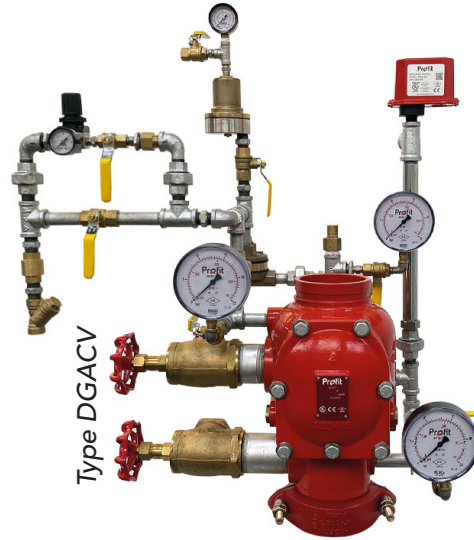
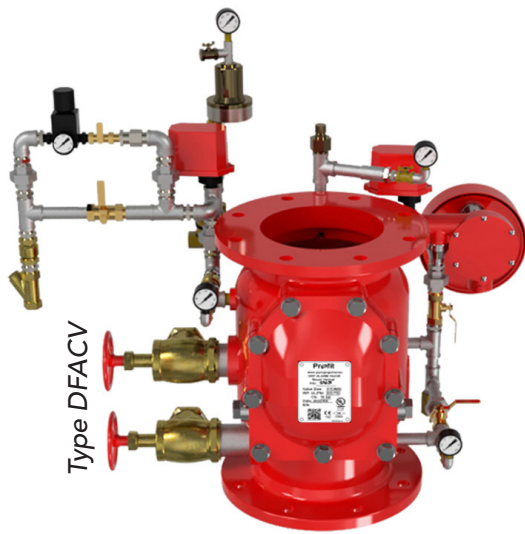


Size range: 3" - 8"



Profit dry pipe valves type DFACV & DGACV are resilient seated alarm valves, ready for installation in low pressure dry pipe sprinkler systems. They are supplied with plug & play trim set + several optional items.

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II. TESTING THE VALVE

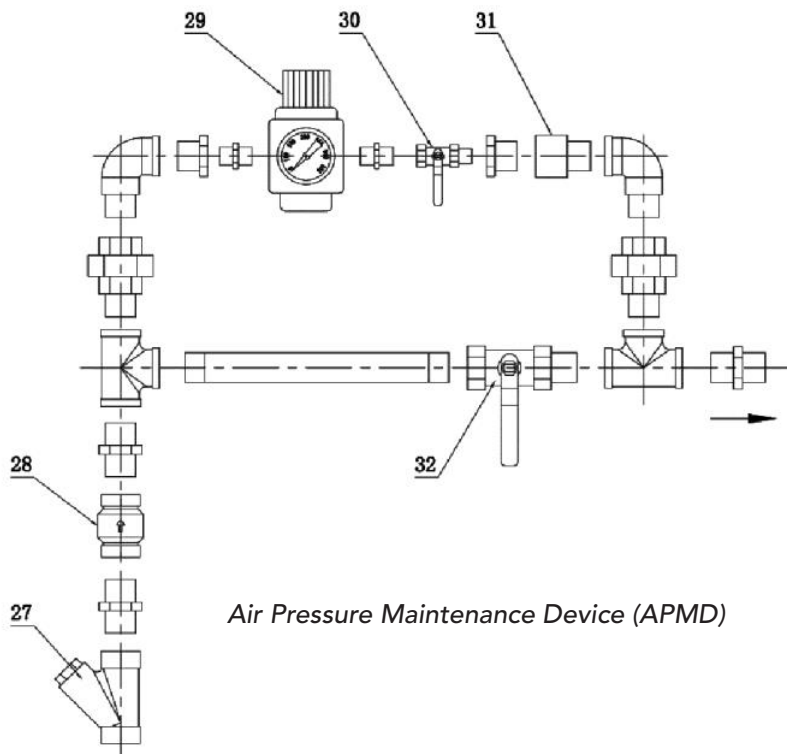
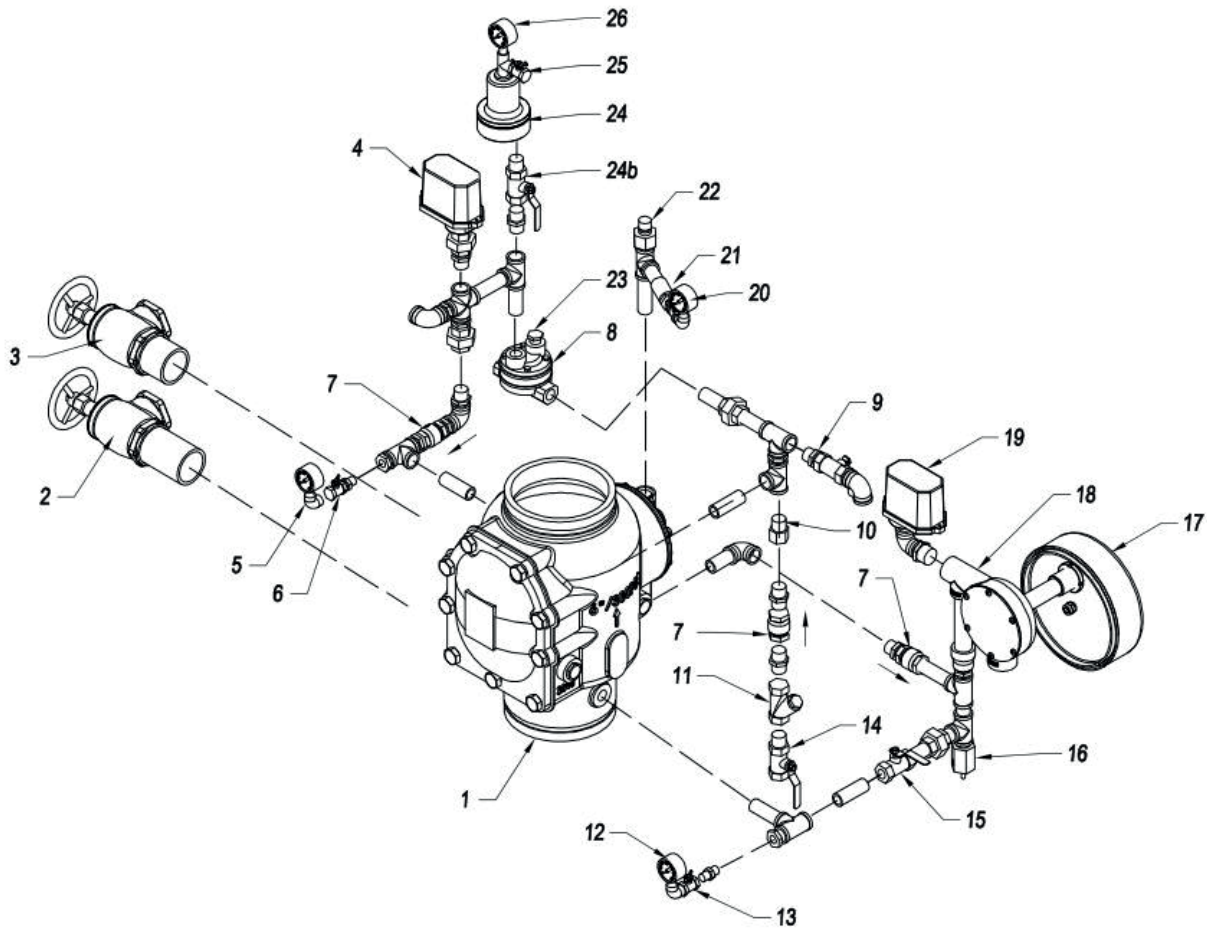
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REVISION TABLE

