

## COBRA REEL

### Choice of appropriate Cobra Rodding System

Choice of diameter may depend on length, although size of duct may influence choice.

When pushing a long length of cobra rod, it will want to corkscrew. If it is a narrow duct, the wall of the duct will keep it straight. In a wider duct, a larger diameter rod will be stiffer and less likely to corkscrew.

The typical relations of length to diameter are shown in the table below:

A narrow duct with tight bends might suggest that a narrower rod might be suitable. A large diameter duct or a requirement to push a sonde might make a larger diameter rod appropriate. Long lengths of a large diameter rod can be very heavy, and the difficulty of pushing a heavy rod may make a narrower rod more practical (e.g. 250m of 45mm rod will weigh less than 250m of 9mm rod).

If there is a tight bend in the duct, rod diameter may be restricted by minimum bend radius; as shown in the table below:

If a rod is of too small diameter for the size of duct and corkscrews, pushing harder will only force the rod harder against the wall of the duct and the rod will eventually break close to the pushing point.

If the guide tip gets caught between two cables in the duct, further pushing may bend the rod tighter than the minimum bend radius and in this case the rod breaks just behind the end fitting and guide tip.

Required Length	Suitable Diameter Rod	Rod Length Available from PSM	Minimum Bend Radius (At -25°C to +80°C)
50m – 100m	4.5mm	100m	300mm
100m – 250m	9.0mm	140m	600mm

### Frames

A frame for the 4.5mm diameter rod does not have wheels. The longest practical 4.5mm (about 100m) on its frame will weigh less than any manual handling limit imposed by safe systems of work.

120m of 9mm rod on a MEDCO frame weighs less than 25kg. The optional wheel kit weighs 3kg and total weight will exceed 25kg if this is fitted. If manual handling limits is set at 25kg and the method of use is to bring the Cobra Rodding System to the location by vehicle and lift it out of the van, then it would be better to use the unit without wheels.

If the Cobra Rodding System is to be used by moving from access manhole to manhole, then the unit is more convenient if fitted with wheels.

The larger MAXCO frame used for longer lengths of 9mm rod is always fitted with wheels.

### Use

The two main used for Cobra Rodding Systems are:

- To push a sonde through a duct or pip to track it's course with a cable avoidance tool.
- To put through a duct to bring back a draw string to pull a winch rope through a duct.

If used with a sonde, unless it is a mini-sonde, select a cobra with a diameter larger than would usually be thought appropriate for the length. This will give a heavy sonde more support.

Before pushing the cobra through the duct, slacken the brake handle enough to allow the reel to rotate but retain sufficient drag to prevent over-run and excess rod to come off the reel.

As you feed the rod into the duct, check the outer polypropylene for damage from previous usage. If damage is discovered, you should contact your supplier ASAP.

Do NOT use a damaged rod as there may be more damage to the inner fibre-glass core than can be seen from the outside.

After returning the rod to the reel, tighten the brake handle to prevent unravelling in transit.

### Specification

<b>Continuous Fibreglass Rodding Systems</b>	
<b>Rod Diameter</b>	4.5mm & 9mm
<b>Rod Length</b>	100m & 140m
<b>Rod Core Material</b>	Stranded Fibreglass, Epoxy Bonded
<b>Core Reinforcing Layer</b>	Extra Fibreglass Stranding, radially wrapped along the length of the rod
<b>Modulus of Elasticity</b> (DIN EN ISO 527-4) (N/mm <sup>2</sup> )	>50000
<b>Tensile Strength</b> (DIN EN ISO 527-4) (N/mm <sup>2</sup> )	1600 ± 5%
<b>Breaking Elongation</b> (DIN EN ISO 527-4) (%)	>2
<b>Ovalisation (%)</b>	<5
<b>Minimum Bending Diameter</b> At -25°C to +80°C	4.5mm - 300mm 9.0mm - 600mm
<b>Long Term Bending Test 80°C</b>	No breaking or Delamination
<b>Long Term Bending Test 100°C</b>	No breaking or Delamination
<b>Solidity (g/cm<sup>3</sup>)</b>	2.0
<b>Thermal Coefficient of Expansion</b> (DIN ISO 7991) (1°C)	6.0 x 10 <sup>-6</sup>
<b>Water Absorption</b> (DIN53475) (%)	<0.25
<b>Glass Concentration (%)</b>	80 ± 2
<b>Thermal Conductivity</b> (kcal/m xhx°C)	0.17 VDE0304
<b>Continuous Temperature (°C)</b>	155 VDE0304
<b>Protective Outer Layer</b>	Hard wearing, abrasion resistant polypropylene
<b>Ultra Violet Protection</b>	U.V. Inhibitors incorporated into the polypropylene outer layer, to prevent degradation of the rod from the sun's harmful U.V. rays
<b>Rod Guiding Tip</b>	Smooth Profile Brass or Aluminium Guiding Tip c/w Hole for shackle pin & M5 or M12 internal thread for connection onto the end of the rod
<b>Rod End Fittings</b>	Brass Fitting c/w External M5 or M12 Thread
<b>Portable Frame/Reels</b>	Robust, portable frame/reel unit, made from heavy duty tubular steel, zinc electroplated finish for protection. (c/w wheels) Integral, fully adjustable safety brake.