



# SENTRY INSTALLATION & OPERATION INSTRUCTIONS HIGH PRESSURE CHARGEABLE (H & TG MODELS)

S/N: _____	MODEL #: _____	DATE OF PURCHASE _____
MATERIALS OF CONSTRUCTION: BODY _____		BLADDER _____
PUMP AREA & NUMBER _____		
SUPPLIER: COMPANY _____	CONTACT _____	
PHONE _____	FAX _____	E-MAIL _____

## INSTALLATION NOTES *READ BEFORE INSTALLATION*

- To prevent pre-charge loss through the fill valve, always replace the cap after charging unit.
- If a system pressure test is to be performed, SENTRY must be charged with 80% of the system test pressure prior to test. This will avoid possible bladder damage.
- Blacoh recommends installing a pressure relief valve in all pump systems to ensure compliance with pressure limits on system equipment.
- Mount SENTRY as close to pump discharge, inlet and/or quick closing valve as possible, but within 10 pipe diameters.
- Temperature and pressure affect the strength and chemical resistance of plastic and rubber. Please consult factory for additional information.
- Remove all pressure from SENTRY unit AND pumping system before attempting maintenance.
- Do not exceed 1000 PSI with high pressure "H" metal models or 2000 PSI with Tef-Guard (TG) Models.
- **Check pressure rating shown on serial tag.**
- Always wear safety glasses when installing, charging or repairing SENTRY units.
- Do not operate a SENTRY that is leaking, damaged, corroded or unable to hold internal fluid, air or gas pressure.
- Pre-charge SENTRY with clean dry Nitrogen only. **DO NOT USE OXYGEN**
- **DANGER OF STATIC SPARK!**  
**GROUNDING PRECAUTIONS MUST BE CONSIDERED WHEN USED IN FLAMMABLE OR EXPLOSIVE ENVIRONMENTS.**

## INSTALLATION FOR PUMP DISCHARGE PULSATION *READ BEFORE INSTALLATION*

### Step 1 – Installation Position

Install the dampener in-line, as close to the pump discharge as possible to absorb the pulse at its source. Install ahead of any downstream equipment such as risers, valves, elbows, meters, or filters. Dampener installation should be no more than ten pipe diameters from pump discharge. If using a flexible connector from pump to system piping, dampener should be installed at the pump discharge manifold. The flexible connector should be attached to the dampener's tee and system piping (see Figure 1). Since pressure is equal in all directions, SENTRY can be installed in a vertical, horizontal, or upside-down position. Blacoh recommends a vertical installation for better draining of the unit. Limitations for horizontal and upside-down mounting include high specific gravity, high viscosity, settling of solid material, or possible air entrapment, which could result in shortened bladder life and/or poor dampening performance.

### Step 2 – Air Line Connection

Chargeable models do not require an air line connection. Units must be pre-charged with Nitrogen, using a regulated, tank or bottle. **DO NOT USE OXYGEN.** Charging hose kits are available – part number 701-00.

### Step 3 – Charging and Start Up – see *PRE-CHARGE NOTES* on next page.

Prior to starting the pump, pre-charge SENTRY with Nitrogen to approximately 80% of expected system pressure and replace fill valve cap. **DO NOT USE OXYGEN.** The gas pre-charge must always be lower than pump discharge pressure. Generally, pulsation is most effectively minimized when the gas charge is 80% of system pressure. Start the pump to generate system pressure.

**NOTE:** Once system pressure is in contact with the bladder, the gas charge will be compressed to the system pressure and the dampener gauge will read the system pressure, not the initial charge pressure. Once working pressure is achieved, adjustment may be necessary. Gradually increase or decrease the gas charge in the dampener by bleeding or filling through the gas valve. Allow the system to respond to each adjustment (this may take a minute or two) before making further adjustments.



**BLACOH FLUID CONTROL, INC.**  
601 COLUMBIA AVE. BLDG. D, RIVERSIDE, CA 92507 USA  
TEL: 800.603.7867 or 951.342.3100 Fax: 951.342.3101  
e-mail: sales@blacoh.com web site: www.blacoh.com

## INSTALLATION FOR PUMP INLET

**READ BEFORE INSTALLATION**

### Step 1 – Installation Position

Install SENTRY as close to the pump inlet as possible. Install after any upstream equipment such as risers, valves, elbows, meters, or filters. If using a flexible connector from system piping to pump, SENTRY should be installed to the pump inlet manifold. The flexible connector should be attached to the SENTRY tee and system piping (see Figure 1).

