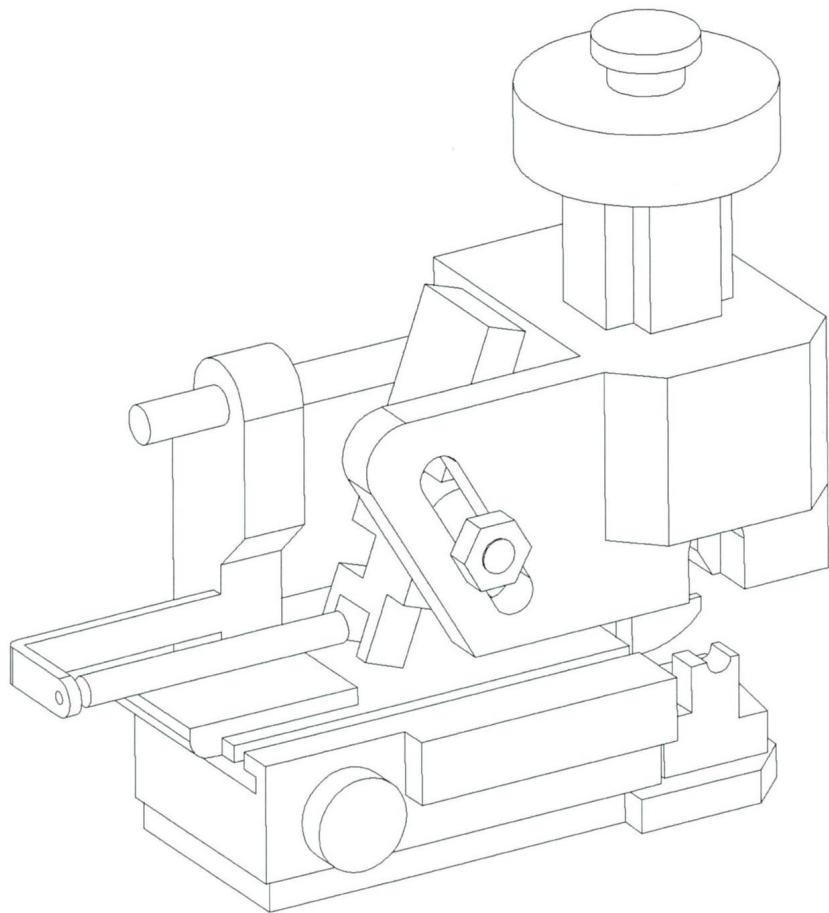
Description: Strato-Standard
 ITT Cannon order no.: 121586-5156



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

Crimping tool

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

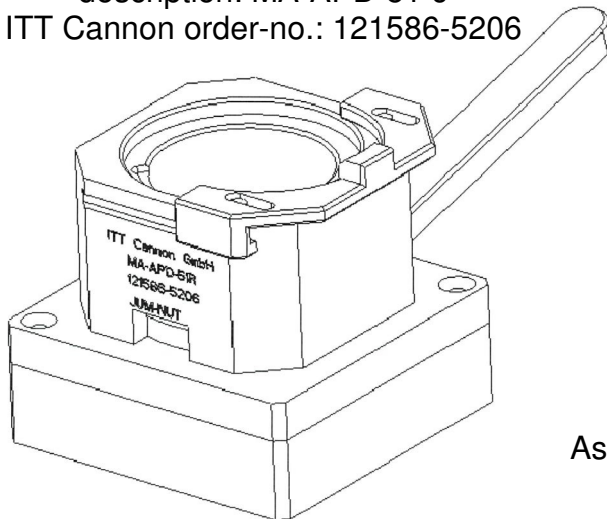


On demand: Electro Crimp - press
 ITT Cannon

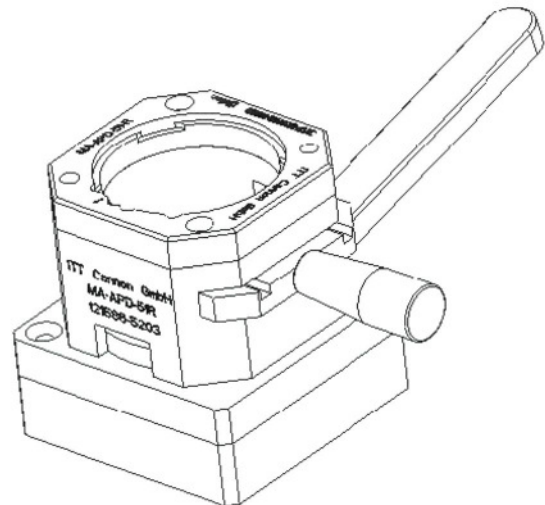
Bearbeitet: 10.02.11 STR	Geprüft: 10.02.11 HAG	Norm:	Änd.-Stand: C 4119W	Änd.-Datum: 10.02.2011
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3. Assembly aids

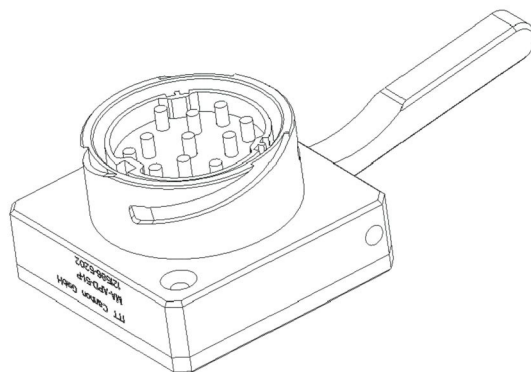
Assembly fixture for Jam nut connector
 description: MA-APD-51-J
 ITT Cannon order-no.: 121586-5206



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

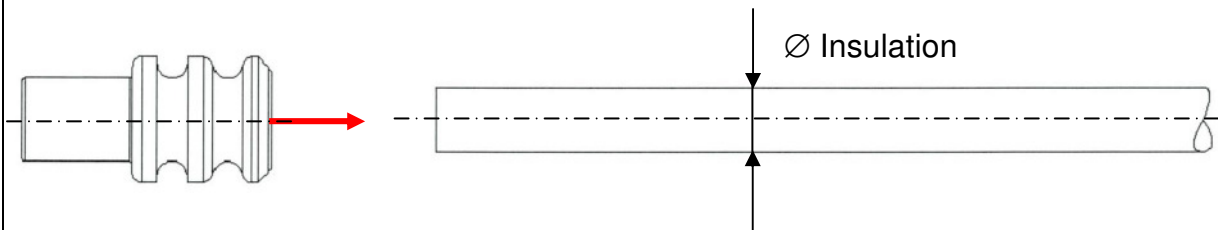


Bearbeitet: 10.02.11 STR	Geprüft: 10.02.11 HAG	Norm:	Änd.-Stand: C 4119W	Änd.-Datum: 10.02.2011
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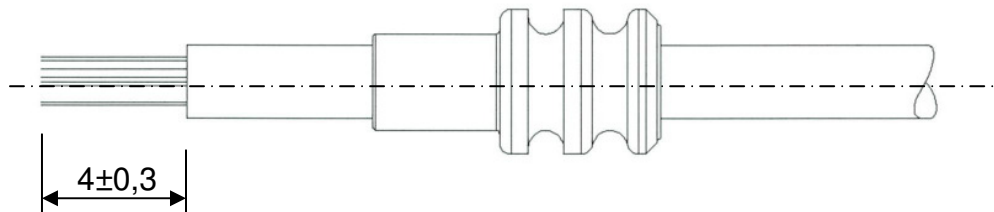
4. Preparation of wires

Select single-wire seal acc. wire diameter (see page 4)

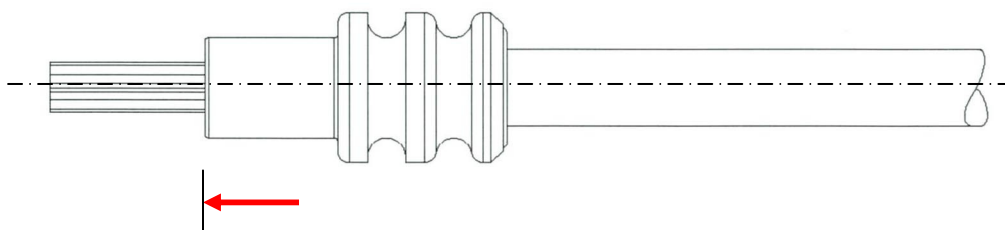
Move single-wire seal as shown on the wire. Leave sufficient space that the single-wire seal won't be damage while stripping the insulation and crimping the contacts.



Strip wire on a length of $4 \pm 0,3$ mm.



Move single-wire seal back to the end of the insulation until it is 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)

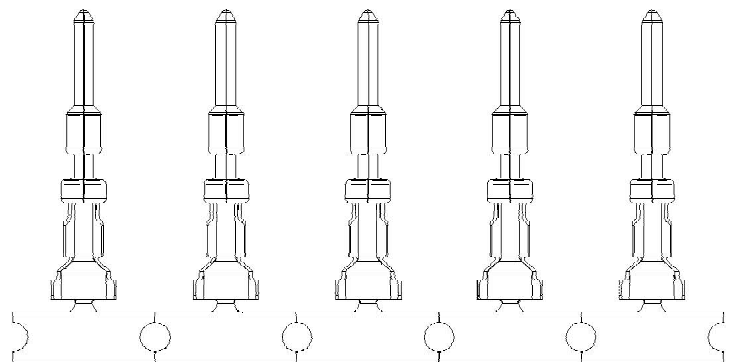
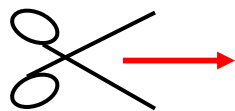
Socket- contact, ITT Cannon order no.: 121668-0202 (APK-SA16A15-002)

Mount inserts ITT Cannon order no.: 121586-5197

into crimp-tool ITT Cannon order no.: 121586-5156

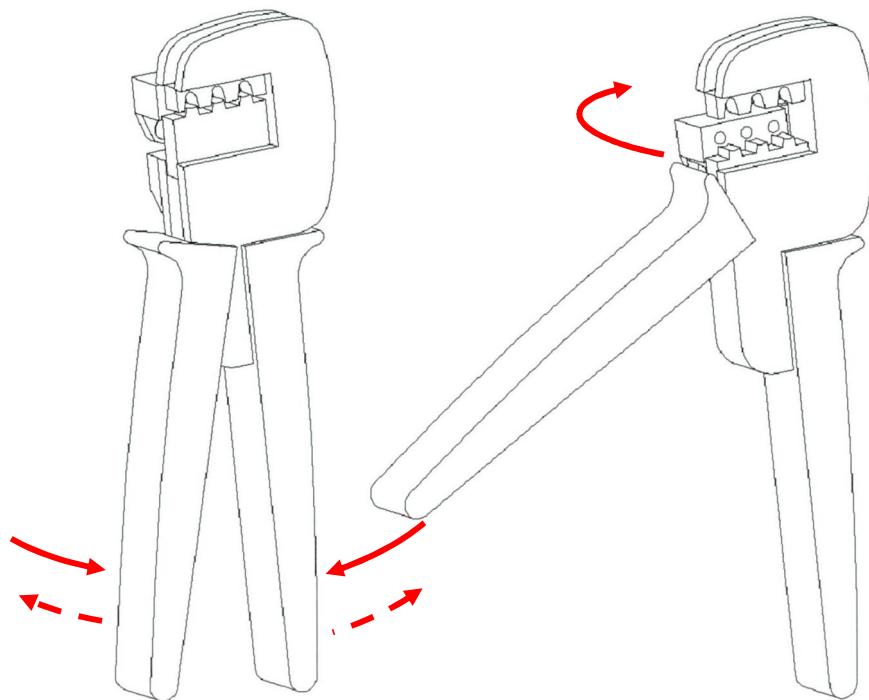
regarding the crimp-tool manual

Use a cutter to separate contacts from support strip



Open crimp-tool be complet pressing

Swing out of contact-positionier.



