



Alarm Valve Model C

General Description

Alarm Valve is a double seated clapper check valve with grooved seat design, which ensures positive water flow for alarm operation and is designed for installation in wet pipe sprinkler system. External bypass prevents false alarm under all supply pressure condition. In the event of variable pressure condition, false alarm is prevented with the provision of retard chamber, thus the design allows for installation under both variable and constant supply pressure condition.

Operation of one or more automatic fire sprinklers causes the water to flow into the sprinkler system causing the alarm valve to open, allowing continuous flow of water into the system and transmittal of alarm, both electrical and mechanical.



Maximum Working Pressure

Size	FM Approved	UL Listed
DN80 (3")	17.2 bar (250 psi)	17.2 bar (250 psi)
DN100 (4")	17.2 bar (250 psi)	17.2 bar (250 psi)
DN150 (6")	17.2 bar (250 psi)	17.2 bar (250 psi)
DN200 (8")	13.8 bar (200 psi)	17.2 bar (250 psi)

End Connections

Flange x Flange
Flange x Groove
Groove x Groove

Flange Connections

ANSI 125/150
PN16

Grooved Connections

Valve Size	Pipe OD [mm]
DN80 (3")	89.0
DN100 (4")	114.3
DN150 (6")	165.1
DN150 (6")	168.3
DN200 (8")	219.1

Note: DN150 (6") valve is supplied with 168.3 mm OD connection as a standard. 165.1 mm OD connection available on request.

Approvals

FM Approved
UL Listed

Installation

Vertical

Trim

Brass valves with galvanised pipes and fittings.

Finish

Red RAL 3001

Weight [KG]

Valve Size	Flange x Flange	Flange x Groove	Groove x Groove
DN80 (3")	18	15	12.1
DN100 (4")	27	22.1	17.3
DN150 (6")	42	35.8	28
DN200 (8")	65	54	44

Ordering information

Specify size of valve, trim details, end connection & pipe OD



Alarm Valve Model C

Operation

The fire protection system initially when being pressurized, will allow water to flow into the system until the 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 the 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. Rapidrop Sprinkler alarm valve, Model-C must be installed vertically.
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.

Accessories

Retard Chamber (Optional):

Retard chamber model RA is required when the Alarm Valve is installed on systems with a variable pressure water supply to curtail unwanted and false alarms.

Water Motor Sprinkler Alarm (Optional):

Alarm Valve model C is designed to operate a mechanical alarm gong during a sustained flow of water (such as the flow required by an open sprinkler).

Pressure Switch (Optional):

Alarm Valve trim allows connection of pressure switch to activate local electric alarms or remote electric alarms during a constant flow of water (such as the flow required by open sprinklers).

Inspection and Maintenance

A qualified and trained person must commission the system. After few initial successful tests an authorised 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 signalled.

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 DN 20 (3/4") strainer provided on the sprinkler alarm bell line.

