

Operation
& Maintenance Manual

ABOVE-GROUND FIRE HYDRANT

P/N
TYPE 8855

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:

Above-ground fire hydrant with single closure

- With automatic water drainage activated by medium flow stoppage;
- With poppet (closure) embedded in 100% pure elastomer;

1.2 PURPOSE

Above-ground fire hydrants TYPE 8855 with single 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

Above-ground hydrants are intended for transport of potable water and industrial water at temperatures from +1°C to +50°C.

- Available diameters (dimensions)
 - DN80 [mm]
 - DN100[mm]
 - DN150[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	150
Mmax [Nm]	80	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
 - 20 dm³/s – above ground DN80
 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 A
- Saddle tees B 75 per DIN 14318: 1985
- Saddle tees A 110 per DIN 14319: 1985

2 STRUCTURE

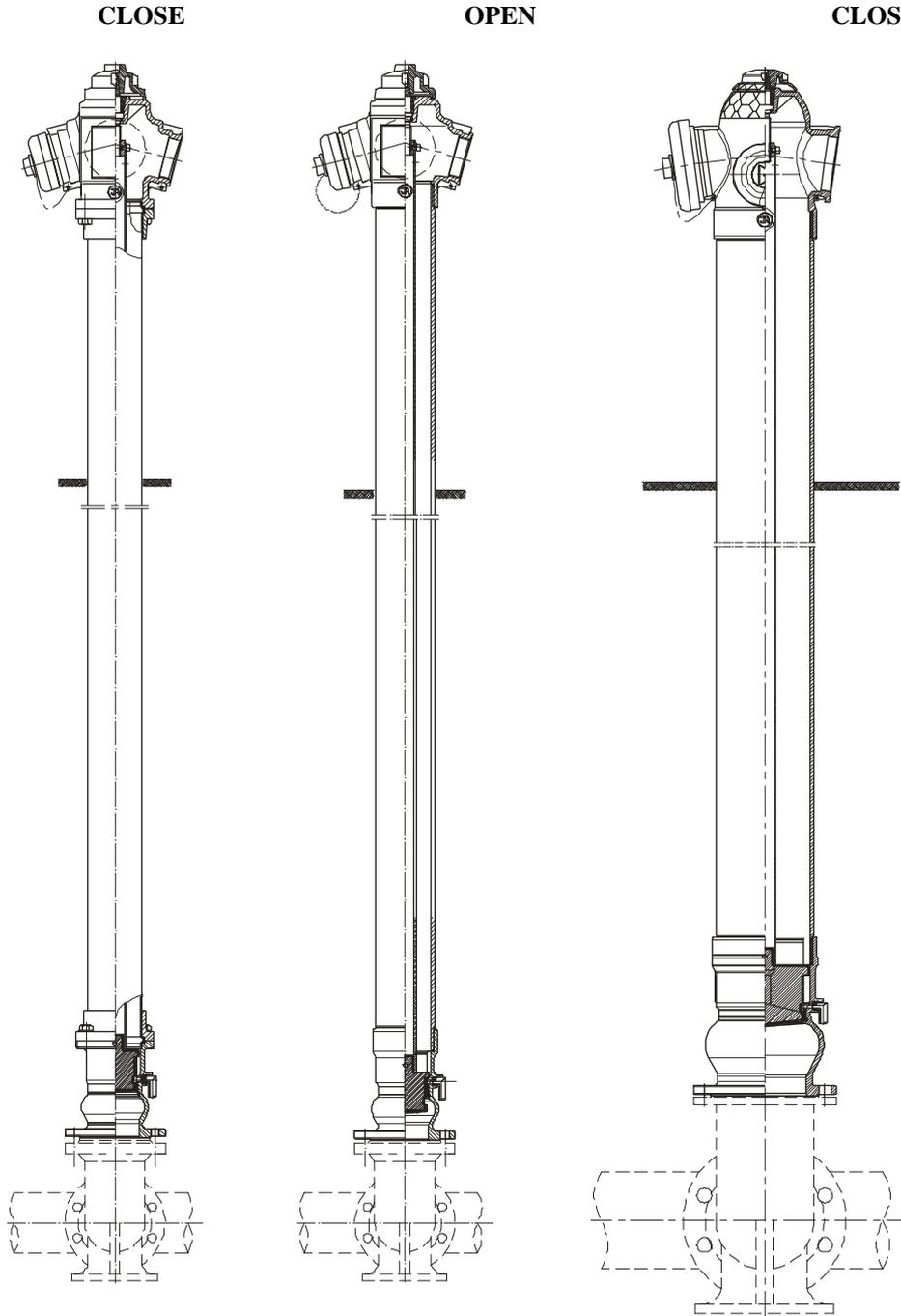
2.1 HYDRANT DESIGN DESCRIPTION

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 lower chamber's housing has 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 is connected with the lower body with a line pipe acting as the hydrant's column. The rotating stem is seated in a stopper with rubber sealing rings.

Rotate the hydrant clockwise to close the flow. When closing a hydrant, the poppet lands in the seat and the water remaining in the hydrant's column using draining valve.

Operation diagram hydrant TYPE 8855

DN150 **TYPE 8855.2 DN80** **TYPE 8855.1** **DN80** **TYPE 8855**



The order of operations during opening and closing of a hydrant type 8855 configured with a shutoff gate valve.

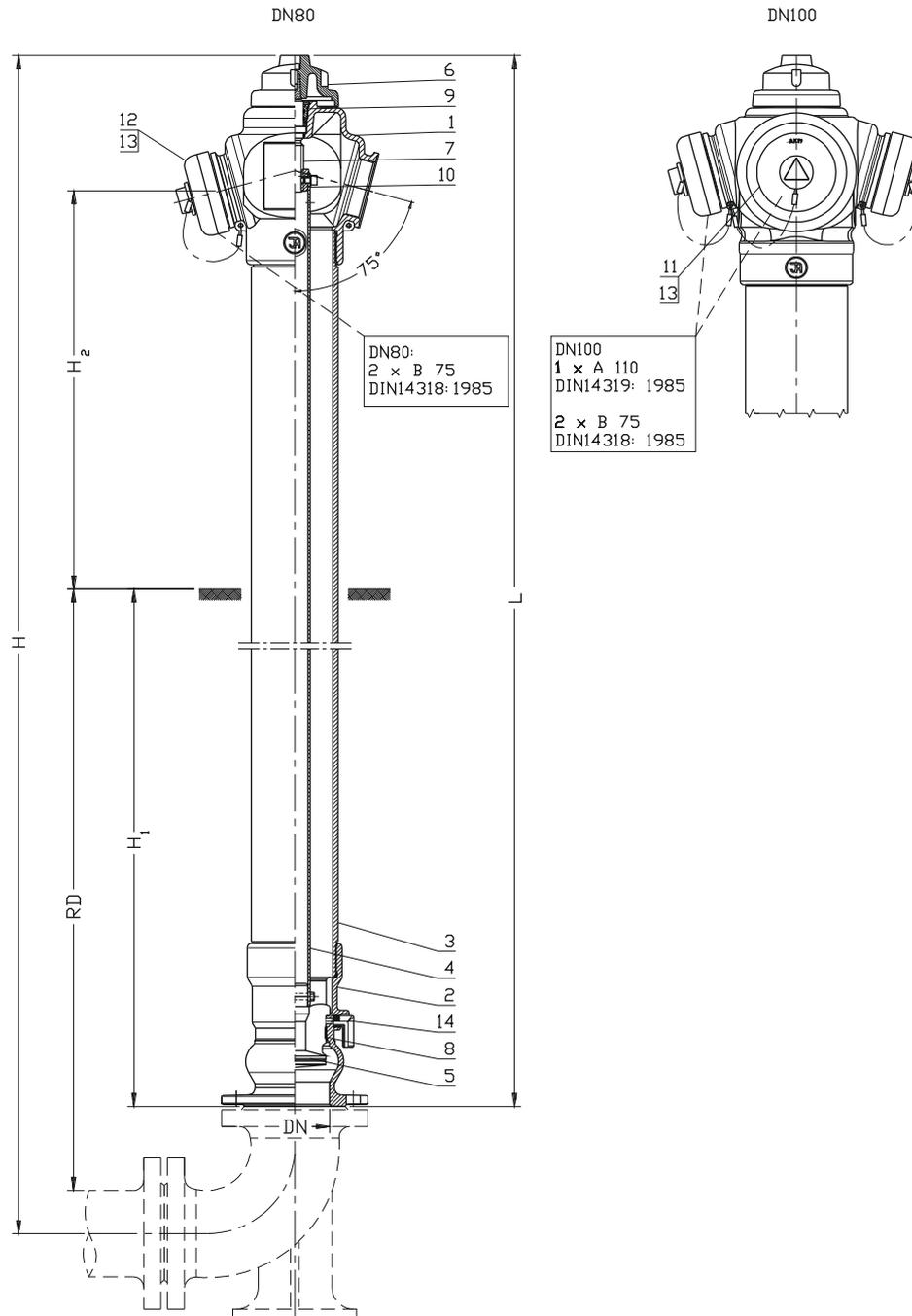
- Starting:
 1. Open the shutoff gate valve.
 2. Open the hydrant.
- Stopping:
 3. Close the hydrant.

