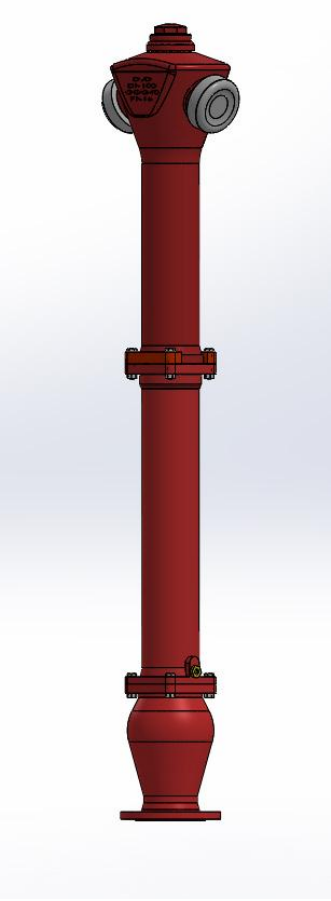
DVD VALVES

OPERATION MANUAL

KY1 FIRE HYDRANT



GENERAL SAFETY INSTRUCTIONS

This Operation Manual is created for you to use DVD Fire Hydrants effectively and to reduce potential risks regarding faulty use of the mentioned valves. With this Manual, potential accidents and damages can be prevented and life time of the valve can be increased.

The product you will be using is designed and manufactured according to highest quality standards and has passed DVD quality procedures 100%. However, Hydrants hold potential risks and can cause danger in case of faulty use or faulty assembly. Therefore, **everyone, who somehow gets in contact with the valve, is responsible for reading and fully understanding this Operation Manual.**

Unauthorized revision, change or application on the product or any of its parts shall be prevented at all times. In case of incompliance to this Operation Manual, DVD Valves cannot be hold directly or indirectly responsible or liable.

During the use of the Hydrants, general regulations and standards shall be followed. Some of these regulations are defined in EN Standards. Installation of the Hydrants shall be done by qualified and experienced technical personnel. For detailed information regarding the Hydrants, DVD Documentation (Catalogs, if appropriate Special Specifications and Technical Drawings, related DVD Order Confirmation etc.) shall be used and followed.

Before disassembling the Hydrant from the pipeline or any of its parts from the valve, make sure that the pipeline is de-pressurized and necessary safety cautions are taken. **If the line (water or air) is pressurized, any part of the Hydrant can move unintentionally, without any control.**

After commissioning, consequently the Hydrants are working under pressure; the Hydrants shall be monitored at all times and should be inspected regularly. Furthermore; laws, regulations and standards about Occupational Health and Safety should be taken into consideration.

During dismantling of the Hydrant from the pipeline, medium can flow out from the pipe or the hydrant in a fast and uncontrolled way. Before dismantling, the pipeline must be emptied to prevent such an incident. Along with the medium; foreign objects (stone, sand, debris etc.) can be flowing out that can cause damage to personnel. Necessary precautions shall be taken to prevent such damage.

DVD Fire Hydrants are designed to be installed on pipelines as water connection point for firefighters.

Operating limits such as Nominal Size, Pressure, Temperature of the Hydrant can be found in DVD Documentation. Furthermore; Operating Size, Operating Pressure, Hydrant Body Material and Production Date can be found on the marking of the Hydrant Body. Any operating condition that is incompliant with these operating limits shall be approved by the Manufacturer in written. Pipeline Operating Pressure can be fluctuating (due to surge, water hammer, air regulation problems etc.). Therefore, such fluctuations should be considered, and the Hydrant should never be faced with a higher pressure than the defined Nominal Pressure.

Hydrants do have an anti-frost automated drainage to discharge the water left above the Disc Mechanism of the Hydrant, in order to protect it from frost damages. However, below the Disc

Mechanism is not protected. Therefore Hydrants should be protected from frosting at all times. Especially in locations that have high risk, protective measures should be taken such as; burying of pipelines in more depth (selecting longer Fire Hydrants), protecting the hydrant by isolation material. If no precaution is taken, due to expansion of water, Hydrant lower body or other parts of the Hydrant can be permanently damaged. DVD Valves cannot be held liable from such damages.

