

**GW C-300 – AUTOMATIC WATER CONTROL VALVE (AWCV)  
WITH LATCHING INTEGRAL PNEUMATIC ACTUATOR**



GW SPRINKLER A/S

**MANUAL**

**INSTALLATION, OPERATION & MAINTENANCE (IO&M)**



GW C-300 AWCV with INTEGRAL PNEUMATIC ACTUATOR (non reg. Deluge valve)						
Material	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")
Ni. Al. Bronze	CV64.561.14	CV64.562.14	CV64.563.14	CV64.564.14	CV64.565.14	CV64.566.14
Super Duplex	CV64.561.16	CV64.562.16	CV64.563.16	CV64.564.16	CV64.565.16	CV64.566.16
Titanium	CV64.561.17	CV64.562.17	CV64.563.17	CV64.564.17	CV64.565.17	CV64.566.17

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**HEALTH AND SAFETY AT WORK**

Section 6 of the Health and Safety at Work act 1974 imposes specific duties on manufacturers, importers, designers and suppliers to ensure that articles supplied for use at work are safe and without risk to health.

The section states:

1. It shall be the duty of any person who designs, manufactures, imports or supplies any article for use at work -
  - a. to ensure, so far as is reasonably practicable, that the article is so designed and constructed as to be safe and without risks to health when properly used;
  - b. to carry out or arrange for the carrying out of such testing and examinations as may be necessary for the performance of the duty imposed on him by the preceding paragraph;
  - c. to take such steps as are necessary to secure that there will be available in connection with the use of the article at work adequate information about the use for which it is designed and has been tested, and about any conditions necessary to ensure that, when put to use, it will be safe and without risks to health.
  
2. It shall be the duty of any person who undertakes the design or manufacture of any article for use at work to carry out or arrange for the carrying out of any necessary research with a view to the discovery and, so far as is reasonably practicable, the elimination or minimisation of any risks to health or safety to which the design or article may give rise.
  
3. It shall be the duty of any person who erects or installs any article for use at work in any premises where the article is to be used by persons at work to ensure, so far as it is reasonably practicable, that nothing about the way in which it is erected or installed makes it unsafe or a risk to health when properly used.

The above is an extract from "Croners H&S Manual" - September 1987.

**Service**

**The Health and Safety at Work Act 1974 imposes specific duties on the user of an installed system to ensure that the system is properly maintained in good repair so as to prevent danger. Advice is given in BS 7273: Part 1: 1990 - The Operation of Fire Protection Measures.**

**Support**

After completing these procedures support is available by:

	<b>International</b>
Telephone	+45 64 72 20 55
Fax	+45 64 72 22 55
E-mail	Sales.dep@gwsprinkler.com

## MANUAL

## INSTALLATION, OPERATION & MAINTENANCE (IO&M)

### INTRODUCTION

#### Function

The GW C-300 deluge valve is fitted in a fire water mains, or section supply branch pipes, in accordance with the requirements of NFPA 13/15 to:

- In stand-by position stay fully closed solely by utilizing the inlet (upstream) pressure as acting (closing) force.
- Upon instruction to provide a controlled opening – supplying a non-pressure regulated flow of water with no water hammer, and a very low pressure drop across the valve in the fully open position.
- Upon instruction to provide a controlled closing, thus eliminating the damaging effect of water hammer and reaction forces in the connected pipe work.

#### Principle of operation

In the closed position (Fig.1)), water from the upstream side (1) of the GW C-300 deluge valve is allowed, via a restrictor controlled port, to enter and pressurise the *sleeve cavity*, defined by the area (2) within the valve between the elastomeric sleeve (3) and the body casing (4) via the pilot system (5). This pressure prevents a flow through the valve by compressing the sleeve tightly around the inner core seat (6), thus maintaining the valve closed. It is this feature which keeps the valve closed also under surge conditions, as the high transient pressure is seen simultaneously at both the inlet of the valve and in the sleeve cavity, thereby allowing the sleeve compression in the seat area to keep a biasing action to the closed position.

The opening of the valve (Fig. 2) is achieved by releasing the pressure from the sleeve cavity via a restrictor controlled vent opening (7). The elastomeric sleeve expands, thus allowing water to flow through the valve.

#### Description of operation

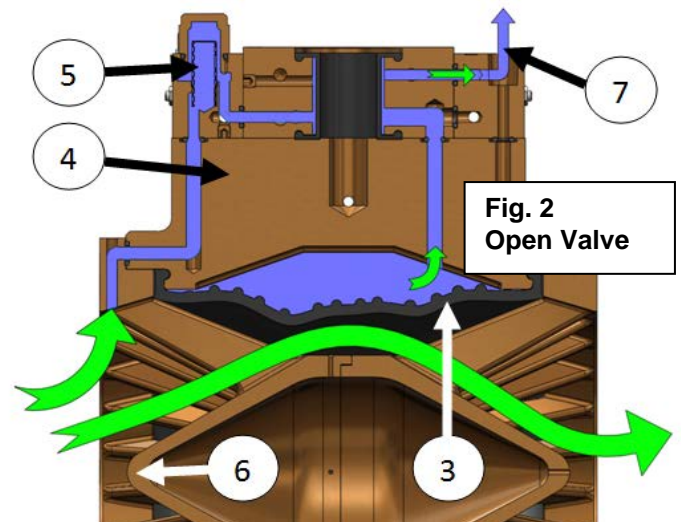
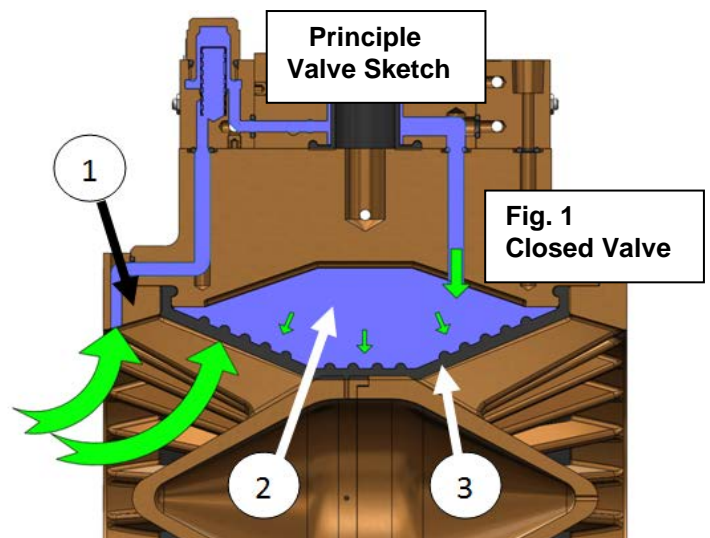
The GW C-300 deluge valve is closed, or maintained in the closed position, by diverting upstream water to the sleeve cavity. This is accomplished by the Pneumatic Actuator. Applying pilot air pressure to the actuator switches its position to “supply ON/ drain OFF”, which allows upstream water to flow to the sleeve cavity, thus closing the deluge valve.