2.2 MATERIALS TYPE 8855.1

List of basic materials used in the construction of the above-ground hydrant TYPE 8855.1 is given in the table:

Item	Part name	Material	Reference standard
1	Main body	Cast-iron, EN-GJL-250 EN-GJS-400-15 EN-GJS-500-7	PN-EN1561: 2012 PN-EN1563: 2012
2	Lower body		
3	Column	Cast-iron, EN-GJS -400-15 EN-GJS-500-7 Steel 1.0254	PN-EN1563: 2012 PN-EN 1503-1:2003
4	Spindle	Steel R45 Stainless steel 1.4301	PN-EN 10088-1:2014
5	Poppet	Cast-iron, EN-GJS -400-15 EPDM	PN-EN1563: 2012 PN-ISO1629: 2005
6	Cap	Cast-iron, EN-GJS -400-15 EN-GJS-500-7	PN-EN1563: 2012 PN-EN1563: 2012
7	Stem	Stainless steel 1.4021	PN-EN 10088-1: 2014
8	Seat	Bronze CuAl7	EN-ISO 24373
9	Stopper	Brass	PN-EN 1982:2010
10	Stem nut	Brass	PN-EN 1982:2010
11	Saddle tee A	Aluminium alloy AlSi	PN-EN 1706:2011
12	Saddle tee B	Aluminium alloy AlSi	PN-EN 1706:2011
13	Saddle tee bonnets	Cast-iron, EN-GJS -400-15 EN-GJS-500-7 Aluminium alloy AlSi	PN-EN1563: 2012 PN-EN 1706:2011
14	Drainage	Polypropylene PP	PN-EN ISO 1873-1:2000