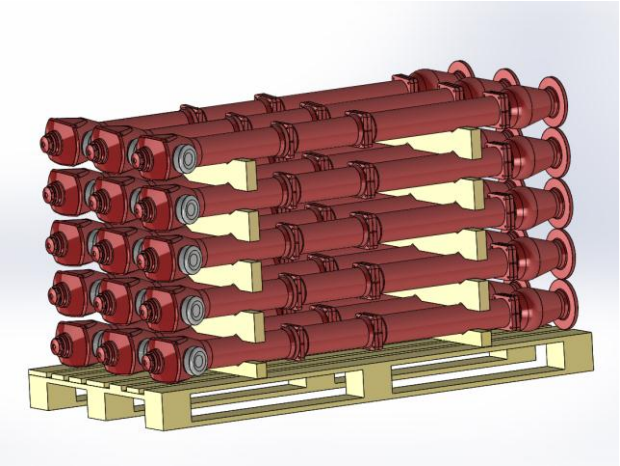
TRANSPORTATION AND STORAGE

During transportation and storage, Hydrants shall be packed with material that can withstand to its size and weight, and should be fully fixed on a pallet. If the Hydrants are not fully fixed on the pallet, the Hydrant can move during transportation and can cause severe damage. The Hydrant should be protected from environmental conditions and physical impacts from outside. Any part of the Hydrant body should not exceed the pallet dimension and shall be wrapped by protective cover (stretch film, insulation material etc).

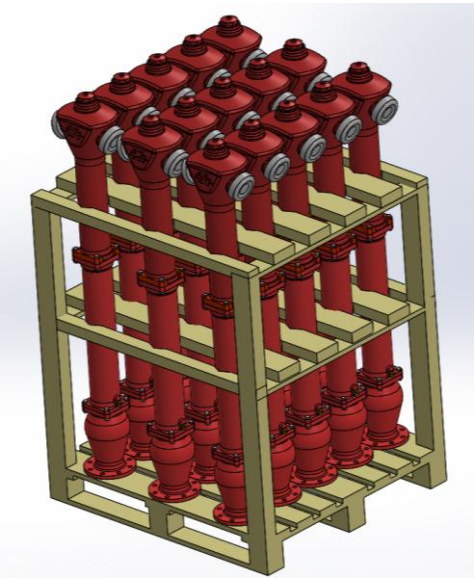
Hydrant coating and Hydrant accessories shall be protected at all times during transportation and assembly.

Positioning of the Hydrant on the pallet is done in two ways:

1. Transportation and Storage Purpose: Hydrant is positioned laying down, on its body (preferred)
2. Only Storage Purpose: Hydrant is positioned on its flange (not preferred – center of gravity of the hydrant will be higher and this can cause the hydrant to fall, in case of earthquakes or outside impacts)



Transportation &
Storage Purpose



Only Storage Purpose
(Not Preferred)

PICTURE 1: Positioning the Hydrant on the Pallet

Center of Gravity of the Hydrant can be away from the Hydrant Center. Therefore, during lifting the Hydrant, it can swing around. Such incidents can cause damage on the lifting device, the

Hydrant itself, and to personnel around the Hydrant. **Lifting operation should be done with extreme care and Center of Gravity of the Hydrant should be determined before lifting operation.**

Lifting Belts and Lugs which are according to safety norms shall be used. They have to be suitable for the Hydrant weight. Hydrant should be lifted only from the main barrel body, by gripping. **Lifting from the Quick Couplings or the Cap Top should not be done at all times.** These parts are not designed to carry the weight of the Hydrant and lifting from these parts can cause breaking, tumbling or dropping.

Hydrants should be protected and stored in a dry and aerated environment and should be protected from environmental effects. Storage should be done @ -20°C/+50°C temperature range. If the temperature is below 0°C, before assembling the Hydrant; the Hydrant should be heated up to 5°C.

Hydrants should never be in direct contact with the ground, and should be protected by a pallet. Hydrant internal surface and moving parts should be protected from foreign particles, sand, dirt, debris etc. Debris collected on moving parts can cause these parts to get stuck and prevent valve operation.

