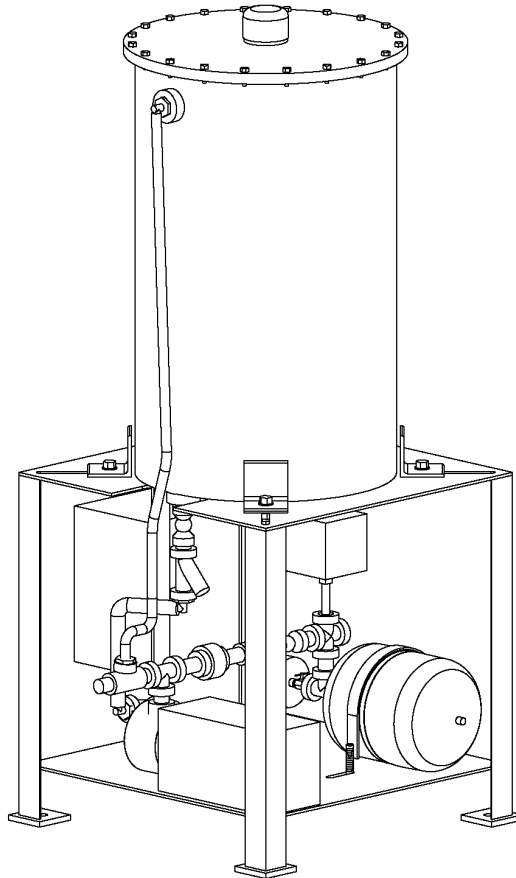


Installation, Operation, and Maintenance Manual
Outdoor Glycol Feed System
JWOP-53-030/055/100

Rev. 1
3/21/11
K.G.



Type - John Wood #JWOP-53-030/055/100, Outdoor Glycol Feed System

Capacity – 30/55/100 Gallons

Service – Glycol/Water Feed

Design Pressure - 100 PSIG

Design Temperature - 180°

Theory of Operation

The Outdoor Glycol Feed System keeps the heating / cooling system at or above its minimum operating pressure by the use of the simple logic of the control panel and the pressure switch. The unit can be set to pump in one of two modes as selected by the H – O – A switch located on the panel face. In “H” or hand mode, all automatic control switches are by-passed. In this mode, control is solely the responsibility of the operator (with the exception of the pressure switch, which will shut the pump down when the set max psi is reached).

In “A” or automatic mode, the system will operate based on the pressure switch setting as well as the level switch. As the pressures of the heating / cooling system drops below its minimum operating pressure, the pressure switch of the glycol feed system closes, bringing the unit’s pump on-line (as indicated by a green panel mounted indicator light). The pump will continue to supply the glycol mixture to the heating / cooling system until the glycol feed system’s pressure switch is satisfied (maximum system operating pressure).

The glycol feed system is equipped with one low level switch. The low level switch will stop the pumps from running if the level of glycol/water drops below 10%. The pump will resume running only when the level of glycol/water is above 10% and the alarm has been cleared by pushing the reset button.

The glycol feed system has one 1/2 hp TEFC regenerative turbine type pump with a head capacity of 130 ft. head (6.2 GPM capacity @ 56.4 PSI).

Installation

Fluid Connection – The Outdoor Glycol Feed System is equipped with a single 3/4” female NPT threaded outlet connection.

Plumbing – The piping connected to the Glycol Feed System must be supported to minimize mechanical and thermal force on the vessel nozzles. Make every effort to keep the lines as short as possible between the piping support and the Glycol Feed System connection. Be sure all joints are tight. Flush out all lines prior to installation.

Alignment – Proper alignment is key to preventing leakage at the connections and to alleviate undue stress on the system.

Electrical – 120 Volt, single phase, 60 hertz power is required to operate the glycol feed system (refer to schematic for interconnection points). It is the responsibility of the owner / installer to ensure all local and governmental regulations are met.

Operation

Pre-Startup – Recheck installation as described above. Fill glycol / water storage tank with the glycol / water mixture. Verify the pump rotation by jogging the motors, correct if necessary. Before initial startup, make sure the pumps are adequately primed. Make sure that suction and discharge valves are open.

Start-up –After initial power up, the alarm will sound and the fault light will illuminate. You must press the reset button before proceeding with the start up. Start unit and check for proper operation. If necessary, adjust the pressure switch using the set point adjustment knob and the dead band adjustment knob. The pressure switch is factory set to activate when pressure falls below 40 psig and deactivate when pressure rises above 60 psig. It is recommended that the line mounted pressure relief setting should be 34 kPa (5 psig) above the operating pressure in the discharge line. Check for leakage once the system is in operation.

