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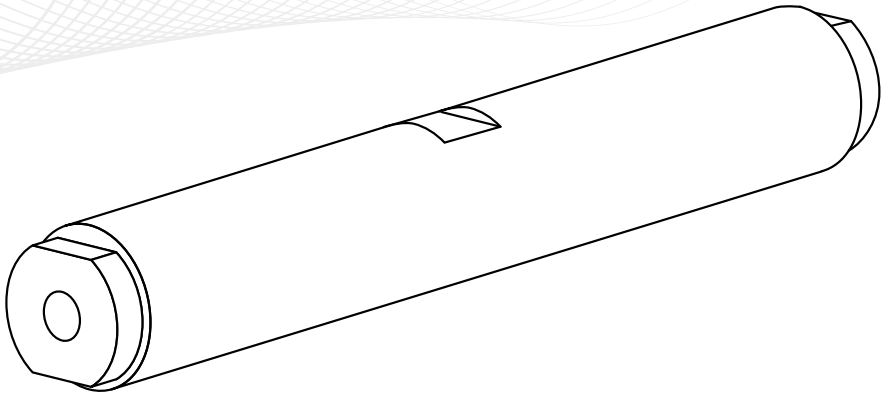
ASSEMBLY INSTRUCTIONS



Ex-CON SR

Cable joint Ex-Con for ELSR

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QAA-072
Rev.04
0080202

CONTENTS

IMPORTANT INFORMATIONEN

For proper and safe use of the Ex-CON SR, please follow these instructions. Please keep these instructions in a safe place for future reference (e.g. in the system documentation).

You can find helpful downloads for this or other products under the following link: https://eltherm.com/downloads.

⚠ ATTENTION

Refers to a potentially dangerous situation.
If it is not prevented, there is a risk of damage or malfunction.

⚠ DANGER

Refers to an extremely dangerous situation.
If it is not prevented there is risk of death or at least a high risk of serious injuries.

Proviso

We reserve the right to make technical changes. Changes, errors or misprints shall not form the basis for any claim to compensation for damages. Comply with the applicable and currently valid standards and regulations for safety-related components and systems.

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Document: 8643050X81125	**Assembly instructions Ex-CON SR (QAA-072)**		
Author:	Peter Schmidt	Date:	27.07.2018
Revision: **04**	Detlef Matthes	Date:	15.07.2024

INTRODUCTION

The Ex-Con SR connection set has been specially developed for use in potentially explosive atmospheres. The connection sleeve is used to connect parallel heating cables (ELSR) in hazardous areas Zone 1 and 21. The rated voltage is 550V.
During development, the focus was on the highest level of safety, the simplest and safest installation, accuracy of fit and a wide temperature range corresponding to the area of application of the ELSR. These requirements were successfully realised by the eltherm engineers during development and verified by a wide range of tests and confirmed by international certificates.

EXPLOSION PROTECTION

ATEX
- II 2G Ex eb IIC T6 ... T3 Gb
- II 2D Ex tb IIIC T85 °C ... T200 °C Db

IECEx
- Ex eb IIC T6...T3 Gb
- Ex tb IIIC T85 °C ... T200 °C Db

APPROVALS

ATEX
IBExU 04 ATEX 1080 X

IECEx
IECEx IBE 13.0012X

STANDARDS

- EN 60079-0:2018
- EN 60079-7:2015 + A1:2018
- EN 60079-31:2014

MARKING

eltherm GmbH Burbach Verbindungsmuffe Ex-Con SR 550V / 145A
Ex II 2G Ex eb IIC T6...T3 Gb Ex II 2D Ex tb IIIC T85 °C...T 200 °C Db

IECEx IBE 13.0012 X
IBExU 07 ATEX 1080 X <Los-Nr: > CE 0637

Advertência: Não abra enquanto está energizado!
Warning: Do not open while energized!
Warnung: Nicht unter Spannung öffnen!