4. Clean the strainer of restriction assembly.

5. Inspect the check valve clapper located on the bypass line.



Alarm Valve Model C

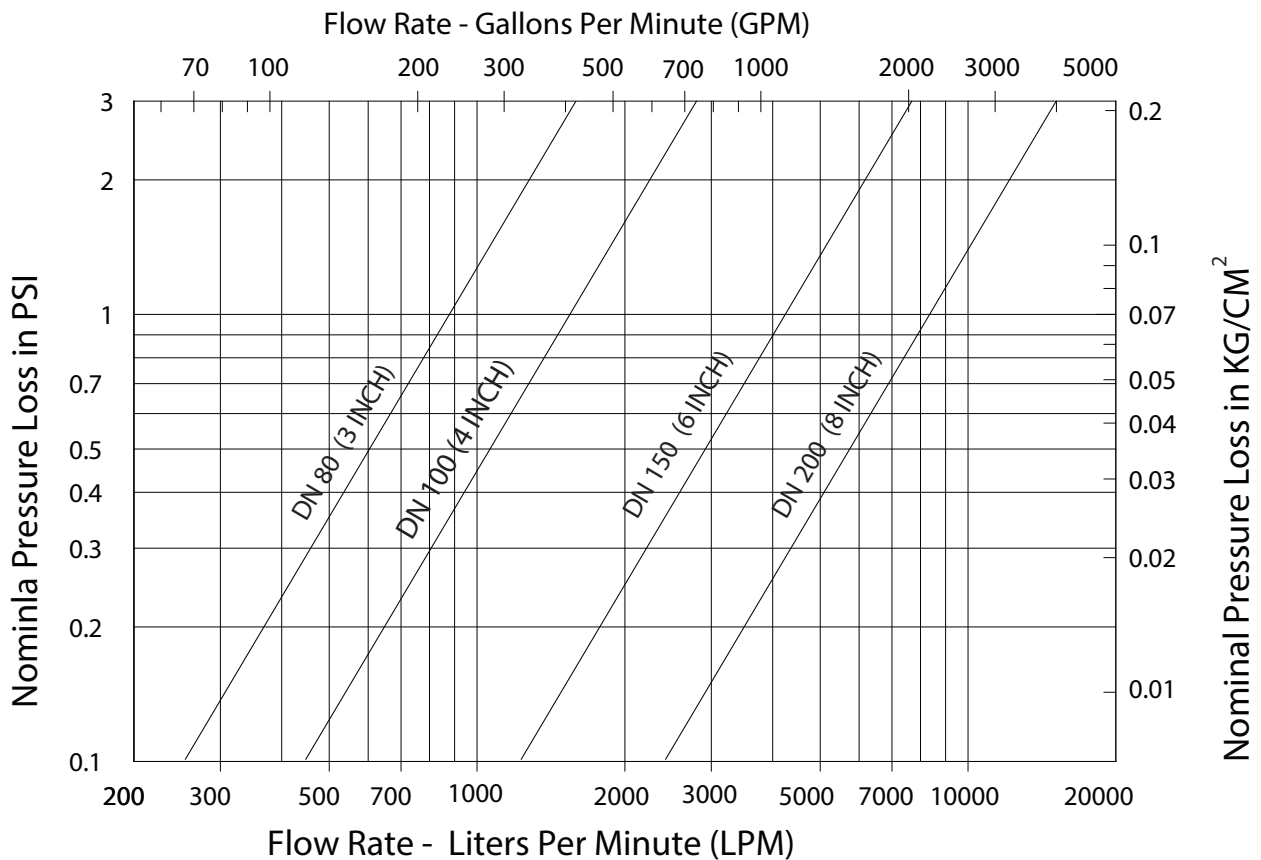
False alarm

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 UL Listing, FM Approval and manufacturer's warranty are valid only when the alarm valve is installed with Rapidrop 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 17.5 Bar (250 PSI). A 17.7 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.

Nominal Pressure Loss vs Flow - Alarm Valve (Model C)