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

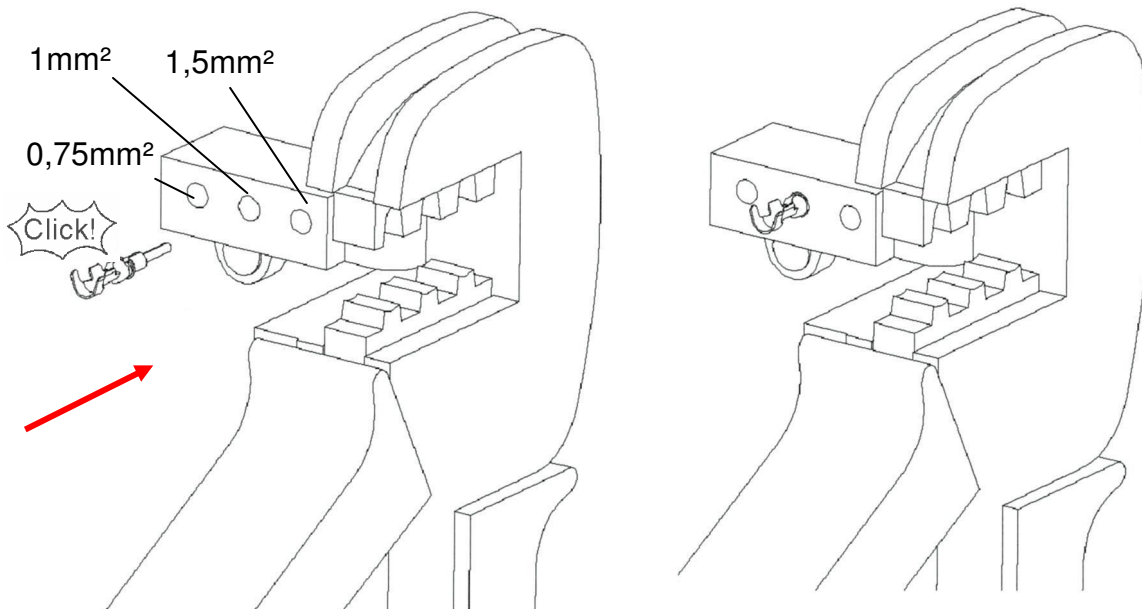
ITT Cannon

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

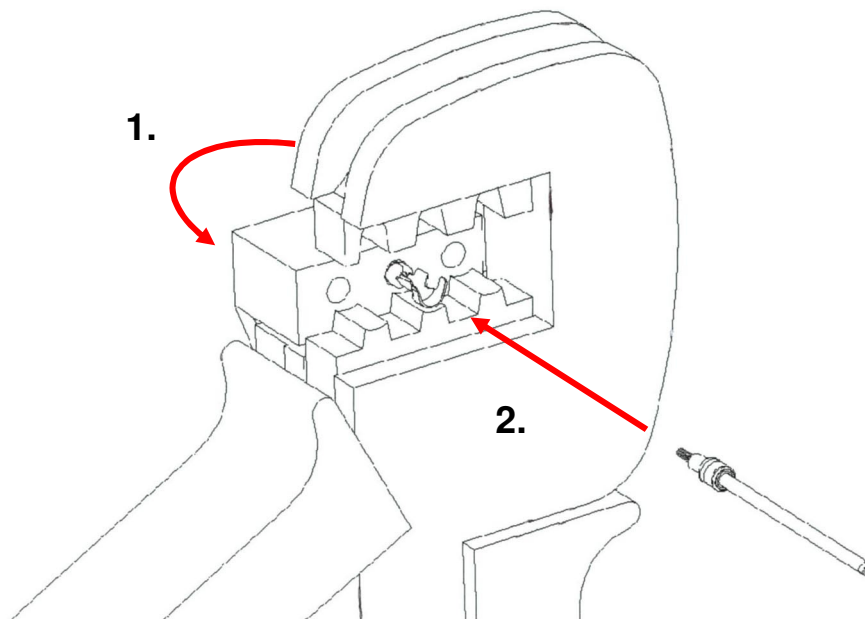
CAS25032E

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-positionier 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.



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

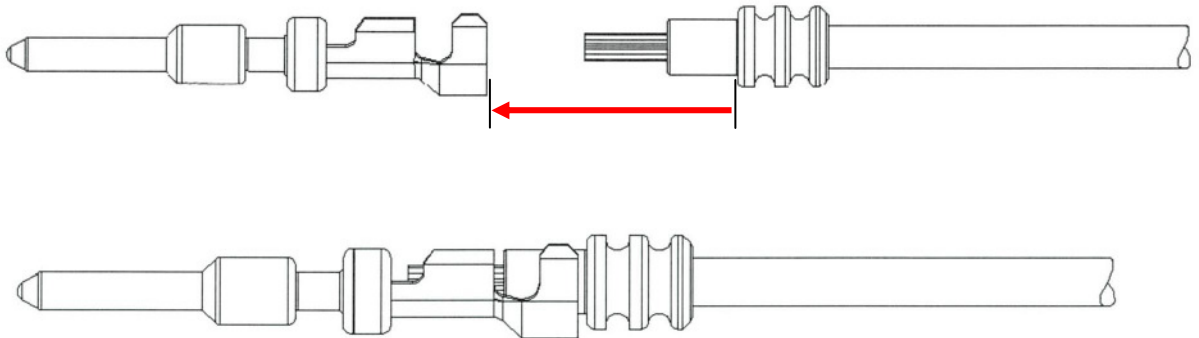
Änd.-Datum:
10.02.2011

ITT Cannon

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

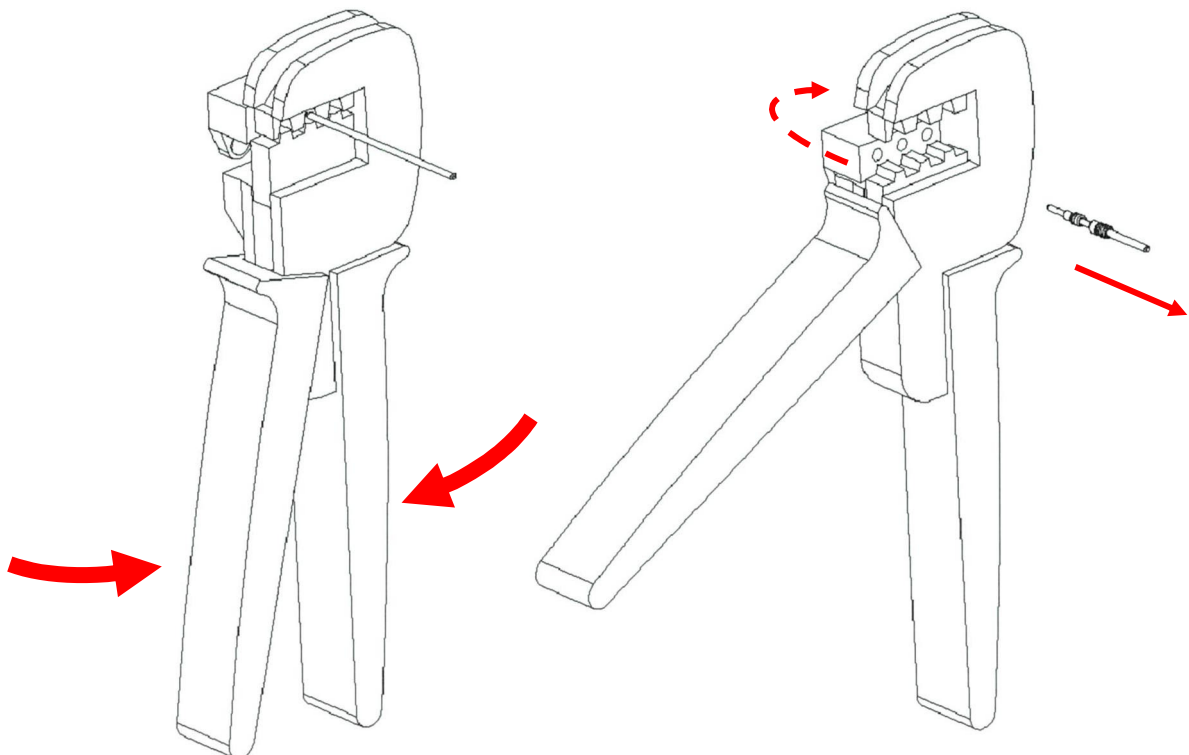
CAS25032E

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)!

Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

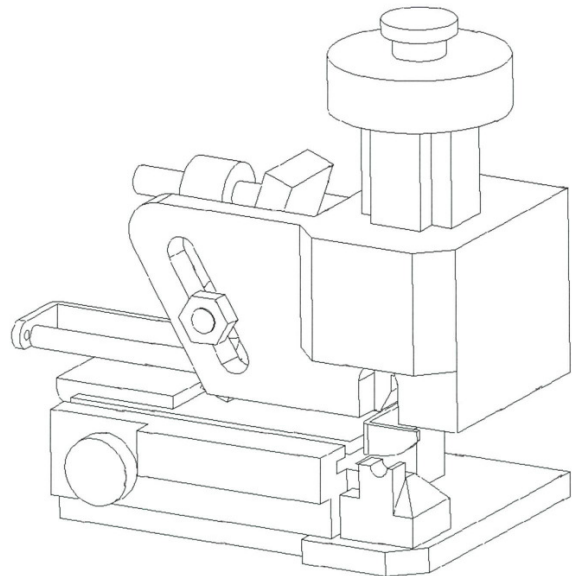
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Product Specification
 APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions

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.

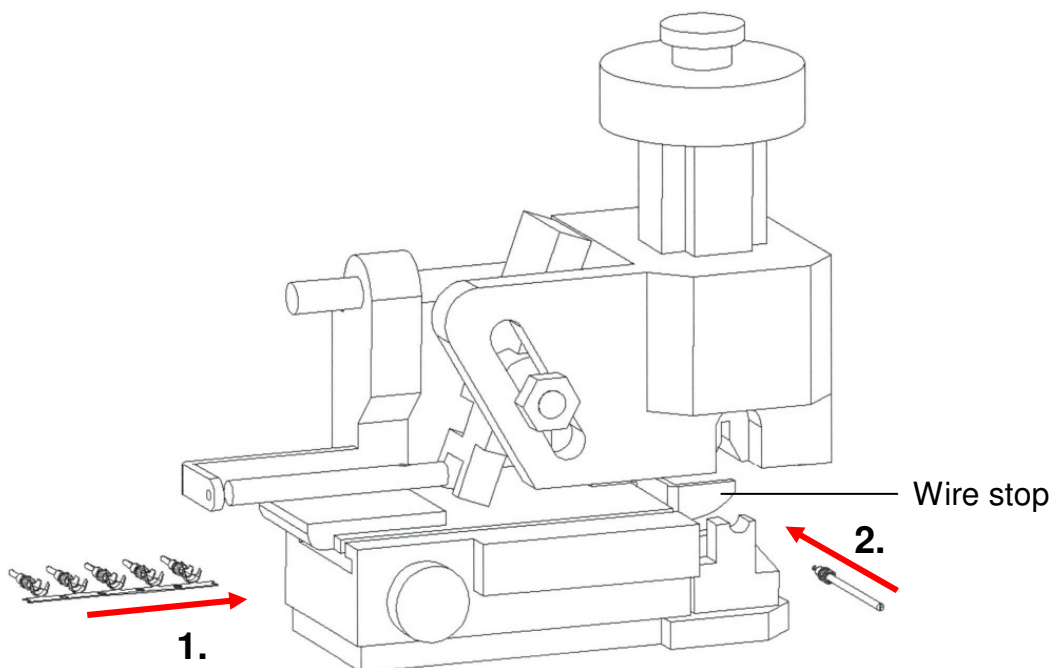


Choose contact acc. application.

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.