20



Air Pressure Maintenance Device (APMD)

No.	Components
1	Dry pipe valve assembly
2	Water supply main drain valve
3	System main drain valve
5	System pressure gauge (0-300 psi)
6	Gauge valve
7	Check valve
8	Low-pressure actuator assembly
9	Manual opening
10	Restrictor
11	Strainer
12	Water supply pressure gauge (0-300 psi)
13	Gauge valve
14	Diaphragm-charge-line ball valve
15	Alarm test ball valve (normally closed)
16	Automatic drain valve
19	Alarm pressure switch for water
20	Diaphragm-charge-line pressure gauge (0-300 psi)
21	Gauge valve
22	Auto drain valve
23	½ plug

No.	Optional components
4	Alarm pressure switch for air
17	Gong alarm
18	Water motor
24	Dry accelerator
24b	Ball valve
25	Ball valve
26	Air pressure gauge (0-0.4Mpa)

No.	APMD Components
27	Strainer
28	Check Valve
29	Air Regulator
30	Slow Fill Ball Valve (Normally Open)
31	Restrictor orifice
32	Fast Fill Ball Valve (Normally Closed)

I. INSTALLATION & COMMISSIONING

PRIOR TO INSTALLATION

- Location of the valve should be considered at the design stage, to give access for operation, adjustment, maintenance and repair.
- Valves must be provided with adequate support. Adjoining pipework must be supported to avoid the imposition of pipeline strains on the valve body, which would impair its performance.
- Valves can only be installed in areas with temperature above 0°C, freezing temperatures are not allowed.
- All special packaging material must be removed. Valve end protectors should only be permanently removed immediately before installation. The valve interior should be inspected through the end ports to determine whether it is clean and free from foreign matter.
- Valves should be supported and aligned with the pipes to avoid damage to the valves.
- Heavy valves may need independent support or anchorage.
- Dry pipe alarm valves may be installed only in vertical pipework. Check the available length for the valve and space for the trimset.
- Prior to installation, a check of the identification plate and body marking must be made to ensure that the correct valve is being installed in the right position.
- Air supply or nitrogen must be clean, dry and oil-free. The system must be checked for any leaks (NFPA-requirement: max 0,1 bar pressure drop/24 hours)
- Make sure that the valve-clapper is in 'set' position before inserting the valve in the riser.

INSTALLATION OF THE VALVE

1. Installation procedure for the valve type DGACV:

- Check the groove-dimensions in the pipes above and below the valve. Check that the two rigid couplings to install the valve are available; we advise to use Profit rigid couplings type GKS or GKA.
- Check that the available length between the pipes matches the total length of the valve.
- Check that valve-body and adjacent pipes are clean inside and that the grooves are clean and free of dust/debris.
- For more details we refer to our installation instructions for grooved couplings.
- For retrofit replacements or repairwork: all pipes need to be depressurized and purged before starting the installation/repair.
- Personnel for the installation must be qualified for the task.