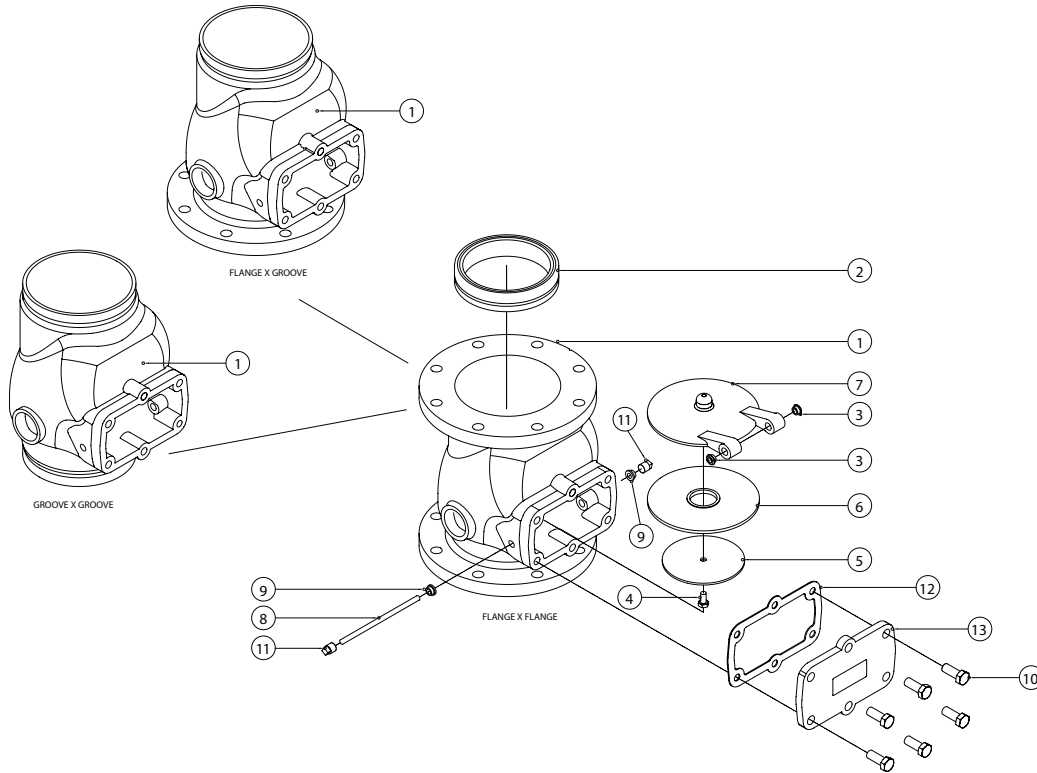


Frictional loss in terms of equivalent length of pipe (C120):

DN80 (3"):4.7m DN100 (4"): 6.1m DN150 (6"): 7.0m DN200 (8"): 7.5m

Alarm Valve Model C

Alarm Valve, Model - C Size DN80 (3"), DN100 (4"), DN150 (6"), DN200 (8")



Material Specification

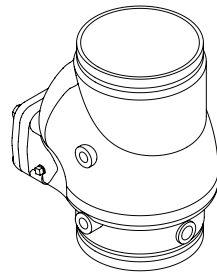
Item No.	Description	Qty				Material Specification
		DN80 (3")	DN100 (4")	DN150 (6")	DN200 (8")	
1	Valve Body (Flange x Flange)	1	1	1	1	Ductile Iron
1	Valve Body (Flange x Groove)	1	1	1	1	Ductile Iron
1	Valve Body (Groove x Groove)	1	1	1	1	Ductile Iron
2	Seat	1	1	1	1	Stainless Steel *
3	Clapper Bush	2	2	2	2	Brass
4	Hex. Head Bolt	1	1	1	4	Stainless Steel
5	Rubber Clamp	1	1	1	1	Stainless Steel
6	Rubber Seat	1	1	1	1	EPDM **
7	Clapper	1	1	1	1	Ductile Iron
8	Hinge Pin	1	1	1	1	Stainless Steel
9	Body Bush	2	2	2	2	Brass
10	Hex. Head Bolt	4	4	6	6	Steel
11	Sq. Head Plug	2	2	2	2	Ductile Iron
12	Cover Gasket	1	1	1	1	EPDM **
13	Cover	1	1	1	1	Ductile Iron

* Stainless Steel is a standard supply, Bronze is an optional supply

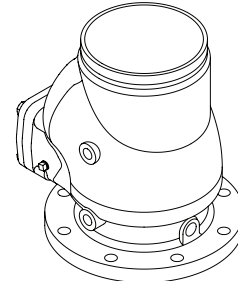
** EPDM is a standard supply, Neoprene is an optional supply

