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Ammonia Services Ball Valve (M)

Habonim's ammonia service ball valves are suited to provide optimal protection and functionality for use in severe ammonia service applications. valves designated for ammonia service are specially prepared and cleaned to meet requirements for the safe operation of ammonia service equipment and media purity.

Ammonia

Ammonia is a compound of nitrogen and hydrogen with the formula NH, at atmospheric conditions, ammonia is a colorless gas lighter than air with a pungent, suffocating odor. It is a highly caustic irritant that is both toxic and flammable. Ammonia is soluble in water to provide an alkaline solution.

Ammonia is lighter than air, its density 0.73 kg/m3 (1.013 bar at 15 °C).

- Ammonia boiling point is -33 °C (-28 °F) at a pressure of 1 atmosphere, a liquid ammonia needs to be stored under high pressure or at low temperature.
- Ammonia melting point is -78 °C (-108 °F).

Self-Relieving-Seat (SRS)

Ammonia Uses

Manufactured by synthesis from nitrogen and hydrogen, ammonia has many uses in the production of fertilizers, plastics, explosives, pharmaceuticals, metal treating operations, refrigerant, cleaning agent and more. Ammonia is developing to be a major renewable fuel as a carrier of Hydrogen.

Ammonia Hazards

Ammonia combined with oil, grease or other combustible substances can result in explosions. valves to be used in ammonia systems should be selected properly.

General

Ammonia Service feature is available for part of Habonim's valves series – check series ordering codes for availability. Available valve sizes, types and variety of end connections are per each relevant series ordering codes.

Cavity pressure relief (P250 Ball)
3 mm relief hole face the upstream

Design

Valves designed for ammonia in a liquid state should be equipped with an upstream pressure relief hole in the ball (Ordering code -P250).

The relief hole avoids trapped cavities in the valve closed position and pressure buildup due to thermal expansion during liquid ammonia boil off. A valve with relief hole in the ball is uni-directional, the relief hole must be positioned at the upstream flow direction for complete in-line sealing.

For Bi-directional valve design for liquid ammonia a Self-Relief Seats (Ordering code -SRS) should be used with seats material of TFM or CF PTFE, the SRS seat design dynamically release cavity pressure buildup and return to shutoff position once the over pressure is relieved. Valves designed for ammonia in the gaseous state do not require an upstream pressure relief hole.

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Valve Component Materials

Due to the extreme noxious nature of ammonia, it is crucial that all valve components are constructed with appropriate materials.

Materials recommendations

Bill of Materials	Wet Ammonia	Dry Ammonia
Body, ends, ball, stem	Stainless steel 316/316L, CF8M/CF3M	Carbon Steel, WCB (min. temp. -29 °C, LCB min. -46 °C, LF2, LC1 min. -60 °C
Seats	TFM (A), PTFE (T), CF PTFE (P), Glass filled PTFE (R), PEEK (K), CF PEEK	TFM (A), PTFE (T), CF PTFE (P), Glass filled PTFE (R), PEEK (K)
Seals	PTFE (T)	PTFE (T)

Cleaning, Assembling and Packing

All valve components used for ammonia service, in gaseous or liquid state, are de-burred to a high standard and specifically cleaned to remove any traces of oil, grease or hydrocarbon materials prior to assembly.

Ammonia service valves are assembled in an oil-free restricted area by personnel who are specially equipped and trained to perform this task. The assembling area, work surfaces, equipment and tools are specially maintained to ensure cleanliness requirements are met.

Only lubricants compatible with ammonia are used.

- Valves are packed in open position with capped ends and plastic bagged
- Each valve is packed with a 'Silica-gel pack'
- A sticker on the plastic bag indicating “Ammonia Service”

Optional Accessories

Fugitive Emission Bonnet (FE)

An important safety mechanism that Habonim offers for ammonia service is the Fugitive Emission bonnet (FE). A stainless-steel pressure chamber bolted on and sealed against the valve ISO 5211 top platform. The FE bonnet will accumulate ammonia leak, if occurred, and contain it in a confined space until a maintenance operation is scheduled.

A readily made purge ports at the FE bonnet top allow the site technician to connect pressure gauge, pressure transducer or ammonia sniffer to alert for ammonia leak through the valve stem seal. The FE bonnet allows stem seal redundancy, a simple design, yet crucial to enhance site safety in terms of ammonia leak through the atmosphere.

For mor information see Habonim Valve Accessories catalog.

Locking Device (LD)

As a safety measure, it is advisable that valve for ammonia service should be equipped with spring loaded locking device do avoid unauthorized or unintentional valve operation.

For more information see Habonim Valve Accessories catalog.