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

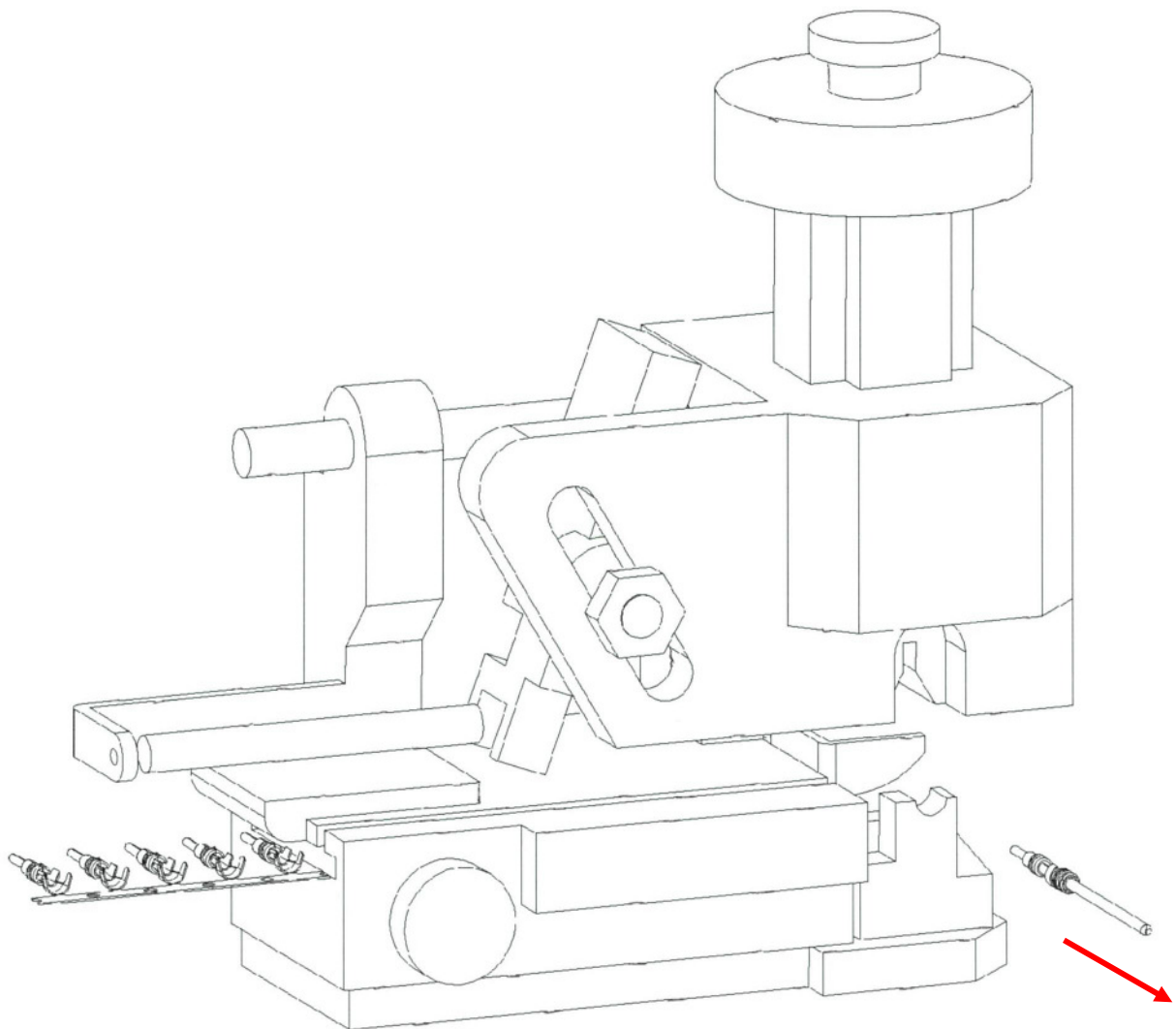
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Product Specification
APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions

CAS25032E

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

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



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

Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

ITT Cannon

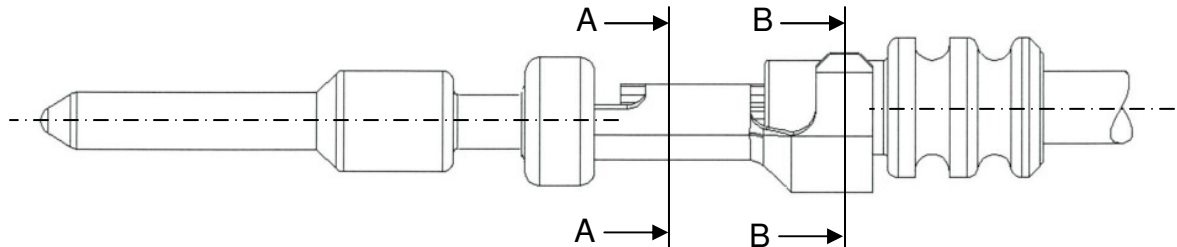
Product Specification
APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions

CAS25032E

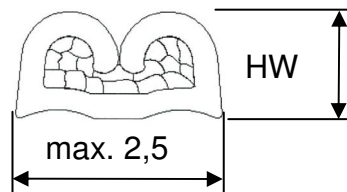
5.3. Crimpspecification

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

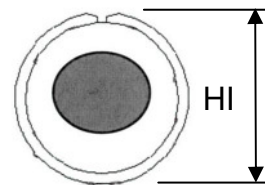
and socket-contact, ITT Cannon order no.: 121668-0...



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!

Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

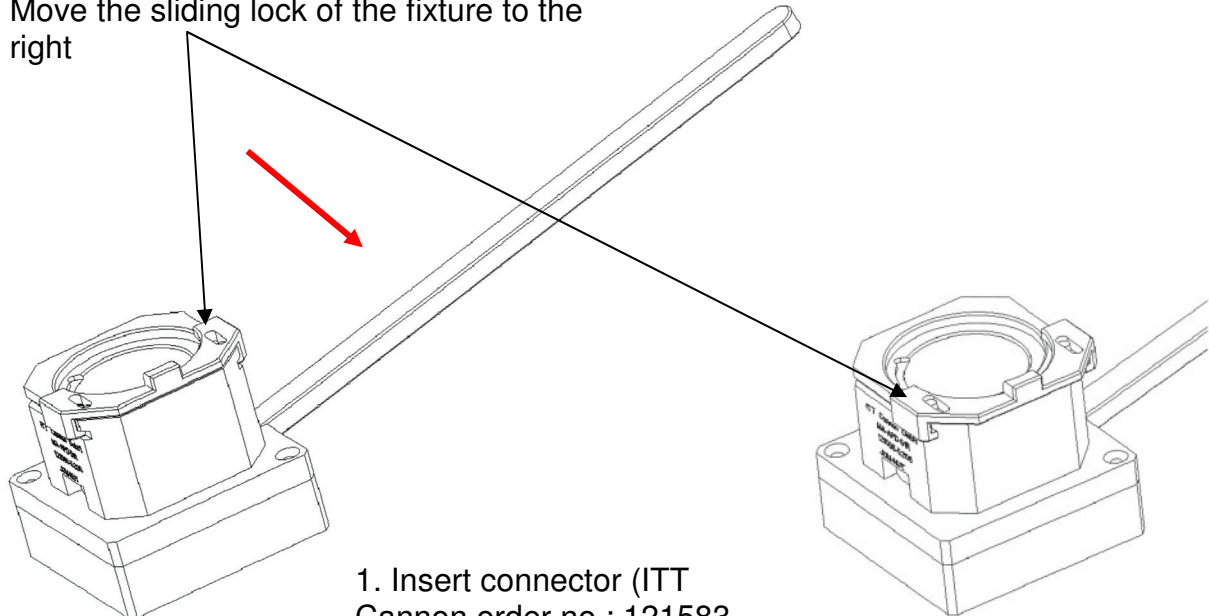
ITT Cannon

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

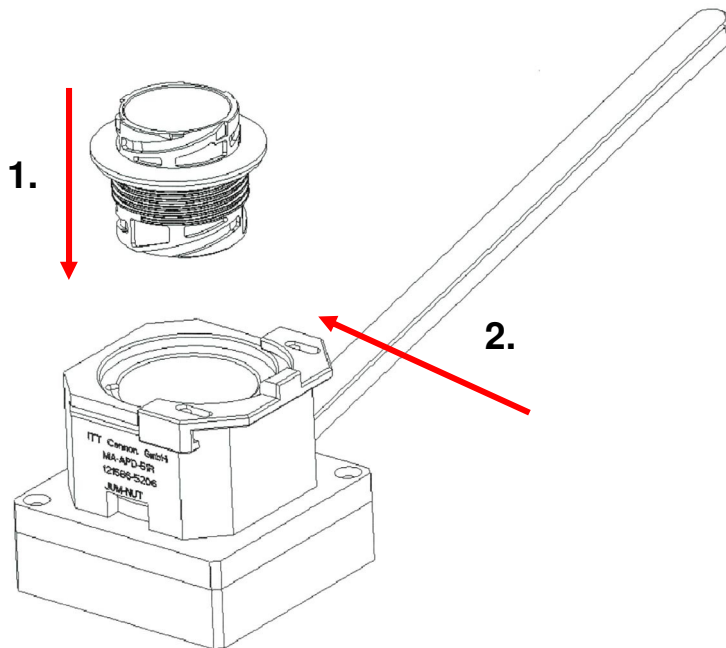
CAS25032E

6. Assembly of the Jam-nut receptacle connector

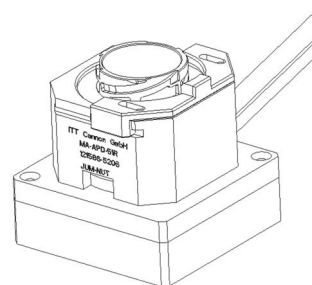
Place and fix the assembly fixture,
 ITT Cannon order no.: 121586-520X
 firmly on a base.
 Move the sliding lock of the fixture to the
 right



1. Insert connector (ITT Cannon order no.: 121583-0091(-0094) and 121583-0103 (-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!



Bearbeitet:
 10.02.11 STR

Geprüft:
 10.02.11 HAG

Norm:

Änd.-Stand:
 C 4119W

Änd.-Datum:
 10.02.2011

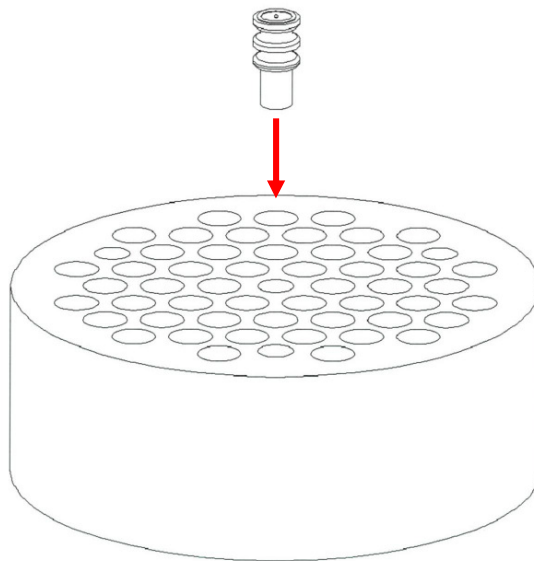
6.1. Insertion of wire fillers

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.

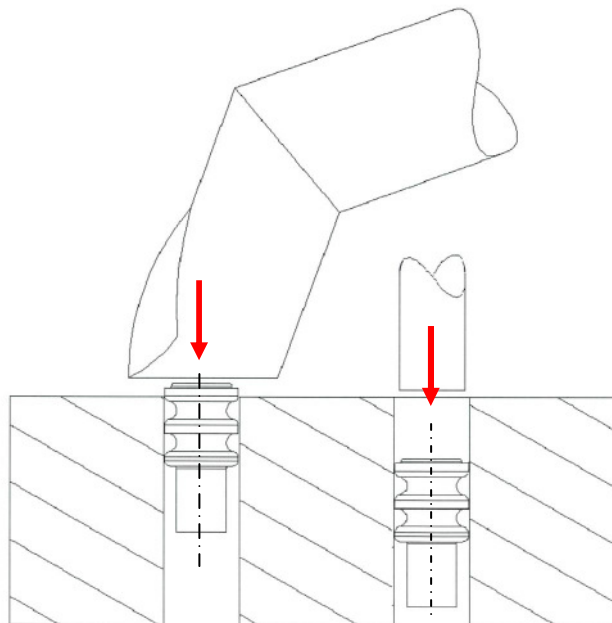
ITT Cannon order no.: 121667-0025

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.