Releasing the pilot air, switches the actuator to position: “supply OFF/ drain ON”, which allows the water to drain from the sleeve cavity, thus opening the deluge valve.

The GW C-300 deluge valve can be operated manually by opening the Manual Release Valve fitted at the bottom of the valve body.

#### GW C-300 deluge valve body

The valve comprises of a tubular casing fitted, at the respective ends, with an inlet and outlet body (cone). Each inlet and outlet body incorporates a central tapered core (valve seat) surrounded by longitudinal slots which provide the water passage through the valve. These inlet and out bodies clamp an elastomeric (flow control) sleeve into the casing.



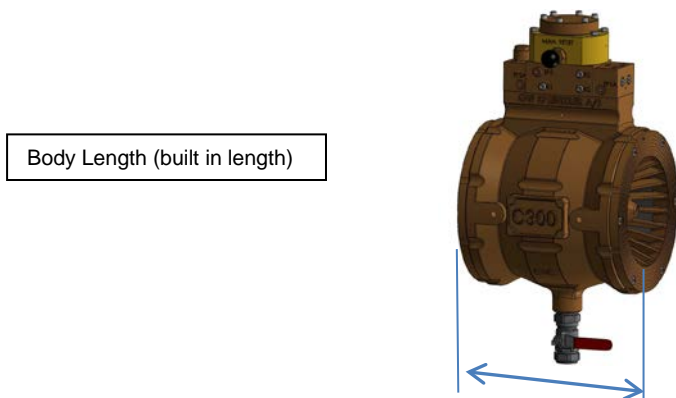
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**TECHNICAL SPECIFICATION**

Parameter	Range
Min. supply pressure	5 barg
Max. supply pressure	20 barg
Recommended pressure differential over valve	4 barg (to utilize full Kv)
Pneumatic Actuator valve specifications	Trip @ 0,5 barg (falling), max. supply 12 barg

Line size dia. mm (inch)	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")
Body Length (mm)	167	167	237	304	350	440
~ Weight (Al.Bronze), Kg	20	25	44	63	103	180



**Materials**

	Ni. Al. Bronze
Casing and Inlet / Outlet Cone	ASTM B148 / UNS C95800
On/Off Block	CuAl10Ni5Fe4
Pneumatic Actuator (wetted parts)	CuAl10Ni5Fe4
Pipes	CuNi 90/10
Flow Control Sleeve	Natural Rubber
Pilot Sleeve	Natural Rubber

Optional materials: Super Duplex Cr.25  
Titanium

Refer to GW C-300 Specification (document): 64 70481

Plug Tightness - ¼" set to 26 Nm  
- ½" set to 58 Nm



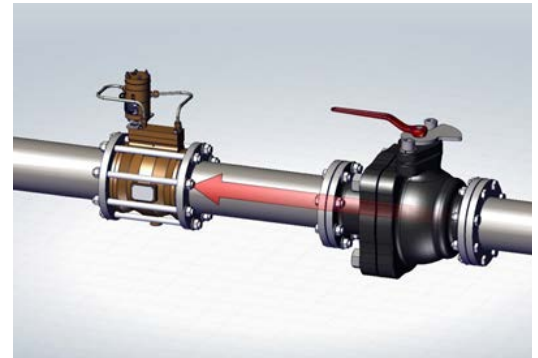
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**INSTALLATION**

**Preamble**

The GW C-300 deluge valve assembly is designed to be clamped between pipe flanges to ANSI B16.5 Class 150 or 300 using full length studs, nuts and washers. The Valve may be positioned vertically or horizontally. Suitable sealing gaskets to ANSI B16.21 RF are to be inserted between flanged joints.



The water inlet supply to the valve should be equipped with a suitable strainer to prevent the ingress of harmful materials. Isolating butterfly type valve should be fitted upstream of the GW C-300 deluge valve assembly.

Upstream and downstream of the valve the pipe work should be straight for at least 3 pipe diameters without valves, bends or fittings. This will ensure that a stable flow regime exists at the entrance and exit from the valve. Ensure that the valve can be withdrawn from the pipework for routine maintenance/repair procedures. The larger valves may require the use of slings and strops when positioning. Lifting eye tapings are provided on the side of the larger valves (6" and larger). Care must be taken to ensure that the Pneumatic Actuator and small bore pipe work is **not** utilised for lifting. Pressure gauges are to be provided to monitor the valve inlet and/or outlet pressure. For accurate readings the gauges should be located in straight lengths of pipework away from valves and fittings.

For test purposes a full bore test/drain outlet with separate isolation valve should be provided in the pipework on the outlet side of the GW C-300 deluge valve assembly.

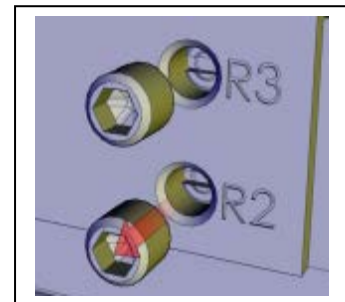
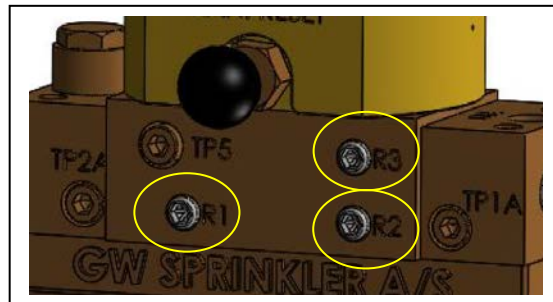
The GW C-300 deluge valve sleeve vent (1/2" NPT) is supplied with a 1/2" isolating valve which acts as a means for air-bleeding of the sleeve cavity – as well as a manual release of the deluge valve, and shall be piped to waste.

The GW C-300 outlet port TP1 (1/4" NPT) should be piped to waste. (Tubing diameter min. 10 mm, maximum length 2 meters, using full flow fittings).

A pressure operated switch (to give remote indication of operation) may be connected to the discharge pipe work.

GW C-300 deluge valves shall be installed in such way to avoid physical damage and exposure to freezing temperatures.

