

# The FairWater BluePump® .... QUALITY MATTERS



FairWater BluePump in UNDP Project Tanzania

*In Africa, 1 out of 3 handpumps is not working anymore, over 150.000 handpumps are already abandoned. In areas with deeper groundwater often 4 out of 5 is not working. NGOs are trying to find solutions to stop wasting funds and trained more people and supplied more spare parts, but that did not solve the maintenance problems.*

**Conclusion:** *we finally need to have a closer look to the quality of the handpump itself. What choices do we have? Is it wise and cost-effective for our target groups if we supply them with cheap handpumps that break down fast and need a lot of spare parts, or shall we look further and see what better quality handpumps are available these days?*

The **BluePump** is not the cheapest handpump, but it offers durability and other great advantages (easy pumping, large water output, etc.) for the users, and that is what also NGOs do care about. The idea to develop a reliable low-cost-maintenance handpump started in 2003 with the Rural Water Development project in Kenya as a response to the many broken down handpumps in Kenya. It was further developed by the **FairWater Foundation** through intensive field testing in Africa, with the help of several international NGOs. The heart of the BluePump is a stainless steel, spare part free pumping system" (BPS), which allows easy & efficient pumping from up to 100m. deep. It is **spare parts free** because it has no rubber seals.

The BluePump design is amazingly simple, while all components are made from strong materials that last; therefore the BluePump is **reliable, cheap & easy to maintain**; it is estimated that under normal conditions no spare parts are required for 10 – 15 years. Furthermore, most parts are locally available or can be made locally.

**The BluePump is therefore considered by leading international NGOs as the most sustainable handpump solution for Africa.**

The **BluePump** is mounted on a concrete 50x50x50cm pedestal with 4 or 6 anchor bolts. The handle can have an additional counterweight, which allows light pumping at greater depth. The BluePump is easy to install by two persons up to 100m deep. The PVC pipes are glued together and are lowered in the borehole with a security rope until they rest on the bottom (Bottom Support Option). In case of shallow water levels the PVC pipes are hanging on a T-piece.

After the installation of the PVC rising main pipes, the BPS cylinder is connected to the stainless steel 12mm rods and lowered into the rising main, until it locks into a conical seat. The position of this conical seat depends on the dynamic water level in the borehole and is generally 10 - 15m below the static water level. The cylinder can be taken out of the rising main by lifting the rods again, while the PVC rising pipes remain in the borehole. This process enables easy installation and dismantling without a tripod or complicated tools.

For installation and maintenance, we recommend that a professional Regional Maintenance Team (RMT) is trained to assist communities with a yearly check-up and repairs in the unlikely case of a Murphy problem. This can be formalized in a maintenance contract for about 10 US\$ per family per year, not including travel costs.



Bluepump at 65m deep on rehabilitated borehole, Unicef project Mozambique

## **Rehabilitation with the BluePump**

In Africa many handpumps are not functional anymore, but often the (expensive) borehole and platform is still usable. Therefore it is cost-effective to rehabilitate abandoned handpumps in stead of drilling a new borehole.

**With the FairWater BluePump such rehabilitation is easy and fast; the 4 anchor bolts of the pedestal of an old India or Afridev pump fit directly on the BluePump footplate.**