Alarm Valve Model C

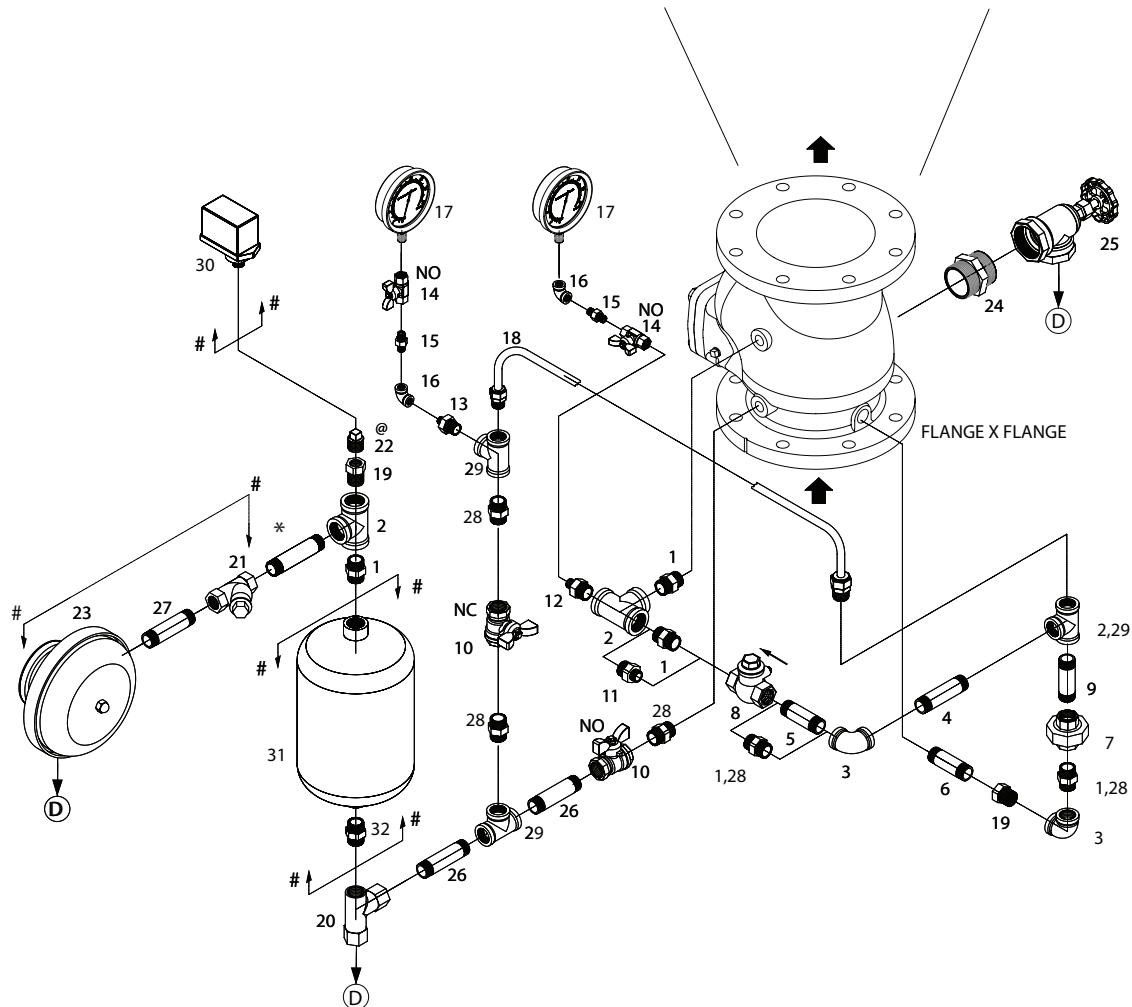
Trim For Alarm Valve Model - C DN80 (3"), DN100 (4"), DN150 (6"), DN200 (8")



GROOVE X GROOVE



FLANGE X GROOVE



NOTES:-

- # OPTIONAL TRIM ORDERED SEPERATELY
 - Ⓧ DRAIN
 - * TO SUIT AT SITE BY INSTALLER
 - NO - NORMALLY OPEN
 - NC - NORMALLY CLOSED
- WHEN PRESSURE SWITCH IS SUPPLIED THEN SL.NO.22 PLUG NOT REQUIRED.



