

**Operation and maintenance**  
**manual for**

**FLANGED**  
**GATE VALVES**  
**WITH SOFT SEALS**  
**FOR PE PIPES**  
**P/N**  
**2123**

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 DESIGNATION AND IDENTIFICATION

The subject of this Operation and Maintenance Manual is:

TYPE 2123 wedge gate valve with soft seals for water supply systems

- full smooth walled bore design
- wedge (closure) embedded in 100% pure elastomer
- non-rising spindle
- soft o-ring seals of the valve cover

### 1.2 USE

The Type 2123 gate valves with soft seals are intended for isolation of water flow and flow of other neutral liquids. The valves are intended for underground installations as installed in horizontal PE pipelines.

### 1.3 TECHNICAL SPECIFICATION

The TYPE 2123 cast-iron gate valves with soft seals are intended for flow isolation in water supply systems with the medium temperature of up to +40°.

- Nominal diameter (dimension) range: DN50 to DN300 [mm]
- Maximum medium flow rate:
  - liquid: 4 [m/s]
  - gas: 30 [m/s]

- The driving torque at opening start and closing end is as listed below:

|                   |    |    |    |     |     |     |     |     |     |
|-------------------|----|----|----|-----|-----|-----|-----|-----|-----|
| <b>DN [mm]</b>    | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
| <b>M max [Nm]</b> | 55 | 80 |    | 100 |     |     | 200 |     |     |

- Valve control mode: the standard version of gate valve has the clockwise closing sense of rotation.  
The closing sense of rotation can be opposite on special order.
- The installation length meets the general table of dimensions, as specified by the manufacturer
- Nominal pressure ratings (PN): - 1.6 MPa

## 2 DESIGN

### 2.1 DESCRIPTION OF THE VALVE DESIGN

The TYPE 2123 cast-iron gate valves with soft seals for water flow isolation manufactured by **F.A. „JAFAR”S.A.** feature a smooth walled bore, a non-ring spindle, and an o-ring spindle seal installed in a head-type valve cover. The stem is guided by a bushing in the valve cover neck and a sealing plug. The stem seal is provided by the plug sealing assembly, which is a system of O-rings. The gate valve closure is a cast iron wedge completely coated with rubber and featuring a stem nut located on the wedge lug. The stem is equipped with an interlocking collar installed by necking. From the bottom the stem collar rests on a seat in the head via a bushing which acts as a sealed bearing. The plug is secured against unscrewing using a wire spring ring installed above the flange. The valve cover to body joint is made with hexagon socket head cap screws mounted flush with the valve cover and secured with paraffin compound. The valve cover to body seal is a rubber gasket which also seals the bolts to prevent any leaks from their openings.

