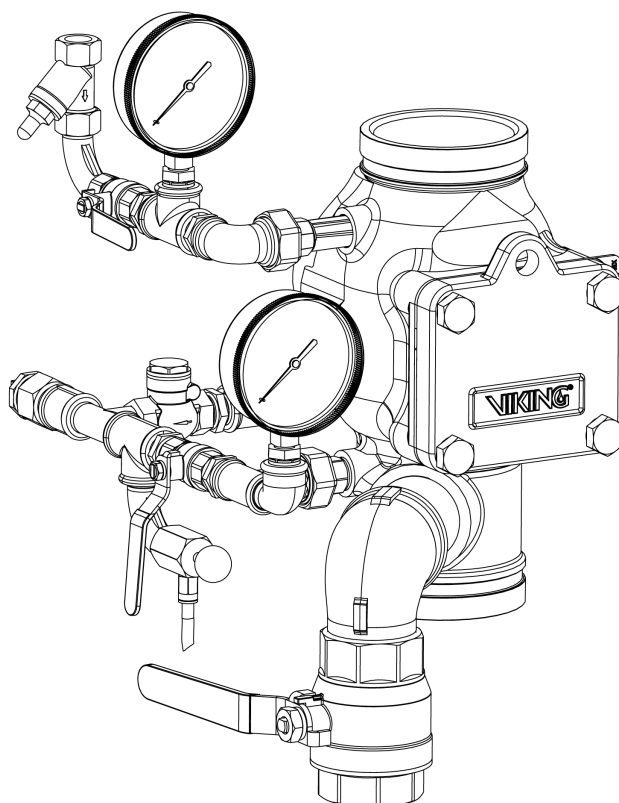




Operating Instructions



Dry pipe alarm valve set

Type DRV-1

IMPORTANT: Read this document before starting any work!

This document is a mandatory part of the product and should therefore always be stored freely accessible close to the product.

Translation of the original operating instructions

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Document identification:

Document name	--
Language	en_US
Document no.	100085056
DOC ID	100097582
Approval / modification no.	EW18-056
Part no.	927081
Revision	01
Version	00
Edition	01-2019

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1 General

1.1 About this document

This document enables the intended use of the product described. Observing all specified instructions and safety instructions is the prerequisite for safe work. Furthermore, the local accident prevention regulations and general safety conditions for the use of the product are also applicable.

If this document refers directly or indirectly to laws, regulations, or directives or quotes from them, the manufacturer cannot be held responsible for the correctness, completeness or up-to-date nature of the reference.

Observe the applicable guidelines, standards, and statutory legislation of the respective country of deployment.

INFORMATION

The manufacturer reserves the right to make modifications resulting from further developments while retaining the key features of the product described without making corrections to this document.

Illustrations in this document are intended to facilitate basic understanding, and may differ from the actual design of the product.

1.2 Safety and warning notices

Safety and warning notices are marked with symbols in this document. The introductory signal words express the respective extent of the danger.

 DANGER

The signal word describes a danger with a high risk level. If the danger is not avoided, it will result in death or serious injury.

 WARNING

The signal word describes a danger with a medium risk level. If the danger is not avoided, it may result in death or serious injury.

 CAUTION

The signal word describes a danger with a low risk level. If the danger is not avoided, it may result in minor or moderate injury.

NOTICE

The signal word describes a danger with a low risk level. If the danger is not avoided, it may result in property and environmental damage.

Further markings

INFORMATION

This marking emphasizes useful tips and recommendations as well as information for efficient and trouble-free operation.

In instructions, this marking starts with the symbol ***i***.

1.3 Intended use

The Dry pipe alarm valve set DRV-1 is intended for automatically controlled flooding of a closed and air pressurized sprinkler pipework in fire suppression systems.

Use for any other or additional purpose is considered as not intended. The manufacturer is not liable for any damage resulting from non-intended use. Intended use also includes observance of the instructions in this operating manual and, in particular, adherence to the inspection and maintenance instructions.

1.4 Safe operation

If products are used improperly or for other than their intended purpose, these products can pose hazards or impair the system or other property. Only use products in an undamaged and fully functional condition. If safe operation (e.g. visible damage) can no longer be assured, put the product out of operation without delay and secure against accidental start-up.

Also observe the following:

- Do not carry out any changes, extensions or modifications without the express permission of the manufacturer or distributor.
This also applies to welding work on load-bearing parts.
- Replace components not in perfect order immediately.
- Use only original spare and wear parts.

Also observe the following basic details:

- National safety regulations
- National accident prevention regulations
- National assembly and installation regulations
- Generally accepted technical principles
- Safety and warning notices as described in this document
- Demands on personnel as described in this document
- If applicable, directives for operation in explosion hazard areas (ATEX directive)

1.5 Operator's obligations

Operator in the sense of this document is any natural person or legal entity using the product personally or on whose behalf it is used. In special cases (e.g. leasing, rental) the operator is the person responsible for ensuring observation of the operating obligations according to the contractual agreements between owner and user of the product.

During operation, the operator is responsible for the legal product stewardship for the protection of the user, personnel or third parties.

The area of responsibility, the competence, and the monitoring of personnel must be precisely defined by the operator.

The operator is obliged to undertake the following:

- Avoid any risks to life and health of the user or third parties.
- Ensure protection against unauthorized access.
- Operate the system taking into consideration the applicable standards, guidelines, and this document.
- Prevent use for other than the intended purpose.
- Check permanent functional readiness of the system at regular intervals.
- Have only persons carry out work who are appropriately qualified, trained, and authorized.
- Ensure the use of suitable personal protective equipment.

1.6 Transport, packaging and storage

Observe the following for transport, packaging, and storage:

- Packaged items must be transported in such a way that they do not create a source of danger by slipping or falling.
- Protect packaged items against external force such as impact, shock and vibrations.
- Inspect the packaged items for completeness and visible signs of damage immediately on receipt.
- Store the packaged items in their original packaging dry, dirt-free, dust-free, and within the specifications defined in this document.
- Dispose of the packaging material in accordance with the prevailing legal provisions and local regulations.

2 Safety

2.1 Qualification of personnel

 WARNING**Inadequately qualified persons pose a hazard!**

Inadequately qualified persons cannot assess the risks involved in handling the product. They expose themselves and others to the risk of severe or fatal injuries.

- All work should be carried out only by persons qualified to do so.

Before starting any work, the following persons must be designated who have the knowledge required to operate the product:

- A person to be responsible for the system
- An operator/person authorized by the operator

For all tasks, only persons from whom it can be expected that they will carry out their tasks reliably are authorized to perform such tasks. Persons whose reaction time is affected, for instance by drugs, alcohol or medication, are not authorized.

Furthermore, all work must only be carried out by persons who meet the following prerequisites:

- They have read and understood this document including the safety instructions and warning notices.
- They are familiar with basic regulations on occupational safety and accident prevention.
- They have been given instruction on handling the product and the entire system.

The various tasks described in this document require that the persons responsible for them have different qualifications. These qualifications are specified in the following section:

Qualified specialist personnel

Qualified specialist personnel are persons with the following qualifications and authorizations:

- These persons are qualified for the respective activities as a result of their education, experience, and participation in a training course conducted by the manufacturer or distributor.
- These persons have the appropriate knowledge of standards, directives, accident prevention regulations, and operating conditions.
- These persons have been authorized by the person responsible for the safety of the system to carry out the necessary activities and are capable of recognizing and avoiding possible risks.

Unauthorized persons



Risk of injury for unauthorized persons!

Unauthorized persons who do not meet the requirements described are not familiar with the risks connected with the function (e.g. triggering and/or isolating) of the system.

This poses risk of injury.

- Keep unauthorized persons away from control equipment.
 - In the case of doubt, speak to persons and instruct them to move away from control equipment.
-

2.2 Personal protective equipment

Personal protective equipment is designed to protect people from risks to their safety and health at the workplace.

Personnel must wear personal protective equipment, which is specially indicated in the individual sections of this document, when carrying out the various tasks.

The personal protective equipment is described in the following section:

Hearing protection



Hearing protection serves to protect hearing from high sound levels (noise).

Protective goggles



Protective goggles cover the entire area of the eyes (including the sides) and are used to protect the eyes from the extinguishing agent and from particles that are whirled up by the extinguishing agent.

Safety footwear



Safety footwear protects the feet from crushing injuries, falling parts, and slipping on slippery substrates.

2.3 Protective devices

Before commissioning of the product, all the protective devices must be correctly installed and functional.

Only remove protective devices when the product has come to a standstill and has been secured to return to service. Where sub-components are supplied, install the protective devices correctly.

2.4 Electric energy hazards

- Work on the power supply must only be carried out by an electrician.
- Electrical compounds of the product must be checked at regular intervals. Loose connections must be repaired and damaged cables must be removed immediately.
- Switch and control cabinets must be kept closed at all times. Only authorized personnel must access such cabinets.

3 Product overview

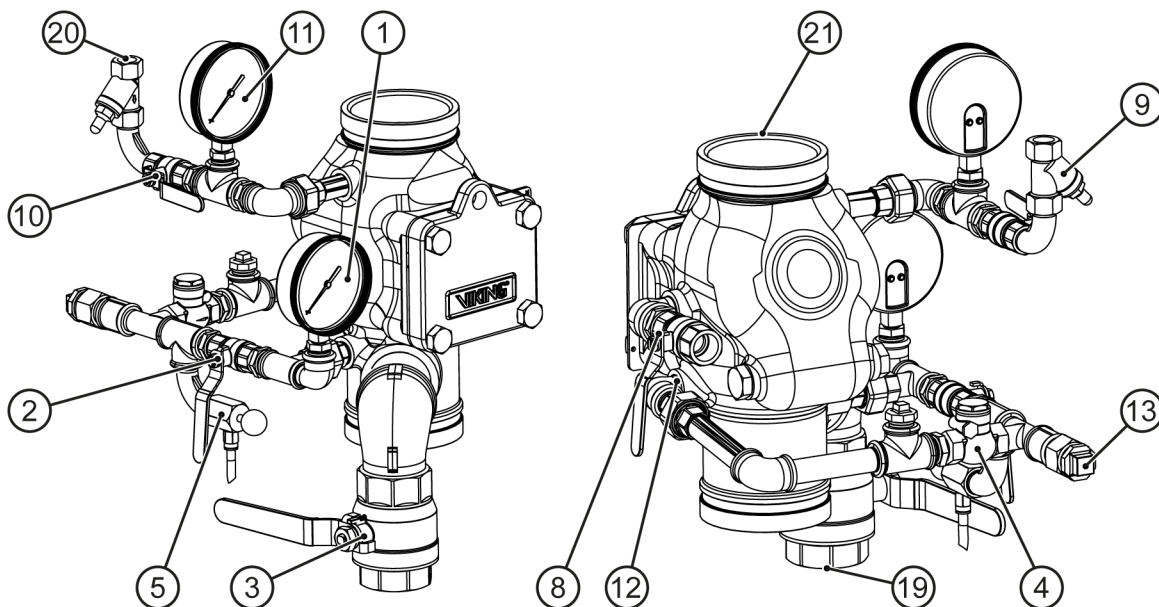
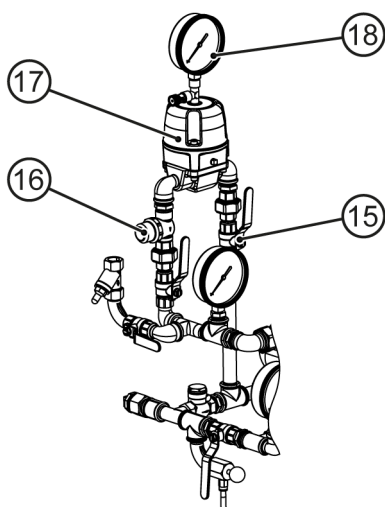


Fig. 1: Dry pipe alarm valve set DRV-1

- | | |
|---------------------------------|----------------------------------------|
| 1 Pressure gauge "water supply" | 10 Ball valve "pressurized air supply" |
| 2 Alarm test valve | 11 Pressure gauge "sprinkler pipework" |
| 3 Main drain valve | 12 Alarm channel |
| 4 Check valve | 13 Connection alarm line option |
| 5 Automatic drip check valve | 19 Connection water supply |
| 8 Drain valve | 20 Connection pressurized air supply |
| 9 Check valve | 21 Connection sprinkler pipework |

Optional accelerator



- | |
|---------------------------------|
| 15 Ball valve "accelerator" |
| 16 Strainer |
| 17 Accelerator |
| 18 Pressure gauge "accelerator" |

