Operation and maintenance manual for

FLANGED GATE VALVES WITH SOFT SEALS

P/N 2700

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.

CONTENTS

1 TECHNICAL DESCRIPTION

1.1 PRODUCT DESIGNATION AND IDENTIFICATION

The subject of this Operation and Maintenance Manual is**:**
Type 2700 flanged cast iron wedge gate valve, with the installation length according to GOST 3706
- full smooth walled bore design
- wedge (closure) embedded in 100% pure elastomer
- non-rising spindle
- stem head-type seal in valve cover (O-rings)

1.2 USE

The gate valves with soft seals are intended for water supply systems, especially for potable water, sewage systems, and industrial processing systems. The valves are intended for surface and underground systems and must be installed in horizontal pipelines.

1.3 TECHNICAL SPECIFICATION

The gate valves with soft seals are intended for transporting potable or industrial water and other liquids (if approved by the manufacturer).

- temperature range: -10°C to +70°C
- nominal diameter range: DN80 – DN300 [mm]
- Maximum medium flow rate: - liquid: max. 4 [m/s]
  - gas: max. 30 [m/s]

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

DN [mm]	80	100	125	150	200	250	300
Mmax [Nm]	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 valve connection flange design is acc. to EN 1092-2
- with the sizes compliant with the nominal pressure values.
  - The installation length and its tolerance is acc. to GOST 3706

- Nominal pressure PN values: 0.6 MPa
  1.0 MPa
  1.6 MPa

2 DESIGN

2.1 DESCRIPTION OF THE VALVE DESIGN

Type 2700 gate valves with soft seals 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 over the flange is secured against loosening with a wire spring ring. The valve cover to body joints is made with hex

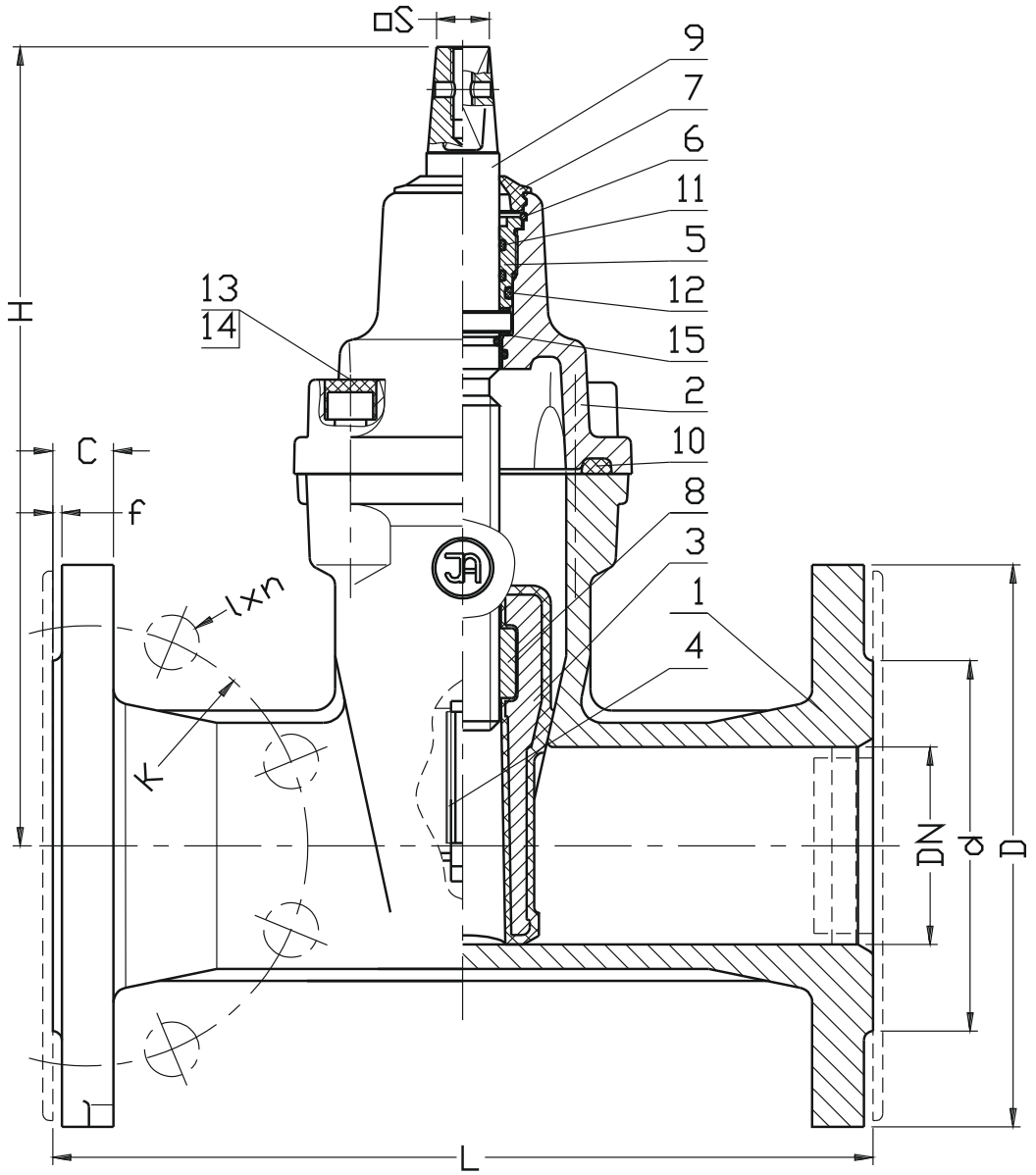
cap screws mounted flush with the valve cover and preserved with a paraffin compound. The valve cover to body seal is a rubber gasket which also seals the bolt penetration points to prevent any leaks from their leads. All inner and outer cast-iron surfaces of the valve are epoxy powder coated. The stem 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 gate valves with soft seals.

