

# HYDRO-LUNG

**Features :**

- Preventing pollution of the hydraulic fluid
- Preventing evaporation of hydraulic fluid such as water glycol

**How to select the model**

(1) Calculate the max displacement of the hydraulic fluid in the oil reservoir

$$V_k = \frac{\pi}{4} d^2 s \cdot 10^{-6}$$

$V_k$ : Max displacement of hydraulic fluid (ℓ)

$d$  : Diameter of the piston rod (mm)

$s$  : Cylinder stroke (mm)

(2) Calculate the max flow rate at the time of the displacement ( $V_k$ ).

$$Q_0 = \frac{V_k}{T_c} \cdot 60$$

$Q_0$ : Max flow rate (ℓ/min)

$T_c$  : Operating time of the cylinder (sec)

(3) Comparing the calculated max flow rate with the allowable flow rate, decide the selection method of the accumulator.

$$Q_0 \leq Q$$

$Q$  : Max allowable flow rate (ℓ/min)

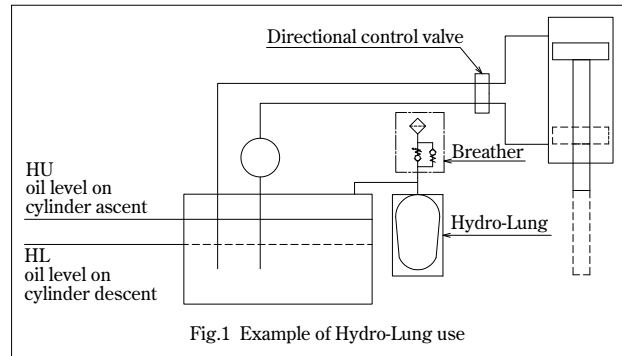


Fig.1 Example of Hydro-Lung use

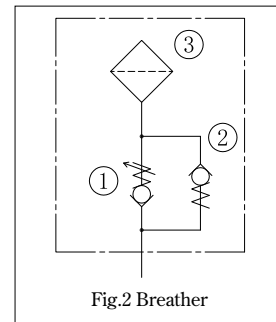


Fig.2 Breather

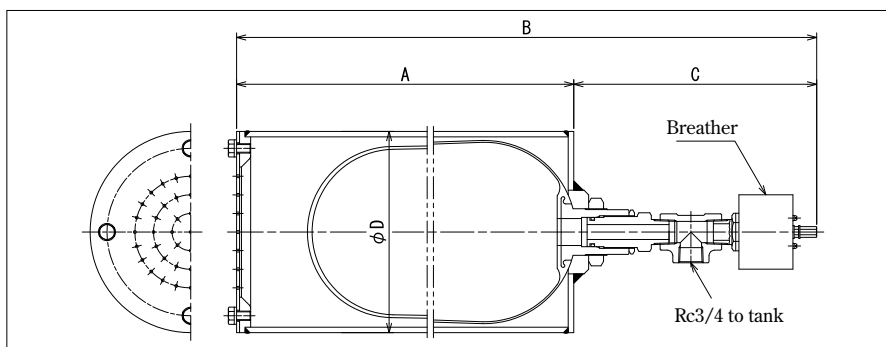
As a result, when  $Q_0$  is less than  $Q$ , it is needed to select a hydro-lung which maximum displacement is adequate to  $V_k$  (Ref. the below model list). But if  $Q_0$  is more than  $Q$  it is better to increase the number of hydro-lungs.

As Fig. 1 Example of Hydro-Lung use, the oil level changes at the same amount as the piston rod volume according to the hydraulic cylinder operation. At the same time, Hydro-lung absorbs the rise and fall in the air chamber. In other words, the bladder of Hydro-lung expands along with increase of the oil-level and constricts according to decrease of the oil-level.

Because a breather valve is equipped, Hydro-lung is effective at the situation also where the oil level greatly changes due to supplying operation oil or replacing devices.

Concretely speaking, the bladder of Hydro-lung constricts along with decrease of the oil-level. After that, the bladder absorbs atmosphere from the vacuum valve ② via filter ③. Conversely, the bladder expands along rise of the oil level or along increase of the pressure in the air chamber. After that, the air discharges to outside through the relief valve ①.

In addition, Hydro-lung can prevent the oil reservoir from the contamination due to external atmosphere since the inside is isolated from the outside.



Model	Max volume of breath (ℓ)	Max allowable flow rate Q (ℓ/min)	A (mm)	B (mm)	C (mm)	D (mm)	Mass (kg)	Max W.P. (MPa)
BAB 1	0.8	47.1	167	384	217	114.3	6	0.03
BAB 2.5	1.6	47.1	355	572	217	114.3	9	
BAB 4	2.4	47.1	225	442	217	165.2	10	
BAB 10	6.0	152.6	376	635	259	216.3	16	
BAB 20	11.7	152.6	666	925	259	216.3	24	
BAB 30	21.0	152.6	1187	1446	259	216.3	38	
BAB 50	32.0	152.6	1673	1932	259	216.3	52	