

TECHNICAL DATA

- Working pressure: 16/20 bar.
- Flanged to JIS 10/16K, BS4504 PN16/20, ANSI#150(300PSI).
- Size: DN 80mm, DN 100mm, DN 150mm, DN 200mm.

PRESSURE/TEMPERATURE RATINGS

Working pressure	16/20 bar
Testing Pressure	Shell: 24/30 bar, Seat: 17/21 Bar
Working temperature	-10°C to 80°C
Suitable Media	

MATERIALS

Part	Material	ASTM Spec.	EN Spec.
Body, disc	Ductile iron	A536 65-45-12	1563 EN-JS1050
Seat ring	Brass	B 124 C37700	2874 CZ122
Stem	Stainless steel 304	A276 S304 00	970 304 C15
Fitting	Stainless steel 304 Carbon Steel	A276 S304 00 -	970 304 C15 -
Painting	Red Epoxy Coating		



DESCRIPTION

- Alarm Check valve are divided seat ring, rubber faced clapper, water flow alarm check valve which are intended for use in wet pipe fire protection systems. They may be installed vertically and they are designed to automatically actuate electric or hydraulic alarm when there is a steady flow of water into the system that is equivalent to the discharge rate of one or more sprinklers.
- Alarm check valve trim includes pressure gauges to monitor system pressure conditions, a by-pass check valve, a main drain valve, and an alarm test valve. The by-pass check valve serves to reduce the possibility of false alarm by permitting slow as well as small transient increases in water supply pressure to be passed through to the system without opening of the water way clapper.

OPERATING PRINCIPLES

- When the fire protection system is initially being pressurized, water will flow into the system until the water supply and system pressure become equalized and the torsion spring closes the clapper in the Alarm Check Valve. Once the pressure has stabilized, the Alarm Check Valve is in service and the centrally located groove in the seat ring is sealed. Consequently, with the Alarm Check Valve set for service there is no flow through the alarm port to the alarm devices (water motor alarm or pressure alarm switch).
- When there is a steady flow of water into the sprinkler system due to a sprinkler operation, the Clapper opens. Water is then permitted to flow into the centrally located groove in the Seat Ring and out through the alarm port towards the Restriction Assembly. When the flow through the inlet restriction of the Restriction Assembly exceeds the flow out through the outlet restriction, the Retard Chamber where provided in the case of system with variable pressure, begins to fill. Subsequently, the water motor alarm or pressure alarm switch will be actuated. The alarm will continue to be actuated as long as the Clapper remains opened. Water in the alarm lines will automatically drain out through 3mm drain orifice in the Restriction Assembly when the Clapper close "due to a discontinuation in the flow of water into the sprinkler system.
- In the case of variable pressure systems, slow as well as small transient increases in water supply pressure may continue to be built up in the system without opening of the clapper. A transient surge in supply pressure which is sufficient to only momentarily open the Clapper will not cause a false alarm, and a portion of the increase in pressure will be trapped within the system, thus reducing the possibility of another opening. Any water in the alarm line is automatically drained, which helps to further reduce the possibility of a false alarm due to a successive transient surge in supply pressure.