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

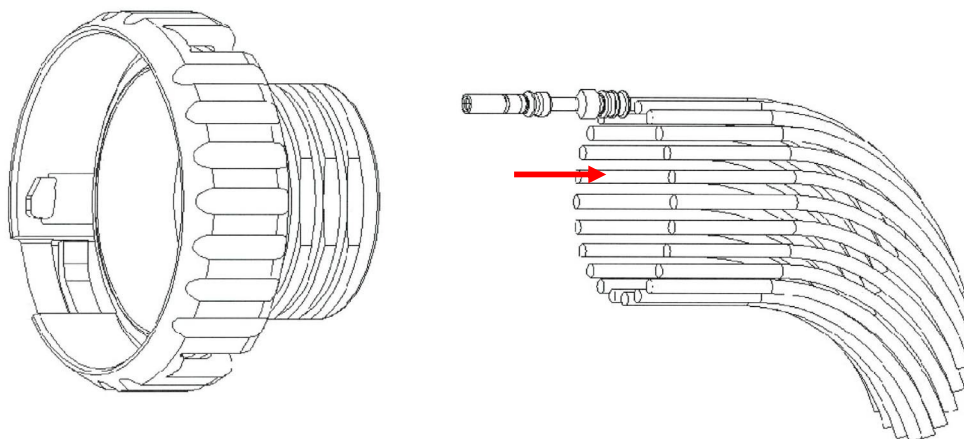
Norm:

Änd.-Stand:
C 4119W

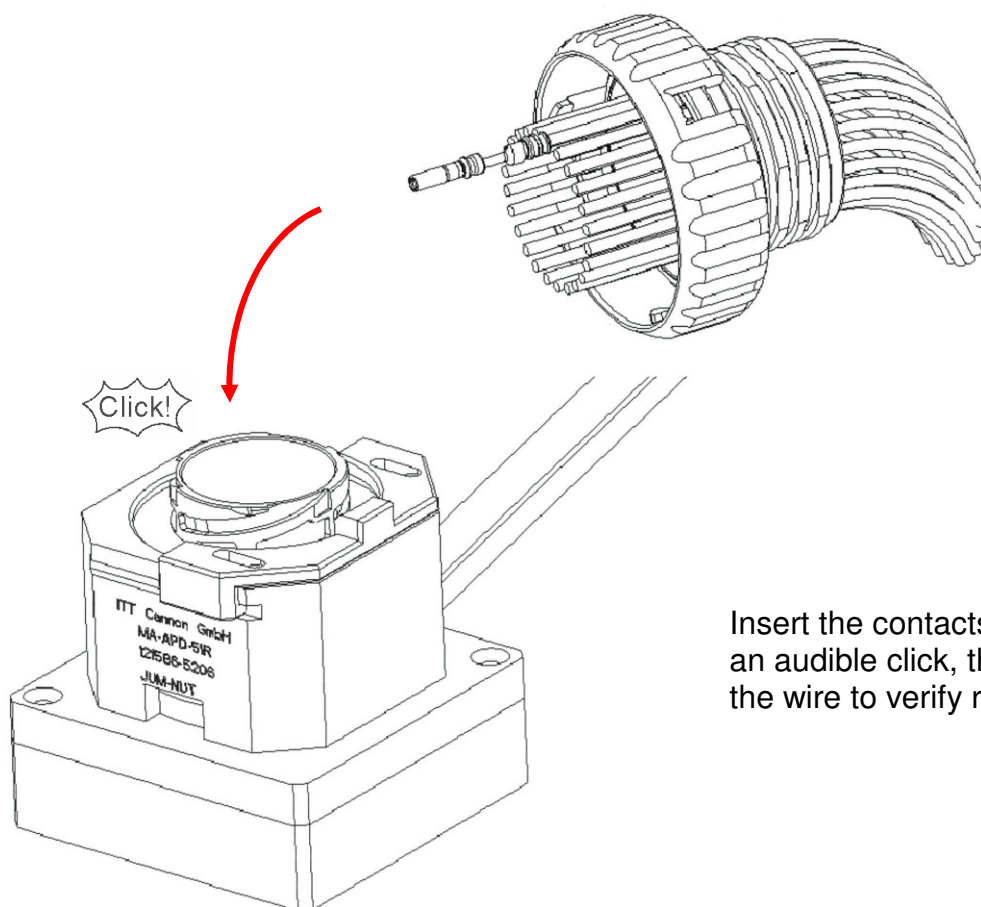
Änd.-Datum:
10.02.2011

6.2. Insertion of contacts

Bunch of wires with crimped contacts (exemplarily 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

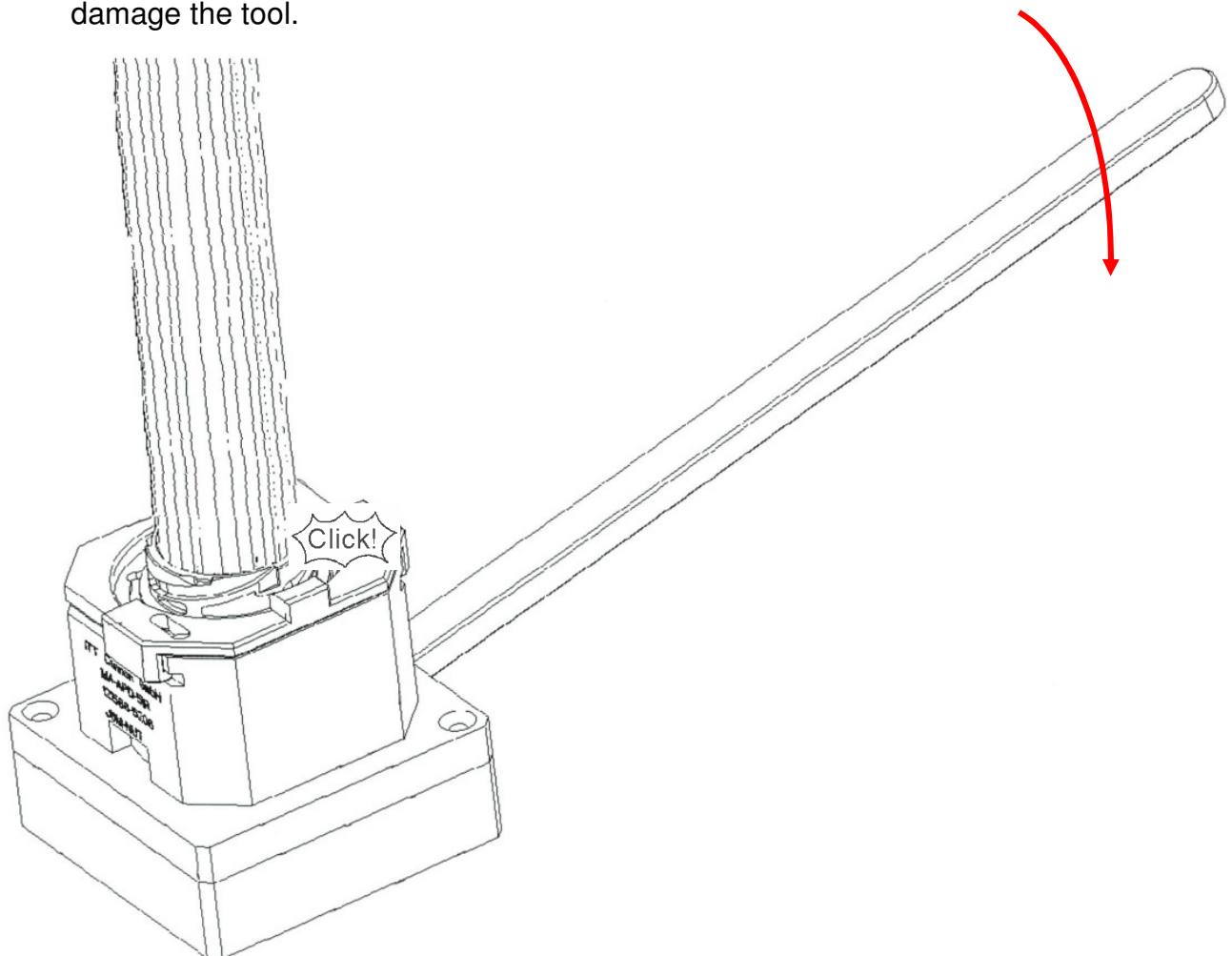
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Product Specification
APD 51-way with circular contacts and bayonet
coupling, secondary locking principle; assembly
instructions

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.



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

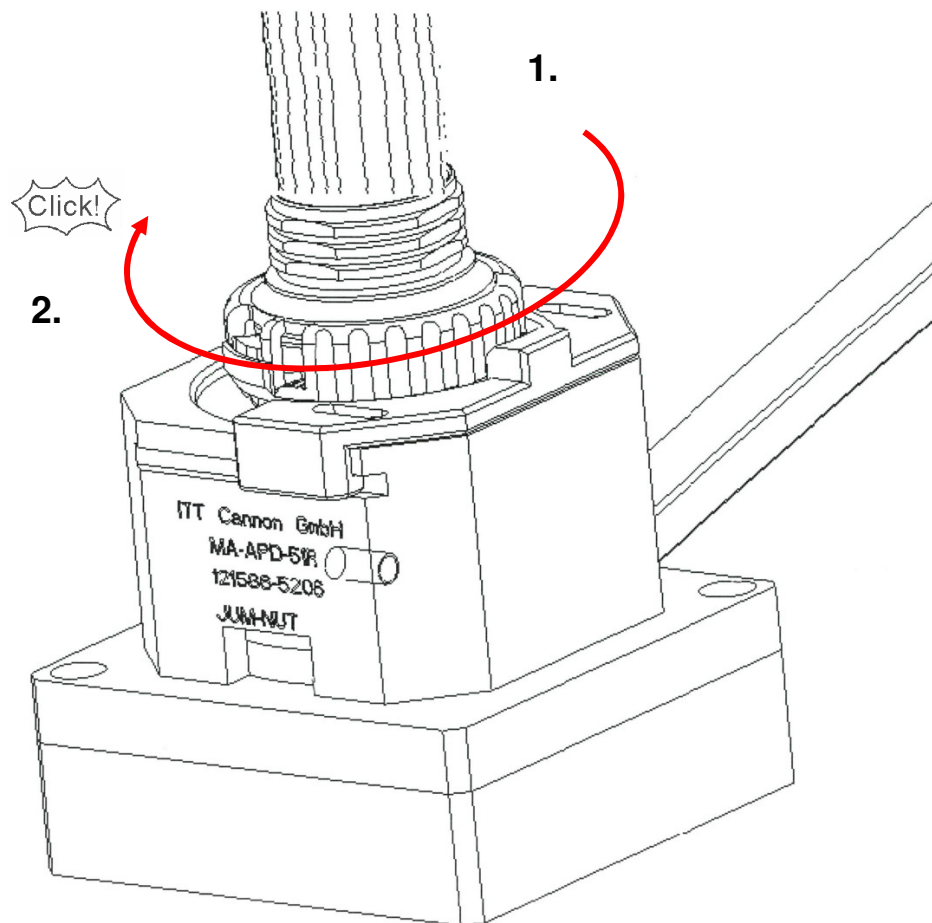
Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

