BLAZE

Alarm Check Valve

Model : - BT 5900F / 5900G / 5900FG

Description:

The BT 5900 Series Alarm Check Valves are designed for use in wet pipe automatic sprinkler fire protection systems. The valve automatically operates electrical and/or hydraulic alarm devices when a sustained flow of water occurs within the system. An integrated retard chamber helps minimize unwanted alarms caused by pressure fluctuations or water surges. BT Alarm Check Valves are suitable for both variable & constant supply pressure conditions.

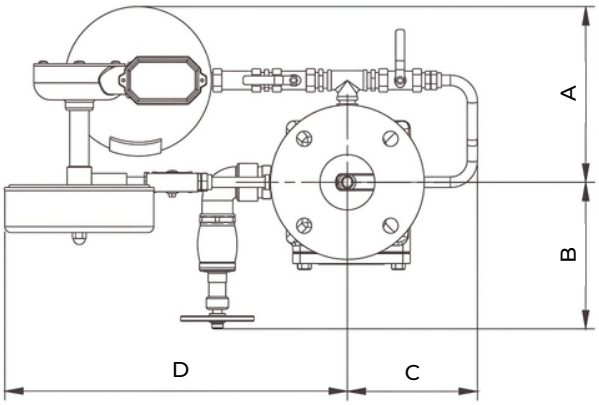
Specifications:

Size	DN 65 to DN 200 (2 ½"- 8")
Maximum Working Pressure	20.7 bar (300 psi)
Approvals	FM 1041 Approved, UL 193 Listed
End Connection	Standard Supply ANSI Class 150 RF / Grooved Ends to AWWA C606 Standard. *ANSI B16.1 / PN16 RF Flange Optional
Temperature Range	0° C to 80°C (32°F to 176°F)
Coating	Fusion Bonded Epoxy Coated Interior and Exterior to AWWA C550 Standard. Average Coating Thickness 250 Microns

*** 2 ½" Size is UL listed.**

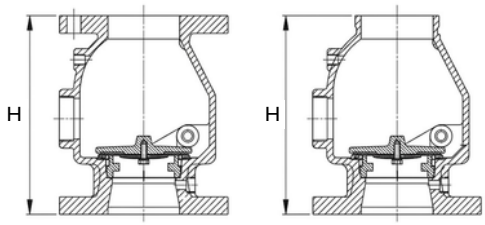
Main Valve :

Part	Material	ASTM Specification	EN Specification
Body	Ductile Iron	A536 Grade 65-45-12	EN 1563 EN-GJS-450-10
Hinge Pin	Stainless Steel	A276 Type 304	EN 10088 X5CrNi18-10
Disc	Ductile Iron	A536 Grade 65-45-12	EN 1563 EN-GJS-450-10
Disc Seat	Rubber	D2000 EPDM	EN 681 EPDM
Body Seat	Bronze	B62 C83600	EN 1982 CuSn5Zn5Pb5



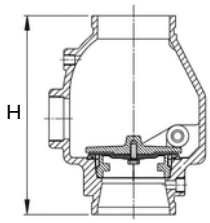
Accessories:

Specification	Material
Screwed Pipe	Stainless Steel
Pipe Fittings	Stainless Steel
Ball Valve	Brass
Pressure Gauge	Assembly
Check Valve	Brass
Angle Valve	Brass
Y-Strainer	Brass
Restrictor	Brass
Water Motor	Assembly
Pressure Switch	Assembly
Retard Chamber	Gray Cast Iron



Dimensions:

Order Code	Size	A (mm / inch)	B (mm / inch)	C (mm / inch)	D (mm / inch)	H (mm / inch)
BT-5900-065-300-RF / -GG	2 ½"	250/9.8"	200/7.9"	190/7.5"	520/20.5"	257/10.1"
BT-5900-080-300-RF / -GG	3"	250/9.8"	200/7.9"	190/7.5"	520/20.5"	257/10.1"
BT-5900-100-300-RF / -GG	4"	280/11.0"	250/9.8"	200/7.9"	520/20.5"	270/10.6"
BT-5900-150-300-RF / -GG	6"	300/11.8"	250/9.8"	200/7.9"	520/20.5"	340/13.4"
BT-5900-200-300-RF / -GG	8"	320/12.6"	250/9.8"	225/8.9"	520/20.5"	432/17.0"



