

## Alarm Check Valve

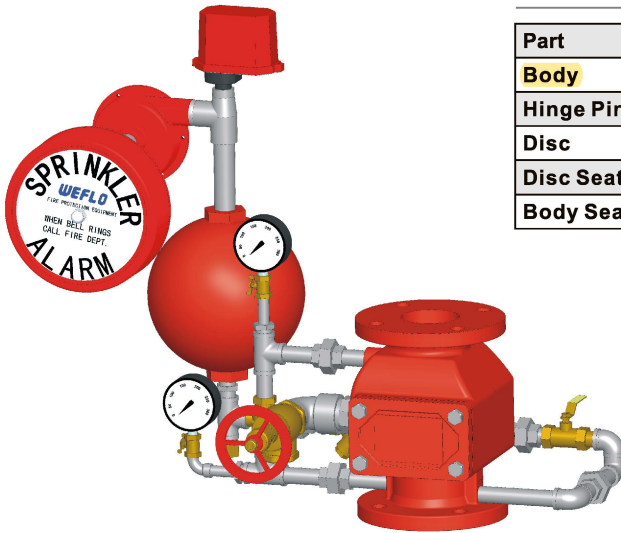
## FIG. F1511-300 / F1512-300 / F1522-300

### Specifications

- Multiple End Types for Main Valve  
F1511-300: Flange by Flange  
F1512-300: Flange by Groove  
F1522-300: Groove by Groove
- Flanged Connections are Drilled per EN1092 -PN10/16 or ANSI B16.1 Class 125. (Other Flange Types Available Upon Request)
- Grooved Connections are cut in accordance with standard Groove Specifications for Steel Pipe.
- Excellent Flow Characteristics.
- Automatically actuates electrically and / or hydraulically operated alarms when there is a steady flow equivalent to the discharge rate for one or more sprinklers.
- Retard Chamber used in installations subject to variable pressure to help prevent false alarms.
- For use in Wet Pipe (automatic sprinkler) Fire Protection Systems.
- Alarm Check Valves should be installed vertically orientation.
- UL 193 Listed and FM 1041 Approved.  
CE and GOST Certified.
- Rated Working Pressure  
**UL/FM: 20 to 300 psi**  
CE: 1.4 bar to 16 bar
- Fusion Bonded Epoxy Coated Interior and Exterior to AWWA C550 Standard.

### Material Specifications

#### Main Valve

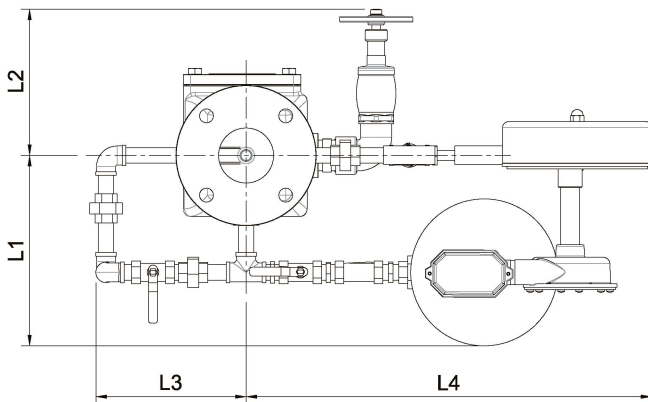


Part	Material	ASTM Specification	EN Specification
Body	Ductile Iron	A536 Grade 65-45-12	EN 1563 EN-GJS-450-10
Hinge Pin	Stainless Steel	A276 Type 304	EN 10088 X5CrNi18-10
Disc	Ductile Iron	A536 Grade 65-45-12	EN 1563 EN-GJS-450-10
Disc Seat	Rubber	D2000 EPDM	EN 681 EPDM
Body Seat	Bronze	B62 C83600	EN 1982 CC491K

#### Accessories

Specification	Material
Screwed Pipe	Carbon Steel
Pipe Fittings	Malleable Iron
Ball Valve	Brass
Pressure Gauge	Assembly
½" Check Valve	Brass
2" Angle Valve	Brass
½" Y-Strainer	Brass
Restrictor	Brass
Water Motor	Assembly
Pressure Switch	Assembly
Retard Chamber	Gray Cast Iron

### Dimensions (mm/inch)



Size	L1	L2	L3	L4
3"	300/11.81	260/10.24	250/9.84	600/23.62
4"	300/11.81	260/10.24	250/9.84	600/23.62
6"	300/11.81	260/10.24	250/9.84	600/23.62
8"	350/13.78	260/10.24	250/9.84	600/23.62

#### Notes

• Designs, materials and specifications shown are subject to change without notice due to the continuous development of our products.



