

Dedicated Bladder Pump Evaluation Guide

From QED, Manufacturers of Well Wizard® Sampling Pumps

What to look for in a Bladder Pump

Bladder pumps are simple in their fundamental design—that's why they're so attractive as ground water monitoring pumps. A superior dedicated bladder pump is one that ensures that samples are not altered, that works right when it's installed and keeps on working properly for so many years that you take it for granted.

What does it take to make a superior dedicated bladder pump?

The answer: ongoing attention to engineering detail based on many years of wide-ranging field experience. This attention to detail focuses on 4 critical areas:

- Long bladder life
- Reliable, leak tight check valves
- Consistent prevention of air and water leaks
- Purity and durability of materials of construction

Since the bladder and check valves are the only moving parts in a dedicated bladder pump, it's critical they be ultra-reliable over many years and in a variety of well conditions. A lot of attention to detail is also needed throughout the pump to make sure air or water don't leak where they shouldn't. Dedicated pumps are expected to work reliably for many years, so even very small leaks can lead to eventual failure, such as through "hydraulic lock." And having "just some" of the pumps leak is not good enough—you expect every one to work so your sampling stays on schedule and within budget.

Material integrity is also critical - a full choice of pump materials to fit your well conditions, executed consistently throughout the pump, selected from premium grade raw materials and specially processed to deliver maximum performance for many years.

A few other things you should expect...

You should expect tubing/fitting sets engineered and quality controlled for high pullout strength so you don't lose a pump downwell even if things get a "little stuck" down there; an inlet screen long enough to hold the pump off the bottom, even if the installation doesn't go exactly as planned; standard low-clearance caps that fit even when the well closure is installed tighter than you'd like; certified clean equipment that doesn't introduce contamination problems; and special packaging to keep the equipment clean and help make the installation go smoothly.

QED's Well Wizard bladder pumps build in all these details and more. Our engineers have never stopped learning how to make Well Wizard pumps better.

Read about some of these details in this guide and call QED to learn more if you like. **1-800-624-2026**



Superior Bladder Pump Design Elements

Premium, compression type tubing fittings - are matched to specially toleranced tubing to *consistently* achieve leak tight, high pullout strength connections, superior to less expensive barb fittings. Compression fittings also provide a full diameter flow area at least as large as the tubing ID, instead of the restricted flow through barb fittings. Finally, compression fitting connections are easy to disconnect and reconnect if needed, unlike barbs which require cutting off the tubing very carefully to avoid creating a leak path by scratching the barb.

Zero-leakback discharge check valve - to help maintain consistent flow even at very low rates, it also prevents pulling air into the flow cell due to drainback suction, which disrupts purge stabilization parameter

Ultra long life bladder - not just "Teflon", but special grade material and extra processing steps to avoid splitting failures along high stress fold lines creased when the bladder is squeezed.

Heavy-duty center rod - prevents bladder lockup and bladder chafe failures by holding bladder firmly in center of pump, away from damaging contact with pump body; weaker center spacer designs flex with each pump stroke, leading to fracture and bladder damage

Anti-bladder chafe detail - liquid porting hole edges are carefully radiused to prevent bladder damage when bladder is squeezed against them during pump discharge cycle.

High grade materials - to match the well are used consistently throughout the pump and fittings, such as 316 SS, to assure purity and long life