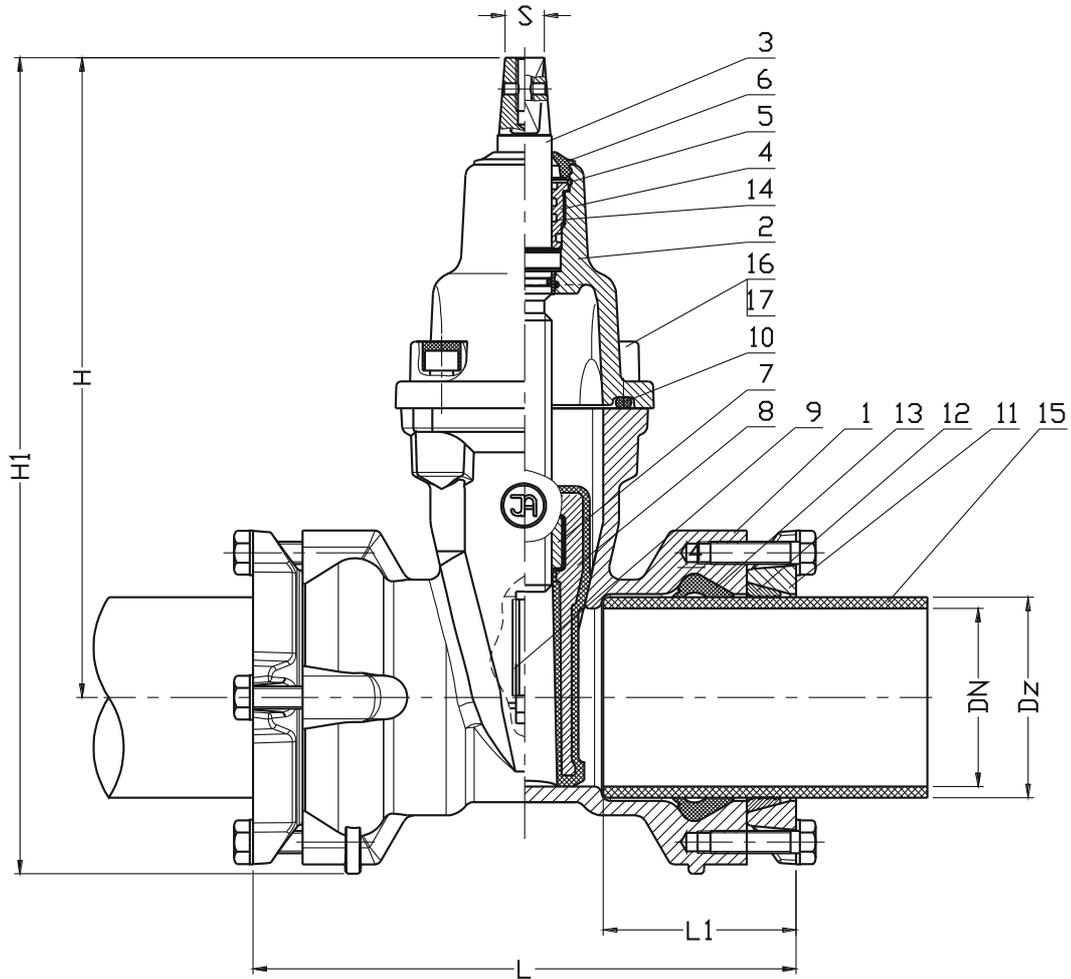
The gate valve body ends are bell sockets with seats for Forsheda seals into which PE pipes are inserted during integration with the pipeline. The gate valves also feature brass rings which secure the PE pipes within the body. All inner and outer cast-iron surfaces of the valve are epoxy powder coated. The stem may be operated manually using a hand wheel or, in case of gate valves located underground, through a hood and gate valve casing, using a T socket.

## 2.2 MATERIALS

The table below lists the structural materials of the type 2123 gate valves with soft seals.

| Item | Part designation   | Material                                                                 | Reference standard                          |
|------|--------------------|--------------------------------------------------------------------------|---------------------------------------------|
| 1    | Body               | Cast-iron, EN-GJS-400-15                                                 | EN 1563                                     |
| 2    | Cover              | Cast-iron, EN-GJS-400-15                                                 | EN 1563                                     |
| 3    | Spindle            | Steel grade 1.4021                                                       | EN 10088-1                                  |
| 4    | Sealing plug       | Brass                                                                    | EN 1982                                     |
| 5    | Safety ring        | Steel grade 1.1260                                                       | 74/H-84032                                  |
| 6    | Cleaning seal      | Rubber: EPDM/NBR                                                         | ISO 1629                                    |
| 7    | Spindle nut        | Brass                                                                    | EN 1982                                     |
| 8    | Wedge              | Brass (DN25-DN32)<br>Cast iron (DN40-DN300)<br>EN-GJS-400-15<br>EPDM/NBR | EN 1982<br>EN 1563<br>ISO 1629              |
| 9    | Skid               | Polyamide                                                                | EN ISO 1874-1                               |
| 10   | Valve cover gasket | Rubber: EPDM/NBR                                                         | ISO 1629                                    |
| 11   | Fork flange        | Cast-iron, EN-GJS-500-7                                                  | EN 1563                                     |
| 12   | Metal ring         | Brass                                                                    | EN 1982                                     |
| 13   | Forsheda ring      | Rubber: EPDM/NBR                                                         | ISO 1629                                    |
| 14   | O-ring             | Rubber: EPDM/NBR                                                         | ISO 1629                                    |
| 15   | PE pipe            | SDR11                                                                    | EN 1555-2                                   |
| 16   | Bolt               | Steel, Fe/Zn5, stainless steel                                           | EN ISO 4762                                 |
| 17   | Bolt plug          | Paraffin                                                                 | acc. to manufacturer's Technical Guidelines |

