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albany

pump company ltd.

ALBANY FUEL OIL PUMP PACKAGES
OPERATIONS & MAINTENANCE MANUAL

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INTRODUCTION

1) All Pump sets are supplied with Albany Helical Gear Pumps. As positive displacement pumps they will displace a definite amount of liquid with each revolution and produce a discharge pressure equivalent to the conditions of the particular installation.

2) Albany Gear pumps are self priming and capable of operating up to 25 ft. suction lift based on fuel oil at 70 F. If the static lift plus pipe friction losses combine to exceed this figure, pump operation will be erratic or no pumping at all will be realized.

3) It is particularly important that the suction line be air tight. Use a good pipe joint compound or tape at all joints. If the suction line is not tight and air is allowed to enter the pump capacity will be noticeably reduced or it may not pump at all.

FOR ALL PUMP SETS

1) Connect the Suction and Discharge lines to the pump set (see drawing).

2) Connect suitably sized piping to the relief valve outlet and run to the main storage tank or the main return line (see drawing).

3) Confirm that motors are properly WIRED to their CORRECT VOLTAGE and ROTATION.

START UP INSTRUCTIONS

CHECKING ROTATION

Open all hand valves. Briefly jog Pump #1 and then Pump #2 to confirm that the ROTATION corresponds to the directional ARROWS on the pumps. If required, change the wiring for correct rotation. (See wiring diagram on the motor).

PRIMING THE PUMPS

CLOSE the hand valves on both sides of Pump #2 and CLOSE all gauge cocks.

Start Pump #1 and operate until the system is completely primed and all air has been purged from the pump and suction piping. NOTE: to assist in priming loosen the plug in the tee located at the base of the relief valve. When the pump is fully primed the oil escaping from the plug will be clear in color (not milky). Tighten the plug. Repeat for pump #2.

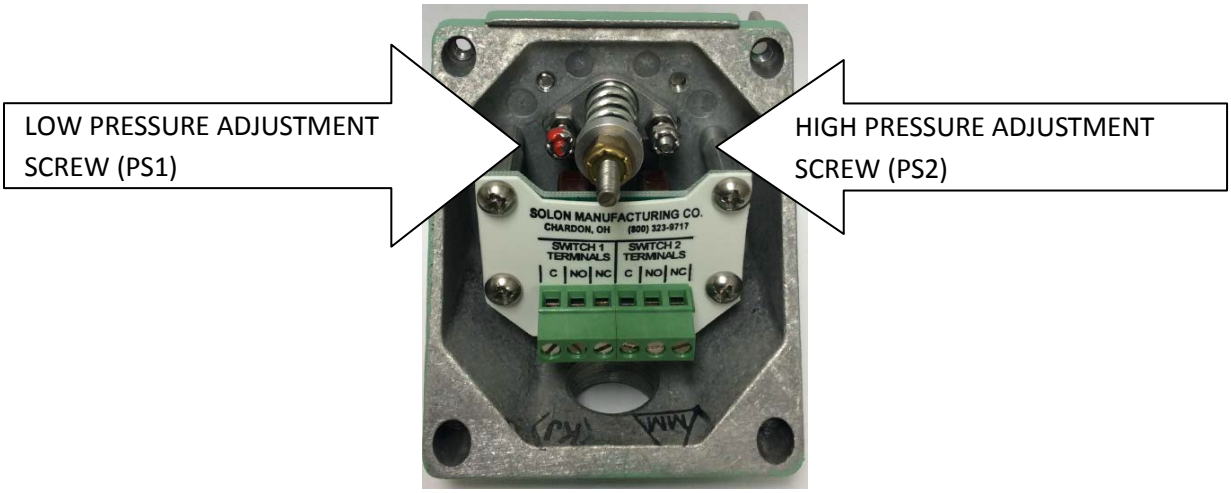
SETTING THE RELIEF VALVES

The Relief Valves supplied on the unit must be SET at time of installation. To set, remove the acorn nut covering the adjusting screw, loosen the lock nut and back the screw off (CCW). With Pump #1 running tighten the screw until the gauge pressure no longer rises. The gauge pressure showing will then be the required “system working pressure”. Next loosen the adjusting screw until the gauge pressure falls slightly below the “system working pressure”. Carefully close the discharge valve for Pump #1. Further adjust the relief valve screw until the “shut off” pressure is approximately 20 percent higher than the “system working pressure”. Replace the lock nut and acorn nut with gasket. Stop Pump #1 and close all corresponding suction and discharge valves.