Maintenance

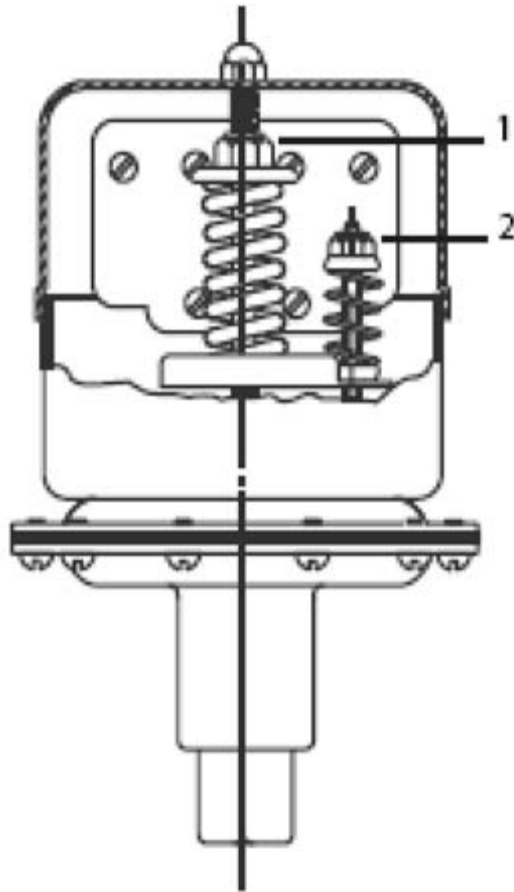
Frequency – The frequency and extent of system maintenance is best established based upon past performance. Keeping detailed maintenance records of past performance aids in determining future preventative maintenance intervals. During routine operating inspections, pay attention to seal and bearing areas of the pump.

Inspection – If unit exhibits reduced flow, an inability to maintain pressure, is noisy or performs otherwise abnormally, first refer to the Troubleshooting Matrix below. If the problem persists, the pump should be inspected for wear or damage. Field inspect by removing the cover nuts (or cap screws) to pull off the cover. Apply gasket sealant to the pump cover before reattaching it to the pump. Replace pump if worn or damaged.

Trouble Shooting Matrix

Difficulty	Probable Cause	Remedy
No liquid delivery	<ol style="list-style-type: none"> 1. Closed valves 2. Plugged suction strainer 3. Air leak at suction 	<ol style="list-style-type: none"> 1. Open valve 2. Eliminate restriction 3. Locate and repair leak
Low liquid delivery	<ol style="list-style-type: none"> 1. Discharge pressure too high 2. Air leak at suction 3. Worn or damaged pump 4. Low viscosity 	<ol style="list-style-type: none"> 1. Reduce downstream pressure 2. Locate and repair leak 3. Inspect and repair as required 4. Verify original application
Gradually loses prime	<ol style="list-style-type: none"> 1. Air leak at suction 2. Worn or damaged pump 	<ol style="list-style-type: none"> 1. Locate and repair leak 2. Inspect and repair as required
Noisy	<ol style="list-style-type: none"> 1. Cavitating 2. Worn or damaged pump 	<ol style="list-style-type: none"> 1. Eliminate restriction 2. Inspect and repair as required
Motor runs hot or overloads	<ol style="list-style-type: none"> 1. Discharge pressure too high 2. High viscosity 3. Incorrectly wired motor 4. Binding internal pump parts 	<ol style="list-style-type: none"> 1. Reduce down stream pressure 2. Verify original application 3. Check wiring 4. Inspect and repair as required
Seal leaks	<ol style="list-style-type: none"> 1. Dry running 2. Seal material incompatible with fluid 	<ol style="list-style-type: none"> 1. Open valve, prime pump 2. Verify original application

