

PowerSAFE connector crimping guide

Manual



VERSION	MODIFICATIONS
1.0	First edition
1.1	Editorial changes
1.2	Section 2.2.1 Table and example adapted / Section 2.4 Reference to no reducing sleeve
1.3	Editorial changes
1.4	Conversion to W pressing / Chapter 2.4
1.5	Chapter 2.4, point 2 and point 5 adapted

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1 General information

1.1 Marking concept for hazards and hints

Hazard

Hazardous situation which will cause serious injury or even death if it is not prevented.

Caution

Hazardous situation which could cause slight to moderate injury if it is not prevented.

Hint

Indicates information which does not concern personal injury, e.g. hints in respect of material damage.

Protective measures

Increase safety by applying a protective measure.

1.2 Responsibilities of the operator

- Make sure that this document is always kept in a safe place in a legible form together with the product.
- Read these instructions carefully before first start-up of the product.
- This product has been developed and produced exclusively for the use indicated in these documents. Every other use, which is not mentioned explicitly, could affect the intactness of the product and/or could constitute a source of danger.
- The manufacturer rejects any liability for damage which has been caused by incorrect or non-intended use of the product.
- In countries, which do not belong to the European Community, the national legal reference regulations as well as the standards and regulations applicable in these countries have to be observed for warranty of a corresponding safety level.
- The installation has to be carried out according to the applicable regulations.
- The manufacturer assumes no liability for inexpert execution of installation as well as deformations which may occur during operation.
- The electric power supply has to be switched off before executing any action on the installation.
- Exclusively original parts of the manufacturer shall be used for maintenance. Maintenance work may be carried out by qualified staff only.
- All procedures which are not explicitly mentioned by the manufacturer in the instructions are not permitted.
- The packing material must not be stored within the reach of children as it could be a potential source of danger.

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2 Introduction

The following steps and instructions must be followed mandatory to ensure correct installation. This is the only way to guarantee that the product works to your complete satisfaction.

i Hint

Carefully read all the instructions before starting the installation. Our sales department will be pleased to answer any questions you may have.

2.1 Connection methosis

Three methods are available for connecting a cable to the PowerSAFE plugs and couplings.

- screw connection
- crimp connection
- connection bolt

The recommended connection methods will be described in detail on the following pages. Do not hesitate to contact us if you have any questions.

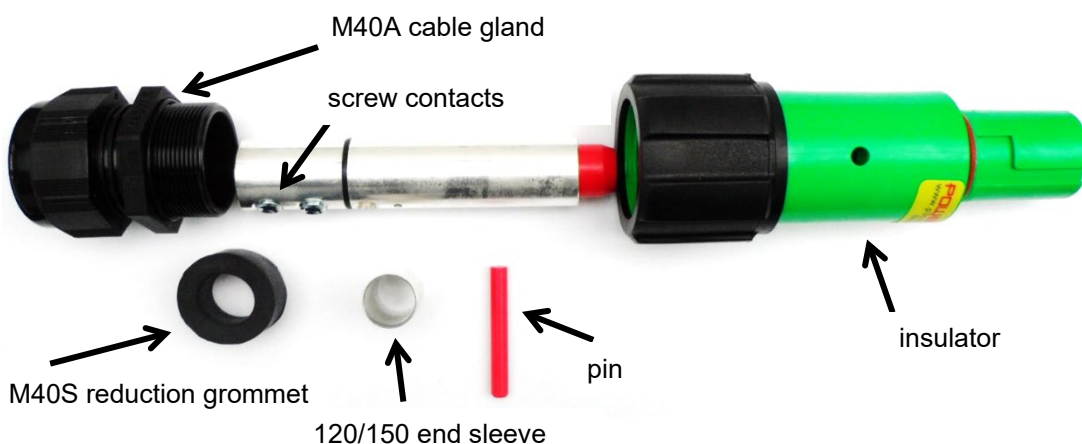
⚠ Hazard

Do not change this product in any way. Doing so can lead to serious injury or even death. Only use copper conductors. Carefully read all the instructions before starting the process. Ensure that all safety regulations are complied with before and after use. This product may only be installed, inspected and maintained by a qualified expert/professional in accordance to the local and national electrical regulations.

