

PACIFIC LIQUID & AIR SYSTEMS

CPB 7 / 10 / 15 INSTALLATION, OPERATION, & MAINTENANCE

IN THE BEGINNING

Before installing or operating this system, familiarize yourself with these instructions. You should also read the other instructions packed with this system.

SYSTEM LOCATION

The CPB system should be located in a dry, protected, and well ventilated area. A garage or utility / laundry room is ideal. If the system is located in a pump house make sure it is well ventilated.

INSTALLATION DIRECTLY IN THE COUNTY WATER LINE

When the CPB System is used to directly boost county water pressure it is installed in the configuration in which it is supplied. Plumb the line from the water meter into the threaded isolation valve on the suction side of the pump. (An approved backflow preventer may be required by your water authority. Check local codes.) Plumb the line from the house to the isolation valve on the discharge manifold.

Connect 230 VAC, 20 AMP service to the outside terminals of the pressure switch. Install a good ground to the ground screw on the pressure switch housing. (A ground fault interruption device may be required. Check local codes.) Although 230 VAC is recommended, all CPB Systems will run on 115 VAC. 230VAC operation will increase motor life and reduce electrical consumption. If 115 VAC operation is desired, refer to the wiring diagram on the side of the motor. Please note that a 30 AMP circuit is required for 115 VAC operation. Also, make sure that existing or new wiring is capable of carrying the higher current load at 115VAC.

INSTALLATION IN WELL, CATCHMENT, AND AIR GAP SYSTEMS

When CPB Systems are used with rainwater catchment tanks, a check valve must be installed where the suction pipe penetrates the tank wall. If the suction pipe enters the catchment tank from above (ie over the side) a foot valve must be used. If the CPB System is being installed with our "AIR GAP 200" System, a check / isolation valve assembly must be installed at the tank discharge. AIR GAP 200 installation instructions are available on our web site.

If you have specified that you are installing the CPB System on a shallow well, a foot valve must be installed. Install the foot valve at the end of the well drop pipe.

Install the house feed line and electrical service as previously described for directly connected systems..

START UP -- DIRECT CONNECTED SYSTEMS

If specified, your CPB System has been preset in our shop to a specific cut in / cut out pressure. If not, all systems are set to cut in at the constant pressure rating of the cycle stop valve and cut out 15 PSI over that value. Tank pressure has been adjusted to 5 PSI below cut in pressure. If the pressure switch requires adjustment, refer to the PL&A publication entitled "SET UP AND TUNING OF PRESSURE SWITCHES AND HYDORPNEUMATIC TANKS" available at our web site.

Check and note the tank air pressure with a good quality digital tire pressure gauge. Open the drain valve located on the discharge manifold. Open the isolation valve on the suction side of the pump and allow water to enter the system. After all air is purged from the System close the drain valve. After the tank fills, the pressure gauge will indicate the static pressure of the water supply. Apply power to the system. The pump will start and pressure will begin to rise. Allow the pump to fully pressurize the system. Note the cut out pressure. Open the drain valve and allow the system pressure to

drop. Cut out pressure must be a minimum of 15 PSI above cut in pressure. If pressure settings are incorrect, readjust the switch or contact Pacific Liquid. If pressure settings are correct and tank air pressure is approximately 5 PSI below pump cut in pressure, the system is set up correctly. Thoroughly rinse the pump and tank by allowing the system to go through two or three discharge cycles. When complete, open the discharge isolation valve and bleed air from the household plumbing. Observe several pump cycles .

START UP -- WELL, CATCHMENT, & AIR GAP SYSTEMS

If your system is installed with an AIR GAP 200 holding tank, it must be sanitized. Follow the directions with the AIR GAP 200.

If specified, your CPB System has been preset in our shop to a specific cut in / cut out pressure. If not, all systems are set to cut in at the constant pressure rating of the cycle stop valve and cut out 15 PSI over that value. Tank pressure has been adjusted to 5 PSI below cut in pressure. If the pressure switch requires adjustment, refer to the PL&A publication entitled "SET UP AND TUNING OF PRESSURE SWITCHES AND HYDORPNEUMATIC TANKS" available at our web site.