Open the suction and discharge valves for Pump #2 and START PUMP. Prime Pump #2 as per the instructions above.

Adjust relief valve for Pump #2 as per instructions for valve #1. Upon completion open all hand valves.

SETTING THE PRESSURE SWITCHES



Your Albany Duplex Fuel Oil Pump Set is equipped with a combination high / low pressure switch to properly protect the system. The pressure switch is installed at a common point in the discharge piping of the pump set and must be wired to the appropriate terminals in the electrical control panel (see control panel drawing). These switches become operative in hand and automatic mode.

LOW PRESSURE SWITCH (PS1)

A low pressure switch is used to detect a drop in pressure to something less than the established normal operating pressure. The low pressure switch contacts (switch 1 in device) are wired in the normally closed position. Starting with the setting indicator below the desired actuation point, adjust the pressure upwards until the switch contacts open at a pressure approximately 5 psig below the established system working pressure. The pump set will continue to operate providing the operating pressure remains at or above the low pressure setting. If the system operating pressure falls below the low pressure setting, the switch contacts will open and activate a timer in the control panel (set at 1 minute). If the system operating pressure stays below the low pressure set point for the full minute, the pumping system will stop. A fault light on the panel will serve to alert the operator. The system will REMAIN STOPPED until the MANUAL RESET on the control panel is activated.

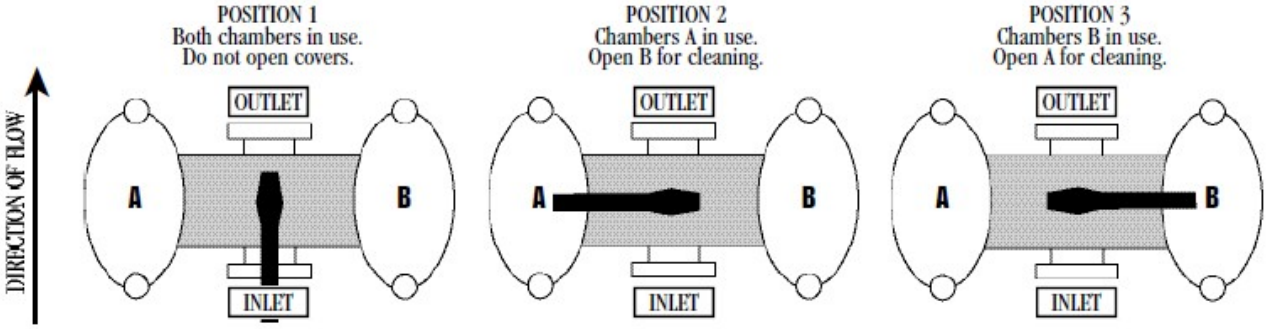
HIGH PRESSURE SWITCH (PS2)

The high pressure switch is intended to stop the pump set in the event of a rise in pressure above the established normal operating pressure. This switch (switch 2 in device) is wired in the normally open position and must remain so in order for the pump set to continue operating. Using the instructions supplied with the switch as a guide, set the activation point 5 to 10 psig above the normal system operating pressure. If a condition occurs in the system causing the pressure to rise, the switch contacts will close and the pumping system will stop. A fault light on the panel will serve to alert the operator. The system will REMAIN STOPPED until the system pressure falls back to normal and the MANUAL RESET on the control panel is activated.

ALBANY PUMP STRAINERS

FOR DUPLEX PUMP SETS

ALBANY BS SERIES BASKET STRAINER



This valve is designed so that the strainer screen can be removed from one side (or the other) while the pump set is in operation. When the pump set is operating, the handle must be positioned to one side or the other.

FOR SIMPLEX PUMP SETS

SIMPLEX BASKET STRAINER

The strainer is installed downstream of pump suction isolating valve. To service strainer, close isolating valve before opening strainer basket.