Fig. 2: Optional accelerator

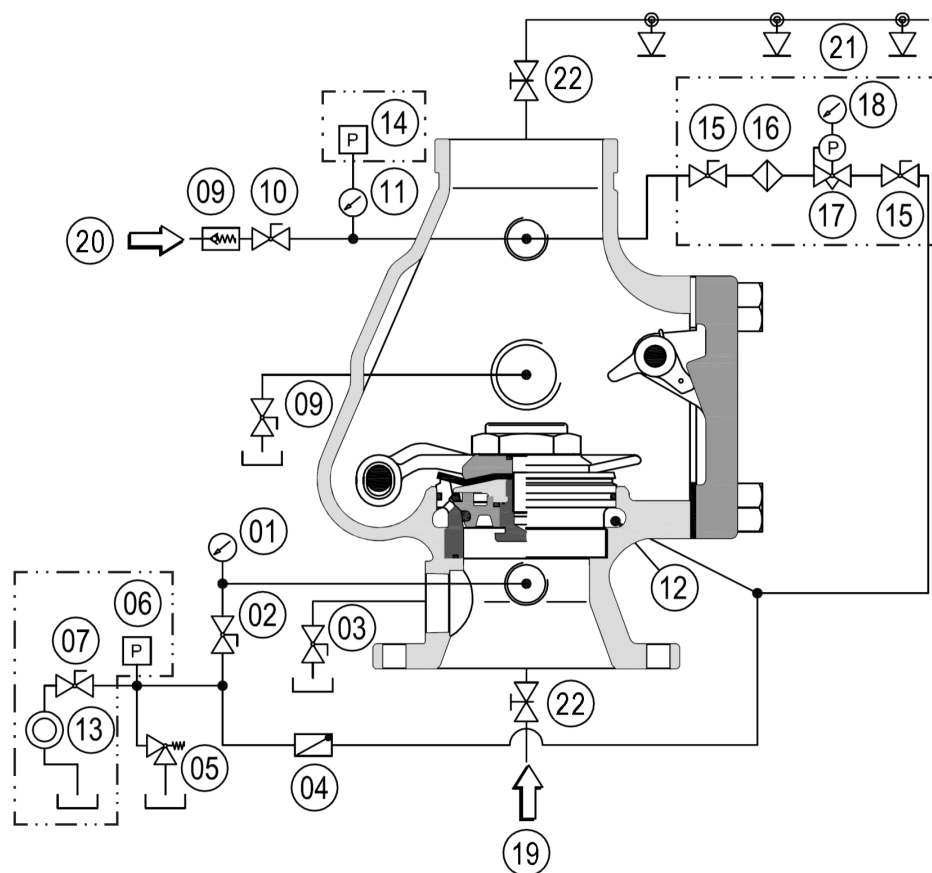


Fig. 3: P&I-Diagram

Item	Description	Function
01	Pressure gauge "water supply"	Display of the water supply pressure
02	Alarm test valve	Is used to test the water motor alarm and the alarm pressure switch without flooding the nozzle pipework
03	Main drain valve	Is used to quickly drain the sprinkler pipework
04	Check valve	Prevents triggering of the valve during an alarm test
05	Automatic drip check valve	Is used to drain water from the alarm line Is used to detect leaks
06	Alarm pressure switch*	Is used to transmit an electric signal if the system is triggered
07	Alarm shut-off valve*	Is used to switch off the water motor alarm
08	Drain valve	Is used to drain the sprinkler pipework
09	Check valve	Prevents a pressure drop in the sprinkler pipework if the pressurized air supply is not operational

Item	Description	Function
10	Ball valve "pressurized air supply"	Is used for servicing the check valve without having to decommission the dry pipe alarm valve set
11	Pressure gauge "sprinkler pipework"	Display of the air pressure in the sprinkler pipework
12	Alarm channel	Guides the water from the valve to the water motor alarm
13	Water motor alarm*	Is used for mechanical, acoustic signal transmission
14	Pressure switch "sprinkler pipework"	Monitoring of the air pressure in the sprinkler pipework
15	Ball valve "accelerator"***	Enables servicing of the strainer and accelerator without having to decommission the dry pipe alarm valve set
16	Strainer**	Protects the accelerator against soiling
17	Accelerator**	Ensures quicker opening of the dry pipe alarm valve set when a sprinkler is triggered
18	Pressure gauge "accelerator"***	Display of the pressure in the accelerator
19	Water supply*	Water inlet into the dry pipe alarm valve
20	Pressurized air supply*	Is used for the pressurized air supply of the sprinkler pipework
21	Sprinkler pipework*	Is used to suppress a fire
22	control valve*	Are used to shut off the water supply or the sprinkler pipework

*not included in scope of delivery





**available as option

4 Variants and options

4.1 Technical data

Valve size	Flange/ Flange (PN16)*	Flange/ Flange (ANSI)**	Flange/ Groove (PN16)*	Flange/ Groove (ANSI)**	Groove/Groove
DN80 / 3"	A/DRV1-3FF (24.3 kg (53.5 lb))	A/DRV1-3FFA (24.3 kg (53.5 lb))	A/DRV1-3FG (21.4 kg (47.27 lb))	A/DRV1-3FGA (21.4 kg (47.27 lb))	A/DRV1-3GG (20.6 kg (45.5 lb))
DN100 / 4"	A/DRV1-4FF (30.8 kg (67.9 lb))	A/DRV1-4FFA (30.8 kg (67.9 lb))	A/DRV1-4FG (27.5 kg (60.6 lb))	A/DRV1-4FGA (27.5 kg (60.6 lb))	A/DRV1-4GG (23.6 kg (52.1 lb))
DN 150 / 6" (165 mm)	A/DRV1-6FF (42 kg (92.6 lb))		A/DRV1-6FG165 (37.2 kg (82.1 lb))		A/DRV1-6GG165 (32.8 kg (72.4 lb))
DN150 / 6" (168 mm)			A/DRV1-6FG168 (37.2 kg (82.1 lb))		A/DRV1-6GG168 (32.8 kg (72.4 lb))
FF = Flange/Flange; FG = Flange/Groove; GG = Groove/Groove					
* For connection with flanges to DIN EN 1092-2					
** For connection with flanges to ANSI B16,5 Klasse 150					

Tab. 1: Variants with weight

Approvals	    <p>LPCB certificate number: 1118c in accordance with standard EN12259-3:2000 + A1:2001 & A2:2005</p>
Max. operating pressure	17.2 bar / 250 psi
Min. operating pressure	1.4 bar / 20 psi
Max. downstream pipework pressure	☞ Chapter 4.1.2 "Pressurized air supply" on page 18
Nominal diameter	DN 80/3", DN 100/4", DN 150/6"
Installation position	vertical
Media	Town water; foam-water mixture*; compressed air; inert gas

Operating temperature	4 °C to 60 °C (39 °F to 140 °F)
* Foam applications in accordance with FM only in combination with system approval.	

Tab. 2: Technical data

Valve housing	Ductile cast iron; wet painted RAL 3000
Seals	Rubber
Valve seat	Brass
Valve flap	Copper alloy

Tab. 3: Material

NOTICE

Material damage due to saline water!

Saline media may cause substantial damage to the system and its components.

- Never use saline water.
 - Dry pipe alarm valves supplied with foam or other corrosive water must be flushed with town water prior to recommissioning.
-

4.1.1 Pressure loss and equivalent length

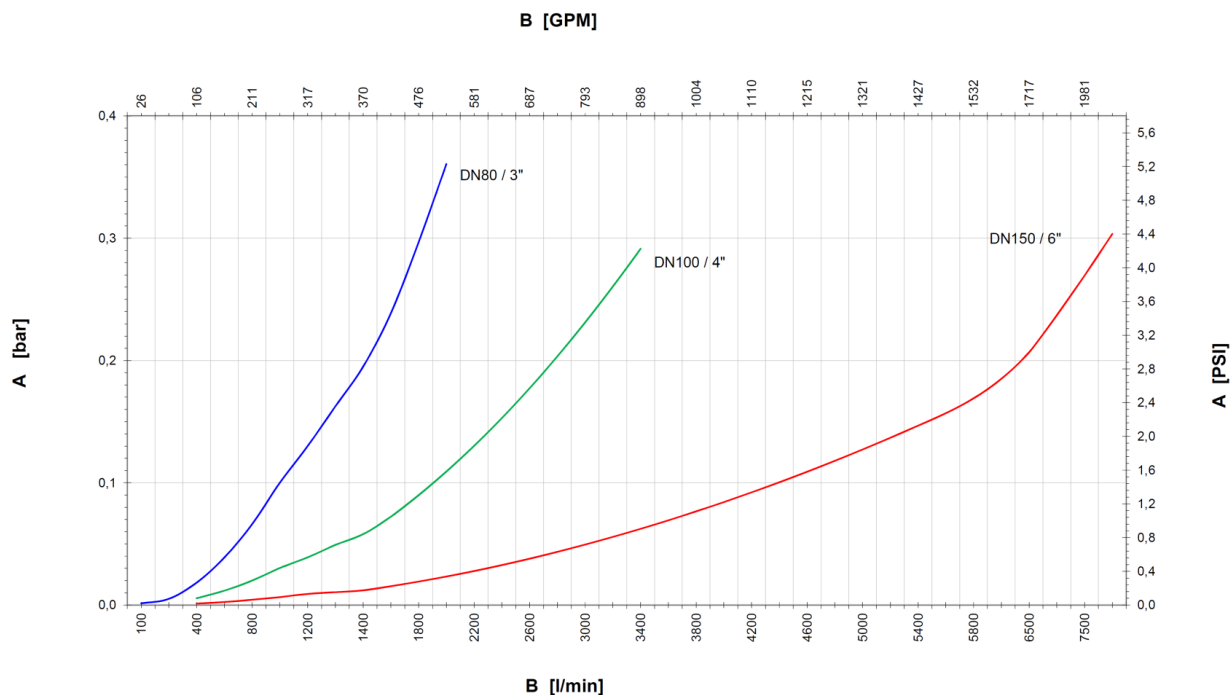


Fig. 4: Pressure loss to flow rate

- A Pressure loss ΔP
- B Flow rate

Nominal diameter	Pipe size	Equivalent length		Δp		Volumetric flow at a speed of 6 m/s (19.7 ft/s)	
	[mm]	[m]	[ft]	[bar]	[psi]	[l/min]	[GPM]
DN80	88.9 x 2.9	7.3	23.95	0.165	2.39	1953	516
DN100	114.3 x 3.2	7.89	25.89	0.137	1.98	3292	870
DN150	168.3 x 4	11.59	38.03	0.132	1.92	7565	1919

Tab. 4: Equivalent length for pipe according to DIN EN 10220

Nominal diameter	Pipe size	Equivalent length		Δp		Volumetric flow at a speed of 6 m/s (19.7 ft/s)	
	[mm]	[m]	[ft]	[bar]	[psi]	[l/min]	[GPM]
DN80	88.9 x 5.49	5.34	17.52	0,165	2.39	1719	494

DN100	114.3 x 6.02	6.08	19.93	0,137	1.98	2959	782
DN150	168.3 x 7.11	9.55	31.34	0,132	1.92	6716	1774

Tab. 5: Equivalent length for pipe according to Schedule 40

4.1.2 Pressurized air supply

An automatic pressurized air/inert gas supply should be installed in order to compensate for pressure losses in the sprinkler pipework.

INFORMATION

Air pressure in the sprinkler pipework
 Set the air pressure in the sprinkler pipework according to the water supply pressure:

$$p_{air} = 1/5 p_{water\ supply\ pressure} + 1.5\ bar\ (safety\ factor)$$

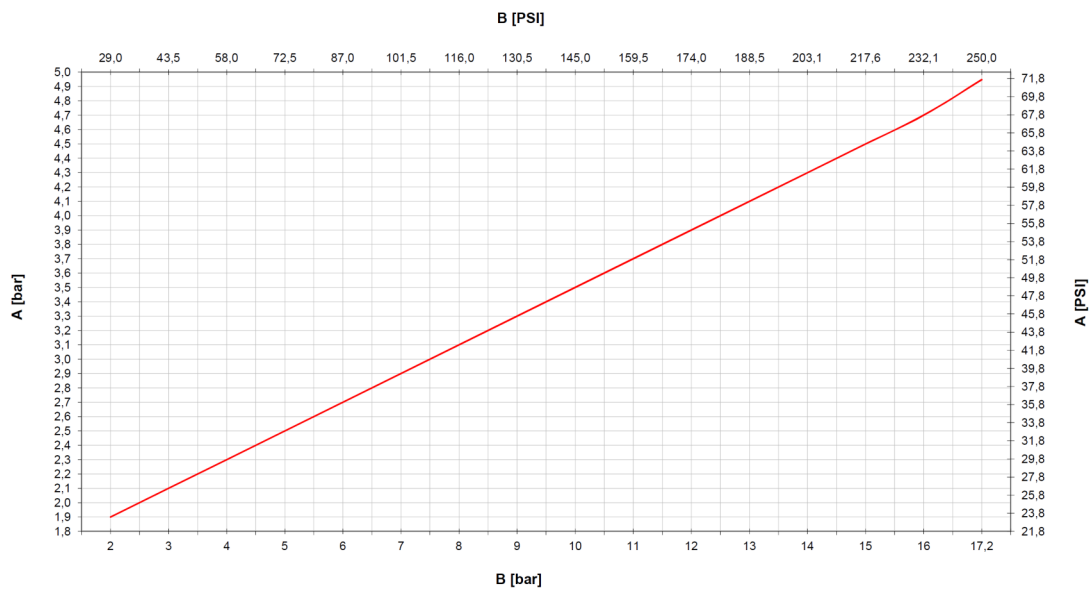


Fig. 5: Relation of air pressure in the sprinkler pipework to water supply pressure*

- A Water supply pressure
- B Air pressure in the sprinkler pipework

*The figure is for reference purposes only

INFORMATION

The time between sprinkler triggering and dry pipe alarm valve triggering may extend with increasing air pressure.
 With higher pressures, the manufacturer recommends the application of an accelerator.

4.1.3 Optional compressed air supply unit

This unit is installed in the line between the pressurized air supply and the dry pipe alarm valve. The ball valve "bypass line" must face upwards.

The line limits topping up of the air quantity via the throttle (Fig. 6/03) in order to prevent excessively long triggering times of the dry pipe alarm valve. Quick filling of the sprinkler pipework via the ball valve (Fig. 6/01) during commissioning or servicing is possible.

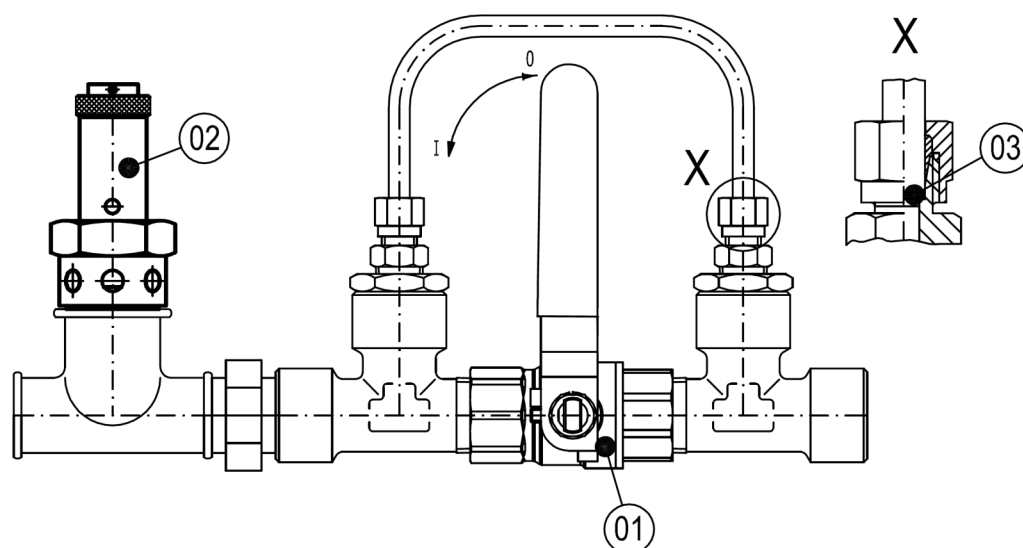


Fig. 6: Optional compressed air supply unit

- 01 Ball valve "bypass line"
- 02 Safety valve (optional)
- 03 Throttle

Part	Part no.
Compressed air supply unit (optional)	DVR1-AS

Depending on the current water supply pressure, a safety valve (Fig. 6/02) may be ordered separately.

