Powersafe Termination Guide

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1. Introduction

Here at Phase 3 it's our goal to make sure that you are 100% satisfied with your product. To do so we have written detailed procedures to guide you through the steps of correctly assembling and maintaining the product.

2. Overview

Due the wide range of cable types available in today's market, to guarantee that an acceptable result is obtained when Powersafe Connectors are terminated to cables, the process for the variety of terminations has to be evaluated.

This procedure provides all the details of how to successfully terminate Powersafe connectors, either by crimping, set screws or threaded post methods.
This Procedure tells you;

- How to perform a crimped termination.
- The recommended crimp tools and dies.
- How to perform a set screw termination.
- How terminate a threaded post panel type connector.
- Safety checks.

3. Termination Methods

There are three methods on how to terminate cables on the Powersafe contacts;

- Crimp termination
- Set Screw termination
- Threaded Post termination

The recommended assembly methods are detailed in the pages to follow. If in doubt please contact Connector-Tech ALS Pty Ltd.

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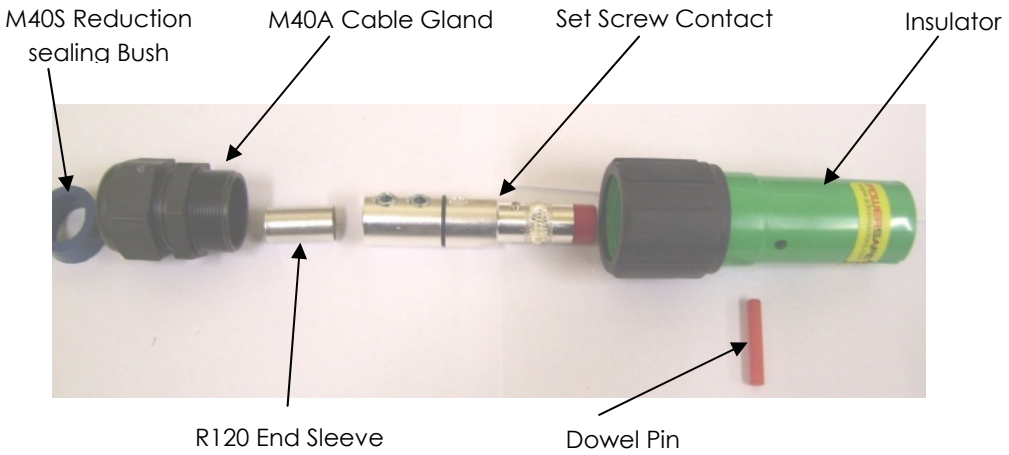
WARNING

Do not alter this product in any way. Doing so may lead to serious injury or death. Use copper conductors only. Read Instructions completely before wiring. Ensure all safety checks are carried out before and after use. This product should be installed, Inspected and maintained by qualified electricians only, in accordance with local and national electrical codes.

3.1 Set Screw Termination

The Recommended assembly procedure has been devised to show you, step by step how to terminate cables to our set screw contact

Component Parts of Typical Line Connector (Source Version Shown)

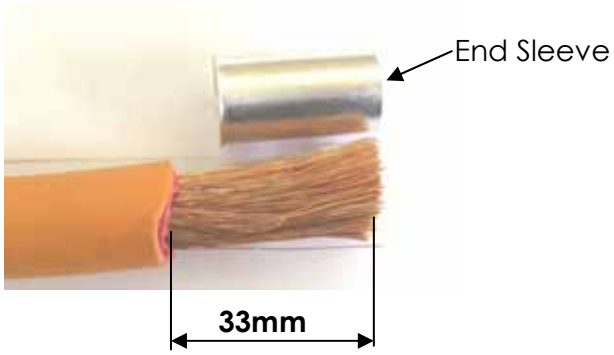


For a satisfactory termination it is essential that the recommended assembly procedure is used.

Recommended assembly procedure:

1. From the packaging: Remove the cable gland from the moulding and remove the contact.
2. Check the cable overall diameter. The standard Black M40A gland will facilitate cable diameter of 19-28mm. If your cable is of a diameter between 15 and 18mm diameter the Blue M40S reduction bush supplied should be fitted to the M40A cable gland. TO do this remove the black rubber sealing ring inside the rear of the gland and replace with the Blue M40S bush.
3. Slide the completed cable gland along the cable jacket.
4. With care strip back the cable the insulation ~33mm trying not to damage any of the conductors stranding.

