FOR YOUR SAFETY

- This paragraph contains important information concerning safety. Read carefully before using the assembly – In this document, "assembly" [accumulator] is defined as the unit formed by the casing, membrane and valve.

- Warnings and cautions

WARNINGS: this symbol indicates warnings that must be read prior to using the product to prevent possible physical harm to the user

CAUTIONS: this symbol indicates procedures for preventing product damage

WARNINGS

- To prevent risks of explosion or fire, do not expose the assembly to direct or indirect heat sources.
- The pre-charge pressure must be equal to Po = P1 (Minimum operating pressure) x 0.8.
- If the assembly operates at high temperature, the pre-charge pressure changes according to the formula below.

Example:

Let's assume to pre-charge the assembly at 50 bar at an environment temperature of approx. 20°C and that it shall operate at a max. temperature of 200°C. The pre-charge value must be obtained using the following formula:

$$P0_{TA} \times \frac{(273 + TA)}{(273 + T2)}$$

Where

$P0_{TA}$ = Pre-charge pressure at environment temperature

TA = Environment temperature

T2 = Max. operating temperature

- It is strictly prohibited to make structural changes to the assembly. [welding or drilling for installation].
- The customer shall install a safety system which protects the accumulator from unwanted overpressures.

- ***Use ONLY NITROGEN, never other types of gas: DANGER OF EXPLOSION***

CAUTIONS

- Never exceed the maximum pressure which is stamped on the equipment.
- Use grease type Castrol 8794 or similar for bladders : NBR – HNBR – NBR for low temperatures - VITON
- Use oil type Caldic 47V350 for other elastomers
- Upon system start, we recommend to verify the pre-charge pressure

- INSTALLATION

- Vertical or horizontal position according to the needs of the plant. It is strictly forbidden to install the equipment upside down, with the gasvalve downwards.
- When subject to vibration we advise to fix the equipment with the fasteners available on our catalogue.

- Some advice
- Use in your hydraulic system:
  - Check-valve between pump and accumulator
  - A limit valve, set under the p. max. indicated on the equipment
  - A safety block, in order to exclude the equipment and to discharge the accumulator safely

- If the equipment is precharged, the operator must proceed as follows:

1 **To pre-charge the assembly:**

a. Remove the protection cap (8a) of the valve (8) on the damper.

b. Fit the pre-charge device rotating the ring nut (1), ensuring that the discharge valve (2) is closed.

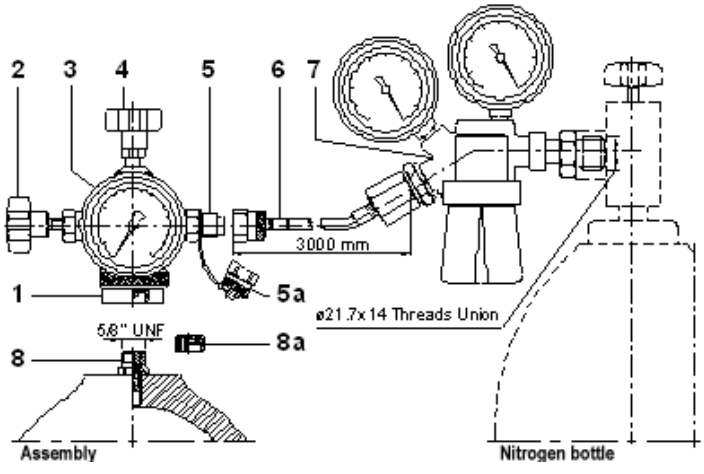
c. Remove the cap (5a) and connect the hose (6) to the precharge attachment (5) and to the pressure reducer (7) fitted on the nitrogen bottle.

d. Screw, without forcing, the handwheel (4) and slowly open the cock of the nitrogen bottle.

e. Checking the pressure gauge (3), increase the pre-charge pressure, operating the pressure reducer adjusting knob (7), up to a value slightly higher than the one selected.

f. Unscrew the handwheel (4), close the cock of the bottle and empty the hose (6) opening the valve (2).

g. Remove the hose (6), refit the cap (5a) on the pre-charge attachment (5) and wait for a few



minutes.

h. Screw the handwheel (4) and verify the pressure: if it is correct unscrew the handwheel (4), remove the device unscrewing the ring nut (1) and refit the protection cap (8a) on the valve (8); if it is not right, increase or decrease the pressure as indicated above.

2 **To discharge the assembly:**

a. Remove the protection cap (8a) of the valve (8) on the damper.
b. Fit the pre-charge device rotating the ring nut (1), ensuring that the discharge valve (2) is closed.
c. Screw, without forcing, the handwheel (4) and open the valve (2).

