



## **MAINTENANCE & TROUBLESHOOTING GUIDE**

### **SENTRY SURGE SUPPRESSORS**

#### **PREVENTATIVE MAINTENANCE**

##### **CAUTION: PLASTIC UNITS CANNOT BE USED FOR SURGE OR WATER HAMMER CONTROL**

SENTRY Surge Suppressors require very little maintenance. The rubber bladder is the only wear part of the unit.

Bladder replacement should be part of the system preventive maintenance program. Bladder life is a function of many variables. Normal life can be from a few months to several years depending upon usage, proper charge and size, system design, and/or the harshness of the process fluid and application temperature.

With any pumping system, component wear is dependent upon many factors; therefore, this suggested maintenance program might need to be adjusted based upon the specific application.

Periodic inspection of units should be as follows:

1. SENTRY housings and fasteners should be inspected for signs of over pressurization, stress, fatigue, corrosion, or UV attack. Housings and fasteners must be replaced at the first indication of deterioration.
2. Fastener tightness should be checked before initial start-up. Consult factory for torque specifications.
3. Fasteners on metal units should be replaced at each re-assembly.
4. Check the gas pre-charge in the unit while no system pressure is present. If system pressure is present, the gauge will display system pressure, NOT the pre-charge pressure.

#### **EFFECTIVE DAMPENING TIPS**

The primary factors that determine the level of dampening obtained with a SENTRY suppressor are capacity, location, and the pressure charge.

**CAPACITY:** The suppressor must be properly sized so that the volume of compressed gas inside is enough to absorb fluid shock, and there is enough liquid volume capacity to accumulate the fluid surge. A key element of effective surge control is the relationship of the gas charge to the fluid volume necessary for the pressure range required. An undersized suppressor will result in insufficient dampening, but also lead to excessive bladder wear and early failure.

**LOCATION:** Location is important because of the natural phenomena of water hammer. When a valve in the fluid system is closed quickly, a pressure spike 4 to 8 times greater than normal flowing pressure is created. To effectively absorb this pressure spike a surge suppressor must be located upstream of the valve within ten pipe diameters.

**CHARGE:** The compressed gas charge applied to a surge suppressor will vary with each application and can have a significant effect on the device's performance. Normally, the charge will be 95% to 98% of normal flowing pressure. To properly charge the suppressor, an accurate reading of the system fluid pressure is required. A pressure gauge should be installed on the system piping downstream from the suppressor.

**NOTE:** The system pressure must be at zero when charging the suppressor or an inaccurate charge will occur.

## TROUBLESHOOTING

### INSUFFICIENT OR NO SURGE SUPPRESSION

1. Check flowing system pressure. If the pressure charge in the suppressor is improper, the suppressor will not function properly and bladder wear will increase. The pressure charge in the suppressor should be set at 95% to 98% of the normal system flowing pressure.
2. Check for bladder failure. Replace bladder.
3. Check the inlet fluid port of the suppressor for blockage or restriction. Clear obstruction or remove restriction.
4. Check location of suppressor. The surge suppressor should be mounted within 10 pipe diameters of the quick closing valve or other pressure spike causing device, normally upstream or on the high pressure side.
5. Check the size of the surge suppressor. An undersized suppressor will not effectively dampen the pressure spike. Consult Blacoh for assistance in evaluating proper size.

### LEAKING FLUID OR AIR

1. All plastic and PTFE components take an initial set after manufacture. The fasteners may need tightening. Consult factory for torque specifications.
2. Check the air controls and gauge threads for an airtight seal. Tighten if needed. Consult factory for torque specifications.
3. Check the ring flange bolts for proper torque. Tighten if needed. Consult factory for torque specifications.
4. Check for a bladder rupture. Replace the bladder if it has failed.

### BLADDER RUPTURE OR FAILURE

**CAUTION:** IF A SYSTEM PRESSURE TEST IS TO BE PERFORMED, THE UNIT MUST BE CHARGED WITH 90% to 95% OF THE SYSTEM TEST PRESSURE PRIOR TO THE TEST. FAILURE TO CHARGE THE SUPPRESSOR CAN CAUSE BLADDER FAILURE.

1. Chemical Attack  
Swelling, hardening, and distortion are some of the indications of chemical attack. Check the chemical compatibility charts. Consult factory for assistance.
2. Cut Bladder  
Check for a sharp object that may have been introduced into the suppressor through the pumped fluid.
3. Torn Bladder  
Check for an insufficient air charge in the suppressor. Properly charge the unit for the application.
4. Excessive Bladder Wear
  - A. Check the size of the unit. An undersized unit does not have the capacity to absorb the volume of liquid necessary, forcing the bladder to be overworked.
  - B. Check the gas charge in the unit. An undercharged unit will cause the bladder to rub excessively and wear against the internal body housing.



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