6.4. Assembly of endbell

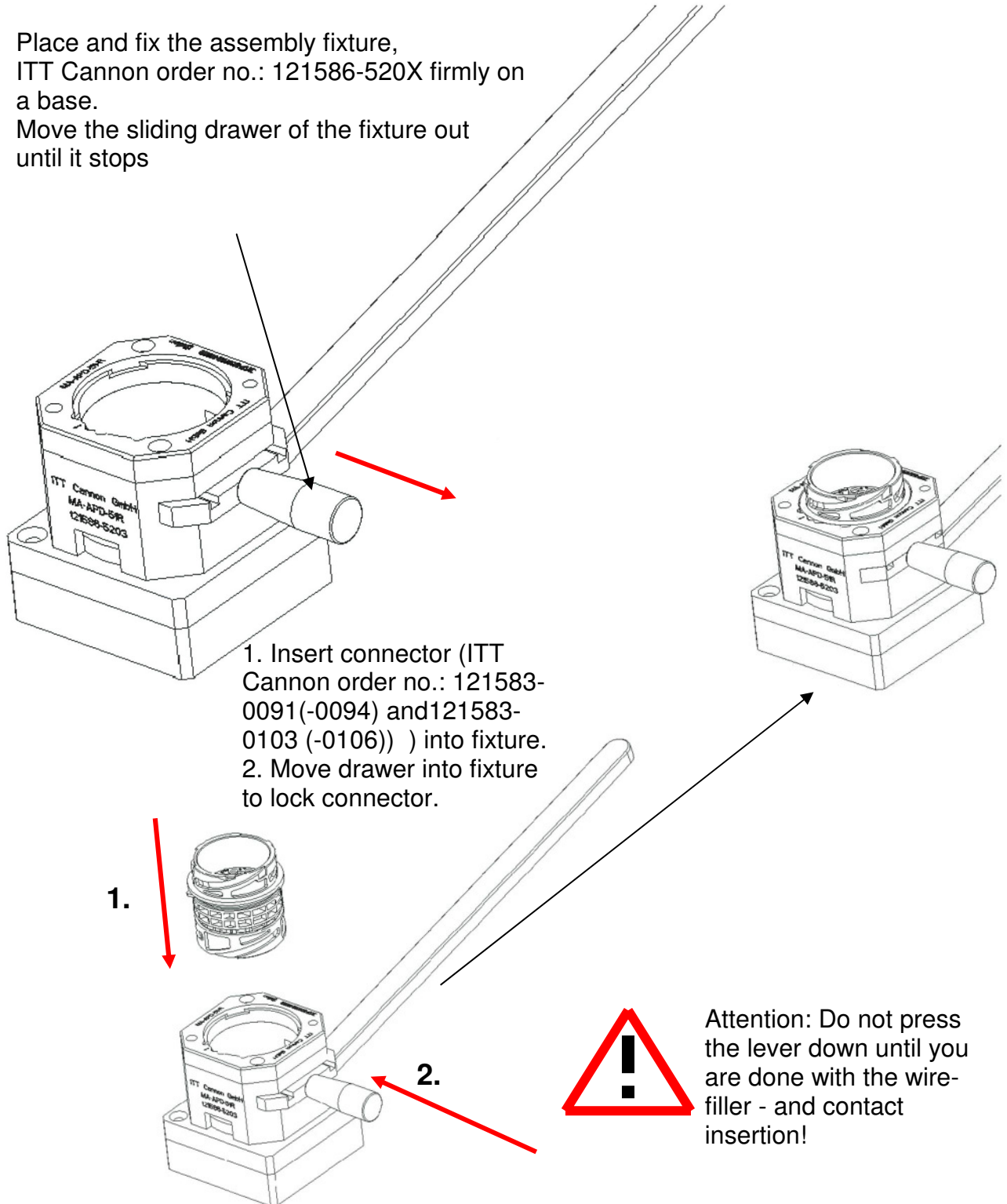
1. Move the endbell which is already on the wires over the connector housing.
 2. Turn the endbell to the right until its final locking. In the final position there is an audible click.
- For disassembly see chapter 8.



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

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



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

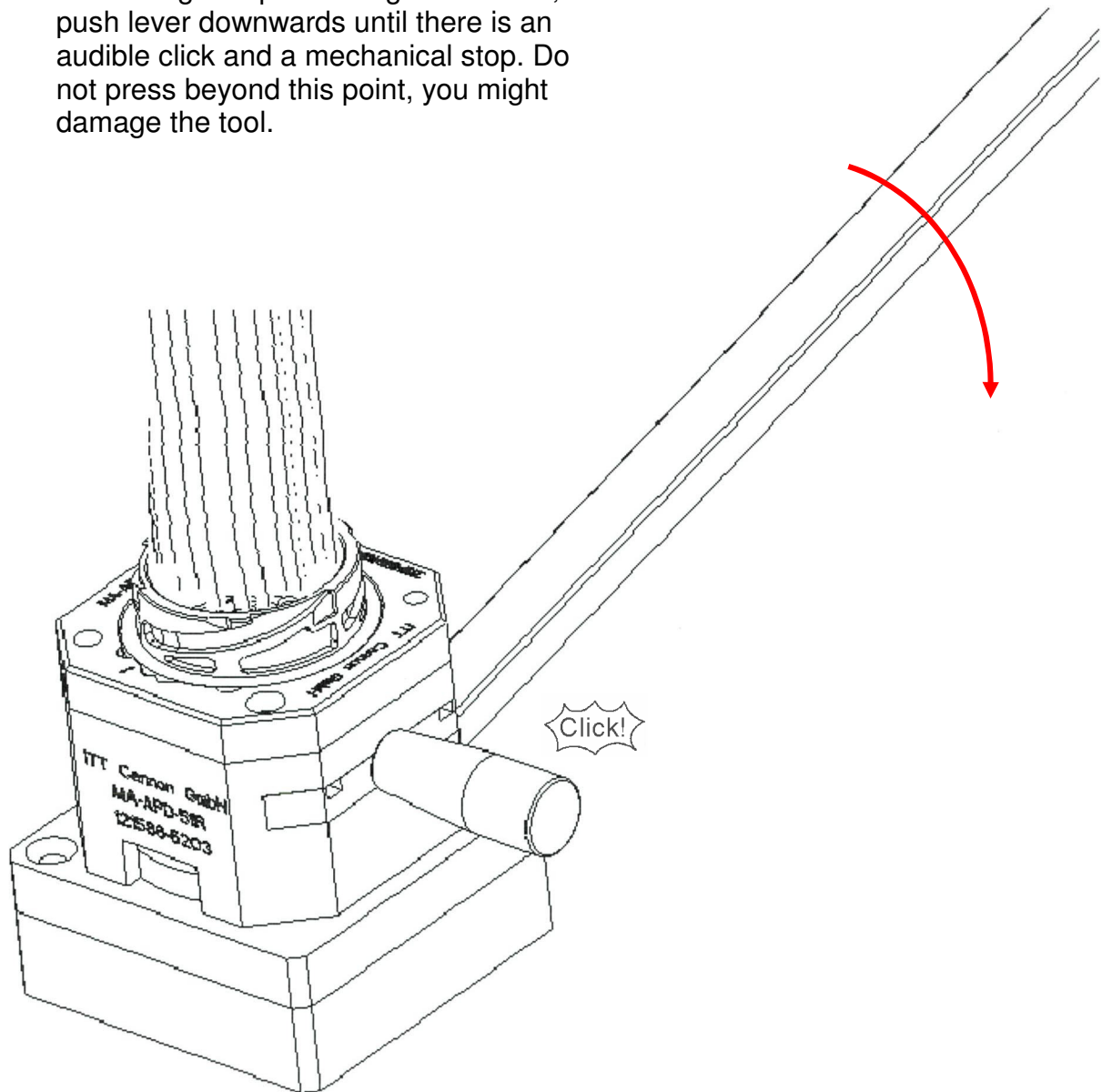
ITT Cannon

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.



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

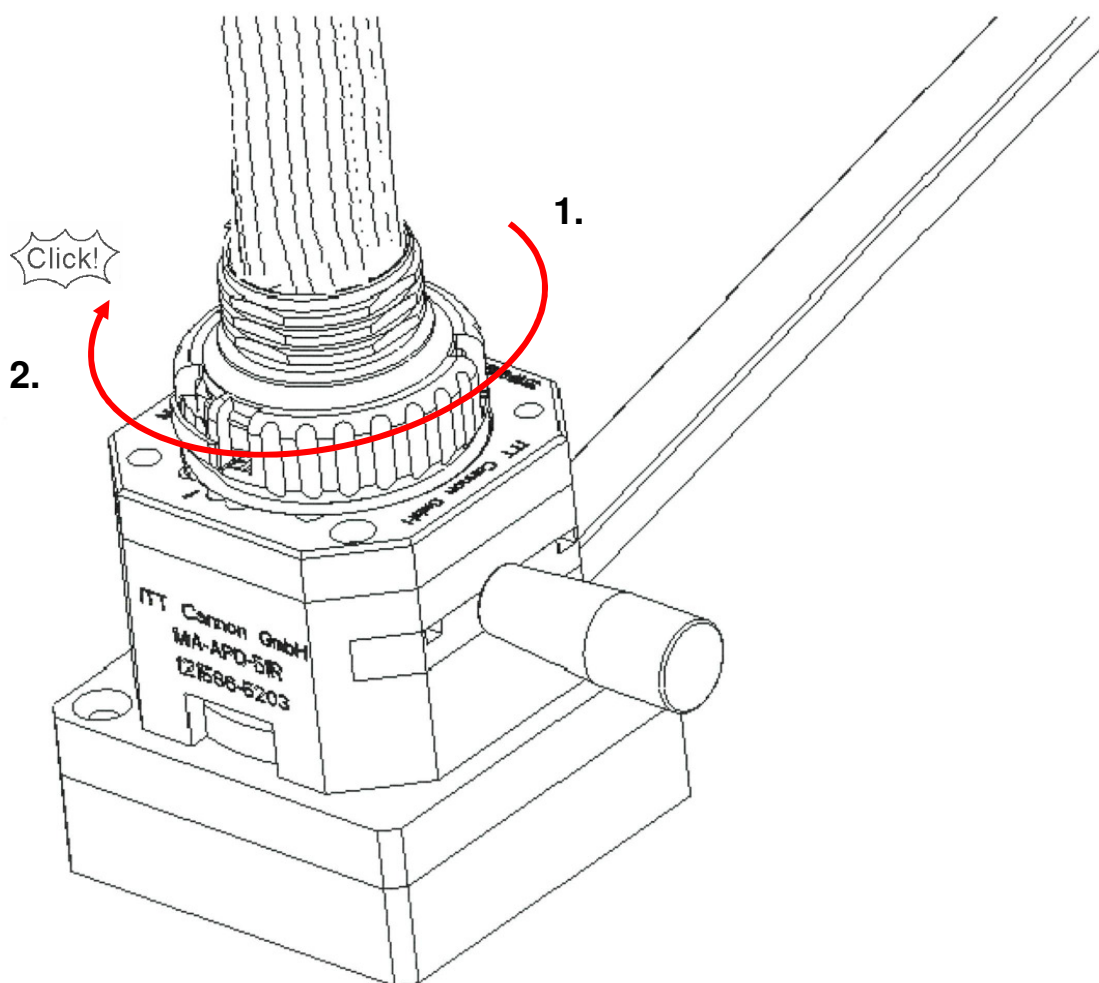
Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

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.

