

Before You Buy a Reciprocating Pump

7 Critical Parameters Every Industrial Buyer Should Check

Reciprocating pumps — triplex and plunger designs in particular — are built for high-pressure, precise-flow applications across process industries, water treatment, and manufacturing. But selecting the wrong pump for your application shows up quickly: premature seal wear, inconsistent pressure delivery, valve failure, and unplanned downtime. This guide walks through the seven parameters our engineering team evaluates on every installation, so you can specify with confidence before you buy.

1. Maintenance Accessibility & Total Cost of Ownership

The lowest purchase price rarely reflects the lowest cost over the pump's operating life.

- Evaluate ease of access for valve, seal, and packing maintenance
- Factor in spare parts availability and lead time from the manufacturer
- Compare total cost of ownership: energy consumption, maintenance frequency, and expected service life

2. Valve & Seal Material Compatibility

Valve and seal materials must match the chemical and physical properties of the process fluid being pumped.

- Check chemical compatibility for corrosive or abrasive fluids
- Match elastomer and seal material to fluid temperature range
- Consider erosive wear from suspended solids or slurries

3. NPSH Requirements (Reciprocating-Specific)

Net Positive Suction Head works differently for reciprocating pumps than centrifugal pumps, due to the pulsating nature of suction flow.

- Account for acceleration head, unique to reciprocating pump suction design
- Verify NPSH available exceeds NPSH required, including pulsation effects
- Consider a pulsation dampener on the suction line for long or complex piping runs

4. Coating & Packing Selection

The coating and packing assembly is often the first point of failure when mismatched to the application.

- Select coating (ceramic, chrome, tungsten carbide) based on fluid abrasiveness & corrosivity
- Choose packing material rated for your pressure and temperature range
- Plan for packing adjustment and replacement access in the installation layout

5. Duty Cycle & Application Match

Continuous, intermittent, and standby duty cycles place very different demands on a reciprocating pump's components.

- Match pump duty rating to actual operating hours per day, not nameplate capacity alone
- Factor in start-stop frequency, which accelerates wear on valves and packing
- Confirm the drive train (motor, gearbox) is rated for your specific duty cycle

6. Material of Construction

Pump housing, cylinder, and wetted-part materials determine service life in your specific operating environment.

- Cast iron, ductile iron, or stainless steel — select based on fluid and ambient conditions
- Consider corrosion allowance for long-term installations
- Verify certifications required for your industry (e.g., process, water treatment)

7. Pressure & Flow Sizing

Correct sizing starts with matching required discharge pressure and flow rate to your actual process demand — not the nearest catalog model.

- Confirm maximum working pressure and continuous duty flow, not just peak figures
- Account for pressure drop across the full pipeline, not just at the pump outlet
- Avoid over-specifying: an oversized pump increases energy cost and accelerates valve wear

Use this checklist as a starting point when evaluating quotations from any manufacturer. If you'd like our engineering team to review your specific application — flow rate, pressure requirements, fluid type, and duty cycle — we're happy to help you specify the right pump the first time.

Talk to our engineering team

www.wasppumps.com