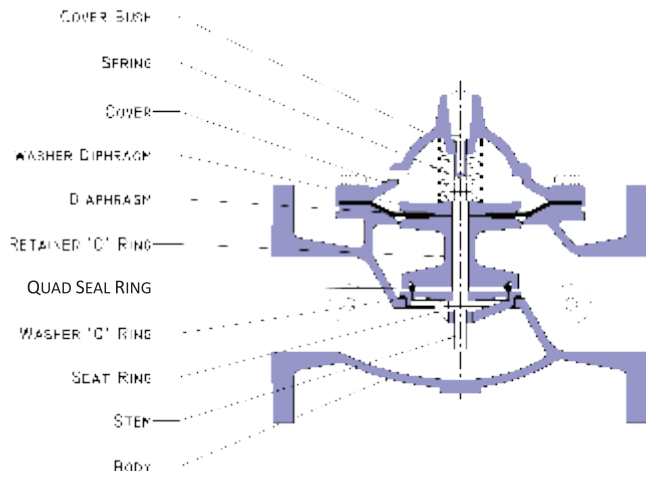


Automatic Control Valve



Flow Applications & Control Engineering company

The Basic Valve



Main Valve Design

The main valve is Self Actuating Type, Pilot Operated, Globe/Angle Pattern, Top & Bottom Guided, Glandless, Hydraulically Operated, Diaphragm Actuated for **multifunction** control of less viscous, non corrosive, non abrasive fluids.

Our wide range of control pilots makes it possible to offer combination models for variety of functions. The main valve contain only one moving part. This simplicity of design promotes dependibility, making the maintenance easier and extend the life of the valve.

The lower portion of main valve diaphragm assembly is a mechanical check feature, which acts independently of diaphragm position or pilot control system, and provide immediate check action when flow ceases.

The **Automatic Control Valve**, the word is self explanatory. It is a highly engineered Automatic Control Valve knowledgeably designed to operate of the line pressure or if desired, from an independent power source. Actrol valves are hydraulically operated, diaphragm actuated for multi-function control of non corrosive, non abrasive fluids.

Main Valve Construction

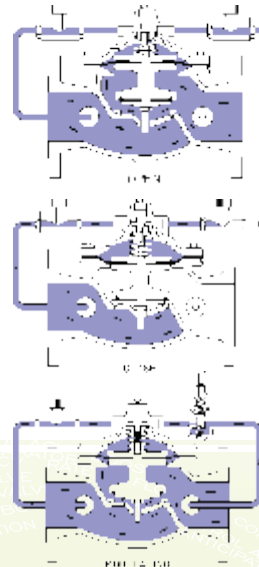
The main valve consist only three major components; Body, Cover and the Top & Bottom Guided Diaphragm Assembly which is the only moving parts in the main valve making the online maintenance very easy.

With simplicity of design & packless construction, minimal part wear is there which assure trouble free operation & long life of dependable.

Actrol is available in various materials and in full range of sizes with flanged ends.

Main Valve Operating Principle

The main valve is normally closed, when pressure is applied to the valve inlet the same pressure is applied to the cover also (upper chamber) the valve remains close. By controlling the pressure in the cover the valve can be made fully open or closed.



Full Open:

When pressure in the cover chamber is released to a lower pressure zone the line pressure at the valve inlet opens the valve allowing full flow.

Tight Closing:

When the pressure from the valve inlet is applied to the cover chamber, the valve closes drip tight.

Modulating Action:

Actrol valves are hydraulically operated ,by introducing or releasing the liquid from above the diaphragm at controlled rates. A pressure differential is required , either inlet to outlet or inlet to atmosphere, depending on application.

The control valve holds any intermediate position when operating pressures are equal above and below the diaphragm. The control pilot modulates the valve to automatically compensate for line pressure changes.

Selection

Valves are sized to provide an appropriate pressure drop for each application. The minimum pressure drop should be 5 psi for inlet to atmosphere and 10 psi from inlet to outlet.

Actrol valves are design for use with clean liquid (water, ATF) application for other media is possible, consult factory.

Actrol is a single chamber full port engineered basic valve used in nearly all Brightech's model bearing its description. when the main valve is provided with different combination of pilot & accessories the valve perform a wide range of Automatic Fluid Control making it a specified valve for the **Municipal Water Works, Water Distribution System, Fire Protection, Irrigation, Industrial Petroleum & Aviation Fueling System, Loading Terminal Automation of Tankers & Wagons Marine Theme Park, Decorative Fountain etc.** for the system application like Remote Control, Pressure Regulation, Solenoid Operation, Rate of Flow Control, Liquid Level Control, Check Function and many more.