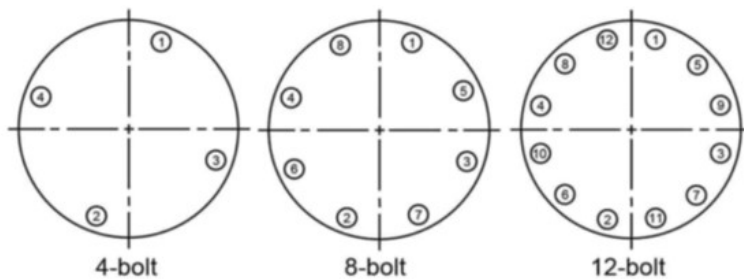
2. Installation procedure for the valve type DFACV:

- The mating flange (both valve and pipework flanges) should be checked for correct gasket contact face, surface finish and condition. Separate the 2 pipe-flanges and position de valve between the flanges. Bolt dimensions for PN-16 bolt connections (EN 1092-PN16):

DN	Number of bolts	Bolt-nut size mm	Bolt length mm
50	4	M 16	70
65	8 (or 4)	M 16	70
80	8	M 16	70
100	8	M 16	70
125	8	M 16	70
150	8	M 20	90
200	12	M 20	90
250	12	M 24	100
300	16	M 24	100

- Care should be taken to provide correct alignment of the flanges being interconnected with the valve. Suitable lubricant on bolt threads should be used if applicable. Tighten now all bolts using the recommended torque values and apply the crossover sequence method shown in Fig below, to load the pipe and valve evenly and prevent stress on the joints. Bolt torque: please consult gasket datasheet/supplier.

(Bolt N°1 is the bolt closest to biggest gap between the 2 flanges)



Our advice =

- STEP 1 = 30%
- STEP 2 = 60%
- STEP 3 = 100%

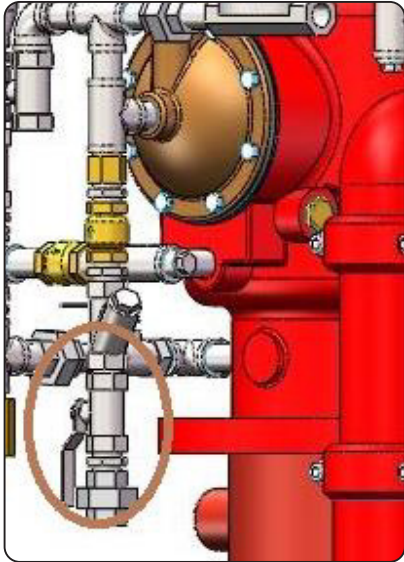
BOLT TORQUE = depends on the applied gasket-type and on the bolt material grade.

- After installation of the valve, install the 3 pressure gauges, 1 or 2 pressure switches, the accelerator (optional), the water motor gong(optional) and the air pressure maintenance device (optional).

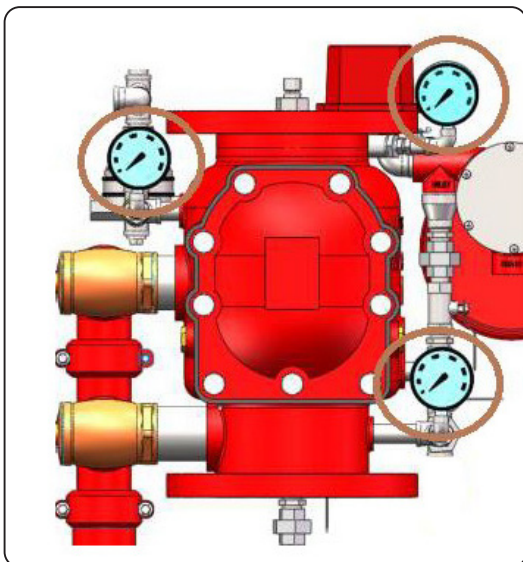
VALVE INSTALLATION AND CONNECTING THE TRIMSET

Use appropriate pipe thread sealant on all threaded connections.

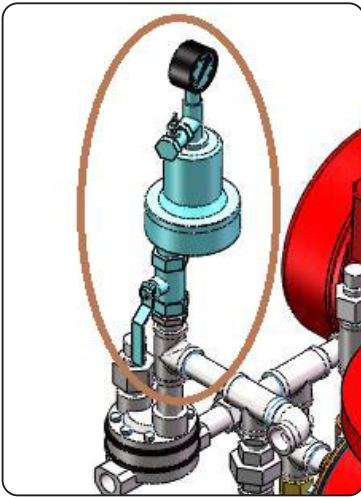
- Connect the water supply to the ball valve N°14 (valve closed).



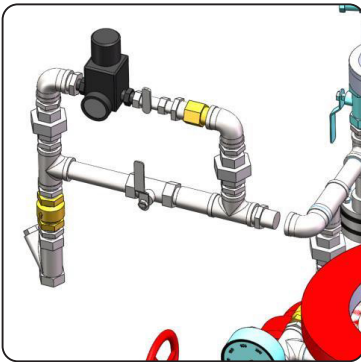
- Connect the 2 main drain valves (N°2,3) to a drain pipe. We advise to use Profit grooved couplings and fittings 2"/DN50.
- Install the 3 pressure gauges (N°5,12 & 20).



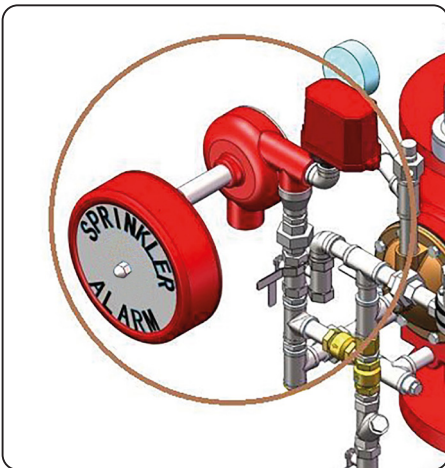
- If applicable: install the accelerator (N°24) with trimset.