### 3 DIMENSIONS



| DN   | Dz  | H   | H1  | L   | L1  | S  | Mass |
|------|-----|-----|-----|-----|-----|----|------|
| [mm] |     |     |     |     |     |    | [kg] |
| 50   | 63  | 230 | 295 | 226 | 82  | 14 | 5    |
| 65   | 75  | 265 | 335 | 240 | 85  | 17 | 11   |
| 80   | 90  | 290 | 367 | 242 | 86  | 17 | 15   |
| 100  | 110 | 325 | 412 | 252 | 86  | 19 | 19   |
| 100  | 125 | 325 | 412 | 260 | 86  | 19 | 21   |
| 125* | 125 | 365 | 458 | 280 | 90  | 19 | 29   |
| 150  | 160 | 457 | 575 | 326 | 90  | 19 | 38   |
| 200  | 200 | 534 | 674 | 366 | 128 | 24 | 56   |
| 200  | 225 | 534 | 674 | 366 | 128 | 24 | 58   |
| 250* | 280 | 633 | 812 | 420 | 147 | 27 | 97   |
| 300  | 315 | 708 | 908 | 472 | 176 | 27 | 135  |

## 2.4 REFERENCE STANDARDS

|                |                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------|
| EN 1074-1      | Valves for water supply. Fitness for purpose requirements and appropriate verification tests. General requirements                   |
| EN 1074-2      | Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Isolating valves.                      |
| 89/H-02650     | Valves and pipelines. Pressure and temperature ratings.                                                                              |
| EN19           | Industrial valves. Marking of metallic valves                                                                                        |
| EN 12266-1     | Industrial valves. Testing of metallic valves. Pressure tests, test procedures and acceptance criteria. Mandatory requirements.      |
| EN 558         | Industrial valves. Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems. PN-designated valves. |
| EN ISO 6708    | Pipework components. Definition and selection of DN (nominal size).                                                                  |
| EN 1559-1      | Founding. Technical conditions of delivery. General.                                                                                 |
| EN 1563        | Founding. Spheroidal graphite cast irons.                                                                                            |
| EN 1370        | Founding. Surface roughness inspection by visual tactile comparators.                                                                |
| EN 10088-1     | Stainless steels. List of stainless steels.                                                                                          |
| 74/H-84032     | Spring steel. Grades.                                                                                                                |
| EN 1982        | Copper and copper alloys. Ingots and castings.                                                                                       |
| EN 12420       | Copper and copper alloys. Forgings.                                                                                                  |
| ISO 965-1      | General purpose ISO metric threads. Tolerances. Principles and basic data.                                                           |
| ISO 2903       | Trapezoid ISO metric threads. Tolerances.                                                                                            |
| EN ISO 4762    | Hexagon socket head cap screws.                                                                                                      |
| EN 10204       | Metallic products. Types of inspection documents.                                                                                    |
| ISO 1629       | Rubbers and latices. Nomenclature.                                                                                                   |
| EN ISO 1872-1  | Plastics. Polyethylene (PE) moulding and extrusion materials. Designation system and basis for specifications.                       |
| EN ISO 1873-1  | Plastics. Polypropylene (PP) moulding and extrusion materials. Designation system and basis for specifications.                      |
| EN ISO 1874-1  | Plastics. Polyamide (PA) moulding and extrusion materials. Designation system and basis for specification.                           |
| EN ISO 12944-5 | Paints and varnishes. Corrosion protection of steel structures by protective paint systems. Protective painting systems.             |

## 2.5 ORDERING INFORMATION

Water supply system valves are specific purpose industrial valves, therefore orders must include:

- part number (P/N, equal to the product type);
- intended use, e.g. for water supply systems;
- and:
- nominal diameter, acc. to EN ISO 6708
- nominal pressure, acc. to 89/H-02650;
- body material type, acc. to EN 1563
- maximum operating temperature, acc. to 89/H-02650.