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Alarm Check Valve

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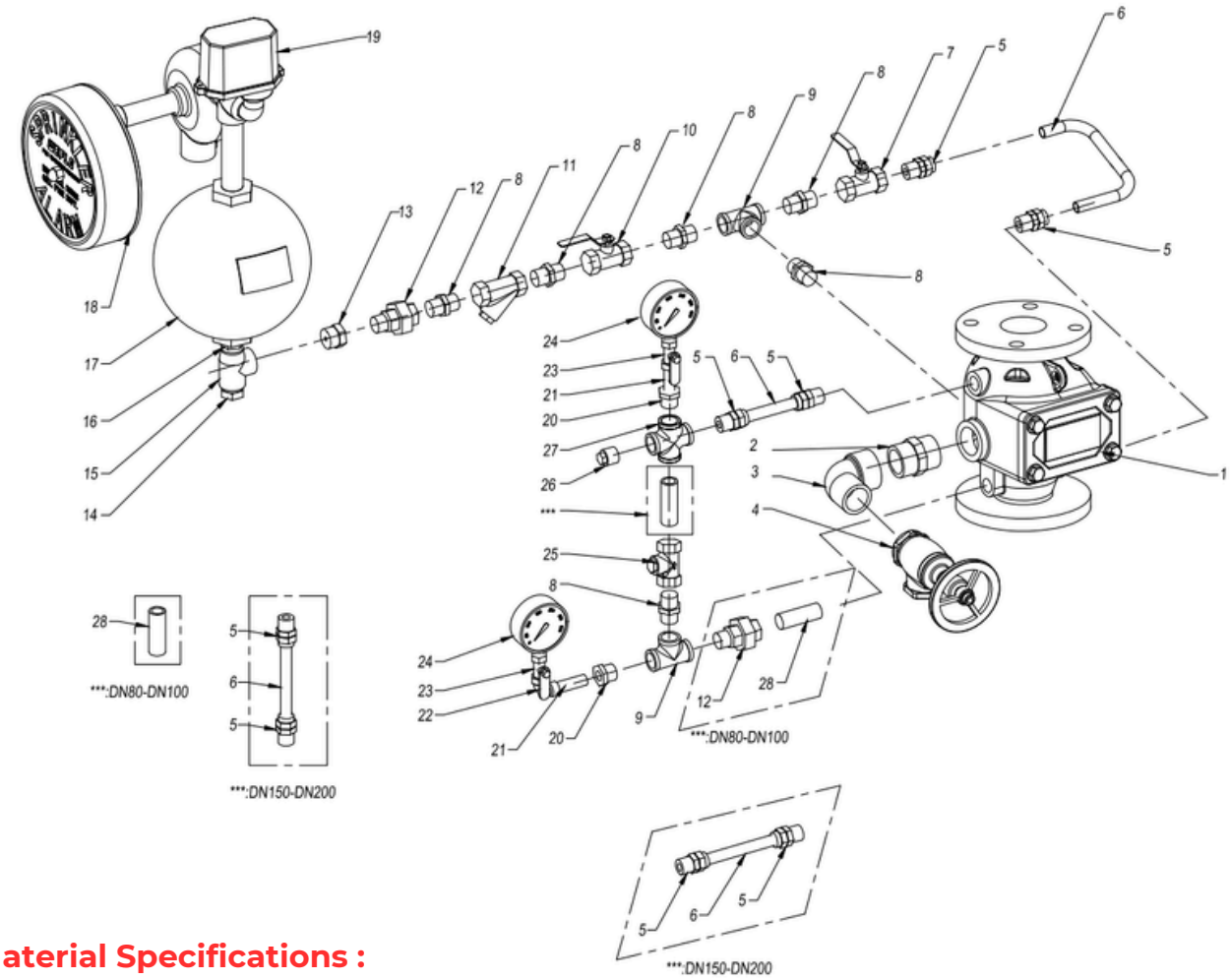

Material Specifications :

