

BLADDER KIT STORAGE & CARE

BLADDER ACCUMULATORS

BLADDER KIT STORAGE

1. Replacement bladder kits are shipped in sealed UV protective black bags. Store bladders in these bags until needed.
2. The cartons in which bladders are shipped are designed to prolong storage life. Keep bladders in these boxes until needed for service.
3. Keep the tops of the cartons sealed at all times. After removing some of the bladders, reseal the carton. By keeping the carton and bag closed, degradation from sunlight and artificial lighting may be minimized.
4. Immediately upon receipt, place bladders in a storage area. Keep this area free from all sunlight, ultraviolet light, fluorescent lights, electrical motors, electronic equipment and other ozone producing items. At no time should the bladders be exposed to temperatures that exceed 80 F.
5. Following the above conditions bladders may be stored for up to 6 months.

For longer-term storage, the following additional optimum conditions should be included:

1. The storage area should be isolated in a closed clean room, maintained at 60 F to 72 F at all times.
2. Bladders should be slightly inflated with dry nitrogen gas (N₂) to 70% of their design diameter. Place in UV protective bags and hang vertically from the gas stem. If placed horizontally, they should be rotated monthly.
3. Storage area must be dark with no sunlight, ultraviolet light, fluorescent light or any heat source. Room should be dry to prevent gas stem corrosion. No electrical motors, electronic equipment or other ozone producing items should be within 10 meters of the room.
4. Under these conditions bladders can be stored for extended periods.

BLADDER FAILURE MOST COMMON CAUSES

1. STAR BURST (AT BOTTOM OF BLADDER)

- **CAUSE:** Excessively rapid precharging causes bladder to freeze and burst or extrude through plug orifice before poppet can close. **SOLUTION:** Always use an approved nitrogen gas regulator for precharging.
- **CAUSE:** Low fluid temperature causes a bladder to become brittle. **SOLUTION:** Use a low temperature bladder.
- **CAUSE:** Lack of bladder lubrication causes excessive stretching. **SOLUTION:** Always lubricate bladder prior to use, using fluids with good lubricity. Use a water service accumulator for water-based or low lubricity fluids.

2. STAR BURST (6" TO 8" FROM BOTTOM OF BLADDER)

- **CAUSE:** Folding of bladder bottom during replacement causes it to be pinned against shell wall. Bladder cannot stretch to close the poppet and it bursts. **SOLUTION:** Never fold/twist bladder when repairing unit.

3. POPPET CUT (AT BOTTOM OF BLADDER)

- **CAUSE:** Excessive flow rate causes bladder to extrude down through plug before poppet can close. **SOLUTION:** Use a High Flow accumulator or multiple standard accumulators.
- **CAUSE:** Poppet does not close all the way, which causes the bladder to extrude. **SOLUTION:** Inspect plug and poppet assembly for damage, corrosion or debris. Replace as needed.
- **CAUSE:** Bottom of bladder has hardened due to the reduction of plasticizers from the elastomer, which is caused by excessive heat or chemical degradation. **SOLUTION:** Check elastomer fluid capability.

4. PICK-OUT (PIN HOLE NEAR TOP OF BLADDER)

- **CAUSE:** Operation of the accumulator with insufficient precharge allows fluid pressure to force bladder to extrude into gas valve. **SOLUTION:** Always operate accumulator with proper nitrogen gas precharge. Check precharge often.

5. BUBBLES, BLISTERS OR RUBBER FLAKING ON BLADDER SURFACE OR BURNT SMELL

- **CAUSE:** Incompatible fluid or excessive temperature. **SOLUTION:** Refer to rubber compatibility chart and temperature chart for correct elastomer compounds.

6. TEARING OF BLADDER AROUND GAS VALVE STEM

- **CAUSE:** Twisting of gas valve stem during replacement. **SOLUTION:** When tightening gas valve hex jam nut, use a second wrench to keep gas valve from twisting. Do not use excessive torque.

7. GROOVES OR HOLES ON BLADDER SURFACE

- **CAUSE:** Fluid contamination causes foreign debris entrapment between bladder and shell during cycling. **SOLUTION:** Use clean fluid and proper filtration.

8. RUBBER HAS BECOME BRITTLE CAUSING CRACKS OR FLAKES

- **CAUSE:** Excessive heat can cause the bladder to re-cure or harden due to the reduction of plasticizers from the elastomer. **SOLUTION:** Check elastomer fluid compatibility and/or install heat exchanger in system. Do not use or store units in hot environment or in direct sunlight.