**Valve restrictors**



The deluge valve incorporates three variable/adjustable restrictors, (R1, R2 and R3). The purpose of these is to enable the user to tune the valve's performance to meet the service conditions and required opening and closing characteristics.

After removing the protective plug adjust the central screwed restrictor with the tool 64/70506. Finger pressure is only required.

The Restrictor is a needle valve. Rotating clockwise (screw in) reduces the orifice (and water flow), hence slowing down the reaction of the deluge valve. Rotating the restrictor counter clockwise will do the opposite.

Following commissioning and the satisfactory operation of the valve, the restrictors must be locked in position with the protective plug.

Once set, the restrictors should not require further adjustment. If the valve's characteristics alter, this is not normally a function of the restrictors and reference should be made to the Fault Finding Section of this Manual.

**Do not tamper with the Restrictor settings once set**

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<b>R1</b> (Lower Left on Centre Block)	<b>Initial setting is 4 turns open from fully in.</b>	Governs the <b>closing speed</b> of the valve.
<b>R2</b> (Lower Right on Centre Block)	<b>Initial setting is 6 turns open.</b> <b>Shall NOT be adjusted!</b>	Alters the speed at which water enters and leaves the sleeve cavity. Responds to the pressures within the control pilot chamber and alters the speed of response of the valve.
<b>R3</b> (Upper Right on Centre Block)	<b>Initial setting is 4 turns open from fully in.</b>	Governs the <b>opening speed</b> of the valve while it is pressure regulating.

Note: later versions of the pilot do not have restrictor R2. This is unused in this valve variant.

**Procedure** (read in conjunction with Annex 1)

1. Ensure that the upstream isolating valve (4) is closed.
2. Ensure that all interfacing flange surfaces are clean and the arrow on the valve points in the flow direction (i.e. to the nozzles).
3. Locate and align the sealing gaskets on the water inlet and outlet flanges (gasket to ANSI B16.21 RF). Fit the tie-rods between the two flanges. Each tie-rod is fitted initially by inserting the top end through the upper flange from its underside with the lower end of the tie-rod canted outwards to clear the lower flange, then pull it through the upper flange and finally lower it down through the lower flange, installing isolation bushes if required.
4. Fit and tighten the nuts and washers on the tie-rods, ensuring at least 1½ - 2 full threads are visible. Ensure the flanges are pulled down evenly to a maximum torque in accordance with the piping/bolting specification. The deluge valve casing and inlet and outlet bodies should be clamped to a point where there is no visible gap between casing and end cones – i.e. metal to metal.
5. Secure the drain pipe connection from manual release valve (3).
6. Connect the air supply (9) to the Pneumatic Actuator (2), to switch the Actuator to the “supply ON/ drain OFF” position.
7. Continue onto *commissioning*.

**NOTE: ON NO ACCOUNT SHOULD THE SMALL BORE PIPEWORK OR PNEUMATIC ACTUATOR (OR OTHER FITTINGS) BE USED TO LIFT, SLING OR MANOEUVRE THE VALVE ASSEMBLY.**

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## **COMMISSIONING** (read in conjunction with Annex 1)

### **Preamble**

Ensure an adequate water supply (20 bar max.).

It is essential that the operator, or commissioning engineer, reads these procedures prior to the operation of the valve. Failure to do so could result in the valve failing to open, or damage to the valve or pipework.

Any hydrostatic tests must be less than 20 barg.

The only commissioning procedure required for the GW C-300 deluge valve is to carry out a check of the installation and the operation of the Pneumatic Actuator prior to a functional test of the system.

It is recommended that the GW C-300 deluge valve response time check list (see page 26) is completed during commissioning and retained for future reference.

### **Checks**

1. The GW C-300 deluge valve (1) outlet is connected to the protected area's distribution pipework (downstream) via an isolating valve (5).
2. The GW C-300 deluge valve upstream Isolating Valve (4) is closed.
3. The main water supply isolating valve is closed. (Clients Supply)
4. The GW C-300 deluge valve downstream Isolation Valve (5) is closed.
5. The system test/drain valve (6) is piped to waste/drain and closed.
6. The GW C-300 deluge valve sleeve cavity (jacket) outlet is piped to waste/drain via an isolating valve (3), and closed.
7. The Pneumatic Actuator (2) outlet port (marked with "TP1") is piped to waste/drain.
8. The Pneumatic Actuator is closed - i.e. air pressure (9) is present at the pneumatic input on the top of the valve.

### **Procedure**

Stop the commissioning if any part of the pipe work or valve shows any leakage or erratic behaviour.

1. Open the Main water supply isolating valve. (Clients Supply)
2. Open the GW C-300 deluge valve sleeve cavity outlet valve (3) to bleed any trapped air.
3. Partially open the GW C-300 deluge valve upstream Isolation Valve (4) to fill the GW C-300 deluge valve (1) and the upstream pipework.
4. When plain water (no air) is trickling from the GW C-300 deluge valve sleeve cavity outlet pipe, **close** the 1/2" isolating valve (3).
5. Fully open the upstream Isolation Valve (4) to impose full water pressure on the GW C-300 deluge valve.
6. Open the test and drain valve (6).
7. Confirm that the GW C-300 deluge valve inlet pressure gauge (7) registers line pressure, and the GW C-300 deluge valve outlet pressure gauge (8) reads zero (= deluge valve is closed).
8. Confirm no water is flowing through the valve.
9. Release the air pressure (9) from the Pneumatic Actuator (2).
10. Observe the water discharging overboard from the system Test/Drain line. Allow the system to function for one minute approx. to prove correct operation and note the discharge pressure.
11. Close the GW C-300 deluge (1) valve by: pulling out the manual reset latch/ black knob (10) on the Pneumatic Actuator (2) - and, with the latch pulled, reinstate the air pressure to the Pneumatic Actuator, allowing it to operate (switch position) and impose full line pressure to the sleeve cavity to close the GW C-300 deluge valve.



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**12. IMPORTANT : FULL FLOODING TEST**

***This test must only be carried out with the full authority of the client as water will be discharged into the protected area !!.***

13. Close the test valve (6) and **open the main discharge valve (5)** which will allow for deluge of the risk.
14. Release the air pressure from the Pneumatic Actuator (2). **This will open / trip the GW C-300 deluge valve.**
15. Note the discharge pressure (8) and observe full and correct flow from all nozzles.
16. Close the GW C-300 deluge (1) valve by: pulling out the manual reset latch /black knob (10) on the Pneumatic Actuator (2) - and, with the latch pulled, reinstate the air pressure to the Pneumatic Actuator and allowing it to operate (switch position) - and impose full line pressure to the sleeve cavity, thus closing the GW C-300 deluge valve.
17. Open the system Test/Drain valve (6) in the GW C-300 deluge valve discharge pipework to drain the system pipework.
18. Close the system Test/Drain Valve (6) on the GW C-300 deluge valve discharge pipework.
19. The test is now completed.