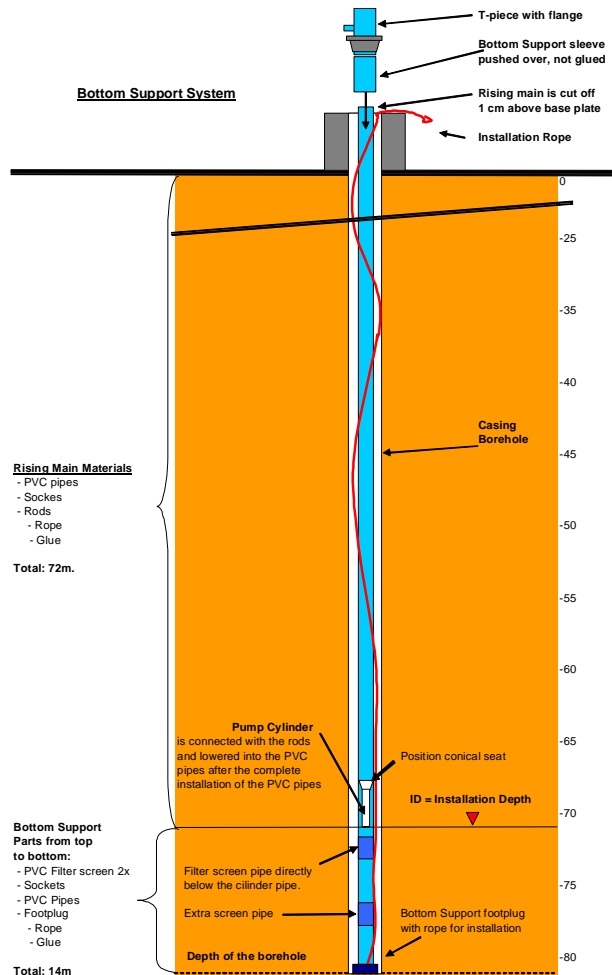
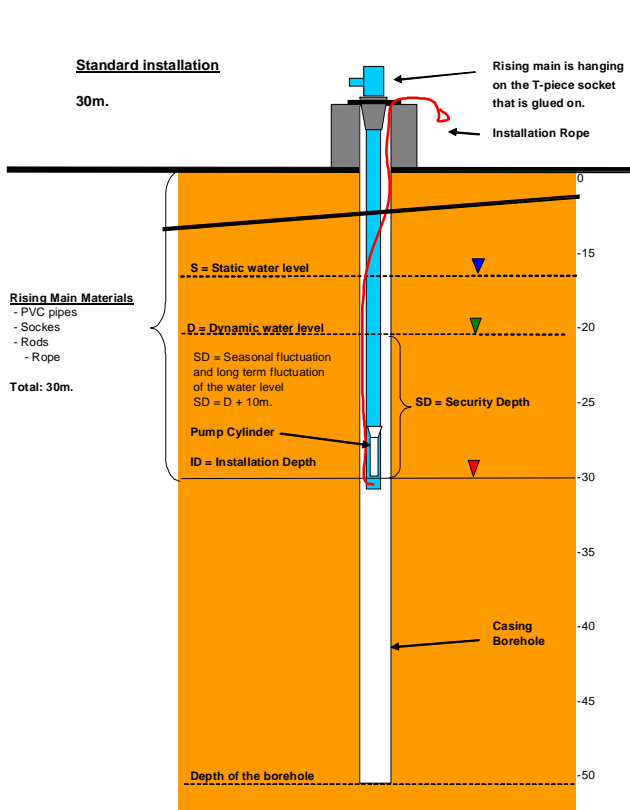
FairWater Foundation only uses the BluePump for its rehabilitation projects in Africa. To do so, FairWater has a network of competent local private sector partners in several African countries. They can provide professional assistance and training of a RMT for rehabilitation and installation with a simple contract for maintenance to assure long term sustainability.

## **Available with FairWater BluePump Distributers in:**

*The Netherlands, Angola, Burkina Faso, Cameroun, Congo, DRC, Central African Republic, Cote d'Ivoire, Ethiopia, Niger, Malawi, Mozambique, The Gambia, Kenya, South Africa, Tanzania, Uganda, Swaziland.*

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### Hanging pipes installation < 40m.

- In case of shallow static water tables (not deeper as 25 to 30m.) the cylinder can be installed in PVC rising mains that are "hanging" at a flange-socket inside the base plate.
- **Important:** The PVC pipes are lowered inside the borehole while the base plate is already on place but with the blue box not on the borehole.
- The T-piece is in fact the last socket and is glued at the last pipe of the PVC rising main.
- When all pipes are installed, the blue box is put on the base plate and secured with 4 to 6 bolts.
- In case the pipes may drop, the installation rope will provide additional security to help to get the PVC pipes out again.

**Note:** PVC pipes are ideal for handpumps; They are relatively light, not expensive and easy to work with. They do not rust and can resist even brackish groundwater. However, with pipe length over 40m. even the strongest PVC pipes will stretch during pumping, which can ultimately cause leaks. A Bottom Support is therefore recommended for PVC installations deeper as 40m.

### Bottom Support Installation >40m.

- The bottom support pipes with the rope attached to the foot plug will enter first in the borehole.
- The top part of the bottom support pipes must have a BOODE screen to allow the water of the borehole to enter in the bottom support pipes.
- The conical seat is glued inside the PVC pipes to be installed directly above the screen (-55m. deep in example above).
- At the surface the upper (last) PVC pipes is cut 5cm. above the level of the base plate.
- The T-piece has an extension and is not glued to the rising main, but has a tight fit and is pushed over the upper part of the PVC pipes using Vaseline, not glue.
- Old boreholes may have silt accumulated on the bottom and the PVC pipes may slowly sink 10 to 20 cm. in the first months. To compensate for this, the rods as well as the rising main need to be extended with the same length.

For a sustainable operation, the correct calculation of the depth of the cylinder (installation depth) is important. Due to the pumping and seasonal and long term fluctuations, the cylinder needs to be installed at least 10m. below the dynamic water level.

**If the static water level is below the range of 25 to 30m. depth,** the installation depth of the cylinder will normally be below 40m. In these cases it is strongly advised for sustainable operation of all handpumps with PVC pipes to install bottom support pipes to avoid tensional stress on the PVC pipes during pumping.