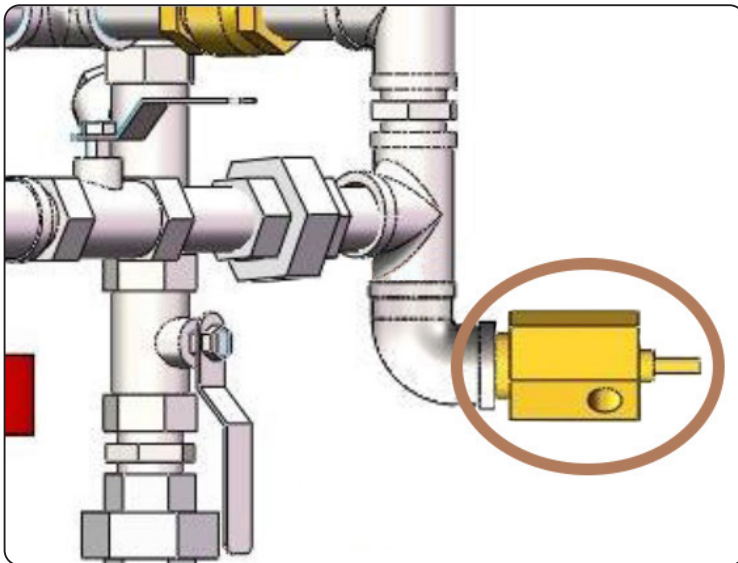
- If applicable: install the APMD and/or connect the compressed air supply (valves closed).



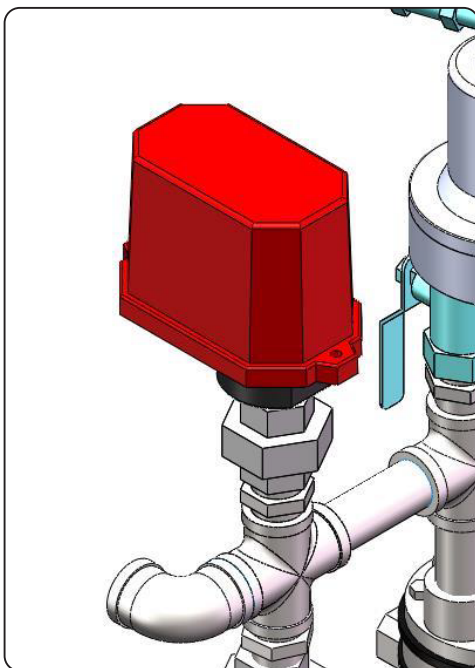
- Install the Alarm Switch (N°19).
Set the switch to activate on a pressure rise of 4-8 psi/28-55 kPa.
Optional: connect the water motor gong (N°17+18).



- Install the drip check valve N°16.

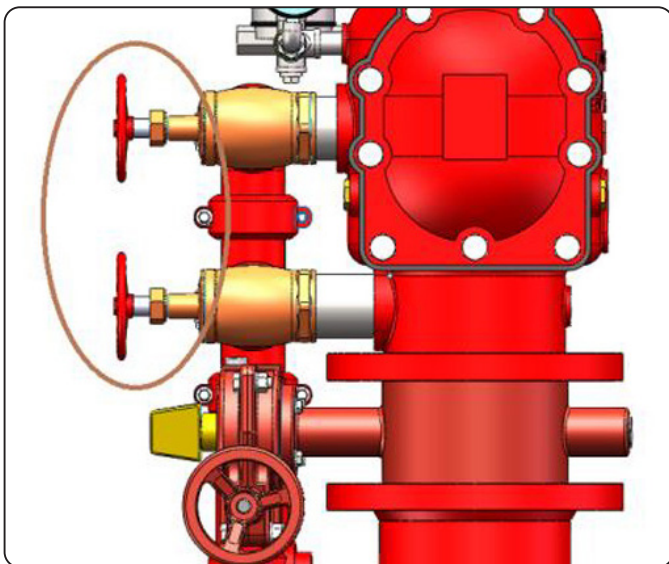


- Optional: install the air supervision pressure Switch (N°4).
Set the switch to activate at a pressure of 2-4 psi/14-28 kPa below the minimum required air pressure.



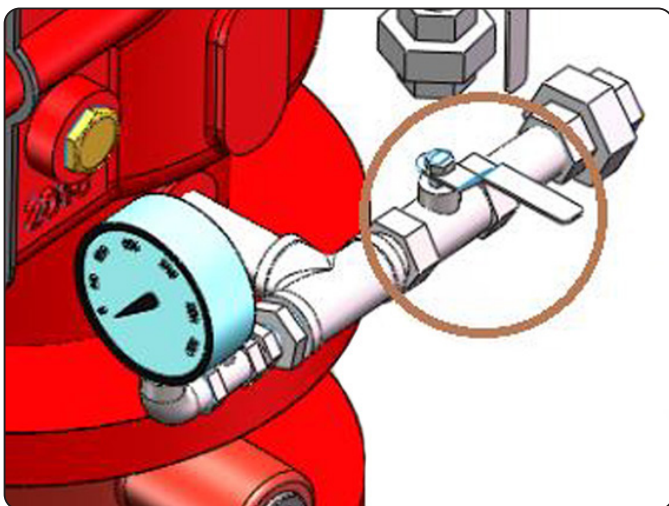
COMMISSIONING OF THE VALVE

STEP 1: check the water supply control valve to be in closed position without any water leakage to the system. Open both drain valves (N°2 & 3 and make sure that there is no water in the valve.



Confirm that all pressure gauges show zero.
Now close both drain valves.