Part	Can be used for water pressure		Part no.
Safety valve 3.5 bar	to 10 bar	to 146 psi	131054
Safety valve 3.9 bar	10.1 to 12 bar	147 to 175 psi	849833
Safety valve 4.3 bar	12.1 to 14 bar	176 to 203 psi	649834
Safety valve 4.7 bar	14.1 to 16 bar	204 to 232 psi	849835

4.1.4 Drainage water

If the dry pipe alarm valve has triggered, the drainage water of the automatic drain valve must be discharged into an open drain pipe.

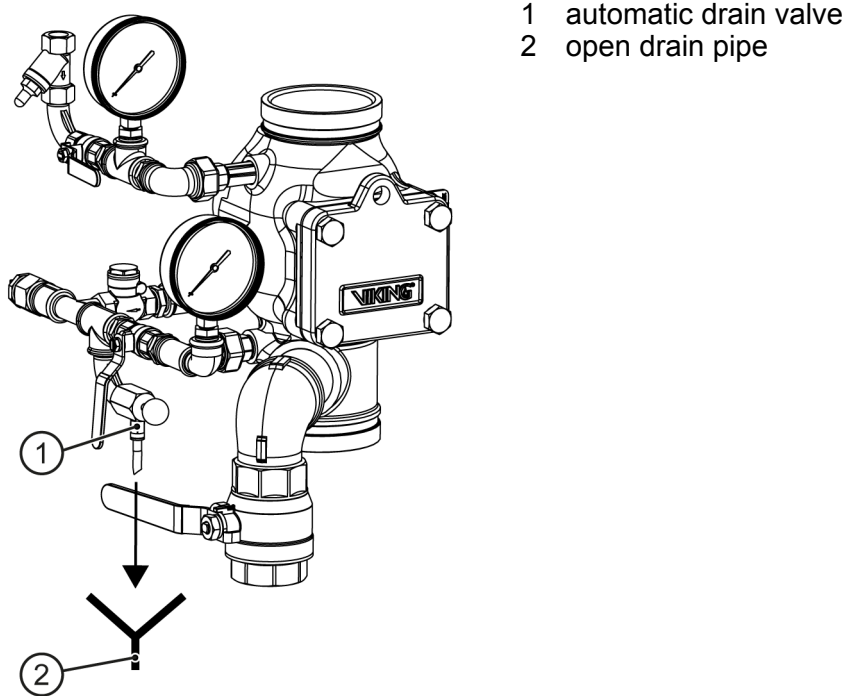


Fig. 7: Drainage water drain pipe

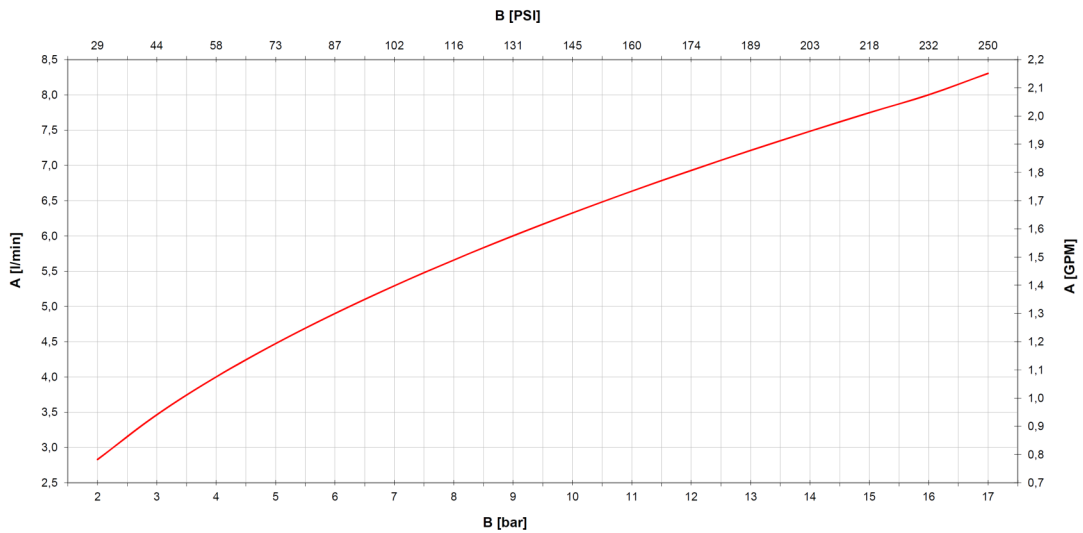


Fig. 8: Drainage water quantity to water supply pressure

- A Drainage water quantity
- B Water supply pressure

4.2 Dimensions

4.2.1 Dimensions

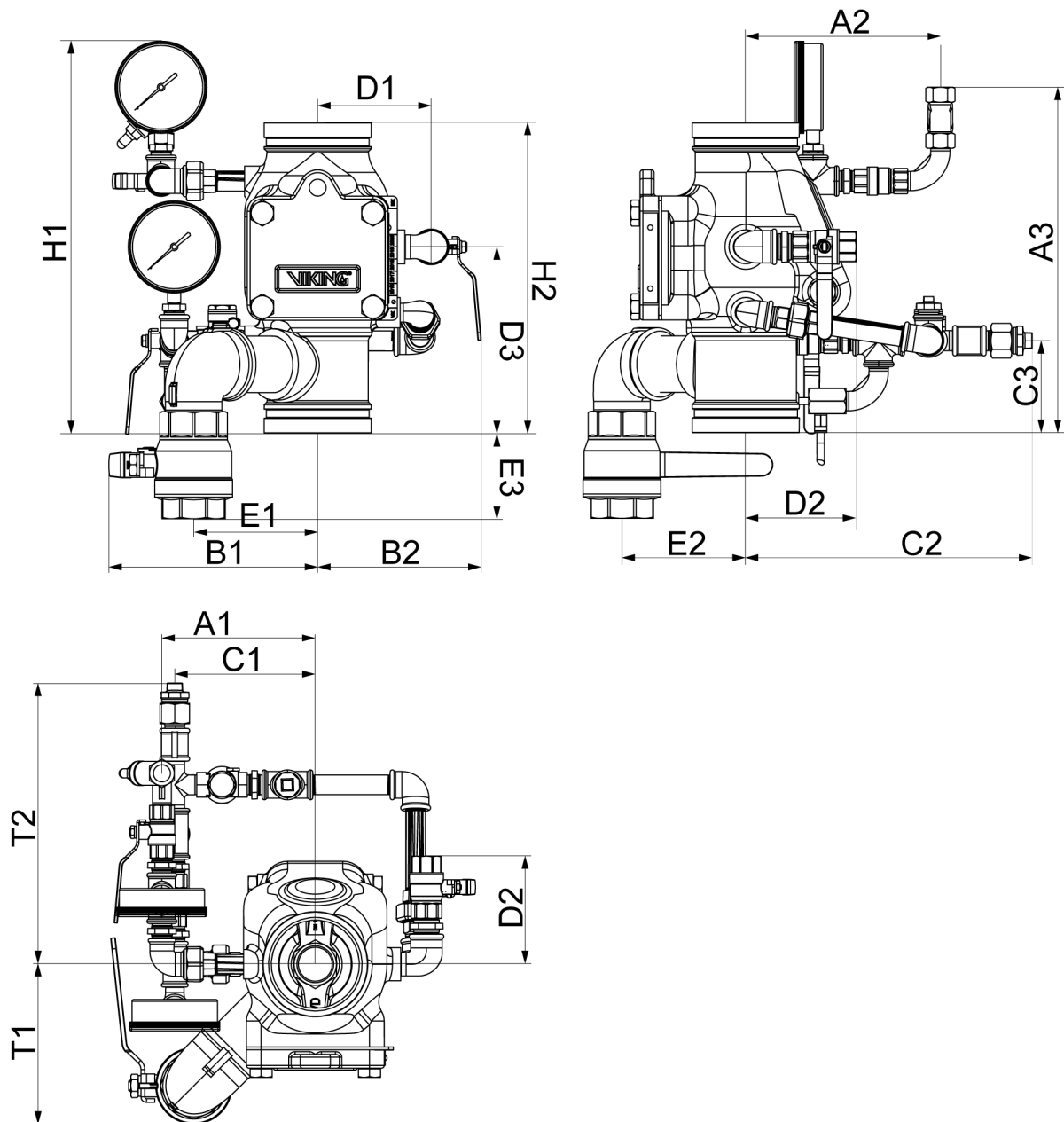


Fig. 9: Dimensions dry pipe alarm valve set

Flange/Flange and Flange/Groove				Groove/Groove		
Size	DN80	DN100	DN150	DN80	DN100	DN150
A1	146	161	191	146	161	191
A2	197	197	197	197	197	197
A3	344	344	344	339	357	355
B1	192	208	226	192	208	226
B2	164	174	194	164	174	194
C1	139	154	184	139	154	184
C2	284	284	284	284	284	284
C3	85	88	85	80	98	95
D1	111	121	141	111	121	141
D2	116	116	116	116	116	116
D3	185	188	187	180	198	198
E1	125	135	153	125	135	153
E2	125	135	153	125	135	153
E3	35	104	107	70	94	97
H1	403	406	403	398	416	408
H2	300	320	335	295	330	345
T1	153	177	195	153	177	195
T2	306	306	306	306	306	306

Tab. 6: Dimensions dry pipe alarm valve set

4.2.2 Dimensions of dry pipe alarm valve set with optional accelerator

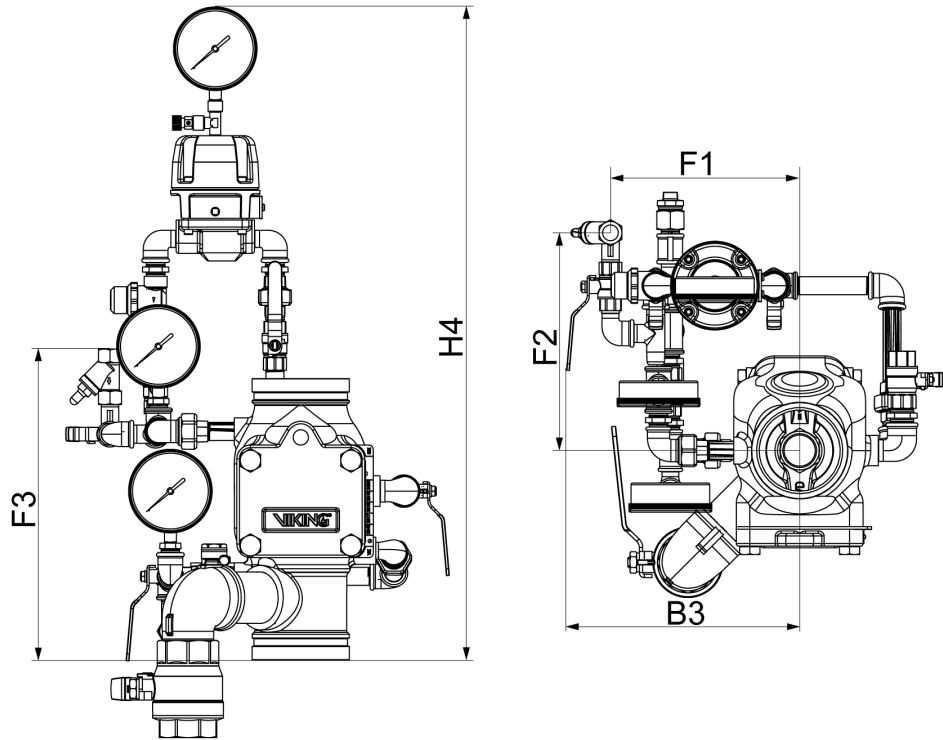



Fig. 10: Dimensions of dry pipe alarm valve set with optional accelerator

Part	Part no.	Weight
Accelerator set (refer to  Chapter 6.8.2 "Accelerator set" on page 37)	DRV1-AK	6 kg (13.23 lb)

Flange/Flange and Flange/Groove				Groove/Groove		
Size	DN80	DN100	DN150	DN80	DN100	DN150
B3	251	266	296	251	266	296
F1	202	217	247	202	217	247
F2	229	229	229	229	229	229
F3	344	347	344	339	357	354
H4	716	716	716	711	729	724

Tab. 7: Dimensions of dry pipe alarm valve set with optional accelerator

4.2.3 Dimensions of dry pipe alarm valve set with monitoring set for sprinkler pipe network (optional)

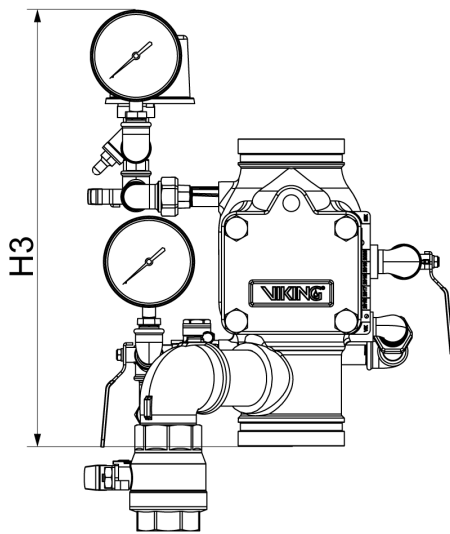


Fig. 11: Dimensions of dry pipe alarm valve set with monitoring set for sprinkler pipe network

Part	Part no.	Weight [kg]
Monitoring set for sprinkler pipe network	DRV1-MK	1

Flange/Flange and Flange/Groove				Groove/Groove		
Size	DN80	DN100	DN150	DN80	DN100	DN150
H3	453	441	453	448	466	463

Tab. 8: Dimensions of dry pipe alarm valve set with monitoring set for sprinkler pipe network (optional)

4.3 Pipework components

4.3.1 Alarm line options

Different alarm line options are available (see product catalogue).

