

## HYDROPAD INSTALLATION, OPERATION AND MAINTENANCE

*Warning: Read all instructions carefully.* EXPOSING THE INLET SIDE OF AN UNDERCHARGED HYDROPAD TO LINE PRESSURE MAY DAMAGE THE UNIT. NEVER exceed the maximum operating pressure stamped on the nameplate of the vessel and NEVER weld to the pressure boundary of the Hydropad without consulting Flexicraft. The Hydropad bellows, if damaged, cannot be serviced by the user. The entire unit must be returned to Flexicraft for evaluation and repair.

### **INSTALLATION:**

The Hydropad housing should be located above the point of connection and installed vertically. If this is not possible, Flexicraft must be contacted for additional instructions. In certain instances, Hydropads may be installed with the inlet connection up, but Flexicraft must be contacted before mounting in this orientation.

Unless the Hydropad is furnished from the factory with some type of supports, the unit may require more support than the piping itself can provide. Check with your piping designer to verify that the piping can support the additional weight of the Hydropad.

### **OPERATION:**

Note that Hydropads are NOT charged at the factory prior to shipping. IT IS THE CUSTOMER'S RESPONSIBILITY TO CHARGE THE UNIT TO THE CORRECT PRESSURE PRIOR TO PLACING IN SERVICE.

To ensure correct charge, the Hydropad must be isolated from line pressure. The actual charge pressure depends on the type of application and the system operating pressure. It is vital that the Hydropad is properly sized and charged for the system and application. If the unit is undercharged, the bellows may be damaged when exposed to line pressure. If a Hydropad is overcharged, it will be ineffective. In fact, an overcharged Hydropad acts like a dead end in the piping system.

### **CHARGE PRESSURE:**

#### *Pump Pulsation Dampener Charge Pressure:*

For most pulsation dampener applications, the charge pressure should be between 80% and 90% of the mean output pressure of the pump. With the pump running, the system pressure will compress the nitrogen and the charge pressure will reflect the actual output pressure of the pump with any residual pulsation.

#### *Surge Suppressor Charge Pressure:*

The Hydropad charge pressure for surge suppressor applications is 3 to 5 psi below the system operating pressure at the point of Hydropad installation. After the Hydropad has been installed and exposed to line pressure. The nitrogen will be compressed to the same pressure as the system.

#### *Accumulator Charge Pressure:*

The correct charge pressure for a Hydropad used as an accumulator is the minimum acceptable fluid deliver pressure. As the system pressure is increased to the normal operating pressure. The Hydropad will 'accumulate' fluid until the nitrogen charge pressure equalizes with the system pressure. The accumulated fluid will discharge into the system as the system pressure drops.

#### *Thermal Expansion Chamber Charge Pressure:*

When a Hydropad is used as a thermal expansion chamber, the charge pressure should be the same as the initial pressure when the system is initially blocked off. As the temperature of the fluid increases the fluid will expand into the bellows of the Hydropad compressing the nitrogen pressure up to the maximum acceptable system pressure. Normally this is at or below the set pressure of any relief device in the system.

### **MAINTENANCE:**

Hydropads are virtually maintenance free. The only maintenance that may be required is to adjust the charge pressure to the proper level. If reasonable care is taken, adjusting the charge pressure on a Hydropad is a simple matter.

#### **If the Hydropad is uncharged or undercharged:**

- a) Unit should be unconnected to line or isolated from line pressure. Unless otherwise specified, all Hydropads are supplied with a pressure gage mounted near the charging valve. This gage reads the nitrogen charge pressure.

- b) Remove the yellow cap from the charging valve (see figure A below) and attach a nitrogen supply to the valve using gas charging chuck (part number cc300) or any other suitable connection.
- c) Turn the 3/4 in hex swivel nut counter-clockwise to open the valve.
- d) Open the valve on the nitrogen supply and increase the nitrogen charge to the desired level.
- e) Turn the 3/4 in nut clockwise to close and apply 50-70 in-lb torque.
- f) Turn off and disconnect the nitrogen supply from the charging valve.
- g) Reinstall the yellow valve cap. The Hydropad may now be exposed to line pressure.

**If the Hydropad is overcharged:**

- a) Isolate the unit from line pressure and relieve the pressure inside the bellows. Unless otherwise specified, all Hydropads are supplied with a pressure gauge mounted near the charging valve. This gauge reads the nitrogen charge pressure.
- b) Remove the yellow cap on the charging valve and slowly turn the 3/4 in hex swivel nut counter-clockwise until the valve stem opens. Nitrogen will begin to escape from the valve and the pressure will drop.
- c) Once the correct charge pressure has been reached, turn the 3/4 in nut clockwise to close the valve and apply 50- 70 in-lb torque to the swivel nut.
- d) Reinstall the yellow valve cap. The unit may now be exposed to line pressure.

Provided the pressure gauge is not damaged, the charging valve is closed and capped and the bellows has not been damaged, the nitrogen charge on Hydropads should never need adjusting if the system parameters do not change. It is recommended that the Hydropad charge pressure is checked at regular intervals. A monthly check of the charge pressure should be sufficient. If the system line pressure changes, the charge should be adjusted to account for the change. Other than checking and maintaining the charge pressure, no other maintenance is necessary.

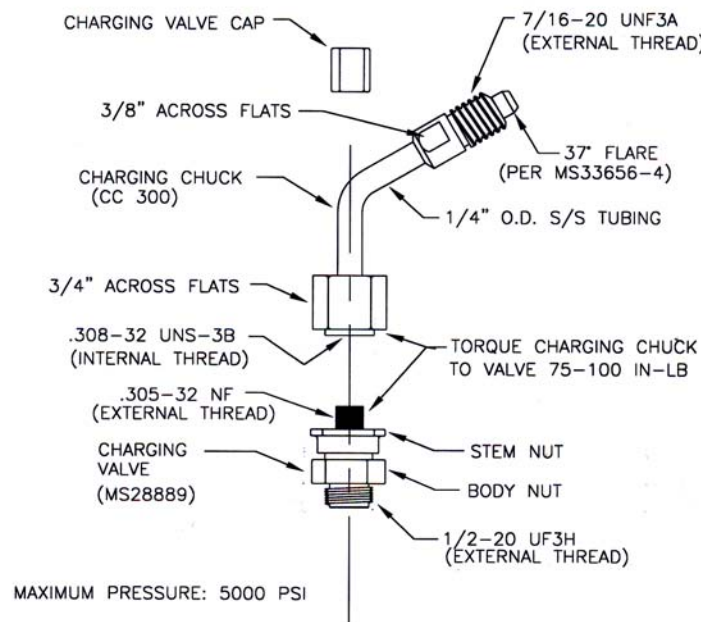


FIGURE A

