

**Precharge Pressure**

The precharge pressure is of critical importance for the correct function and serviceable life of the hydropneumatic accumulator. Frequently machine malfunctions may be traced back to an incorrect precharge pressure. It is dependent on the temperature range and the accumulator application. As a rule, the precharge pressure is, for:

- an application for energy accumulation and pressure shock attenuation:  $\leq 90\%$  of the minimum working pressure  $P_1$ , but at least 20% of the maximum working pressure  $P_2$
- a pulsation damping application: 60% of the pump pressure
- volume compensation: about 80% of the closed system static pressure.

**Caution :**

Before each check, charge/top up, of the precharge pressure, the hydropneumatic accumulator must be discharged of fluid. The accumulators must be charged with nitrogen. Oxygen and air are prohibited on account of the risk of explosion.

**INSPECTIONS****Prior to the installation of the accumulator:**

In order to guarantee the best possible safety for the use of the hydropneumatic accumulator, the following checks must be conducted prior to installation:

- The accumulator must not have any external damage.
- The maximum allowed working pressure stamped on the casing must be greater than or equal to the maximum possible system pressure.
- Verifying the precharge pressure:
  - a) If the protective cover of the gas inlet valve is lead-sealed :  
the accumulator is charged with the precharge pressure  $P_0$  indicated on the manufacturer's name plate. It is no longer necessary to check the pressure before putting into operation. (The lead seal must not be damaged, otherwise the right to guarantee cover is forfeit).
  - b) If the protective cover of the air valve is not lead-sealed : using the OLAER tester and pressurizer instrument, check the accumulator, and top up as necessary with nitrogen to the precharge pressure required for the system application. Operate the tester and instrument as per instructions OAC 746.

**During Operation:**

After new installation of the accumulator, or repairs, the precharge pressure must be checked as follows:

- a) Lead-sealed accumulators:
  - Annual check. First check one year after first use.
  - In the case of a guarantee claim, the accumulator must be returned with the lead seal intact.
- b) Non lead-sealed accumulators:
  - at least once during the first week, so that large nitrogen losses can be identified and eliminated without delay.
  - where no losses are revealed in the first check, the second check should be made after c. 3 months.
  - where no significant gas losses are revealed in this second check either, the interval between checks, depending on use, may be extended to annual checks.

With operating temperatures in excess of 50 °C, there are higher gas losses. Under these circumstances, a shorter interval is recommended.

**Important Note:**

The precharge pressure changes with temperature. Checks should, therefore, always be made at the same temperature. After charging or discharging with nitrogen, always wait c. 5-10 minutes before measuring the gas pressure to allow the temperature to stabilise. Nitrogen is lost through the pressurizer instrument every time the gas pressure is measured. This will reduce the precharge pressure so should be allowed for, particularly for small accumulators.

**INSTALLATION****Location**

In order to achieve the highest working efficiency, the accumulator should be mounted as close as possible to the system application.

A space of 200 mm must be left over the gas inlet valve, to allow the tester and pressurizer instrument to be attached.

## Orientation

Preferably vertical (gas inlet valve upwards) to horizontal (OLV Series only vertical).

Leave the nameplate with the precharge data visible.

Leave unrestricted access to the venting screw.

## Mounting

By means of clamps and support brackets, or a mounting set. The mounting must be made in such a way that should a hydraulic fluid pipe break, or the gas inlet valve be damaged, the accumulator cannot be torn out of its holder by the resulting force.

***No attachments of any kind must be welded onto the accumulator itself.***

## Connectors

The hydraulic fluid valve has either an external or an internal thread, depending on the accumulator type. Reductions or flanges can be supplied by us. If a special connecting piece is manufactured, take care that the valve tappet remains clear.

Also take care that the correct o-ring size is used in this connecting piece. (Thread recess is not sufficient!).

During mounting of a screw attachment, reduction or block unit, hold the accumulator by the hydraulic fluid valve with a spanner to prevent the hydraulic fluid valve from being rotated.

## Installation

To ensure perfect operation, note the following points:

- install regulating valve between pump and accumulator (prevents a return flow of the fluid to the pump).
- a safety valve must be installed in the plant system in such a way that it remains connected to the accumulator at all times.
- install a shut-off and a release valve (German regulations), so that the hydropneumatic accumulator can be depressurized.
- the OLAER safety units combine all the major functions, such as shut-off, discharge, pressure limitation, and manometer connection option, in one single unit.

## PUTTING INTO OPERATION

Before pressurizing the system, vent the accumulator. Pressurize the system and check the connector seals.

## OPERATION

Apart from a regular check of the precharge pressure, the OLAER hydropneumatic accumulator operates without the need for maintenance.

Take care that the accumulator experiences no external mechanical load.

All OLAER standard model hydropneumatic accumulators operate with mineral oil in the temperature range from -15°C to +80 °C.

Should applications be foreseen requiring other mediums, and/or temperatures outside this range, please consult OLAER.