

An antitheft device for the India Mark 2 pump heads

November 2014



Kelvin, the assistant of the WASH project in Makeni (Sierra Leone) is fitting an antitheft device.



A 90° leg has been welded to the original bolt (Top). It is therefore not possible to rotate the bolt and unscrew the nut beneath. (the lower bolt has also been modified but it is not visible on the photo. It is identical to the top bolt.) The top and lower nuts have been modified with a U flange being welded on each of them. They can therefore be linked together with a padlock.

The present device allows to secure the pump head as it prevents unbolting it from the base of the pump. It implies to fit the top and bottom nuts with a welded U flange which allows to link them by mean of a padlock. The length of the welded U is roughly adjusted to the size of the available padlock.

A leg is welded on the top and bottom bolts. This leg abuts on the pump side. It is therefore not possible to unscrew the bolt in order to remove the nut.

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The device consists of 5 pieces : (from left to right on the picture below): a padlock, 2 modified bolts (with a leg to avoid their rotation), 2 modified bolts (with an U flange to attach the padlock)

Any effort to unscrew the top nut will result in tightening the bottom nut as both nuts are linked by the padlock. It is therefore not needed to tighten strongly the modified nuts when placing the device on the pump.



Left : the five pieces of the device

From left to right: a padlock, 2 modified bolts (with a leg to avoid their rotation), 2 modified bolts (with an U flange to attach the padlock)

Benefit :

- The device can be produced locally at a very low cost. It simply requires to modify the existing bolts and nuts (they are standard 12X50)
- The pump head is not modified and therefore does not have to be dismantled.
- The device is light and easily transportable on a bicycle (270 g including the padlock)
- The pump handle may be locked to the same padlock by mean of a chain. A regular usage of the padlock will avoid it to rust and block.
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Mechanical resistance (approached values):

- Résistance of the U nut (6mm wire) : about 1 ton
- Resistance of the 12mm bolt: about 5 Tons.

Limitation :

- The U welded on the nut is made of a 6mm diameter round wire (same as the padlock). It may be cut with a metal saw. The use of 8mm wire is perhaps more appropriate. It will also be stronger (Resistance : 3 tons)

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