Data Sheet 5.11

Issue D

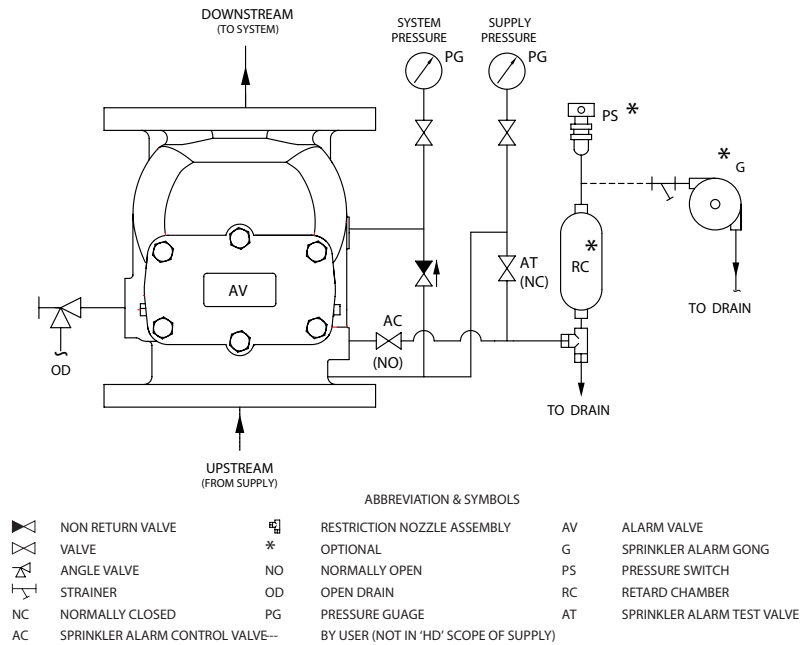


Alarm Valve Model C

Item No.	Description	Size	Quantity Per Alarm Valve Size			
			DN 80(3")	DN100 (4")	DN150 (6")	DN200 (8")
1	Hex Nipple	3/4"	2	5	4	4
2	Tee	3/4"	2	3	3	3
3	Elbow	3/4"	-	2	2	2
3	Elbow	1/2"	2	-	-	-
4	Pipe Nipple	3/4" X 150 Mm Long	-	-	-	1
4	Pipe Nipple	3/4" X 130 Mm Long	-	-	1	-
4	Pipe Nipple	3/4" X 100 Mm Long	-	1	-	-
4	Pipe Nipple	1/2" X 100 Mm Long	1	-	-	-
5	Pipe Nipple	3/4" X 100 Mm Long	-	-	-	1
5	Pipe Nipple	3/4" X 80 Mm Long	-	-	1	-
6	Pipe Nipple	1/2" X 100 Mm Long	1	-	-	1
6	Pipe Nipple	1/2" X 80 Mm Long	-	1	1	-
7	Union	3/4"	-	1	1	1
7	Union	1/2"	1	-	-	-
8	Swing Check Valve	3/4"	-	1	1	1
8	Swing Check Valve	1/2"	1	-	-	-
9	Pipe Nipple	3/4" X 70 Mm Long	-	-	1	1
9	Pipe Nipple	3/4" X 60 Mm Long	-	1	-	-
9	Pipe Nipple	1/2" X 70 Mm Long	1	-	-	-
10	Ball Valve	1/2"	2	2	2	2
11	Reducing Hex Nipple	3/4" X 1/2"	1	-	-	-
12	Reducing Hex Nipple	3/4" X 1/4"	1	1	1	1
13	Reducing Hex Nipple	1/2" X 1/4"	1	1	1	1
14	Ball Valve	1/4"	2	2	2	2
15	Hex Nipple	1/4"	2	2	2	2
16	Elbow	1/4"	2	2	2	2
17	Pressure Gauge	1/4"	2	2	2	2
18	Alarm Test Line Assembly	1/2"	1	-	-	-
18	Alarm Test Line Assembly	1/2"	-	1	-	-
18	Alarm Test Line Assembly	1/2"	-	-	1	-
18	Alarm Test Line Assembly	1/2"	-	-	-	1
19	Reducing Bush	3/4" X 1/2"	1	2	2	2
20	Restriction Nozzle Assembly	1/2"	1	1	1	1
21	"Y" Type Strainer (Optional)	3/4"	1	1	1	1
22	Plug	1/2"	1	1	1	1
23	Sprinkler Alarm Gong (Optional)	Rapidrop Model Ea (5.09)	1	1	1	1
24	Hex Nipple	2"	-	1	1	1
24	Hex Nipple	1-1/4"	1	-	-	-
25	Angle Valve	2"	-	1	1	1
25	Angle Valve	1-1/4"	1	-	-	-
26	Pipe Nipple	1/2" X 60 Mm Long	2	2	2	2
27	Pipe Nipple (Optional)	3/4" X 80 Mm Long	1	1	1	1
28	Hex Nipple	1/2"	5	3	3	3
29	Tee	1/2"	3	2	2	2
30	Pressure Switch (Optional)	1/2" End Connection	1	1	1	1
31	Retard Chamber (Optional)	Rapidrop Model Ra (5.10)	1	1	1	1
32	Hex Nipple	3/4"	1	1	1	1