# Technical Data of Wet Alarm Check Valve

Ultimate Protection



## MODEL "A" 4 and 6 inch

### Technical Data

Size: 4 inch and 6 inch

Maximum Working pressure: 175 psi

Hydrostatic test Pressure: 100 % test at 350psi

Standard finish: red enamel pating Flange

Dimension: ANSI B150 16.5Lb

### Description

The Chang Der's "CD" brand model A wet pipe Alarm Check Valves are designed to hold back water pressure in the piping system until the sprinkler head is activated, to be used in wet pipe sprinkler installations in buildings where not subject to freezing temperatures, Alarm valve includes trim package valves pressure gauges, pressure switch, fittings and nipples to provide retard chamber connection, drain connection and alarm test by-pass.

The CD brand Alarm Check Valve is a wet pipe sprinkler system water flow check valve, which is installed in the wet pipe sprinkler system, it is designed to that water pressure in the pipe system will hold back after pressure at the valve until such time as a sprinkler is activated, hence activating the alarm.

### Accessories

- Standard trim
- Retard chamber
- Water motor alarm or gong
- Pressure gauges
- Pressure switched
- Drain valve

# Features

Wet type  
Vertical installation  
ANSI B16.5  
Flanges connection  
UL Listed



## 1. Retard chamber

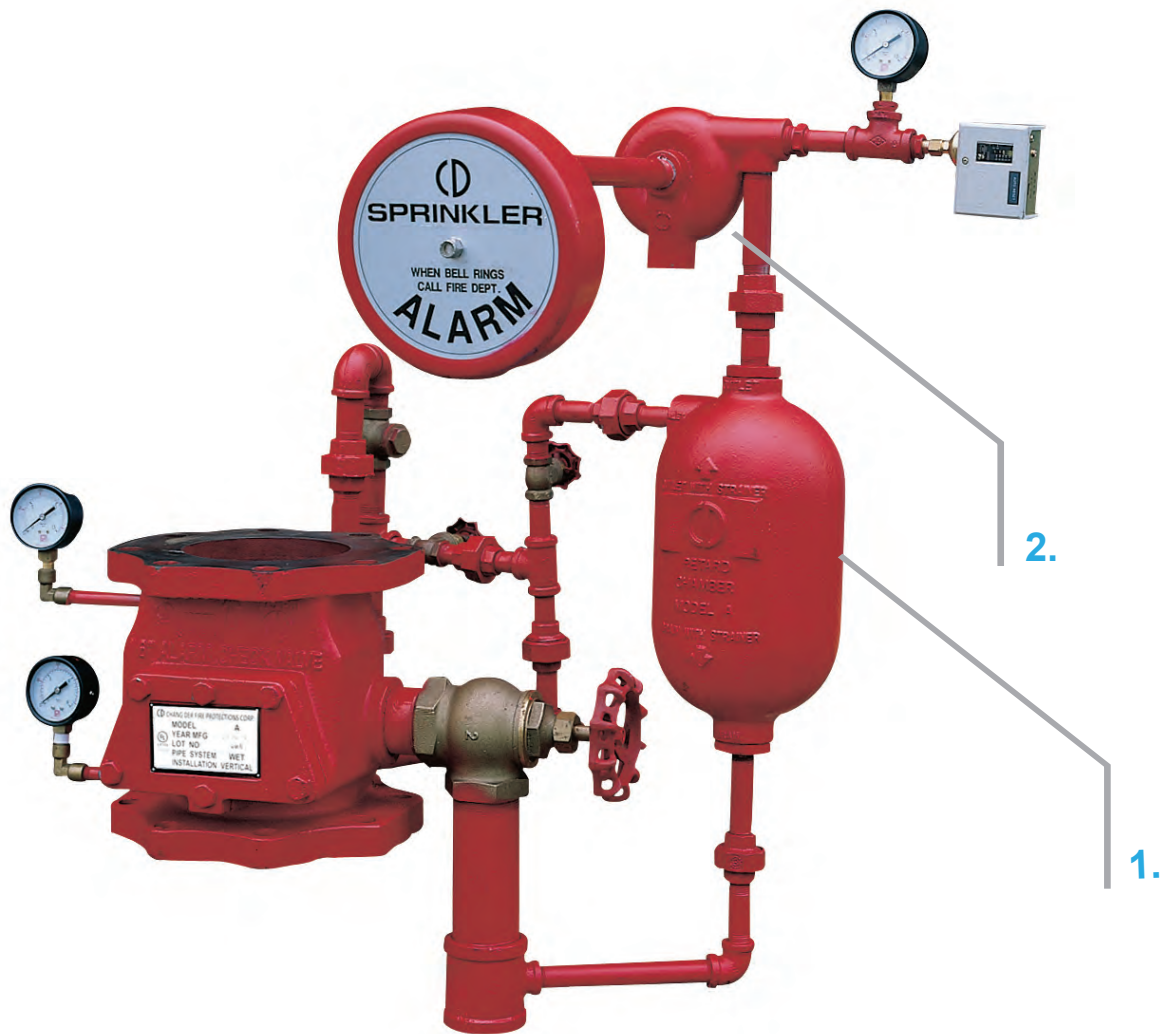
The device is a valve accessory which may be used for variable pressure wet system where mechanical motor alarms or pressure switch are used . in situations where excessive water pressure surge occur the retarding chamber is needed to collect excess water from the alarm valve and feed water back into the main drain, before activating the alarm .