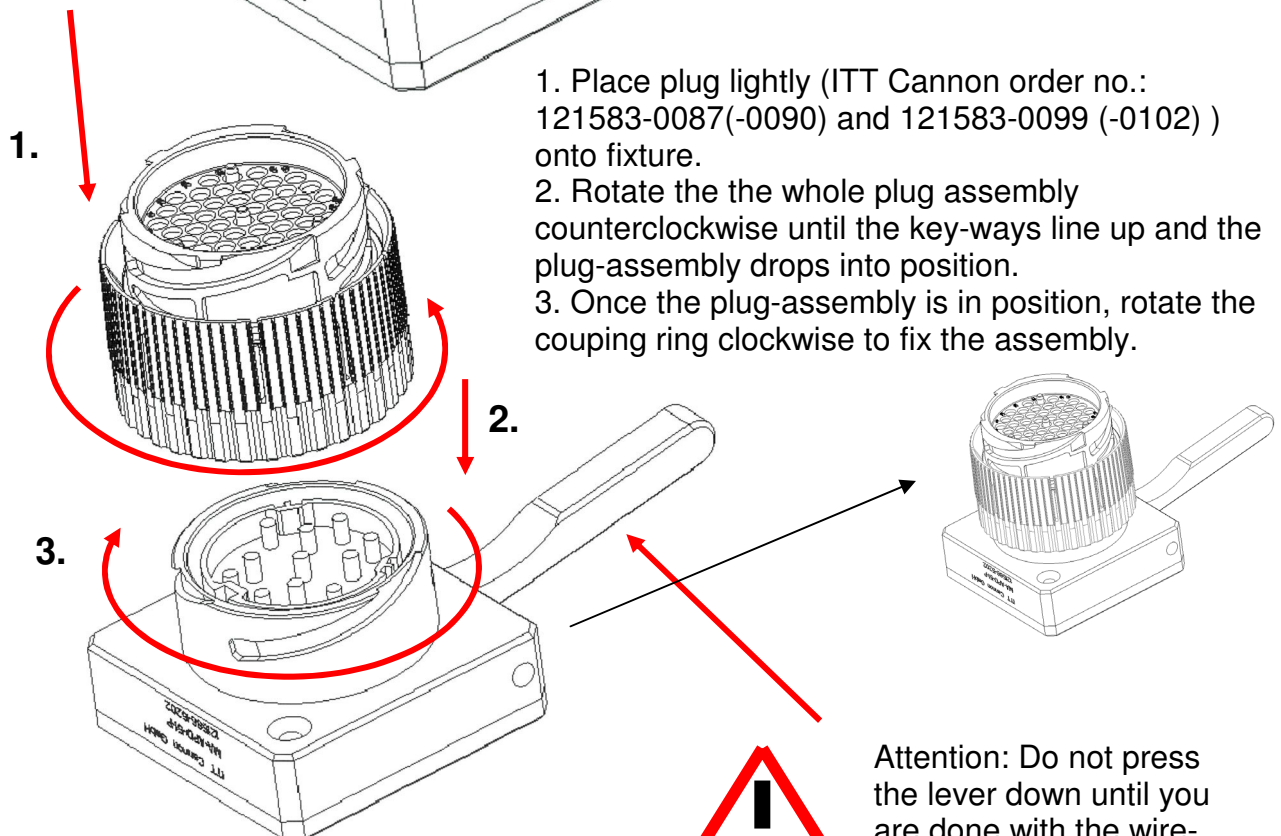
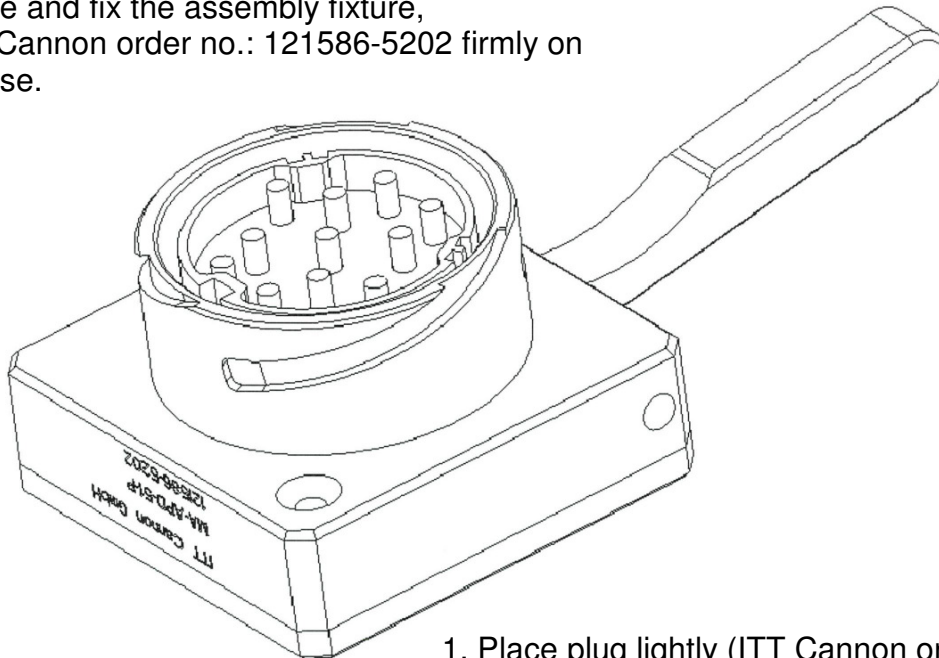
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Product Specification
 APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions

CAS25032E

8. Assembly of the straight plug connector

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



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

Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

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

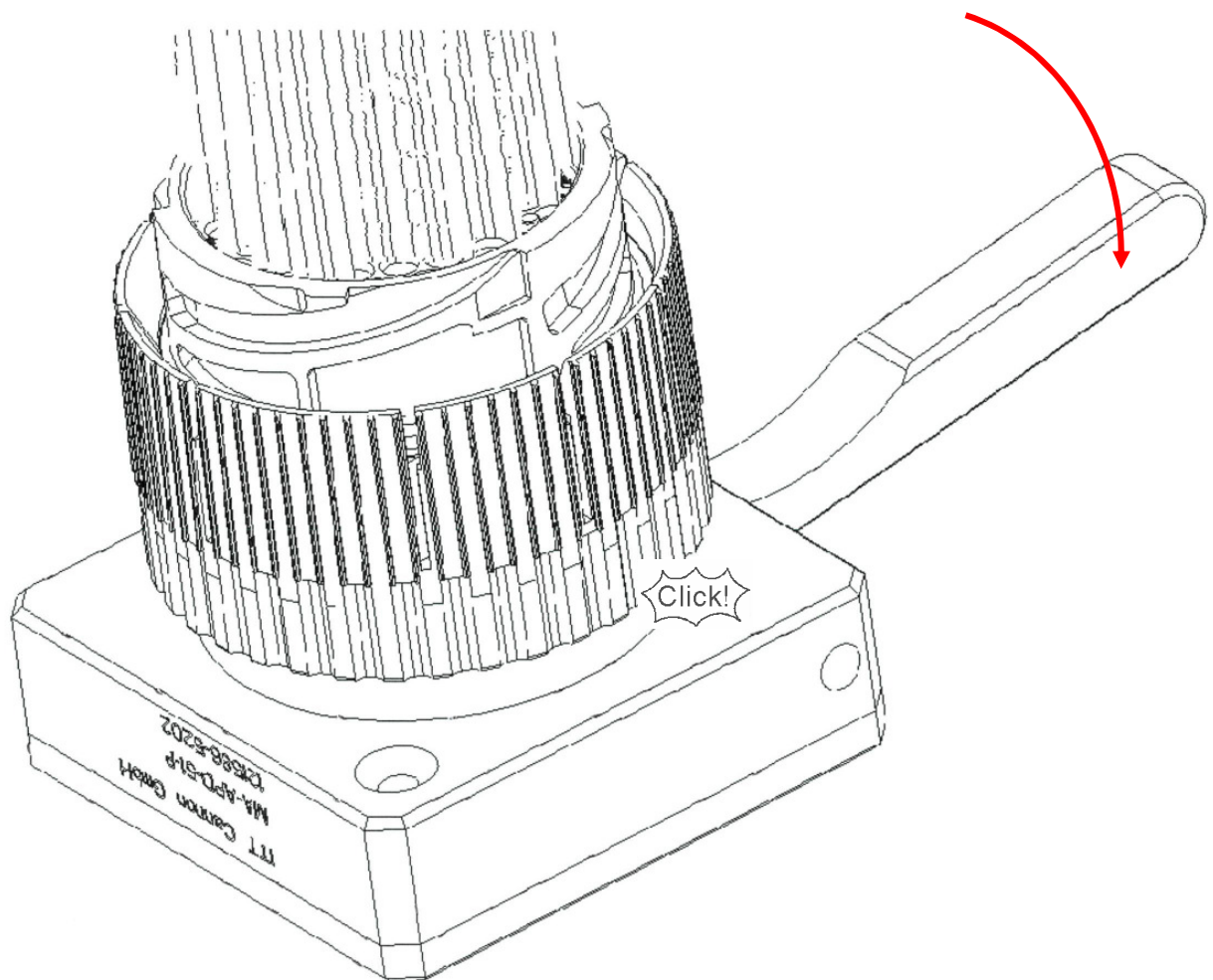
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Product Specification
APD 51-way with circular contacts and bayonet
coupling, secondary locking principle; assembly
instructions

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.



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

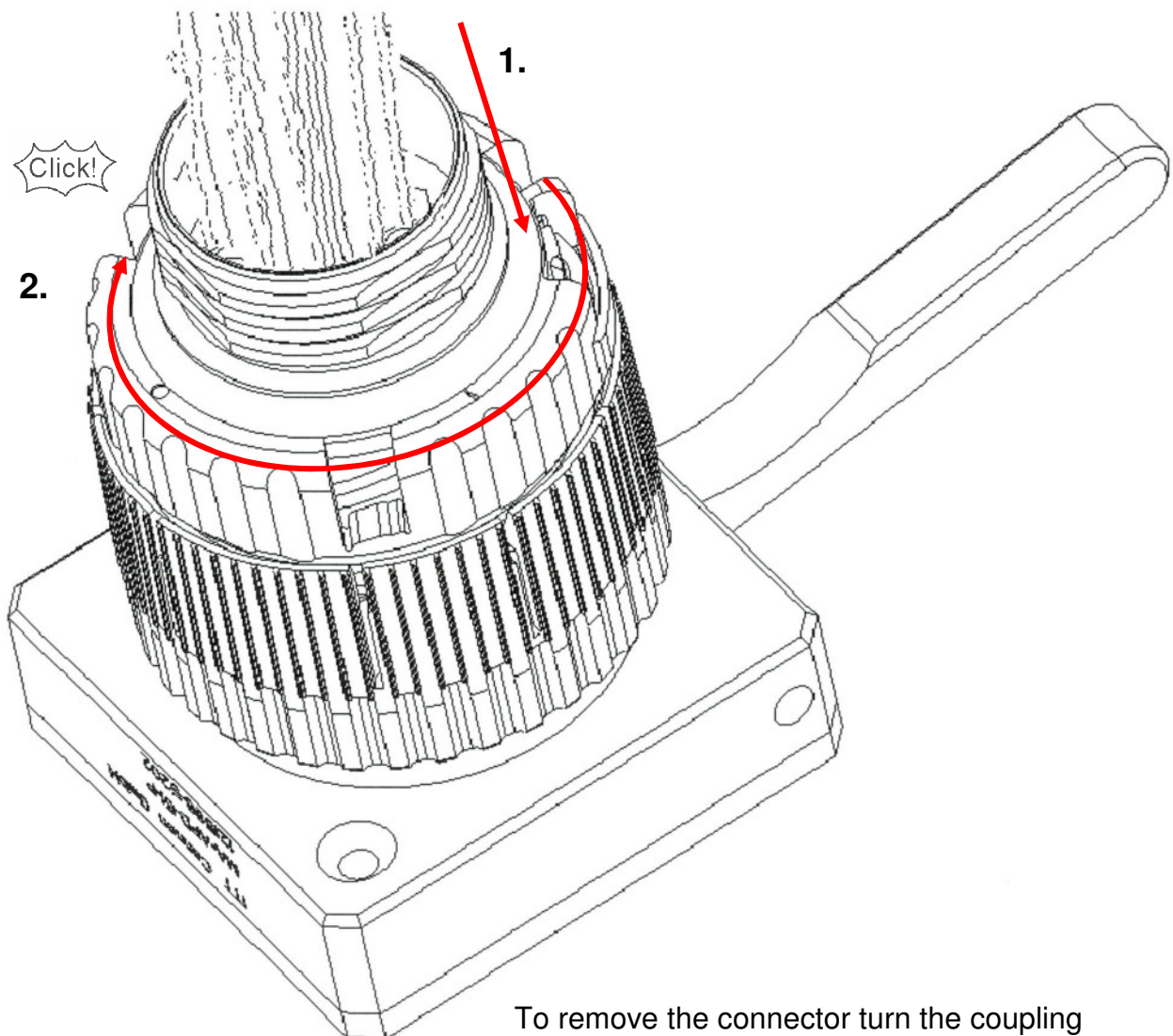
Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

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.

Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

9. Disassembly of endbell

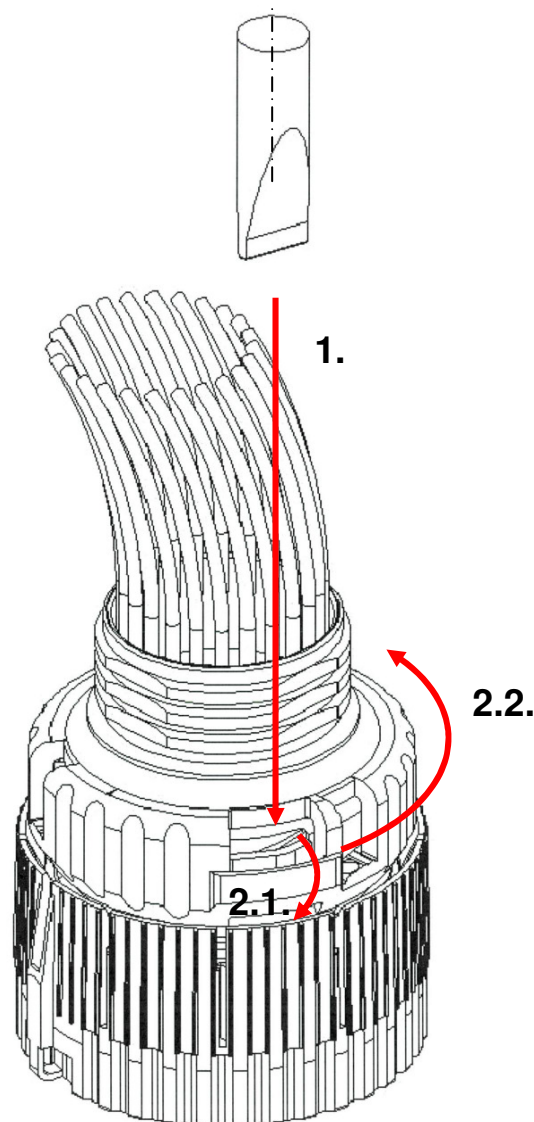
1. Move carefully with a flat tool (preferably the tip of a screw driver) behind the locking latch of the end bell.

