

Operation and Maintenance Manual

BREAK-AWAY FIRE HYDRANT

**P/N
TYPE 8003**

Approved for use by

President of Factory, JAFAR S.A.

Failure to comply with the guidelines and instructions in this Operation and Maintenance Manual releases the manufacturer from all obligations, liability and guarantee.

Due to continuous business development, we reserve the right to introduce modifications and structural changes to the presented product.

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1 TECHNICAL DESCRIPTION

1.1 PRODUCT NAME AND FEATURES

The subject of this O&MM is:

Break-away fire hydrant with double closure

- With additional protection against flow in the form of ball valve; placed below poppet
- With automatic water drainage activated by medium flow stoppage;
- With poppet (closure) embedded in 100% pure elastomer;
- Internal parts may be replaced without cutting off flow;
- Valve body with saddle tees may be rotated within the range from 0° to 360°.

1.2 PURPOSE

Break-away fire hydrants TYPE 8003 with double closure are intended for fire protection systems, for chemically neutral pure water, free of impurities and for industrial systems. For use on above-ground installations on pipelines laid horizontally below the freezing zone.

1.3 TECHNICAL SPECIFICATION

Break-away fire hydrants with closure are intended for transport of potable water and industrial water at temperatures from +1°C to +50°C.

- Available diameters (dimensions) DN80-DN100 [mm]
- Maximum medium flow rate: - liquid up to 4 [m/s]

- driving torque at opening start and closing end are listed below:

DN [mm]	80	100
Mmax [Nm]	80	80

- equipment control: closing direction in the standard version of hydrant: clockwise closing sense of rotation.

The closing sense of rotation can be opposite on special order.

- connection flanges are manufactured in accordance with PN-EN 1092-2:1999 with the dimensions adequate to the relevant nominal pressure of 1.6 MPa.
- Hydrant's efficiency with nominal pressure 0.2 MPa is:
 - 10 dm³/s – above ground DN80
 - 15 dm³/s – above ground DN100

In accordance with PN-B-02863: 1997 "Fire water supply"

- Key for controlling valves and taps PN-89/M-74088
- Design in accordance with PN-EN 14384:2009 TYPE C
- Saddle tees B 75 per DIN 14318: 1985
- Saddle tees A 110 per DIN 14319: 1985

2 STRUCTURE

2.1 HYDRANT DESIGN DESCRIPTION

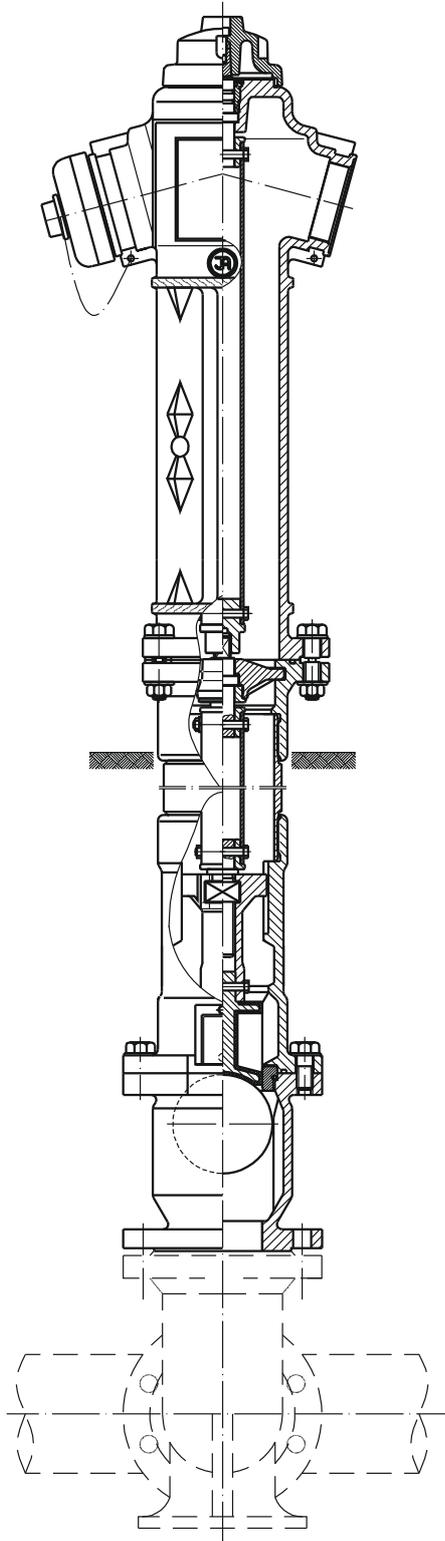
The fire hydrants are made in the form of column with internal structure to enable drawing water from pipeline and a header with saddle tees for attachment of fire hoses. In the lower part of the hydrant there is a cast-iron valve chamber with a poppet acting as closing element and a drainage device. The chamber housing is connected to the ball's (ball return valve) valve chamber finished with a connection flange for installing the hydrant on the pipeline. Top part of the hydrant is a cast-iron body with outlet openings with saddle tees. The top body also has a driving element on the end of bolt used for transferring rotational movement to the hydrant's poppet via distance pipe. The top body of a break-away fire hydrant is connected to the underground part with