## 2. Water Motor Alarm (Gong)

The device is a hydraulically driven mechanical gong that automatically sounds a continuous alarm when the sprinkler system activates .

Water motor alarm (gong) is used along with alarm check valve in automatic sprinkler system, the water motor alarm is hydraulically driven that automatically sounds a continuous alarm when sprinkler system actuates. It is easily mounted on an outside building wall, water motor alarm can generate sufficient sound that can be heard by human being .





### Retard chamber

The outlet plug and drain plug assemblies should be checked . properly for the obstructions and must be cleaned **thoroughly**

The retard chamber is used along with alarm check valve in automatic sprinkler system. the retard chamber is a valve accessory. Which may be used for variable pressure wet sprinkler system, where mechanical water motor alarm and /or pressure switch are used

### Alarm test valve

main drain valve and inspectors test valve  
Ensure that all controlling valves are in their set position and are not leaking

### By-pass check valve

The check valve in the external by-pass trim set should be checked for obstructions .and must be cleaned properly

### Seat ring

The seat ring should be visually checked for nicks and for stones, dirt or other foreign matter lodged in the groove or holes, clean . the seat ring thoroughly

# About Our Company



Chang Der Fire Protections Corp. is a professional manufacture producing a series of fire fighting equipment. The brand CD (Chang Der) is a trade-mark which created by industries which are in compliance with a hundred year fire fighting conception and conscience. The product qualities are relative to the safety of all human's lives and their properties. In order to promote the product qualities, we have invested a large amount of capital to conduct the research and development, leading to the advanced automated production facilities, and the entire system test instruments. The manufacturing is controlled by a high standard management system certificated by BSMI (Bureau of Standard, Metrology and Inspection), the Taiwan government ISO 9001, some products are UL listed, and the series products are exported worldwide .

## Maintenance

### Constant Pressure Condition

Under constant pressure conditions the system and the supply pressure will be the same, when there is no considerable surge and fluctuation in pressure retard chamber is not necessary, when a sprinkler operates the system pressure drops allowing the alarm clapper valve to open, when the water flows into the system simultaneously it flows into the alarm line thereby operating the alarming device .

### Maintenance

It is imperative that the alarm check valve and its related device must be inspected and tested on regular basis to ensure proper and trouble free operation of the system, several areas to be routinely inspected are .

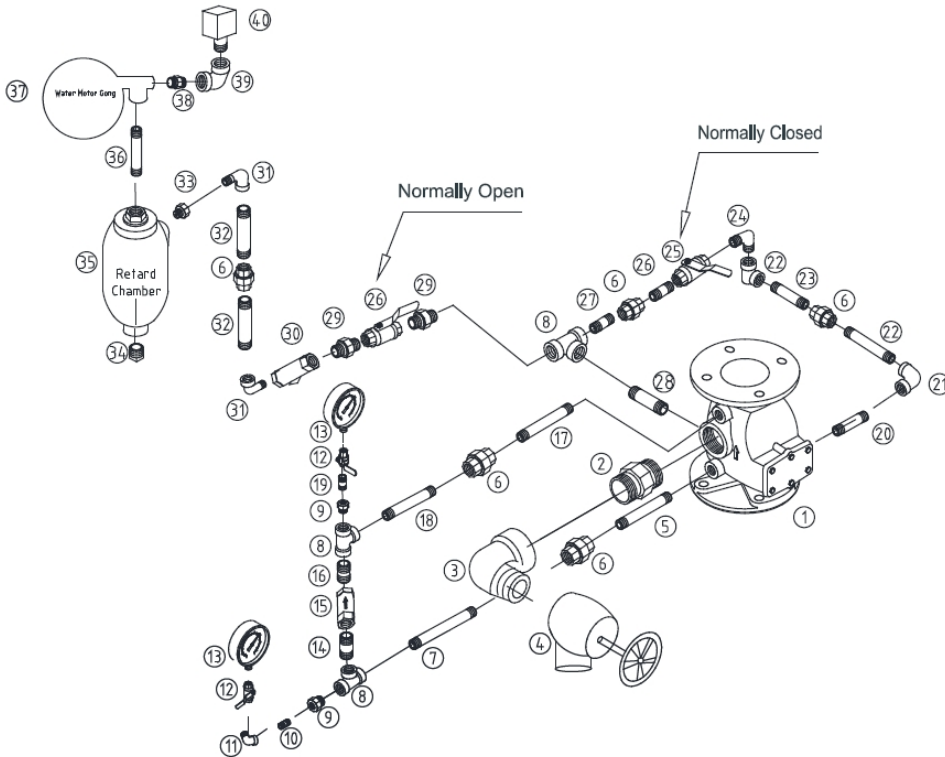
### Clapper facing

The clapper facing should be checked for wear and tear and to ensure that it is free from dirt and foreign matter, replace the facing if it is damaged, clean the facing if it is found dirty.