Item	Part designation	Material	Reference standard
1	Body	EN-GJS 400-15 cast iron	EN 1563
2	Cover	EN-GJS 400-15 cast iron	EN 1563
3	Wedge	EN-GJS 400-15 cast iron Rubber: EPDM (or NBR)	EN 1563 ISO 1629
4	Skid	Polyamide	EN ISO 1874-1
5	Sealing plug	Brass	EN 1982
6	Safety ring	Steel grade 1.1260	74/H-84032
7	Cleaning seal	Rubber: EPDM (or NBR)	ISO 1629
8	Spindle nut	Brass	EN 1982
9	Spindle	Steel grade 1.4021	EN 10088-1
10	Valve cover gasket	Rubber: EPDM (or NBR)	ISO 1629
11-12	O-ring seal	Rubber: EPDM (or NBR)	ISO 1629
13	Bolt, cap, hex	Acc. to reference standards	EN ISO 4762
14	Bolt plug	Paraffin	acc. to manufacturer's Technical Guidelines
15	Washer	Polyamide PA6	EN ISO 1874-1

2.3 DIMENSIONS



DN	L	H	d	D	K PN16 (PN10)	l PN16 (PN10)	C	f	n PN16 (PN10)	S	Mass
[mm]									-	[mm]	[kg]
80	210	290	132	200	160	19	19	3	8	17	19
100	230	325	156	220	180	19	19	3	8	19	25
125	255	365	184	250	210	19	19	3	8	19	34
150	280	457	211	285	240	23	19	3	8	19	46
200	330	534	266	340	295	23	20	3	12 (8)	24	73
250	450	633	319	405	355 (350)	28 (23)	22	3	12	27	108
300	500	708	370	460	410 (400)	28 (23)	25	4	12	27	150

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.
EN 1092-2	Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, PN designated. Cast iron flanges.
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.
GOST 3706	Gate valves. Installation length.

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;
- type of body material — acc. to EN 1561 or EN 1563
- maximum operating temperature, acc. to 89/H-02650.

2.6 PRODUCTION AND ACCEPTANCE

Type 2700 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 gate valve marking meets the following standards: EN-19, EN-1074-1.

The gate 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 screws connecting the body and the cover are manufactured as stainless, grade OH18N9 or Fe/Zn5 (galvanised steel).