2.2 Screw connection

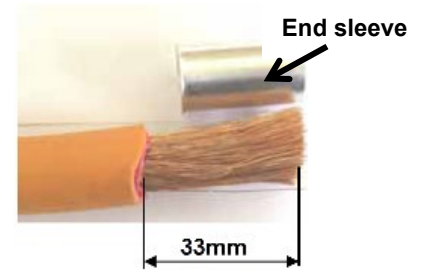
The procedure in order to enable the preparation of a plug and coupling in line with good professional practice is shown step-by-step.

Components of a typical conductor connector (initial version)



Recommended procedure:

1. Remove the cable gland from plug and coupling (insulator) and remove the contact.
2. Check the cable diameter. The standard M40A connector is designed for cable diameters from 19-28 mm. If your cable has a diameter of 15-18mm, the supplied M40S reduction grommet must be fitted in the M40A cable gland.
3. Move back the cable gland along the cable jacket.
4. Remove 33mm of the cable insulation. Ensure that you do not damage the conductor.
5. Mount the correct end sleeve or combination of reduction sleeves with end sleeves (see table below) on the conductor cable. Ensure that all wires are on the inside of the end sleeve.



2.2.1 End sleeve selection guide

cable size	required reduction sleeve					end sleeve 120/150	minimum screw torque (Nm)	stripping length (mm)
	25	35	50	70	95			
25mm ²	x	x	x	x	x	x	10.5	33
35mm ²		x	x	x	x	x	10.5	33
50mm ²			x	x	x	x	10.5	33
70mm ²				x	x	x	10.5	33
95mm ²					x	x	10.5	33
120/150mm ²						x	10.5	33
set: item no. reduction sleeve	147795							

Use the table above to select the appropriate reduction sleeve. Push the respective sleeves into one another until the required section has been obtained.

Hint

Please make sure to use the recommended sleeves. The sleeves may not be crimped.

Example:

The 35, 50, 70, 95 and end sleeve (120/150) must be used in sequence for a 35 mm² cable. The end sleeve (120/150) is enclosed with plug and coupling.

All these sleeves fit perfectly into one another and therefore provide a gradual reduction of the span width. The widened end of the sleeves should be adjacent to the cable insulation.



Suitable reduction sleeve / end sleeve



Cable and sleeves mounted on a contact

6. Use a 5mm inbus key to undo the locking screws in the contact.

7. Push the cable and the sleeves into the rear of the contact, ensuring that they are fully inserted in the contact.
8. Use a 5mm inbus key to tighten the locking screws in the contact.
9. The locking screws must be checked with a torque spanner according to the table in chapter 2.2.1.
10. Insert the contact in the rear of the insulator and adjust the locking hole in the contact so that it is aligned with the hole in the insulator.
11. Align the pin with the hole in the insulator. The pin is designed to fit exactly in the insulator hole and it is essential that you drive the pin through the insulator and the contact with a plastic hammer. When the pin is fully inserted, it must be flush with the surface of the insulator body.

i Hint

The pins are designed for single use only.

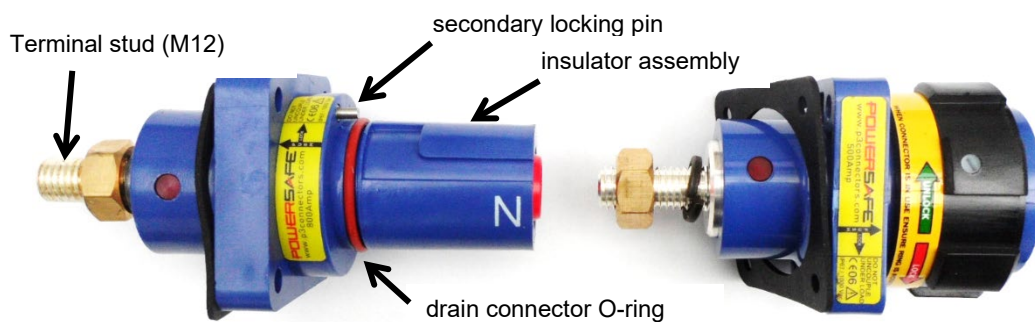
In case the connector is disassembled a new pin should be fitted. Never use a pin which does not fit tightly in the insulator. Periodic checks should be made to ensure that the fitting pins are secure.