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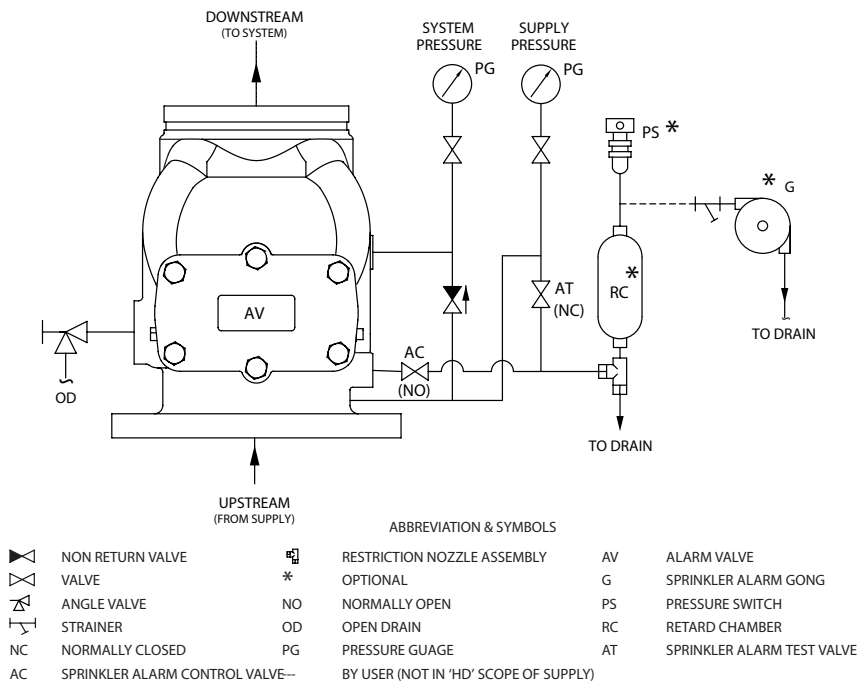
Trim - Schematic Alarm Valve Model - C Flange x Flange DN80 (3"), DN100 (4"), DN150 (6"), DN200 (8")



Note:

1. Sprinkler alarm control valve must be kept normally open if this valve is kept closed the sprinkler alarm bell/electric alarm will not signal.
2. Sprinkler alarm test valve must be kept normally closed condition. Valve is Opened to test the sprinkler alarm bell/electric alarm

Trim - Schematic Alarm Valve Model - C Flange x Groove DN80 (3"), DN100 (4"), DN150 (6"), DN200 (8")