INSTALLATION PROCEDURE

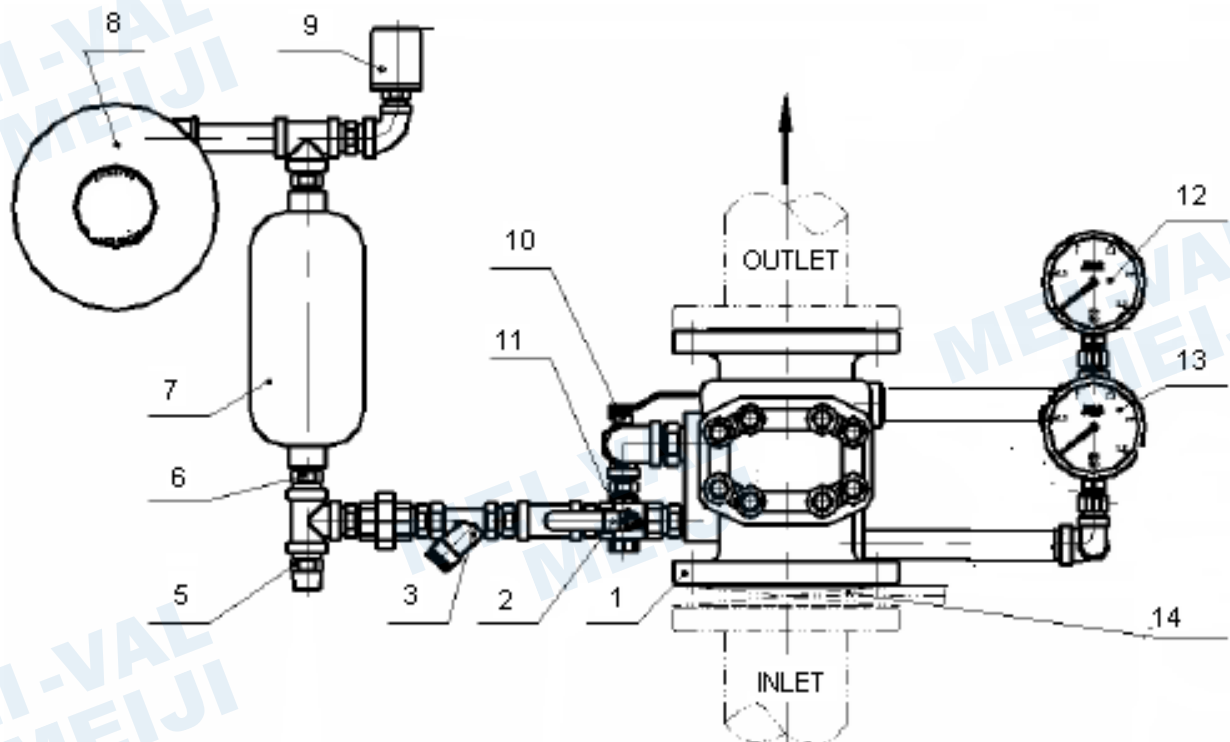
- **Pipe flanged welding:** Properly position Alarm Check Valve and bolt hole and then firmly weld in accordance to the pipe flange plan considering the height of Alarm Check Valve and gasket packing.
- **Pipe Cleaning:** when the installation is completed, clean thoroughly the pipe interior. Remove slag by knocking welded parts of pipe with a hammer and if possible, flush the interior with pressure water of 5kg/cm² until it is completely rinsed out. Negligence of cleaning will: 1. Cause repeated false alarm due to the damaged seat rubber in the Alarm Check Valve, 2. retard or even result in failure of fire suppression when the orifice of sprinkler head is choked up.
- **Note:** Alarm Check Valve depends upon the trim described in this data sheet being installed in accordance with the following instruction. Failure to follow the appropriate trim installation instructions may prevent the device from functioning properly as well as void listing/approvals, and the manufacture's warranties. The Alarm Check valve must be installed in readily visible and accessible locations. It is recommended that provision be made for viewing of the alarm line drain water by locating the main drain outlet in a readily visible area. Wet pipe fire protection systems must be maintained at a minimum temperature of 4oC.
- **Step 1:** Trim the Alarm Check Valve in accordance with applicable. Apply pipe thread sealant sparingly to male threads only.
- **Step 2:** The Alarm Vent Trim illustrated must be installed if a water motor alarm in not to be used.
- **Step 3:** Plug unused alarm connections.
- **Step 4:** Suitable provision must be made for disposal of alarm line and system drainage water. Drainage water must be directed such that it will not cause damage or result in dangerous conditions.
- **Step 5:** The alarm line drain must be arranged so that there will be no danger of freezing.
- **Step 6:** The check valve in the externally mounted bypass around the waterway Clapper must be installed with its arrow pointed up and the drain check valve must be installed with its arrow pointing towards the drain.
- **Step 7:** It is recommended that a vent connection, be piped from a cross main or branch line at the point most remote from the alarm valve. The vent line should be connected to the top of a cross main or to the end of a branch line and be located at the highest level of a multi-level installation. The vent connection can be used to bleed off excessive air from the system and, therefore, minimize the possibility of a false alarm due to a transient surge in supply pressure. The contraction/expansion associated with an excessive amount of trapped air could also cause the waterway Clapper to cycle open and shut during an inspector's test or during a discharge by a single sprinkler.

Using Manual

Automatic sprinkler system

Wet alarm valve

Fig.1007



Wet alarm valve installation drawing

1. wet alarm valve, 2. ball valve at the alarm position (normally open), 3. filter, 4. test valve for manual alarm, 5. retard chamber outlet connector, 6. retard chamber inlet connector, 7. retard chamber, 8. water motor alarm bell, 9. pressure switch, 10. drain valves (normally close), 11. manual test valve, 12. pressure at system piping side, 13. pressure gauge at the water supply side, 14. water supply control valve (normally open) (signal gate valve or signal butterfly valve)

1. Product performance and use

(1) Wet alarm valve is an important component part of the wet automatic sprinkler system. mainly composite by wet alarm valve, retard chamber and water motor alarm, It's main function is: When the sprinkler open and make the water flow in the pipeline, to open the valve automatically, and water flows into the hydraulic alarm and pressure switch and the alarm sounds a warning and alarm signals. In the automatic fire extinguishing system, wet sprinkler system is one of the most extensive application systems.