Setting the Pressure Switch

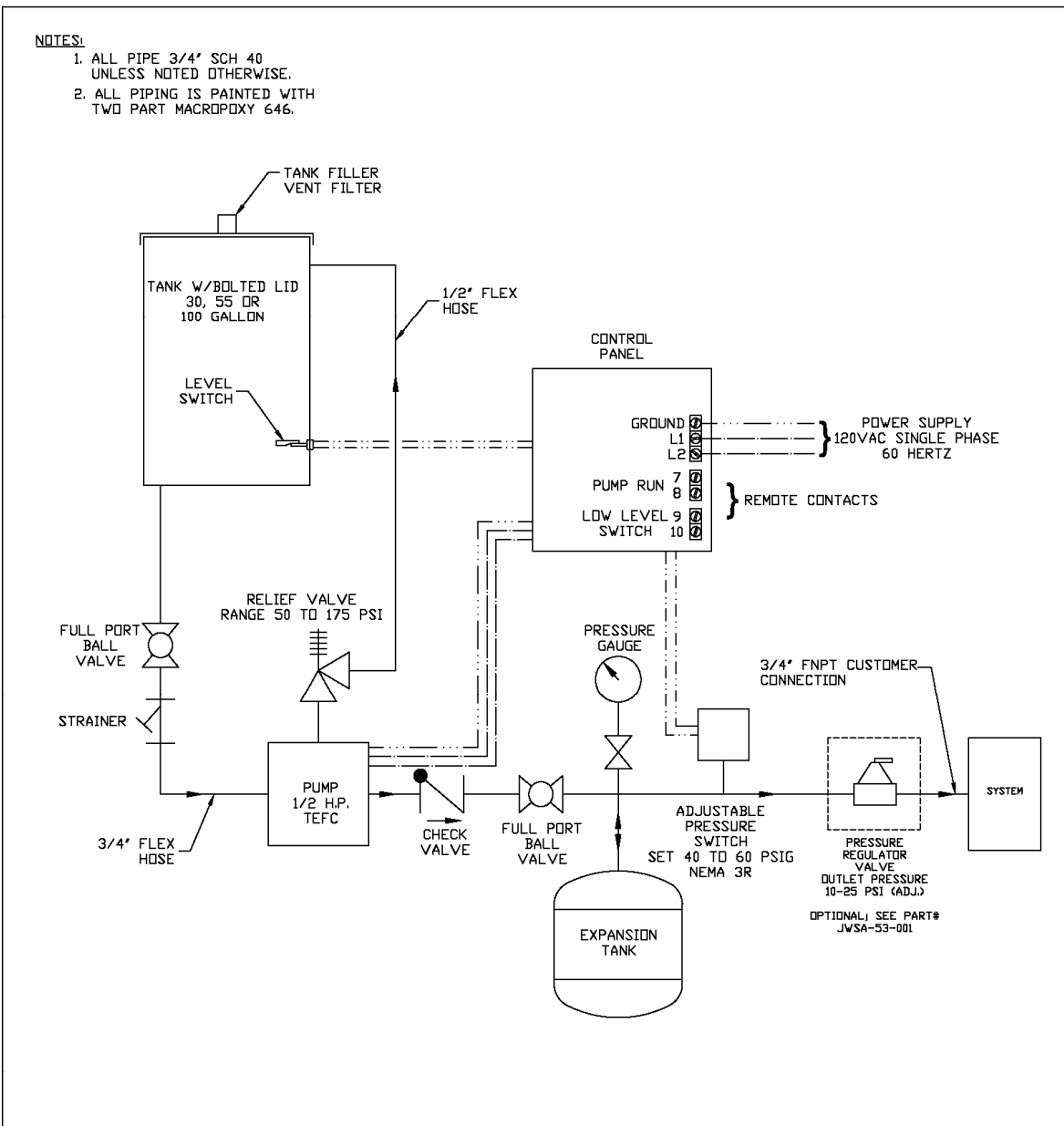


1. When setting the pressure switch, adjust the switching point on falling pressure (cut-in) first and then adjust the point on rising pressure (cutout).
2. Switching point on falling pressure: set the cut-in pressure by adjusting screw-nut 1. Tighten to raise the set point. Loosen to lower the set point.
3. Switching point on rising pressure: set the cut-out pressure by adjusting screw-nut 2.
4. Tighten screw-nut 2 to increase the differential in pressure. This will also increase the cut-out set point. Loosen screw-nut 2 to decrease the differential in pressure.

Outdoor Glycol Feed System P&ID

NOTES:

1. ALL PIPE 3/4" SCH 40 UNLESS NOTED OTHERWISE.
2. ALL PIPING IS PAINTED WITH TWO PART MACROPOXY 646.



ALL UNITS ARE INCHES.
 SCALE: NONE

THESE DRAWINGS, SPECIFICATIONS, AND THE IDEAS CONTAINED HEREIN ARE THE EXCLUSIVE PROPERTY OF THE JOHN WOOD CO. THESE DOCUMENTS SHALL NOT BE COPIED OR REPRODUCED IN PART OR IN FULL AS A BASIS OF DESIGN, MANUFACTURE, OR SALE, AND SHALL NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THIS COMPANY. THEY ARE SUBJECT TO RETURN UPON REQUEST.

OUTDOOR GLYCOL SYSTEM P&ID		JWOP-53-030/055/100	
REVISION	DATE BY		
SIZE	DR. K.G. 3/21/2011	THE JOHN WOOD COMPANY VALLEY FORGE, PA.	JWOP-53 PID
A	CH. _____		
	APP. _____		
		REV	

Spare Parts

The following replacement part(s) are available:

- | | |
|--------------------|------------|
| 1. Level Switch | #100099130 |
| 2. Relief Valve | #13708-5 |
| 3. Expansion Tank | #JNER14008 |
| 4. Pressure Switch | #100099120 |
| 5. Pump | #100099116 |
| 6. Pressure Gage | #13708-4 |