

Figure 1 : A locked 'slab-top lid' covering the opening in the roof slab. The lid is 100mm thick, is made of 60 MPa concrete and contains 5% (vol/vol) Y10 reinforcement.



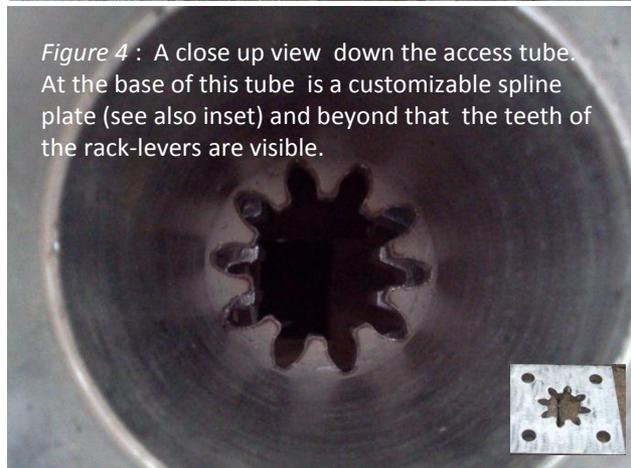
Figure 2 : The magnet at the one end of the opening tool is used to lift out the stainless steel plug from the access tube. Both the plug and the tube are cone shaped on top to form an effective seal.



Figure 3 : With the plug removed the opening tool is inserted into the access tube – first the pinion, followed by the bearings to centralise the pinion.



Figure 4 : A close up view down the access tube. At the base of this tube is a customizable spline plate (see also inset) and beyond that the teeth of the rack-levers are visible.



## 'Slab-top Lid'

SA Patent 2012/08045

**60 MPa concrete lid for securing small openings in valve chambers and pump stations.**

Manufactured & installed by Dams for Africa (Pty) Ltd.  
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Figure 5: The opening tool has passed through the spline-plate and has engaged the two rack-levers below – ready for unlocking.

Figure 7 – With the lid upside down, showing the rack levers in their extended positions. Note the lid's inside area protrudes 30mm above the perimeter 'seat' area. This protrusion fits into the opening and hence ensures that the lid cannot slide relative to the slab.

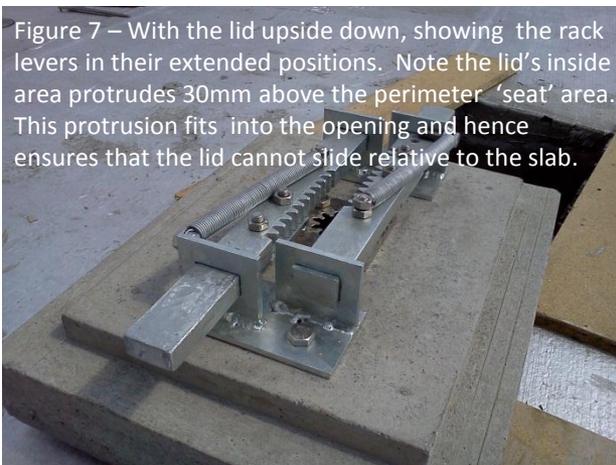


Figure 6: A view of the underside of the lid, showing that the pinion of the opening tool has engaged the rack levers. These levers are currently inside sockets in the roof-slab. When the tool is turned they will retract out of the sockets, rendering the lid unlocked.

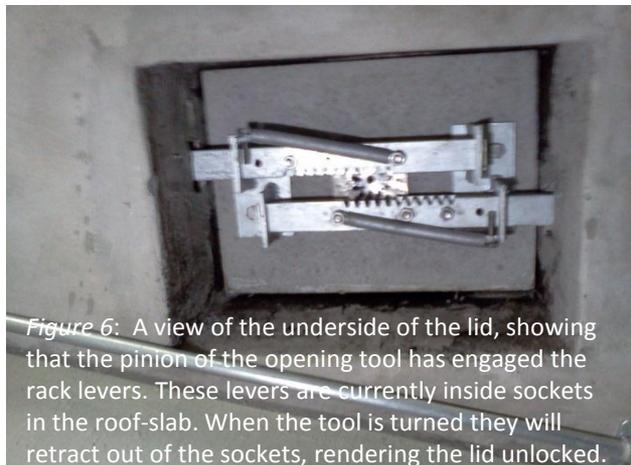


Figure 8: With the rack-levers retracted the slab-top lid may be lifted out by the handle of the opening tool.