Etnyre INTERNATIONAL

Service Manual
Rexroth Pump

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Cautions and Warnings

Always read all instructions thoroughly and familiarize yourself with the equipment before operating or attempting repairs or service.

Observe all caution and warning statements in the applicable manual and on the equipment.

Always use extreme caution when working with any pressurized system. Always be aware of other persons and/or equipment in the immediate area and the hazards involved. Be prepared to immediately shut down the truck and/or hydraulic system if required, especially during initial startup and testing.

The equipment must be assembled and serviced by a trained mechanic or technician. Ensure only properly trained individuals should operate the equipment.

Always use personal protection equipment, such as eye and ear protection, when indicated by the instructions or by the work environment.

Always operate equipment safely and within its rated capacity and performance range. Hydraulic fluid in the human bloodstream can be fatal. If hydraulic fluid penetrates the skin under pressure, seek medical attention immediately! Hydraulic oil, solvents, and pipe sealers may cause skin irritation and rashes. Avoid lengthy exposure to these materials. Wash your hands thoroughly after contact with oils, solvents, and other chemicals. Remove clothing that is saturated with oil.

Do not operate equipment that is damaged or in need of maintenance. Repair equipment as soon as problems are identified.

Use tools that are suited to the task, and keep your tools in good repair.

Use proper lifting equipment when moving or installing heavy components.

Keep your work area clean and safe. Always clean up any spills immediately and properly dispose of the material in the designated refuse container.

Always shut off the vehicle engine and disconnect pump electrical power before working on the hydraulic system.

Etnyre International is not responsible or liable for injury, damage, or loss caused by improper installation by the end user, misuse of the equipment, lack of maintenance, accidents, or failure to follow instructions. In cases where equipment application was determined by the end user, Etnyre International is not responsible or liable for injury, damage, or loss caused by misapplication of this equipment.

Specifications, parts descriptions, illustrations, and instructions in this manual were accurate at the time of publication. Etnyre International reserves the right to discontinue products and to change specifications and/or designs at any time without notice and without incurring any obligation.

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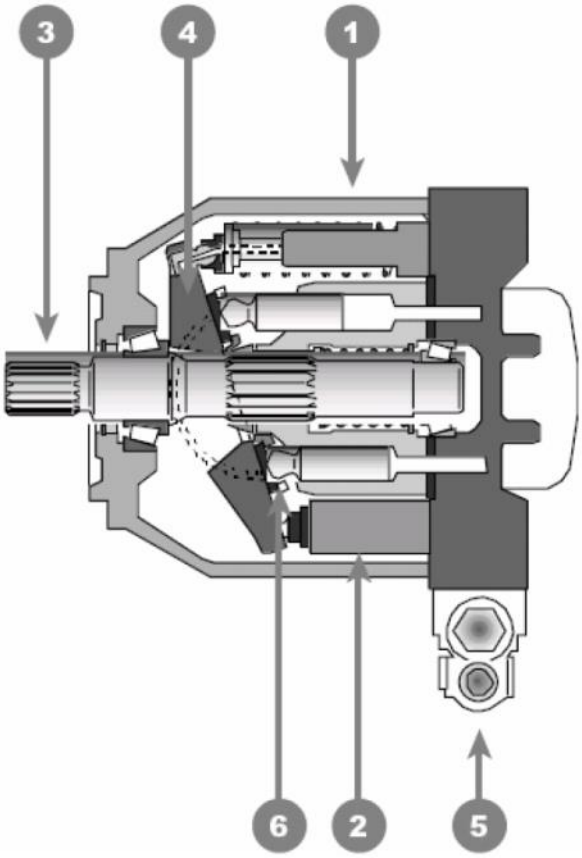
Variable displacement swash plate design axial piston pump

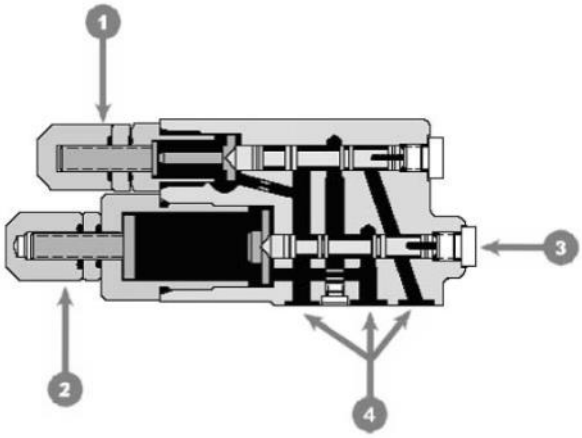
1. Housing
2. Control Piston
3. Input Shaft
4. Swash Plate
5. Control Valve Assembly
6. Pistons (x7)



