
SUBMERSIBLE MOTOR ENGINEERING PTY. LTD.

SME Splicing Procedures for Drop Cables

General

It is very important that all Spliced Cable Connections for submersible motors are done to ensure a high level of reliability.

The electrical connections must be good to ensure that there are no "Hot Joints".

The connections must be very well sealed to ensure that NO water can get into the cable or cause an earth fault to the water in the hole.

The overall cable "bulk" where the joints are, should also be kept to a minimum so that the joint area does not get damaged when the motor/pump is lowered down the bore hole.

Try to ensure that the work area is kept as clean as possible and we recommend that this work is done in a workshop environment – rather than on site where there is much less control on the environment.

Please read instructions carefully before commencing work. Please note it is important to fit cold shrink onto cable before commencing splice. Clean hands are very important through out splicing procedure as tapes may not adhere properly.

Steps to follow to join Single Core Cables

1. Prepare the Work Area and the tools needed.
2. Lay the Cables out and arrange to stagger the Joints so that overall build up of the total joint is kept to a minimum.
3. Cut the cables so that there is a gap between each joint of about 7 times the length of the tunnel crimp connector.
4. On single jacket cables trim back the jacket to half the length of the crimp connector.
5. On Multicore cables trim back the over jacket so there is enough space and flexibility for taping over the joints, (usually this is about 3 to 4 times the length of the crimp connector), and then trim back the under jacket to half the length of the crimp connector. Take care not to damage the under jacket when trimming back the over jacket.
6. SME recommend the use of special "Blind" tunnel crimp connectors. These connectors do not have a hole that goes right through the tunnel. There is a barrier in the middle of the connector which will stop any fluid or water from being able to travel through the cable. Only copper crimp connectors should be used.
7. Position the crimp connectors and crimp both sides using a proper crimping tool.



8. We recommend that the joints are soldered after they have been crimped.

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9. Clean the outside of the cables with a residue free solvent. If the cables are PVC, or similar, use a fine sandpaper to rough up and clean the surfaces of the cables.



10. Lay 2 layers of 2900 R Sealing Collar Tape over the Crimp Joint and about 5mm over the ends of the cable with a half lap. Please ensure that each layer of tape is wound on in the opposite direction, i.e. if the first layer is wound left to right, the next layer should be wound right to left.



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11. Use a glass sleeving, or something similar, to wrap tightly over the 2900 R tape to squeeze it right into the crimp link and into gap between the crimp link and the end of the insulation on the cable. After the 2900 R has been squeezed tight carefully unwind and remove the glass sleeving, then smooth out the surface of the 2900 R tape with your hand.



12. Lay 2 layers of Vinyl Mastic tape over the top of the 2900 R tape with a half lap as tightly as possible. Ensure each layer of tape exceeds the previous layer in length, and that each layer is wrapped in the opposite direction.



13. Lay 2 layers of 3M 130C Linerless Rubber Splicing Tape over the Vinyl Mastic Tape with a half lap and that each layer is wrapped in the opposite direction.

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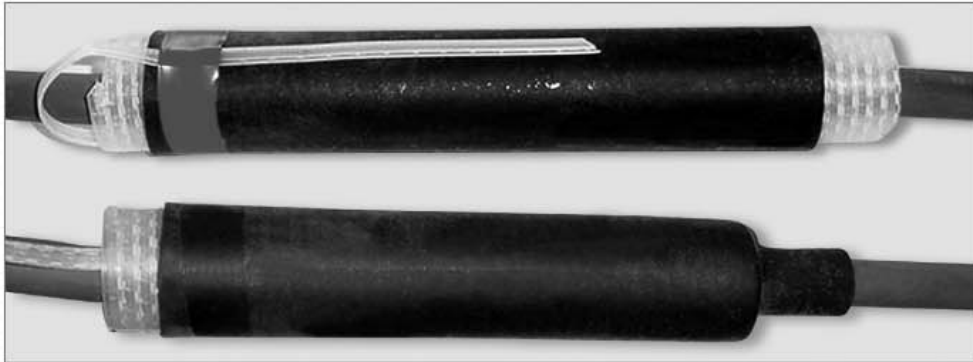
14. Lay 3 layers of Super 33+ electrical tape over the 130C tape with a half lap. Try to tape in an even and uniform manner to ensure a smooth and uniform shape, and that each layer is wrapped in the opposite direction.