thinner bolts. Such a connection enables breakage of hydrant without damaging it and resulting water outflow. Special flanges enable free rotation of the ground part of the hydrant from 0° to 360°. There is a special articulation spindle inside the hydrant, in the connection area of the above ground and underground part of the hydrant. The rotating stem is seated in a stopper with rubber sealing rings. Rotate the hydrant clockwise to close the flow. Poppet moves during rotation of the stem and flow opens. The poppet's movement closes the water draining device's outlet opening. When closing a hydrant, the poppet lands in the seat and the water remaining in the hydrant's column using draining valve.

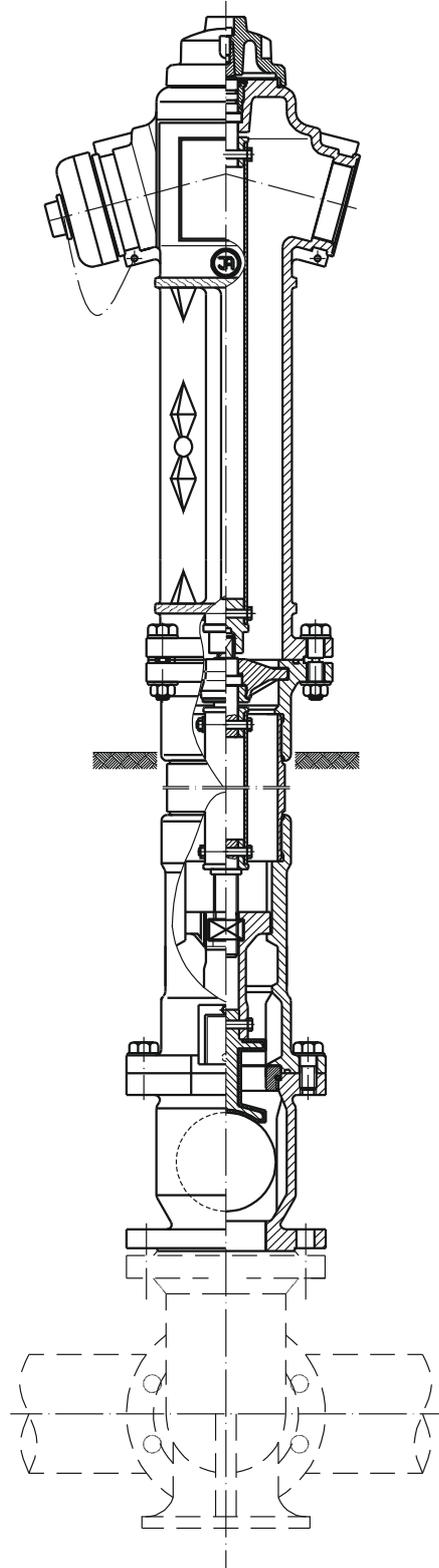
With this type of hydrant, it is possible to replace the complete internal equipment of a hydrant without cutting off the supply thanks to a ball valve.