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.



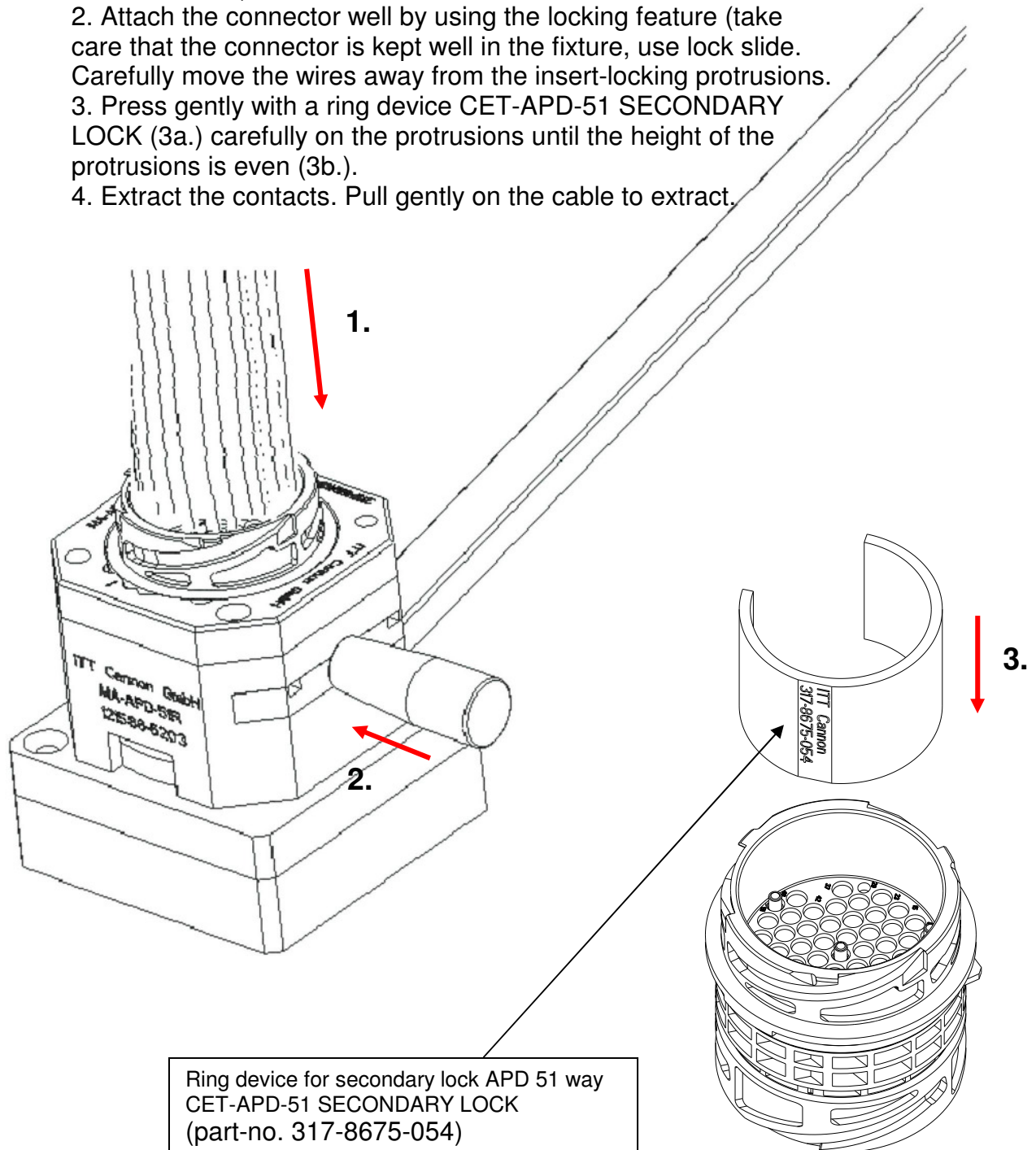
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Product Specification
 APD 51-way with circular contacts and bayonet coupling, secondary locking principle; assembly instructions

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.



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

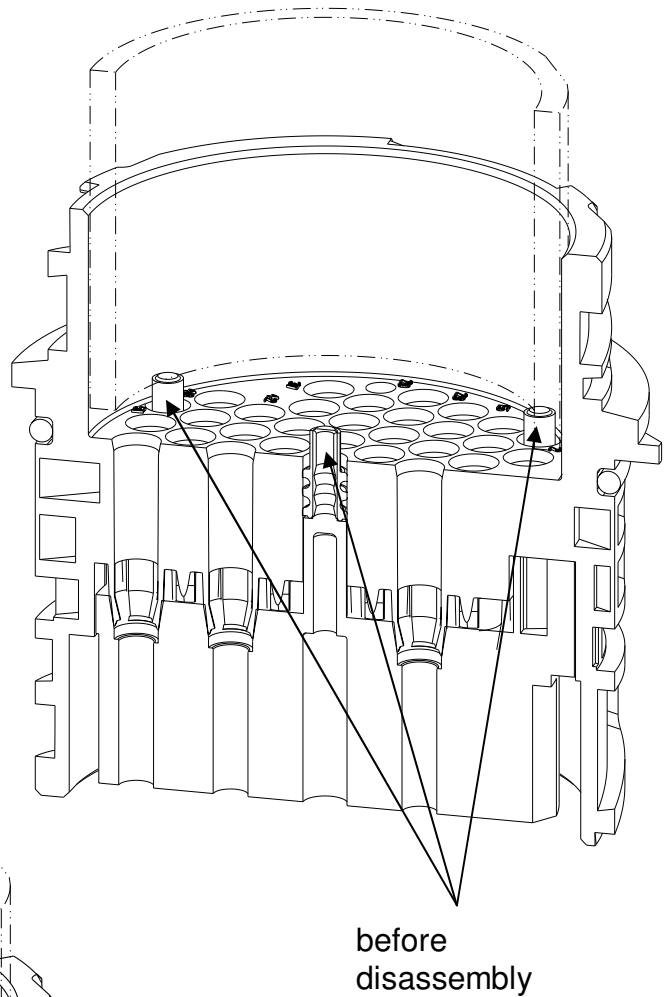
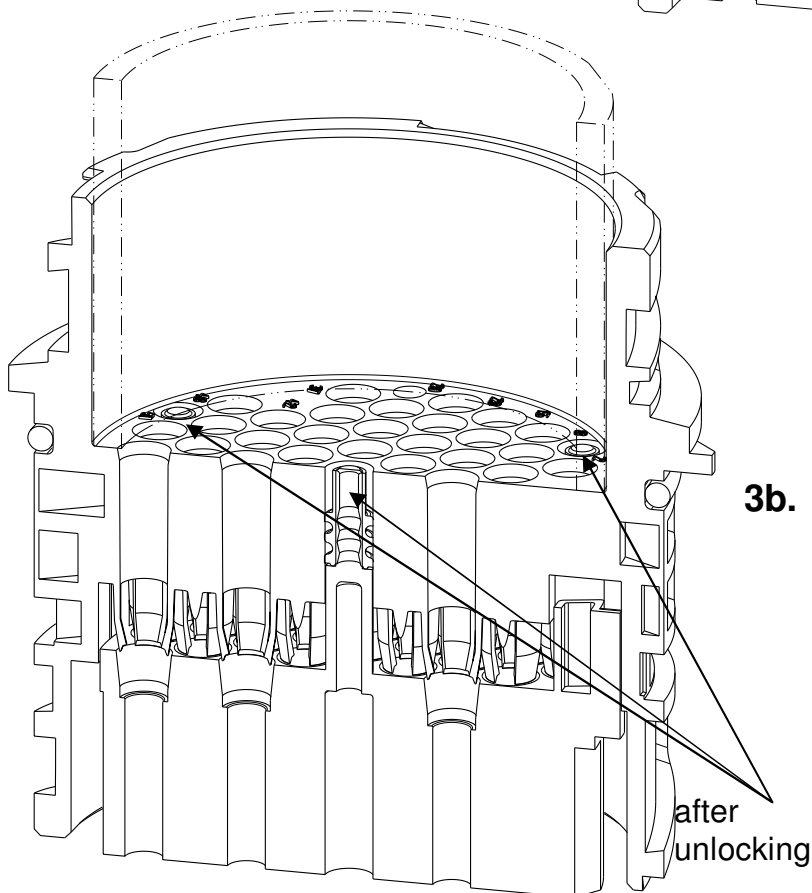
Änd.-Datum:
10.02.2011

ITT Cannon

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.**3b.**

Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

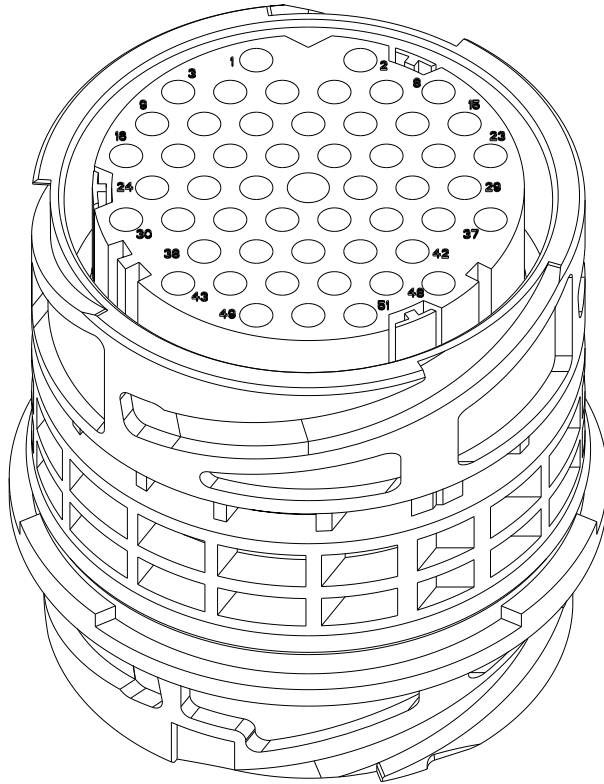
Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