The pump must be primed prior to starting. Remove the hex bushing (pipe fitting) below the pressure gauge. Slowly fill the pump and associated piping with water. When full, retape the threads and replace the hex bushing. Open the drain valve and apply power to the system. Depending upon the diameter and length of the suction piping, priming can take 10 seconds to several minutes. Although it is not required, prefilling the suction piping prior to starting the pump will reduce prime time to just a few seconds. When the system has primed and all air has been purged, close the drain valve and allow the system to fully pressurize. Note the cut out pressure. Open the drain valve and allow the system pressure to drop. Note the cut in pressure. Cut out pressure must be a minimum of 15 PSI above cut in pressure. If not, readjust

the pressure switch or contact PL&A. If pressure settings are correct and tank pressure is approximately 5 PSI below pump cut in pressure, the system is set up correctly. Thoroughly rinse the pump and tank by allowing the system to go through two or three discharge cycles. When complete, open the discharge isolation valve and bleed air from the household plumbing. Observe several pump cycles.

TROUBLE SHOOTING

Your CPB System has been thoroughly tested prior to shipping. Although equipment failures can occur after testing, 99% of all operational problems are due to improper installation. Use the following list to trouble shoot a faulty installation. Please refer to the System setpoints that were attached to the installation packet. It lists serial number, cut in/cut out pressure, tank precharge, and motor voltage. You will need to know these values when trouble shooting. If the following suggestions do not correct the problem, please contact your dealer or PL&A.

Pump doesn't run (all installations)

Make sure the proper voltage is applied to the outside terminals of the pressure switch.

If your system is direct connected, make sure that cut in pressure exceeds static pressure by at least 10PSI.

Pump doesn't prime (shallow well, air gap, and catchment installations only)

Make sure that the pump is filled with water. If you did not prefill the suction piping you must allow additional prime time.

The drain valve must be open during priming in order for air to be purged. If the air is not allowed to escape, the pump will not prime.

Check the suction piping for leaks. All it takes is a *pin hole* to keep the pump from priming. If an additional check valve has been installed, make sure it is facing in the proper direction.

You can always check the pump's condition by

placing your hand over the suction isolation valve. If it is operating properly the sensation will be similar to placing your hand over a vacuum cleaner hose.

Pump doesn't cut off or restarts after a short period of time (all installations)

If the pressure switch has been readjusted, make sure that cut off pressure is not set too high.

Close the discharge isolation valve. If pressure rises and the pump shuts off properly, check for major leaks or open valves in the household plumbing. Use the same procedure with the discharge isolation valve to test for leakage back through the check valve. If the pressure rises and the pump shuts off properly, remove the check valve and check for debris.

Make sure the motor is set for the proper voltage. Incorrect voltage will cause the motor to run at a lower speed resulting in low pressure. Incorrect voltage will also damage the motor windings very quickly.

Pump cycles on and off rapidly

This condition is not uncommon and is usually due to water hammer that is often generated by the household piping (too many 90° bends or restrictions). If the pump cycles during cut in or cut out, make sure that cut in and cut out pressures differ by at least 15PSI. Increasing the differential pressure to 20PSI will often cure the problem. If this does not work and the piping problem cannot be corrected a surge arrestor must be installed on the pressure switch. Contact PL&A for the correct part.

MAINTENANCE

There are several preventive maintenance steps that will help insure a long life for your CPB system. Failure to follow them will shorten system life, reduce reliability, and possibly void your warranty.

If you nick or scratch the finish on the tank,

touch it up immediately with a good enamel. Mild steel will rust quickly when exposed to Hawaii's corrosive environment.

Like any tire valve the Shrader valve on the tank will leak. Also the bladder is a semipermeable membrane and will pass some air over time. **Annually** shut off the discharge and suction isolation valves, disconnect power, and drain the system. Check the air pressure and add air if the tank pressure has dropped. It should be 5 PSI below cut in pressure. **Failure to do this will void your tank warranty**.

Check the system for leaks and repair immediately. Leaks will cause rust and possible motor damage.

Pressure switch settings drift over time. If the pump seems to run longer than it did originally, check the cut in and cut out pressure and readjust the switch if necessary.

Replace faulty or broken pressure gauges immediately. A working pressure gauge is the best tool for diagnosing system problems.

When you go on vacation or leave the house unoccupied for long periods of time, switch off the system. If you wish to leave it on for irrigation purposes, specify that a low pressure cut off switch be installed. This will protect the pump if the source of water is interrupted.

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PACIFIC LIQUID & AIR SYSTEMS
PUMPS • MOTORS • CONTROLS

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