USE AND APPLICATON

DVD KY1 Fire Hydrants are designed to be used in clean potable water systems. Operation in medium containing gas, oil etc. is not possible.

In systems that contain foreign particles (dirt, sand, debris etc.), the valve mechanism can be clogged or sealing problems can occur. Hydrants should not be used in such applications. For special applications other than clean water systems, please get in contact with the manufacturer and request a written approval.

High Water Velocity can cause damage to the Hydrant. To prevent such damage, please check the Flow Rate. Maximum operating flow rate of DVD Fire Hydrants is 1x5 times the K_v of the Hydrant.

DVD Fire Hydrant disc opening and closing limits can be sensed easily by opening/closing the valve mechanism. Furthermore, # of turns needed for the hydrant to be fully open – fully close is marked on the Hydrant body. **Do not force the Hydrant to further opening or closing beyond the Valve Disc Limit.** Such force does not increase the sealing capability of the valve mechanism; on the contrary, due to excessive torque, damages can occur on the Hydrant. If there is a sealing problem, please get in contact with the manufacturer before applying excessive torque.

DVD Fire Hydrants are provided with a Cap-top that can be operated by a special key. These keys are designed to operate the valve mechanism easily and can provide sufficient force on the Hydrant. **For any reason, do not use a bigger Key or do not use a device (crank, lever etc.) to increase the force acting on the Hydrant.** If there is a torque problem, please get in contact with the manufacturer.

DVD Fire Hydrants should be operated in fully open position. Cavitation damage can occur in case of regulation (semi valve disc opening). If vibration or noise occurs during the operation of the Hydrant, please check whether the Hydrant is in fully open position. If the disc position is ok

but the problem still continues, please check the system operation conditions (flow rate, pressure etc.) in order not to face any cavitation damage.

Before opening the Hydrant, make sure to install fire hoses to the quick couplings beforehand. After water flowing from the outlet, hose connection cannot be able to be done properly and water splash can occur.

INSTALLATION TO THE PIPELINE

Pipeline flange, which the hydrant will be installed to should be in the same axis and flange surfaces should be parallel to each other. Sealing problems can be seen if this is not obtained, and/or the hydrant can face high load forces that can cause failures in long time. Load forces transmitted to the hydrant from the pipeline should not go beyond what is defined in EN 1074-2 standard. Not to do so can cause hydrant failure.

During installation, make sure that flange surfaces are clean and smooth.

Hydrant flange to Duck Foot Bend flange connection should be done by bolts and nuts; and washers must be used to protect the Hydrant coating. Opposing bolts should be screwed equally, preventing high load forces, strain and failure. Steel reinforced gaskets should be used between the flanges. Make sure that the gaskets are correctly positioned on the sealing surface of the flanges. Flange bolting should be selected according to EN 1591 Standard requirements. Excessive screwing of the bolts can cause permanent damage on the Hydrant.

Hydrant should be protected from outside effects (construction work, coating, concrete work etc.) at all times. Welding work should be concluded before Hydrant installation, and welding burrs should be cleaned beforehand.

Pipeline should be flushed and cleaned from all foreign particles, before Hydrant installation. Even though the pipeline can seem to be clean around the Hydrant installation area, during filling the line, particles from long distances can be carried to the installation area and can cause permanent damage on the Hydrant. DVD Valves cannot be held liable from damages occurred due to foreign particles such as debris, dirt, stones, wooden sticks etc.

Especially at steel pipeline applications, make sure to have full cathodic protection. In the absence of cathodic protection or non-active protection, Galvanic Corrosion can occur very fast. DVD Valves cannot be held liable from such damages.