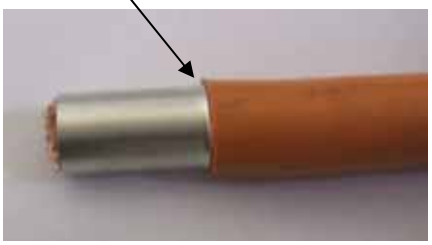
5. Fit the correct end sleeve or combination of end sleeves (see table below) over the conductor strands. Take care to ensure all the wire strands are inside the end sleeve.



End Sleeve Selection Guide table 1.

Cable Size (mm²)	Reduction Sleeve Required	Set Screw Torque minimum (Nm)	Cable jacket length strip length (mm)
25mm²	R120...R25	10.5	33
35mm²	R120...R35	10.5	33
50mm²	R120...R50	10.5	33
70mm²	R120...R70	10.5	33
95mm²	R120...R95	10.5	33
120mm²	R120	10.5	33

Using the table below above, select the appropriate reduction sleeves and slide in sequence on to the exposed conductor stranding.
Please note; all sleeves down to the size recommended for the cable in use must be used.
I.e. For a 35mm² cable, the R120, R95, R70, R50 and R35 sleeves should all be used in sequence.
All the sleeves fit perfectly inside each other to create a gradual reduction span.
The flared end of the sleeves should be against the cable insulation.



End Sleeve fitted

Cable and End Sleeve fitted to contact

6. Slide the cable and reduction sleeves into the back of the contact ensuring they are fully inserted inside the contact.

7. Using a 5mm Allen key tighten the set screws in the contact in accordance with the table 1 above.

8. Now insert the contact into the rear of the insulator and align the hole in the contact so that it is in line with the holes in the insulator.

9. Now align the dowel pin with the tapered end first with the hole in the insulator. The dowel pin is designed to be a tight interference fit with insulator hole and it is necessary to drive the pin using a hammer through the insulator and contact. When fully inserted the pin will be flush with the surface of the insulator body.

Note: **Never use a dowel pin that is not a tight interference fit** within the Insulator as this could lead to failure of the watertight barrier or allow the contact to dislodge from the insulator. Periodic checks should be made to ensure security of dowel pins.

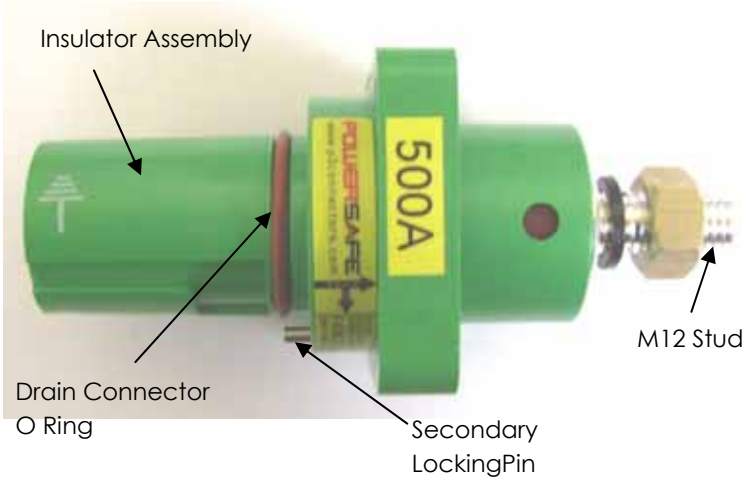
10. Now screw the cable gland onto the insulator and tighten the body and dome nut to 11Nm.

Your connector should now be complete and ready for an overall inspection.

3.2. Recommended Assembly Procedure for Panel Mounted Connectors

Panel connectors are supplied pre assembled and ready for direct mounting to equipments.

1. When the panel Connector is mounted in an equipment: remove the nut and washer from the threaded post section.
2. Fit your selected terminal or accessory over the threaded area.
3. Refit the Washer and bolt on to the threaded area and tighten to a maximum of 12Nm.



3.3 Crimp Termination

It is important to use the recommended Crimp tool and Die to ensure a satisfactory crimp.