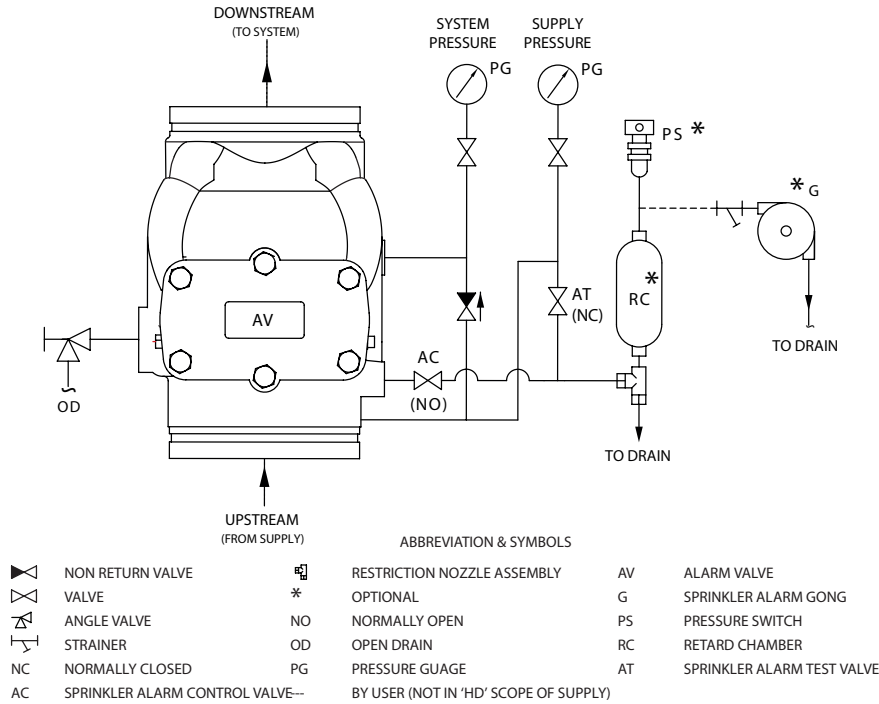


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Alarm Valve Model C

Trim - Schematic Alarm Valve Model - C Groove x Groove DN80 (3"), DN100 (4"), DN150 (6"), DN200 (8")



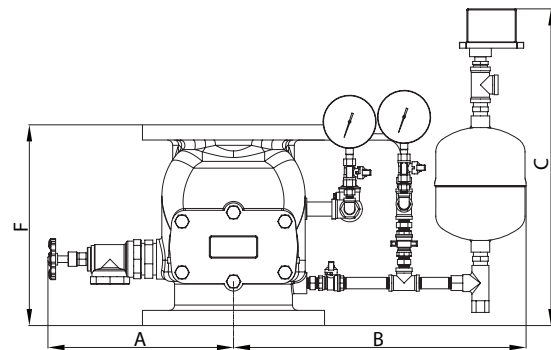
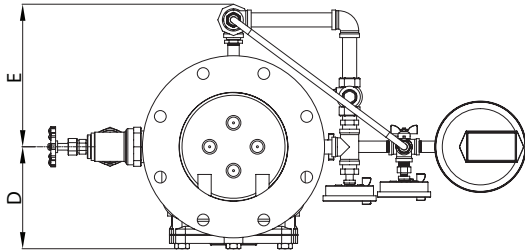
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Alarm Valve Model C

Installation Dimensions With Trim

Alarm Valve Model - C Flange x Flange DN80 (3"), DN100 (4"), DN150 (6"), DN200 (8")

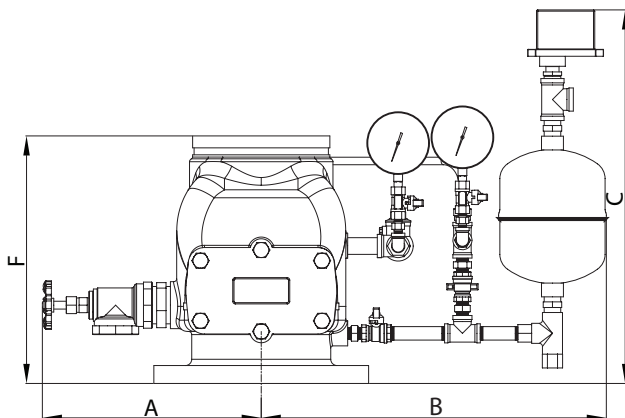
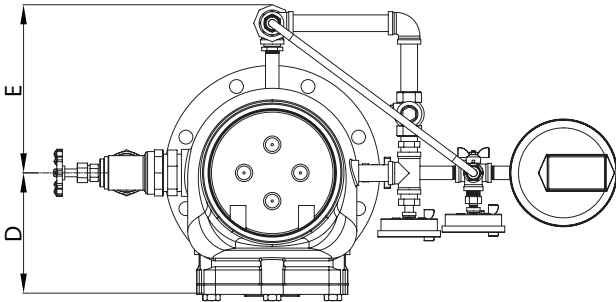


