

INSTRUCTION & MAINTENANCE MANUAL

Top Repairable Bladder Accumulators

IMPORTANT - READ FIRST

It is most important that these instructions and the Pre-charge and Maintenance Manual be consulted before installing and commissioning the Accumulator. Failure to comply with the specified procedures may result in possible injury or death. Accumulators must be installed and commissioned by a trained personnel. Particular attention must be paid to the following.

- Use DRY NITROGEN ONLY to precharge accumulator to the desired precharge pressure to avoid risk of explosion due to dieseling effect.
- A pressure relief valve must be installed in the hydraulic system to prevent accidental over pressurization. Relief pressure should not be more than 10% above the accumulator rated pressure.
- A pressure regulator must always be used on the gas bottle while precharging to avoid accidental over pressurization.
- Check for fluid compatibility with the bladder compound to avoid the risk of bladder failure. Consult factory for any assistance with compatibility before commissioning.
- Accumulator shell and parts are protected from corrosion when petroleum based fluids are used. If accumulators are used in aggressive environments, they must be protected with suitable paint and/or protective coating to prevent from corrosion prior to commissioning.
- Accumulators must be securely installed with suitable clamps and brackets recommended in the Servi Fluid Power Inc. accumulator product catalog to prevent any vibrations that result in damage to the accumulator or the installation.
- When replacing gas valves or valve cores, use only Servi approved parts published in the Precharge maintenance manuals to avoid premature failure.
- Prior to any maintenance being done, relieve all nitrogen precharge pressure and hydraulic pressure as instructed in this manual. Failure to relieve pressure before any disassembly may result in possible injury or death.
- Protective Gloves: Chemical resistant gloves if necessary must be used to avoid skin contact with aggressive fluids.
- Eye Protection: Safety glasses must be worn before any maintenance is performed on the accumulator.
- Check the maximum allowable working pressure rating stamped on the shell does not exceed the system maximum working pressure. Use only the recommended tools to perform the maintenance.

Precharging

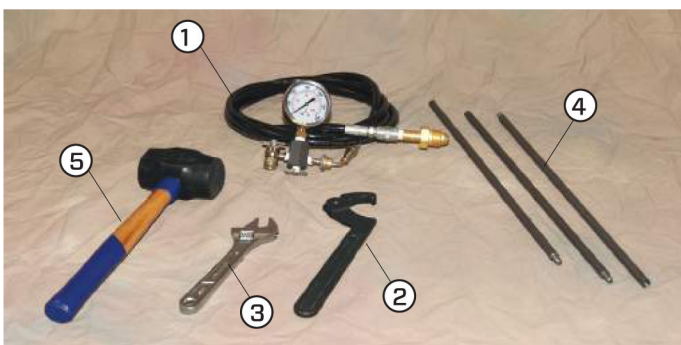
Always use the recommended charging kit and follow the steps in the precharging instruction manual. Incorrect or loss of precharge pressure will reduce the performance of the accumulator as well as potentially damage the bladder.

After precharging check for any leaks through the gas valve or the valve core with soap water. If there is a leak, tighten the valve core or the gas valve to stop the leak. If the leak persists, replace the core or the gas valve as required.

Tighten the lock nut on the fluid port and the jam nut on the valve stem using a wrench.

Installation

Accumulators must be installed securely on the hydraulic system using the recommended brackets and clamps in the catalog. Using only the hydraulic system manifold without any support accessories is not recommended. No welding is allowed on the accumulator. Vertical mounting with fluid port at the bottom is recommended for optimum performance of the accumulator. Allow enough clearance above the accumulator to be able to perform precharge maintenance on a regular basis.



Tool List

Item #	Description
1	Charging Kit
2	Spanner Wrench
3	Crescent Wrench
4	Bladder Pull Rod
5	Rubber Mallet



Parts List

Item #	Description	Item #	Description
1	Accumulator Shell	8	Anti Extrusion Ring
2	Bladder	9	Teflon Back-up
3	Top Adaptor	10	O-ring
4	Jam Nut	11	O-Ring Back-up
5	Gas Valve	12	Spacer
6	Protective Cap	13	Lock Nut
7	Bleed Plug		

Disassembly Instructions for Top Repairable Bladder Accumulators

CAUTION: Always wear safety glasses before conducting any precharge maintenance to avoid risk of eye injury.

Before any maintenance is done on the accumulator, ensure there is no residual hydraulic or gas pressure trapped inside the accumulator. Release any hydraulic pressure by opening the bleed valve on the port body. Release all the gas pressure using the charging kit. Only qualified service personnel must perform these maintenance steps. The following sequence of steps can be conducted while the accumulator is installed on the hydraulic system.

After disassembly, it is recommended to replace all the rubber parts. All the metallic parts must be thoroughly cleaned with organic solvent.