HT131 crimping tool

ME series Crimp Die

1. A hydraulic crimping tool and hexagonal Die set is used to perform a crimp termination. Selection of the correct crimp die is essential to achieve a reliable result. As cable conductor sections vary widely, the table below is intended as a guide to appropriate die selection. Cable tensile test should be performed to ensure the final crimp termination meets the tensile and mv drop test of a particular specification.

Table 2: **Crimp Contact Dimensions and Die Selector**

Cable Size	Inside Diameter	Outside Diameter	Tensile Strength IEC61238-1	Die Set Code & (No of Crimps)
mm^2	mm	mm	N	
25	7.0	9.4	1.500	ME 5 (2)
35	8.9	11.8	2.100	ME 07 (2)
50	10.0	13.0	3.000	ME 10 (2)
70	11.3	14.7	4.200	ME 14 (2)
95	13.5	17.6	5.700	ME 19 (2)
120	15.2	19.7	7.200	ME 24 (2)
150	16.8	21.6	9.000	ME 30 (2)
185	19.2	24.5	11.100	ME 37 (2)
240	21.1	25.4	14.400	ME 48 (3)
300	24.0	30.0	18.000	ME 60 (3)

Hand Held Crimping Tool : HT 131-C
Cordless Hydraulic14.4v Crimping Tool : B 131-C

The assembly of the Insulator and Glands is the same as previously described for the set screw terminations. How to perform a crimp termination is detailed below:

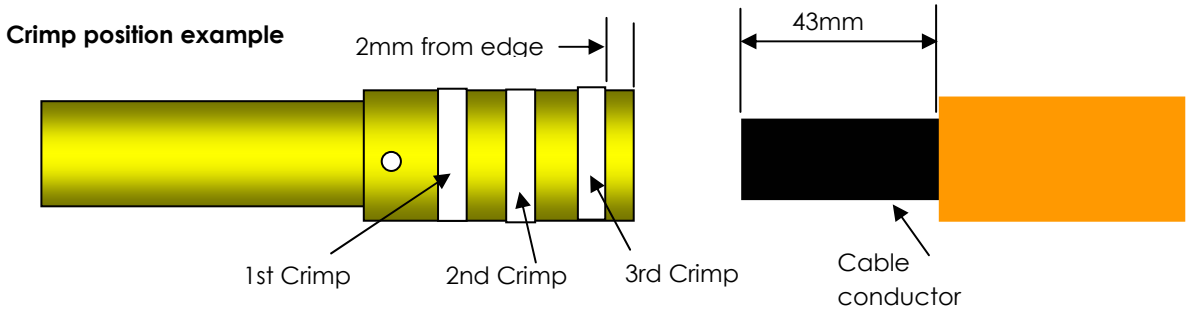
1: Select the appropriate Die set from table 2 above. For example if you are using a 240mm ² cable use Die set ME48.

2: Strip the cable jacket to leave 43mm of conductor exposed.

3: Slide the conductor into the rear of the contact. Take care to ensure all the wire strands are inside the contact.

4: Place the contact and cable carefully into the die set and close the crimping tool. In the case of tool HT131 the tool hands are pumped until they go no further. As the tool reaches the required compression you will feel and hear a click. The tool can then be opened to release the finished crimp.

5: In some case more than one crimp is recommended to ensure the maximum surface are of crimp are achieved. From table 2 we can see for example that a 240mm crimp should be made in 3 equidistant positions along the contact crimp area.



4. Safety and Maintenance Checks

a) Check external surface of Insulators periodically for signs of cracks or breaks. If any signs of damage breaking the insulator are present the complete insulator should be replaced.
b) Check cable glands for tightness. In use cable glands can become loose and this could lead to water ingress, so periodic checking is essential.
c) Check condition and position of Cable gland seal within the cable gland. If any degradation is suspected a new seal or gland should be fitted
d) With Drain connectors: check condition of the front O ring for signs of degradation. Also periodically a film of Silicone grease should be applied to the O ring surface. This will allow continued ease of mating and protect the O ring.
e) With Drain connectors: check the secondary locking pin which is spring loaded moves freely. It should travel fully down to the insulator surface and fully extend.
f) Check security and position of dowel pins. With a slight tap with a hammer the dowel pins should not move.

Following these steps above will ensure the long term safety and continued performance of your connectors.

For further information or assistance please contact our technical department

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