# ALARM CHECK VALVE

## INSTALLATION AND MAINTENANCE GUIDE

MODEL A Size "4



Part No.	Specification	Material
1	Valve	See Above
2	2" NPT Pipe Fitting	Malleable Iron
3	2" NPT Street Elbows	Malleable Iron
4	2" Angle Valve	Brass
5	1/2" NPT Screwed Pipe	Carbon Steel
6	1/2" Cone Union	Malleable Iron
7	1/2" NPT Screwed Pipe	Carbon Steel
8	1/2" Straight Tees	Malleable Iron
9	1/2" x 1/4" Reducers	Malleable Iron
10	1/4" NPT Screwed Pipe	Carbon Steel
11	1/4" 90° Elbow	Malleable Iron
12	1/4" Ball Valve	Brass
13	Pressure Gage	
14	1/2" NPT Screwed Pipe	Carbon Steel
15	1/2" Check Valve	Brass
16	1/2" NPT Screwed Pipe	Carbon Steel
17	1/2" NPT Screwed Pipe	Carbon Steel
18	1/2" NPT Screwed Pipe	Carbon Steel
19	1/2" NPT Screwed Pipe	Carbon Steel
20	1/2" NPT Screwed Pipe	Carbon Steel
21	1/2" 90° Elbow	Malleable Iron
22	1/2" NPT Screwed Pipe	Carbon Steel
23	1/2" NPT Screwed Pipe	Carbon Steel
24	1/2" 90° Elbow	Malleable Iron
25	1/2" Ball Valve	Brass
26	1/2" NPT Screwed Pipe	Carbon Steel
27	1/2" NPT Screwed Pipe	Carbon Steel
28	1/2" NPT Screwed Pipe	Carbon Steel
29	1-2" NPT Pipe Fitting	Malleable Iron
30	1-2" Y-Strainer	Brass
31	1-2" 90° Street Elbow	Malleable Iron
32	1/2" NPT Screwed Pipe	Carbon Steel
33	Pipe Fitting	AISI 304
34	Plug 1	Brass
35	Plug 2	Brass
36	3/4" NPT Screwed Pipe	Carbon Steel
37	Water Motor Gong	
38	3/4" NPT Screwed Pipe	Carbon Steel
39	3/4" x 1/2" 90° Reducing Elbow	Malleable Iron
40	Pressure Switch	

## Operation and installation

The CD brand alarm check valve has flange by flange connection ends with a set of auxiliary piping called trim set

To put the system in service the water is allowed to flow into the system until the pressure gauge on the system side of the alarm check valve should indicate water pressure equal to or greater than the water pressure indicated on the gauge located on the supply side, this causes the clapper of the alarm check valve to close tightly on the seat ring.

In the variable pressure condition, in most of the cases pressure on the system side will be found greater than the water supply pressure, this condition is achieved because pressure surges and fluctuation in the water supply is allowed to pass through the external by pass trim minimize the false alarms .

When a sprinkler operates, the sustained water flow through the sprinkler relieves the system pressure, the greater supply pressure then causes the clapper valve to open, allowing unobstructed supply of water into the system, simultaneously water flows through the seat ring opening and via trim lines into the retard chamber. But now the retarding chamber will fill faster than water can drain through the restricted drain of the alarm trim, the water fills the chamber and then flows into the water motor alarm and or actuate the alarm pressure switch .

Retard chamber should be installed properly between the alarm check valve and the water motor alarm and/or an electric alarm . pressure switch

The water motor alarm must be properly installed as per the requirements of NFPA standards and any other authority having jurisdiction, in order to ensure the nominal operation the total length of 3/4" supply wet pipe line from the alarm valve, dry pipe valve or deluge valve to the water motor alarm should not exceed 75 feet, and the number of fittings should be . kept to a minimum

Where the length exceeds 75 feet, the diameter of the supply piping should be increased to 1" or 1-1/4" to reduce friction losses, the water motor alarm should not be located more than feet above the alarm check valve, dry pipe valve or deluge 20 valve to which it is connected .

To ensure clean water supply to the water motor alarm, a 3/4" screen filter (strainer) must be installed in the supply line .