Operation diagram for hydrant TYPE 8003 DN80

CLOSE

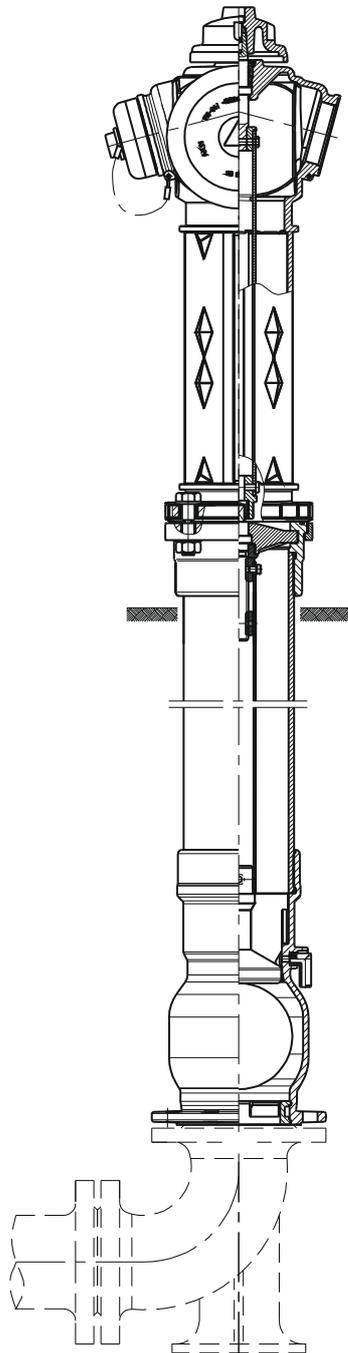


OPEN

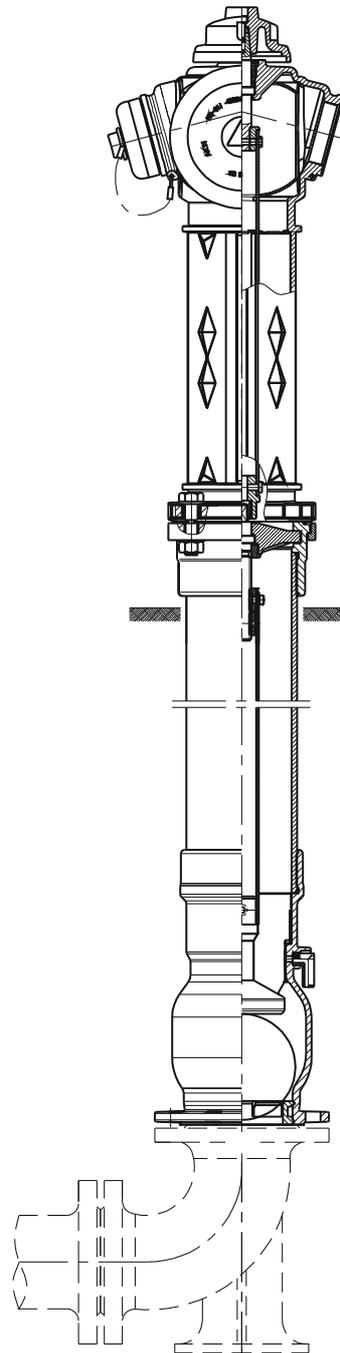


Operation diagram for hydrant TYPE 8003 DN100

CLOSE



OPEN



The order of operations during opening and closing of a hydrant type 8003 configured with a shutoff gate valve.

- Starting:

1. Open the shutoff gate valve.
2. Open the hydrant.

- Stopping:

