



## BLADDER VESSELS

### WATER HAMMER CONTROL DEVICE



#### FEATURES

- Available in 6,10,16 20 and 40 Bar working pressure
- Sizes from 8 to 10,000 liters
- Larger inlet size to water chamber as per water hammer analysis
- Min vessel thickness is 6 mm, inclusive of 2 mm corrosion allowance
- Water does not come in contact with vessel
- Full size floating bladder reinforced with high strength nylon, coated with food grade impervious Butyle rubber for long life
- Drain arrangement to check pre charge air pressure
- Optional, protection cover, and base frame
- Indigenous tailor made designs. Easy availability of products and spares

Website : [www.vanpumps.com](http://www.vanpumps.com)

Air chambers (also called as Hydro pneumatic tanks) have proved to be most effective devices for control of water hammer, but are complicated and expensive. VAN make BLADDER VESSELS are improved air vessels, and eliminate all inconveniences of old Air vessel designs. Indigenously designed and produced, more than 1000 Bladder vessels are in use, since last 20 years

Sr. No.	Description	Air Vessels	Bladder Vessels
1	Vessel Volume	➤ 300%	100%
2	Air Compressor, and control system	✓	✗
3	Dead water in vessel	✓	✗
4	Location	Nr Electric supply	Any where
5	Can it be used for air induction on negative pressure, in pipe line?	✗	✓
6	Air and water surfaces in contact ?	✓	✗
7	Space /cost	➤ 500%	100%

#### OPERATION

The pre charge pressure in the Bladder vessel Air chamber 8, is kept lower than the lowest pressure in the pipe line as per analysis. When the vessel is connected to pipe line, the air in chamber 8 gets compressed and becomes equal to line pressure. Upon failure of electricity, negative pressure starts at connecting pipe 10, and water from chamber 9 is forced in to pipe line, closes NRV instantly. When the water hammer wave reflects the water is forced in chamber 9 via throttling orifice plate 4, reducing and controlling water hammer the pressure



## BLADDER VESSELS

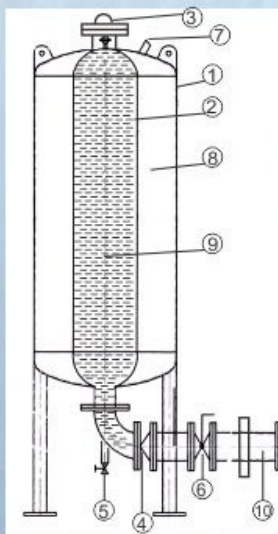
## APPLICATION OF BLADDER VESSEL

The pipe 10 can be connected to main pipe at a point as per water hammer analysis. The Bladder vessel can be located at any convenient place. It does not require covered structure Few of important locations are as under.

- Near NRV at pump house
- High point on discharge line
- Ahead of NRV during pump start up
- Behind quick opening valve/solenoid valve
- At the end of rising main
- At the junction point of change of velocities
- On long pump suction lines On suction line of pumps in series
- **On closed loop pressurized piping as expansion vessel**
- **Bladder vessels can economically replace,surge tanks,one way surge tanks, Zero velocity valves, Large air vessels with compressor**

## CONSTRUCTION

Bladder vessel consists of Air Chamber and Water chamber. Both are separated by a floating Impervious.Bladder. The Air chamber is pre charged via air inlet valve. The bottom flange can be connected to pipe line via throttling orifice and control valve



### ALL DIMENSION ARE MM

SERIES	Nominal Size (Liters)	DIAMETER	HEIGHT (H)	SYSTEM CONNECTION
AG-60	60	382	1395	65
AG-80	80	450	1500	80
AG-100	100	450	1600	80
AG-200	200	550	1900	100
AG-300	300	630	2050	100
AG-500	500	780	2275	150
AG-750	750	780	2650	150
AG-1000	1000	930	2770	200
AG-1500	1500	115	2800	250
AG-2000	2000	1280	3200	300

- |               |                 |                           |
|---------------|-----------------|---------------------------|
| 1 - Shell     | 4- Orificeplate | 7 - Air Inlet             |
| 2 - Bladder   | 5 - Drain Valve | 8 - Air Chamber           |
| 3 - Air Valve | 6 - B.F. Valve  | 9 - Water Chamber         |
|               |                 | 10 - Main Line Connection |

*Note ; Specifications are subject to change without notice. We make Bladder vessels upto 10,000 Ltrs. for higher sizes refer to us.*



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## VAN PUMPS & CONTROL SYSTEMS PVT. LTD.

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