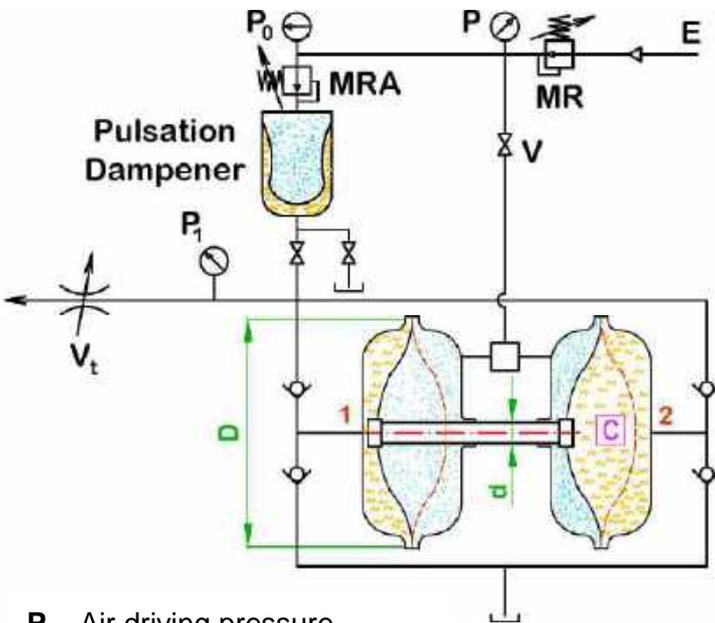


PULSATION DAMPER APPLICATION ON AN AIR VARIABLE PRESSURE DRIVING MEMBRANE PUMP



- E – Compressed air from the factory circuit.
- MR – Air pressure reducer.
- MRA – Dampener air precharging pressure reducer.
- V – Isolating valve.
- V_t – Throttle valve to increase the dampener efficiency.

START RUNNING INSTRUCTIONS

- I) Valve “V” closed. Fill the Dampener with air at an estimated pressure. Follow the formulas beside.
- II) Open Valve “V” and adjust the working pressure needed in the liquid circuit.
- III) With the air reducer valve “MRA” adjust the entrance of air into the Dampener until the pressure gage reads the accepted or calculated residual pulsation pressure.

- P – Air driving pressure.
- P₁ – Liquid pumped pressure.
- P₀ – Dampener precharging air pressure.

$$P \times (D - d)^2 = P_1 \times D^2$$

$$P_1 = [P \times (D - d)^2] / D^2 ; (D - d)^2 / D^2 = \text{PUMP CONSTANT} = K$$

$$P_0 \approx 0.75 \times P_1 \longrightarrow P_0 \approx 0.75 \times P \times K$$

NEVER start pumping liquid without air inside the dampener. The Bladder, Membrane or Bellows of the Dampener can be damaged.

NOTE: P₀ ought to be measured with the dampener empty of liquid.

P ₁ versus P ₀ @ Constant Temperature	
P ₁	P ₀
8	6
7	5
6	4.5
5	3.5
4	3
3	2
2	1.5
1	0.7

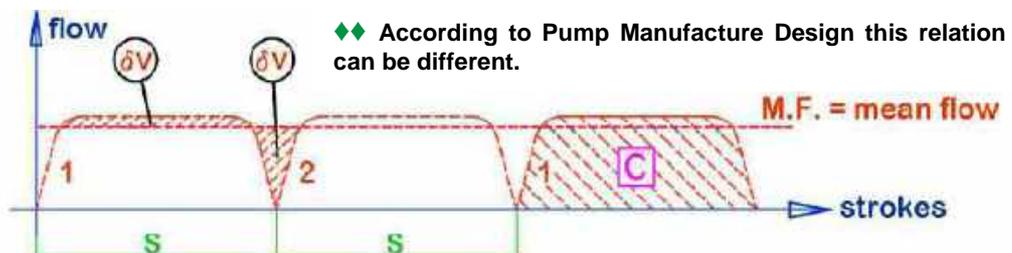
∂V - Liquid going into / out the dampener.

C – Liquid volume pumped per stroke.

S – Pump stroke.

◆◆ Relation between C and ∂V : $\partial V \approx 0.2 \times C$

◆◆ According to Pump Manufacture Design this relation can be different.



FORMULA TO CALCULATE THE PULSATION DAMPER SIZE (V₀)[◆]:

$$V_0 \approx 15 \times \partial V$$

◆ FOR A RESIDUAL OSCILLATING PRESSURE OF APPROX. +/- 5% @ CONSTANT TEMPERATURE (To reduce this percentage, increase the Dampener size or, for more accuracy, see our Pulsation Damper Technical and Practical Article)