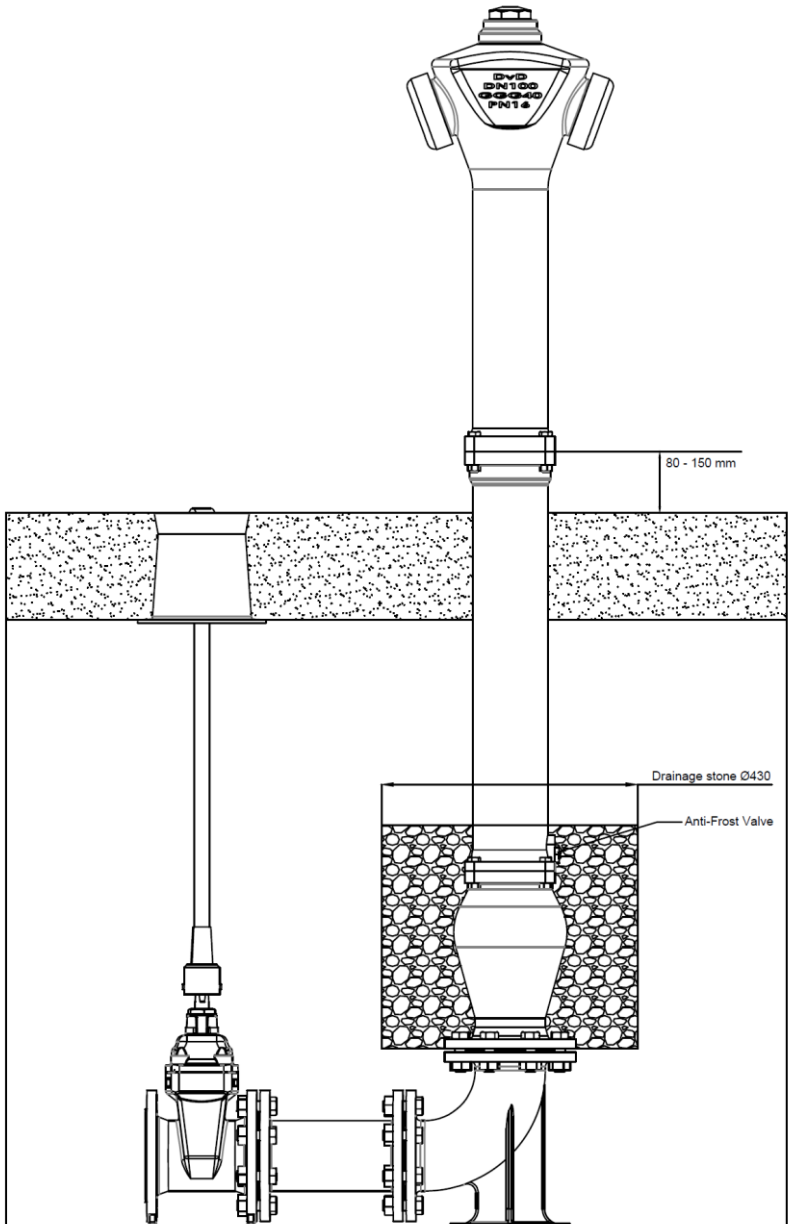
Inspect the Hydrant before installation and make sure that there are no foreign particles inside the Hydrant. Check the sealing surfaces of the Hydrant and confirm that they are clean. Open and close the Hydrant at least one time and check the functionality of the Hydrant before installation. For Hydrants that are stored for a long period of time, please check the sealings for any deformation and please contact the manufacturer if you see any problems.

If the Hydrant needs to be re-coated on site, for maintenance purposes, be sure to protect the sealing surfaces (gaskets, o-rings, stainless steel surfaces etc.) If these surfaces are coated, sealing problems can occur.

VALVE POSITIONING

Hydrants should be installed with a Duck Foot Bend to support the installation. In failure to install a Duck Foot Bend, Hydrant can sink down or tilt due to earth movements.