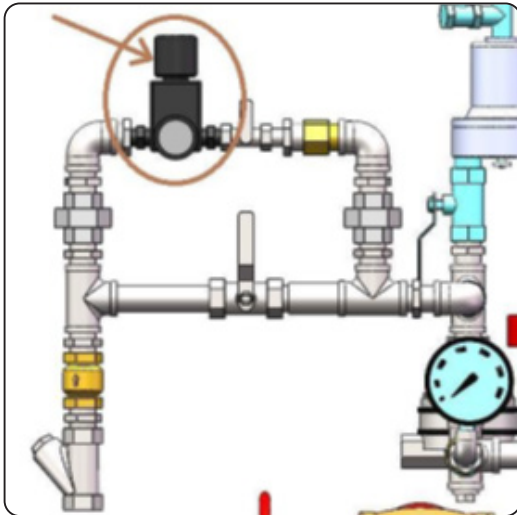
STEP 2: close alarm test ball valve (N°15).



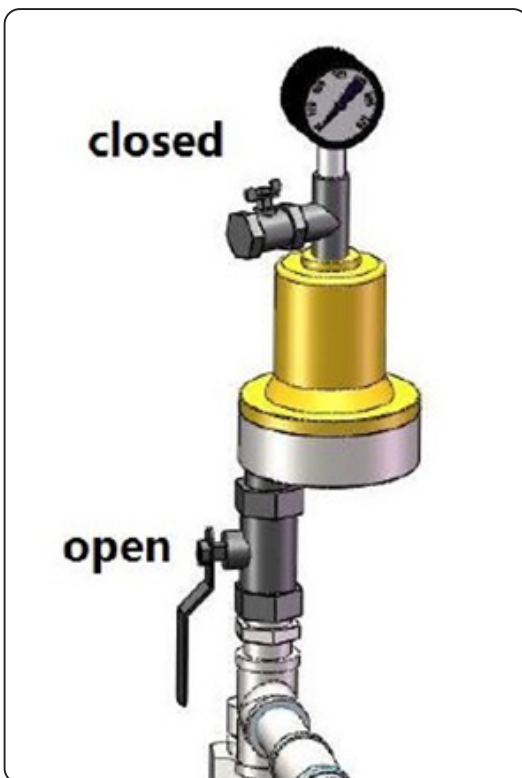
STEP 3: close the ball valve (N°24b) to the accelerator and open ball valve N°25.

STEP 4: charge the system with air by opening the fast fill ball valve (N°32) until the pressure reaches almost the desired set pressure. Close the valve N°32 and open the slow fill valve (N°30).

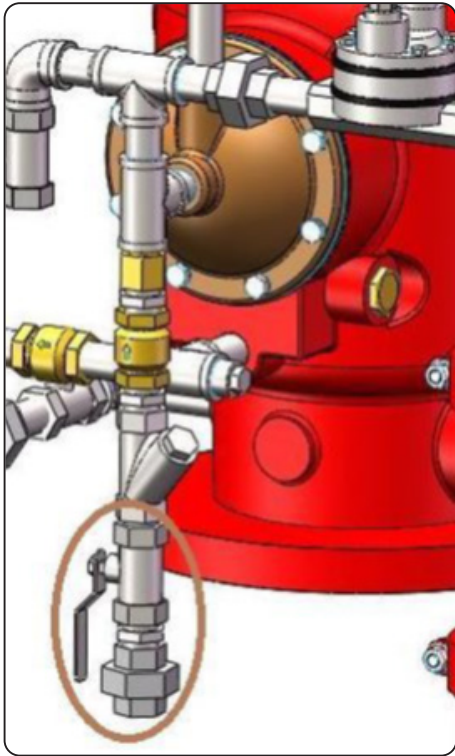
Adjust the regulator to the desired air system pressure.



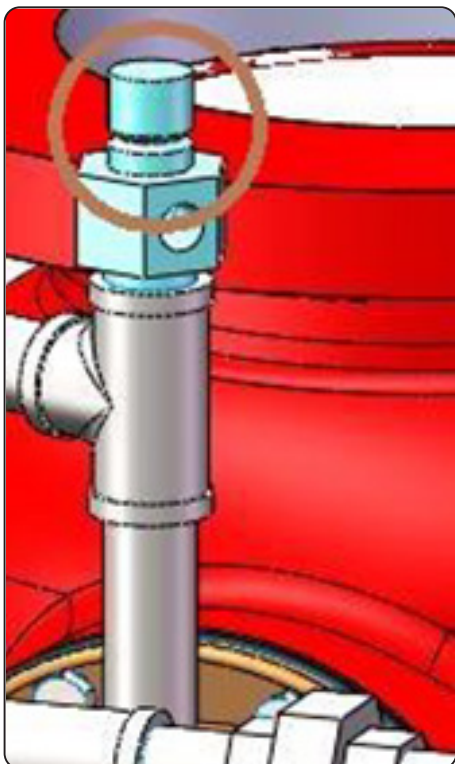
STEP 5: close ball valve N°25 and then open the ball valve (N°24b) to the accelerator.



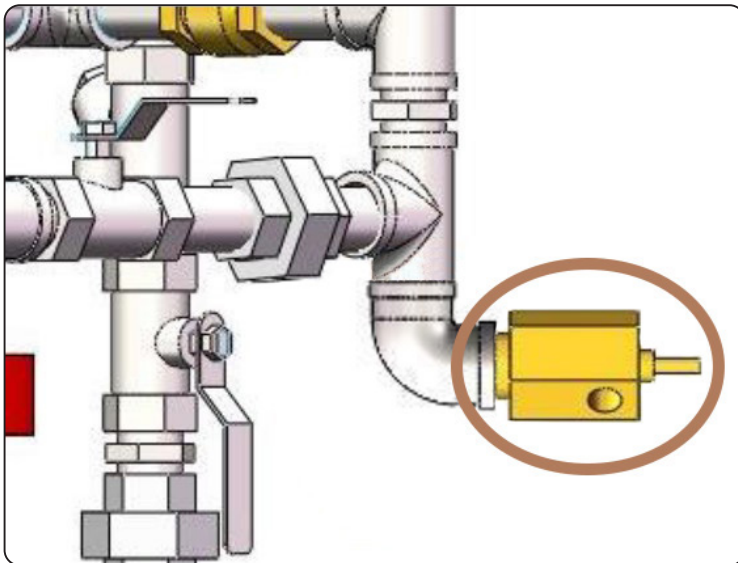
STEP 6: open now the ball valve (N°14) to charge the diaphragm.



