Operating and maintenance manual

FLANGED GATE VALVE WITH SOFT SEAL

Cat. no.
2111
2002

Approved for application by:

President of the JAFAR S.A. factory

The user's failure to follow the guidelines and regulations provided in the following operating and maintenance manual releases the manufacturer from obligations and warranties.

Due to the continuous development of our company we reserve the right to introduce modifications and design changes to the presented product.

CONTENTS

1 TECHNICAL DESCRIPTION

1.1 NAME AND FEATURES OF THE PRODUCT

The subject of the following O&MM are:
Cast-iron flanged valve wedges with soft seal TYPE 2002 and 2111
- with full and unobstructed passage,
- with a wedge (closing device) enclosed in 100% with elastomer,
- with non-rising valve spindle,
- with head seal of the valve stem in the cover (o-rings).

1.2 INTENDED USE

Gate valves with soft seal are intended for use in water transport system, especially for potable water as well as sewage from sanitary and industrial systems. They may be used in above-ground and underground applications, in horizontal pipelines.

1.3 TECHNICAL CHARACTERISTICS

Gate valves with soft seal are intended for transport of potable or industrial water or other liquids (after consultation with the manufacturer).

- temperature range from -20°C to +70°C,
- nominal diameters DN32–DN600 [mm],
- max. medium flow rate: – liquid up to 4 [m/s]
  – gas up to 30 [m/s]

- torque values at the start of the opening cycle and at the end of the closing cycle are specified below

DN [mm]	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Torque [Nm]	25	55		80			100			200		250	280	300	350	410

- Fixture control: in the standard variant the gate valve closes clockwise (to the right), on request the closing direction may be reversed.
- Flanges are made in accordance with the EN 1092:2 standard
- Flanges have the dimensions appropriate for the assumed rated pressure.
- Length for installation and its tolerance as specified in the EN 558 standard
  series 14 – TYPE 2111
  series 15 – TYPE 2002
- nominal pressure PN: 0,6MPa
  1,0MPa
  1,6MPa

2 DESIGN

2.1 FIXTURE DESIGN DESCRIPTION

Gate valves with soft seal with TYPE 2002 and TYPE 2111 manufactured by **F.A. "JAFAR" S.A.** have unobstructed passage through the body, non-rising valve spindle, o-ring seals of the spindle located in the cover. The spindle is held by a sleeve in the cover and a seal plug. The valve spindle is sealed using a plug unit based on a system of o-ring seals. The valve gate consist of a cast-iron wedge that is completely encased in rubber with a replaceable not for connection to the valve spindle located in the wedge lug. The valve spindle has a flange closed by crimping. From the bottom the valve spindle is supported on the bottom of the head socket using a sleeve that acts as a sealed bearing. The plug above the flange is secured against

unscrewing using a spring ring. The cover is connected to the body using hexagon socket head cap bolts inset in the cover and secured using paraffin paste. The connection between the body and the cover is sealed using a rubber gasket that also seals the bolts preventing any leaks near them. All internal and external cast-iron surfaces of the gate valve are powder coated with epoxy paint. The spindle may be operated manually using a hand wheel or, in case of gate valves located underground, through the hood and gate valve housing, using a T-type wrench. In gate valves between DN350 and DN600 the wedge is supported on plastic inserts. The spindle in gate valves between DN400 and DN600 is installed in a separate head fitted to the cover using longitudinal bearings supporting the spindle flange.