## Caution

Care must be taken to avoid air trapping inside the system, the pressure surge can compress this trapped air and allow the clapper to move off the seat ring, thus causing the false alarm, therefore while putting the system in service it is recommended to bleed off the confined air to fill the system with water to water to the fullest extent possible .

# TECHNICAL SPECIFICATIONS

## Approvals

UL and FM

## Maximum system working pressure:

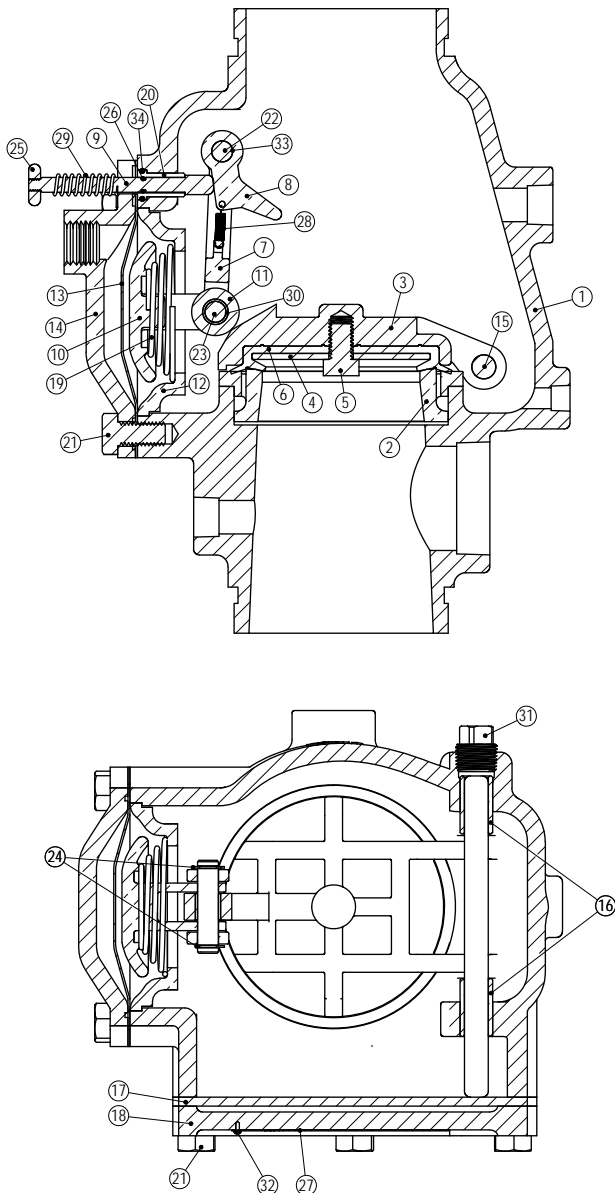
300 psi (20.6 bar)

## Materials of construction:

See Table below

## Take out dimensions (end to end):

4" (DN100) Valve	13.13" (333,5mm)
4" (DN100) Valve w/ Model GLR300G	17.66" (448,5mm)
6" (DN150) Valve	14.47" (367,5mm)
6" (DN150) Valve w/ Model GLR300G	19.69" (500mm)



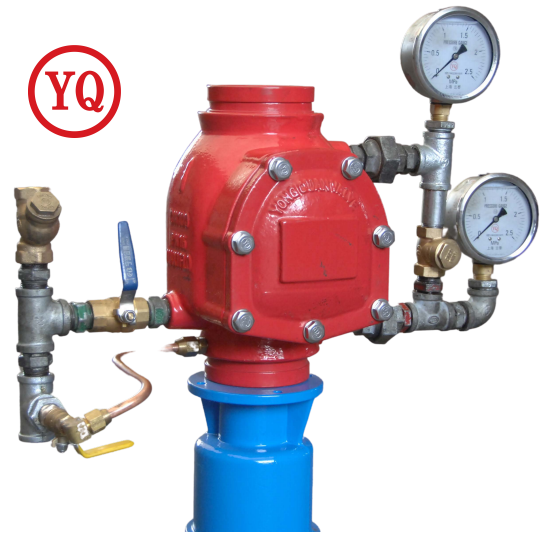
ITEM	DESCRIPTION	MATERIAL
1	"RCW-2" Body (groove/groove)	Ductile Iron
2	Seat Ring	Bronze
3	Clapper	Bronze
4	Retaining Ring	Stainless
5	Retaining Bolt	Steel
6	Clapper Facing Disc	EPDM
7	Latch Arm	Bronze
8	Clapper Latch	Bronze
9	Reset Plunger	Bronze
10	Push Rod	Bronze
11	Roller	Stainless
12	Diaphragm Retainer	Ductile Iron
13	Diaphragm	Rubber
14	Diaphragm Cover	Ductile Iron
15	Clapper Hinge Pin	Stainless
16	Clapper Hinge Pin Bushing	Bronze
17	Hand Hole Cover Gasket	Rubber
18	Hand Hole Cover	Ductile Iron
19	Diaphragm Spring	Stainless
20	Reset Bushing	Bronze
21	Cover Bolt	Steel
22	Clapper Latch Hinge Pin	Stainless
23	Roller Arm Hinge Pin	Stainless
24	Roller Arm Hinge Pin Clip	Stainless
25	Reset Plunger Knob	Bronze
26	Plunger O-Ring	Rubber
27	Name Plate	Aluminum
28	Return Spring	Stainless
29	Reset Plunger Spring	Stainless
30	Roller Bushing	Bronze
31	1/2" NPT Plug	Steel
32	Drive Screw	Stainless
33	Clapper Latch Bushing	Bronze



