**Tunnel Seals**  
- standard drawing

**Sequence**
1. Grout mix development seals typically filled with neat cement grout. Grout to be highly fluid with the Water/Cement Ratio adjusted to give a 12.7 mm Ø flow cone discharge reading of 13 to 17 seconds (WCR typically 0.5) An expansive or non shrink additive can be used as required.
2. The condensed Grout bag seal is fixed as shown.
3. TBM, pipe or lining moved into place.
4. Seal pump filled with grout from the bottom filler sleeve. Seals typically filled at 3 m vertically per hour (for seal gaps below 250 mm)
Filling to stop upon vent discharge. The vent is to be topped up after some 15 - 30 mins, from the top of the vent. (Filler sleeves 2 and 3 are back up filling points)

**Notes**
1. Multiple ring seals can be used where required
2. Typically seal width w>G

**Information Required From Customer**

D - Shaft Diameter  
d - TBM or Pipe Diameter  
T - Positioning Tolerance

For engineering contact:
office@proserveltd.co.uk  
+44 (0) 1926 512 222

For sales contact:
aps1@btconnect.com  
+44 (0) 114 244 7916

---

Section A-A