Axial piston pumps model A10V0 are swash plate design variable displacement pumps. As illustrated by the picture under functional purpose they basically consist of a housing (1), control pistons (2) located inside cylinder barrel, drive shaft (3), swash plate (4), a control valve assembly (5), and pistons (6) This piston pump smoothly and continuously varies its displacement (volumetric output – size), by altering the angle of its swash plate. As your system operates, valves monitor the load pressures on the system's cylinders and/or motors and control the swash plate accordingly. The greater the angle of the swash plate, relative to the drive shaft, the further the pistons stroke in and out creating greater fluid flow.

There are two control valves, located in a removable housing, bolted to the pump. The standard type of control used is referred as flow and pressure compensator, type DFR.

The flow and pressure compensator, matches pump output flow and pressure to system demand. This control will automatically regulate the pump displacement to deliver the flow required to maintain a constant pressure drop across a valve spool or other flow limiting device. When there is no system demand, the pump stands by at zero flow and low pressure. When the system demands flow, the pump delivers only the flow required by the system, at a pressure required to move the load. To protect the system from infinite load pressures, the pressure compensator section of the control will cause the pump to automatically de-stroke when the pre–adjusted maximum system pressure is reached.



Flow and pressure compensator valve

1. Standby pressure adjustment screw
2. Maximum pressure adjustment screw
3. Gauge test port
4. Connections to pump control piston

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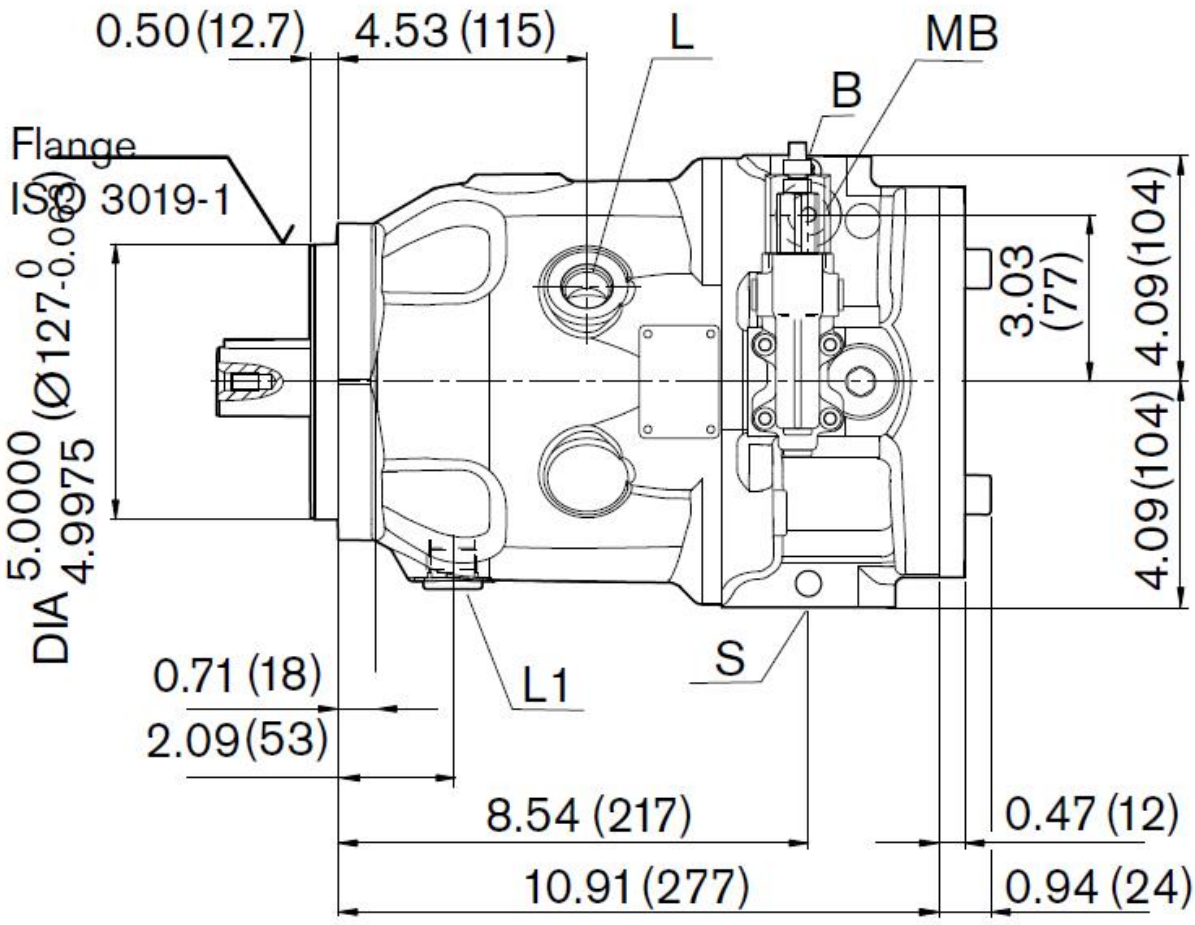