## ▶ ALARM CHECK VALVE

**Part Number: ZSFZ**

Wet system alarm valve is specially designed for fire protection system use. The valve is an important component in Wet system automatic sprinkler and fire extinguishing system and suitably applied to the system which is well and broadly used among the automatic sprinkler and fire extinguishing system. The design allows for installation under both variable and constant supply pressure conditions. When water flows into the sprinkler system due to the operation of one or more automatic fire sprinklers the alarm valve opens, allowing continuous flow of water into the system and transmission of an electrical or mechanical alarm.



### Specification

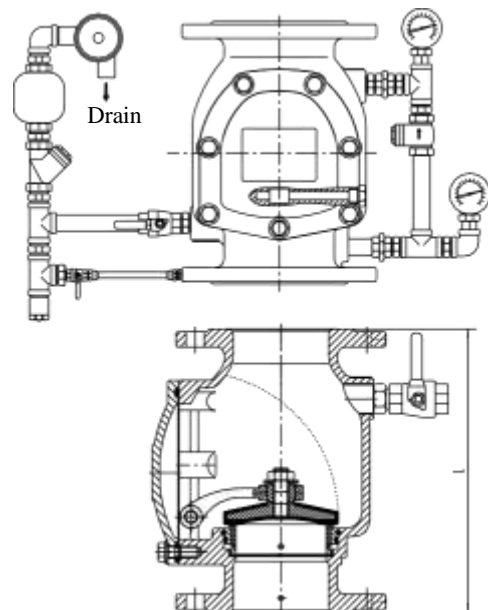
- Alarm check valves should be installed vertically orientation
- For use in wet pipe (automatic sprinkler) fire protection systems
- Multiple end type: Groove by Groove, Flange by Flange, Flange by Groove
- Excellent flow characteristic
- Automatically actuates electrically and/or hydraulically operated alarms when there is a steady flow equivalent to the discharge rate for one or more sprinklers.
- Retard chamber used in installations subject to variable pressure to help prevent false alarms.
- Flange connection is drilled per EN1092 - PN10/16 or ANSI B16.5 Class 150.
- FM 1041 approved
- **Nominal size: DN100, DN 150, DN200.**

### Working pressure

- **0.4MPa to 1.6MPa**

### Material specification

PART	MATERIAL	SPECIFICATION
Body	<b>Ductile iron</b>	EN-GJS-500-7
Cover	<b>Ductile iron</b>	EN-GJS-500-7
Gasket	rubber	EPDM
Bonnet bolts and nuts	Stainless steel	BS10088-1 1.4401
Hang pin	Stainless steel	BS10088-1 1.4401
Disc	Bronze	BS1982 CC331G
Disc seat	rubber	EPDM
Seat retainer	Stainless steel	BS10088-1 1.4401
Body seat	Bronze	BS1982 CC331G
Retard chamber	Assembly	
Water motor gong	Assembly	
Ball valve	Stainless steel	BS10088-1 1.4401
Check valves	Stainless steel	BS10088-1 1.4401
Drain valves	Bronze	BS1982 CC331G
Strainer	Stainless steel	BS10088-1 1.4401
Pressure gauge	Assembly	



## Corrosion protection

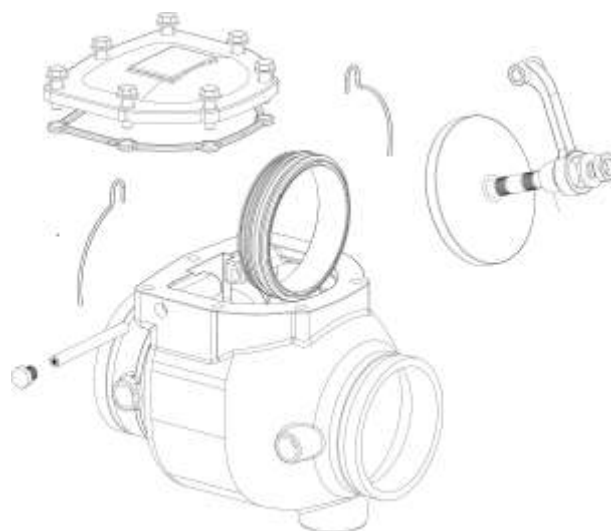
- Fusion bonded coating interior and exterior meet or exceed all applicable of AWWA C550 standard.