TECHNICAL DATA

Ex-CON SR

Nominal Voltage	550 VAC
Nominal Current	max. 145 A *1
Ambient temperature	- 32 °C up to +200 °C
Housing material	PEEK
Dimensions	230 x 36 mm (L x Ø)
Permissible degree of mechanical load	4 Joule
Protection level	IP 65
Weight	approx. 0,32 kg
UV-resistance	Ex-Con SR must be installed protected from light

› *1 max. 30 A/mm²

SPECIAL CONDITIONS

Assembly and installation of the cable joint

Proper assembly is shown on the following pages. The stated cable dimensions, creeping distances and torques must be observed. Make sure cable entry and crimp connection are done properly. For the crimp connection only the listed tools shall be used.

The joint with Part-No. 0X81125 is designed for low mechanical loads only (4J) and shall therefore always be installed with additional mechanical protection. During operation, the cable joint is to be fixed onto the surface to be heated. It is to be covered in the same way as the associated heating cable (e.g. by self adhesive aluminium tape or by heat transfer aids). This also fulfills the requirement of protection of the cable joint against light and against electrostatic charge.

The integrated strain relief fulfils the requirements of EN 60079-0. However, it is recommended to create an additional strain relief on the heated surface.

Suitable Cable

The joint shall only be used for connection of parallel heating cables and connection leads consisting of two parallel conductors, conductive matrix, polymeric electrical insulation (XTPE or fluorpolymer), protection braid and outer jacket (fluorpolymer or TPE, each min. 0,4 mm thick), with the following external dimensions:

- Width 11 mm bis 14 mm x height 4 mm bis 5,4 mm (ELSR-LS, ELSR-N, ELSR-H, ELSR-H+, ELSR-SH, ELSR-SH+ & ELSR-SHH)

The heating cables used have to be approved according to Directive 2014/34 EU. Special conditions mentioned in the relevant ATEX certificates shall be observed.
Also permitted is the connection of a parallel heating cable (as described above) to a cold lead with three cores ranging from 1.5 mm^2 to 4 mm^2, when this cold lead fulfills the requirements of EN 60079-14:2014 section 9.3.3 and when its OD ranges from 7.0 mm to 13.5 mm.

Temperature Range

The permissible holding temperature range is:

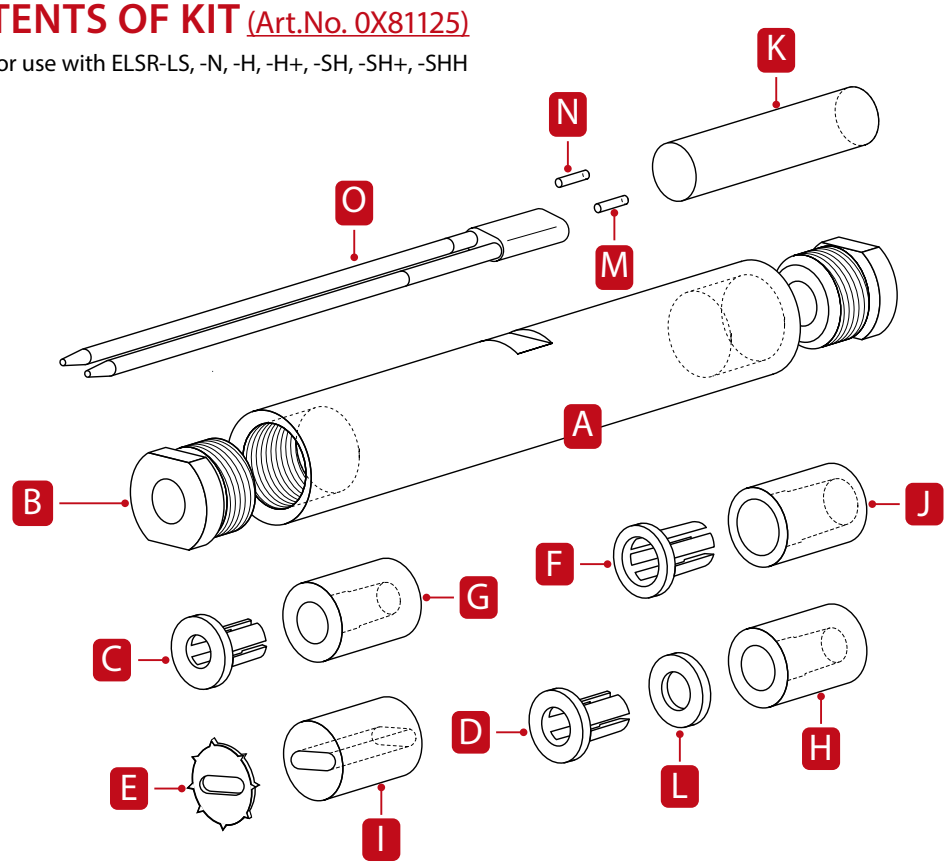
- -32 °C to a maximum of +200 °C when used with ELSR-H, -H+, -SH, -SH+ and -SHH
- or up to a maximum of +80 °C when used with ELSR-N and -LS.
- The T class of the connection made depends on the T class of the connected parallel heating cable.

