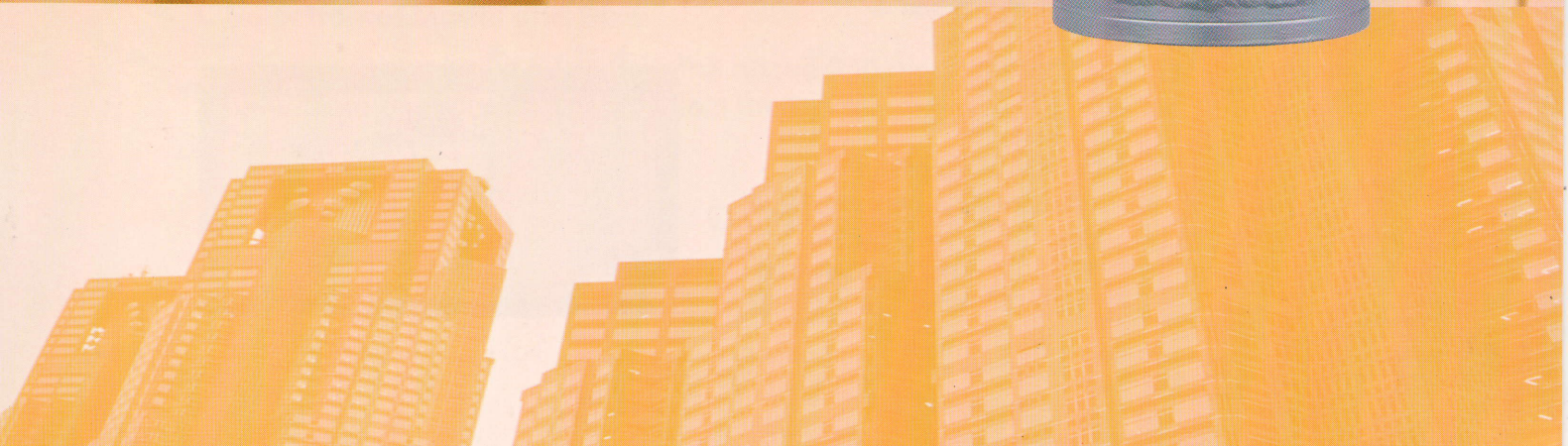


MOOHA

WATER HAMMER SHOCK ABSORBER

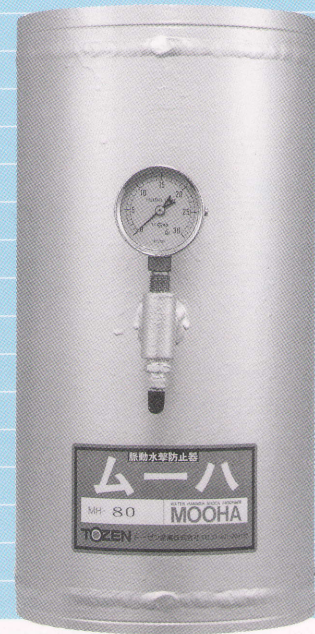


M O O H A



MOOHA

WATER HAMMER SHOCK ABSORBER



Introduction

The occurrence of water hammer is quite complicated process existing in water piping system. It is in fact water shock waves caused by rapid closing/opening of valves used in piping systems or improper layout of piping systems.

This undesirable phenomenon may reduce service life of equipment or other accessories of piping system if it is not checked.

After years of study and testing, we have come to develop MOOHA which ease and smooth away shock of water wave.

Since its development, MOOHA has been widely applied in various applications.

Features

1. Fast Response

MOOHA' responses fast and effectively against water hammer, thus relieves the system from abnormal shock without restraining water flow.