STEP 7: pull up auto drain valve (N°22) until no more water leaks from the outlet. Check the pressure gauge (N°20) that it shows the same as the water supply pressure.

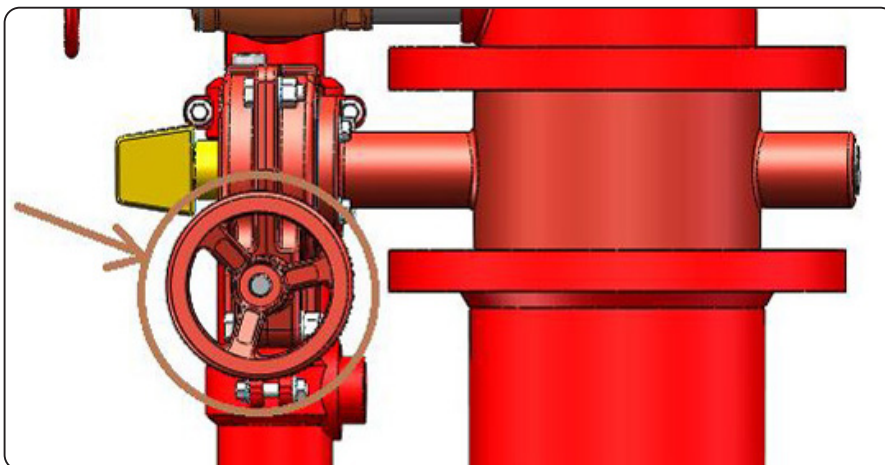


STEP 8: manually open the drip check valve (N°16). Make sure there is no air/water leakage.



STEP 9: open the supply main drain valve.

STEP 10: slowly open the supply main control valve until the water flows steadily from the open water supply main drain valve.



STEP 11: close the water supply main drain valve.

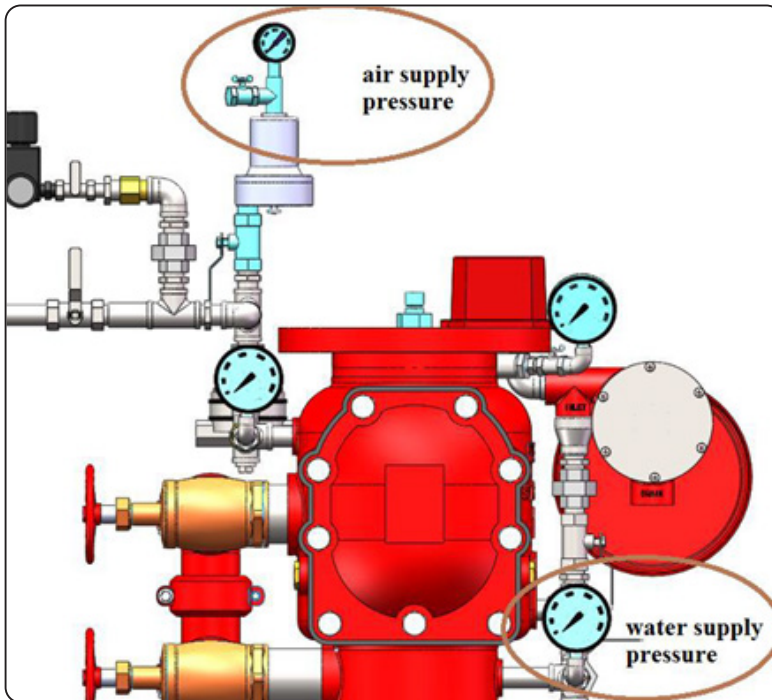
STEP 12: manually open the drip check valve (N°16) once more. Make sure there is no air/water leakage.

STEP 13: open now the main control valve fully.

STEP 14: confirm all valves are in the normal position for operation of the valve, see table.

Valve - N°	Normal operating position
Water supply main control valve	open
Water supply main drain valve (N°2)	closed
System main drain valve (N°3)	closed
Diaphragm-Charge-Line ball valve (N°14)	open
Alarm test ball valve (N°15)	closed
Air slow-fill ball valve (N°30)	open
Air fast-fill ball valve (N°32)	closed
Accelerator venting ball valve (N°25)	closed
Accelerator isolation ball valve (N°24b)	open
Gauge ball valves (N°6,13 and 21)	open
Manual opening (N°9)	closed

**The valve setup is now completed, valve is set and ready for normal operation.
Record the air supply pressure and the water supply pressure.**



RESETTING THE VALVE

STEP 1: close ball valve N°14.

STEP 2: close the water supply main control valve.

STEP 3: stop all air supply.

STEP 4: drain the system fully by opening the main drain valve N°3.
Push the drip check valve (N°16) to release the pressure.

STEP 5: close the main drain valve N°3.

STEP 6: all drains are closed and no leaks can be observed.

STEP 7: all pressure gauges indicate zero.

STEP 8: ball valve 24b is closed and ball valve 25 open (if applicable).

STEP 9: alarm test ball valve N°15 is closed.

Follow now steps 6 to 14 from the section 'Commissioning of the valve'.

