

## Sealing and terminating Wrexham Mineral Cables

A Termination is required at both ends of each length of cable, and it should be fitted as soon as the cable has been prepared.

A complete termination consists of two basic items:

First, the seal assembly which separates and insulates the conductor's from each other and from the cable sheath. Secondly a cable gland

### The Seal Assembly

#### **Standard Brass Pot Seal**

Continuous operating temperature - 80°C to 105°C

Name	Ref
Brass Pot	RPS for Standard seal or RPSL for Earth tail seal
Polypropylene stub cap / disc	Provided with each kit.
Conductor sleeving	RZP
Headed sleeving	RZD
Extension sleeving	RZE
Sealing compound	RMX

#### **Increased Safety Seal**

Operating Temperature - 20°C to 60°C

Name	Ref
Brass Pot	RPA for Standard seal or RPAL for Earth tail seal
Polypropylene stub cap / disc	Provided with each kit.
Conductor sleeving	RZP
Headed sleeving	RZD
Extension sleeving	RZE
Sealing compound	RMX

### The Cable Glands

#### **Externally Threaded Glands**

Ref: RGM (BRASS)

Manufactured and tested to BS EN 60702-2:2002

Assessed to BS EN 50014:1997 (amendments A1 – A2) & BS EN 50018:2000

And compliance with ATEX Directive 94/9/EC.

Certified:  II2G EExd IIC      Ref: Sira 02ATEX1305X

For ambient service temperatures of -20°C to 450°C (T1)

This means the RGM can be used with flameproof apparatus sub-groups 11A, 11B, 11C and general applications.

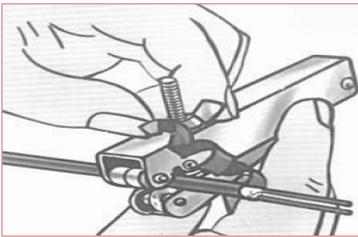
**1) Initial cable preparation**

First cut the cable to length with a hacksaw. Offer up the gland shroud to the end of the cable, in reverse, to determine the amount to be cut off to ensure a tight fit over the LSZH outer covering on the cable. Cut the gland shroud accordingly.

Mark out the outer covering to the required tail length + 70mm for 20mm and 25mm glands, + 80mm for 32mm glands and + 90mm for 40mm glands.

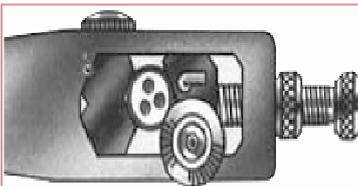
Remove the outer covering to this mark with a knife, taking extreme care not to score the copper sheath.

**2) Ring Tool**



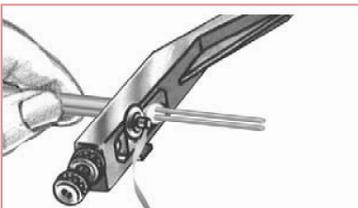
The correct amount of sheath as shown above should be scored with a ringing tool. This cuts a groove round the copper sheath so the copper residue will break away cleanly, leaving a neat square end.

**3) Rotary Stripper Positioning**



Place the cable inside the device as show. Hand tighten the thread so the blade is in contact with the cable. A good tip is to use some form of lubricant on the area of the sheath to be stripped, such as Vaseline or Copper Slip.

**Stripping Action**



Start the stripping action applying slight forward pressure in the direction of the scored cable. Continue until reaching scored sheath created by the ringing tool.

**Gripping with Pliers**



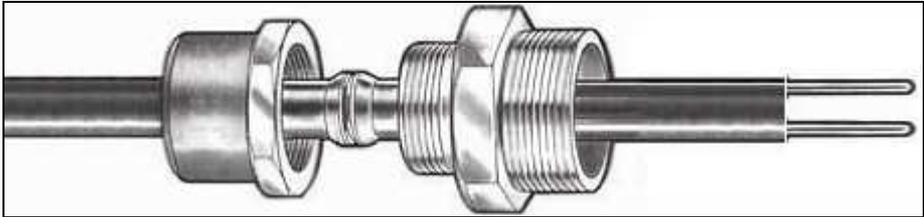
Alternatively if no ringing tool is available the length can be stripped as above and pliers used to stop the stripping action and create a straight neat end.

**NOTE:**

Tools will not operate correctly if a replacement blade is required or the cable sheath is distorted. Remove all tooling and wipe the conductors to remove any remaining insulation.

**Glands and Shrouds**

Glands (and if required shrouds), should be slid onto the cable sheath before applying the seal pot.



**Fitting of the pots**

Two methods can be used to fit the pot

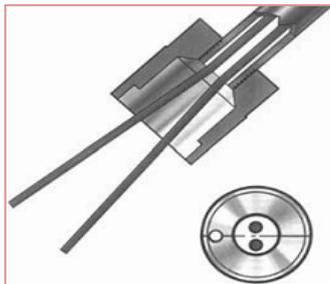
**With the Pot wrench – Ref: ZPM**

Pot wrench tools are available for all sizes of seal pot.