A Gate Valve should be installed in the upstream of the Hydrant in order to allow isolation and maintenance of the Hydrant. A typical installation should be done as below:



PICTURE 2 – Fire Hydrant Typical Installation

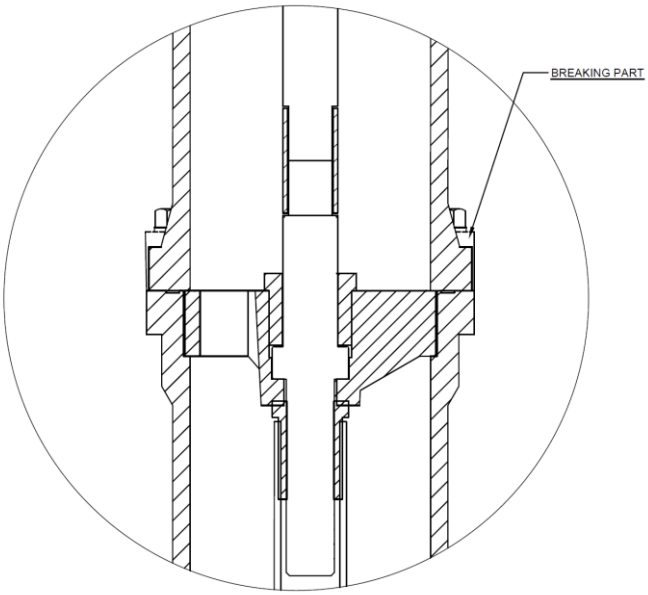
Make sure to provide drainage stones around the Automated Drainage Valve (Ø400 – Ø 450 mm area), in order to allow easy drainage of water. In failure to do so, Automated

Drainage Valve will not be able to drain the Hydrant and frost damages may occur. Automated Drainage Valve can spill out water during the use of the Hydrant.

Installing the Hydrant upside-down or as tilted can cause sealing problems or cause permanent damage on the Hydrant.

KY1 Fire Hydrants have Break-Away design. **Break-Away connection point should be installed 80 – 150 mm higher than the ground level.** If the positioning of the Break-Away point is not followed, it will not be functional.

KY1 Fire Hydrants have 90° positioning feature. By dismantling the Break-Away connection point, one can rotate the Hydrant Barrel in 90°, in order to suit the hydrant outlets. **Make sure to position the outlets of the hydrant to be easily accessible in case of fire.**



PICTURE 3 – Break-Away Connection Point

MAINTANANCE

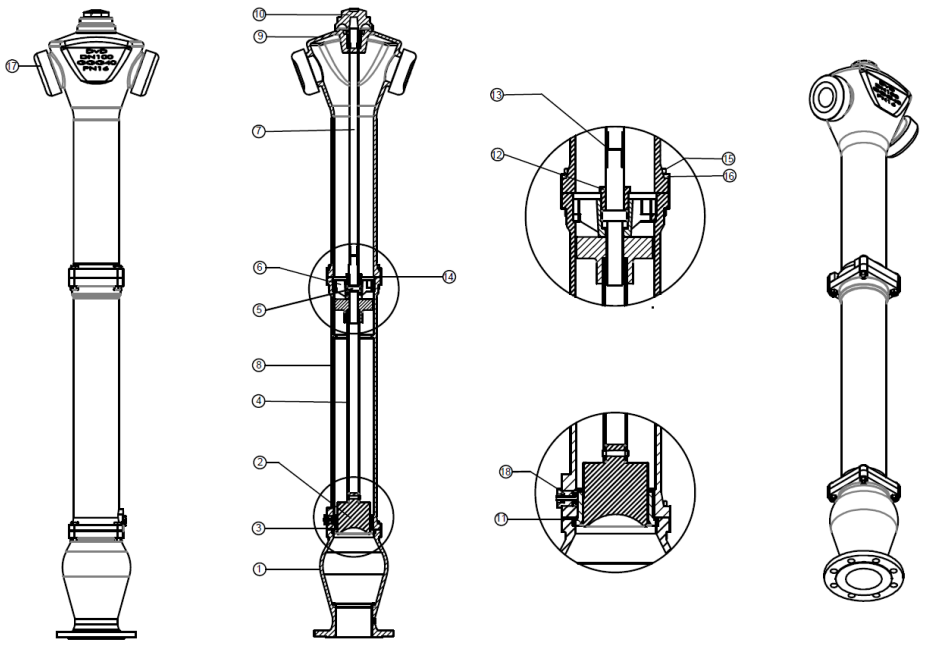
Before starting the maintenance, make sure that the Hydrant is isolated; upstream pipelines of the Hydrant is drained and de-pressurized. In case pipeline is not de-pressurized fully; potential dangers such as sudden disc movement, part movement or pressurized water outflow etc. can occur.