The maximum operating temperatures are

- 195 °C in T3, 130 °C in T4, 95 °C in T5 & 80 °C in T6 for gas and TX for dust.

CONTENTS OF KIT (Art.No. 0X81125)

Suitable for use with ELSR-LS, -N, -H, -H+, -SH, -SH+, -SHH

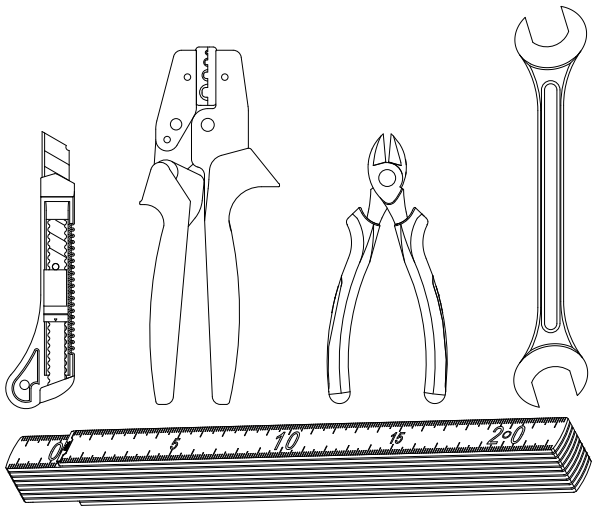


Nº	Type	Quantity
A	PEEK – sleeve Ø 36 x 210	1 Unit
B	Screw plug PEEK; M27x1,5; WAF 30	2 Units
C	Strain relief for round cables Ø < 9 mm	1 Unit
D	Strain relief for round cables Ø 9 mm - 12 mm	1 Unit
E	Strain relief for round cables (ELSR)	2 Units
F	Strain relief for round cables Ø max. 13,5 mm	1 Unit
G	Gasket for round cables Ø < 9 mm	1 Unit
H	Gasket for round cables Ø 9 mm - 12 mm	1 Unit

Nº	Type	Quantity
I	Gasket for round cables (ELSR)	2 Units
J	Gasket for round cables Ø max. 13,5 mm	1 Unit
K	PTFE - Sleeve Ø 18 / 16 x 90 mm	1 Unit
L	Washer Ø 25 / 10,5x1,5	1 Unit
M	Crimp connector Ø 4,0 x 0,4 x 9,0 mm Nickel	2 Units
N	Crimp connector Ø 4,8 x 0,4 x 9,0 mm Nickel	1 Unit
O	Isolator	2 Units

PREPARATION & ASSEMBLING

RECOMMENDED TOOLS



DANGER

Installation in potentially explosive atmospheres may only be carried out by persons trained in handling potentially explosive devices. Strict compliance with the relevant safety regulations in potentially explosive atmospheres is a prerequisite for the safety of persons, systems and devices.