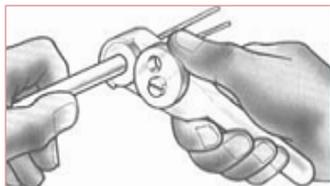
Leave the gland nut and compression ring on the stripped end of cable and position the seal pot in the recess within the gland body and screw the gland into the Pot wrench. Finger tightness is sufficient at this stage. As you apply downward pressure the pot will create a thread on the cable sheath

**Overview of pot on cable**



Continue until the sheath is level with or protruding slightly from the shoulder inside the pot. Picture shows plan view of earth tail type of pot. The earth tail should be kept as far away from the cable conductors as possible.

**With the Wrench – Ref: ZRP**

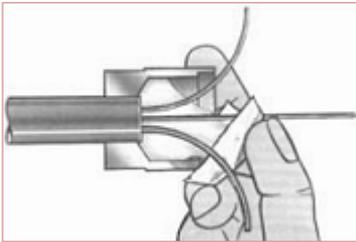


The ZRP Wrench is only available for 20mm seal pots. This has a ratchet system to lock the seal pot in to the Wrench. Ensure the pot wrench is square to the cable end

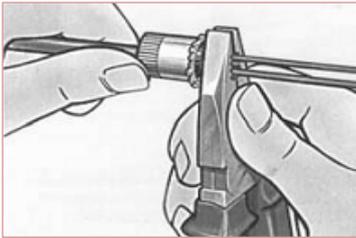
before attempting to screw on. This will also create a thread on the copper sheath and should be screwed to the same point as above.

After fitting the brass seal pot examine the interior carefully and remove any debris that may have resulted from the preparation. If appropriate, check for squareness of the seal pot by sliding the gland body over the seal pot. If the pot is not correctly located continue to tighten the pot. Unscrewing the seal may effect the integrity of the installation.

**Filling the Seal**



Slide the stub cap / disc over the conductors and into the seal pot recess to check for fit, then, partially withdraw. Press the sealing compound into the seal pot from one side only, to avoid cavities, preferably with the thumb or finger behind the paper to ensure cleanliness. Fill the seal pot completely, overfilling slightly. Care should be taken to avoid contamination of the sealing compound.



Slide the stub cap or disc/sleeve assembly over the conductors up to the sealing compound. With the aid of a pair of pliers, apply pressure to the face of the disc. Check for alignment for stub cap / disc in to the pot.

**Crimping the Pot Closure**

Two types of crimping tools are available.

**Ref: ZDD available for all pot sizes**

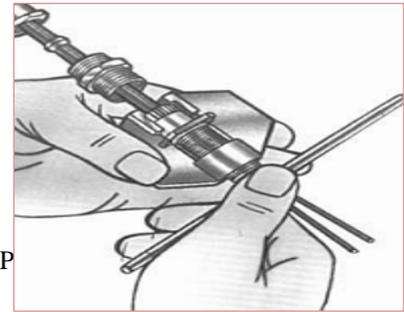
A low cost expendable tool, with a life span of approximately 100 operations.



Fully slacken the two screws, slide the crimping plate over the conductors and up to the seal pot. The slotted base plate swivels around the cable under the seal pot then tighten the two screws evenly. This will drive the stub cap or disc fully into the seal pot recess and secure it into position by indenting the brass seal pot wall in three positions. Slacken and remove tooling

**Ref: ZDC**

Available for 20mm seal pots only.



Fully slacken the drive screw by means of the handle. Slide the conductors through the hole in the crimping plate and through the hollow drive screw.

Place the seal pot into the seating in the brass body of the crimping tool and tighten fully hand tight. This drives the stub cap or disc fully into the seal pot recess and secures with the three indent crimps. Slacken and remove the tool.

Ensure that when removing tool the pot does not move from its position on the cable.

### **Testing**

The seal should be visually inspected for obvious defects. If there is a minor fault such as incomplete crimping, it may be practicable just to repeat the operation. After **both** ends of a cable have been terminated with permanent seals, the cable should be subjected to an insulation test. This is a test at a dc voltage appropriate to the intended operating voltage.

The insulation resistance should be noted and compared with the value measured at least twenty-four hours later. Initial low readings may result from many causes-for instance, cables sealed in high humidity conditions.

**NEVER TEST A CABLE WHICH HAS UNSEALED ENDS, THIS WILL RESULT IN FALSE READINGS**

### **Degree of Ingress Protection**

The electrical installation, when carried out in an area which is dusty, damp or likely to be wet, must use equipment and boxes suitable for the conditions in which they are to be installed.

For threaded entries a rating of IP54 can be achieved by tightening the Wrexham glands in the recommended manner, or by using a suitable thread sealant a rating of IP67 may be achieved.

The threaded Entry Hole should have at least three threads of Medium Fit Tolerance.

With plain hole entries a rating of IP67 may be achieved with Wrexham glands using a sealing washer and thread sealant. However, the surface finish, variations in wall thickness, dimensional tolerances and quality of the entry hole of the enclosure can adversely affect the IP Rating.