**Resetting procedure (after activation of GW C-300 deluge valve)**

1. Close the GW C-300 deluge (1) valve by: pulling out the manual reset latch / black knob (10) on the Pneumatic Actuator (2) - and, with the latch pulled, reinstate the air pressure (9) to the Pneumatic Actuator (2) and allowing it to operate (switch position) and impose full line pressure to the sleeve cavity to close the GW C-300 deluge valve.
2. Attend the affected protected area.
3. Inspect all pipework and fittings for possible fire damage and carry out remedial repairs as necessary.
4. Open the system Test/Drain valve (6) to drain the surplus water downstream of the GW C-300 deluge valve.
5. Close the system Test/Drain valve (6).
6. Confirm that the pressure on the upstream side (7) of the GW C-300 deluge valve is at line pressure, and that the main downstream discharge valve (5) (to system/nozzles) is OPEN.

THE SYSTEM IS NOW FULLY REINSTATED.

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**MAINTENANCE SCHEDULE**

Inspection and testing should be carried out in accordance with NFPA Standards, the requirements of the Authority Having Jurisdiction (AHJ) – and the following instructions:

**Monthly: Visual Inspection**

- Check for no damage to valve, piping and trim parts.
- No leaking from tell-tale holes (body, pilot or actuator) and seals.
- Check that all valves and handles are in “In Service” position.
- Operate upstream (4) & downstream (5) isolating valves to avoid sticking \*).

\*)

The system design provides for isolating valves to remain in the OPEN position for long periods. Close and open the valve several times at monthly intervals to ensure freedom of movement. Leave and lock the valve in the OPEN position

**6 months**

- Conduct a **partial flow test** (see note below) adequate to move the sleeve from the seat.
- Check and rinse inlet-strainer.

**12 months**

- Conduct a **full flow test** at maximum pump capacity.
- Check that required downstream pressure/flow (8) is achieved.

**36 months**

- Replace the elastomeric sleeve, diaphragms and seals in service – and those held unused as spare stock. Spares should be used within a two year shelf life to provide a 3 year “in service” life (5 year total life).
- Check and rinse inlet-strainer.
- Check and clean all water channels/bores forming part of the valve and manifold block internal water way.

The “in service” life of the elastomeric sleeve can be extended annually to a **maximum “in service” period of 5 years** from the date of first installation – or 6 years from valve manufacture, whichever is the sooner, provided that a “maximum extension test” (see below) to fully stretch the flow control sleeve within the deluge valve body, is performed – AND is followed by a full flow test. Replace the elastomeric sleeve if the deluge valve does not seal 100% after “maximum extension test”.

**NOTE: FLOW TESTS:** Extract from NFPA 25: Records indicating the date the deluge valve was last tripped and the tripping time as well as the individual and organisation conducting the test shall be maintained at a location or in a manner readily available for review by the Authority Having Jurisdiction (AHJ).

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**MAXIMUM EXTENSION TEST (read in conjunction with Annex 1)**

NOTE: Stop the test if any part of the pipe work or valve shows any leaks or dangerous behaviour.

1. Ensure that the GW C-300 deluge valve upstream (4) and downstream (5) isolating valves and system test/drain valve (6) are closed – and the Pneumatic Actuator (2) is closed - i.e. air pressure (9) is present at the Pneumatic Actuator air inlet on top of the actuator.
2. De-energize the Pneumatic Actuator by removing pilot air supply, to drain the valve sleeve cavity.
3. Open the GW-C-300 deluge valve sleeve vent outlet (manual release valve) (3) to fully drain the valve sleeve cavity.
4. Partially open the deluge valve upstream isolation valve (4) to fill the GW C-300 deluge valve and upstream pipe work.
5. When water has stopped trickling from the GW C-300 deluge valve sleeve cavity outlet pipe, close the manual release valve (3).
6. Fully open the deluge valve upstream isolation (4) valve to impose full pump water pressure on the deluge valve to fully stretch the elastomeric sleeve. Leave the valve pressurized for 1 minute. Check that downstream pressure (8) reads same pressure as inlet (upstream) pressure (7).
7. Energize the Pneumatic Actuator (2) – i.e. pulling out the manual reset latch / black knob (10) on the Pneumatic Actuator (2) - and, with the latch pulled, reinstate the air pressure (9) to the Pneumatic Actuator (2) and allowing it to operate (switch position) and impose full line pressure to the sleeve cavity to close the GW C-300 deluge valve.
8. Slowly open the downstream test and drain valve (6).
9. Confirm that the deluge valve inlet pressure gauge (7) registers line pressure and the deluge valve outlet pressure gauge (8) reads zero – and no water flows through the valve.
10. If the deluge valve does not fully seal, the elastomeric flow control sleeve should be replaced.
11. Close test/drain valve (6) and proceed with full flow test.

**MAINTENANCE PROCEDURES**

**Valve Removal (read in conjunction with Annex 1)**

Obtain a permit to disable the system.

Isolate the water supply to the GW C-300 deluge valve system.

IMPORTANT: If a by-pass system is fitted around the GW C-300 deluge valve assembly, ensure a water supply is available to this system to enable emergency operation when/while the GW C-300 deluge valve is removed.

1. Close the upstream Isolation Valve (4) and lock in position
2. Open the Test/Drain valve (6) to drain the GW C-300 deluge valve system pipework.
3. Operate (de-energize) the Pneumatic Actuator (2) to drain the water.
4. Disconnect the piped connection between the GW C-300 deluge manual release valve (3) and the drain pipe.
5. Disconnect the air supply (9) to the Pneumatic Actuator.
6. Release and remove the tie-rods securing/clamping the GW C-300 deluge valve.
7. Slacken the pipe supports, then gently jack the pipework apart and carefully withdraw the GW C-300 deluge valve, together with the sealing gaskets.

NOTE: When manhandling the GW C-300 deluge valve, consider its size and weight.

DO NOT USE THE SMALL BORE PIPEWORK, PNEUMATIC ACTUATOR OR OTHER FITTINGS TO LIFT, SLING OR MANOEUVRE THE VALVE ASSEMBLY. For lifting - fit and use lifting eyes in tapped/threaded holes located on valve body exterior (on 6" valves and larger).