## Option

- Multiple end type: Groove by Groove, Flange by flange, Flange by Groove.
- With or without retard chamber.

## Parts List for Alarm Valves

Item	Description	Material
1	cover	Ductile iron
2	gasket	rubber
3	snap spring	Stainless steel
4	stem	Stainless steel
5	plug	copper
6	body	Ductile iron
7	seat	copper
8	clapper	copper
9	stud	Stainless steel
10	guide ring	Stainless steel
11	clapper arm	copper
12	washer	Stainless steel
13	Hex nut	Stainless steel

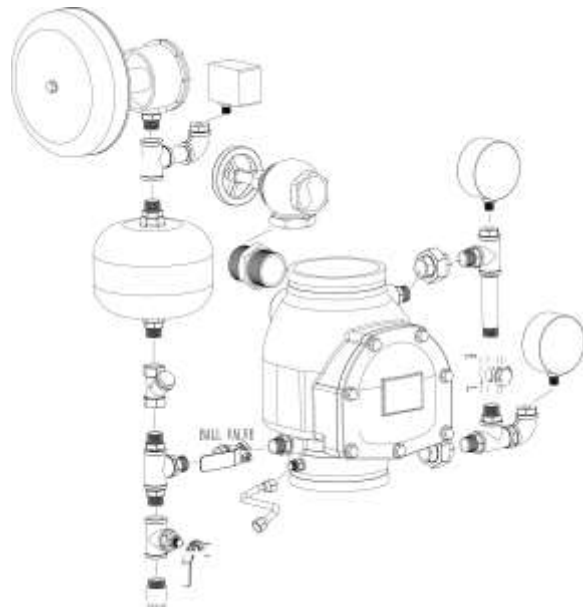


## Operation

The fire protection system initially when being pressurized, will allow water to flow into the system until water supply and system pressure is equalized and the clapper closes the waterway. Once the pressure is stabilized, the fire protection system is ready to be placed in service and then the alarm control valve must be opened. Under normal condition, the water pressure gauge connected to the system side of the alarm valve would show a higher or equal pressure reading than the water pressure gauge connected to the supply side of the valve. This occurs because of the bypass line connecting downstream and upstream side of the alarm valve, which allows water pressure surge to pass without lifting the valve clapper off its seat, thereby causing excessive high-pressure surge entrapped in the system side due to presence of a check valve, which generally prevents false alarm. Sudden high-pressure surge, as might be encountered by start-up of a large fire pump may lead the valve clapper to lift momentarily, allowing water to flow through grooves in the valve seat to the retard chamber. The water in the alarm line is automatically drained out, which helps to prevent false alarm due to successive transient surge in supply pressure. Restriction assembly located beneath the retard chamber consists of inlet and drain restriction orifices, which are established by considering the volume of the retard chamber to meet the listing and approval requirement with regard to time to alarm. These requirements represent a balancing of the need to reduce the possible false alarm due to a transient surge in supply pressure and to achieve desired minimum time to alarm following a sprinkler operation. In constant pressure installation, the retard chamber is not required and the water passing through the groove in the alarm valve seat flows directly through restriction nozzle assembly to activate the mechanical and electrical alarm.

## Installation

1. YQ Alarm Valve, Model ZSFZ must be installed vertically (Show in figure 1).
2. The alarm valve must be installed in a readily visible and accessible location and provision to be made in such a way that alarm line drain is visible and accessible.
3. Where water pressure fluctuates, the variable pressure trim with retard chamber must be used. Under non-fluctuating water pressure condition, the constant pressure trim, which does not include retard chamber, may be used.
4. The valve must be installed with trim in accordance with the trim data. Failure to follow the appropriate trim connection guidelines may prevent the device from functioning properly as well as void listing, approval and the manufacturer s warranty.
5. Care must be exercised while installing the check valve in the trim to ascertain that they are located with the arrow mark on the check valve body and pointed in proper direction.
6. The contraction and expansion associated with an excessive volume of trapped air could cause the waterway clapper to cycle open and shut. This may result in false alarm or an intermittent alarm. To avoid these, it is recommended to have breather valve in the system piping network and a vent valve at the extreme end of the system to bleed-off the air.
7. The ball valve provided on the alarm line must be kept open and strapped in set position.
8. Pipe connecting the retard chamber and sprinkler alarm bell must be supported properly to avoid loading on the retard chamber.
9. All the newly installed system pipes must be flushed properly before alarm valve is put into service.