2.3 DIMENSIONS TYPE 8855.1



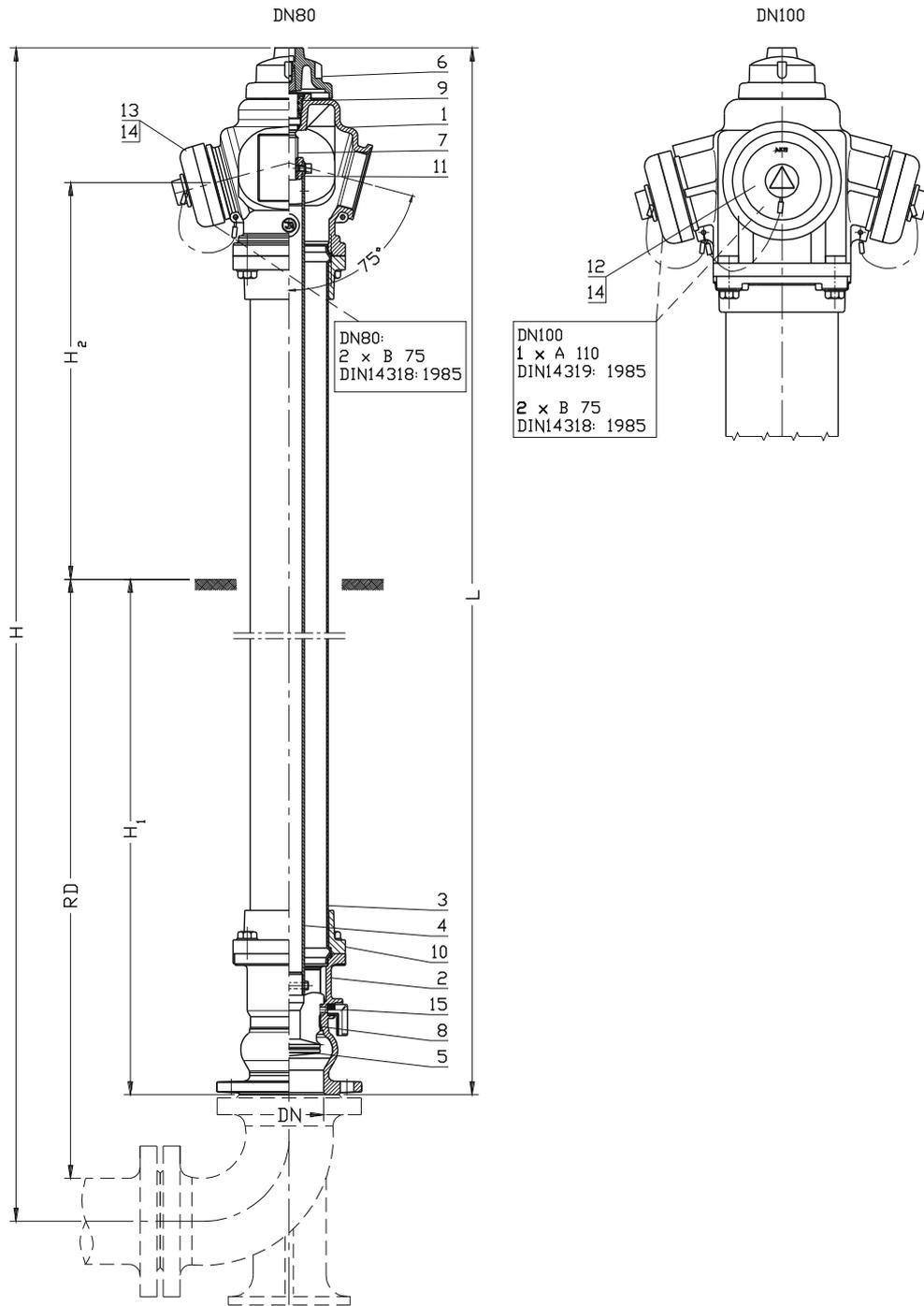
DN	RD	L	H	H ₁	H ₂	Weight
[mm]						[kg]
80	1000	1640	1805	880	600	48
	1250	1890	2055	1130		50
	1500	2140	2305	1380		59
	1800	2440	2605	1680		60
100	1250	1900	2080	1130	600	68
	1500	2150	2330	1380		73
	1800	2450	2630	1680		78

2.4 MATERIALS TYPE 8855.2

List of basic materials used in the construction of the above-ground hydrant TYPE 8855.2 is given in the table:

Item	Part name	Material	Reference standard
1	Main body	Cast-iron, EN-GJL-250 EN-GJS-400-15 EN-GJS-500-7	PN-EN1561: 2012 PN-EN1563: 2012
2	Lower body		
3	Column	Cast-iron, EN-GJS -400-15 EN-GJS-500-7 Steel 1.0254	PN-EN1563: 2012 PN-EN 1503-1:2003
4	Spindle	Steel R45 Stainless steel 1.4301	PN-EN 10088-1:2014
5	Poppet	Cast-iron, EN-GJS -400-15 EPDM	PN-EN1563: 2012 PN-ISO1629: 2005
6	Cap	Cast-iron, EN-GJS -400-15 EN-GJS-500-7	PN-EN1563: 2012 PN-EN1563: 2012
7	Stem	Stainless steel 1.4021	PN-EN 10088-1: 2014
8	Seat	Bronze CuAl7	EN-ISO 24373
9	Stopper	Brass	PN-EN 1982:2010
10	Flange	Cast-iron, EN-GJS -400-15 EN-GJS-500-7	PN-EN1563: 2012 PN-EN1563: 2012
11	Stem nut	Brass	PN-EN 1982:2010
12	Saddle tee A	Aluminium alloy AlSi	PN-EN 1706:2011
13	Saddle tee B	Aluminium alloy AlSi	PN-EN 1706:2011
14	Saddle tee bonnets	Cast-iron, EN-GJS -400-15 EN-GJS-500-7 Aluminium alloy AlSi	PN-EN1563: 2012 PN-EN 1706:2011
15	Drainage	Polypropylene PP	PN-EN ISO 1873-1:2000