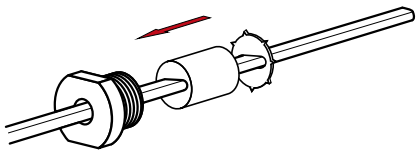
ATTENTION

To ensure electrical safety, the lengths specified in the following installation steps must be strictly adhered to.
Incomplete connection sets must be replaced with complete ones.
If you have any queries, please contact eltherm.

CONNECTION ELSR-ELSR

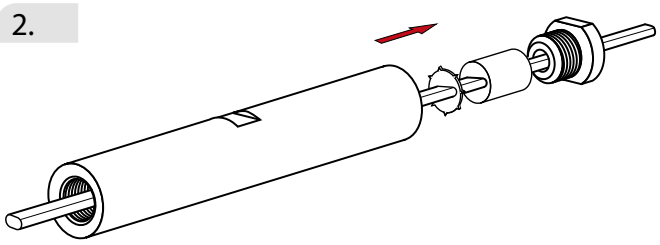
Preparing heater

1.



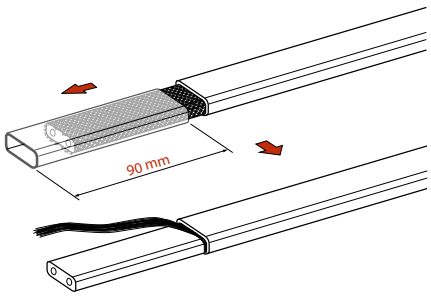
Slide on the screw plug (B), gasket (I) and strain relief (E) onto the end of the heating cable 1 as shown.

2.



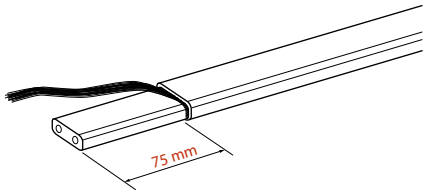
Slide on the PEEK- sleeve (A), screw plug (B), Gasket (I) and strain relief (E) onto the end of the heating cable 2 as shown.

3.



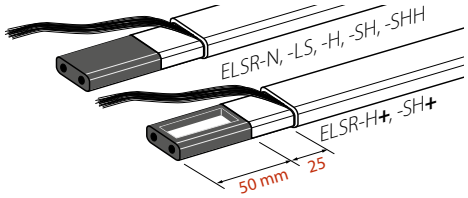
- Remove the outer sheath from both heating cables
- carefully open braid, expose inner cable and twist braid

4.



Shorten exposed both inner cables to 75 mm

5.

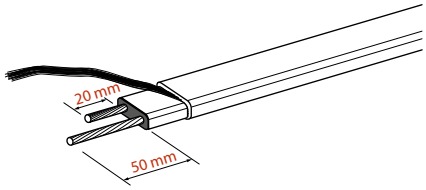


Remove the insulating sheath from both heating cables by 50 mm.

NOTE

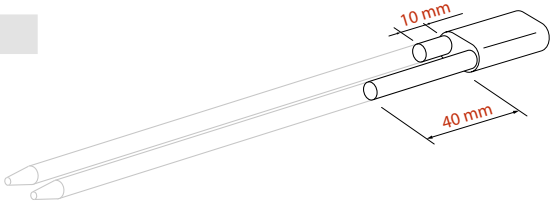
ELSR-H+ & -SH+ only: Hole spacing and lengths may vary depending on the trace heater type.

6.



- Expose the power supply conductor on both heating cables
- shorten one of the power supply conductors by 30 mm.

7.



Trim the Isolator (N) as shown.