3. Close the hydrant.
4. Close the shutoff gate valve.

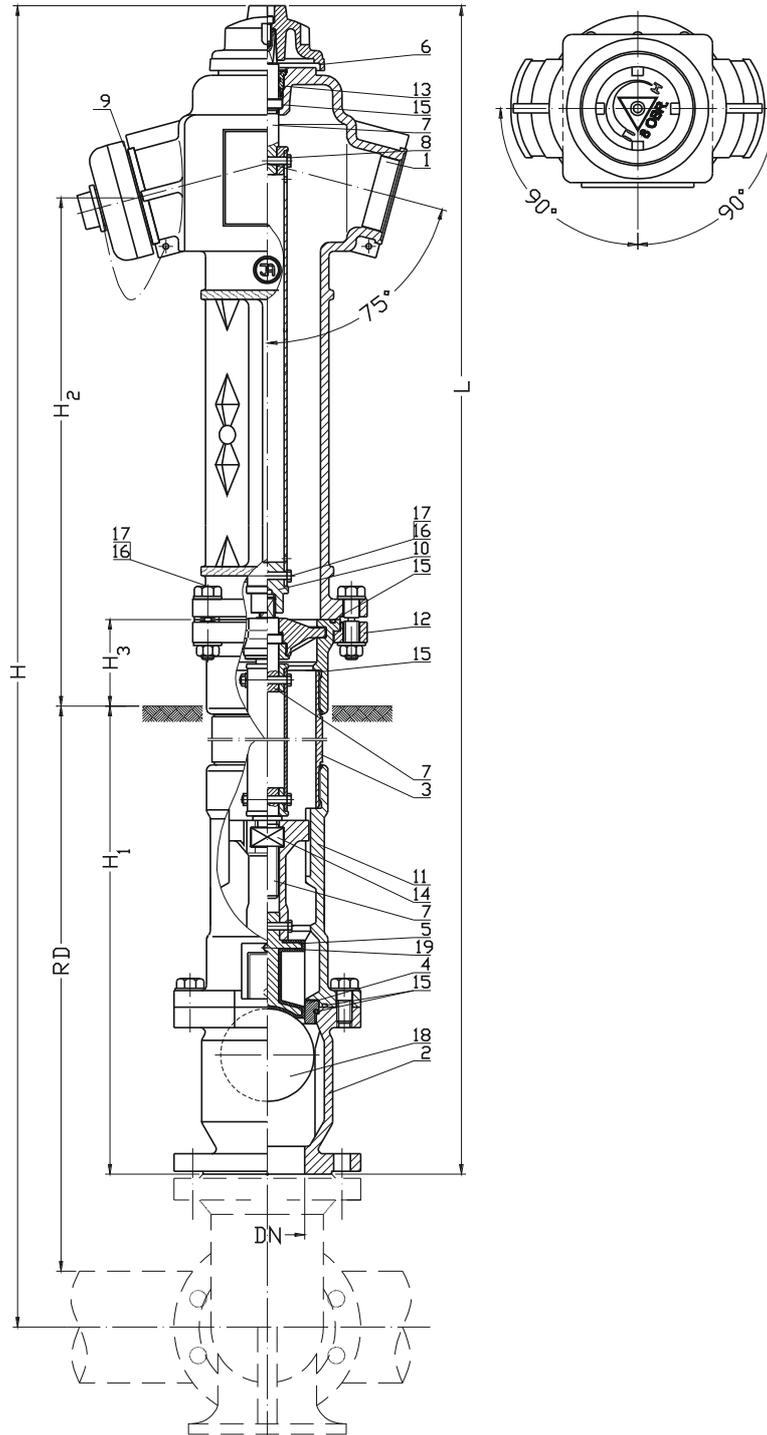
Caution! It is prohibited to open this type of hydrant with a closed shutoff gate valve because the poppet sliding down must be able to push a water column in the direction opposite to the flow direction during the first phase of its movement.

2.2 MATERIALS DN80

List of basic materials used for the construction of an overground hydrant TYPE 8003 DN80 —
See table

Item	Part name	Material	Reference standard
1	Main body	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
2	Ball chamber	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
3	Column	Cast-iron, EN-GJS 400-15 EN-GJS500-7 Steel 1.0254 Stainless steel 1.4301	PN-EN1563: 2012 PN-EN 1,503-3:2003 PN-EN 10088-1:2014
4	Seat	Brass	PN-EN 1982:2010
5	Poppet	Cast-iron, EN-GJS 400-15 EN-GJS500-7 EPDM	PN-EN1563:2012 PN-ISO1629:2005
6	Cap	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
7	Stem	Stainless steel 1.4021	PN-EN 10088-1: 2014
8	Spindle	Stainless steel 1.4301	PN-EN 10088-1:2014
9	Saddle tee	Aluminium, AlSi	PN-EN 1706:2011
10	Coupling	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
11	Lower body	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
12	Lower flange	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
13	Stopper	Brass	PN-EN 1982:2010
14	Stem nut	Brass	PN-EN 1982:2010
15	O-ring	EPDM	PN-ISO 1629:2005
16	Bolt	Stainless steel, A2	PN-EN ISO 4017: 2011 PN-EN ISO 4762: 2006
17	Nut	Stainless steel, A4	PN-EN ISO 4032: 2013
18	Ball	Cellular polypropylene or aluminium alloy AlSi/EPDM	PN-EN 1706:2011 PN-ISO 1629:2005
19	Drainage	Polypropylene PP	PN-EN ISO 1873-1:2000