4.3.2 Accelerator D2

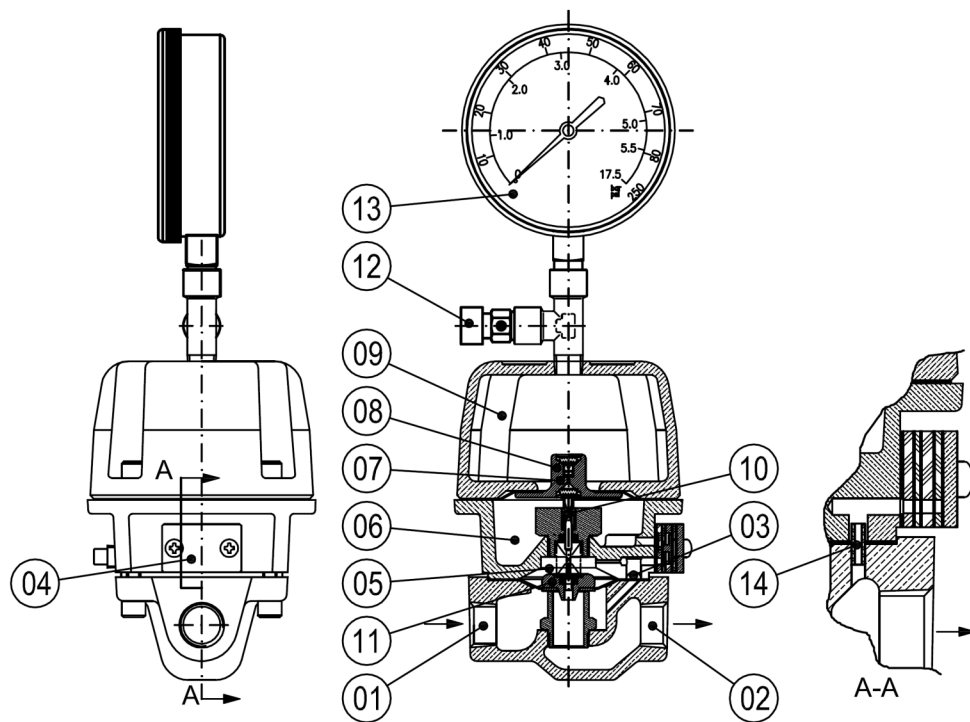


Fig. 12: Accelerator D2

- 01 Inlet
- 02 Outlet
- 03 Screen
- 04 Anti-flood assembly
- 05 Lower chamber
- 06 Middle chamber
- 07 Throttle
- 08 Diaphragm cover
- 09 Upper chamber
- 10 Release rod
- 11 Diaphragm piston
- 12 Vent plug
- 13 Pressure gauge 80 psi / 5.5 bar extended 250 psi / 17.2 bar
- 14 Locating sleeve

Accelerator type D2 works according to the pressure differential principle. If the accelerator is pressurized with compressed air at the inlet (Fig. 12/01), the compressed air enters the lower chamber (Fig. 12/05) through the screen (Fig. 12/03) and the middle chamber (Fig. 12/06) through the anti-flood assembly (Fig. 12/04). From the middle chamber the compressed air flows slowly through a throttle (Fig. 12/07) in the diaphragm cover (Fig. 12/08) into the upper chamber (Fig. 12/09).

After the initial charging time, the system pressure is the same in all the chambers. Make sure the vent plug (Fig. 12/12) is closed. If the pressure gauge (Fig. 12/13) displays identical pressure to the pressure gauge of the pressurized air supply, the accelerator is ready. The pressure at the outlet (Fig. 12/02) of the accelerator is atmospheric.

If sprinklers of the sprinkler pipework open, the pressure in the middle and lower chambers is reduced at the same speed as in the pipe system. The throttle in the diaphragm cover limits the amount of compressed air escaping from the upper chamber. This results in relative higher pressure in the upper chamber. Due to this pressure difference, the diaphragm cap including the release rod (Fig. 12/10) is pressed down. The pressure escapes from the bottom chamber which enables the inlet pressure to lift the diaphragm piston. The compressed air is then released to the outlet (Fig. 12/02) of the accelerator. The compressed air now located in the outlet of the accelerator flows through the locating sleeve (Fig. 12/14) into the anti-flood assembly and prevents water entering the accelerator.

The compressed air from the sprinkler pipework flows through the accelerator into the alarm channel of the dry pipe alarm valve increasing the force on the underside of the valve clapper. This results in a much faster opening of the valve.

4.3.2.1 Charging times compressed air of the accelerator

The charging time can be determined without having to decommission the dry pipe alarm valve set. A stopwatch is required to determine the charging time. The time depends on the sprinkler pipework pressure (see ↗ *“Charging times compressed air” on page 26*).

Sprinkler pipework pressure [bar/psi]	2.5 / 36.3	3 / 43.5	3.5 / 50.8	4 / 58	4.5 / 65.3	5 / 72.5
Charging time pressure increase from 1 bar to 2 bar [min:sec]	1:02	00:49	00:41	00:37	00:33	00:30

Tab. 9: Charging times compressed air

Perform the check as follows:

1. ▶ Shut off the ball valves (Fig. 22/01+02).
2. ▶ Open the vent plug (Fig. 22/04) and release the pressure from the accelerator.
Note: This process can take up to 10 minutes.
3. ▶ Remove the cap (Fig. 22/06) to open the strainer (Fig. 22/05).
⚠ CAUTION! Risk of injury due to pressurized parts
If pressure relief is not executed fully, there is a risk of injury.
 - Carefully loosen the cap. Check whether compressed air is escaping and only then loosen the level plug fully.
4. ▶ Clean the strainer (Fig. 22/05) and seal it again.
5. ▶ Seal the vent plug (Fig. 22/04) again.
6. ▶ Open the ball valve (Fig. 22/01) and observe the pressure gauge (Fig. 22/03).
7. ▶ Wait until the pressure has increased to 1 bar (14.5 psi).
8. ▶ Measure the time of the further increase in pressure until 2 bar (29 psi) are achieved.
9. ▶ Compare the measured time with the values in Table Fig. 22.
 - ⇒ If the deviation is greater than $\pm 10\%$, the accelerator needs servicing (observe the instructions for use of the accelerator D2).
10. ▶ Wait until the pressure gauge (Fig. 22/03) and the pressure gauge "pressurized air supply" display identical pressure.
Note: This process can take up to 10 minutes.
11. ▶ Open the ball valve (Fig. 22/02).
 - ⇒ The accelerator is ready.

4.3.3 Automatic drain valve

Art.-Nr. 845951

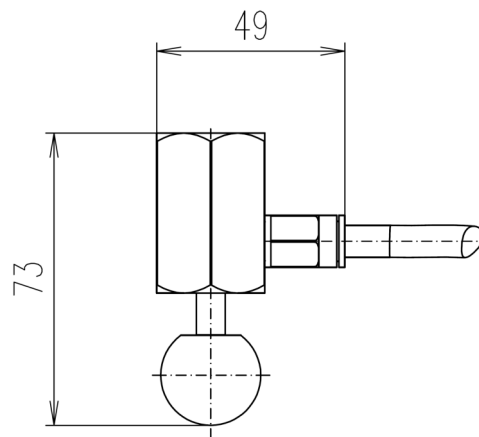


Fig. 13: Automatic drain valve

Nominal pressure	17.2 bar / 250 psi
Flow coefficient	k = 2 (imperial ~ 0.14) permanent leakage k ≤ 20 (imperial ~ 1.4) if the ball button is pressed

Tab. 10: Technical data

Valve housing	Brass
Valve rod	Brass
Button	Plastic
Spring	Stainless steel

Tab. 11: Material

5 Functional description

The dry pipe alarm valve set consists of a dry pipe alarm valve and its associated trim. It has the following functions:

- Releasing sprinkler system water in the event of a fire if one or several sprinklers have been activated.
- Triggering the hydraulic and electric alarm devices in the event of a fire (water motor alarm, alarm pressure switch).
- Disconnecting the water supply from the compressed air in the sprinkler pipework.
- Monitoring of the pressures in the water supply and the sprinkler pipework.
- Disconnecting the area threatened by frost from the water supply, preventing the sprinkler pipework from freezing during periods of frost.

5.1 Dry pipe alarm valve

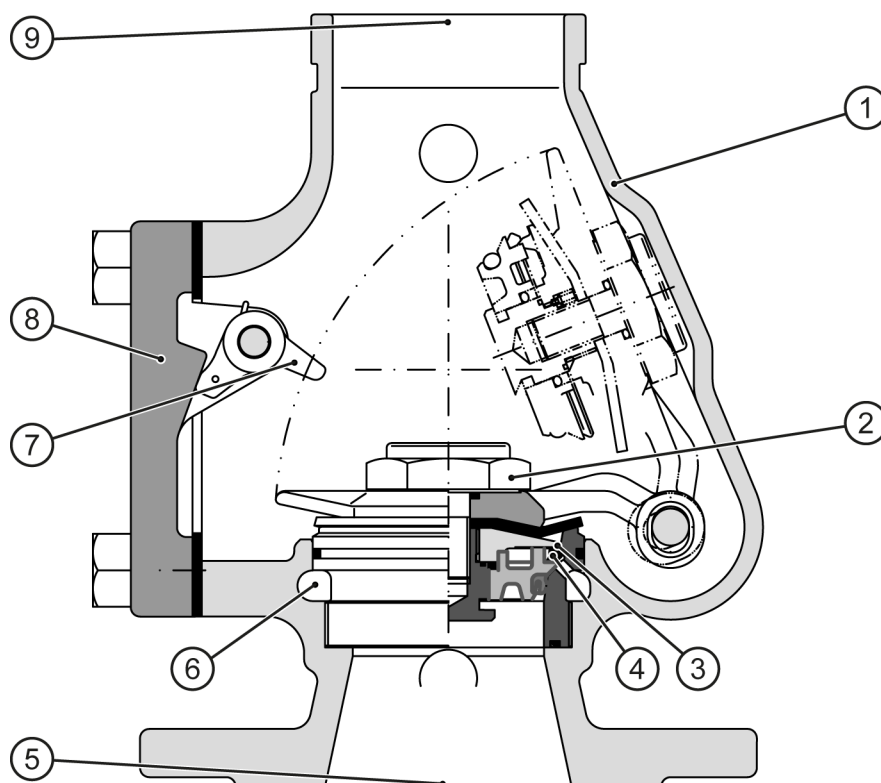


Fig. 14: Dry pipe alarm valve (sectional drawing)

- | | |
|-----------------------------|-----------------------------------|
| 1 Dry pipe alarm valve | 6 Alarm channel |
| 2 Valve clapper | 7 Locking device |
| 3 Thrust ring | 8 Handhole cover |
| 4 Spring washer | 9 Sprinkler pipework (connection) |
| 5 Water supply (connection) | |

If the dry pipe alarm valve (Fig. 14/1) is ready for operation the valve clapper (Fig. 14/2) is closed and thrust ring (Fig. 14/3) and spring washer (Fig. 14/4) are locking up the valve clapper. A certain air pressure from the sprinkler pipework (Fig. 14/9) presses on the valve clapper from above, so that the valve clapper resists the current water pressure from the water supply (Fig. 14/5) without opening.

INFORMATION

In operational state the valve clapper is closed at a pressure ratio of:

- 1 (air pressure) : 5 (water pressure)

If the air pressure drops to less than $\frac{1}{5}$ of the water pressure the water pressure opens the valve clapper. Example: At a water pressure of 10 bar (145 psi) the valve clapper opens at an air pressure less than 2 bar (29 psi).

Further information on the ratio air pressure/water pressure: ↪ Chapter 4.1.2 “Pressurized air supply” on page 18.

In case of a fire, sprinklers of the sprinkler pipework open and the air pressure in the sprinkler pipework drops.

If the air pressure in the sprinkler pipework (Fig. 14/9) drops to less than $\frac{1}{5}$ of the water pressure (Fig. 14/5), the water pressure unlocks thrust ring (Fig. 14/3) and spring washer (Fig. 14/4) and opens the valve clapper (Fig. 14/2):

- The water floods the sprinkler pipework (Fig. 14/9) and initiates the extinguishing process.
- The water passes through alarm channel (Fig. 14/6) to the alarm line and initiates the alerting.

INFORMATION

The triggering time is proportional to the air pressure in the sprinkler pipework.

After opening the clapper valve (Fig. 14/2) the locking device (Fig. 14/7) keeps the clapper valve in an open position and prevents the extinguishing process to be interrupted by closing the clapper valve. By opening the handhole cover (Fig. 14/8) the locking device can be removed from the clapper valve.

6 Installation

6.1 General

⚠ CAUTION**Malfunctioning due to incorrect installation position!**

If the dry pipe alarm valve is installed in a horizontal position, it will not function.

Fire fighting is not possible.

- Install the dry pipe valve set in a vertical position.

Installation instructions:

- Only install the dry pipe alarm valve set in a zone without the risk of frost or mechanical damage.
- The dry pipe alarm valve is intended only for operation with town water or a foam-water mixture. Do *NOT* use saline water (or other chemicals).
- The valve must be equipped as shown below. Each deviation from the component size or arrangement may impair proper operation of the valve.
- If available, remove all protective devices from the openings of the set.
- Sealant (recommended: Teflon tape or Permabond A1044 or equivalent sealant) to the outside threads of all required pipe connections. Observe the instruction manual of the sealant!
- Ensure that no material or other foreign particles enter nipples or openings of the valve or the pipework components.