(2) Wet automatic sprinkler system for the application of environmental temperature 4°C~70°C.

(3) Wet alarm valve have many advantages, such as, stable performance, efficient fire, action sensitive and simple maintenance, access to reliable, long life. Therefore, they have been widely used in high-rise buildings, hospitals, hotels, office buildings, shopping malls, warehouses, factories and underground engineering, and other places suitable for water fire-fighting.

2. Main technical parameter and dimensions

1) Technical data

Size (mm)	Inside Nominal diameter (mm)	Sealed test (MPa)	Rated working pressure (MPa)	Alarm flow (L/min)	Retard alarm time (s)	Friction Resistance (MPa)
DN 80	80	2.4/3	1.6/2.1	15<Q<60	5~90	≤0.035
DN 100	100					
DN 125	125					
DN 150	150					
DN 200	200					

2) Dimensions

Size (mm)	Height of Alarm valve (H=mm)	Outside diameter of flange (mm)	Inside diameter of flange screw hole (mm)	Diameter of screw hole (mm)	Quantity of screw hole
DN 80	230	200	160	18	8
DN 100	250	220	180	18	8
DN 125	270	266	230	18	8
DN 150	270	285	240	22	8
DN 200	368	340	295	22	12

3. Principle

(1) Wet alarm is made to the valve-seat horizontal clapboard structure, its wet alarm valve installed by the main valve, valve seats, valve, compensation valves, filters, valves trial, delayed, pressure switch, hydraulic Alarm, pressure gauges and accessories, through the galvanized pipe from joint assembly. Hinged valve is a fixed Gasket connection, valve seats in the closed-face with the pipeline trench and holes leading to the delayed alarm. When the valve closed, the trench has been closed too. If valve open, water flow from small hole and the trench into the hydraulic alarm and pressure switch. If water pressure appears a water hammer phenomenon or fluctuations, the pressure balance compensation plant and the delayed outside the wet alarm, can reliability, prevent wet alarm valve min-function, to avoid min-alarm. When the pressure of entrance is 0.14 MPa, the continuous flow Q value in system side is among the range of 15L/min<Q<60L/min, the valve of wet alarm can be accurately open, allowing the system to work.

(2) When the system in the work state, the valve will seat the trench on the blocks, and there is no water flow in the alarm pipeline to the delayed. But when the Marine happens in the Protection region to make one or more sprinkler head in the network activated, the system is so sensitive that open the valve and supply water to fire, while a small part of water through the small trench hole in the valve seat, and flow to the alarm line, through the delay of filling the water in the delayed, continue to flow to the hydraulic alarm and the pressure switch, the city's water alarm sounds alarm, and pressure switch sent signals to fire control center, or send a direction to start fire pumps or other electrical equipment's.

(3) Wet alarm valve device has manual alarm test pipeline. Under normal use the ball valve between Valve alarm and delayed is normally in a state of open locked, the ball valve of manual alarm test pipeline is in open locked state. When need to manually test alarm device, it will unlock and close the valve of the alarm, and start the ball valve of the manual alarm test line. So you can get this function without having to start valve components.

4. Installation

(1) The installation of wet valve

a) In order to reduce the tedious installation and avoid mistakes, wet alarm valve and its annex are installed into wet alarm valve device, they send out of the factory after passing the whole test. If you need to change the installation of annex because of the scenic environment, you should refer to the "wet alarm valve devices installed map".

b) Before installation, the pipe net should be cleaned to avoid all kinds of debris into the cavity and plug the valve seat.

c) It should be installed vertically at room will not be frozen at normal temperature and also in place where is clear and easy to operate. The height from ground is generally 1.2 m, face from the wall is not less than 1.2 m, both sides from the wall is not less than 0.5 m. At the time of installation, you should pay attention to the direct-ion of water supply and the direction of the arrow on the same direction.

d) Pressure gauge should be installed for easy reading and observation.

(2) The installation of retard chamber

a) When installed the retard chamber, you should distinguish the inlet and outlet. As shown in Figure, the inlet is the installation of three vertical, connecting with the filter export from the wet alarm valve. The outlet is the installation of three horizontals. Respectively, both sides are connected with the water motor alarm and the pressure switch.

b) From top to bottom of the three links of the inlet, all installed the inner connector tube, respectively, in a different configuration of the orifice diameter. The top one is larger and the bottom one is smaller. It should not be installed at the wrong U-turn.

c)The bottom inner connector may not be cancelled or replaced, and cannot be series connect with the valves, it's necessary to sure drainage smooth, Otherwise, it will cause change of alarm function.