### Inspection and Maintenance

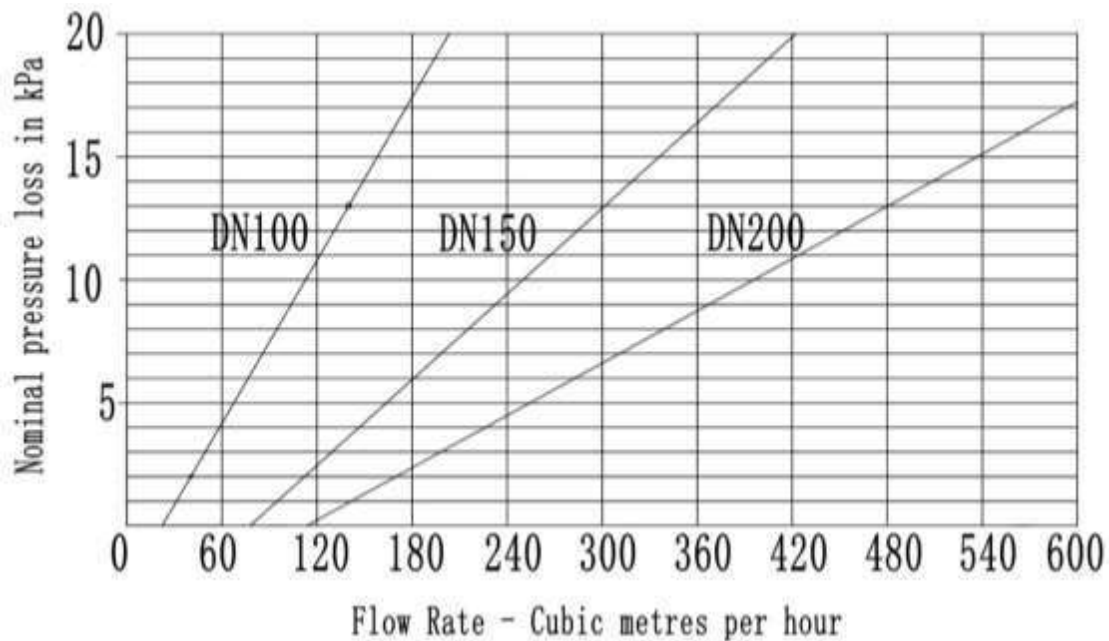
A qualified and trained person must commission the system. After few initial successful tests an authorized person must be trained to perform inspection and testing of the system.

It is recommended to carry out physical inspection of the system at least twice a week. The inspection should verify that all the control valves are in proper position as per the requirement of the system and no damage has taken place to any component.

It is recommended that the alarm valve and its accessories should be examined and performed for following at least quarterly or as demanded by local authorities to ensure reliable and trouble-free operation and service.

1. Inspection and testing is to be carried out only by an authorized person. DO NOT TURN OFF the water supply valve to undertake repair work or to test the valve, without placing a roving fire patrol in the area covered by the system. The patrol should continue until the system is back into service. Also do inform the local security personnel and alarm control station, so that a false alarm is not signaled.
2. Open the alarm test valve. Verify that the sprinkler alarm bell and/or the pressure alarm switch/ electric alarm properly actuate. Close the alarm test valve and verify that water has ceased to flow from the alarm line drain.
3. Clean the strainer provided on the sprinkler alarm bell line.
4. Inspect the check valve clapper located on the bypass line.

### Nominal Pressure Loss VS Flow Rate



## **False Alarm**

1. Inspect the valve rubber clapper face. If worn or damaged, replace it. Be certain that dirt, stone or any other foreign object have not accumulated under the clapper face and lodged in the groove or holes. Clean the clapper face thoroughly. If the seat ring surface is nicked or scoured, it might be possible to repair the same using lapping compound. If not, replace the complete valve or return it to the manufacturer s works for repair.
2. If sprinkler alarm bell is not functioning or the impeller is jammed, please follow the maintenance guideline provided in the catalogue for sprinkler alarm bell.
3. If pressure alarm switch gives a steady signal, but sprinkler alarm generates an intermittent alarm, check sprinkler alarm bell shaft. If both the sprinkler alarm bell and pressure alarm switch are generating intermittent alarm then check for the possible air which is trapped within the sprinkler system. Trapped air is to be bled off. Also the intermittent alarm may occur due to sudden pressure drop and increase in the system. These problems can be corrected by maintaining a steady supply.

### **▲ Caution ▲**

1. The FM Approval and manufacturer s warranty are valid only when the alarm valve is installed with YQ trim set and installed as per installation guidelines.
2. Pressure relief valve is required with wet pipe system, when a rise in ambient temperature can cause system pressure to exceed 16 Bar or 16.5 Bar relief valve setting should be used.
3. For proper operation of the wet system and to minimize unwanted false alarm, it is important to remove trapped air from the system. The air trapped in the system may also cause intermittent operation of the Water Motor Alarm during sustained flow of water.