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**Valve Elastomer Sleeve Renewal**

**Equipment Required**

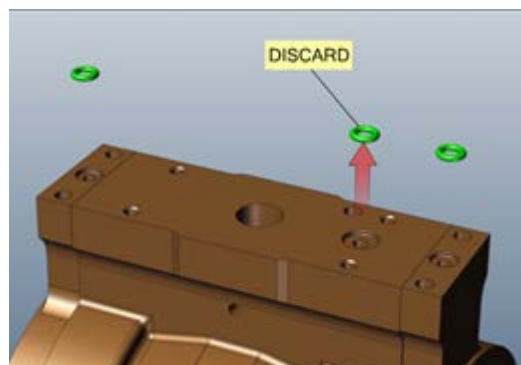
1. A set of appropriate sized A/F spanners and wrenches.
2. Valve Sleeve Spare Part Kit (according to data sheet: DV070 1001 A).
3. Rubber Lubricant Emulsion (1 litre bottle) - Part No. CV64/62163.

**Renewal of Elastomeric Sleeve**

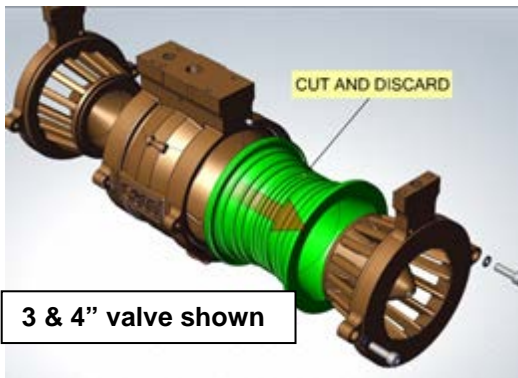
When the valve is removed for servicing, the opportunity should be taken to renew all elastomeric components associated with the GW C-300 deluge valve and the Pneumatic Actuator.



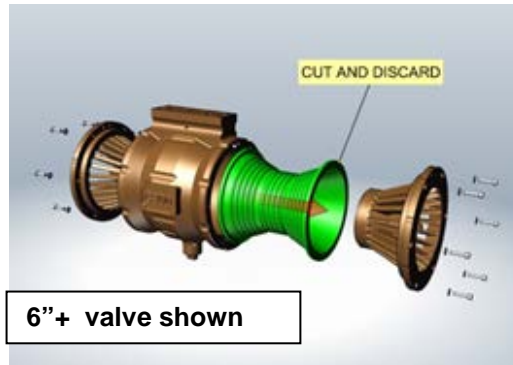
1. Support the Valve horizontally. Withdraw the Pneumatic Actuator and On/Off Block as a complete assembly by releasing the retaining bolts fitted.



2. Remove the 'O' sealing rings located in each of the three ports associated with the inlet body, the outlet body and the valve casing, and discard.



3. Stand the Valve on its outlet (see arrow on body) Release the bolts securing the inlet body to the casing and prise apart taking care not to damage the faces. Withdraw the inlet body and place on a clean surface.

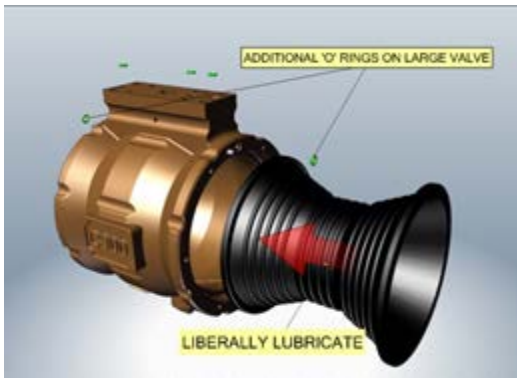


4. Invert the Valve and repeat the procedure for the outlet body, then the elastomeric sleeve may be pulled clear, cut and discarded. When disassembled, use the opportunity to check and clean the water intake bores located in the inlet & outlet cones, top inside.

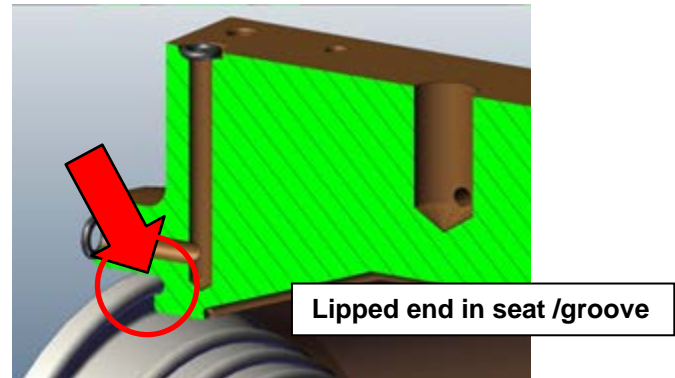
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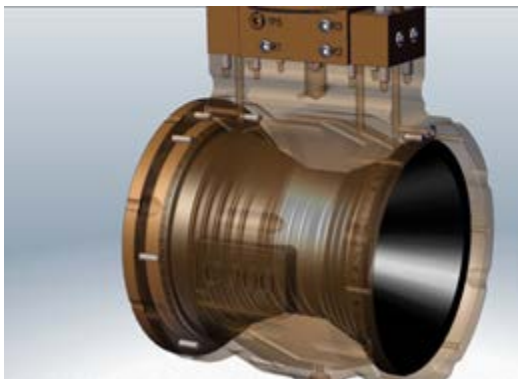
**Sleeve Assembly, all except 100mm (4”) Valves**



1. Support the Valve casing horizontally. For the 150mm (6”) and larger valves, fit new O-Rings into the casing to seat on the Inlet and Outlet Cones.



2. Insert the replacement sleeve into the valve casing. Carefully work into position until each lipped end of the sleeve is seated in the groove each end of the casing.



3. Liberally apply Rubber Lubricant Emulsion to the elastomeric flow control sleeve inside surface to reduce friction when fitting the cones. Locate the inlet cone ensuring the core does not damage the sleeve's surface. Fit the body retaining bolts and evenly tighten down. Repeat for the outlet body.

**Sleeve Assembly, 100mm (4”) Valve**

The 100 mm elastomeric sleeve may appear undersized – but is designed this way! Liberally apply Rubber Lubricant Emulsion to the elastomeric flow control sleeve and ease the flow control sleeve onto the inlet body until it reaches the base. Carefully lower the casing over the sleeve taking note of its correct orientation. Then turn the valve over and partly secure the Inlet Body. Re-lubricate the downstream end of the sleeve. Carefully lower the outlet body into the sleeve. As the body is worked down, use a blunt instrument between the vanes (e.g., a small ring spanner) to push the sleeve outwards. When the sleeve is in position, partly tighten the securing bolts and nuts. In turn, slightly tighten the bolts on each end of the valve – so the end cones are “simultaneously” screwed in. Observe – and push/expand the elastomeric sleeve so its lip fits into the annular grooves.