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

CAS25032E**4.**

Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

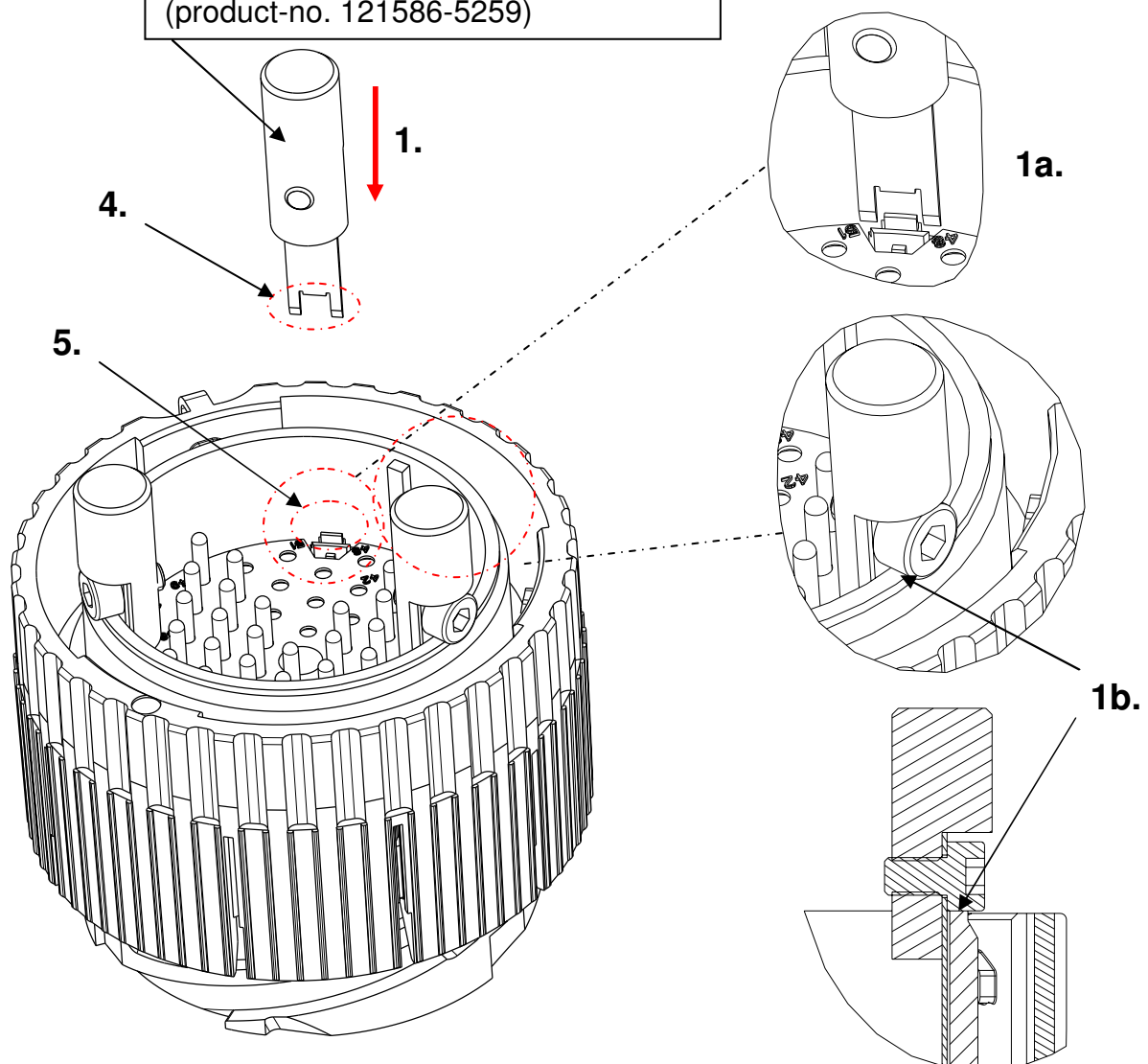
Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

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.

Unlocking tool for secondary lock APD 51 way
 CET-APD-51 SECONDARY LOCK SET
 (product-no. 121586-5259)



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

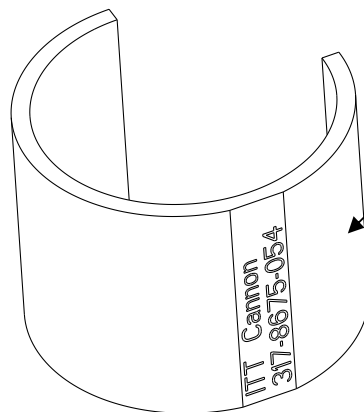
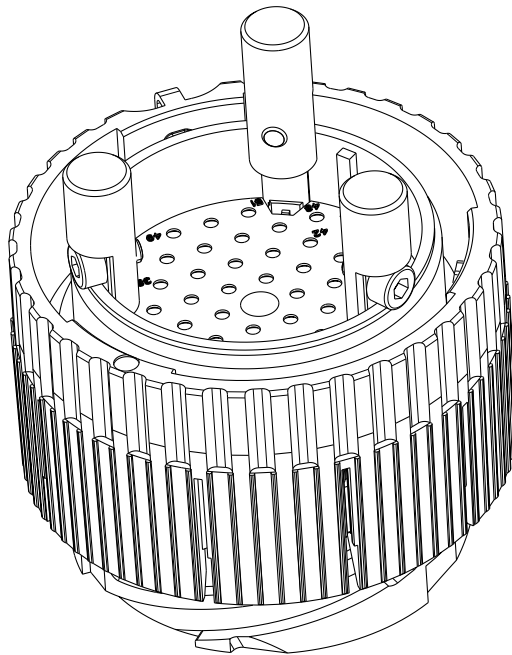
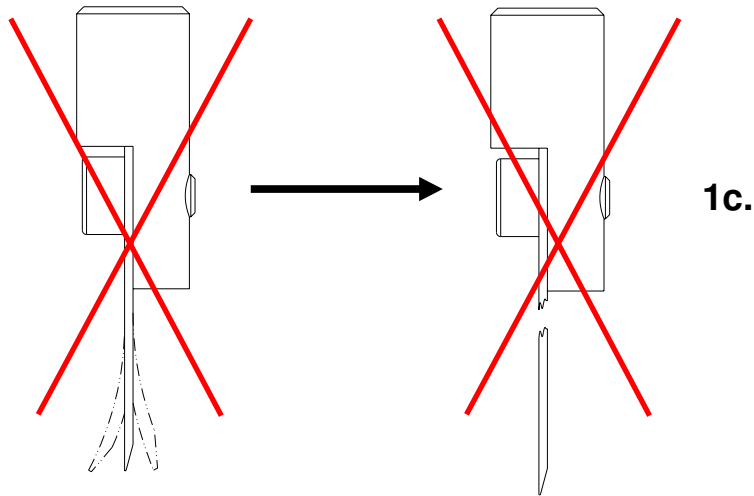
Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

ITT Cannon

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

CAS25032E

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

Bearbeitet:
 10.02.11 STR

Geprüft:
 10.02.11 HAG

Norm:

Änd.-Stand:
 C 4119W

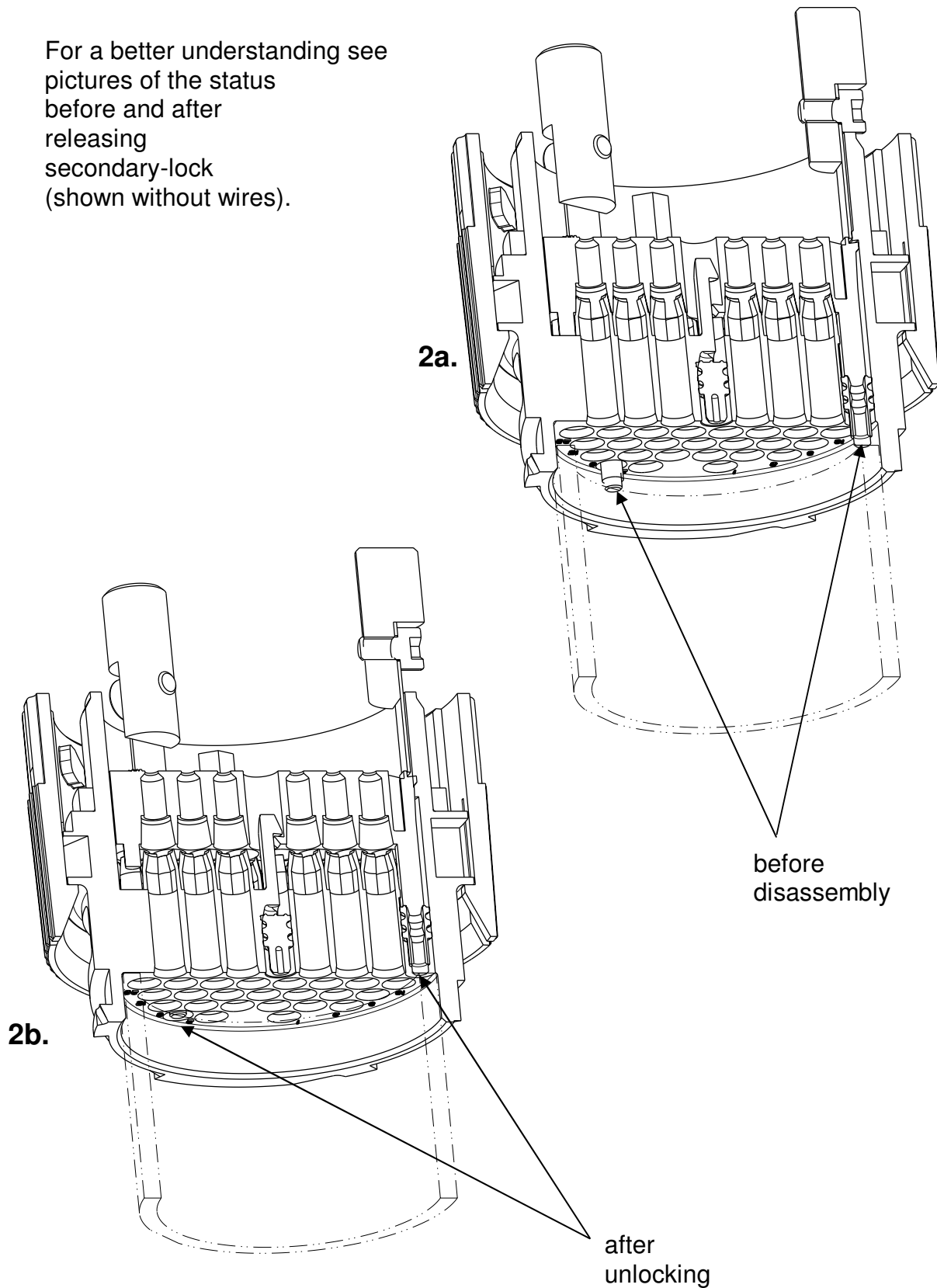
Änd.-Datum:
 10.02.2011

ITT Cannon

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).



Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

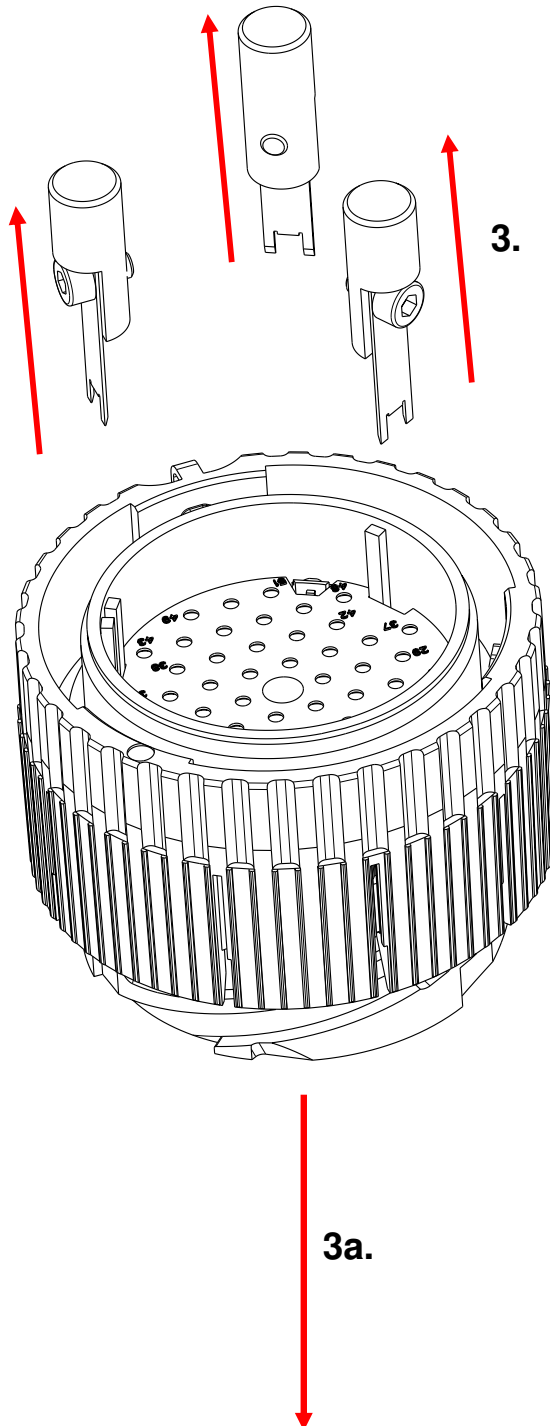
Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

ITT Cannon

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

CAS25032E

Bearbeitet:
10.02.11 STR

Geprüft:
10.02.11 HAG

Norm:

Änd.-Stand:
C 4119W

Änd.-Datum:
10.02.2011

ITT Cannon

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.

Bearbeitet:
 10.02.11 STR

Geprüft:
 10.02.11 HAG

Norm:

Änd.-Stand:
 C 4119W

Änd.-Datum:
 10.02.2011

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

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