BTA 11 Size Range: 25mm to 400mm
Pressure Rating: Class 150 & 300

Level Control Valve

BTA 111



Function

The model BTA-111, Modulating float control valve to maintain constant liquid level in storage tanks and reservoirs by compensating for variations in supply or demand, keeping the tank full.

Operation

The Ball type Float operated Pilot Control is Installed at the high liquid level in the tank / reservoir and is connected via tubing or pipe to the main valve. As the liquid level changes, the float control proportionally opens or closes the main valve, keeping the liquid level nearly constant.

Detail Product Catalog available on request

Filter Separator Control Valve

BTA 211



Function

This model has a specific purpose; to shut off the flow of fuel to a pre-set maximum in response to a signal from the float control of a fuel-water filter/separator. It is a hydraulically operated pilot controlled, diaphragm type globe valve. The valve will close drip tight in case of diaphragm failure providing fail safe operation.

Operation

The interface float pilot is down with little or no water in the sump of the filter separator. The float pilot routes vessel pressure to the bonnet of the three-way auxiliary pilot. This position the three-port auxiliary pilot to connect the bonnet to the main valve down stream, allowing the valve to open.

Detail Product Catalog available on request

Solenoid Control Valve

BTA 311



Function

Operated by two way - three way solenoid pilot valve, BTA-311 a Solenoid Control Valve is an on-off control valve that either open or closes upon receiving an electrical signals to the solenoid pilot control, provides two position [On-Off] Operation.

Operation

This Valve is consist of a "Actrol" main Valve and a two way solenoid valve. The main valve opens fully or closes drip tight depending upon the actuation position of the solenoid, energized to open/energized to close. The valve may be remotely operated by timers, relays, probes or any triggered device to the solenoid.

Detail Product Catalog available on request

Booster Pump Control Valve

BTA 311-64



Function

A Pilot (Solenoid) operated Booster pump control valve is designed for Installation on the discharge of Booster pump to control opening & closing on pump start up and shut down, eliminates pipe surges.

Operation

A three-way solenoid valve controls the valve operations equipped with hydraulic check feature to close valve on pressure reversal and shut off pump in event of pump failure. Valve and pump operations are interlocked by limit switch assembly.

Detail Product Catalog available on request

Digital Control Valve

BTA 311-66



Function

It is an electrically operated, electronically diverted, hydraulically actuated, diaphragm valve. The flow into and out of the upper operating chamber is controlled by the two-way solenoid pilot. The electronic control determines whether the opening solenoid or the closing solenoid is operated. The change in valve position is dependent upon which solenoid is operated and the duration of the energized period.

Operation

The two way solenoid operate the main valve. The first connects the main valve inlet to the diaphragm chamber and when it is open, causes the main valve to close. The second solenoid connects the main valve outlet and, when it is open allows the main valve to open. A needle valve is provided in series with each solenoid, giving separate adjustment of the valve opening and closing speed.

Detail Product Catalog available on request

Rate of Flow Control Valve

BTA 411



Function

The Actrol Model BTA – 411 Rate of Flow Control Valve prevents the excessive flow by limiting flow to a pre selected max. rate regardless of changing line pressure.

Operation

The pilot senses the differential pressure across the specially sized thin edge orifice plate mounted in the valve inlet flange. when the pressure differential is less than the set point, the main valve opens and allowing to maintain the desired flow. At the desired max. set point the pilot valve reacts to small changes in sensing pressure and controls the main valve position by modulating the pressure above the diaphragm.

When the pressure drop (across) the orifice exceeds the set point, the valve closes slightly, limiting the flow to pre-set minimum.

The orifice usually sized to generate a pressure differential of 3 to 5 psi at the desired max. flow. Adjusting the pilot setting permits the max. flow to be changed in the field above or below the original point.

Detail Product Catalog available on request

Pressure Reducing Valve

BTA 511



Function

Brightech® manufactures a complete range of Automatic Control Valve offers pilot operated pressure reducing valve, design to reduce higher inlet pressure (up-stream pressure) to a constant lower outlet pressure (down-stream pressure) regardless of varying of up stream pressure & flow rates.

Operation

This is an accurate pilot operated pressure regulating valve capable of holding down stream pressure of a pre-determined limit. The pilot reacts to a small changes in pressure to control the main valve position by modulating the pressure above the diaphragm and when down stream pressure exceeds the pressure setting of control pilot the main valve and pilot close drip tight.

Detail Product Catalog available on request

Pressure Relief Valve

BTA 611



Function

A hydraulically operated pilot controlled modulating type pressure relief valve is design to maintain constant up stream pressure and to minimize surging.

Operation

The valve is actuated by line pressure through a pilot control system, opening fast to hold the upstream line pressure constant but closing gradually to Prevent surges. Operation is completely automatic and pressure settings may be easily changed.