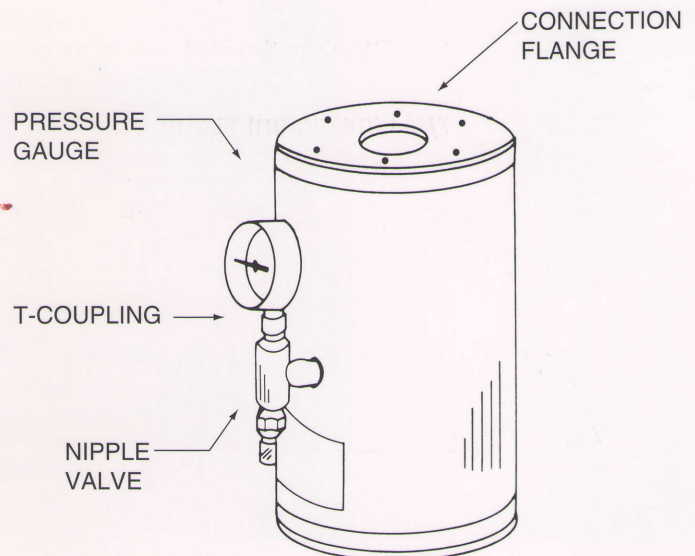
2. Simple Installation

MOOHA s compact in design. It requires minimum space for installation and can be connected directly in series to piping system in many directions.

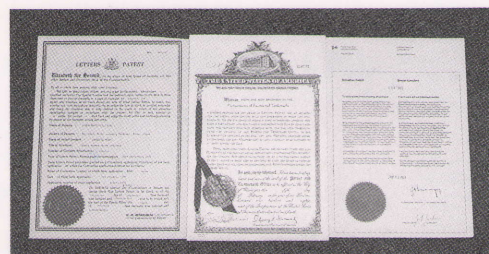
3. High Durability and Economy

MOOHA is designed for optimum performance while price is affordable.

Its casing is constructed of mild steel and elastic inner tube is made of high grade synthetic rubber.

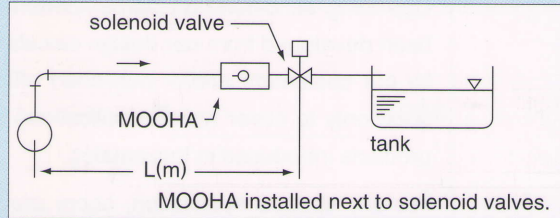
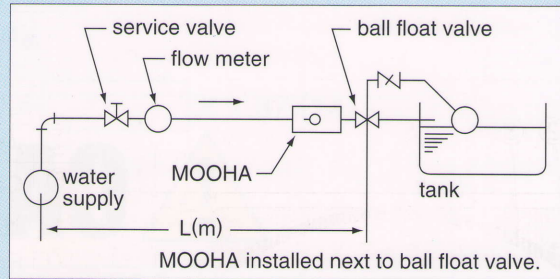
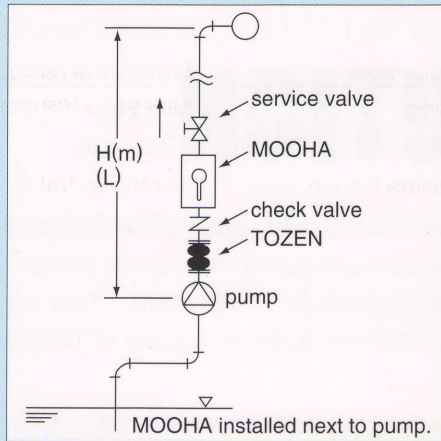


PT-MOOHA® is patented
in USA, CANADA and AUSTRALIA
PATENT NO. 4186775 (USA)
1047365 (CANADA)
485621 (AUSTRALIA)

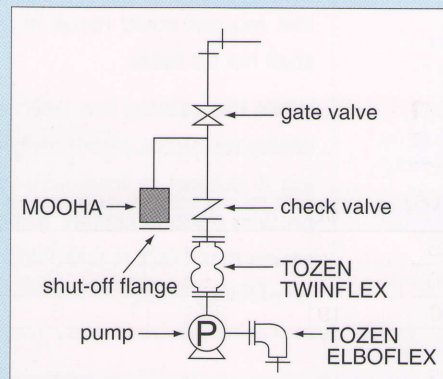
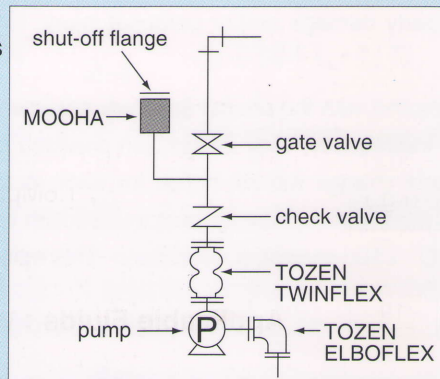


Installation Location

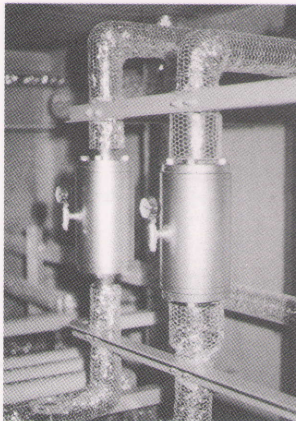
Install MOOHA at locations of water hammer source as close as possible as follows.