INFORMATION

- *All the supplied fittings comply with EN 10242. The threads of all pipes comply with ISO 7-1. Sealants excluded.*

6.2 Alarm line

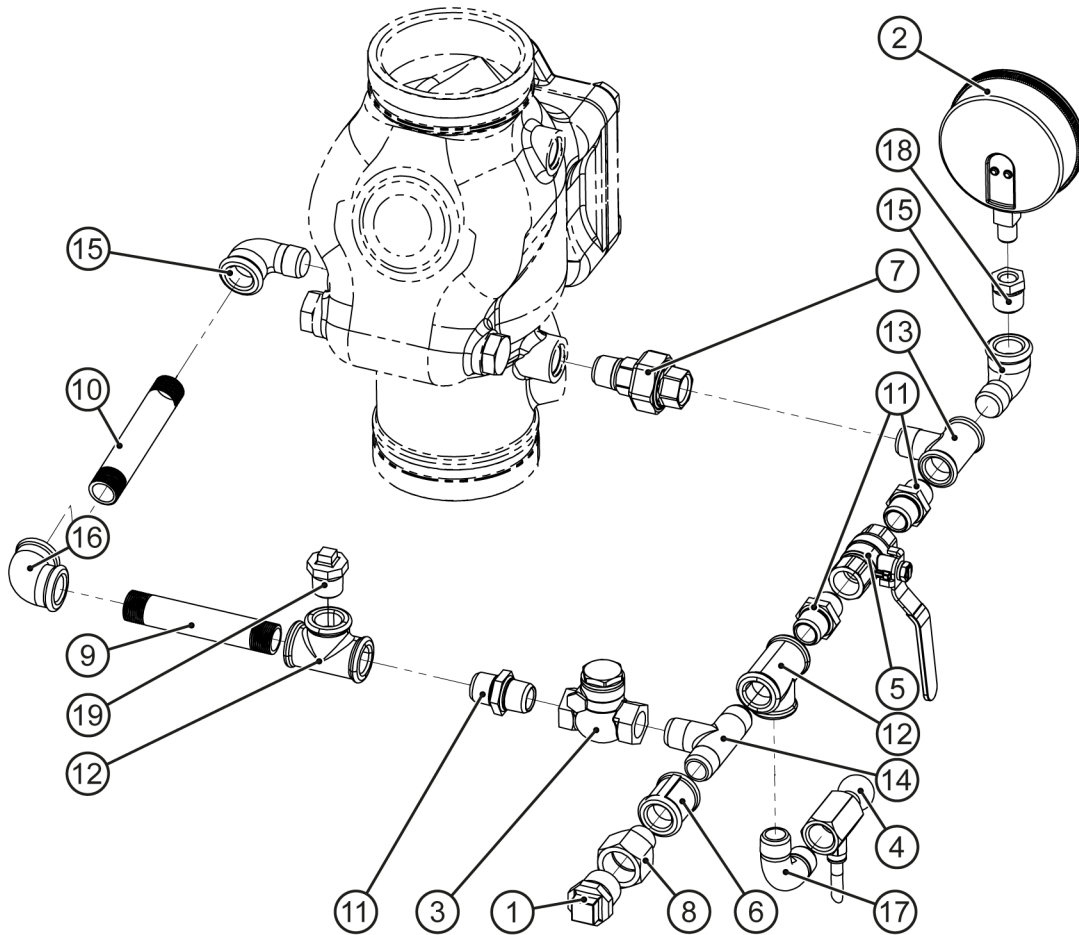


Fig. 15: Pipework alarm line

- | | |
|----------------------------------------------|----------------------------------|
| 1 Plug T9 1/4 (Connection alarm line option) | 10 Pipe nipple DN15 (1/2") x 115 |
| 2 Pressure gauge 20.7 bar (300 psi) | 11 Double nipple N8 1/2" |
| 3 Check valve 1/2" | 12 T-piece B1 1/2" |
| 4 Automatic drip check valve with hose | 13 T-piece 133 1/2" |
| 5 Ball valve 1/2" | 14 T-piece 135 1/2" |
| 6 Socket M2 1/2" | 15 Elbow A4 1/2" |
| 7 Union U12 1/2" | 16 Elbow A1 1/2" |
| 8 Reducing socket 3/4" - 1/2" with orifice | 17 Elbow G8 1/2" |
| 9 Pipe nipple DN15 (1/2") x 85 DN80 | 18 Nipple N4 1/2" to 1/4" |
| Pipe nipple DN15 (1/2") x 105 DN100 | 19 Plug T9 1/2" |
| Pipe nipple DN15 (1/2") x 160 DN150 | |

6.3 Alarm line option

Different alarm line options (Fig. 15/1) are available (see product catalogue).

6.4 Compressed air line

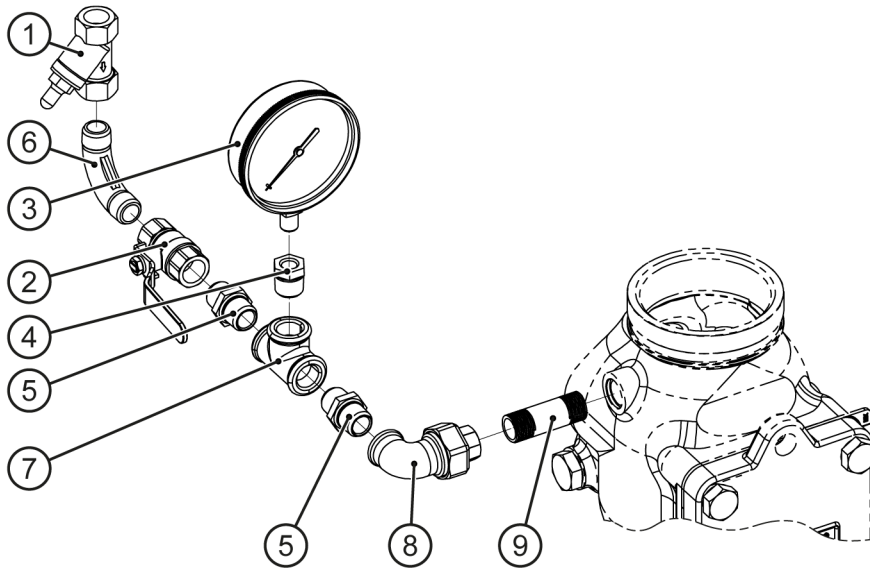


Fig. 16: Pipework pressurized air line

- | | |
|------------------------------------------------------------------|---------------------------------|
| 1 Check valve DN15 (1/2") | 5 Double nipple N8 1/2" |
| 2 Ball valve DN15 (1/2") | 6 Elbow G8 1/2" |
| 3 Pressure gauge 5.5 bar (80 psi); delayed
17.2 bar (250 psi) | 7 T-piece B1 1/2" |
| 4 Nipple N4 1/2" - 1/4" | 8 Pipe connection UA11 1/2" |
| | 9 Pipe nipple DN 15 (1/2") x 60 |

6.5 Drain pipe

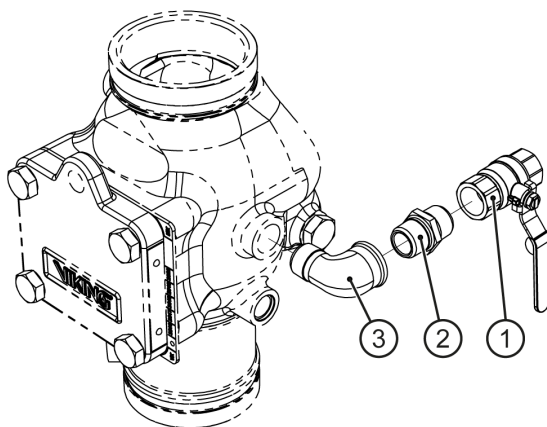


Fig. 17: Pipework drain pipe

- | |
|-------------------------|
| 1 Ball valve DN20 3/4" |
| 2 Double nipple N8 3/4" |
| 3 Elbow A4 3/4" |

6.6 Main drain line

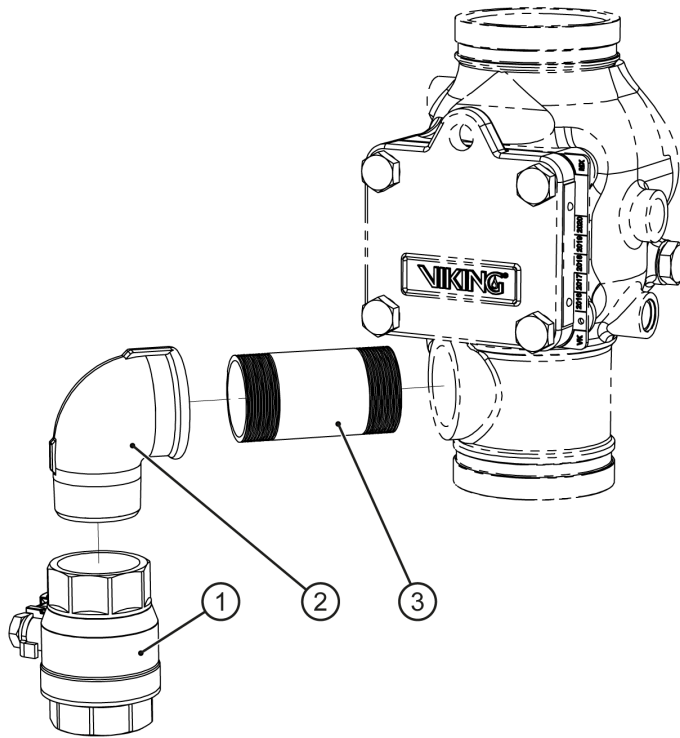


Fig. 18: Pipework main drain line

- 01 DN80 (1 1/4"): Ball valve DN32
DN100 to DN150 (2"): Ball valve DN50
- 02 DN80 (1 1/4"): Elbow DN32
DN100 to DN150 (2"): Elbow DN50
- 03 DN80 (1 1/4"): Pipe nipple DN32
DN100 to DN150 (2"): Pipe nipple DN50


6.7 Assembly/Disassembly of the accelerator

The accelerator can be removed from the pipework without having to decommission the dry pipe alarm valve set.

Proceed as follows to remove the accelerator from the pipework:

1. Shut off the ball valves (Fig. 22/01+02).
2. Open the vent plug (Fig. 22/04) and release the pressure from the accelerator.

Note: This process can take up to 10 minutes.







3.  Loosen the unions (Fig. 22/07+08) and remove the accelerator.

⚠ CAUTION! Risk of injury due to pressurized parts

If pressure relief is not executed fully, there is a risk of injury.

- Carefully loosen the unions.
Check whether compressed air is escaping and only then loosen the level plug fully.

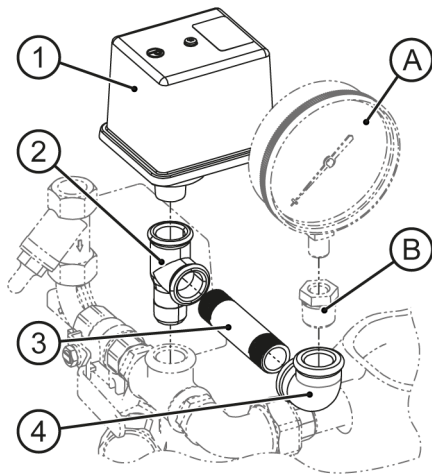
Proceed as follows for assembly of the accelerator in the pipework:

1.  Use the unions (Fig. 22/07+08) to align and install the accelerator.
2.  Check whether the vent plug (Fig. 22/04) is closed.
3.  Check whether the cap (Fig. 22/06) of the strainer (Fig. 22/05) is closed.
4.  Open the ball valve (Fig. 22/01).
5.  Wait until the pressure gauge (Fig. 22/03) and the pressure gauge "pressurized air supply" display identical pressure.
Note: This process can take up to 10 minutes.
6.  Open the ball valve (Fig. 22/02).
⇒ The accelerator is ready.

6.8 Assembly of the optional sets

6.8.1 Air pressure monitoring kit

Part. no. DRV1-MK



- 1 Monitoring pressure switch
- 2 T-piece 134
- 3 Pipe nipple DN32 (1 1/4")
- 4 Elbow A1
- A Pressure gauge
- B Nipple

Fig. 19: Air pressure monitoring kit for the pressure in the sprinkler pipework

Retrofit: Remove parts A and B and reinstall them as shown in Fig. 19.

6.8.2 Accelerator set
Accelerator set
Part no.: DRV1-AK

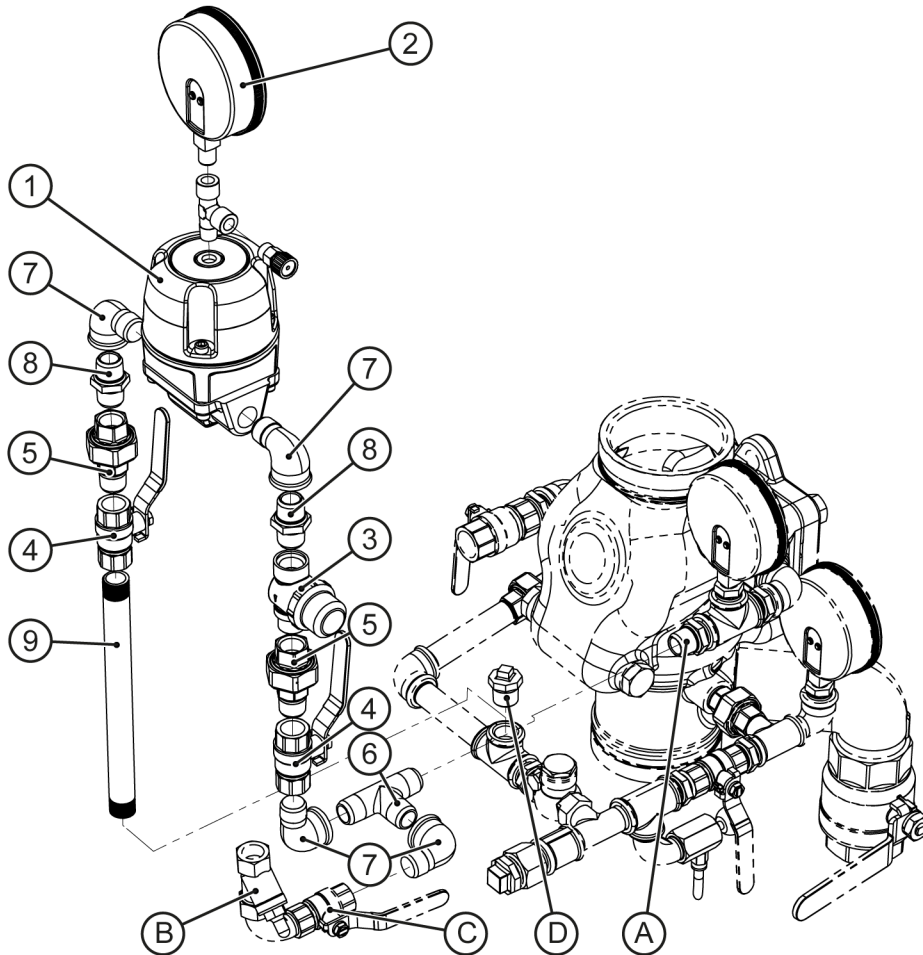


Fig. 20: Design accelerator set

- | | |
|------------------------------------------------------------------|---------------------------------|
| 1 Accelerator | 7 Elbow A1 1/2" |
| 2 Pressure gauge 5.5 bar (80 psi); delayed
17.2 bar (250 psi) | 8 Double nipple N8 1/2" |
| 3 Strainer DN15 1/2" | 9 Pipe nipple DN15 (1/2") x 240 |
| 4 Ball valve DN15 1/2" | A Double nipple |
| 5 Union U12 1/2" | B Check valve |
| 6 T-piece 135 1/2" | C Ball valve |
| | D Plug |

Retrofit: Dismantle parts A, B, C, and D, reinstall parts B and C as shown in Fig. 20. Parts A and D are *NOT* used again.