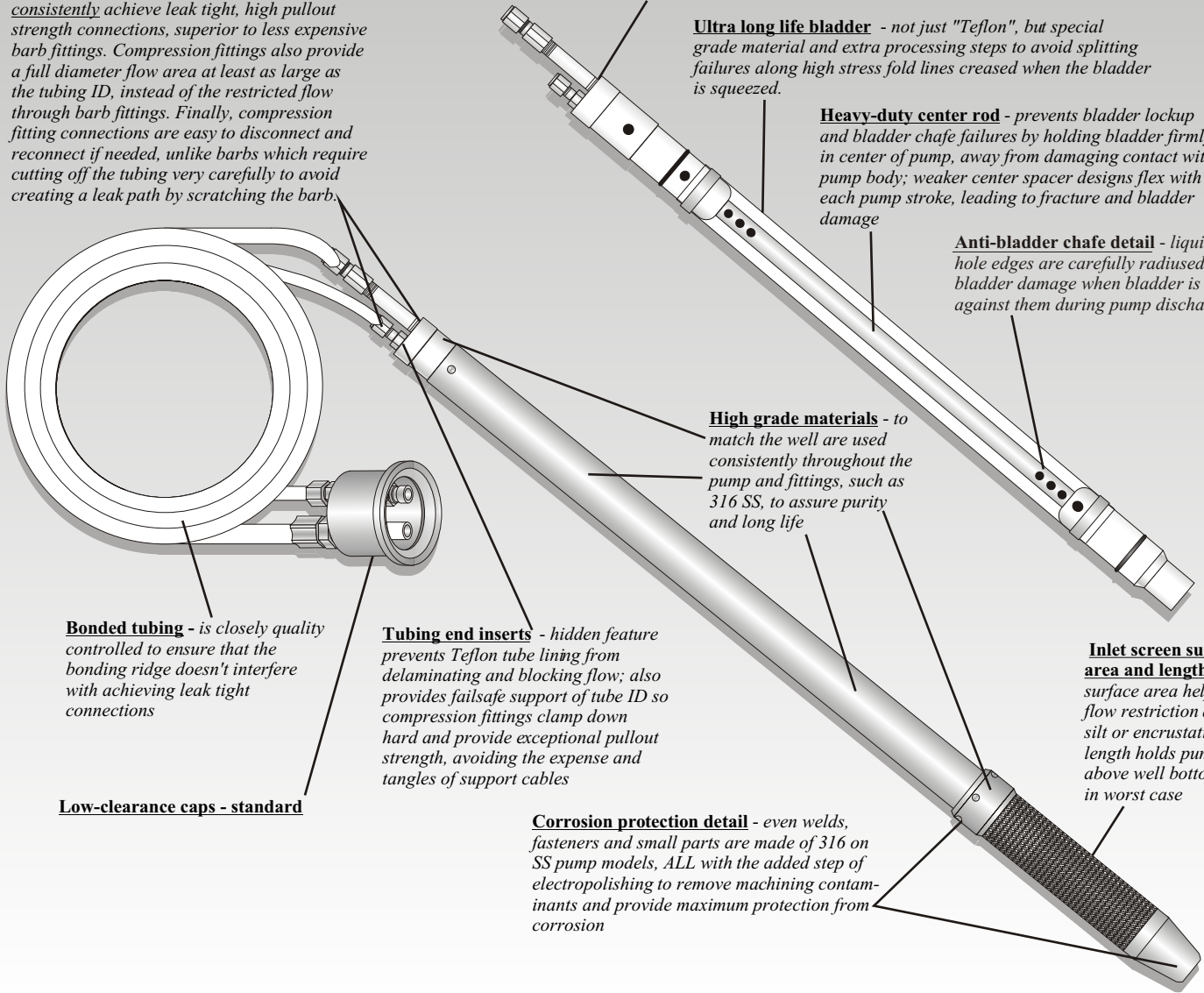
Bonded tubing - is closely quality controlled to ensure that the bonding ridge doesn't interfere with achieving leak tight connections

Tubing end inserts - hidden feature prevents Teflon tube lining from delaminating and blocking flow; also provides failsafe support of tube ID so compression fittings clamp down hard and provide exceptional pullout strength, avoiding the expense and tangles of support cables

Inlet screen surface area and length - High surface area helps avoid flow restriction due to silt or encrustation; length holds pump inlet above well bottom even in worst case

Low-clearance caps - standard

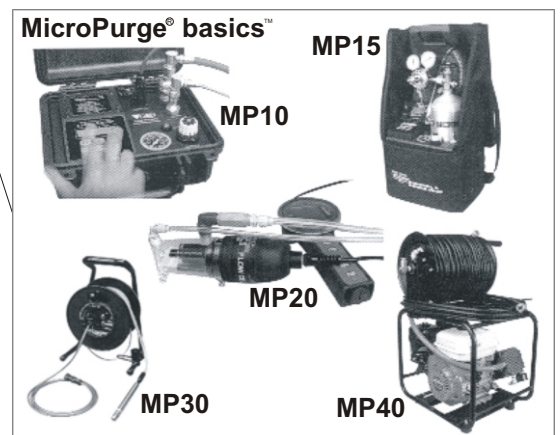
Corrosion protection detail - even welds, fasteners and small parts are made of 316 on SS pump models, ALL with the added step of electropolishing to remove machining contaminants and provide maximum protection from corrosion



Systems, NOT just Pumps

The pump is just part of what makes a sampling system a superior value. You should expect a complete systematic approach that starts with easy installation and goes on for years of trouble-free performance. Look for:

- 100% purity and performance checked - every pump tagged with certification test tracking data
- Special packaging that delivers your equipment in good shape and tells you which box to take to each well
- A complete set of easy-to-use and reliable controls, for flow, level and stabilization
- Expert assistance with equipment selection, installation, and technical and regulatory questions you may have later



QED ENVIRONMENTAL SYSTEMS

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