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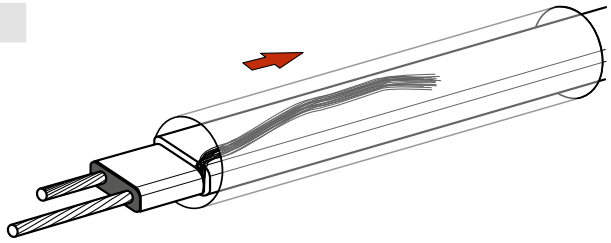
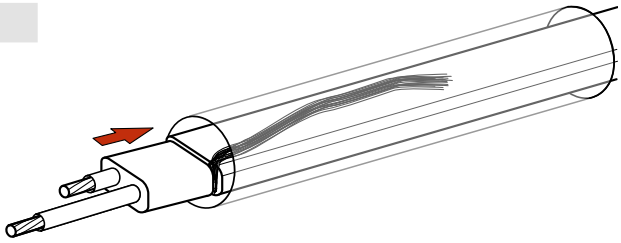
8.



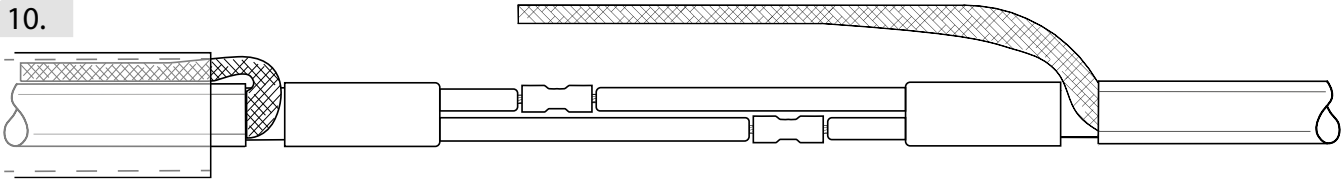
- Place the braid on the heating cable 1
- Push on PTFE sleeve Ø 18 / 16 x 90 mm (K).

9.



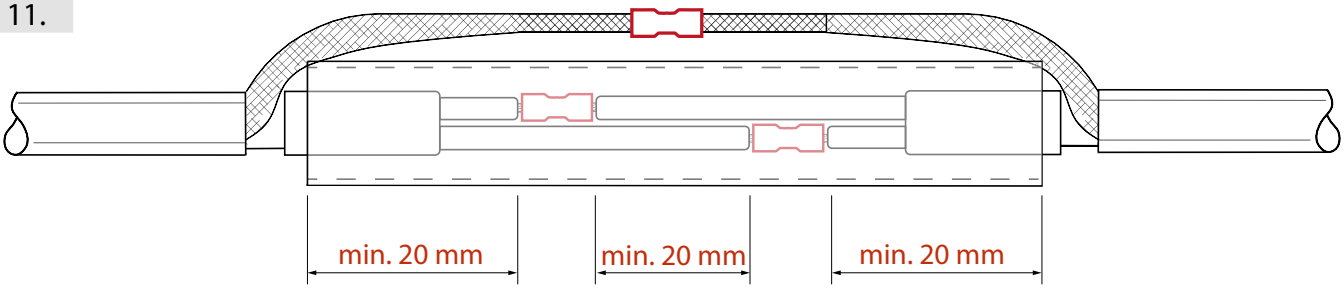
Slide on the Isolator (N).

10.



- Insert exposed power conductors completely into the crimp connector Ø 4,0 x 0,4 x 9,0 mm (M)
- Press with suitable tool for crimp 1,5mm²-2,5mm² with outer-Ø 4mm

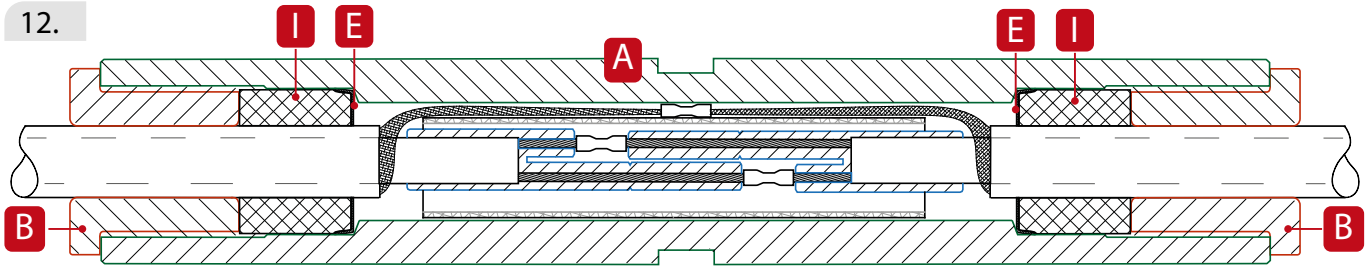
11.