7 Commissioning

Personnel: ■ Qualified specialist personnel

7.1 Factory-provided water pressure test

- This dry pipe alarm valve set has been designed and is listed for operation with a maximum water pressure of 17.2 bar (250 psi).
- The valve was tested with 34.5 bar (500 psi) at the factory. The leakage test of the valve seat is carried out with 17.2 bar (250 psi).
- A function test is included in the pressure monitoring of the valve.

7.2 Procedure

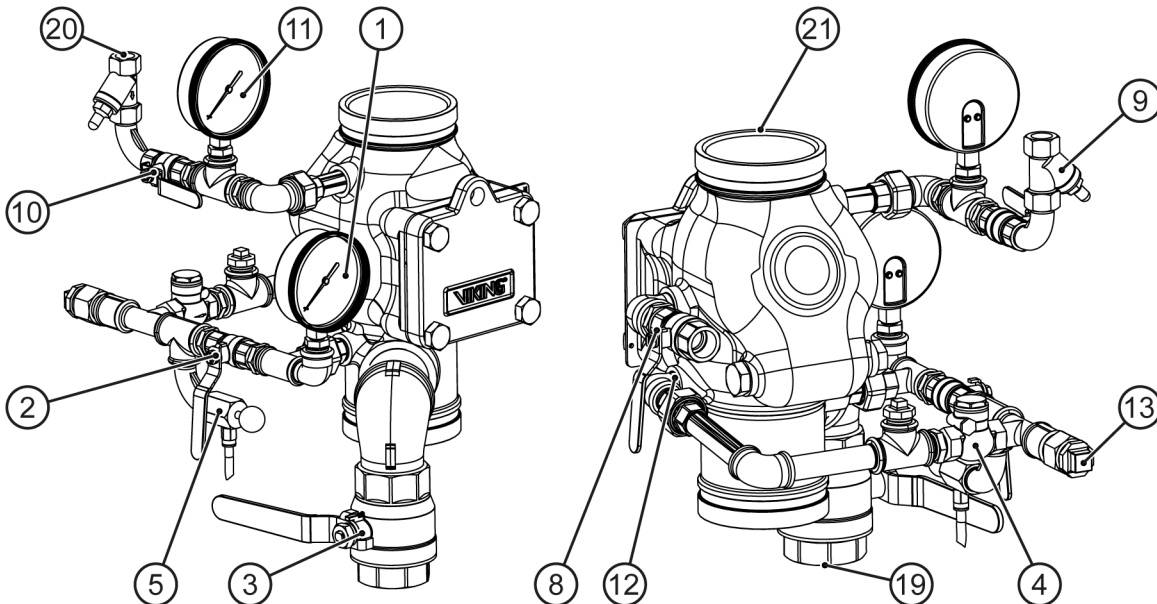


Fig. 21: Dry pipe alarm valve set DRV-1

- | | |
|---------------------------------|----------------------------------------|
| 1 Pressure gauge "water supply" | 10 Ball valve "pressurized air supply" |
| 2 Alarm test valve | 11 Pressure gauge "sprinkler pipework" |
| 3 Main drain valve | 12 Alarm channel |
| 4 Check valve | 13 Connection alarm line option |
| 5 Automatic drip check valve | 19 Connection water supply |
| 8 Drain valve | 20 Connection pressurized air supply |
| 9 Check valve | 21 Connection sprinkler pipework |

1. ▶ Make sure that the upstream control valve is closed and the dry pipe alarm valve set is piped (see ↪ *Chapter 6 "Installation" on page 31*).
2. ▶ Make sure that the ball valve "pressurized air supply" (Fig. 21/10) is open. Only the alarm test valve (Fig. 21/2) can be closed.
3. ▶ Check whether the sprinkler pipework has been filled properly with pressurized air.

For DRV-1 with accelerator, also observe the following chapters: ↪ *Chapter 7.3.1 "Commissioning" on page 40* and/or ↪ *Chapter 7.3.2 "Commissioning after each triggering of the dry pipe alarm valve" on page 41*.

4. ▶ Both drain ball valves (Fig. 21/3+8) must be closed.
If compressed air escapes from the hose of the automatic drip check valve (Fig. 21/5), the valve clapper is not closed properly. The space below the valve disk must be under ambient pressure.
Quickly open and close the main drain valve (Fig. 21/3). The valve clapper should be closed.
5. ▶ The water supply is now pressurized up to the upstream control valve. Slightly open the upstream control valve so that a small amount of water flows slowly into the zone underneath the valve disk of the dry pipe alarm valve.
Wait until the pressure gauge "water supply" (Fig. 21/1) displays full water supply pressure.

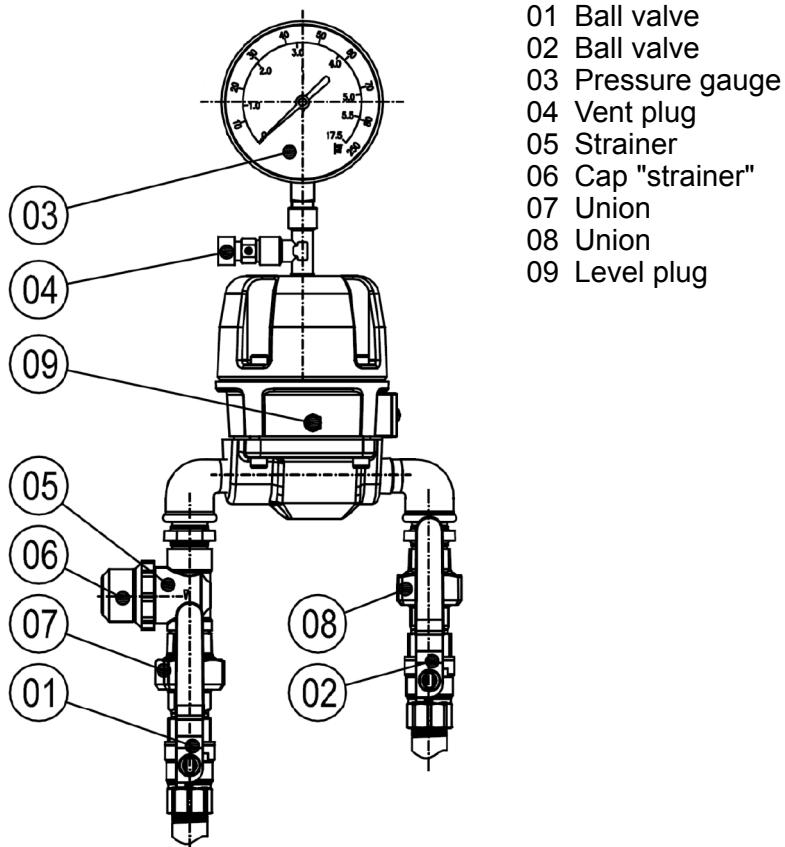
NOTICE!

An excessively fast filling process can trigger the valve and flood the sprinkler pipework pressurized with pressurized air.

6. ▶ Open the upstream control valve fully.
7. ▶ Carry out a leakage test according to local legal requirements.
If water is constantly flowing from the hose of the automatic drip check valve (Fig. 21/5), the groove seal of the valve disk is leaking. In this case, close the control unit in the water supply line again, release the compressed air fully and check or replace the O-rings and the guide ring of the valve disk.
8. ▶ In case of new systems, decommissioned systems, or if new equipment has been installed, test the system to check whether all the equipment functions properly.
⇒ The system is ready.

7.3 Accelerator

7.3.1 Commissioning



- 01 Ball valve
- 02 Ball valve
- 03 Pressure gauge
- 04 Vent plug
- 05 Strainer
- 06 Cap "strainer"
- 07 Union
- 08 Union
- 09 Level plug

Fig. 22: Commissioning of the accelerator

Perform initial commissioning as follows:

1. ➤ Seal the ball valves (Fig. 22/01+02).
2. ➤ Pressurize the sprinkler pipework with pressurized air.
3. ➤ Check whether the vent plug (Fig. 22/04) is closed.
4. ➤ Open the ball valve (Fig. 22/01).
5. ➤ Wait until the pressure gauge (Fig. 22/03) and the pressure gauge pressurized air supply display identical pressure.

Note: This process can take up to 10 minutes.

6. ➤ Open the ball valve (Fig. 22/02).

⇒ The accelerator is ready.

7.3.2 Commissioning after each triggering of the dry pipe alarm valve

Perform commissioning as follows:

1. ► Seal the ball valves (Fig. 22/01+02).
2. ► Open the vent plug (Fig. 22/04) and release the pressure from the accelerator.
Note: This process can take up to 10 minutes.
3. ► Remove the level plug (Fig. 22/09).
⚠ CAUTION! Risk of injury due to pressurized parts
If pressure relief is not executed fully, there is a risk of injury.
 - Carefully loosen the level plug. Check whether compressed air is escaping and only then loosen the level plug fully.
4. ► Check whether water or moisture is leaking.
⇒ Dismantle, clean, dry, and install the accelerator.
5. ► Install the level plug (use sealant).
6. ► Pressurize the sprinkler pipe network with compressed air.
7. ► Check whether the vent plug (Fig. 22/04) is closed.
8. ► Open the ball valve (Fig. 22/01).
9. ► Wait until the pressure gauge (Fig. 22/03) and the pressure gauge compressed air supply display identical pressure.
Note: This process can take up to 10 minutes.
10. ► Open the ball valve (Fig. 22/02).
⇒ The accelerator is ready.

8 Decommissioning

Personnel: ■ Qualified specialist personnel

Drain all the water from the dry pipe alarm valve alarm set, including pipework, water supply lines, and other enclosed areas, if one of the following situations arises:

- The valve is decommissioned.
- The valve is subjected to temperatures below freezing.
- The valve is not going to be operated for a longer period of time.

Close the upstream control valve before decommissioning the dry pipe alarm valve set.

9 Maintenance

Maintenance work must be carried out in accordance with national guidelines and standards and at regular intervals, taking account of operating conditions and environmental factors.

Personnel: ■ Qualified specialist personnel

Protective equipment: ■ Safety footwear
■ Protective goggles
■ Hearing protection

9.1 General

WARNING

Risk of injury if the system is not ready for operation!

Each system maintenance during which a control valve or a fire detection control panel is shut down can override the fire protection functions of the system.

- Prior to carrying out work, inform all the relevant authorities.
- If necessary, employ a fireguard in the affected areas.

INFORMATION

The operator is responsible for making sure that the fire protection system and devices are always in proper functional condition. Protect the dry pipe alarm valve set against temperatures below freezing and mechanical damage that could impair its functionality.

Inspect, test, and maintain the system at regular intervals. Depending on the ambient conditions (e.g. corrosive atmosphere) and the water supply conditions (e.g. soiled, extremely hard water), shorter intervals may be necessary.

Observe the following:

- Carry out all inspection, test, and maintenance work within the specified time period.
- Secure all upstream and downstream system components and operating equipment to prevent inadvertent actuation.
- Check all pipe screw connections for tightness.
- After completing maintenance work, check whether the safety devices are functioning properly.








Maintenance and inspection intervals according to EN 12845

	Week	Month	3 months	6 months	Year	Every 5 years
Inspection						
Pressure gauge	X					
Outside			X			
Inside					X	
Strainer, filter, etc.					X	
	Week	Month	3 months	6 months	Year	Every 5 years
Test						
Alarm devices	X		X			
Main drainage/ Water supply			X			
Release test					X	
	Week	Month	3 months	6 months	Year	Every 5 years
Servicing						
Release test					X	

Maintenance and inspection intervals according to NFPA 25

	Week	Month	3 months	6 months	Year	Every 5 years
Inspection						
Pressure gauge	X					
Outside		X				
Inside					X	
Strainer, filter, etc.						X
	Week	Month	3 months	6 months	Year	Every 5 years
Test						
Alarm devices			X	X		
Main drainage/ Water supply			X			
Release test					X	
	Week	Month	3 months	6 months	Year	Every 5 years
Servicing						
Release test					X	

9.2 Inspection**9.2.1 Weekly visual check**

1.  Make sure the upstream control valve is fully open.
2.  Make sure all ball valves are in the correct operating mode and are secured accordingly (see  *Chapter 7 "Commissioning" on page 38*).
3.  Check the dry pipe alarm valve set for mechanical damage, leaks, or corrosion.
⇒ If such defects are detected, carry out servicing immediately.
4.  Make sure the dry pipe alarm valve and the components are protected against frost and mechanical damage.
5.  Check the water supply pressure on the pressure gauge.
6.  Check the pressure gauge of the sprinkler pipework and refill pressurized air if necessary (refer to Fig. 5).

9.2.2 Alarm test

WARNING

Risk of injury due to noise!