Item	Part Name	Material
1	Main Valve Assembly	
2	Hexagon Nipple	SS304
3	Elbow	SS304
4	Drain Valve	Brass
5	Ferrule Fitting	Stainless Steel
6	Tube	Stainless Steel
7	Ball Valve	Brass
8	Hexagon Nipple	SS304
9	Tee	SS304
10	Ball Valve	Stainless Steel
11	Strainer	Brass
12	Union	SS304
13	Restriction Orifice	Brass
14	Restriction Orifice	Brass

Item	Part Name	Material
15	Tee	SS304
16	Hexagon Nipple	SS304
17	Retard Chamber	CI
18	Water Motor Gong	
19	Pressure Switch	-
20	Reducing	SS304
21	Barrel Nipple	SS304
22	Elbow	Stainless Steel
23	Ball Valve	Brass
24	Pressure Gauge	
25	Check Valve	Brass
26	Plug	Brass
27	Cross	SS304
28	Barrel Nipple	SS304

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Operation :

The BT 5900 Alarm Check Valve is fitted with a spring-assisted clapper incorporating a replaceable EPDM rubber seal. Under normal operating conditions, the clapper remains closed, preventing reverse water flow while maintaining pressure within the sprinkler system. Minor pressure fluctuations are equalised through the bypass line without lifting the clapper, preventing false alarm activation.

When a sustained flow of water occurs, such as from an operating sprinkler or an open inspector's test connection, the clapper opens and allows water to flow into the alarm line. This activates the associated water motor alarm and/or pressure switch, which continues to operate until the water flow stops.

Operation with an Optional Retard Chamber

When fitted with a retard chamber, temporary pressure surges are absorbed to minimise nuisance alarms. Water entering the retard chamber drains through a restricted orifice, preventing alarm activation during short-term pressure fluctuations.

During a genuine fire condition, the sustained water flow fills the retard chamber completely, allowing the water motor alarm and/or electric pressure switch to operate and provide a continuous alarm signal.

Installation :

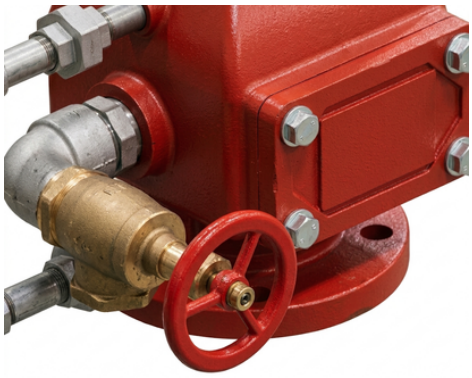
- The BT Alarm Check Valve is suitable for indoor installation. Outdoor installation is permitted; however, the service life of the trim assembly cannot be guaranteed. For outdoor installations, the pressure switch provides IP66 protection.
- Inspect the valve and all supplied components upon receipt. Ensure that all parts are present and undamaged before installation.
- Use only approved accessories and components. The use of non-approved parts may affect system performance.
- Thoroughly flush the water supply pipework before installing the valve to remove dirt, scale and other foreign material.
- Do not install the valve in areas where it may be exposed to freezing temperatures.
- Install the Alarm Check Valve only in the vertical position, with the flow arrow on the valve body pointing upwards. The flow arrow on the bypass swing check valve must also point upwards.
- Apply a small amount of thread sealant or PTFE tape to male threaded connections only. Do not allow sealant or foreign material to enter the valve body, pipework or trim components.
- Install the valve, trim and accessories in accordance with the applicable trim drawing.
- Where a retard chamber is fitted, provide suitable support to prevent it from tilting after installation.

Note: The BT Alarm Check Valve must be installed in the vertical position only.

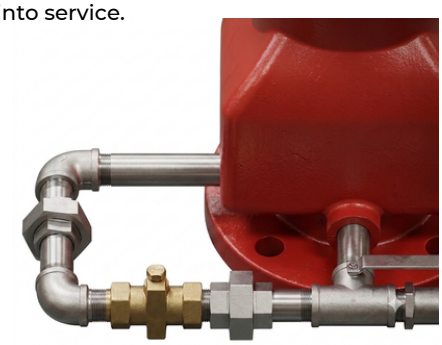
⚠ Warning :

- Read and understand this manual before installing, operating or maintaining the valve.
- Ensure the piping system is fully depressurised and drained before carrying out any installation, removal, adjustment or maintenance work.
- Always wear appropriate personal protective equipment (PPE), including safety glasses, a hard hat and safety footwear, during installation and servicing.