2.2 MATERIALS

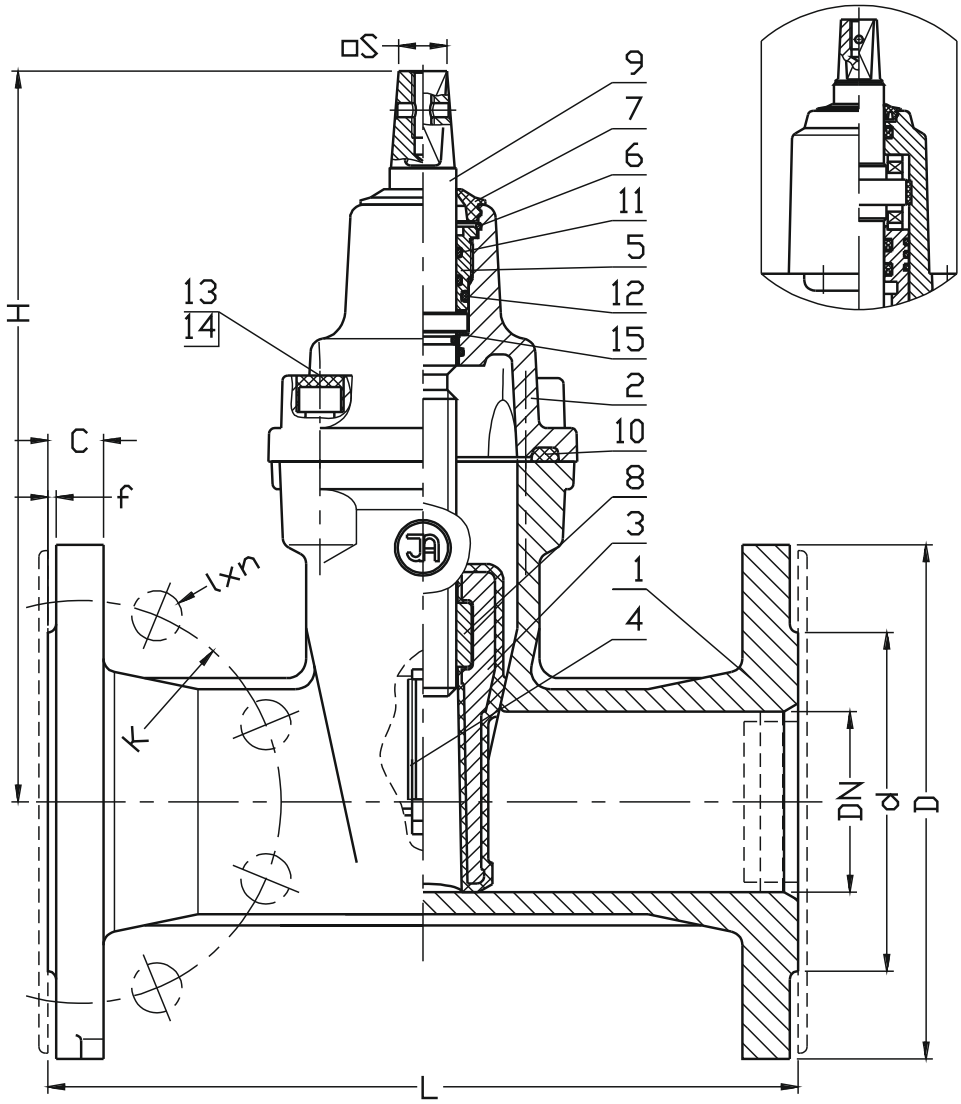
A list of materials used for the construction of gate valves with soft seal is given in the table.

Item	Part name	Material	Standard
1	Body	EN-GJS-400-15 cast iron EN-GJS-500-7	EN 1563
2	Cover	EN-GJS-400-15 cast iron EN-GJS-500-7	EN 1563
3	Wedge	Brass (DN32) Cast-iron (DN40–DN600) EN-GJS 400-15, EN-GJS 500-7 covered with rubber: EPDM (or NBR)	EN 1982 EN 1563 ISO 1629
4	Skid	Polyamide	EN ISO 1874-1
5	Sealing plug	Brass	EN 1982
6	Protective ring	1.1260 steel	74/H-84032
7	Cleaning gasket	Rubber: EPDM (or NBR)	ISO 1629
8	Valve spindle nut	Brass	EN 1982
9	Valve spindle	1.4021 steel	EN 10088-1
10 11	Cover gasket	Rubber: EPDM (or NBR)	ISO 1629
12	Sealing rings (o-rings)	Rubber: EPDM (or NBR)	ISO 1629
13	Hexagon socket head cap bolt	In accordance with applicable standards	EN ISO 4762
14	Bolt plug	Paraffin	as specified in manufacturer's technical requirements
15	Washer	Polyethylene	EN ISO 1872-1