OIL PUMP CONTROL PANELS

The FO Series Pump Set includes our **SICON and DUCON** Microprocessor Based Fuel Oil Management and Pump Controller, which can be configured to monitor and control transfer pumps, return pumps, tank level gauges, and tank leak detectors. It provides pump operation and monitoring with motor starters and HOA switches. Automatic level control is managed by our control panels through signals received by float switches located in the day tank. The Controller can network with other system controllers using Ethernet, and directly to Building Management Systems with an option of BACnet, Modbus, Metasys N2, or Lon protocol.

The completely assembled and wired controllers are factory tested before shipping. All components used in Albany Pump oil pump controllers are CSA listed and UL approved.

All Fuel Pump Control Panels come standard with the following alarm light features:

-Low Level Day Tank/Lead Pump Failure (Duplex system only)

-High Level Day Tank

-Critical High Level Day Tank

-Low Level Main Tank

-High Level Main Tank

-Overload Pump 1

-Overload Pump 2 (Duplex system only)

-Low Pressure

-High Pressure

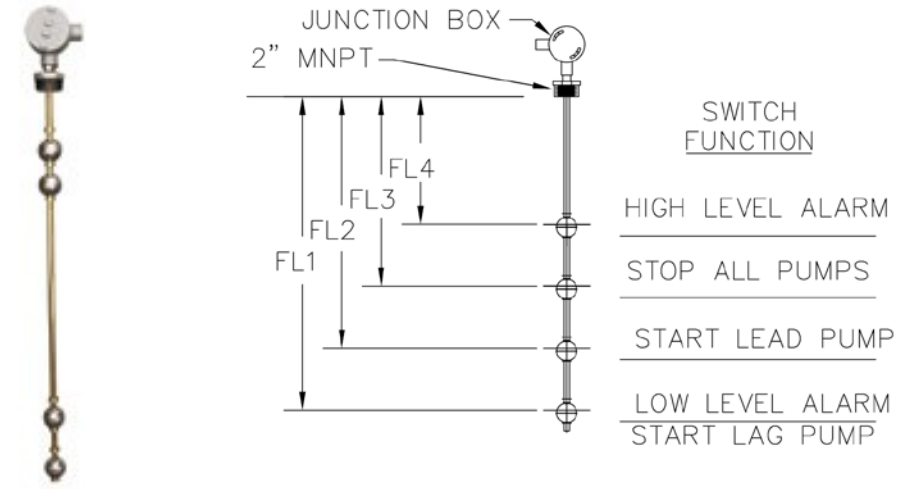
FLOAT SWITCHES

PRINCIPLE OF OPERATION

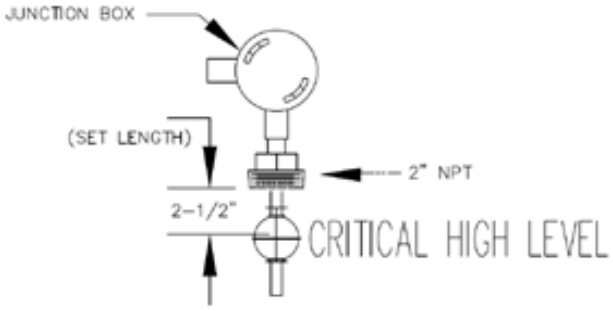
The switching action is achieved through the use of an internal magnet within the float and its interaction with the switch mechanism. As the liquid level changes inside the tank, the float moves. Its magnetic field opens or closes each reed switch inside the stem to complete an electrical circuit.

A four level float is used in a standard set up. A redundant, single point float switch is required by TSSA to provide a Critical High Level shut off point in the case of the failure of the four level float.

FOUR LEVEL FLOAT



CRITICAL HIGH LEVEL FLOAT



PUMP REPAIR – H SERIES

DISASSEMBLING PUMP

Repair kits are available for all Albany Gear pump models. Each repair kit includes replacement gaskets, seal, gears, shafts and bearings. Remove rear cover. Using fingers or hook tool, remove rear bearings. Slide out idler gear assembly. Grasp drive gear, slide off drive shaft and carefully remove key from shaft.

Remove 3 screws from bearing retainer and pull shaft assembly from pump

Remove screws from front cover. Remove cover by light tapping; to ease off dowl pins, while pulling from body. Front bearings can now be removed.

Loosen 2 set screws in outboard bearing and slide retainer off shaft.

For 03 Models only: Remove snap ring from shaft in front of outboard bearing and push shaft through retainer, pushing out wearface and seal seat at same time. Remove snap ring from shaft behind bearing.