2.5 DIMENSIONS TYPE 8855.2



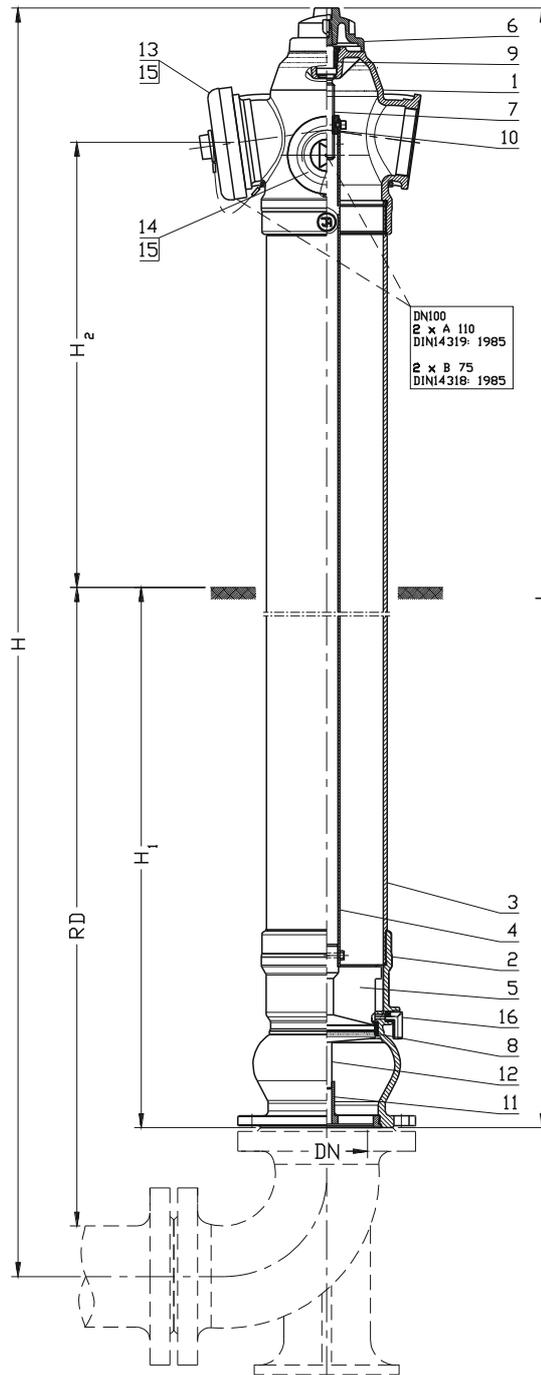
DN	RD	L	H	H ₁	H ₂	Weight
[mm]						[kg]
80	1250	1890	2055	1130	600	47
	1500	2140	2305	1380		49
	1800	2440	2605	1680		53
100	1250	1900	2080	1130	600	64
	1500	2150	2330	1380		68
	1800	2450	2630	1680		72

2.6 MATERIALS TYPE 8855 DN150

List of basic materials used in the construction of the above-ground hydrant TYPE 8855 is given in the table:

Item	Part name	Material	Reference standard
1	Main body	Cast-iron, EN-GJS 400-15	PN-EN1563: 2012
2	Lower body		
3	Column	Cast-iron, EN-GJS 400-15 EN-GJS500-7 Steel 1.0254 Stainless steel 1.4301	PN-EN1563: 2012 PN-EN 1503-1:2003 PN-EN 10088-1:2014
4	Spindle	Steel R45 Stainless steel 1.4301	PN-EN 10088-1:2014
5	Poppet	Cast-iron, EN-GJS 400-15 EPDM	PN-EN1563: 2012 PN-ISO1629: 2005
6	Cap	Cast-iron, EN-GJS 400-15	PN-EN1563: 2012
7	Stem	Stainless steel 1.4021	PN-EN 10088-1: 2014
8	Seat	Bronze CuAl7	EN-ISO 24373
9	Stopper	Brass	PN-EN 1982:2010
10	Stem nut	Brass	PN-EN 1982:2010
11	Slide	Stainless steel 1.4021	PN-EN 10088-1: 2014
12	Pin	Brass	PN-EN 1982:2010
13	Saddle tee A	Aluminium alloy AlSi	PN-EN 1706:2011
14	Saddle tee B	Aluminium alloy AlSi	PN-EN 1706:2011
15	Saddle tee bonnets	Cast-iron, EN-GJS -400-15 EN-GJS-500-7 Aluminium alloy AlSi	PN-EN1563: 2012 PN-EN 1706:2011
16	Drainage	Polypropylene PP	PN-EN ISO 1873-1:2000

