

Operation and Maintenance Manual

**CONNECTION SET
FOR
HARD PIPES**

**Cat. no.
3218**

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.

TABLE OF CONTENTS

1 TECHNICAL DESCRIPTION	3
1.1 PRODUCT NAME AND FEATURES	3
1.2 PURPOSE	3
1.3 TECHNICAL SPECIFICATION	3
2 DESIGN	3
2.1 FITTING DESIGN DESCRIPTION	3
2.2 MATERIALS	4
2.3 DIMENSIONS	5
2.4 STANDARDS	5
2.5 ORDERING REGULATIONS	6
2.6 MANUFACTURE AND ACCEPTANCE	6
2.7 MARKING	6
3 PROTECTION, STORAGE & TRANSPORT	7
3.1 PROTECTIVE COATINGS	7
3.2 PACKAGING	7
3.3 STORAGE	7
3.4 TRANSPORT	7
4 ASSEMBLY AND INSTALLATION	7
4.1 INSTALLATION GUIDELINES	7
4.2 INSTALLATION INSTRUCTIONS	7
4.3 OPERATION	8
4.4 OH&S REGULATIONS	8
5 GUARANTEE CONDITIONS	8

1 TECHNICAL DESCRIPTION

1.1 PRODUCT NAME AND FEATURES

The subject of this O&MM is:

Connection set for hard pipes

- full smooth walled bore design
- wedge (closure) embedded in 100% pure elastomer
- non-rising spindle
- stem head-type seal in valve cover (O-rings)
- type 3100 connection.

1.2 PURPOSE

The hard pipe connection set is intended for water supply systems, especially for potable water, and industrial processing systems. It may be used in surface and underground systems and must be installed in horizontal pipelines.

1.3 TECHNICAL SPECIFICATION

The hard pipe connection sets are intended for transporting potable or industrial water and other liquids (if approved by the manufacturer).

- temperature range: -10°C to $+70^{\circ}\text{C}$
- nominal diameter range: DN25 to DN50 [mm]
- maximum medium flow rate:
 - liquid: max. 4 [m/s]
 - gas: max. 30 [m/s]
- driving torque at opening start and closing end are listed below:

DN [mm]	32	40	50
Mmax [Nm]	25	55	

- fitting actuation: in the basic version, the direction of damper closing is clockwise (to the right)
upon special request the closing direction may be opposite.
- the connection thread design is acc. to EN 10226-1 normal product grade [A].
- installation length: in accordance with plant documentation
- nominal pressure PN:
 - 0.6 MPa
 - 1.0 MPa
 - 1.6 MPa

2 DESIGN

2.1 FITTING DESIGN DESCRIPTION

Connection sets for hard pipes manufactured at F.A. “JAFAR” S.A. feature a smooth walled bore, a non-rising stem, and an O-ring stem 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

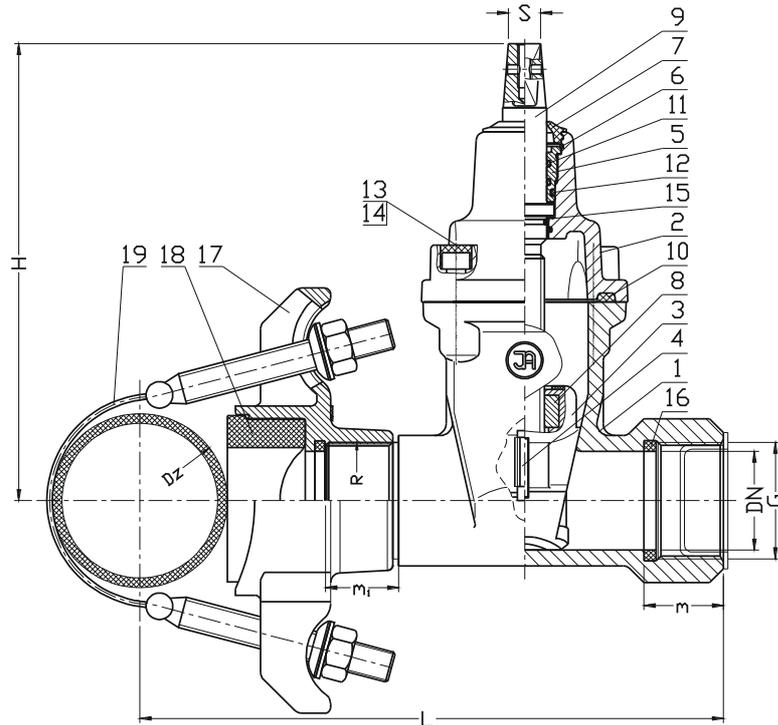
O-rings. The gate valve closure is a cast iron wedge completely coated with rubber and featuring a stem nut located on the wedge lug. The stem is equipped with an interlocking collar installed by necking. From the bottom the stem collar rests on a seat in the head via a bushing which acts as a sealed bearing. The plug is secured against unscrewing using a spring wire 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 unit is connected using a stub pipe with a type 3100 jaw coupling. All inner and outer cast-iron surfaces of the gate 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

This table lists the materials used in the construction of gate valves with soft seals.