2.3 DIMENSIONS DN80



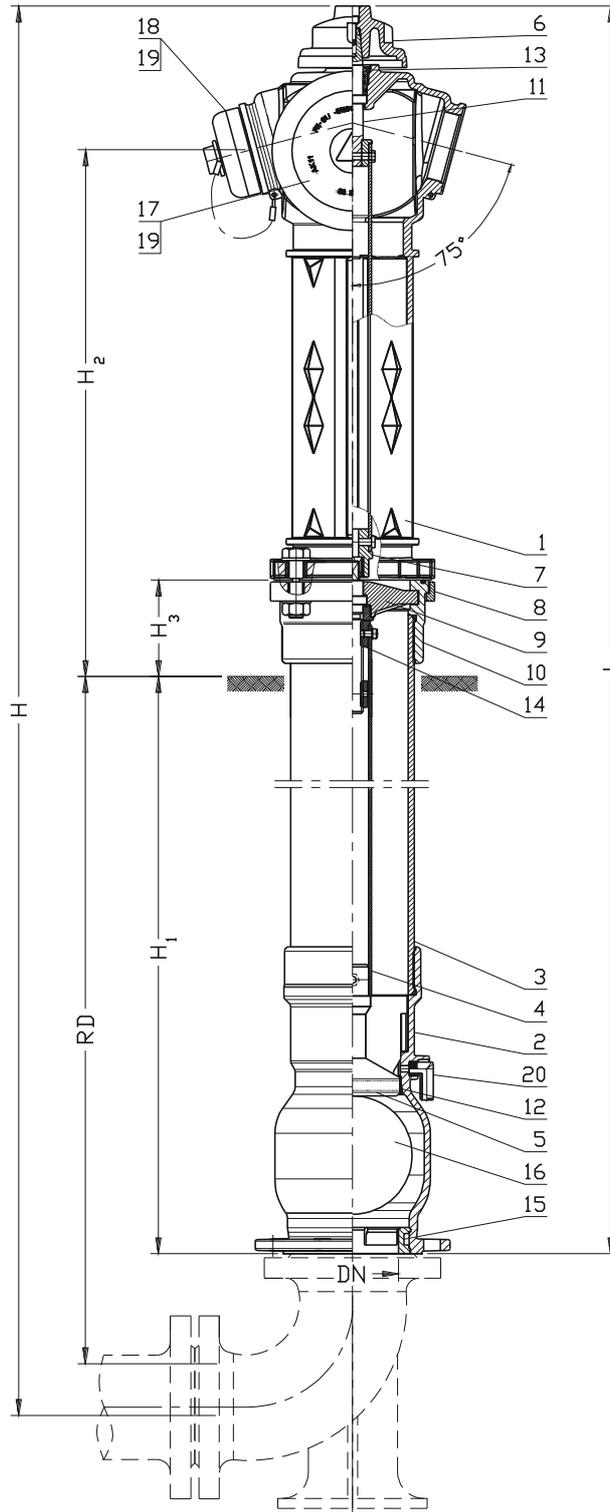
DN	RD	L	H	H ₁	H ₂	H ₃	Weight
							[mm]
							[kg]
80	1250	1890	2055	1130	600	110	75
	1500	2140	2305	1380			81
	1800	2440	2605	1680			89

2.4 MATERIALS DN100

List of basic materials used for the construction of an overground hydrant TYPE 8003 DN100 — see table

Item	Part name	Material	Reference standard
1	Main body	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
2	Lower body	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
3	Column	Cast-iron, EN-GJS 400-15 EN-GJS500-7 Steel 1.0254 Stainless steel 1.4301	PN-EN1563: 2012 PN-EN 1,503-3:2003 PN-EN 10088-1:2014
4	Sleeve	Brass	PN-EN 1982:2010
5	Poppet	Cast-iron, EN-GJS 400-15 EN-GJS500-7 EPDM	PN-EN1563:2012 PN-ISO1629:2005
6	Cap	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
7	Stem	Stainless steel 1.4021	PN-EN 10088-1: 2014
8	Spindle	Stainless steel 1.4301	PN-EN 10088-1:2014
9	Saddle tee	Aluminium, AISi	PN-EN 1706:2011
10	Coupling	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
11	Rotary clamp	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
12	Rotary flange	Cast-iron, EN-GJS 400-15 EN-GJS500-7	PN-EN1563: 2012
13	Stopper	Brass	PN-EN 1982:2010
14	Stem nut	Brass	PN-EN 1982:2010
15	O-ring	EPDM	PN-ISO 1629:2005
16	Bolt	Stainless steel, A2	PN-EN ISO 4017: 2011 PN-EN ISO 4762: 2006
17	Nut	Stainless steel, A4	PN-EN ISO 4032: 2013
18	Ball	Cellular polypropylene or aluminium alloy AISi/EPDM	PN-EN 1706:2011 PN-ISO 1629:2005
19	Drainage	Polypropylene PP	PN-EN ISO 1873-1:2000

2.5 DIMENSIONS DN100



DN	RD	L	H	H ₁	H ₂	H ₃	Weight
[mm]							[kg]
100	1250	1890	2075	1125	600	110	85
	1500	2140	2325	1375			90
	1800	2440	2625	1675			96