High sound pressure levels from acoustic alarm devices (e.g. signal sounders) may cause damage to hearing.

- Wear ear protection.
- In case of an alarm, immediately leave the protection zone before the pre-warning time ends.
- Avoid standing directly near acoustic alarm equipment.

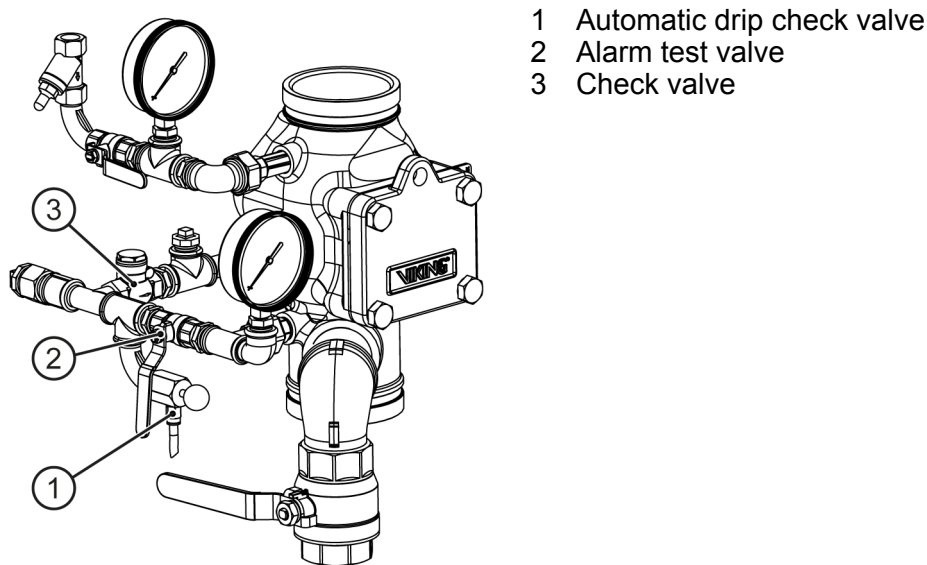







Fig. 23: Alarm test

Carry out the test as follows:

1.  Inform the responsible authority and anyone working in the zone affected by the test.
2.  Open the alarm test valve (Fig. 23/1).
3.  Make sure the electrical alarm pressure switch has triggered (check the fire detection system) and whether the local water motor alarm is audible.
4.  Close the alarm test valve. Automatic drip check valve (Fig. 23/05) keeps dripping until the alarm line is drained.

***i** Water is removed directly from the water supply line; the connection to the alarm channel is, however, shut off at the same time by the check valve (Fig. 23/3).*

5.  Inform the responsible authority and anyone working in the zone affected by the test about the completion of the test.

The following must also be checked:

- All local alarm devices are disabled.
- The water pipe to the water motor alarm has been drained properly via the drain valve.
- The ball valve is open.
- Make sure that no water flows from the automatic drip check valve 1/2".

9.2.3 Main drainage test

Prior to the test, make sure that a large quantity of water can be discharged safely.

Carry out the test as follows:

1. ► Inform the responsible authority and anyone working in the zone affected by the test.
2. ► Record the pressure displayed on the pressure gauge of the water supply.
3. ► Make sure that no water flows from the automatic drip check valve 1/2".
4. ► Open the main drain ball valve fully.
5. ► With full flow rate, record the residual pressure displayed on the pressure gauge.
6. ► Once the test has been completed, close the main drain ball valve slowly.
7. ► Compare the test results to the results of the previous tests.
 - ⇒ If degradation of the water supply is detected, take appropriate action to restore adequate water supply.
8. ► Check whether the normal water supply pressure to the dry pipe alarm valve has been built up again.
9. ► Make sure that all ball valves are in open operating mode and the ball valve for the alarm test is closed.
10. ► Inform the responsible authority that the test has been completed.
Record the test results or, when necessary, inform the responsible authority about them.

9.2.4 Release test

NOTICE


Undesired flooding of the sprinkler pipework area during tests!

During this test, the dry pipe alarm valve is active and undesired flooding of the sprinkler pipework area can occur.

INFORMATION

Installation of a downstream control valve behind the dry pipe alarm valve can prevent undesired flooding of the sprinkler pipework.

Carry out the test as follows:

1. ➤ Inform the responsible authority and anyone working in the zone affected by the test.
 2. ➤ In order to flush out any collected foreign particles, open the main drain valve fully.
 3. ➤ Close the main drain valve slowly.
 4. ➤ Trigger the dry pipe alarm valve by opening the drain valve. Enable full flow through the dry pipe alarm valve. The flow alarm devices must function properly.
 5. ➤ After completion of the test:
 - Close the upstream control valve and the drain valve.
 - Drain the dry pipe alarm valve fully by opening the main drain valve.
 6. ➤ Close the main drain valve.
 7. ➤ Remove the hand hole cover so that the valve disk falls from the locking device onto the valve seat.
 8. ➤ Reinstall the hand hole cover.
 9. ➤ Pressurize the sprinkler pipework with pressurized air.
 10. ➤ Commissioning of the system (see  Chapter 7 “Commissioning” on page 38).
- NOTICE! Material damage due to saline water!**
Saline media may cause substantial damage to the system and its components.
11. ➤ Inform the responsible authority that the test has been completed.
 12. ➤ Record the test results or, when necessary, inform the responsible authority about them.









9.3 Servicing

Use only original parts for servicing or for the replacement of seals and spare parts.


After each operation

- Recommission the sprinkler system that was exposed to a fire as soon as possible.
Check the entire system for damage and, if required, repair or replace it.
- Dry pipe alarm valves which come into contact with corrosive water must be flushed with town water prior to return to service.
- Carry out half-yearly servicing after each application.

Half-yearly servicing

1.  Shut down the system.
2.  Close the upstream control valve and, if available, the downstream control valve.
3.  Open the main drain valve and release the water pressure.
4.  Release the air pressure via the drain valve.
5.  Check the valve and the pipework for signs of corrosion and blockage. Clean or replace if necessary.
6.  Clean the strainer.
7.  Put the system back into operation (see  *Chapter 7 “Commissioning” on page 38*).

Every 5 years






- Carry out an internal check of the dry pipe alarm valve every 5 years. It might become apparent during inspections and tests that frequent internal checks are necessary.
- Carry out an internal check of the strainer every 5 years. It might become apparent during inspections and tests that an internal check is necessary.
- Record the test results and inform the responsible authority about them.
- Carry out internal servicing of the dry pipe alarm valve (see  *Chapter 9.4 “Servicing of the dry pipe alarm valve” on page 49*).

9.4 Servicing of the dry pipe alarm valve

Personnel: Qualified specialist personnel

Servicing must take place at least every 6 months. Record maintenance work.


Perform servicing as follows:

1.  Inform the respective department about maintenance work.
2.  Do a visual check of the general condition of the dry pipe alarm valve set.
3.  Check fittings for correct functional condition (refer to  *Chapter 7 “Commissioning” on page 38*).
4.  Check the operating pressures at the pressure gauges.

5. ▶ Pressure relief can occur at the outlet of the valve flap in pressure-dependent condition of the dry pipe alarm valve.

NOTICE!

In order to prevent flooding of the pipework, close the control valve of the sprinkler pipework (above the dry pipe alarm valve set).

6. ▶ Shut off the water and pressurized air supply and drain the sprinkler pipework fully.
7. ▶ Servicing of the dry pipe alarm valve according to the maintenance instruction (refer to  Chapter 9.3 "Servicing" on page 48).

⚠ DANGER! Danger to life

The valve must only be opened if it has been depressurized and drained fully.

8. ▶ Leakage test of the valve at the drain valve.
9. ▶ Check the pipework of the valves for leaks.
10. ▶ Option: Check the strainer in the line of the accelerator and clean it if necessary.

9.4.1 Removal of the valve disk from the dry pipe alarm valve

Use only original parts for servicing or for the replacement of seals and spare parts.

Replace the seal, O-rings, and the spring washer once a year.

⚠ CAUTION

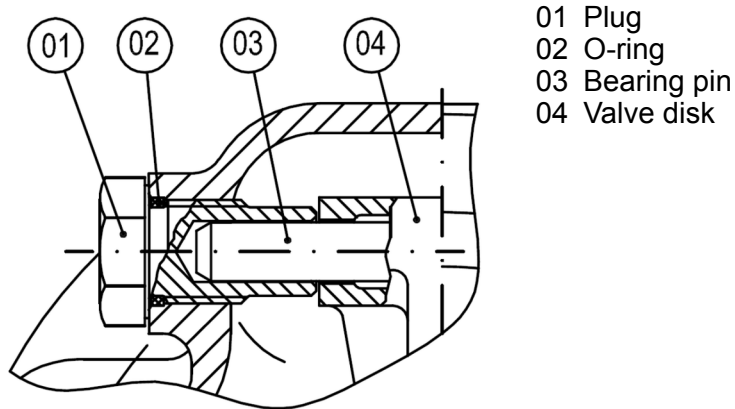
Risk of injury due to pressurized components!

There is a risk of injury when opening the hand hole cover while the valve is pressurized.

- Depressurize and drain the valve.

INFORMATION

Valve disks for the dry pipe alarm valve type DRV feature a vertical extended hole and are marked with "TMX".



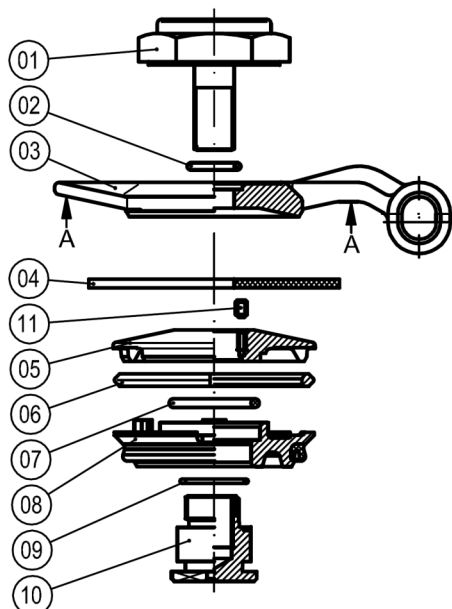
- 01 Plug
- 02 O-ring
- 03 Bearing pin
- 04 Valve disk

Fig. 24: Valve disk bearing

Proceed as follows to remove the valve disk:

1. ➤ Remove the hand hole cover.
2. ➤ Remove the plugs (Fig. 24/01).
3. ➤ Pull out the bearing pin (Fig. 24/03) from the housing from the side.
4. ➤ Remove the entire valve disk (Fig. 24/04).
5. ➤ Assembly takes place in reverse order.
Replace the O-ring (Fig. 24/02).

9.4.2 Disassembly of the valve disk







- 01 Buffer stop
- 02 O-ring 14 x 2.5
- 03 Valve disk
- 04 Valve flap seal
- 05 Pressure ring
- 06 Spring washer
- 07 O-ring 25x3.2 / 3"
- 08 Guide ring with vulcanized groove seal
- 09 O-ring 21x1.5 / 3"
- 10 Guide pin






Fig. 25: Valve disk

- 11 Threaded pin
- A-A Support point for disassembly

Proceed as follows to disassemble the valve disk:

1.  Loosen the buffer stop (Fig. 25/01) and unscrew it a few turns.
2.  Position the valve disk (Fig. 25/03) at the positions marked with "A-A" and arrows.
3.  Loosen the locking mechanism of the valve disk (Fig. 25/01) by gently tapping the buffer stop (Fig. 25/03) with a rubber mallet.

 The valve disk (Fig. 25/03) with the seal (Fig. 25/04) sits firmly (suction effect) on the pressure ring (Fig. 25/05). The locking mechanism can also be released by placing a screwdriver between the valve disk (Fig. 25/03) and the seal (Fig. 25/04).

4.  Unscrew the buffer stop (Fig. 25/01) fully.
5.  Unscrew the threaded pin (Fig. 25/11) using a 2 mm socket wrench.
6.  Unscrew the guide pin (Fig. 25/10) and clean all the disassembled parts.
7.  Replace the seal (Fig. 25/04), o-rings (Fig. 25/02, 07, 09), and spring washer (Fig. 25/06).
8.  Check guide ring (Fig. 25/08) with vulcanized groove seal and replace if damaged.

9.4.3 Assembly of the valve disk

 **CAUTION**

Risk of crushing fingers at the sealing unit!

When checking the sealing unit, make sure your fingers are not crushed!

- Install the flap unit in the alarm valve.
 - Seal the valve with the hand hole cover and carry out commissioning.
-

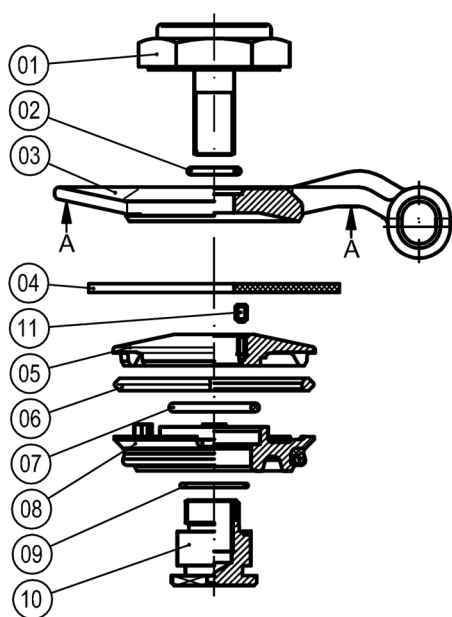


Fig. 26: Valve disk

- | | |
|-----|----------------------------------------|
| 01 | Buffer stop |
| 02 | O-ring 14 x 2.5 |
| 03 | Valve disk |
| 04 | Valve flap seal |
| 05 | Pressure ring |
| 06 | Spring washer |
| 07 | O-ring 25x3.2 / 3" |
| | O-ring 30x3.2 / 4" |
| | O-ring 50x3 / 6" |
| 08 | Guide ring with vulcanized groove seal |
| 09 | O-ring 21x1.5 / 3" |
| | O-ring 23.5x1.78 / 4" |
| | O-ring 38x3 / 6" |
| 10 | Guide pin |
| 11 | Threaded pin |
| A-A | Support point for disassembly |

Assembly takes place in reverse order. For this, slightly lubricate all the parts of the locking mechanism. To achieve this, proceed as follows:

1. ➤ Insert the O-ring (Fig. 26/09) in the groove of the guide pin (Fig. 26/10).
2. ➤ Insert the guide ring (Fig. 26/08) on the guide pin (Fig. 26/10).
3. ➤ Insert the O-ring (Fig. 26/07) in the guide ring (Fig. 26/08) and pull the O-ring over the guide pin (Fig. 26/10).