Item	Part name	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	Brass (DN25-DN32) Cast iron (DN40-DN50) EN-GJS 400-15, EN-GJS 500-7 Rubber: EPDM (or NBR)	EN 1982 EN 1563 ISO 1629
4	Skid	Polyamide	EN ISO 1874-1
5	Sealing plug	Brass	EN 1982
6	Locking ring	Steel 1.1260	74/H-84032
7	Cleaning seal	Rubber: EPDM (or NBR)	ISO 1629
8	Stem nut	Brass	EN 1982
9	Stem	Sectional 1.4021	EN 10088-1
10 11	Valve cover gasket	Rubber: EPDM (or NBR)	ISO 1629
12	O-ring seal	Rubber: EPDM (or NBR)	ISO 1629
13	Hexagon socket head cap screw	Acc. to reference standards	EN ISO 4762
14	Bolt plug	Paraffin	acc. to manufacturer's technical guidelines
15, 17	Washer	Polyamide PA6	EN ISO 1874-1
16	Pipe gasket	Rubber: EPDM (or NBR)	ISO 1629
18	Jaw coupling	EN-GJS 400-15 cast iron	EN 1563
19	Installation clamp TYPE 3330	Stainless steel Rubber: EPDM (or NBR)	EN 10088-1 ISO 1629

2.3 DIMENSIONS



DN	G / R	Dz	L	m	m ₁	H	S	Weight
[mm]	[inch]		[mm]					[kg]
32	5/4" / 5/4"	90-738	95+70+Dz/2	25	40	160	12	6,8
	5/4" / 2"		105+70+Dz/2					6,9
40	6/4" / 6/4"		140+70+Dz/2	40	40	215	14	10,5
	6/4" / 2"							10,6
50	2" / 2"		160+70+Dz/2	40	40	225		11,7

2.4 STANDARDS

EN 1074-1	Valves for water supply. Fitness for purpose requirements and appropriate verification tests. General requirements.
PN-EN 1074-2	Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Isolating valves.
89/H-02650	Fittings and pipelines. Pressures and temperatures for fittings, connectors and equipment with PN markings. Cast iron flanges.
EN19	Industrial fittings. Metal fitting marking.
EN 12266-1	Industrial valves. Testing of metallic valves. Pressure tests, test procedures and acceptance criteria. Mandatory requirements.
EN ISO 6708	Definition and selection of the DN /nominal dimension/
EN 10226-1	Pipe threads where pressure tight joints are made on the threads - Part 1: Taper external threads and parallel internal threads. Dimensions, tolerances and designation
ISO 965-1	ISO general purpose metric screw threads. Tolerances. Principles and basic data.
ISO 2903	Trapezoid ISO metric threads. Tolerances.

EN 1982	Copper and copper alloys. Ingots and castings.
EN 12420	Copper and copper alloys. Forgings.
EN 1559-1	Founding. Technical conditions of delivery. General.
EN 1563	Founding. Spheroidal graphite cast irons.
EN 1370	Founding. Examination of surface condition by visual-tactile comparators.
EN 10088-1	Stainless steels. Grades of stainless steel.
74/H-84032	Spring steel. Grades.
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	Plastic materials. Polyethylene (PE) moulding and extrusion materials. Designation system and basis for specifications.
EN ISO 1873-1	Plastic materials. Polypropylene (PP) moulding and extrusion materials. Designation system and basis for specifications.
EN ISO 1874-1	Plastic materials. Polyamide (PA) forming and extrusion moulding materials. Designation system and basis for specification.
EN ISO 12944-5	Paints and varnishes. Anti-corrosion protection of steel structures by means of protective painting systems. Protective painting systems.

2.5 ORDERING REGULATIONS

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

- catalogue number,
 - intended use, e.g. for water supply systems,
- furthermore:
- 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
 - max. operating temperature — acc. to 89/H — 02650.

