

5.7 Coping with Dirty Water Conditions

PS pumps have good resistance to quantities of sand and fine sediment that can normally occur in a well. However, any amount of abrasive material will reduce the life of this pump, like any other pump. Extreme sediment can cause the pump to stick. Sediment can also settle inside the drop pipe each time the pump stops, and block the flow. For water sources that contain high amounts of sand, clay, or other solids, consider the following suggestions.

To avoid pumping dirty water

1. Have your well purged, developed, or otherwise improved by a water well contractor before installing the pump.
2. Temporarily install a more powerful pump to draw at a high flow rate until the water looks clean.
3. Set the pump as high as possible in the well. If the pump can be placed higher than the perforations in the well casing, it will probably avoid all but the finest suspended silt.
4. After lowering the pump in a well, wait at least 15 minutes for sediment or debris to settle down.
5. If the water source is at the surface, dig a shallow well next to the water source to obtain clean water.
6. If the water source is at the surface, use a fabric screen to protect the pump. See section 6.5

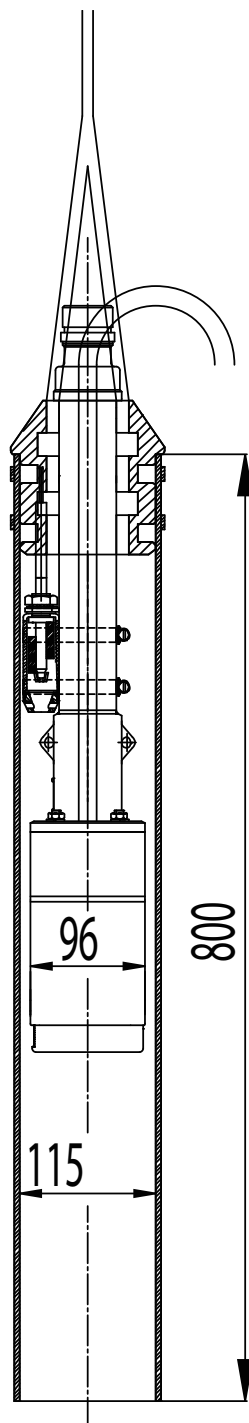
If dirty water cannot be avoided

1. Use a reduced size of drop pipe. This will maximize the velocity of water flow in order to exhaust sand particles. Refer to section 13.3, Water Pipe Sizing Chart. Select the smallest size pipe that does not impose excessive friction loss. Use a reducer bushing on the pump if necessary, to adapt it to a smaller pipe size. See the caution about plastic bushings in section 6.3
2. Monitor the situation regularly by observing the volume of water pumped and/or the current draw of the pump. For AC amps, see sections 9.3 and 13.8 As a pump wears, its flow rate (and current draw) will decrease gradually. Replace the pump end when reduced performance is observed, or before your season of greatest water demand. Increased current draw may indicate debris stuck in the pump and/or pipe.

Before opening a pump that is clogged with dirt, see the **CAUTION** about removing check valve, see section 9.1

Add a stilling tube if operation in dirty water conditions cannot be avoided Use a stilling tube to protect the pump from dirt. This design prevents dirt to enter from top or from the sides of the borehole into pump. The large inner diameter of about 115 mm allows the water to rise only very slowly, so that sand or other heavy particles cannot be sucked into the pump.

Figure 19: Stilling tube for HR pumps



5.8 Utilizing a Low-Production Water Source

PS pumps can make the best of a limited water source, even if the pumping rate can exceed the recovery rate. You want to draw the most water possible, without running dry. PS-Pumps can handle this in two ways.

The low-water probe The low-water probe allows the pump to work to its full potential until the water level drops, see section 5.9. This is a good strategy because you get all the water you can while the sun shines. Place the pump near the bottom of the well to utilize the storage of water in the well. When the pump is stopped by the low-water probe, it re-starts after a 20 minute delay. The Low Water OFF light will slowly flash even after the water recovers and the pump restarts, to indicate that the level got low at some time during the day. See section 5.9, Low Water Probe. It may be feasible to hang the probe independently and use it to locate the water level at any moment. See section 6.4, Safety Rope and Binding

Reduce the Maximum RPM setting If the well has little storage capacity, the supply may recover before the 20-minute restart delay. In this case, reduce the "Maximum RPM" setting in the controller. See section 5.6



WARNING Do not use a valve as a means of reducing the flow. With a helical rotor pump, excessive pressure may result. Use the Maximum RPM setting instead.



QUESTION How is a pump damaged from "dry run"? —

ANSWER If the pump runs completely dry, parts will overheat and be damaged. However, if water is only trickling into the pump, it will usually provide enough lubrication and cooling to prevent damage.



QUESTION What effect does hard, mineralized, alkaline or salty water have? — **ANSWER**

Generally, none. Dissolved minerals and salts are not abrasive.