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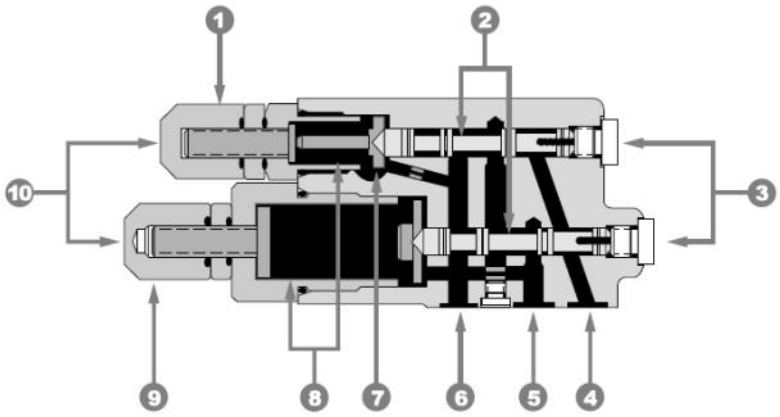
CONTROL VALVE ASSEMBLY



Identification Drawing

1. Load Sensing regulation
2. Control valve spools
3. Gauge test port
4. From the pump's output port
5. To he pump's control piston
6. To the pump's low pressure case then back to the reservoir
7. Connection to the load sensing shuttle valves
8. Adjustable command springs
9. Pressure regulation
10. Control valves and their adjustment screws

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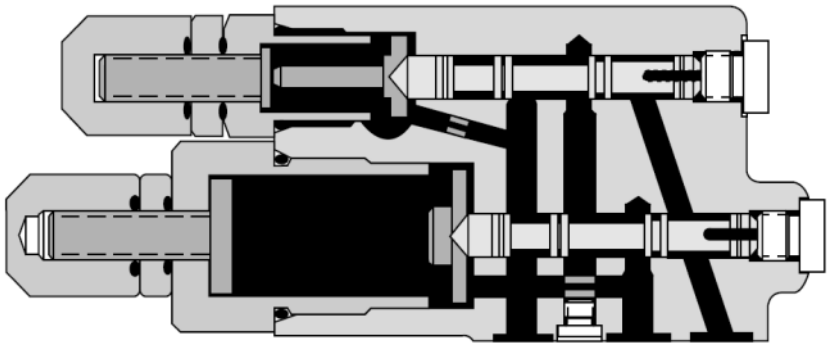
DFR CONTROL



Setting the compensator and load sense pressure settings

The pressure settings can be set without isolating the pump however the settings will be influenced by down-stream leakage, etc. Isolating the pumps pressure port will provide clear proof of actual pump performance. Refer to page 7 for the isolation schematic.