To remove rotating seal head from shaft it is necessary to protect the rubber bellows from grooves and keyway. This can be accomplished by covering them with scotch tape. Lubricate shaft and slide seal head off shaft.

To remove wearface and seal seat, remove snap ring from outboard bearing. Pull out bearing and then push out wearface and seal seat.

Replace any parts where wear is evident be re-assembling pump.

RE-ASSEMBLING PUMP

Carefully clean all parts and lubricate lightly. Make sure pump body faces are clean and free of nicks or scratches. If new bearings are used, try in body and on shafts before re-assembling pump.

Insert front bearings. Replace gasket, install front cover using dowel pins for alignment. Tighten eight screws finger tight. Slide rotating seal head on shaft using caution not to cut rubber bellows or scratch seal wearfaces until spring washer is against snap ring. Press wearface and seal seat in bearing retainer; taking care not to nick the seal seat, and make sure wearface is seated squarely on back face. Press sealed ball bearing in retainer and insert snap ring. Slide this assembly over shaft after cleaning and lubricating seal faces. Remove one set screw from ball bearing, push retainer until screw hole lines up with locking groove on shaft and tighten other set screw. Insert other screw and tighten both set screws until allen wrench flexes approximately 15^{o}.

For 03 models only: After installing front cover as previously, slide rotating seal head on shaft using caution not to cut rubber bellows or scratch seal wearfaces until spring washer is against snap ring. Press wearfaces until spring washer is against snap ring. Press wearface and seal seat in bearing retainer taking care not to nick the seal seat, and make sure the wearface is seated squarely on its back face. Slide bearing retainer on shaft and

place middle snap ring on shaft. Push ball bearing on shaft and press into retainer until snap ring can be inserted to hold bearing in retainer. NOW place outer snap ring on shaft to complete retainer, seal and shaft assembly.

Insert retainer, seal and shaft assembly in front cover making sure drain hole is pointing down and replace screws.

Insert key in drive shaft and slide drive gear against front bearing. Insert idler gear assembly and insert rear bearings. Replace gasket and rear cover. Tighten all screws while rotating drive shaft by hand.

PUMP REPAIR – G SERIES

DISASSEMBLING PUMP

Repair kits are available for all Albany Gear pump models. Each repair kit includes replacement gaskets, seal, gears, shafts and bearings. Remove rear cover. Using fingers or hook tool, remove rear bearings. Slide out idler gear assembly.

Remove screws from seal retainer and remove seal retainer from pump.

IMPORTANT

Do not remove screws fastening front cover to body – keep pump body and front cover assembly together as a unit in order to preserve relative positions and alignment. In the event body and front cover are separated, it will be necessary to tap body and cover lightly at pump re-assembly while tightening screws in order to insure alignment and free turning.

Remove drive shaft and gear assembly from cover and body assembly by pushing on drive shaft end while supporting on body flange.

For pumps equipped with mechanical seals and lip seals, it is necessary to protect the rubber lip or bellows from shaft grooves and keyway. This can be accomplished by covering them with scotch tape. Lubricate shaft before pushing drive shaft and gear assembly from cover.

To remove wearface and seal seat, push out wearface and seal seat from seal retainer.

Replace any parts where wear is evident be re-assembling pump.

RE-ASSEMBLING PUMP

Carefully clean all parts and lubricate lightly. Make sure pump body faces are clean and free of nicks or scratches. If new bearings are used, try in body and on shafts before re-assembling pump.

Place internal pump parts into front cover and body unit. Suggested sequence includes front bearings, drive and idle gear assemblies, and rear bearings.

MAINTENANCE INSTRUCTIONS

Your Albany Fuel Oil Pump Set requires periodic cleaning of the Inlet Suction Strainers. Service as follows:

a) Select the pump to be serviced first and set the control panel selector switch for that pump to the “OFF” position.

b) Close the valve on the discharge of the pump to be serviced. Position either the 3 way suction valve handle or the Duplex Strainer handle so that the flow to the pump/ basket being serviced is closed.

c) Remove the strainer basket and clean in a suitable solvent.

d) Re-install the strainer basket. (Ensure that any and all o-rings are suitably in place).

e) Repeat process for second pump / basket when required.

All other forms of service can be arranged through our office on a semi-annual or annual basis.