2.3 DIMENSIONS

BEARINGS FOR DN 40–350

BEARINGS FOR DN > 350



DN	2111 L	2002 L	H	d PN16 (PN10)	D PN16 (PN10)	K PN16 (PN10)	l PN16 (PN10)	C	f	n PN16 (PN10)	Amount of turns to opening	S	Weight	Weight
[mm]										-		[mm]	2111 [kg]	2002 [kg]
32	130	140	145	76	140	100	19	18	3	4	9	12	5	6
40	140	240	220	84	150	110	19	19	3	4	11	14	9	10
50	150	250	230	99	165	125	19	19	3	4	13,5	14	10	11
65	170	270	265	118	185	145	19	19	3	4	14	17	14	16
80	180	280	290	132	200	160	19	19	3	8	17	17	15	17
100	190	300	325	156	220	180	19	19	3	8	21	19	21	23
125	200	325	365	184	250	210	19	19	3	8	26	19	31	39
150	210	350	457	211	285	240	23	19	3	8	26	19	41	48
200	230	400	534	266	340	295	23	20	3	12 (8)	34,5	24	62	77
250	250	450	633	319	405	355 (350)	28 (23)	22	3	12	42,5	27	94	106
300	270	500	708	370	460	410 (400)	28 (23)	25	4	12	51	27	122	148
350	290	550	790	429	520	470 (460)	28 (23)	27	4	16	60	27	216	254
400	310	600	1020	480	580	525 (515)	31 (28)	28	4	16	58	32	298	345
450	330	-	1090	548 (530)	640	585 (565)	31 (28)	30	4	20	65	32	350	-
500	350	700	1220	609 (582)	715 (670)	650 (620)	34 (28)	32	4	20	63	36	458	540
600	390	800	1390	720 (682)	840 (780)	770 (725)	37 (31)	36	5	20	77	36	640	776
600*	430	900	1390	794	910 (895)	840	37 (31)	36	5	24	77	36	670	-

2.4 STANDARDISATION

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	Fixtures and pipelines Pressures and temperatures.
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 valves. Pressure tests, test procedures and acceptance criteria. Mandatory requirements.
EN 558:2012	Industrial valves. Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems. PN and Class designated valves.
EN ISO 6708	Definition and selection of DN (nominal size)
EN 1559-1	Founding. Technical conditions of delivery. General.
EN 1561	Founding. Grey cast-iron.
EN 1563	Founding. Spheroidal graphite cast iron.
EN 1370	Founding. Surface roughness inspection by visual tactile comparators.
EN 10088-1	Stainless steels. List of stainless steels.
74/H-84032	Spring steel. Types of spring steels.
EN 1982	Copper and copper alloys. Ingots and castings.
EN 12420	Copper and copper alloys. Forgings.
ISO 965-1	ISO general purpose metric screw threads. Tolerances. Principles and basic data.
ISO 2903	ISO metric trapezoidal screw threads. Tolerances.
EN ISO 4762	Hexagon socket head cap screws.
EN 10204	Metallic products. Types of inspection documents.
ISO 1629	Rubber and latices. Nomenclature.
EN ISO 1873-1	Plastics. Polypropylene (PP) moulding and extrusion materials. Designation system and basis for specifications.
EN ISO 1872-1	Plastics. Polyethylene (PE) moulding and extrusion materials. Designation system and basis for specifications.
EN ISO 1874-1	Plastics. Polyamide (PA) moulding and extrusion materials. Designation and classification.
EN ISO 12944-5	Paints and varnishes. Corrosion protection of steel structures by protective paint systems. Protective painting systems

2.5 ORDERING

Fixtures for transport of water belong to specific purpose industrial fixtures, therefore the order needs to specify:

- catalogue number (equivalent of length),
- intended use e.g. water supply systems.