- Position the PTFE - sleeve Ø 18 / 16 x 90 mm (K) in the centre above the connection
- Insert (center) braiding into the crimp connector Ø 4,0 x 0,4 x 9,0 mm (N) (shorten protruding braid)
- Press with suitable tool for crimp 1,5mm²-2,5mm² with outer-Ø 4mm
- Creeping distance min. 20 mm

Finalisation heating cable connection

12.

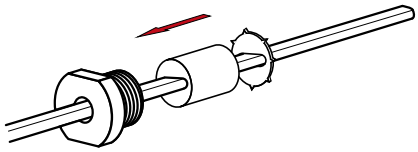


- Center the connection in the PEEK-sleeve (A)
- Push the strain relief (E) and gasket (I) into the PEEK-sleeve (A) as far as they will go
- Screw the screw plug (B) into the PEEK-sleeve (A) and tighten until it stops in its end position (recommended torque 25Nm)

CONNECTION ELSR - COLD LEAD

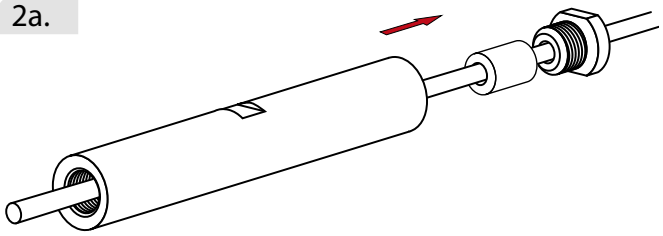
Preparing heater

1a.



Slide the screw plug (B), gasket (I) and strain relief (E) onto the end of the heating cable as shown.

2a.

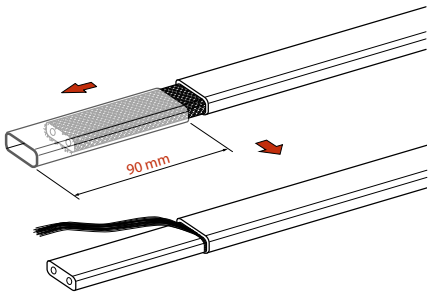


Slide on the PEEK- sleeve (A), screw plug (B), Gasket (I) and strain relief (E) onto the end of the cold lead as shown.

Cold lead Ø	Strain relief	Gasket	Washer
12,0 mm– 13,5 mm	F	J	
9,0 mm - 12,0 mm	D	H	
7,0 mm - 9,0 mm	C	G	L

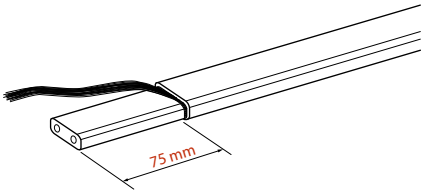
Table: assignment of strain reliefs and gaskets

3a.



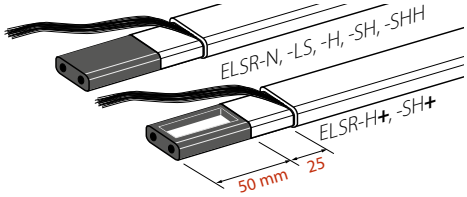
- Remove the outer sheath from the heating cable
- Carefully open braid, expose inner cable and twist braid

4a.



Shorten exposed inner cable to 75 mm

5a.

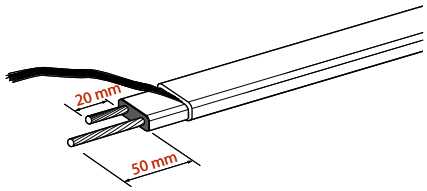


Remove the insulating sheath from the heating cable by 50 mm.