2.7 DIMENSIONS TYPE 8855 DN150



DN	RD	L	H	H ₁	H ₂	Weight
[mm]						[kg]
150	1250	1971	2191	1115	640	95
	1500	2221	2441	1365		103
	1800	2521	2741	1665		111

2.8 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-EN 1563: 2012	Founding. Spheroidal graphite cast irons.
PN-EN 1370: 2012	Founding. Examination of surface condition by visual-tactile comparators.
PN-EN 14384: 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-EN 1982: 2010	Copper and copper alloys. Ingots and castings.
PN-EN 12420: 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.

2.9 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.

2.10 MANUFACTURE AND ACCEPTANCE

The above-round 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.

2.11 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.

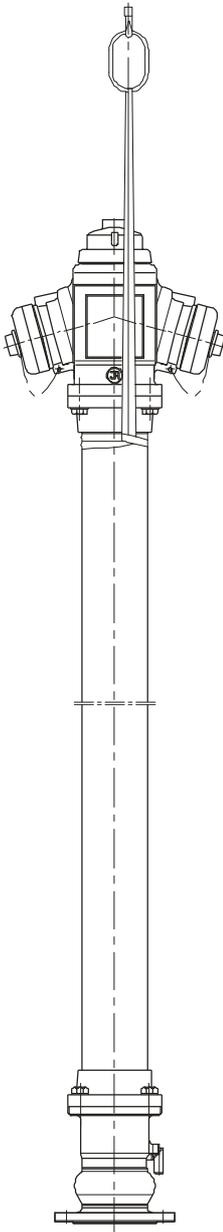
3.3 STORAGE

Store the hydrants in sheltered rooms.

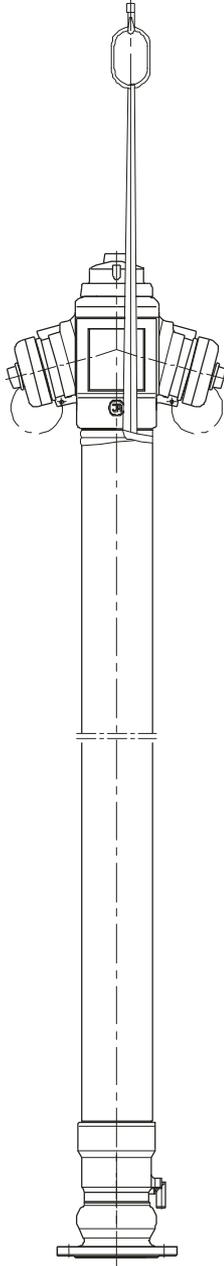
3.4 TRANSPORT

Transport the hydrants on sheltered vehicles.