(3) The installation of hydraulic alarm

It should be installed at a public access or on the external walls nearby the Duty Room, and as close as possible to wet alarm valve, or keep the valve device in out factory state. If installed at the distance, you'd better use DN20 galvanized connections, and its length should not exceed 20 m, its height from the alarm valve does not exceed 5 m. The inlet pressure after the installation of hydraulic alarm should not less than 0.05 Mpa.

b) You should pay attention to the intake and outfall cannot anti-installation. The large-hole is the connecting of the intake and the retard chamber outlet, and the small hole is outfall, it must be vertical down after the installation and allow an independent channel with exclusive access to the gutter, but the channel shall not be higher than the outfall pipe, and valve shall not be installed in the pipeline either.

c) After the installation of hydraulic alarm, rotating impeller by hand, bell hammer and arm should be able to easily flexible, non-resistance. In the installation process, should keep clean in the pipeline and sealed to prevent other debris blocked the Intake of water motor alarm.

5. System debugging

After the automatic sprinkler system installed (if the pressure switch connects with the network of the local fire department, you should inform their staff that the system debugging is about to begin), water filled to the system pipe net and debug. Water filled steps are as follows (see fig).

1. Closed drainage valves (10), manual test valve of wet valve (11), closed water control valve (14), manual alarm test valve (4), water control valves must be allocated to signal valve or signal butterfly valve;
2. Open all the exhaust valves in system network.
3. Launched pump
4. Open control valve slowly (14), inject the water from pump slowly to the system network;
5. Observed all of the drainage system valve, until the air in pipe net be ranked (that is, exhaust valve fountain), and then closed the exhaust valve immediately;
6. After closing all the exhaust valves, keep the water control valve in the largest open, when the pressure in the system network reaches a certain value, wet alarm valve closes the valve by reset themselves automatically, and then water-filled finished.
7. Open the alarm valve (2) and lock.
8. If system in an under-working state, it can be tested on a pilot project.
9. Manual alarm test: lifted the valve (2) locked, closed, and then open the manual alarm test valve (4), so you can have the function. After finish the test, lock the value (2) at the open place, manual alarm test valve (4) at the closed place.

6. System maintenance

If there is a central control system, should inform the relevant departments before the commencement of the alarm so as to avoid reactions.

(1) Weekly inspection

- a) Inspect whether the system is in normal working condition
- b) Open the test valve and confirmed: the hydraulic alarm sounds a continue loud alarm: pressure switch act, the staff of the control room should confirm receiving signals
- c) Make sure the records of supply side pressure gauges and system-side pressure gauge are consistent.
- d) Closed the test valve, and fixed with a belt and padlock.
- e) Manual alarm test check: according to the above 8 methods of system debugging.

(2) Annual inspection

- a) Complete the weekly test items
- b) Observe the record of the supply-side pressure gauges

c) Fully open the drainage valve, alarm by systems, record the pressure drop before and after the pressure gauges, and then compared with the previous pressure records, if the records vary greatly, so there are obstructions in the supply valve or control valve or pipeline.

(3) Common faults and rule out

a) Under normal circumstances, after exhaust and water-filled, the records of this stem-pressure gauge and water pressure gauge should be consistent. If the records of the system-pressure gauge significantly reduced, you should check whether the system network and the valves, nozzles and other parts are intact, or leakage, if happened, it should be promptly corrected and excluded.

b) Open the test valves, if the hydraulic alarm do not ring, check the filter to the alarm or alarm line, the holes on the seat is non-blocking, it required to remove all the dirties so that water can flow smoothly. check the intake of delayed for three links, whether the top, bottom and inner joints have been installed upside down. Or the bottom inner joints have no orifice, check whether there are dirties block the inlet of hydraulic alarm. or oppositely installed the inlet and outfall. or the outfall did not directly down.

c) If water leaking from the valve to the alarm channels (this will cause the hydraulic alarm make wrong alarm), you should check if there are debris in the wet alarm valve to open the valve, make the valve unable to close and seal. Whether the rubber seals are Aging or wear, so that seal failure. Need to open the valve cover and have inspection.

d) If gap in the alarm, is usually caused by the air in the system, you should according to the requirements of Section V, re-exhaust and water filling, and check whether debris block the balance used only to compensate for the intricacy, whether the direction and action is normal.

7. Others

After starting the automatic sprinkler system, only confirmed the fire had been completely extinguished, can you close the water control valve of the wet alarm device.

a) Open the test valve and drainage valves, drainage part of water in the pipe net, until there is no water in the tube which need to replace the nozzle.

b) On the location of the acted head, put on a new, similar models, the same temperature ranges of nozzle;

c) For the number of nozzle in the note boxes, you should maintain the original number. If ignored, it will cause the whole system cannot be timely to resume normal work after fire. Nozzle cannot be painted or hoarded in order to avoid failure.

d) After completing the above work, according to the requirements of Section V, the system will resume work-state.

► Note:

- The above control switch position is system on servo of working state.
- Design and specifications are subject to change without prior notice