NOTE

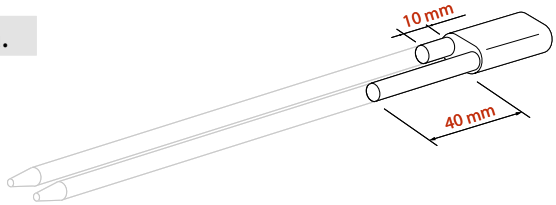
ELSR-H+ & -SH+ only: Hole spacing and lengths may vary depending on the trace heater type.

6a.



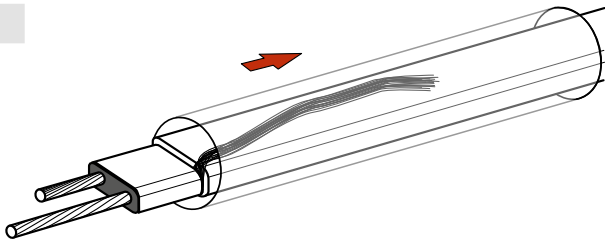
- Expose the power supply conductor on the heating cable
- Shorten one of the power supply conductors by 30 mm.

7a.



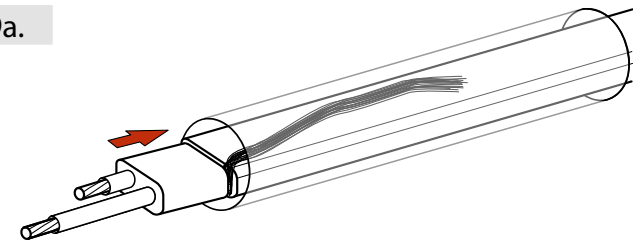
Trim the Isolator (O) as shown.

8a.



- Place the braid on the heating cable
- Push on PTFE sleeve Ø 18 / 16 x 90 mm (K).

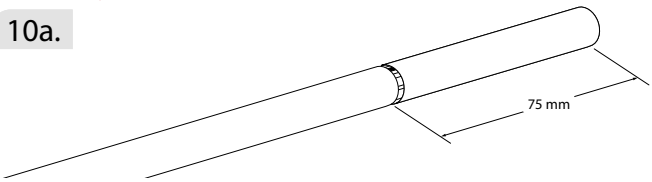
9a.



Slide on the Isolator (O).

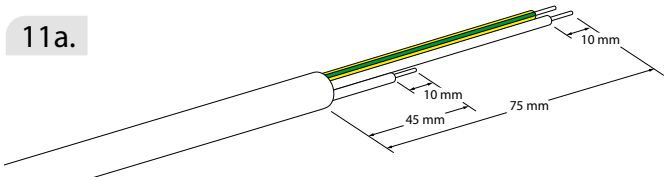
Preparing the cold lead

10a.



Remove 75 mm of the outher insulation from the cold lead.

11a.



- Remove 10 mm of the insulation from the earth conductor (green/yellow) and the power conductor (L)
- Shorten power conductor (N) to 45 mm and remove 10 mm of the insulation.