Placing the System in Service :



- Open the Main Drain Valve (Angle Valve) and confirm that the system has been completely drained. Once draining is complete, close the drain valve.
- Ensure that all system drains are closed and verify that there are no leaks within the system.
- Confirm that the system is fully depressurised. All pressure gauges should indicate zero pressure.
- Open the Inspector's Test Connection and any auxiliary drain valves to release trapped air from the system before placing the valve into service.



- Close the Alarm Line Ball Valve to prevent false alarm operation while the system is being filled.
- Slowly open the Main Water Supply Control Valve.
- Allow the system to fill completely with water.
- Once a steady flow of water is established and all trapped air has been expelled, close the Inspector's Test Connection and any auxiliary drain valves.
- Record the water supply and system pressures.
- Fully open the Main Water Supply Control Valve.
- Verify that all control valves are in their normal operating positions before placing the system into service.

Valve	Normal Position
Alarm line Ball Valve	Open
Water Supply Main Control valve	Open
System Main Drain Valve	Closed
System Test Valve	Closed

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Inspection :

Weekly Inspection

Carry out a visual inspection of the BT Alarm Check Valve and its trim assembly every week to ensure all components are in good condition.

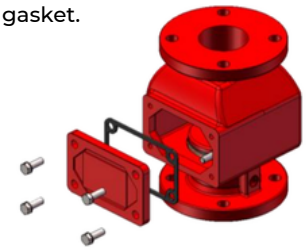
Note: Where the system is fitted with a low-pressure alarm, a monthly inspection may be sufficient.

Monthly Inspection

- Record the water supply pressure and system pressure.
- Inspect the valve and trim for signs of leakage, mechanical damage or corrosion. Replace any damaged or corroded components.
- Verify that the valve and trim are installed in an area protected from freezing temperatures.

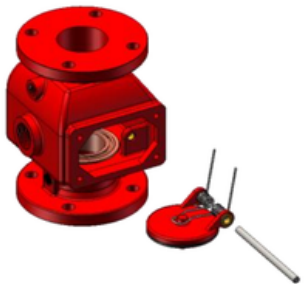
Clapper Replacement :

- Loosen the cover bolts and remove the cover together with the body-to-cover gasket.



- Remove the shaft, spring and clapper assembly from the valve.

Caution: The spring is under tension. Handle it carefully during removal.

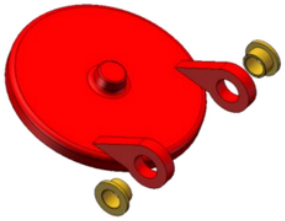


- Loosen the clapper retaining bolt and remove the seat retainer and clapper seal. Clean the clapper sealing surface with a clean cloth.

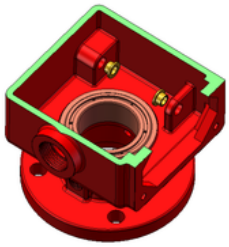
- Install the new clapper seal, then refit the seat retainer and spring washer. Tighten the retaining bolt securely.
- Ensure the valve seat is clean before repositioning the clapper assembly.
- Reinstall the spring and shaft.
- Fit a new body-to-cover gasket.
- Reinstall the cover and tighten the cover bolts evenly using a criss-cross sequence.

Shaft bushing Replacement :

- ID bigger bushing on the clapper.



- ID smaller bushing on the body.