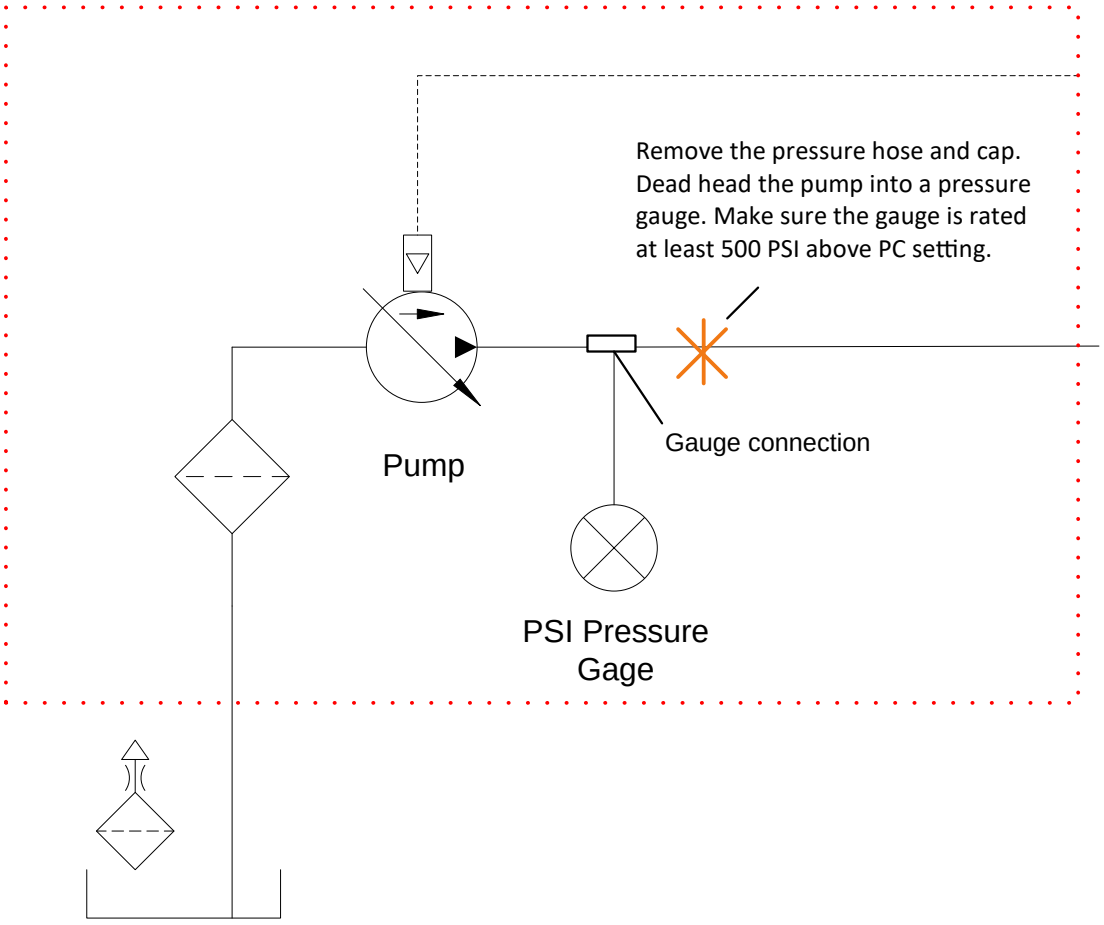
1. Remove the cap nuts (17mm external hexagon)
2. Undo the lock nuts (17mm external hexagon)
3. Turn the load sensing adjustment screw clockwise until it bottoms out taking care not to tighten the screw.

   (4mm internal hexagon) (This will defeat the LS portion of the control)
4. Set the pressure compensator by turning clockwise to increase and counter clockwise to decrease the pressure setting. (4mm internal hexagon)

   (Turing clockwise will increase and counter clocksiwe will decrease the pressure setting)

   (One full turn of the PC screw will result in approximately 50 bar or 735 psi pressure change)
5. Tighten the lock nut (17mm external hexagon)
6. Back out the LS adjustment screw until the desired stand by pressure is reached

   (Typically 34 bar or 500 PSI)



Isolate the pump from the system by:

1. Disconnecting the pressure line
2. Install high pressure plug in the hose to prevent any loss of hydraulic oil.
3. Connect the test fitting and gauge as shown above.

The purpose of this test is to isolate the pump and set the pressures independent of any down steam influence. This will ensure the settings are not corrupted by any fluid loss in other components.

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HYDRAULIC PUMP COMMISSIONING INSTRUCTIONS

1) After reinstalling on the RoadSaver ensure all fittings, hoses and components are flushed clean and free of grit and dirt.

2) Fill the hydraulic oil reservoir and pump through a filter to avoid adding contamination to the hydraulic system.

IMPORTANT NOTE: Fill the pump case to the highest case drain or vent port. Use clean filtered fluid. A pump of this construction relies on the oil it is pumping to provide lubrication for its moving parts. Never run an A10VO series pump dry, it will be instantly damaged.