12. Now screw the cable gland on the insulator and tighten with 11Nm.

2.3 Recommended assembly procedure for panel-mounted connectors

Connectors are supplied pre-assembled and are prepared for direct assembly on housings.

1. If the connector is mounted on a device, remove the nut and the spring washer from the terminal stud.
2. Mount the cable on the threaded pin using the appropriate press cable lug (M12).
3. Replace the nut and spring washer on the terminal stud and tighten the nut with 12 - 14Nm max.



2.4 Crimp connection

It is important that you use the recommended crimping tool and die sets in order to obtain good crimp results.

W matrix insert



A hydraulic crimping tool and hexagonal die sets should be used in order to obtain good crimp connections. It is important to select the correct crimp insert for reliable results. As cable diameters vary greatly, the following table serves as a guide for selecting the appropriate inserts. Cable tensile tests should be carried out.

Crimp contact dimensions

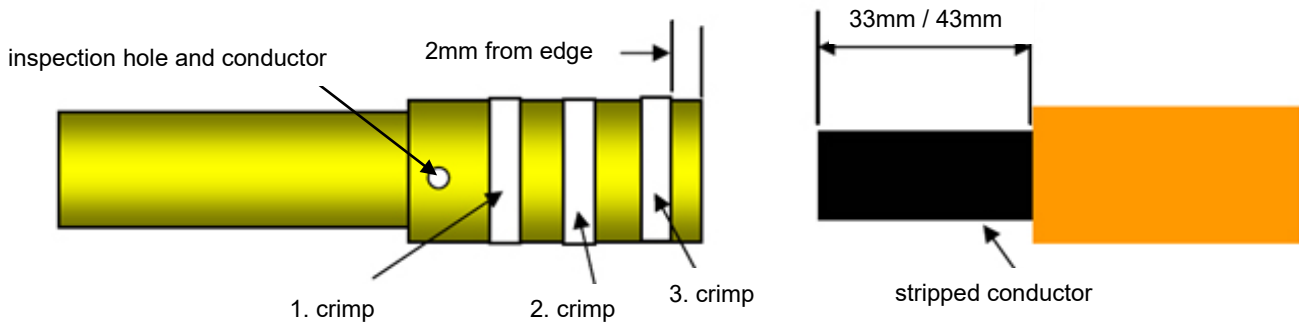
cable size mm ²	inside diameter mm	outer diameter mm	tensile strength IEC61238-1 N	tool set code & (number of crimps)
185	19.2	24.5	11.100	185 [□] (3)
240	21.1	25.4	14.400	240 [□] (4)
300	24.0	30.0	18.000	300 [□] (4)

Hint

It is important to use the appropriate crimp contact for each cable cross-section. Reduction sleeves **may not be used**.

The arrangement of the insulator and the cable gland is the same as previously described for screw connections. The procedure to carry out a crimp connection is described as follows:

1. Select the tool set from the previous table. For example: die set 185mm² must be used for a 185mm² cable.
2. Strip the conductor to the appropriate length. (33mm for 185mm² / 43mm for 240mm²)
3. Push the stripped conductor into the rear of the contact. Ensure that all the wire strands are inside the sleeve. Check whether the conductor can be seen in the inspection hole.
4. Carefully place the contact and the cable in the stamping bit and close the crimping tool. You will feel and hear a click when the tool reaches the required compression.
5. The previous table shows the required number of crimps. At least two crimps are required for 25mm² to 150mm². At least three crimps are required from 185mm². The crimps are provided at equidistant positions along the contact.



3 Security and maintenance checks

The following steps will ensure the long-term safety and continued performance of your connections.

1. Check the external surface of insulators regularly for signs of cracks or breaks. If there are any signs of damage, the complete insulator must be replaced.
2. Check the cable glands for tightness. Cable glands can become loose during use. This allows the ingress of water. For this reason, periodic checks are mandatory.
3. For plug connectors: Check the condition of the front o-ring for signs of wear. A film of silicone grease should also be periodically applied to the surface o-ring. This ensures dimensional stability and protects the o-ring.
4. For plug connectors: Check that the spring-loaded secondary locking pin moves freely. It should be possible to fully retract and extend it.
5. Check the secure attachment and position of the pins. The dowel pins should not move after a light tap with the hammer.

4 Service

4.1 Service addresses

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4.2 Imprint

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