**All Valves**

Select correct sized o-rings from the Spares Kit, lubricate and fit into the respective grooves on the valve and On/Off block interfaces. Secure the On/Off block to the valve by tightening the retaining bolts. It is recommended to secure the bolts by applying a few droplets of removable thread locker – e.g. Loctite

**Reinstatement Procedure**

Follow the Installation Procedure.



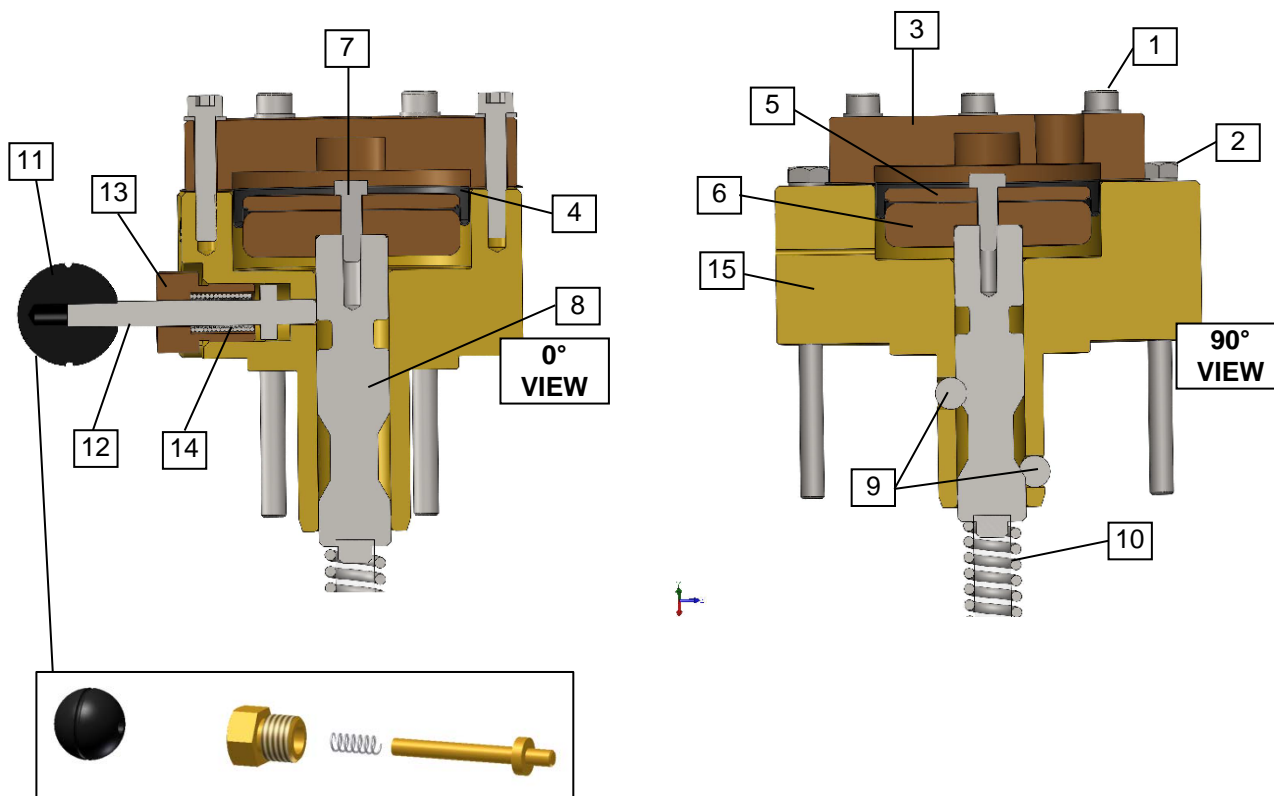
**MANUAL**

**INSTALLATION, OPERATION & MAINTENANCE (IO&M)**

**Pneumatic Actuator**

**Dismantling of Pneumatic Actuator**

In the following procedures, reference is to be made to the drawing below to assist in component identification.



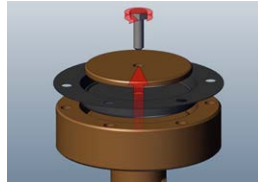
POS	QTY	Description
1	6	Screw
2	4	Screw
3	1	Top Cover
4	1	Diaphragm
5	1	Retaining Plate
6	1	Piston
7	1	Screw
8	1	Spindle
9	2	Ball
10	1	Spring
11	1	Knob
12	1	Latch Pin
13	1	Spring Housing (latch)
14	1	Spring (latch)
15	1	Ball Guide

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**INSTALLATION, OPERATION & MAINTENANCE (IO&M)**

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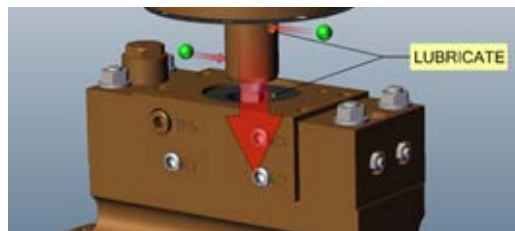
1. Unscrew the 4 screws (2) that secure the Integral Pneumatic Actuator to the Block Assembly.
2. Lift the complete Integral Actuator free of the Block Assembly. Make sure the 2 Balls (9) are not lost.
3. Unscrew the 6 screws (1) that secure the Top Cover (3) to the Ball Guide (15) – and remove the Top Cover.
4. Lift out the Spindle/Piston/Diaphragm/Retaining Plate assembly (8+6+4+5) by pushing the Spindle (8) backwards through the Ball Guide.
5. Unscrew Screw (7) and remove the Retaining Plate (5). NOTE: This may stick to the rubber diaphragm!!
6. Remove the Diaphragm (4) – and discard.



7. Remove and inspect the Spring (10) located in the center hole under the Block Assembly. If damaged, replace with a new.