In addition specify:

- nominal diameter in acc. with EN ISO 6708,
- nominal pressure in acc. with 89/H–02650,
- body material in acc. with EN 1563,
- max. operating temperature in acc. with 89/H – 02650.

2.6 PRODUCTION AND ACCEPTANCE

The gate valves TYPE 2002 and TYPE 2111 are manufactured and subject to acceptance as specified in 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 gate valves (100%) are subject to tightness tests. The external tightness of the body and the tightness of closure are verified.

2.7 MARKING

The marking meets the requirements of the EN-19 and EN-1074-1 standards.

The gate valve bodies are marked on the front and rear wall of the body with the following information:

- gate type (specified by the number of applicable product standard)
- nominal diameter
- nominal pressure
- body material
- manufacturer's logo.

A rating plate with the following information is installed at a location specified in the technical documentation:

-company name and logo,
- serial number of the product,
- temperature class of the seals,
- "B" construction marking and/or "CE" marking (if applicable),
- product type.

3 PROTECTION, STORAGE, TRANSPORT

3.1 PROTECTIVE COATINGS

All internal and external cast-iron surfaces are protected with epoxy paint applied using the electrostatic method. The paint has a certificate allowing for its use in contact with food products.
The thickness of the corrosion-protection layer is at least 250 μm.
The casting surfaces are prepared for the application of the epoxy layer in accordance with the technical documentation and the EN ISO 12944-5standard.
The bolts connecting the body with the cover are stainless – OH18N9 or Fe/Zn5 (galvanised steel).

3.2 PACKAGING

The gate valves are packaged on EURO palettes (1200x800) and protected using a heat-shrink cover.

3.3 STORAGE

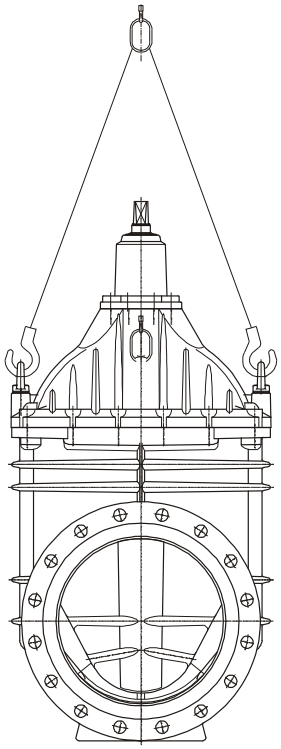
The gate valves shall be stored under a roof.

3.4 TRANSPORT

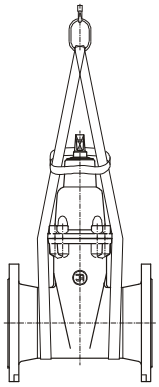
Gate valves shall be transported on covered vehicles.

When transporting gate valves with high weight (DN350 and larger) use transport components (bolts and lugs) and in case of DN65 to DN300 gate valves use belt slings (as shown in the diagram below), which are protected against rotation of the fixture.

DN300 >



DN65–DN300



4 INSTALLATION

4.1 INSTALLATION GUIDELINES

Cast-iron gate valves with soft seal TYPE 2002 and TYPE 2111 may be installed in underground or above-ground pipelines in horizontal and vertical systems. The products may be installed between flanges of the pipeline with matching dimensions. During assembly make sure that the system does not cause bending or tensile stress on the fixture (gate valve) resulting from loads caused by an unsupported pipeline. It is advised to consider compensation for temperature and pressure when installing the fittings. The assembled and adjusted gate valve supplied by the manufacturer is ready for installation and use. Any works related to removal of components of the gate valve which are handled without due care may cause it to lose tightness.