## 2.6 PRODUCTION AND ACCEPTANCE

Type 2123 gate valves are accepted and produced in accordance with EN 1074-2 (Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Isolating valves) and EN 12266-1 (Industrial valves. Testing of valves). All valves (100%) are subject to tightness testing. The tests include external body tightness and closing tightness.

## 2.7 MARKINGS

The valve marking is regulated by the following standards: EN-19, EN-1074-1.

The valve bodies feature markings on the front and back walls of the body chamber. The marking contains the following data:

- valve type (defined by the product reference standard number)
- nominal diameter
- nominal pressure
- body material type
- manufacturer trademark

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

- manufacturer's company name and logo
- serial number
- sealing temperature rating
- construction mark "B" and/or mark "CE" (as applicable)
- product type.

## 3 PROTECTION, STORAGE & TRANSPORT

### 3.1 PROTECTIVE COATINGS

All inner and outer cast-iron surfaces 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.

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

The cover-to-body fastening bolts are grade OH18N9 (stainless steel) or Fe/Zn5 (galvanized steel).

### 3.2 PACKAGING

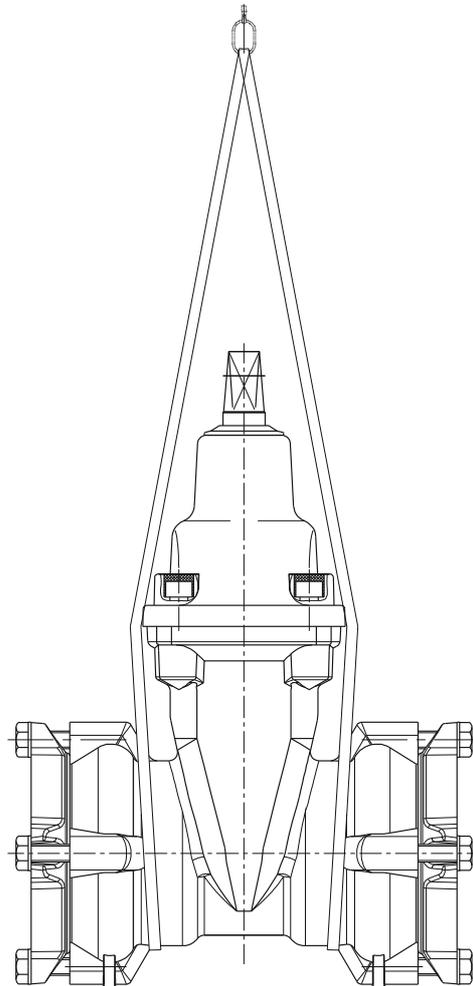
The gate valves are packed on EURO pallets (1200x800) and protected with heat-shrunk film.

### 3.3 STORAGE

Store the gate valves in sheltered rooms.

### 3.4 TRANSPORT

Transport the gate valves on sheltered vehicles.  
The gate valves shall be handled on slings (see the example diagram below) and secured from turning.



## 4 ASSEMBLY AND INSTALLATION

### 4.1 ASSEMBLY GUIDELINES

The Type 2123 water supply gate valves with soft seals can be installed in underground pipelines both in horizontal or vertical orientation. The listed products are intended for installation on the pipeline main end. Note that the system must not expose the (gate) valve to bending or tensile stress from loading with the weight of unsupported pipeline sections. Assemble with consideration to pressure and temperature compensation of the pipeline. The valve assembled and adjusted by the manufacturer is ready for installation. Any dismantling of the valve components may result in loss of seal.

