Inbal valves for Fire protection systems

The Inbal Automatic Control Valve is a pressure operated, sleeve actuated valve designed from basic concepts, with a built in actuator to function as a control valve in fire protection. The Inbal Valve utilizes the unique N.M.M.P. (No Moving Mechanical Parts) design which ensures a long life of dependable operation. The small physical dimensions and the low weight enable the Inbal Valve and the control trim assembly to occupy much less space and significantly reduce the time and labor needed for installation. The Inbal Valve withstands pressure surges and is entirely resistant to false tripping. Opening is quick, yet smooth, virtually eliminating water hammer.

All valves are rated at 21 bar (300 psi), and are available in sizes 40 mm to 300 mm (1½" to 12").

The Inbal Valves are approved by Factory Mutual (FM) by VdS Schadenverhütung, Type Approved by Lloyd's Register, American Bureau of Shipping (ABS), Det Norske Veritas (DNV) and Bureau Veritas (BV) and listed by Underwriter's Laboratories (UL) for Fire Pump Relief valve. As standard, Inbal Valves are made of Ductile Iron, epoxy coated and the control trim is made of Stainless Steel and Brass, Nickel-Chrome plated. A variety of additional materials such as Cast Steel, Stainless Steel, Nickel Aluminum Bronze, and Titanium are supplied Ex-stock. Inbal Valves are available with threaded, flanged, wafer, or grooved ends. All valves are flow tested before being supplied. The Inbal Valves are designed to work with potable water, foam, and seawater.

The Inbal range includes: Deluge-, Remote Control-, Pressure Control Deluge-, Pressure/Flow Control Valves, Dry Pipe Systems, Pre-Action Systems and Control Panels.

Description

Inbal Valves embody a breakthrough in the conceptual design of automatic water control valves. Developed from basic principles, they are free of limitations imposed by the human hand, which characterize conventional control valves such as clapper or diaphragm actuated types. The major concept that led to the development of the Inbal Valve is the N.M.M.P. (No Moving Mechanical Parts), a significant feature in fire protection systems where reliable operation is considered the first criterion in selecting equipment, particularly control valves.

The Inbal Automatic Control Valve comprises only a few parts:
Deluge valves

Deluge Systems are intended to deliver large quantities of water over a large area in a relatively short period of time. The Inbal Deluge Valve is FM and VDS approved to 300 psi (21 bar) in sizes 3", 4", 6", and 8" (80, 100, 150, and 200 mm). The Inbal deluge Valve is compact, lightweight, and is provided with a preassembled trim - all of which minimize the installation time and make it simple and easy. The Inbal Valve opens fast, yet smoothly, preventing water hammer. The Inbal Valve design prevents false tripping and it can be reset by a thumb-activated knob.

The Inbal Deluge Valve is available for:
- **Local Resetting** - Once the deluge valve operates, it is latched in an open position.
- **Remote Resetting** - The Inbal Deluge Valve can be remotely reset.

The Inbal Deluge Valve is designed to allow for a variety of detection and release systems:
- Hydraulic Actuation
- Pneumatic Actuation
- Electric Actuation
- Pneu-Electric Actuation

Remote control valves

The Inbal Remote Control Valve is used whenever monitoring and controlling the whole area is done from a control room or control panel. Remote operation of the system is needed for reducing heat transfer and for cooling purposes. Remote resetting of the systems is vital for effective use of the limited water / foam capacity and to reduce drainage problems.

The innovative design of the control trims whereby all the components are built in one body and the use of external tubing is virtually eliminated, makes the Inbal Valves function ideally for the purpose of remote control.

The Inbal Remote Control valves are designed for a variety of actuation systems:
- Hydraulic Actuation
- Pneumatic Actuation
- Electric Actuation
- Pneu-Electric Actuation
Dry pipe systems

The Inbal dry pipe system is a sprinkler system employing automatic sprinklers installed on a piping system containing air or nitrogen under pressure. This dry pipe valve is used to hold back the water supply and to serve as the water / air interface. It is designed so that a moderate amount of air pressure will hold back a much greater water pressure. When a fire occurs and enough heat is generated, one or more sprinklers will operate. The system's air pressure will then escape through the open sprinkler(s) and drop to a predetermined level to allow the dry pipe valve to open. Once the dry pipe valve opens, the water supply will be admitted into the sprinkler system piping to fill it, and water will discharge from any sprinkler(s) that have operated. Dry pipe systems are used in environments that may be subject to freezing temperature. Inbal Dry Pipe Valves are FM approved to 300 psi (21 bar) in sizes 3", 4", 6", and 8" (80, 100, 150, and 200 mm).

Pressure / Flow control valves

Pressure Relief Valve
The Inbal pressure relief valves are used to release excess pressure that may develop as a result of a sudden change in the velocity of the water flowing in the pipe.

Pressure Sustaining Valve
The Inbal pressure sustaining valves are used to sustain the system pressure to a predetermined maximum level. The applications balance the pressure distribution throughout the whole system by maintaining the minimum pressure for high altitude users. Pressure sustaining valves are also used to prevent discharging of the pipe system when any user starts to operate.

Pressure Reducing Valve
The Inbal pressure reducing valves maintain a predetermined outlet pressure which remains steady and unaffected by either changing of inlet pressure and/or various demands. Inbal Pressure Reducing Valves are self-contained control valves which do not require external power.
Preaction systems

The Inbal Preaction System employs a piping system with closed sprinklers pressurized with supervisory air or gas pressure. The system is equipped with a supplemental detection system whose function varies depending on the type of preaction system. The types of detection systems most commonly used are pneumatic or electric actuation. Preaction systems are used where it is important to prevent an accidental discharge of water, when an alarm is desired in advance of sprinkler operation, or when it is desired to reduce the water delivery delay inherent in a dry pipe system.

Inbal Preaction Systems are available in the following configurations:

- **Non-Interlock** - Utilizes a dry pipe valve and a supplemental pneumatic or electric detection system. The valve may be opened either by operation of a sprinkler in the sprinkler piping or by operation of the detection system.

- **Single Interlock** - Utilizes a deluge valve and a supervisory air pressure system. Loss of air in the sprinkler piping system due to damaged piping or broken sprinklers will only operate the alarm systems and will not cause water to flow through the deluge valve and into the system. The valve will open only if the electric or pneumatic detection system operated.

- **Double Interlock** - Utilizes an automatic water control valve, an electric or pneumatic detection system, and a pressurized (air or gas) sprinkler piping system. Only operation of both detection and sprinkler piping systems will allow water to enter the sprinkler system and be discharged through the fused sprinkler(s). The valve is FM approved to 300 psi (21 bar) in sizes 3", 4", 6", and 8" (80, 100, 150, & 200 mm) as a valve for Refrigerated Areas.