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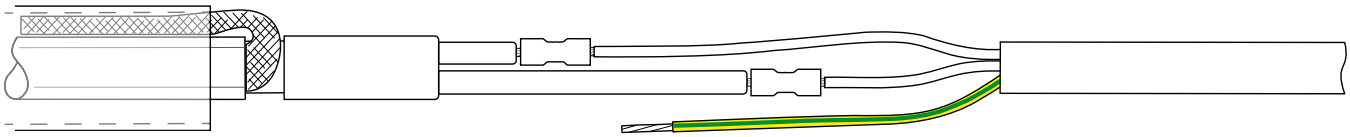
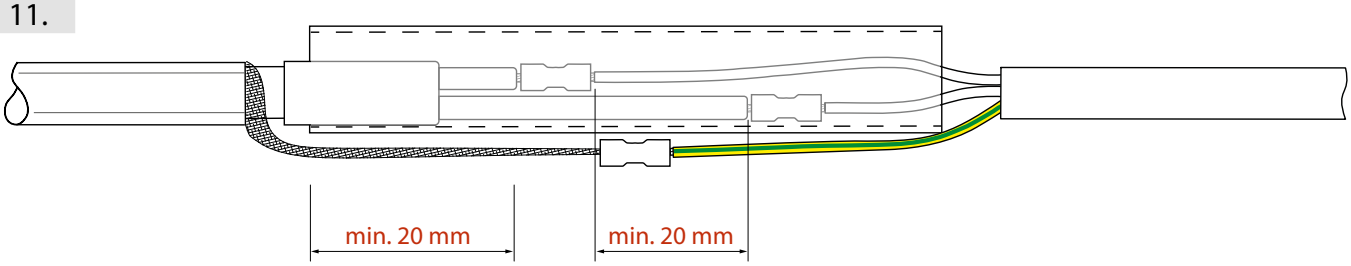
10.



- Insert exposed power conductors completely into the crimp connector Ø 4,0 x 0,4 x 9,0 mm (M)
- Press with suitable tool for crimp 1,5mm²-2,5mm² with outer-Ø 4mm

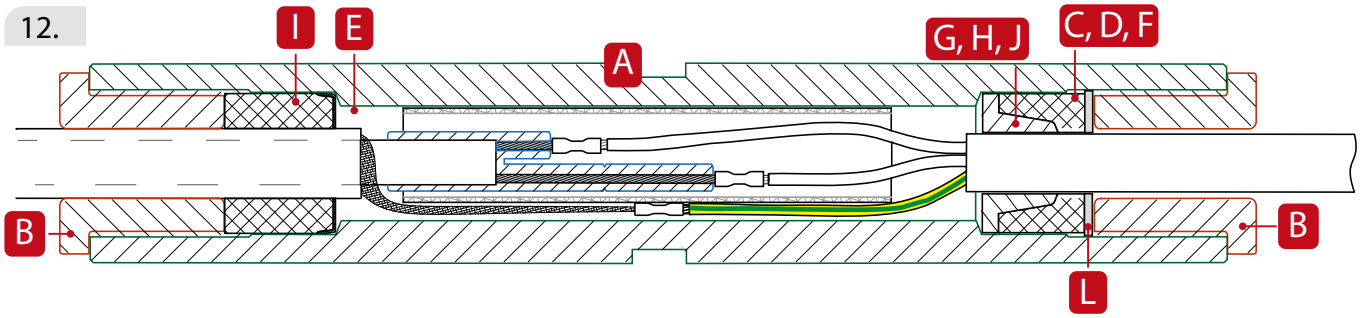
11.



- Position the PTFE - sleeve Ø 18 / 16 x 90 mm (K) in the centre above the connection
- Insert (center) braiding into the crimp connector Ø 4,8 x 0,4 x 9,0 mm (N) (shorten protruding braid)
- Press with suitable tool for crimp 1,5mm²-2,5mm² with outer-Ø 4mm
- Creeping distance min. 20 mm

Finalisation

12.



- Center the connection in the PEEK-sleeve (A)

L only cables Ø ≤ 9 mm

Heating cable

- Push the strain relief (E) and gasket (I) into the PEEK-sleeve (A) as far as they will go
- Screw the screw plug (B) into the PEEK-sleeve (A) and tighten until it stops in its end position (spanner size 30/32, recommended torque 25Nm)

Cold lead

- Push the strain relief (C, D or F) and gasket (G, H or J) into the PEEK-sleeve (A) as far as they will go. (see *Table: assignment of strain reliefs and gaskets* on page 7)
- Screw the screw plug (B) into the PEEK-sleeve (A) and tighten until it stops in its end position (spanner size 30/32, recommended torque 25Nm)

8643050X81125 Assembly instructions Ex-CON SR (QAA-072) EN - subject to technical changes without notice.