Installed on a by-pass line, mainline pressure is accurately controlled by relief excess pressure. This valve can be used for pressure relief, back pressure, up stream pressure control and many more.

Installed in a mainline it prevents upstream pressure from dropping (sustain) below preset minimum.

Detail Product Catalog available on request

Altitude Control Valve

BTA 711



Function

The model BTA-711, one way Altitude valve controls the high water level in elevated Tanks or reservoirs. The altitude pilot senses the hydrostatic head of the reservoir to close on high water level. When the water level drops below the predetermined set point the valve opens to fill the reservoir. Supply pressure is greater than static head pressure. Tank discharge is by separate line.

Operation

This is a hydraulically operated and pilot controlled valve which operates on the differential in forces between a spring load and the water level in the reservoir. The desired high water level is set by adjusting the spring force. The pilot control measures the head through a sensing line directly connected to the reservoir.

Detail Product Catalog available on request

Hydraulic Check Valve

BTA 811



Function

It permits the main valve to be fully open when inlet pressure exceeds outlet pressure in the normal direction and main valve close drip-tight on reverse flow. Opening and closing speeds are separately adjustable.

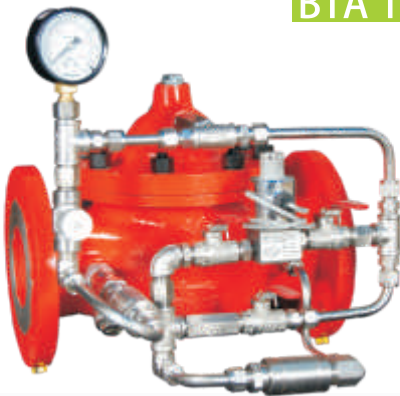
Operation

The Valve Operates on the differential between two pressure : upstream or inlet pressure acting under the seat of the valve , and downstream or outlet pressure acting on the diaphragm via single hydraulic line. When upstream pressure is greater of the forward flow , the valve opens at an adjustable rate to allow flow. When downstream pressure is greater , the valve is forced fully closed.

Detail Product Catalog available on request

Deluge Valve

BTA 1011



Function

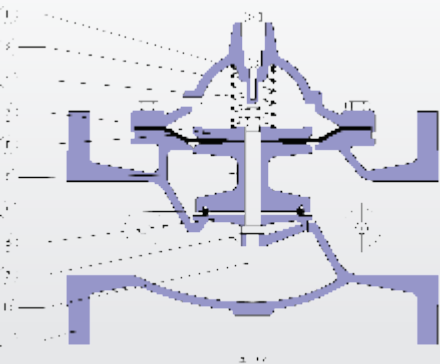
Brightech® Deluge valve is a solenoid control on-off valve which either opens or closes upon receiving an electrical signal to the solenoid pilot control to provide water flow to the fire protection sprinkler system. This valve consist of a Actrol main valve, a three-way solenoid valve and an auxiliary pilot valve. This pilot control system alternatively applies pressure to/or relieves pressure from the diaphragm chamber of the main valve. it is provided either normally open or normally closed. pilot system can be hydraulically , pneumatically or manually operated.

Operation

Energized the solenoid valve pressurizes the diaphragm chamber of the three-way auxiliary pilot valve. The pilot valve then shifts to relieve pressure from the diaphragm chamber of the main valve , allowing the main valve to open fully and admit water through the main line. The valve may also be opened by utilizing the manual override ball valve on the bonnet , which allows opening of the main valve regardless of solenoid pilot activation. The valve closes when the solenoid valve is de-energized.