2.6 MANUFACTURE AND ACCEPTANCE

The connection sets for hard pipes are manufactured and subject to acceptance 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 metallic valves). All gate valves are leak tested (100%). The tests include external body tightness and closing tightness.

2.7 MARKING

The markings on the connection set are specified in standards: EN-19, EN-1074-1.

The gate valve bodies and clamps feature markings on the front and back walls of the body chamber. The markings contain the following data:

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

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

- company name and mark
- product 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 internal and external cast iron surfaces are protected with epoxy paint, applied electrostatically. The paint is approved for contact with food products.

The thickness of the anti-corrosion coating layer is min. 250 µm.

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

The screws connecting the body and the cover are manufactured as stainless, grade 1.4301 or Fe/Zn5 (galvanised steel).

3.2 PACKAGING

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

3.3 STORAGE

Store the connection sets in sheltered rooms.

3.4 TRANSPORT

Transport the connection sets using sheltered vehicles.

4 ASSEMBLY AND INSTALLATION

4.1 INSTALLATION GUIDELINES

The hard pipe connection sets can be installed in underground or surface pipelines both in horizontal and vertical orientation. The listed products are suitable for joining with threaded ends of pipelines with (thread) size equal to that of the gate valve threads. Note that the system must not expose the (gate) valve to bending or tensile stress from loading with the weight of unsupported pipeline sections. The connection sets assembled and adjusted by the manufacturer are ready for installation. Any dismantling of the set components may result in loss of tightness.

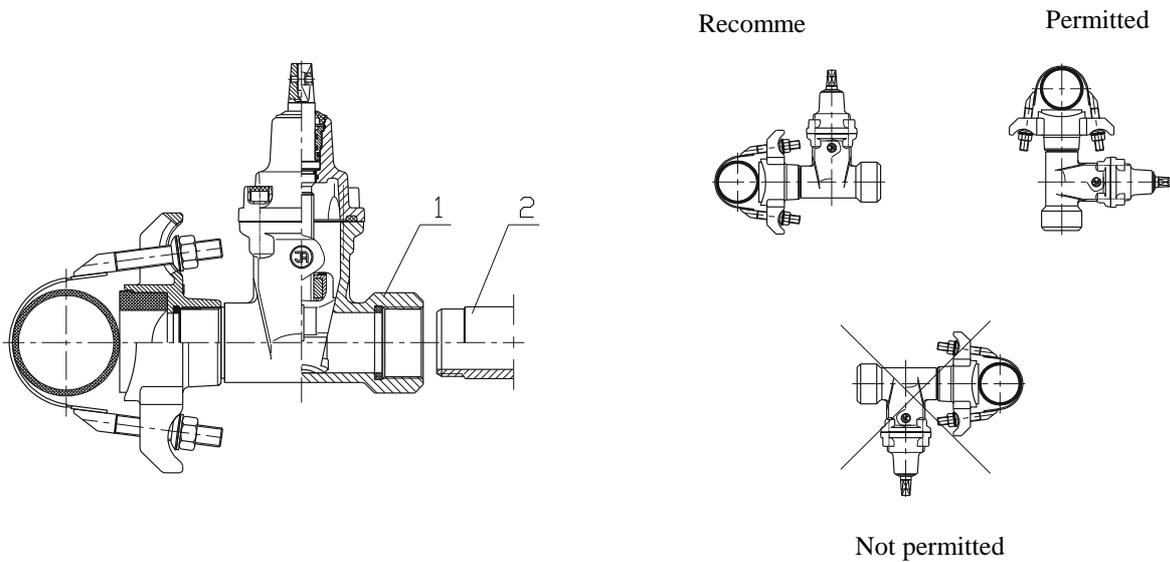
4.2 INSTALLATION INSTRUCTIONS

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

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

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

The figure below shows the method for coupling the set and the set orientation diagrams:



1.-Connection set, 2.-Threaded pipeline section

4.3 OPERATION

The hard pipe connection sets shall be operated in accordance with all relevant requirements for cut-off valves, i.e. either in fully open or fully closed positions. Leaving the hard pipe connection set partially opened (or closed) may result in seal failure.

To ensure full performance, switch the pipe connection sets periodically (once a year) from fully open to fully closed.

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

4.4 OH&S REGULATIONS

The OH&S guidelines and recommendations 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 the Polish Regulation concerning general OH&S regulations (use of personal protective equipment for hands, legs and head, and safety garments), especially at work with low or high temperature hazard apply to the pipe connection set.

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.