2.6 STANDARDS

PN-EN 1074-1: 2002	Valves for water supply. Fitness for purpose requirements and appropriate verification tests. General requirements
PN-EN 1074-6: 2009	Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Hydrants.
PN-89/H-02650	Fittings and pipelines. Pressures and temperatures.
PN-EN 19:2005	Industrial valves. Marking of metallic valves.
PN-EN 1092-2: 1999	Flanges and their connections. Circular flanges for pipes, valves, fittings and accessories, PN designated. Cast iron flanges.
PN-EN ISO 6708: 1998	Pipework components. Definition and selection of DN (nominal size).
PN-EN 1559-1: 2011	Founding. Technical conditions of delivery. General.
PN-EN1563: 2012	Founding. Spheroidal graphite cast irons.
PN-EN1370: 2012	Founding. Examination of surface condition by visual-tactile comparators.
PN-EN14384: 2009	Standpost hydrants.
PN-EN 10088-1: 2014	Stainless steels. List of stainless steels.
PN-89/H-84023/07	Specific application steel. Pipe steel. Grades.
PN-EN 1706 2011	Aluminium and aluminium alloys. Foundings. Chemical composition and mechanical properties.
PN-EN1982: 2010	Copper and copper alloys. Ingots and castings.
PN-EN12420: 2002	Copper and copper alloys. Forgings.
PN-ISO 965-1: 2001	ISO general purpose metric screw threads. Tolerances. Principles and basic data.
PN-ISO 2903: 1996	Trapezoid ISO metric threads. Tolerances.
PN-EN ISO 4762:2006	Hexagon socket headcap screws.
PN-EN ISO 4017:2011	Hexagon head screws. Product grades A and B.
PN-EN ISO 4014:2011	Hex head bolt. Product grades A and B.
PN-EN ISO 4032:2013	Hexagon regular nuts (style 1). Product grades A and B.
PN-EN ISO 7091:2003	Plain washers. Normal series. Product grade C
PN-77/M-82008	Spring washers.
PN-EN ISO 8752:2009	Spring-type straight pins. Slotted, heavy duty.
PN-69/M-80202	Steel wires 1x7.
BN-89/8511-15	Metallic seals.
PN-ISO 1629: 2005	Rubbers and lattices. Nomenclature.
PN-EN ISO 1873-1: 2000	Plastic materials. Polypropylene (PP) moulding and extrusion materials. Designation system and basis for specifications.
PN-EN ISO 1872-1:2000	Plastic materials. Polyethylene (PE) moulding and extrusion materials. Designation system and basis for specifications.
PN-EN ISO 12944-5: 2009	Paints and varnishes. Anti-corrosion protection of steel structures by means of protective painting systems. Protective paint systems.

2.7 ORDERING REGULATIONS

Above-ground fire hydrants are specific purpose industrial valves, therefore orders must include:

- product's catalogue number,
- intended use, e.g. for fire water supply systems;
- furthermore:
- nominal diameter — acc. to PN-EN ISO 6708: 1998
- nominal pressure, acc. to PN-89/H-02650;
- type of body material — acc. to PN-EN 1563: 2012
- max. operating temperature — acc. to PN-89/H — 02650.

2.8 MANUFACTURE AND ACCEPTANCE

The above-ground hydrants are accepted and produced in accordance with: PN-EN 1074-6:2009 (Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Hydrants.) and PN-EN 14384:2009

(Above-ground fire hydrants.) All hydrants (100%) are subject to tightness testing. The tests include external body tightness and closing tightness.

2.9 MARKINGS

The above-ground hydrants are marked in accordance with: PN-EN-19: 2005, PN-EN-1074-6: 2009 markings on the front and back walls of the body chamber. The marking contains the following data:

- nominal diameter
- nominal pressure
- type of body material
- manufacturer trade mark
- direction of medium flow.

The location on the valve specified in the documentation features the nameplate which contains the following data:

- manufacturer's company name and logo
- product serial number
- sealing temperature grade
- the Polish Building Mark "B" and/or the CE mark (as applicable)
- product type

3 PROTECTION, STORAGE & TRANSPORT

3.1 PROTECTIVE COATINGS

All inner and outer cast-iron surfaces and column pipes are protected with electro-deposited epoxy coat. The coat has been approved for contact with foodstuffs.

The anti-corrosion coating layer minimum thickness is 250µm with UV protection.

The casting surface is pre-treated for epoxy coating in accordance with the relevant technical documentation and standard PN-EN ISO 12944-5: 2009.

The fastening bolts for external hydrant's part, if other than stainless steel grade 1.4301, should have corrosion protection in the form of coat, e.g. Fe/Zn5.