**Re-Assembly and Re-fitting of Integral Pneumatic Actuator**

1. Lubricate a new Diaphragm (from Spares Kit) and the Spindle (8) with grease.
2. Fit the new Diaphragm over the Piston (6)
3. VERY IMPORTANT: Make sure the Diaphragm is correctly orientated – i.e. the (fabric) side with print “PISTON SIDE” is facing the Piston.
4. Fit the Retaining Plate (5) – and tighten the Screw (7) using a torque of 6-8 Nm.
5. Fit the Spindle/Piston/Diaphragm/Retaining Plate assembly (8+6+4+5) into the Ball Guide – and align the holes in the Diaphragm to match those in the Ball Guide.  
NOTE: Remember to pull the Manual Reset Latch when sliding the Spindle into the Ball Guide!! If required the Manual Reset Latch can be removed as an assembly by unscrewing the Spring Housing (13) from the Ball Guide.
6. Fit the Top Cover – align the holes, and secure with 6 off Screws (1) using a torque of 6-8 Nm.
7. Apply some grease in the 2 holes in the ball Guide – and fit the 2 Balls (9)
8. Apply some grease to the outside of the Ball Guide, where the Balls are located.
9. Fit the Integral Pneumatic Actuator assembly into the Block Assembly. Mind the Location Pin in the Block Assembly for correct orientation of the Actuator.

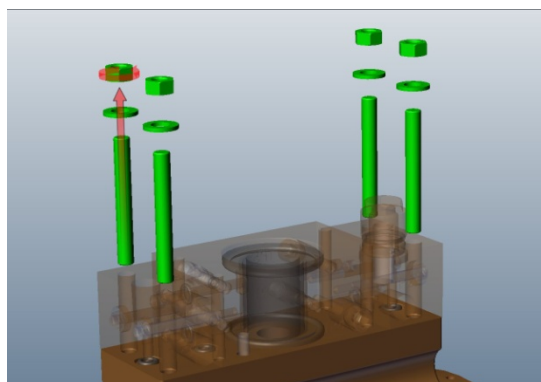


10. Secure the assembly by screwing in the 4 off Screws (2) using a torque of 6-8 Nm.

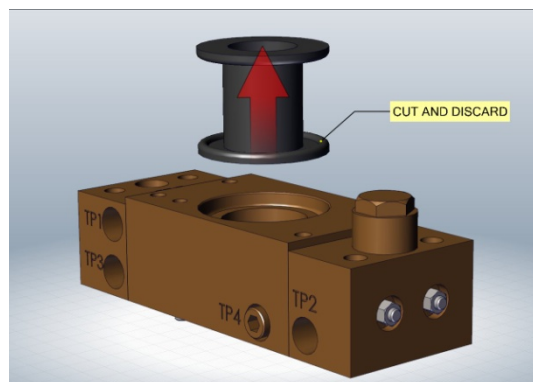
**MANUAL**

**INSTALLATION, OPERATION & MAINTENANCE (IO&M)**

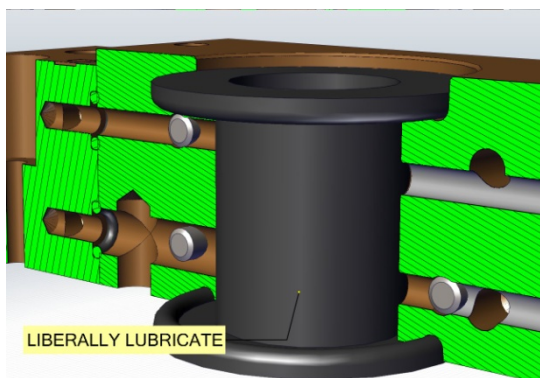
**Pilot Sleeve Replacement**



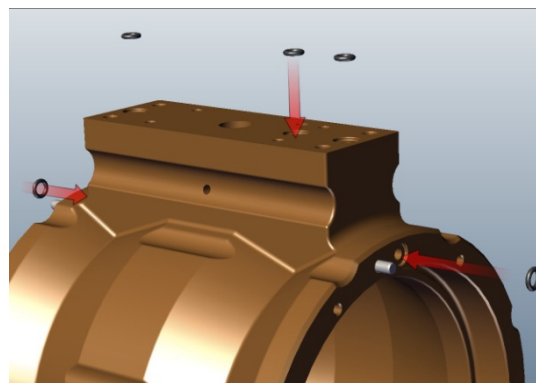
1. Remove the manifold block assembly whole from the Valve body by releasing the four retaining nuts fitted to the outer blocks.



2. Withdraw the Pilot Sleeve from the Centre Block and discard. Cut to prevent re-use.

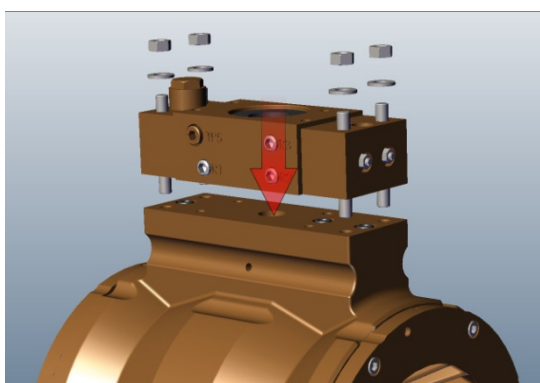


3. Liberally apply Rubber Lubricant to a new Pilot Sleeve. Fit the Sleeve into the body and confirm the moulded end flanges are correctly located in both end faces.



4. Fit new 'O'- ring seals on top of the body, and at each end, with a very light application of grease.

Do not block the ports.



5. Fit the Manifold Block Assembly to the Valve body ensuring correct orientation and secure with the nuts and washers.

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**INSTALLATION, OPERATION & MAINTENANCE (IO&M)**

**SPARE PARTS LIST**

**Elastomeric Flow Control Sleeve c/w O-ring spares kit**

(Data Sheet: DV070 1001A)

Size	80	100	150	200	250	300
Kit number	64/90119	64/90120	64/90121	64/90122	64/90123	64/90124

**Pneumatic Actuator Spares Kit: 64/90125**

(Data Sheet: DV070 1002A)

Comprising:

- 1 off Rolling Diaphragm
- 1 off Pilot sleeve
- 4 off Stainless steel balls
- 1 off Compression Spring
- 1 off Grease sachet
- (1 off Compression Spring for Latch – PN: CV64/70145) **ON REQUEST**

**Common to all sizes of valve**

Elastomeric Sleeves, Rolling Diaphragms and Seals should be stored in sealed light proof black bags. Spare stocks of sleeves, diaphragms and seals should be used within a two year shelf life to provide a three year in-service life (five year total life).

