

WELL DEVELOPMENT SWABS

GeoPump Well Development Swabs features:

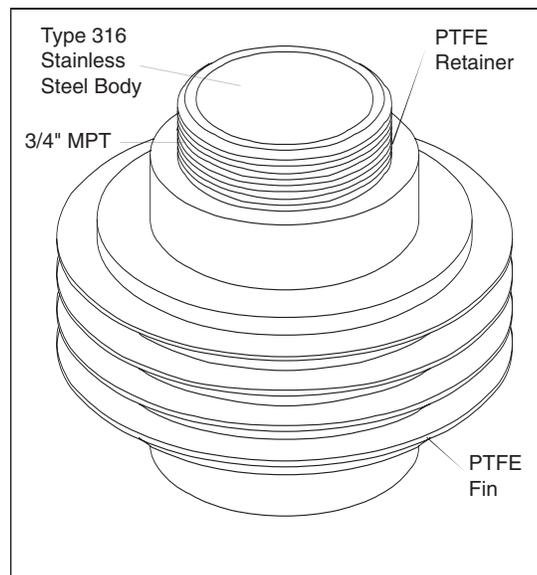
- Type 316 Stainless Steel and PTFE construction.
- Flexible fins that permit the swab to pass by fittings, dimples and other minor constrictions within the well while maintaining the correct diameter for effective surging.
- Field replaceable fin assemblies.
- Sizes for 1.5-inch through 4-inch casings.
- Easy attachment and detachment from pump.

Application:

Proper and complete well development is now recognized as a crucial component of monitoring well installation.

GeoPump Well Development Swabs offer a simple, effective and convenient way to accomplish this important task. Development swabs are typically used in conjunction with GeoPump gas-drive pumps simply by attaching the swab assembly to the threaded intake of the pump. This effectively increases the diameter of the pump to enable the user to produce the proper surging action within the open interval of the well.

When the pump is surged up and down within the well, the backwash effect that is created causes fines to migrate into the well and then be pumped to the surface simultaneously.



| Model | Well Size | Diameter (in/cm) | Length (in/cm) | Weight (lbs.) |
|-------|-----------|------------------|----------------|---------------|
| 5785 | 1.5" | 1.61/4.09 | 2.0/5.0 | .5 |
| 5786 | 2" | 2.07/5.26 | 2.0/5.0 | .5 |
| 5787 | 3" | 3.07/7.80 | 2.0/5.0 | 1.6 |
| 5788 | 4" | 4.03/10.24 | 2.0/5.0 | 1.6 |

| Replacement Fin Sets | |
|----------------------|---------------|
| Swab Model | Order Fin Set |
| 5785 | 50264 |
| 5786 | 50265 |
| 5787 | 50266 |
| 5788 | 50267 |

APPLICATION TIP: WELL DEVELOPMENT

One of the most commonly overlooked elements of monitoring well construction is adequate well development. When monitoring well is drilled, a mud cake forms on the wall of the bore hole. If not removed, this mud cake acts as a barrier which may cause formation water to move around the well rather than through it. Many monitoring wells that are thought to be poor producers may in fact be inadequately developed.

The objective of well development is to remove the mud cake and naturally occurring fine material from the formation in the immediate vicinity of the well screen.

Traditional production well development techniques are effective on production wells because they are installed in high yielding formations where transport velocities are sufficient to carry fine materials into the well for removal. However, monitoring wells are not sited with yield as a primary consideration, rather, they are strategically positioned to intercept a potential contaminant plume. The result is that many monitoring wells are installed in marginal water bearing formations. Another limitation is that most monitoring wells are small diameter which reduces the development option.

A frequently employed method is surge pumping and swabbing. This is easily accomplished with inexpensive equipment. A positive displacement gas-drive pump is used with a flexible finned swab attached below the intake check valve. The swab fits closely to the inside diameter of the well casing, yet is flexible enough to pass by minor restrictions in the casing, such as dimples and

fittings. The gas-drive pump is used due to its inherent ability to pump solid slurries without damage. The development "string" consisting of a gas-drive pump, swab and tubing is lowered until the swab is immediately above the well screen. The development string is then surged up and down. On the down-stroke, water is forced into the formation, dissolving the mud cake. On the up-stroke, water is pulled into the well, bringing with it fine material. The surging action keeps the fines in suspension so that they enter the pump and are lifted from the well via the water discharge tubing.

GEOPUMP swabs simply thread into the bottom inlet of the GEOPUMP gas-drive pump and together with GEOPUMP heavy-duty coaxial tubing, offer a clean, quick and efficient means for accomplishing well development. A complete well development system consists of the following items.

- Model 5973 Gas-Drive Pump, 1.66" O.D. x 81" length.
- Model 5786 Well Development Swab for 2" Wells (also available in sizes for 1.5", 3" and 4" wells).
- Model 5001 Electric Automatic Cycle Pump Controller.
- Model 5420-H Compressor Assembly.
- Model 5689 Polyethylene Twin Tubing.

• **GeoPump, Inc.** • 213 State Street • Medina, NY 14103 • www.geopump.com •
• Toll Free 877-Geo-Pump • 585-798-6666 Outside USA • 585-798-0175 Fax •