15. If you are joining single core to single core cables with staggered joints use a cold shrink over each individual joint.



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Steps to follow to join Single Core Cables to Multi Core Cable

1. If joining single core to Multicore cable use 2900 R Sealing Collar Tape over the crimp link for each separate conductor. Apply the tape like putty and mould it to seal each conductor.

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2. Lay 2 layers of Vinyl Mastic tape over the top of the 2900 R tape with a half lap as tightly as possible. Ensure each layer of tape exceeds the previous layer in length.

3. Lay 2 layers of 3M 130C Linerless Rubber Splicing Tape over the Vinyl Mastic Tape with a half lap.



3. Lay 2 layers of 3M 130C Linerless Rubber Splicing Tape o4. Lay 3 layers of Super 33+ electrical tape over the 130C tape with a half lap. Try to tape in an even and uniform manner to ensure a smooth and uniform shape.

5. Repeat this process for each individual motor lead.

6. Two different size cold shrink may be used.

A. Larger size to cover the four core cable:

e.g. 8428-18 suit to 49mm o.d.

8429-18 suit to 67mm o.d.

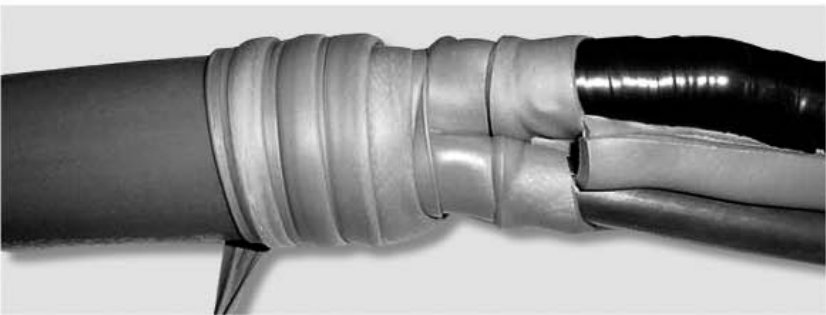
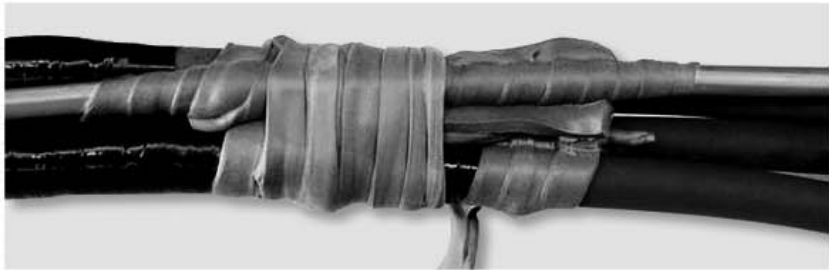
B. Smaller size to cover the single core cable:

e.g. 8427-12 suit to 35mm o.d.

7. Select the cold shrink by the outside diameter of the cable to be spliced and allow approximately additional 15-20mm for build up of putty and tape. Always select bigger size if in doubt on the amount of build up, as the cold shrink will seal to approx half the original outside diameter.



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« COLD SHRINK™ SELECTION TABLE »»

Product Number	Conductor Sizes AWG&KCMIL	Product Diameter Range (minimum –maximum) Inches (mm)	Relaxed Tube Length inches (mm)
8426 –11	2/0 –250	0.55 –1.18 (13,9 –30,1)	11.0 (279)
8427 –12	250 –400	0.67 –1.38 (16,8 –35,1)	12.0 (305)
8428 –18	450 –800	0.95 –1.94 (24,0 –49,3)	18.0 (457)
8429 –18	900 –1000	1.27 –2.67 (32,2 –67,8)	18.0 (457)

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