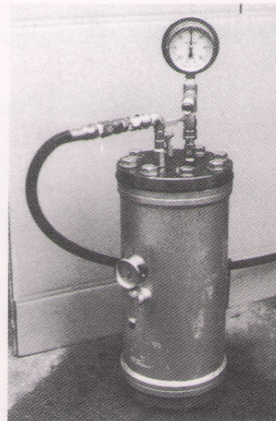
Off-line installation is also available as follows.



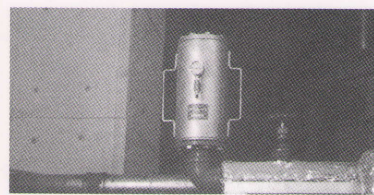
Example of Installation



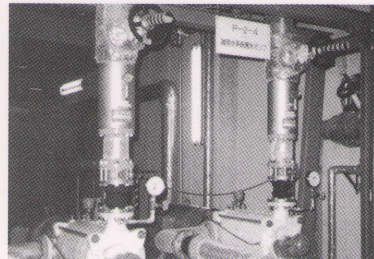
Installation in riser for lift pump



Pressure Durability Test



Off-line installation



Installation in riser

Notes

1. Air chamber pressure is pre-set at 0.5Mpa as standard in the factory, but optimum air chamber pressure will be approx. 50% of maximum working pressure. This pressure can be adjusted by pumping in air or released by nipple valve.
2. Prior to installation, check to ensure hex. socket head cap screws are in place and fastened.
3. When placing order, please advise of the pipe diameter, piperun, flow velocity, working pressure, water hammer source, etc.

■ Selection of MOOHA

1. Surge Pressure of Water Hammer : Ps

$$P_s \cong \text{Flow Velocity (m/s)} \times 1.37 \{14\} = \boxed{} \times 1.37 \{14\}$$

$$= \underline{\hspace{2cm}} \text{ MPa } \{ \text{kgf/cm}^2 \}$$

2. Relationship with Max. Impact Pressure Pb and Normal Working Pressure P

$$\frac{P_b}{P} = \frac{P_s + P}{P} = \frac{\boxed{} + \boxed{}}{\boxed{}} = \underline{\hspace{2cm}} \text{ times}$$

3. Calculation for Absorption Capacity

$$q = 4 \times 10^{-3} \times \frac{\lambda}{\lambda - 1} (0.0164 L - t) \eta$$

Note : q = Required capacity of pressure absorption _____

Q = Flow rate _____ /min.

λ = Ratio of allowable water hammer pressure (P_m) and normal working pressure (P)

$$\lambda = \frac{P_m}{P} = 1.5 \text{ (where not specified specially)}$$

L = Total piperun _____ m

t = Closing time of valve or pump (normally 0.2 sec.)

η = Coefficient factor 0.5

$$q = 4 \times 10^{-3} \times \frac{1.5}{1.5 - 1} \times \boxed{\text{Flow rate}} (0.0164 \times \boxed{\text{Piperun}} - 0.2) \times 0.5$$

$$= 0.006 \times \boxed{\text{Flow rate}} (0.0164 \times \boxed{\text{Piperun}} - 0.2)$$

$$= \underline{\hspace{2cm}}$$

4. Selection of Model and Size

Compare the value of q got from the above 3 to air chamber capacity by models in the table of dimensions and select the model.

Consequently,

$$\text{MOOHA MH} - \boxed{} = (\text{Air Chamber Capacity } \underline{\hspace{2cm}}) \times \underline{\hspace{2cm}} \text{ pcs.}$$

to be installed as close as possible to water hammer source.



CAUTION

Operating conditions and other performance data published in this catalog have been developed from our design calculation, in-house testing, field reports provided by our customers and/or published official standards or specifications. They are good only to cover typical applications as a general guideline to users of TOZEN products introduced in this catalog.

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※ The contents of this literature are subject to change without notice.

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