Size	DN80 (3")	DN100 (4")	DN150 (6")	DN200 (8")
A	279	312	331	350
B	457 (482*)	464 (488*)	486 (510*)	527 (551*)
C	434 (588*)	434 (588*)	434 (588*)	443 (597*)
D	127	140	173	192
E	201	219	234	269
F	262	274	315	378

*Dimension including optional retard chamber
Installation measurement in mm. (Approximate)

Installation Dimensions With Trim

Alarm Valve Model - C Flange x Groove DN80 (3"), DN100 (4"), DN150 (6"), DN200 (8")

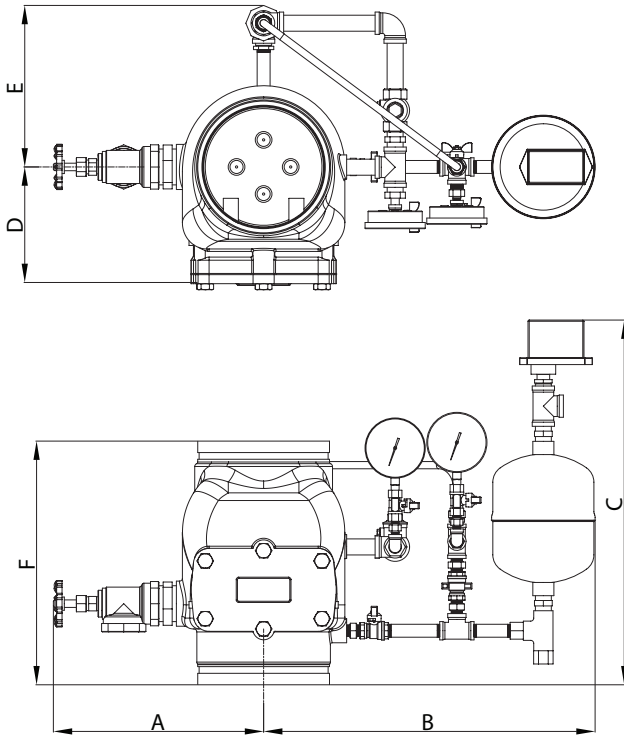


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A	279	312	331	350
B	457 (482*)	464 (488*)	486 (510*)	527 (551*)
C	434 (588*)	434 (588*)	434 (588*)	443 (597*)
D	127	140	173	204
E	201	219	234	269
F	275	291.3	316.8	395.2

*Dimension including optional retard chamber
Installation measurement in mm. (Approximate)

Alarm Valve Model C

Installation Dimensions With Trim Alarm Valve Model - C Groove x Groove DN80 (3"), DN100 (4"), DN150 (6"), DN200 (8")



Size	DN80 (3")	DN100 (4")	DN150 (6")	DN200 (8")
A	279	312	331	350
B	457 (482*)	464 (488*)	486 (510*)	527 (551*)
C	439 (593*)	443 (596*)	443 (596*)	443 (607*)
D	127	140	173	204
E	201	219	234	269
F	280	300	324	405

*Dimension including optional retard chamber
Installation measurement in mm. (Approximate)

Ordering Codes

Ordering Code	Description
RDAVC080T	Alarm Valve DN80 (3") Groove x Groove
RDAVC100T	Alarm Valve DN100 (4") Groove x Groove
RDAVC150T	Alarm Valve DN150 (6") (165.1mm) Groove x Groove
RDAVC168T	Alarm Valve DN150 (6") (168.3mm) Groove x Groove
RDAVC200T	Alarm Valve DN200 (8") Groove x Groove
RDAVC100AT	Alarm Valve DN100 (4") ANSI Flange x Flange
RDAVC150AT	Alarm Valve DN150 (6") ANSI Flange x Flange
RDAVC200AT	Alarm Valve DN200 (8") ANSI Flange x Flange
RDAVC100FT	Alarm Valve DN100 (4") PN16 Flange x Flange
RDAVC150FT	Alarm Valve DN150 (6") PN16 Flange x Flange
RDAVC200FT	Alarm Valve DN200 (8") PN16 Flange x Flange
RDWMGEA	Alarm Gong Model Ea
RDRETARD-RC9	Retard Chamber Model RA

Note: Ordering codes for European countries.
For other areas please contact your local Rapidrop sales representative.