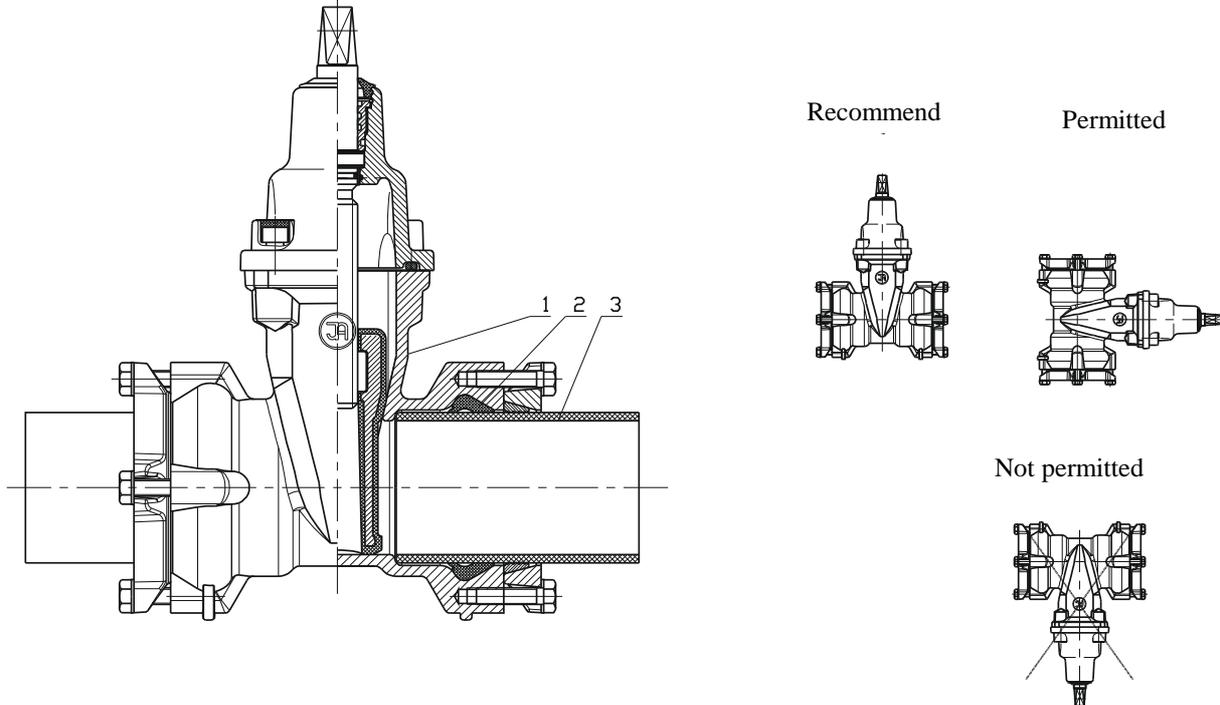
## 4.2 ASSEMBLY INSTRUCTIONS

Before attempting to install the valve, check the technical and commercial documents delivered with the product to verify that the media and pipeline operating parameters comply with the manufacturer's declaration. Any change in the operating conditions must be consulted with the valve manufacturer beforehand.

Before attempting to assemble the valve, remove the main bore plugs, check the inner surfaces of the valve and thoroughly flush with water, if necessary.

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

The figure below shows the assembly method of the gate valve and the valve orientation diagrams:



1. - Gate valve; 2. - Forsheda sealing ring; 3. - PE 100 pipeline

## 4.3 OPERATION

The gate valve shall be operated according to all relevant requirements for cut-off valves, i.e. either in fully open or fully closed positions. Leaving the gate valve partially opened (or closed) may result in seal failure. To ensure full performance, switch the knife gate valve periodically (once a year, from fully open to fully closed). Exceeding the operating limits of the valve may result in damage that will not be covered by the warranty granted by the manufacturer.

## 4.4 OCCUPATIONAL HEALTH AND SAFETY

The Type 2123 gate valves with soft seals are eligible for the OHS guidelines and recommendation concerning installation of pipelines and devices for NG systems and eligible for the Polish Regulation concerning general OHS laws (use of personal protective equipment for hands, legs and head, and safety garment), especially at work with low or high temperature hazard.

**Misuse of this product is prohibited.**

## 5 WARRANTY TERMS AND CONDITIONS

The product assembled, installed and operated in compliance with this Manual is covered by a commercial warranty from the manufacturer. The conditions and period of the warranty is specified in the warranty sheet.