II. TESTING THE VALVE

1. WATER FLOW ALARM TEST

Frequency: depending on local requirements (NFPA-25)

- 1.1. Notify the authority that an alarm test will be performed.
- 1.2. Open the main drain valve (N°2, supply side) fully and close again.
- 1.3. Open the alarm test ball valve (N°15).
- 1.4. Confirm that the alarms are activated and working.
- 1.5. Close the alarm test ball valve (N°15).
- 1.6. Push the drip check valve (N°16) to release the pressure.
- 1.7. Confirm that the alarms have stopped (sound and signal) and that the line has drained.
- 1.8. The drip check valve (N°16) is not leaking water.
- 1.9. Notify the authority that the line is back in service.

2. LOW AIR PRESSURE ALARM TEST

Frequency: depending on local requirements (NFPA-25)

- 2.1. Notify the authority that an alarm test will be performed.
- 2.2. Close ball valve N°24b to the accelerator (if installed).
- 2.3. Open the main drain valve (N°2, supply side) fully and close again.
- 2.4. Slowly open the main drain valve (N°3, system side) and record the pressure at which the low air alarm is activated. (There should be no water flowing from the drain!)
- 2.5. Close drain valve N°3.
- 2.6. Close the slow-fill ball (N°30) valve one the APMD.
- 2.7. Open the fast-fill ball valve (N°32) one the APMD until the air pressure is back on system pressure.
- 2.8. Close the valve (N°32) and open the slow fill valve (N°30).
- 2.9. Open the ball valve N°24b to the accelerator (if installed).
- 2.10. Open the main drain valve (N°2, supply side).
- 2.11. Slowly open the water supply main control valve until water is flowing from the drain valve (N°2).
- 2.12. Close the main drain valve (N°2, supply side).
- 2.13. Fully open the water supply main control valve.
- 2.14. Confirm all valves are in the normal position for operation of the valve, see table.

Valve - N°	Normal operating position
Water supply main control valve	open
Water supply main drain valve (N°2)	closed
System main drain valve (N°3)	closed
Diaphragm-Charge-Line ball valve (N°14)	open
Alarm test ball valve (N°15)	closed
Air slow-fill ball valve (N°30)	open
Air fast-fill ball valve (N°32)	closed
Accelerator venting ball valve (N°25)	closed
Accelerator isolation ball valve (N°24b)	open
Gauge ball valves (N° 6,13 and 21)	open
Manual opening (N°9)	closed

- 2.15. Notify the authority that the line is back in service.

3. ANNUAL OPERATIONAL VALVE DRY TRIP TEST

- 3.1. Notify the authority that an alarm test will be performed.
- 3.2. Record system air pressure and water supply pressure.
- 3.3. Open the main drain valve (N°2, supply side) fully to flush.
- 3.4. Close the main water supply valve until almost fully closed (small water flow through drain valve N°2).
- 3.5. Close the main drain valve (N°2, supply side).
- 3.6. Open now the remote test valve (Inspector Test Connection - ITC) to simulate open sprinkler.
- 3.7. Record the air pressure when the valve operates.
- 3.8. Confirm that the charge-line pressure is zero, pressure gauge N°20.
- 3.9. Close the main water supply valve fully.
- 3.10. Close the remote test valve.
- 3.11. Close all air supply.**
- 3.12. Close the charge-line ball valve (N°14)
- 3.13. Reset the system → section 'Resetting the valve'.
- 3.14. Notify the authority that the line is back in service.

4. MAIN DRAIN TEST

- 4.1. Notify the authority that an alarm test will be performed.
- 4.2. Record system air pressure and water supply pressure.
- 4.3. Confirm that there is no water leaking from the drip check valve N°16.
- 4.4. Verify that the air pressure is correct for the water supply pressure.
- 4.5. Open the main drain valve N°2 fully (**supply side!**) to flush the water supply side.
Record the water supply pressure (residual pressure).
- 4.6. Close main drain valve N°2.
- 4.7. Record the water supply pressure again.
- 4.8. Compare the value for residual test with the result of the previous test.
Take the necessary steps in case that there is a degradation.
- 4.9. Check all valves are in the correct position. See table below.

Valve - N°	Normal operating position
Water supply main control valve	open
Water supply main drain valve (N°2)	closed
System main drain valve (N°3)	closed
Diaphragm-Charge-Line ball valve (N°14)	open
Alarm test ball valve (N°15)	closed
Air slow-fill ball valve (N°30)	open
Air fast-fill ball valve (N°32)	closed
Accelerator venting ball valve (N°25)	closed
Accelerator isolation ball valve (N°24b)	open
Gauge ball valves (N° 6,13 and 21)	open
Manual opening (N°9)	closed

- 4.10. Check and confirm there is no drip from the drip check valve N°16.
(leaks from valve intermediate chamber).
- 4.11. Notify the authority that the line is back in service.

III. MAINTENANCE OF THE VALVE

The valve should be at zero pressure and ambient temperature prior to any maintenance. Maintenance engineers & operators are reminded to use correct fitting tools and equipment. Tools causing sparks are only permissible if dust deposits have been removed and no dust cloud is present.

A full risk assessment and methodology statement must be compiled prior to any maintenance. This must include the removal of dust deposits by good housekeeping. The risk assessment must take into account the possibility of the limits of use being exceeded whereby a potential hazard could result.

A maintenance programme should therefore include checks on the development of unforeseen conditions, which could lead to failure.

In systems where corrosion could be a potential hazard, wall thickness checks on the body and bonnet should be made. This requires either the removal of the valve from the pipeline or removal of the bonnet with the system at zero pressure. If the wall thickness has reduced by 25%, the valve must be replaced.

