

Superior Design and Construction Features

“Top Easy Maintenance Design” makes it possible to inspect the inside of the Accumulators or to replace bladders without removing Accumulators from the pipings.

NACOL'S seamless one-piece molded bladder has a strong resistance against fatigue and has a very low degree of gas permeability.

Plateau reinforcement in the bladder prevents it from being damaged by sharp bending in the bottom portion of the bladder.

DYNAC GAS VALVE acts as a safety device (fuse) in the event of fire or extreme heat.

The **safety vent** is designed to release remaining gas pressure from the Accumulator when the Accumulator is disassembled.

The **pleated bladder** design compresses uniformly assuring longer bladder life and more useable oil volume.



“Disassembling, Assembling, and the shell inside Inspection through Large Top Opening”

The accumulator made by **NACOL**, so called “Top Easy Maintenance Design Accumulator” can be performed the internal inspection and bladder replacement safely and easily in a short time without removing in from the system, and it releases an operator from hard work. Because the accumulator does not disperse the hydraulic fluid that happens to the bottom loading type accumulators during the maintenance jobs, it is good also for the environment.

Unsuitable bladder installation (bending and twisting) becomes a cause of bladder rupture.

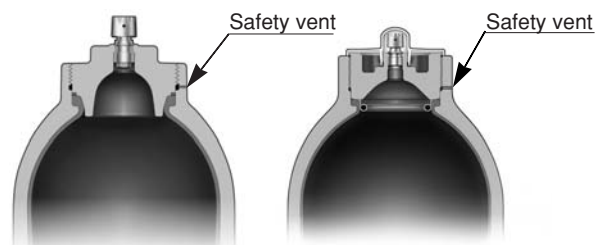
Ensuring of the suitable bladder installation to the accumulator shell can be easily made for **NACOL** Accumulators by inspecting through their Large Top Openings. So, long **NACOL** bladder life can be obtained, while competitors' accumulators do not allow such ensuring due to their closed top design.



(Bladder exchanging)

Safety Vent

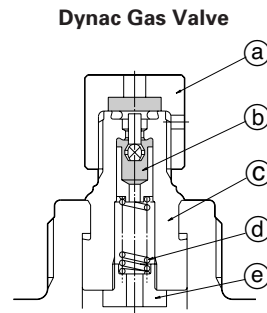
The Safety Vent is a safety device which releases the gas charge and warns the existence of the remaining gas in the accumulator by the relieving sound before the accumulator can be disassembled.



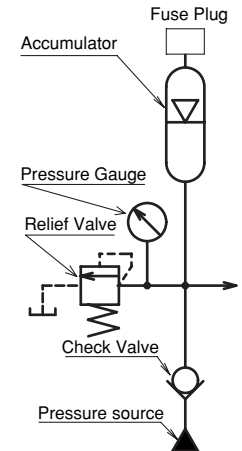
Dynac Gas Valve

The **NACOL** Dynac Gas Valve has been designed with safety in mind. It contains two parts (a, b) whose fuse parts melt at the temperature $160 \pm 20^\circ\text{C}$ and vent the gas charge in the event of fire or extreme heat. This prevents the Accumulator from becoming a potential bomb on such occasions.

Symbol	Name	Item
a	Cap with Fuse Packing	645024106A (for G1/4) 645025702A (for G3/8)
b	Dynac Valve Packing with Valve Stem	645026400A
c	Dynac Gas Valve Body	—
d	Spring	645045500
e	Spring Nut	640074708



Hydraulic Circuit



Bladder

Seamless one-piece molded bladder

The Seamed Bladder can be easily molded and saves the manufacturing cost, but the wall thickness of the stuck part of seamed bladder gets thicker and the hardness is changed from the other bladder area.

When the bladder transforms, stress concentrates to the seamed part all the time, and such seamed area becomes the cause of the fatigue damage.

However, **NACOL** Bladders are seamless one-piece molded bladders, so stress concentration does not occur and can be used stably for a long term period.

In addition to the above, the "Free Rotation Type Gas Charging 3-way Valve" that shall be used fixing on the accumulator gas valve when nitrogen gas charging will be made, has a stopper and prevents the 3-way Valve handle being turned excessively and destroying the accumulator's **NACOL** Dynac Gas Valve.



Natural shape

1/2 compression

1/4 compression



Pleated Type Bladder

Bladder is transformed by the pressure difference between inside and outside of the bladder, and the transformation always starts from the weakest (thin wall thickness) bladder part. Then, that same part keeps transforming repeatedly. Therefore, it is necessary to take some measure to prevent the bladder rupture developed from the wrinkle and/or the crack those are easily generated to the area where fatigue concentration may occur.

In that respect, **NACOL** bladders keep ideal "Curving triangular stelliform" shape throughout the transformation owing to the **NACOL** devices of original pleated structure and plateau at the bottom of the bladder which makes the bladder shape round at every edges. Therefore, the stress concentration to the bladder is dispersed effectively suppressing the generation of the wrinkle and prevent the bladder damage as the result of the fatigue concentration.

Moreover, when the working fluid with large specific gravity (Water based and Synthetic based) is used, bladder receives larger buoyancy than the time of Mineral Oil based working fluid is used.

Even on such occasion, **NACOL** bladder forms a triangular stelliform pillar vertically owing to the pleated structure, and the pillar suppresses the bottom area of bladder to rise up by the buoyancy (U-turn phenomenon), and the bladder damage can be eliminated.