3.2 PACKAGING

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

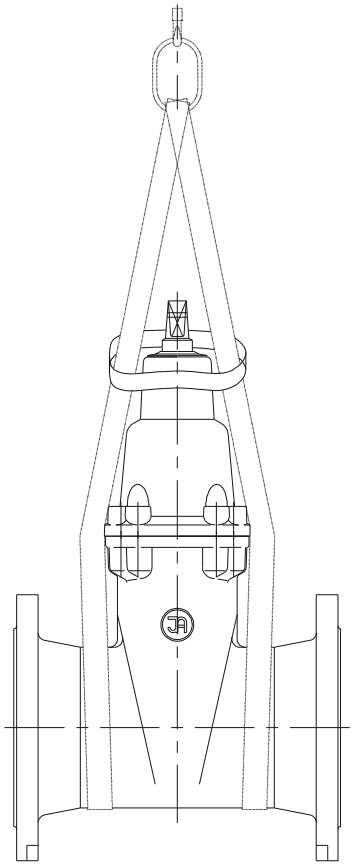
3.3 STORAGE

Store the gate valves in sheltered rooms.

3.4 TRANSPORT

Transport the gate valves on sheltered vehicles.

The DN80 to DN300 gate valves with soft seals shall be handled and installed on belt slings (see the example diagram below) and secured from turning.



4 ASSEMBLY AND INSTALLATION

4.1 ASSEMBLY GUIDELINES

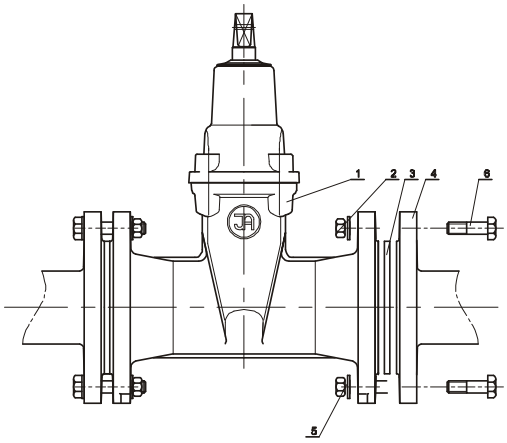
The Type 2700 flanged cast iron gate valves can be installed in underground or overground pipelines both in horizontal or vertical orientation. The listed products are suitable for joining with the flanged ends of pipelines with the size equal to that of the valve flanges. Note that the system must not expose the (gate) valve to bending or tensile stress from loading with the weight of unsupported pipeline sections. It is recommended to perform installation works considering pipeline compensation due to temperature and pressure. The valve assembled and adjusted by the manufacturer is ready for installation. Any dismantling of the valve components may result in loss of seal.

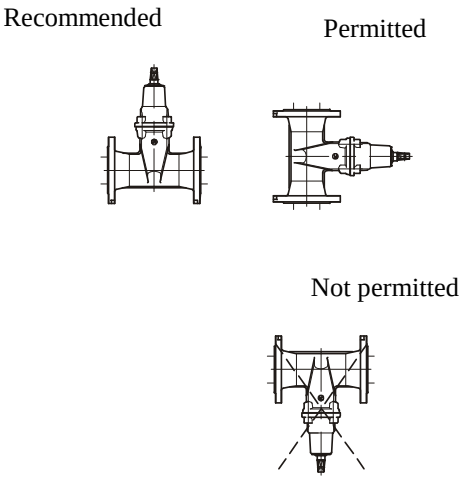
4.2 ASSEMBLY INSTRUCTIONS

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 method for coupling the gate valve and the valve orientation diagrams:





1. Valve; 2. Nut; 3. Gasket; 4. Pipeline flange; 5. Washer; 6. Fastening bolt

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 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 covered by the suretyship granted by the manufacturer.

4.4 OCCUPATIONAL HEALTH AND SAFETY

The valves with soft seals are eligible for the OHS guidelines and recommendation concerning installation of pipelines and devices for water supply stations, heat power plants, water treatment plants, sewage treatment plants, pumping stations and other facilities, 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.