1. VALVE INTERNAL INSPECTION

Before you start: Notify the authority that a valve inspection will be performed and the system will be taken out of service.

- » Open the main drain valve N°2 on the water supply side to flush.
- » Close the main drain on the water supply side.
- » Close the main water supply control valve.
- » Open the main drain on the water supply side. The water must stop flowing completely.
- » Close ball valve N°24b to the accelerator. Open valve N°25.
- » Close the slow fill air supply valve N°30. Confirm that valve N°31 is also closed.
- » Close charge line ball valve N°14. Push the drip check valve (N°22) to remove the pressure from the charge line (check the pressure gauge).
- » Open the main drain valve N°3 on the system side until all water is drained from the system. (if the system has been activated then you should open also the ITC and all drain points).
- » Open the valve N°9 to remove pressure from charge line. Close valve.
- » All water pressure gauges must show zero before the cover plate can be removed.
- » Slowly loosen all cover bolts, then remove one by one and remove the cover plate. Take good care of the cover plate rubber gasket.
- » Now push the latch (that keeps the clapper in place) backwards so the clapper is released.
- » The clapper must be able to rotate freely and easy out of the body to inspect the clapper seal and the bronze seat ring.
- » Clean the clapper and seat ring from dirt. Do not use any abrasives on the sealing parts. Clean dirt from the small holes in the bronze seat ring. Rotate back the clapper.
- » Inspect also the diaphragm for wear or damage. Replace if necessary by a new Profit dry valve diaphragm (see section 'Replacing the diaphragm').
- » When all parts are fit-for-service and need no replacement, install back the cover plate (see section 'Replacing the cover gasket') and put the system back in service (see 'Resetting the valve').

2. REPLACING THE CLAPPER SEAL

Use only original Profit parts.

- » Notify the authority that a valve inspection will be performed and the system will be taken out of service.
- » Follow the steps for 'Valve internal inspection'.

1. When the clapper is rotated outside of the valve body (see valve inspection), remove the center bolt (+ bolt-seal) and the metal retaining ring from the clapper.
2. Dry the moisture (if necessary) from the rubber seal. Remove the clapper seal out of the clapper and check it for damage. Replace if necessary.
3. Check the clapper and clean from dirt. Inspect for any damage.
4. Install the clapper seal back in the clapper, place the retaining ring and assemble with bolt seal and bolt. Use proper torque value (see table).

Valve size	Torque Nm
3" - DN80 4" - DN100	12
6" - DN150 8" - DN200	20

5. Install back the cover plate (see section 'Replacing the cover gasket').
6. Put the valve back in service.

3. REPLACING THE CLAPPER

Use only original Profit parts.

- » Notify the authority that a valve inspection will be performed and the system will be taken out of service.
- » Follow the steps for 'Valve internal inspection'.

1. Close to the valve cover, you can find the clapper shaft bushings (brass hexagon).
Remove these 2 bushings from the valve (careful to keep safe the 2 rubber o-rings).
2. Remove the shaft and keep the released spring separate.
3. Remove now the clapper. Clean the bronze seat-ring inside the valve.
4. Bring the new clapper in the same position and check that the holes for the shaft are in line with the holes in the body of the valve.
5. Re-Install the shaft including the spring (take care to put the spring in the same position as before). Close the shaft with the two bushings + o-rings until metal body contact, apply thread sealant on the bushings!
6. Install the cover with cover-gasket (see section 'Replacing the cover gasket').
7. Put the valve back in service.

4. REPLACING THE COVER GASKET

Use only original Profit parts.

- » Notify the authority that a valve inspection will be performed and system taken out of service.
- » Follow the steps for 'Valve internal inspection'.

1. Slowly loosen all cover bolts, then remove one by one and remove the cover plate.
Take good care of the cover plate rubber gasket.
2. When the cover gasket is found in bad or damaged condition, replace with a new gasket.
3. The cover gasket is o-ring shaped. For easy assembly, use small amount of grease to keep it into the groove of the cover. The o-ring should nicely fit the groove in the cover.
4. Push the cover with gasket against the body while aligning the bolt holes with the threaded holes in the body. Ensure that the clapper spring is touching and loaded against the inside of the cover surface.
5. Insert two cover bolts and tighten up so the cover stays in place (and gasket secured). Now put the remaining bolts and tighten all at the correct maximum torque value. (See table)

Valve size	Torque Nm
3" - DN80 4" - DN100	70-90
6" - DN150 8" - DN200	140-160

6. Put the valve back in service.

5. REPLACING THE DIAPHRAGM

Use only original Profit parts.

- » Notify the authority that a valve inspection will be performed and system taken out of service.
- » Follow the steps for 'Valve internal inspection'.

1. Disconnect the union fittings that connect the trimset.
2. Remove all screws from the diaphragm cap and pull the cap backwards.
3. Remove the diaphragm. Memorize the position of the diaphragm.
4. Clean the inside of the body and the latch from any dirt. Also clean the inside of the cap.
5. Install the new diaphragm. Take care that the holes are well-aligned with the holes in the body.
Put the cap in place and install all bolts.
6. Tighten the bolts with the correct torque. (See table).

Valve size	Torque Nm
3" - DN80 4" - DN100	22-25
6" - DN150 8" - DN200	25-28

7. Connect & tighten the union fittings as before the start.
8. Put the valve back in service. Check the trim set and diaphragm for any leaks.

REVISION TABLE

Date	△	Notes
20/02/2024		Initial release
23/04/2024	A	Page 18 - Revision of the text 'Replacing the clapper seal'.
16/05/2024	B	Page 4 - Revision of the text 'Prior to installation'.