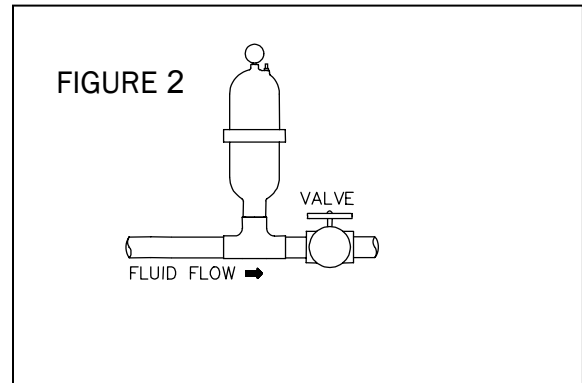
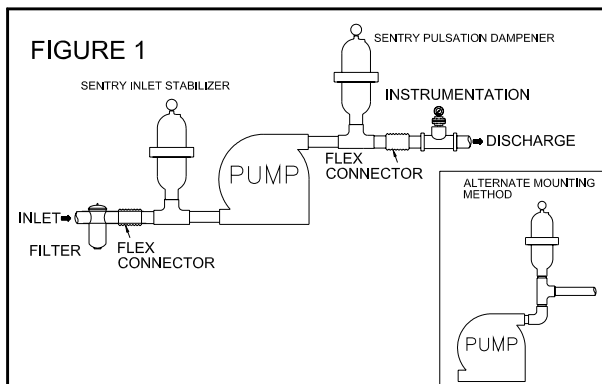
### Step 2 – Air Line Connection

Units must be pre-charged with Nitrogen, using a regulated tank or bottle. **DO NOT USE OXYGEN.** Charging hose kits are available – part number 701-00.

### Step 3 – Charging and Start Up – see PRE-CHARGE NOTES.

**A. Suctions Lift/Accumulator:** No pre-charge is required in a lift/accumulator installation. Start the pump to generate working pressure. As system pressure and vacuum is created, the acceleration head created with each suction stroke will compress the air trapped in the bladder.

**B. Positive Inlet Pressure:** Pre-charge SENTRY with 50% of the static pressure realized at the pump inlet. Start the pump to generate working pressure. Minor pressure adjustments may be required. Allow the system to respond to each adjustment (this may take a minute or two) before making further adjustments.



## INSTALLATION FOR WATER HAMMER / SURGE

**READ BEFORE INSTALLATION**

### Step 1 – Installation Position

Install SENTRY up stream from valve, as close as possible but no more than ten pipe diameters from the valve. (See Figure 2)

### Step 2 – Air Line Connection

“H” and “TG” models do not require an air line connection. Units must be pre-charged with Nitrogen, using a regulated tank or bottle. **DO NOT USE OXYGEN.** Charging hose kits are available – part number 701-00.

### Step 3 – Charging and Start Up – see PRE-CHARGE NOTES

Prior to operating system, pre-charge SENTRY to 90% of system pressure and replace fill valve cap. Start the system.

## PRE-CHARGE NOTES

**READ BEFORE INSTALLATION**

Gas molecules will diffuse through elastomer membranes, the speed of which depends on elastomer material, temperature and pressure. As a rule of thumb, the pre-charge pressure should be checked every month. Checks must occur when no system pressure is present or inaccurate readings will be recorded. If temperature is above ambient and/or pressure is over 300 PSI, checks should be performed more frequently. **Also, to prevent pre-charge loss through the fill valve, always replace the cap after charging.** A proper Nitrogen gas charge is the key to dampener effectiveness and bladder life.

**Standard Product Warranty:** Blacoh Fluid Control warrants its products to be free of defective material and workmanship under normal use and service for two years from date of shipment. The remedy for any product defect covered under this warranty shall be limited to the replacement or repair of the defective part or parts and Blacoh will not be responsible for damages or injury caused to other products, machinery, buildings, property or person. This warranty shall be null and void if the product has been altered, misapplied, misused, or neglected of maintenance. Damage or loss resulting from over-pressurization of a product, whether from gas or fluid does not constitute a defect covered under this warranty nor will Blacoh be responsible in any way for any such damage or loss. Because Blacoh cannot anticipate or control the many different conditions under which its products may be used, Blacoh does not guarantee the applicability or suitability of its products for any particular use or purpose. Each user of Blacoh products should conduct its own tests to determine the suitability of each product for its intended uses or purposes. Blacoh products are sold with this limited warranty and each buyer assumes all responsibility for loss or damage, including consequential damage, arising from the handling and use of Blacoh products whether used in accordance with Blacoh's directions or otherwise. Statements concerning the possible use of Blacoh products are not intended as recommendations for any specific use of such products. This Standard Product Warranty shall be governed by and construed in accordance with the laws of the State of California.



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e-mail: sales@blacoh.com web site: www.blacoh.com  
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