Detail Product Catalog available on request

GA Drawing with Material Specification & Dimension



Material Specification

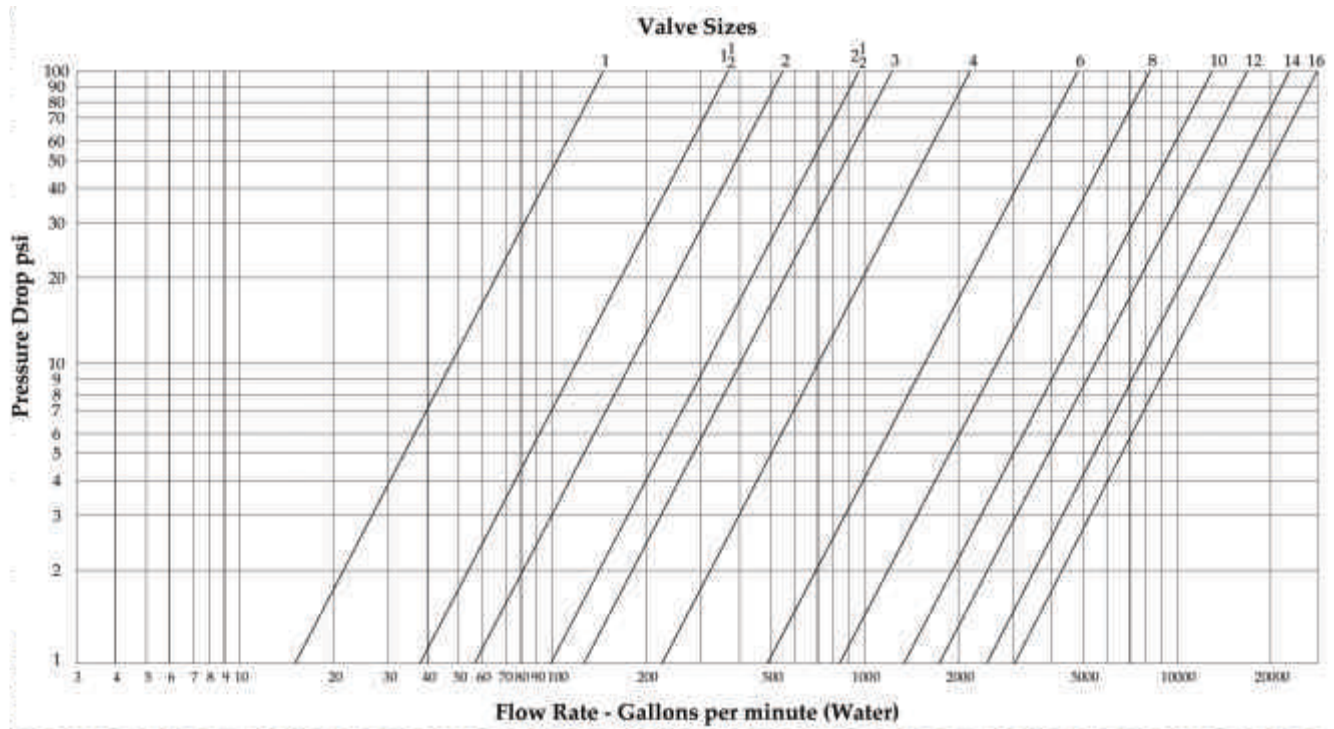
SR.NO.	PART NAME	MATERIAL
1	BODY	ASTM A 216 GR WCB /
2	COVER	ASTM A 351 GR CF8 / 8M
3	SEAT RING	ASTM A 351 GR. CF8 / 8M
4	QUARD SEAL	BUNA N
5	RETAINER 'O' RING	ASTM A 351 GR. CF8 / 8M
6	WASHER 'O' RING	SS 304 / 316
7	WASHER DIAPHRAGM	SS 304 / 316
8	DIAPHRAGM	BUNA N
9	SPRING	SS 302
10	STEM	SS 304 / 316
11	COVER BUSH	SS 304 / 316

Dimension (mm)

SIZE	A	B	WEIGHT (kg)
25MM	152	75	8
40MM	175	110	15
50MM	203	140	18
65MM	241	145	25
80MM	305	170	30
100MM	343	220	60
150MM	432	305	120
200MM	559	400	180
250MM	757	475	370
300MM	864	525	500
350MM	991	570	725
400MM	1060	660	1035

"Actrol" Flow Rate Chart

Pressure Drop Chart BTA-11 (Globe)



Flow Data BTA-11 (Globe)

Valve Size	Inches	1"	1.1/2"	2"	2.1/2"	3"	4"	6"	8"	10"	12"	14"	16"
	mm.	25	40	50	65	80	100	150	200	250	300	350	400
Max. Continuous Flow Rate GPM (Water)		55	125	208	300	460	800	1800	3100	4900	7000	8500	11000
Max. Intermittent Flow Rate GPM (Water)		80	160	260	370	570	1000	2300	3900	6000	8600	10500	14000
CV Value (Globe)		15	40	55	90	125	220	460	840	1400	1700	2350	2950

- Maximum Continuous flow based on pipe line velocity of 20 ft. per second.
- Maximum intermittent flow based on pipe line velocity of 25 ft. per second.
- The valve CV factor of a valve is the flow rate in USGPM at 60° F that will cause a one psi drop in pressure.
- The factors stated are based on a fully open valve.
- CV factor can be used in the following equations to determine flow (Q) and Pressure Drop (ΔP)

$$Q (\text{Flow}) = CV \sqrt{\Delta P}$$

$$\Delta P (\text{Pressure Drop}) = (Q/CV)^2$$

Other Products Range :

- Safety & Thermal Relief Valve
- Pressure Reducing/Regulating Valve
- Pressure Reducing & De-Super Heating Station (PRDS)
- Gas Regulator (Self Actuating & Pilot Operated)
- Pneumatic/Motorized Control Valve
- Teflon[®] Lined Products



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