**FAULT FINDING**

Fault	Cause	Remedial Action
<b>Valve does not open</b>	<b>WATER CANNOT ESCAPE FROM SLEEVE CAVITY</b>	
	a) Rupture of flow control sleeve on inlet side of Valve	Renew sleeve
	b) Non operation of Pneumatic Actuator	-Check no pneumatic pressure. -Check for water flow (must drain from CP2 port)
	c) Restrictor R3 screwed fully in	Adjust restrictor
	d) Ruptured pilot sleeve (Pneu. Actuator)	Renew pilot sleeve
<b>Valve does not close</b>	<b>WATER CANNOT ENTER SLEEVE CAVITY</b>	
	a) Inlet strainer clogged	Inspect and clean strainer
	b) Water supply from inlet to strainer blocked	Clean water supply bore
	c) Rupture of flow control sleeve on discharge side of Valve	Renew sleeve
	d) Restrictor R1 screwed fully in	Adjust restrictor
	e) Non operation of Pneumatic Actuator	- Check for pneumatic pressure. - If Manual Reset Latch is fitted make sure it is pulled when pneumatic pressure is reinstated. - Check that 2 off Ø8 mm St. St. Balls are correctly fitted in the Ball Guide.
	f) Manual release valve is open	Close valve

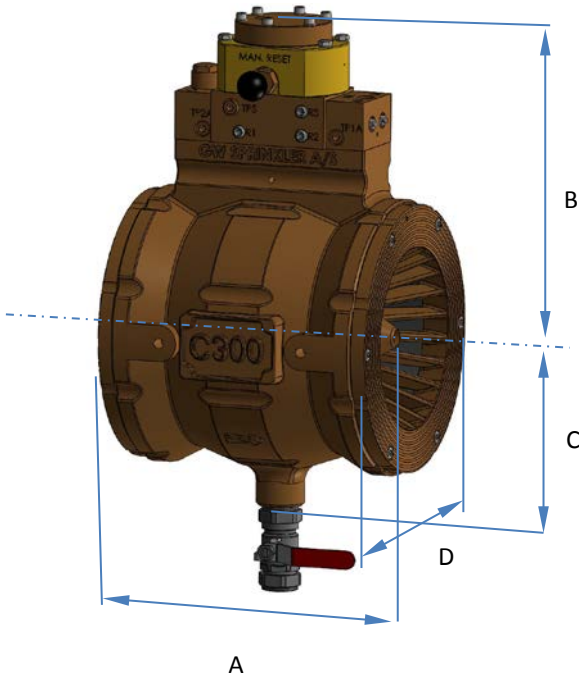
# GW C-300 – AUTOMATIC WATER CONTROL VALVE (AWCV) WITH LATCHING INTEGRAL PNEUMATIC ACTUATOR



GW SPRINKLER A/S

## MANUAL

## INSTALLATION, OPERATION & MAINTENANCE (IO&M)



All dimensions in mm.

Valve Size	A	B	C *)	D **)
80 (3")	167	175	95	128
100 (4")	167	197	115	161
150 (6")	237	229	145	222
200 (8")	304	257	167	295
250 (10")	350	293	200	336
300 (12")	440	331	235	406

\*) valve center to 1/2" boss end (unplugged).

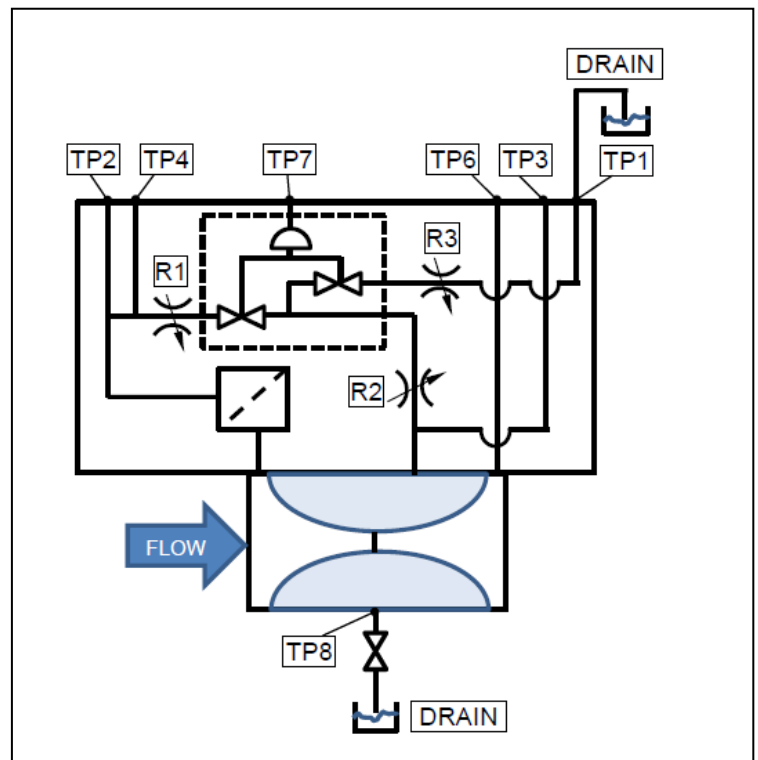
\*\*) Fitment: Wafer fits between ANSI/ASME B16.5 Class 150 or 300 lbs. flanges using full length studs, nuts and washers. Gasket to ANSI B16.21 RF.

### P & ID for GW C300 Deluge Valve Non Reg. with Integral Actuator

#### P & ID:

Port	Description	Size
R1	Inlet Restrictor (close)	
R2	Sleeve Restrictor	
R3	Outlet Restrictor (open)	
TP1	Exhaust to open valve	1/4" NPT
TP2	Plugged	1/4" NPT
TP3	Plugged	1/4" NPT
TP4	Plugged	1/4" NPT
TP5	Plugged	1/4" NPT
TP6	Plugged (DEL.)	1/4" NPT
TP7	Air Supply (Actuator)	1/4" NPT
TP8	Manual Release Valve	1/2" NPT

R = Restrictor (needle valve)  
TP = Terminal Port





**MANUAL**

**INSTALLATION, OPERATION & MAINTENANCE (IO&M)**

**Annex 1.**

**Valve & Instrumentation Schematic**

POS.		In Service	POS.		In Service
1	GW C-300 Deluge valve		6	Test/ Drain Valve	Closed
2	Pneumatic Actuator	Air ON	7	Upstream Pressure Gauge	
3	½" Manual Release Valve	Closed	8	Downstream Pressure Gauge	
4	Upstream Isolation Valve	Open	9	Pilot Air Pressure Line	Air ON
5	Downstream Isolation Valve	Open	10	Manual Reset Latch	Pulled/Air ON