Replace Parts :

Parts List	Qty per Set
Cover Bolts and Washers	According to valve size
Cover Gasket	1
Clapper Assembly	1
Clapper Gasket	1
Clapper Gasket Retainer	1
Clapper Bolt and washer	1
Shaft	1
Spring	1
Clapper Bushing	2
Body Bushing	2

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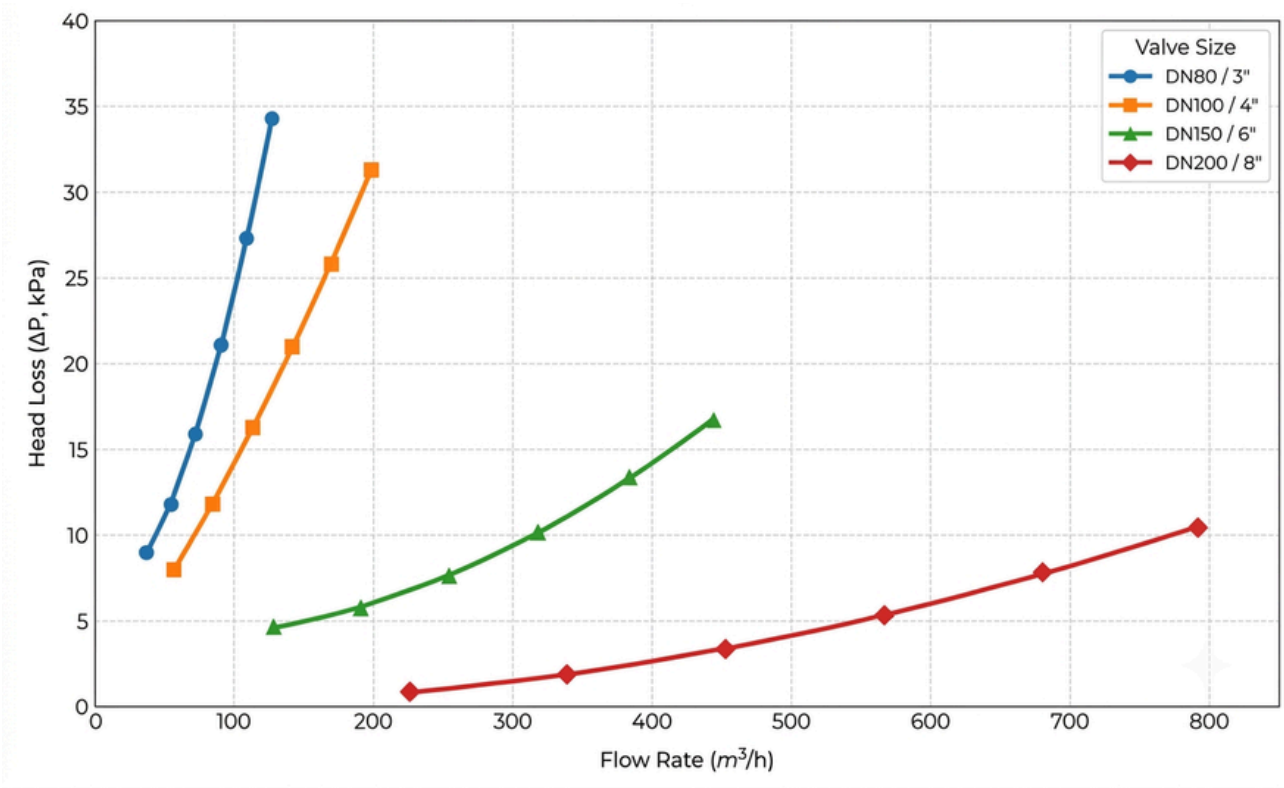
Troubleshooting :

Problem	Possible Cause	Solution
Water leaking from the retard chamber	Water is passing through the clapper seal or the alarm line ball valve is leaking.	Inspect the clapper seal and seat for damage or debris. Check for excessive water supply pressure fluctuations, ensure there is no vacuum in the alarm line, inspect the bypass pipe for blockage, verify the bypass check valve operates correctly, and ensure the alarm line ball valve is fully closed or replace it if necessary.
Water motor alarm does not operate or sounds weak	No water entering the retard chamber, leakage from the alarm line, incorrect restrictor size, closed alarm line ball valve, or low water supply pressure.	Ensure the seat ring ports are clear, verify that check valves isolate each alarm line correctly, confirm the correct restrictor is installed, ensure the alarm line ball valve is fully open, and check that the water supply pressure is adequate.
Leakage from the cover	Loose cover bolts or damaged cover gasket.	Tighten the cover bolts evenly. If leakage persists, replace the cover gasket.

Pressure Loss V/s Flow :



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