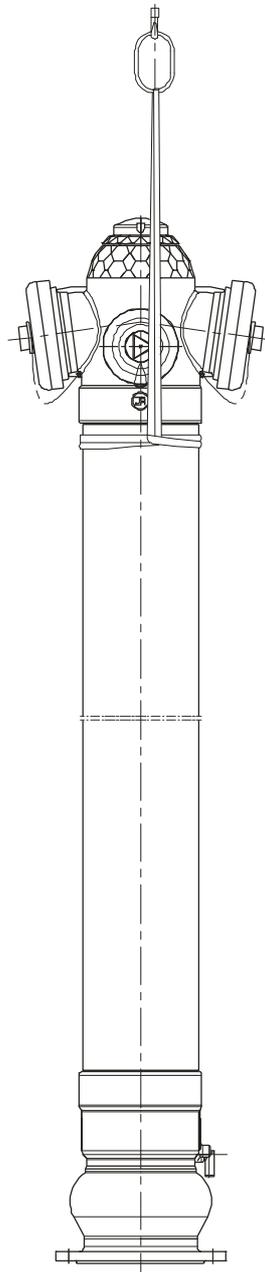
TYPE 8855.2 DN80



TYPE 8855.1 DN80



TYPE 8855 DN150



4 ASSEMBLY AND INSTALLATION

4.1 INSTALLATION GUIDELINES

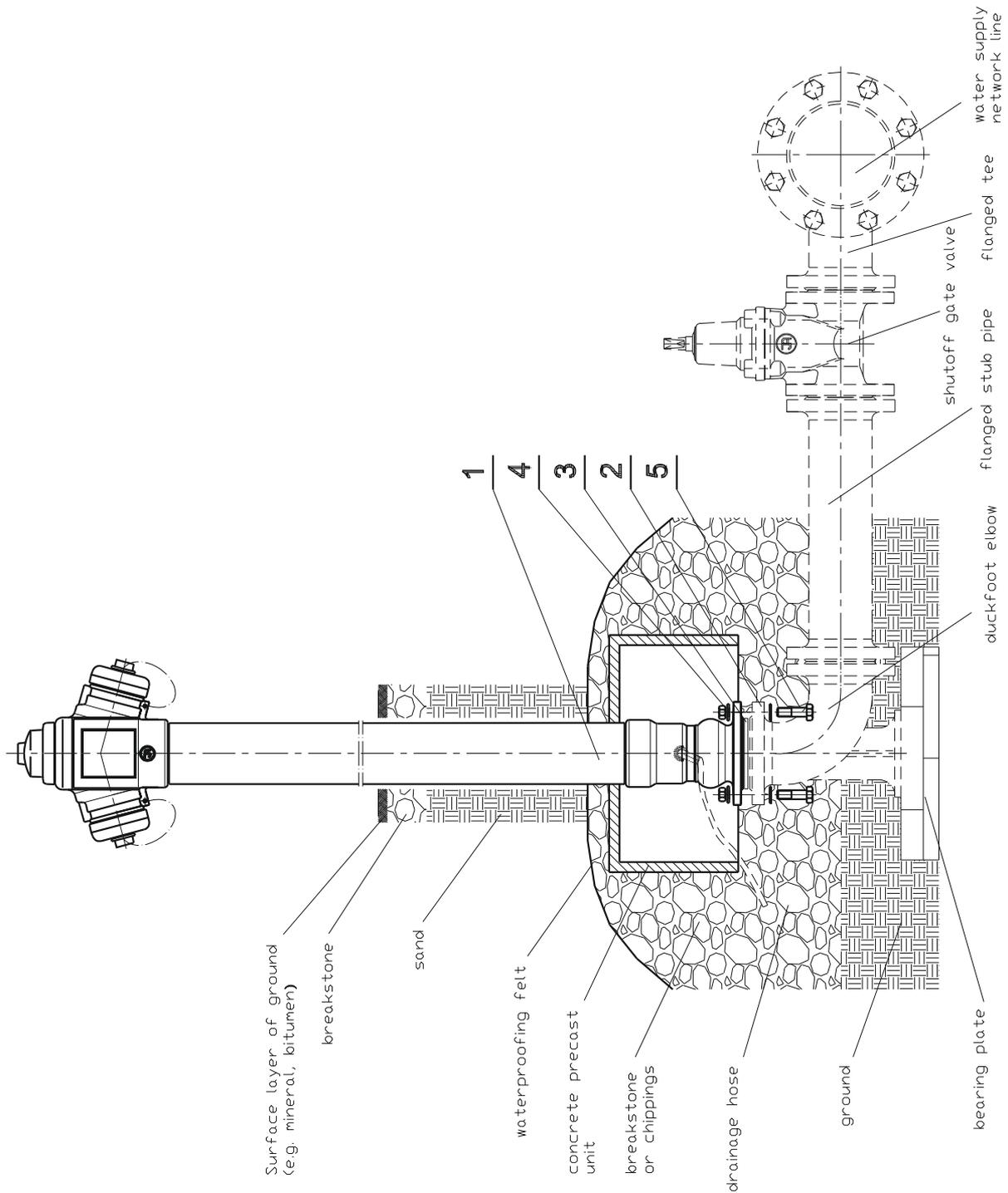
Above-ground fire hydrants TYPE 8855 may be installed on underground pipelines in case of horizontal systems. The products described herein are designed for installation using flange on the pipeline acting as medium (water) supply. Note that the system must not expose the hydrant to bending or tensile 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.



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.