3) Ensure all hoses, fittings, and couplers are tightened correctly.

4) Clean any oil spilled during assembly.

5) The RoadSaver system is equipped with shutoff valves in the suction circuits, check and be sure that all are open for flow.

6) Install a pressure gauge in the pressure line from the pump (this can be easily accomplished by installing a gauge into the test port in the bottom of the compensator. See compensator figure for test port location. Some valves may be equipped with a gauge port for this purpose, contact Rayner Equipment Systems for details about the equipment you are working on.)

IMPORTANT NOTE: Failure to use proper adaptors or properly rated test equipment can cause component failure or personal bodily injury. Contact Rayner Equipment Systems for the proper adaptor to install a gauge in the compensator or any other hydraulic test equipment you might need.

7) Remove both caps (if applicable) and loosen both jam nuts on the compensator adjustment screws. Use a 17mm wrench if your compensator has caps on the adjustments screws, or a 13mm wrench if your compensator does not have caps over the adjustment screws.

8) Using a 3mm hexagonal key, turn the maximum pressure adjustment screw on the pump compensator counter clockwise as far as possible.

IMPORTANT NOTE: New and rebuilt pumps are tested for performance at very high pressure; failure to adjust this pressure to match your system requirements may cause component failure, hoses to rupture, and personal bodily injury.

9) Since air has been introduced into the suction side of the hydraulic system either because this is the first time starting or because of replacing the pump, the air must be bled off to allow pump fluid to be pumped. Air will not automatically flow through because the valve has a closed center design, meaning that no fluid flows unless a function is activated. Bleeding air can be accomplished in a number of different ways, either by directing the main pressure line back to the reservoir, by loosening the main pressure line fitting until pump fully primes, or by activating a free flowing circuit.

IMPORTANT NOTE: Loose connections or lines can be extremely dangerous, as can be hydraulic fluid under pressure. Take extreme caution to prevent injuries during this process.

10) Start pony engine.

11) Allow pump to run for a few moments and fully prime.

12) Shut the system down, re-assemble any hoses or connection changed during step 9

13) Using a 3mm hexagonal key, turn the standby pressure adjustment screw on the pump compensator counter clockwise as far as possible.

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HYDRAULIC PUMP COMMISSIONING INSTRUCTIONS
(Continued from previous page)

14) Re-start engine.

15) Using a 3mm hexagonal key, turn the standby pressure adjustment screw on the pump compensator clockwise as far as possible.

16) Observe the gauge reading while using a 3mm hexagonal key to turn the maximum pressure adjustment screw clockwise slowly. If gauge reading does not change within the first few rotations, stop and start the process from step 1 again

17) Turn the maximum pressure adjustment screw clockwise slowly until the gauge reads the correct setting for maximum system pressure. Then lock the jam nut and double check that the setting did not change.

IMPORTANT NOTE: If you do **not** know the proper setting for maximum system pressure, contact technical support at Rayner Equipment Systems

18) Turn the standby pressure adjustment screw counter clockwise while observing the pressure gauge. The pressure reading will drop off rapidly at first then slowly. Adjust the pressure to between 450 to 500 PSI. Then lock the jam nut and double check that the setting did not change.

19) Run the system under load until oil reaches operating temperature (Should not exceed 140ºF) and check all functions for leaks.

20) Ensure there is still a sufficient quantity of oil in the reservoir now that all lines are full.

IMPORTANT NOTE: Erratic operation may indicate there is still air trapped in the system. By working control valves both ways the remaining air can be eliminated. The system is free of air when all functions can be operated smoothly and the oil in the reservoir shows no foam on the surface.

RS-E (Equalizer) Identified as a two pump system.

Manifold Pump is Pressure compensated only.
Pressure Compensation is set to 1800 PSI.

JS/PM pump is Pressure compensated with Load Sensing.
Load Sensing is set to 500 PSI.
Pressure Compensation is set to 3500 PSI.

RS (RoadSaver) Identified as a three pump system.

Manifold Pump is Pressure compensated only.
Pressure Compensation is set to 1800 PSI.

JS pump is Pressure compensated with Load Sensing.
Load Sensing is set to 500 PSI.
Pressure Compensation is set to 2800 PSI.

PM pump is Pressure compensated with Load Sensing.
Load Sensing is set to 500 PSI.
Pressure Compensation is set to 4200 PSI.

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Consistent Evolution

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