CENTRIFUGAL PUMP MODEL P-100

Operation and Maintenance Manual

Model:	P-100 Series Centrifugal Pump
Document ID:	MAN-P100-2025-R3
Revision:	3.1
Date:	January 15, 2026
Classification:	Internal Use Only

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1. Overview and Specifications

The P-100 Series centrifugal pump is a robust, industrial-grade unit designed for continuous operation in demanding manufacturing environments. This pump is specifically engineered for handling clean to moderately contaminated liquids in process industries.

Parameter	Specification
Flow Rate	100-500 GPM (gallons per minute)
Maximum Head	250 feet
Operating Pressure	120 PSI (pounds per square inch)
Motor Power	25 HP, 3-phase, 460V
Impeller Diameter	12 inches
Seal Type	Mechanical seal, single-spring
Material	Cast iron casing, SS316 impeller
Temperature Range	32°F to 250°F
Weight	485 lbs (dry)

2. Safety Precautions

WARNING: Before servicing, performing maintenance, or troubleshooting, ensure all energy sources are properly locked out and tagged out (LOTO) per plant safety procedures.

• Always wear appropriate Personal Protective Equipment (PPE): safety glasses, steel-toed boots, and hearing protection.
• Never operate the pump without guards in place.
• Do not exceed the maximum operating pressure of 120 PSI.
• Ensure proper ventilation when working with pumped fluids.
• Keep hands and loose clothing away from rotating parts while in operation.

3. Operating Parameters

Normal Operating Range:
The P-100 pump is designed to operate within the following parameters for optimal performance and longevity:

Parameter	Minimum	Optimal	Maximum
Discharge Pressure	80 PSI	100 PSI	120 PSI
Suction Pressure	0 PSI	15 PSI	30 PSI
Flow Rate	100 GPM	300 GPM	500 GPM
Bearing Temperature	70°F	120°F	180°F
Vibration Level	<0.2 in/sec	<0.5 in/sec	0.8 in/sec

5. Maintenance Procedures

5.1 Routine Inspection Schedule

Daily (during operation):
• Check for unusual vibration or noise
• Verify operating pressure is within normal range
• Inspect for leaks around seals and connections
• Monitor bearing temperature

Weekly:
• Lubricate bearings per lubrication chart
• Check coupling alignment
• Inspect motor and pump foundations

Monthly:
• Inspect mechanical seal for wear
• Check impeller clearance
• Verify proper motor current draw

Quarterly:
• Replace mechanical seal if showing wear
• Inspect and replace gaskets as needed
• Perform vibration analysis

5.2 Seal Replacement Procedure

1. Isolate energy sources and apply LOTO procedures
2. Drain pump casing completely
3. Remove coupling guard and disconnect motor
4. Remove seal housing bolts (8x M12)
5. Extract old mechanical seal assembly
6. Clean seal chamber thoroughly
7. Install new seal (Part# P100-SEAL-MS01)
8. Torque seal housing bolts to 45 ft-lbs
9. Reconnect coupling, remove LOTO, test for leaks

6. Troubleshooting Guide

Symptom	Possible Cause	Corrective Action
Low discharge pressure	Worn impeller Air leak in suction	Inspect impeller clearance Check suction line connections
Excessive vibration	Misalignment Cavitation Worn bearings	Check coupling alignment Increase suction pressure Replace bearings
High motor current	Damaged impeller Voltage imbalance	Inspect impeller for damage Check power supply
Seal leaking	Worn seal faces Improper installation	Replace mechanical seal Verify seal installation per manual
Pump won't prime	Blocked suction Suction lift too high	Clear suction line Reduce suction lift or install foot valve