1) Remove the protective cap.



2) Remove the seal cap from the gas valve.



3) Discharge completely the nitrogen precharge pressure using the charging & gauging assembly.



4) Remove the gas valve adaptor using an appropriate socket wrench. Skip this step if the accumulator is mounted vertical on system.



5) Remove the Jam nut using appropriate socket wrench.



6) Remove the locknut using the spanner wrench.



7) Remove spacer ring. For the next steps, care should be taken not to drop parts inside the shell if the service is conducted while the accumulator is vertical installed in the system.



8) Push the top adaptor inside the shell. If it does not go inside possibly due to trapped residual pressure, consult factory.



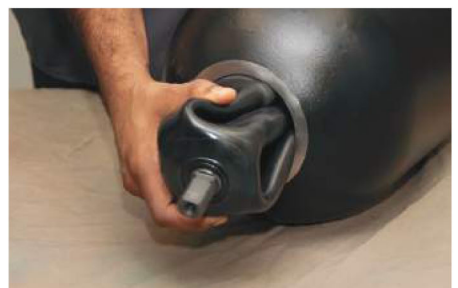
9) Remove the O-Ring back up, O-Ring & Teflon rings.



10) Remove the Anti-Extrusion ring from the top adaptor. Fold the ring and retrieve from the shell.



11) Remove the Top adaptor from the shell.



12) Remove the bladder from the shell by squeezing out any residual gas in the bladder.

Assembly Instructions for Top Repairable Bladder Accumulators

After thoroughly cleaning the metallic parts with organic solvent, check for any damage. Replace the parts if necessary. Inspect the shell for any damage or foreign particles. Thoroughly clean the shell as required. Lubricate the shell with the system fluid that is compatible with bladder rubber compound. For aggressive fluids, it is always recommended to wear rubber gloves.



1) Squeeze the bladder as shown to release any air trapped inside the bladder.



2) Install the gas valve adaptor into the valve stem. Torque it to 90 In-Lbs (10 Nm).



3) After thoroughly lubricating the shell and the bladder with the system fluid or its equivalent, insert the bladder into the shell.



4) Insert the top adaptor carefully into the shell. For vertical installation be cautious not to drop the top adaptor inside the shell. Guide the valve stem through the adaptor hole.



5) Insert the Anti-Extrusion ring by folding as shown.



6) Pull the top adaptor through the extrusion ring and then through the shell opening.



7) For ease of assembly prefill the bladder with nitrogen gas slowly with pressure not exceed 25 psi (1.7 bar) using Servi Charge kit.



8) Guide the top adaptor to make sure the anti-extrusion ring and the adaptor are seated properly. Use a rubber mallet by gently tapping the adaptor to position if necessary.



9) Install the Teflon back up followed by the O-ring and rubber back-up.



10) Install the spacer and then the lock nut. Tighten the lock nut using a spanner wrench.

Assembly Instructions for Top Repairable Bladder Accumulators (Cont.)



11) Install the jam nut on the valve stem and tighten with a socket wrench.



12) Using the Servi Charge kit and precharge instructions, fill the accumulator with desired Nitrogen precharge pressure at a slow rate. Check for any gas leaks with soap water.



13) Remove the charging kit and then retighten the jam nut if necessary. Install the yellow seal cap and the protective cap. Hand tighten them firmly.

Accumulator Storage

If accumulator is stored for future use after assembling, we recommended to fill the accumulator with a low precharge of 25 psi(1.7 bar) to allow the poppet valve to close and always cover the fluid port with a dust cap to prevent any foreign material entering into the accumulator. Store in a cool dry place if possible. The protective cap must be securely tightened to prevent any damage to the gas valve.

If the accumulator is stored for an extended period of time, before putting in service, release all precharge pressure, pour small quantity of oil through the fluid port into the accumulator and rotate the accumulator to allow the fluid to circulate and lubricate the bladder. This process is very important when water based or low viscosity fluids are used. Follow the precharge instructions to fill the accumulator to the desired precharge pressure.

If the accumulator is stored for longer than 5 years, we recommend to replace the bladder and seals.

Bladder Kit Storage Instructions

Do not remove the Bladder from the plastic bag until required for installation. Bladder shelf life is based on rubber compound and storing the bladder in the black or UV protected plastic bags as supplied by the factory. Storage area should be dark and kept at a temperatures between 50OF(10OC) to 70OF(21OC). Storage should be away from ozone generating equipment such as electric motors, UV light, direct sun light and heat generating equipment.

Bladders stored under these conditions could last up to 2 years but special compounds such as Butyl, EPR and Fluoro-elastomer can last up to 5 years.

Servi Fluid Power does not authorize the use of non-approved parts or automotive type valve cores or gas valves. Only use Servi Fluid Power approved parts.