3.2 PACKAGING

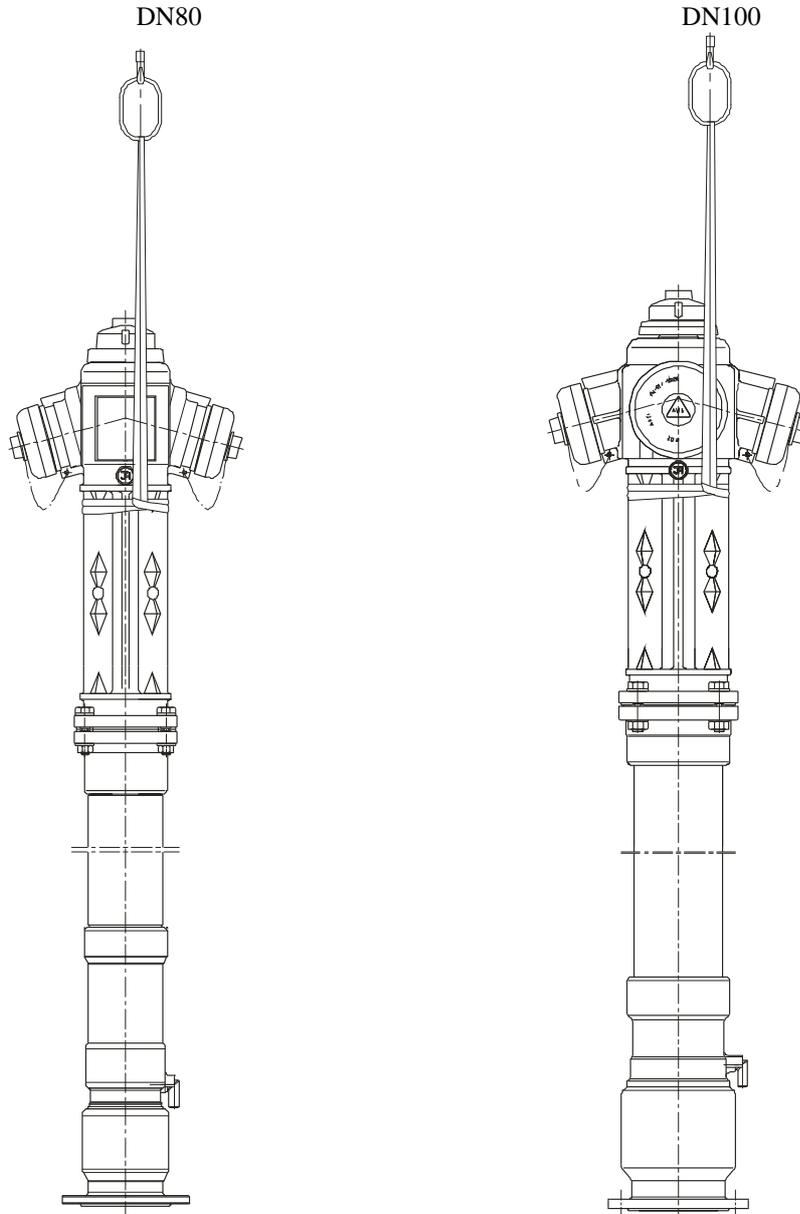
The hydrants are placed in plastic film sleeves and additionally wrapped with stretch wrap when placed on pallets.

3.3 STORAGE

Store the hydrants in sheltered rooms.

3.4 TRANSPORT

Transport the hydrants on sheltered vehicles.