NOTICE!

The O-ring (Fig. 26/07) must be able to slide between the guide pin (Fig. 26/10) and the guide ring (Fig. 26/08). Make sure the O-ring is not damaged.

4. ➤ Insert the spring washer (Fig. 26/06) on the guide ring (Fig. 26/08).
Make sure the marking "TOP" on the spring washer faces upwards! (see Fig. 27 detail "X")

***i** Make sure that the 3 studs of the guide ring (Fig. 26/08) slide/engage in the intended groove of the pressure ring (Fig. 26/05). Replace the spring washer (Fig. 26/06) during annual servicing.*

5. ➤ Screw the guide pin (Fig. 26/10) into the pressure ring (Fig. 26/05) so that it is flush, and turn it until the M4 internal thread has been aligned ensuring the threaded pin (Fig. 26/11) can be screwed in.
6. ➤ Insert the O-ring (Fig. 26/02) on the buffer stop (Fig. 26/01), insert the buffer stop in the valve disk, position the seal (Fig. 26/04) between the pressure ring (Fig. 26/05) and the valve disk (Fig. 26/03).
7. ➤ Tighten the buffer stop in the complete "guide pin" (to a tightening torque of max. 20 Nm).
8. ➤ Check the sealing unit by pressing the guide ring (Fig. 26/08) against the valve disk (Fig. 26/03). If the part is locked (spring washer Fig. Fig. 26/6 is on pressure ring Fig. Fig. 26/5), the lock unit must be unlocked again by pulling off the spring washer (Fig. 26/06) from the pressure washer (Fig. 26/05).
9. ➤ Install the valve disk in the alarm valve (see ↗ *Chapter 9.4.2 "Disassembly of the valve disk" on page 51*).

NOTICE

Damage to the valve disk due to excessive manual force!

The valve disk cannot be locked by manually pressing it down. This takes place automatically when filling the sprinkler pipework with pressurized air.

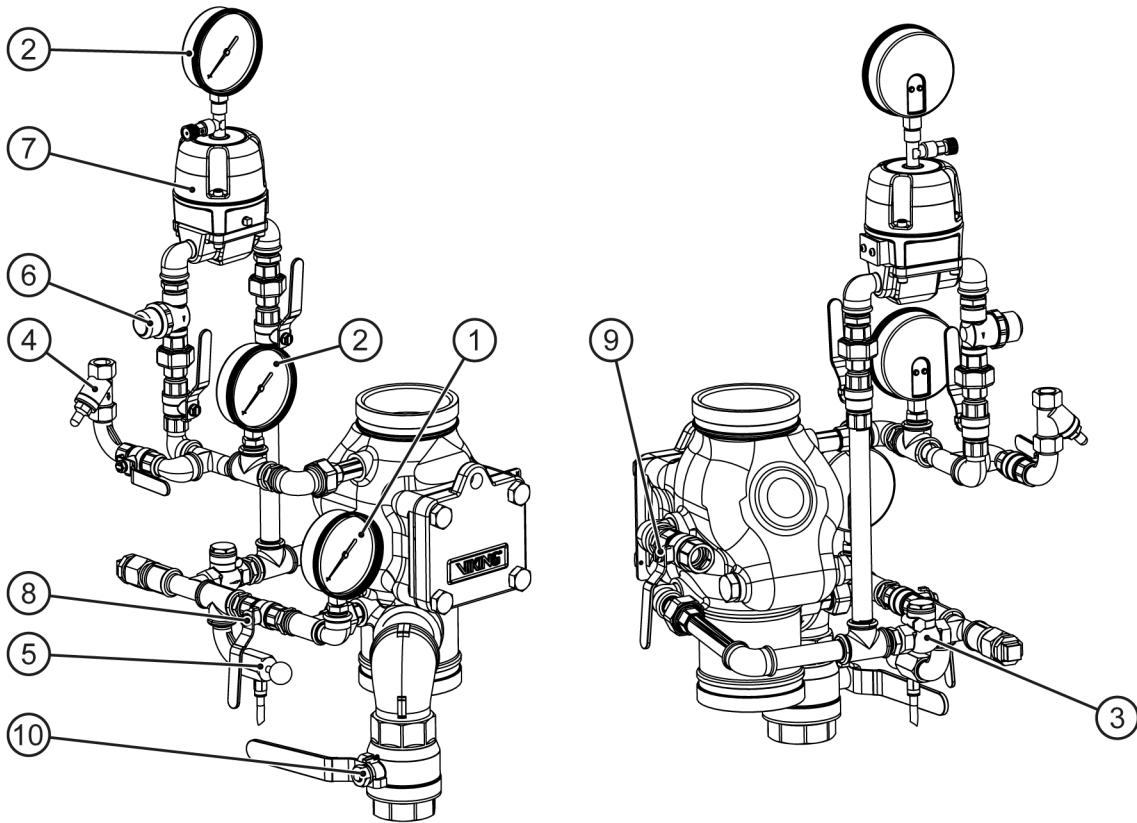
- Do not lock the valve disk using tools such as a lever.
-

10 Troubleshooting

Fault	Possible cause
Valve disk in the dry pipe alarm valve is not locked by the compressed air	<ul style="list-style-type: none"> ● Interrupted pressurized air supply, e.g. defective pressure reducer ● Residual water in the valve seat prevents locking of the valve disk. Ensure ventilation to the valve seat (close the control valve and open the main drain valve). ● Spring washer has been installed the wrong way round or is bent.
Compressed air escapes through the drain valve during commissioning	<ul style="list-style-type: none"> ● The valve disk is not on the valve seat but on the safety catch. ● The gap between the seal and the valve seat is too great. Use a new seal. ● If pressure build-up in the valve is very slow, compressed air can escape. In this case, open the main drain valve abruptly. Due to this shock pressure, the seal is usually positioned on the valve seat to the system and the valve disk locked. Close the main drain valve again.
Water flows or drips constantly from the drain valve	<ul style="list-style-type: none"> ● O-rings of valve disk or valve seat are soiled or damaged. ● Guide ring is soiled or damaged.
Unintentional triggering of the dry pipe alarm valve	<ul style="list-style-type: none"> ● The air pressure in the sprinkler pipework is too low. ● Water hammer in the water supply line
Alarm pressure switch does not respond during the alarm test	<ul style="list-style-type: none"> ● The upstream control valve in the water supply line is not closed. ● Alarm pressure switch is defective or the orifice hole blocked. ● Transmission path (cable) interrupted, electrical fault of the switch or the electrical line
Water motor alarm does not respond during the alarm test	<ul style="list-style-type: none"> ● The valve in the water supply line is closed. ● Water motor alarm is defective or blocked. ● Ball valve is closed.
Triggering of the dry pipe alarm valve is too slow	<ul style="list-style-type: none"> ● The air pressure in the sprinkler pipework is too high in relation to the water supply pressure. ● The volume of the sprinkler pipework is too great.

11 Accessories and spare parts

11.1 Components dry pipe alarm valve



Item	Description	Quantity	Part no.
1	Pressure gauge 300 psi	1	911692
2	Pressure gauge 80 psi delayed 250 psi	2	918783
3	Check valve	1	823745
4	Check valve	1	129754
5	Drain valve with hose	1	845951
6	Strainer	1	842589
7	Accelerator	1	912839
8	Ball valve DN 15 (1/2")	1	912527
9	Ball valve DN 20 (3/4")	1	918782
10	Ball valve DN 32 (1 1/4") for DRV-1 DN 80	1	912529
	Ball valve DN 50 (2") for DRV-1 DN 100 & DN 150	1	912531

11.2 Dry pipe alarm valve

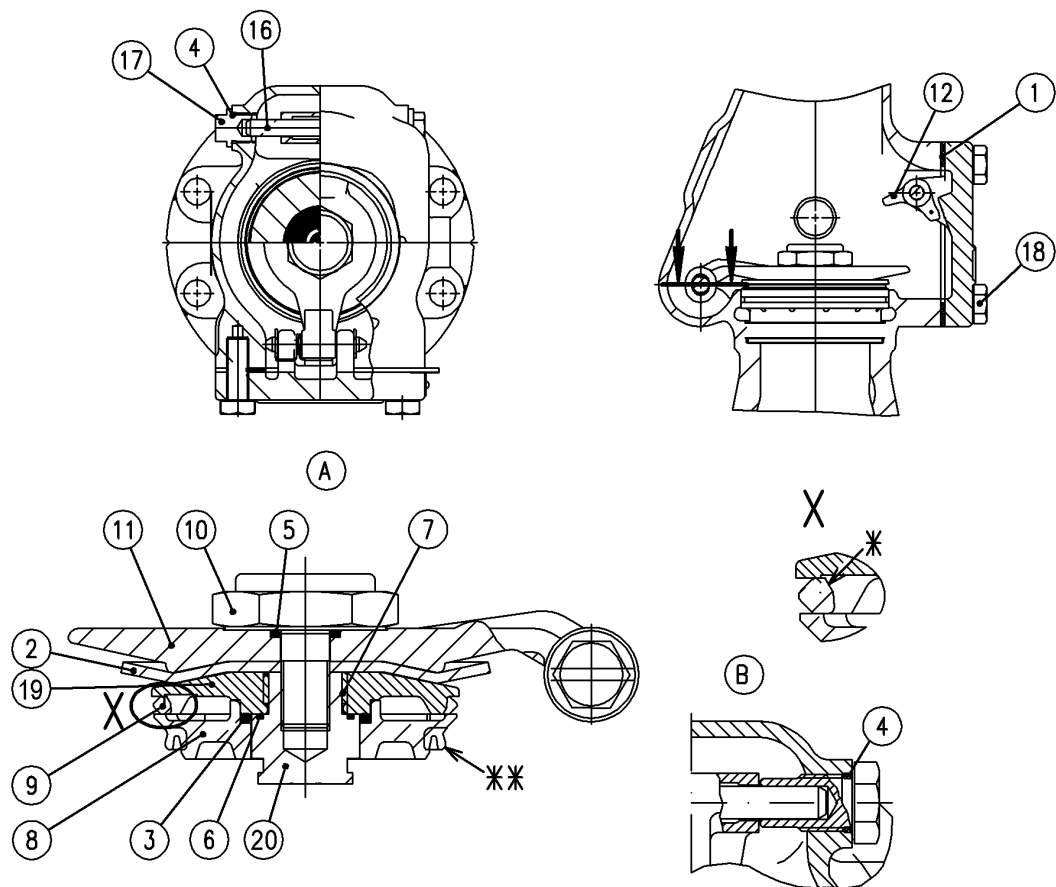


Fig. 27: Alarm valve complete

A Valve disk

B Bearing cross section

X Detailed view

* The inner bevel of the spring washer (Fig. 279) must face upwards.

** The vulcanized grooved ring cannot be replaced. If it is damaged, the guide ring (Fig. 27/8) must be ordered.

Item	Description	Quantity	Part no.		
			DN80 (3")	DN100 (4")	DN150 (6")
1 ... 7 9	Gasket set incl. socket wrench	1	Part no.: 840314	Part no.: 840442	Part no.: 840429
1	Gasket "hand hole" 1x from 2001 1x until 2001	2			
2	Gasket "valve disk"	1			
3	O-ring	1	25 x 3.2	30 x 3.2	50 x 3
4	O-ring from 2001	2	18 x 2.5	18 x 2.5	18 x 2.5
4	O-ring until 2001	2	21 x 1.5	21 x 1.5	21 x 1.5
5	O-ring	1	14 x 2.5	14 x 2.5	14 x 2.5
6	O-ring	1	21 x 1.5	23.5 x 1.78	38 x 3
7	Threaded pin	1			
-	Socket wrench for item 7	1			
8	Guide ring with vulcanized grooved ring	1	Part no.: 845974	Part no.: 845975	Part no.: 845976
9	Spring washer	1			
10	Buffer stop	1	833860	833860	833860
11	Valve disk	1	833743	821463	825109
12	Safety catch	1	833810	833810	833810
13	Torsion spring	1	833822	833822	833822
14	Bolt DIN1443	1	833871	833871	833871
15	Cotter pin	2	247323	247323	247323
16	Bolt DIN1443	1	879074	879086	879098
17	Plug G1/2"	2	883720	883720	883720
18	Hexagon screw	4	833858	833858	833858
-	Valve disk, com- plete	1	840326	840454	840430

Item	Description	Quantity	Part no.		
			DN80 (3")	DN100 (4")	DN150 (6")
19	Pressure ring	Can only be obtained by ordering the valve disk, complete			
20	Guide pin				

Tab. 12: Spare parts dry pipe alarm valve

INFORMATION

The guide ring (item 8) is not included in the gasket set.

INFORMATION

The o-rings for sealing the valve seat are not included in the gasket set, since replacement of the valve seat is not intended.

During the maintenance of the valve the following parts have to be greased:

- All o-rings
- Surface of the seal on both sides
- All metal gliding surfaces

11.3 Air pressure monitoring kit

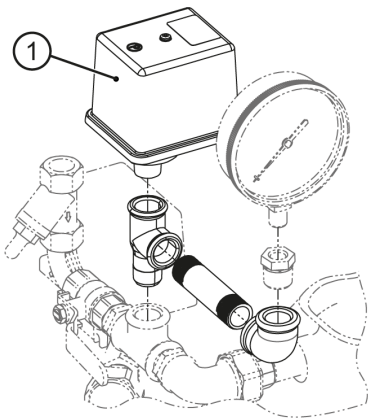


Fig. 28: Air pressure monitoring kit

Pos.	Beschreibung	Menge	Art.-Nr.
1	Monitoring pressure switch	1	915111



9 2 7 0 8 1