After maintenance is done, please re-install the Hydrant to the pipeline according to the related section in this Operation Manual.

Maintenance work should be done by experienced and skilled personnel. If there is no such personnel, please get in contact with DVD Valves and request your maintenance need. All personnel who will do the maintenance work should read and fully understand this Operation Manual.

Maintenance personnel should follow Occupational Health and Safety requirements and should use the necessary protective accessories (Work shoes, glasses, helmet, gloves etc.).

DVD KY1 Fire Hydrant Spare Part lists are indicated as below:



No	Part Name	Material	Standard	Note
18	DRAINAGE VALVE	COPPER ALLOY	EN 10027	-
17	COUPLING COVER	ALUMINIUM	EN 12258	-
16	BREAKING PART	GGG 40	EN 1563	-
15	FASTENERS	AISI 304	EN 1515-2	-
14	O-RING	EPDM	EN 681-1	-
13	COUPLING	AISI 316	EN 10088	-
12	SHAFT NUT	COPPER ALLOY	EN 10027	-
11	O-RING	EPDM	EN 681-1	-
10	CAP TOP	GGG 40	EN 1563	-
9	PILLAR BODY	GGG 40	EN 1563	-
8	MIDDLE BODY	GGG 40	EN 1563	-
7	SHAFT	X20Cr13	EN 10028-2	-
6	BEARING	COPPER ALLOY	EN 10027	-
5	STEM	X20Cr13	EN 10028-2	-
4	PIPE	AISI 304	EN 1515-2	-
3	BUSH	COPPER ALLOY	EN 10027	-
2	DISC	GGG 40	EN 1563	-
1	BOTTOM BODY	GGG 40	EN 1563	-

Product Code		Product Name:						
Mold No		FIRE HYDRANT						
Date	21.05.2019	SIZE						
Design	Sinan ERKUŞ							
Approved	Alaattin YILDIRIM		Size	A3	Scale	1:5	Weight	- Kg
GENERAL TOLERANCES ISO 2768-M			0-6	6-30	30-120	120-400	400-1000	1000-2000	2000-4000
			±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2

Drawing No: YH-XX-XXX

PICTURE 4 – DVD Fire Hydrant Spare Part List

This table is to provide a general idea to users, and life times can vary according to site conditions, application and operational conditions. Sealings should be changed when they are worn out or damaged.

All gasket and o-rings should be lubricated after renewal (w/ de-mineralized lubricant). If the Valve is potable water approved, potable water approved lubricants should be used.

Please follow the below steps to renew the Disc (2):

1. Isolate the Hydrant from the line and make sure that the line is de-pressurized.
2. Dismantle the Fasteners (15) and pull the Pillar Body (9) up.
3. Rotate the Bearing (6) 90° to remove it from the body groove.
4. Pull the Valve Mechanism out of the body.
5. Take out the Pin of the Disc (2) from the Pipe (4).
6. Clean the Bush (3) surface.
7. Install the new Disc (2) and pin it to the Pipe (4).
8. Install the Valve Mechanism inside the body.
9. Rotate the Bearing to fit it to the groove of the body.
10. Install the Pillar Body (9) and fasten the Breaking Part (16).
11. Check the functionality of the Valve Mechanism.
12. After installing the Hydrant, check the Disc (2) for good sealing.

Please follow the below steps to renew the Break Away Mechanism (16):

1. Isolate the Hydrant from the line and make sure that the line is de-pressurized.
2. If not removed, remove the Breaking Part (16) and pull the Pillar Body (9) up.
3. Take out the Coupling (13) and if damaged, change it with a new one.
4. Install the Pillar Body (9) so that the Shaft (7) is well connected to the Coupling (13).
5. Install the Pillar Body (9) and fasten the new Breaking Part (16).
6. Check the functionality of the Valve Mechanism.
7. After installing the Hydrant, check the Disc (2) for good sealing.

CONTACT INFORMATION

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