4 ASSEMBLY AND INSTALLATION

4.1 INSTALLATION GUIDELINES

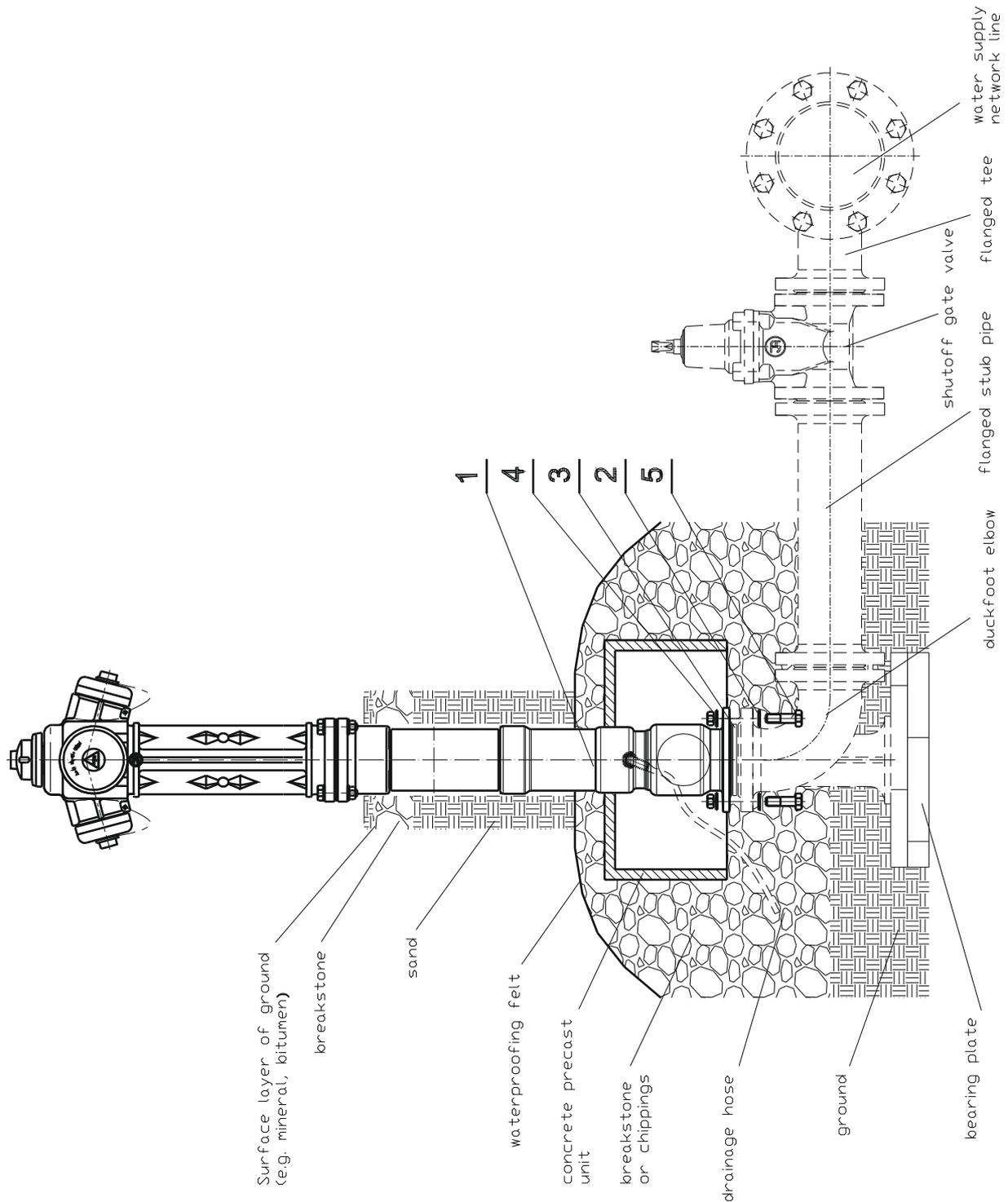
Above-ground fire hydrants TYPE 8003 may be installed on underground pipelines in case of horizontal systems. The products described herein are designed for installation using flange on the pipeline acting as medium (water) supply. The hydrant is equipped with special flanges to enable free above-ground part's rotation (from 0° to 360°). Special bolts for connecting the lower part with the above-ground part, if they have been loosened to enable rotation shall be tightened with max. torque 35Nm. Note that the system must not expose the hydrant to bending or tensile stress from loading with the unsupported pipeline sections. A hydrant assembled and adjusted by the manufacturer is ready for installation in the system. Any dismantling of the hydrant components may result in loss of tightness.

4.2 INSTALLATION INSTRUCTIONS

Before installing the hydrants, check the technical and commercial documentation, i.e. application for media and operation parameters of the pipeline, in which they are to be installed.

Note! If the product is damaged mechanically, do not install it in the pipeline.

Any change in the operating conditions must be consulted with the hydrant's manufacturer beforehand.



1. Hydrant; 2. Pipeline connection flange; 3. Gasket; 4. Nut; 5. Fastening bolt

4.3 OPERATION

The outdoor hydrants are designed for drawing fire fighting water. Detailed requirements are given in applicable regulations defining the need for fire fighting water. The diagram above shows an example installation method for an above-ground hydrant, the installation method largely depends on the applied rules based on the local climate and geologic conditions.

Exceeding the operating limits of the fitting may result in damage that will not be covered by the suretyship granted by the manufacturer.

It is recommended to change the hydrant's settings once a year.

4.4 OH&S REGULATIONS

In case of hydrants, guidelines and recommendations for installation of water systems and devices installed in water supply stations and other facilities apply.

Misuse of this product is prohibited.

5 GUARANTEE CONDITIONS

The manufacturer grants guarantee for the product being installed and operated according to this O&MM. The conditions and period of the guarantee is specified in the guarantee sheet.