Disassembly of the assembly from the operating system and its maintenance

⚠	**WARNING** **These operations have to be carried out by expertised people, because if not performed correctly, they may compromise thr correct functioning of the equipment**

LA ASSEMBLY DISASSEMBLY STAGES:

- For technical information and/or quotations contact+39-02-57603913 Fax +39-02-57604752 or e-mail saip@saip.it The person in charge is Sergio Zanardi
- In the case of normal operation, and respecting the parameters stamped on the equipment these intervention will not be necessary,

If the customer will do the maintenance in his own shop he has to take following precautions:

1. Make sure all the valves are in discharge position and the pumps are stopped.
2. Make sure no residual pressure remained in the accumulator both on the liquid side and on the gas side.
3. Strip down the accumulator from the plant
4. To make sure no gas pressure remain, let eventual residual gas escape using the checking and prefilling device.
5. Screw out carefully the gasvalve.
6. Screw of the closing plug with a special key and take the bladder out. (the necessary key to unscrew the plug can be ordered at SAIP as a sparepart

STEPS TO REASSEMBLE THE ACCUMULATOR:

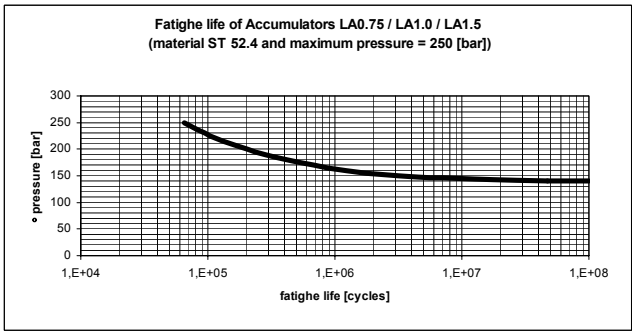
1. Clean with care the inside of the shell with compressed air. Make a visual check of the inside to be sure it is cleaned well.
2. Replace the old bladder with a new one.
3. Lubricate very well the inside of the shall to make the movement of the new bladder easier.
4. Fold the bladder, as shown in the photograph to enable the introduction into the shell and put it inside rotating the bladder slightly.
5. After the introduction the bladder returns in its original shape and the operator must check the correct position of the sealing lip into its seat.
6. Apply some grease type Castrol 8794 [or similar], with a pencil only on the front part of the plug and on the sealing lip of the bladder.

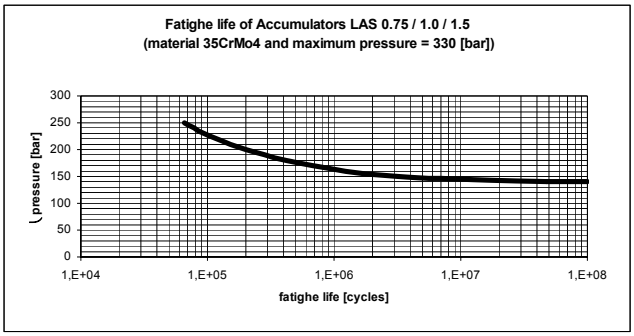
7. Screw the plug by hand until the contact with the bladder increases the friction; Now finish the closing of the accumulator, using the special key, until arriving at the torque indicated at the end of this page.
8. Screw the gasvalve in until arriving at the indicated torque at the end of the page.
9. Procede with the precharging following the instructions of the filling device type DP200.

N.B.: it is advisable to mout the accumulator during the precharging into a vise on the bench..

- ❑ For accumulators from 1,5 lt to 3 lt it is necessary to observe following instructions during the start-up of the precharging with nitrogen.
- ❑ It is important to guide the anti-extrusion disk in the correct position.
- ❑ The operator must use a pin of 4 mm dia. and 250 mm length
- ❑ Introducing this pin from the liquid port into the small hole at the centre of the disk before starting the precharge. Now open slowly the gasbottle and guide with the pin the bladder at the centre of the oilport. This way also the disk will be in the correct position for functioning and in this way the anti-extrusion disk will event the rubber of the bladder to come in contact with the hole of the oilport, which might cause rupture of the bladder itself.
- ❑ All the hydropneumatic accumulators before begins precharged they have to be lubrificated following these steps: after ending the disassembly phase, it is necessary to turn up side down the accumulator and fill it with some lubrificants (hydraulic oil, silicon oil, according to the compatibility of the compound)
  Turn again the accumulator, empty it and precharge it at the pressure desidered

DIAPHRAGM OF THE FATIGUE-LIFE OF EQUIPMENT TYPE LA-LAS 0,75/1,0/1,5





N.B.: The directive defines the value of > $2*10^6$ to be the Endurance Limit of the equipment.
N.B.: When the pressure values would go over the Endurance Limit shown in the diaphragm verify that the equipment will not go over the cycles shown in the diaphragm.

TORQUE VALUE OF THE VALVE

Thread M12	**30 Nm**

TORQUE VALUE OF THE CLOSING PLUG

LA – LAS - LASS 0,75 / 1,0 / 1,5 / 3	**272 Nm**
LA – LAS - LASS 4 / 5 / 10 / 12	**699 Nm**
LASX 0,75 / 1,0 / 1,5 / 3	**272 Nm**
LASX 4 / 5 / 10 / 12	**699 Nm**

EXAMPLE OF ASSEMBLY MARKING

CE xxxx
xxxx.x.x,x.xx.x.x.x
P.MAX xxx Bar
Lt xxx -xx +xx°C
Po xxx Bar
SAIP
01/02
xxxxxx/x

Legend

CE	Qualifying Authority Numbers
xxxx.x.x,x.xx.x.x.x	Assembly type
P.MAX	Maximum pressure
Lt	Assembly capacity
-xx +xx°C	Operating temperature delta
SAIP	SAIP marking
Po	Precharge pressure
01	Month of manufacturing
02	Year of manufacturing.
xxxxxx/x	Serial number

Note: the CE marking and the number of the certifying authority is imprinted for the assembly in class II III IV. The serial number is imprinted only on assemblies of category II, III and IV.

DISPOSAL
- The mechanical parts that make up the assembly are not subject to disposal obligations

WARNING

Spent oil is toxic waste and therefore must be disposed of in strict compliance with the law.