Installation and Maintenance Manual

MAXIMATOR
"PPO" , "PP" and "PPSF" SERIES
PUMPS

Model #
Serial #
Order #
Mfg. Date

When ordering spare parts please specify model, serial and order numbers.

INTRODUCTION

The Maximator pump described in this manual is a pneumatically operated, gate valve controlled piston pump similar in style to a double-acting pneumatic cylinder.

The pump model number indicates the ratio of areas between the pneumatic piston and the hydraulic plunger. For example, the PP22 pump has an area ratio of 22:1 between the pneumatic piston and hydraulic plunger.

This relates to a maximum hydraulic output pressure that is 22 times greater than the pneumatic drive pressure. e.g. With 100psi air, the outlet would be 2,200psi.

INSTALLATION

The pump can, in principle, be installed in any position but maximum service life of the seals is achieved in a vertical installation.

A mounting bracket is provided, at the bottom of the air cylinder, which uses 5/16" bolts. The CPO series pumps are provided with 2 mounting brackets for option locations.

COMPRESSED AIR SUPPLY

Do not use an air lubricator because the pump was lubricated with a silicon grease when built.

A compressed air filter is required and if the air is not dry, a water separator must be used.

Air control packages including a filter, regulator, gauge and shut-off valve are available as an option.

The air pressure connection is a 1/4" FNPT and is located at the spool valve housing.

HYDRAULIC SECTION

Attention! Never loosen the cap nut in the hydraulic seal area of the pump to orient the pump for installation. This nut must always be tight to assure proper operation of the high pressure seals.

The suction and discharge piping must be at least the same size or larger, as the pump connections and properly rated for the pump being used.

A suction filter with a maximum of 100 mesh should be installed in the suction line.

The discharge connection is located at the side and the suction is in the bottom of the pump head. An optional side inlet is available on the “PPO” and “PP” series pumps.

INITIAL SET-UP

The liquid pressure can be precisely selected by adjusting the air pressure according to the pressure ratio of the pump being used.

The pump will stop and maintain pressure for an indefinite period of time, at about 100% to 110% of the ratio, assuming no air or hydraulic leaks.

For example, a PP22 pump with a air drive pressure of 100psi, will operate at a pressure of 2,200psi and completely stop at about 2,400psi.

Operate the pump slowly until it is completely primed.

MAINTENANCE

USE ONLY ORIGINAL MAXIMATOR SPARE PARTS

The air drives of all liquid pumps are factory pre-treated with Maximator silicon grease and require no further lubrication except during routine maintenance.

Pumps can be repaired at your local authorized service center or returned directly to your distributor for quick turn-around service.

Pumps returned for repair should be accompanied with the pump's model, serial and order numbers as well as mfg. date and description of the problem / symptom.

DESCRIPTION OF OPERATION

The automatically operated pump is controlled by a floating slide valve which alternately applies air pressure to the piston and subsequently vents the air again. The control system as such is operated with out springs (except the "CPO" series which does have a piston spring return) and arresting fixtures as pressure is alternately supplied to and vented from the front surfaces of the pneumatically operated floating slide valve.

The main parts in the hydraulic section are the pump body, plunger, seals with thrust rings and inlet and outlet chack valves. The check valves are rated for full flow with dynamic sealing.

TROUBLESHOOTING - PNEUMATIC SECTION

Symptom: Pump cannot be operated at low air pressure.
Cause: Excessive friction of O-rings on spool valve
Remedy: Relubricate or replace the O-rings

Symptom: Pump can only be actuated at high air pressure.
Cause: Air escapes through the piston guide in the top air cap.
Remedy: Replace O-ring on the piston extension.

Symptom: Pump runs slowly or not at all.
Cause: Exhaust or spool valve is "icy."
Remedy: Stop pump for a short while and, if necessary, clear air line and supply of moisture.

Symptom: Pump will not run and air escapes through the exhaust muffler.
Cause: Pilot valve tappet is not sealing in top cap.
Remedy: Clean and grease tappet, check for wear and replace if necessary.

Symptom: Pump will not run and air escapes through small holes in the spool valve housing.
Cause: Spool valve fails.
Remedy: Clean spool valve and sleeve, check O-rings and sleeve, lubricate and/or replace.

Symptom: Pump will not run and escapes through the small holes in the bottom cap.
Cause: Pilot valve tappet is not sealing in the bottom cap.
Remedy: Clean and grease tappet, check for wear and replace if necessary.

Symptom: Pump operates at a high frequency and short strokes.
Cause: Pilot valve defective.
Remedy: Clean, check and lubricate pilot valve parts or replace if necessary.

TROUBLESHOOTING - HYDRAULIC SECTION

Symptom: Pump does not have flow, operates irregularly or does not maintain pressure.
Cause:
1. Air in the hydralulic system.
2. Suction line of excess length.
3. Suction pipe size to small.
4. Failure of one of the check valves.
5. Suction filter is blocked.
6. High pressure seal is worn excessively.

Remedy:
1.1 Check suction line and pipe joints for leaks.
1.2 Check seals between air and high pressure sections.
2. Shorten line as much as possible.
3. Increase suction pipe size.
4. Check both valve assemblies and clean or replace if necessary.
5. Clean suction filter
6. Replace seal.

Symptom: Fluid escapes through the air exhaust.
Cause. Worn high pressure seal.
Remedy: Clean fluid from air section, relubricate and replace seal.

SERVICE

For factory authorized service, contact your local Distributor.