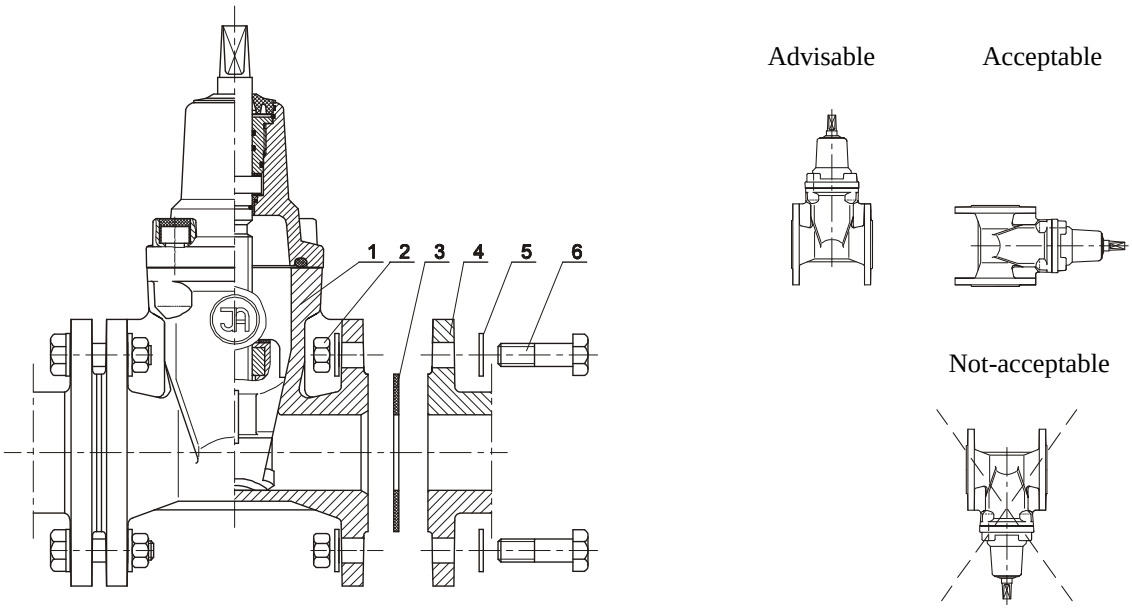
4.2 INSTALLATION INSTRUCTIONS

When installing fixtures consult the technical and commercial documentation, check the pipeline operating conditions and media against the data declared by the manufactured. Every change in operating conditions requires consultation with the fixture manufacturer.

Before commencing assembly remove the plugs from the main opening and inspect the conditions of internal surfaces and clean them thoroughly with water if required.

Caution! If the product has mechanical damage, do not install it in the pipeline.

The connection of the gate valve and the diagram of possible installation directions are presented in the figure below:



1. Gate valve; 2. Nut; 3. Gasket; 4. Pipeline flange; 5. Washer; 6. Installation bolt.

4.3 OPERATION

The gate valve shall be operated in accordance with the requirements applicable to cut-off fixtures i.e. in the "fully open" or "fully closed" position. If the gate valve is left in partially open position the seal may become damaged. In order to provide better efficiency of the gate valve it is advised to periodically (annually) operate it from the fully open to the fully closed position.

Exceeding the temperature limits for the fixtures may damage it, in such case the manufacturer will not accept any claims based on statutory warranty.

4.4 OH&S REGULATIONS

Guidelines and recommendations provided in OH&S regulations applicable to pipelines and devices installed in water stations, thermal power plants, water purification plants, sewage processing plants, pump stations and other similar structures as well as the regulation on the general occupational health and safety regulations (use of upper limb protection, use of lower limb protection, head protection, protective clothing) in cases of exposition to low and high temperatures apply when using gate valves with soft seal.

The use of products otherwise than in accordance to their intended use is not allowed.

5 WARRANTY CONDITIONS

The manufacturer provides warranty for the product installed and operated in accordance with this O&MM. The warranty conditions and period are specified in the warranty card.