

Operation and Maintenance Manual

**SPOTTING DRILLS
FOR SOFT PIPES**

**Cat. no.
3250**

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:

Pipeline spotting drill / gate valve TYPE 3250

- soft lining (elastomer) on the internal clamping surface for the line pipe of the water system
- valve head (closing unit) made using elastomer
- non-rising spindle
- cutting unit (pin-cutting drill) made of stainless steel

1.2 PURPOSE

The cast iron pipeline spotting drills Type 3250 are intended for water supply systems, especially for potable water, industrial systems and gas systems made of polyethylene (PE) and polyvinyl chloride (PVC). It may be used both in underground and surface installations, in vertical or horizontal pipelines.

1.3 TECHNICAL SPECIFICATION

The cast iron pipeline spotting drills with soft lining are intended for transporting potable or industrial water and other liquids (if approved by the manufacturer).

- temperature range: -10°C to $+70^{\circ}\text{C}$
- line pipe diameter range: DN50–DN315 [mm]
- maximum medium flow rate:
 - liquid: max. 4 [m/s]
 - gas: max. 30 [m/s]
- joints on the pipeline spotting drills are designed for connection with threaded pipes with inch threads: 5/4"; 2" ref. PN-EN 10226-1: 2006 normal product grade [A].
- installation length: in accordance with plant documentation
- nominal pressure PN:
 - 0.6 MPa
 - 1.0 MPa
 - 1.6 MPa

2 STRUCTURE

2.1 FITTING DESIGN DESCRIPTION

F.A. "JAFAR" S.A manufactures water pipeline spotting drills for installation on existing systems built using PVC and PE soft pipes. The products have a cast-iron body and clamp, which are used for their installation on the pipe. The body and the clamp lock on the pipe through a rubber lining, which at the same time seals the pipe. A valve-seat in the form of a brass ring is located in the bottom section of the body. The valve-seat is closed by the valve head with a rubber gasket fitted at the end of the coupling piece. The coupling piece is connected to the pipe drill that is used for making an opening used to take the medium from the pipeline. The valve stem with a square tapered end is sealed using O-rings fitted to the screw plug installed at the top of the head. When the stem is rotated the threaded coupling unit with a gasket and cutter is moved towards the main pipeline pipe. During the first closing operation of the pipeline spotting drill the drill bit cuts an opening in the pipeline while the cut out piece remains inside the drill bit as it is held by special cut outs. Further rotation of the stem causes closing of the valve-seat (closing the flow). The connection to the pipeline may be made using the spotting drill when the pipeline is pressurised and without closing the flow.

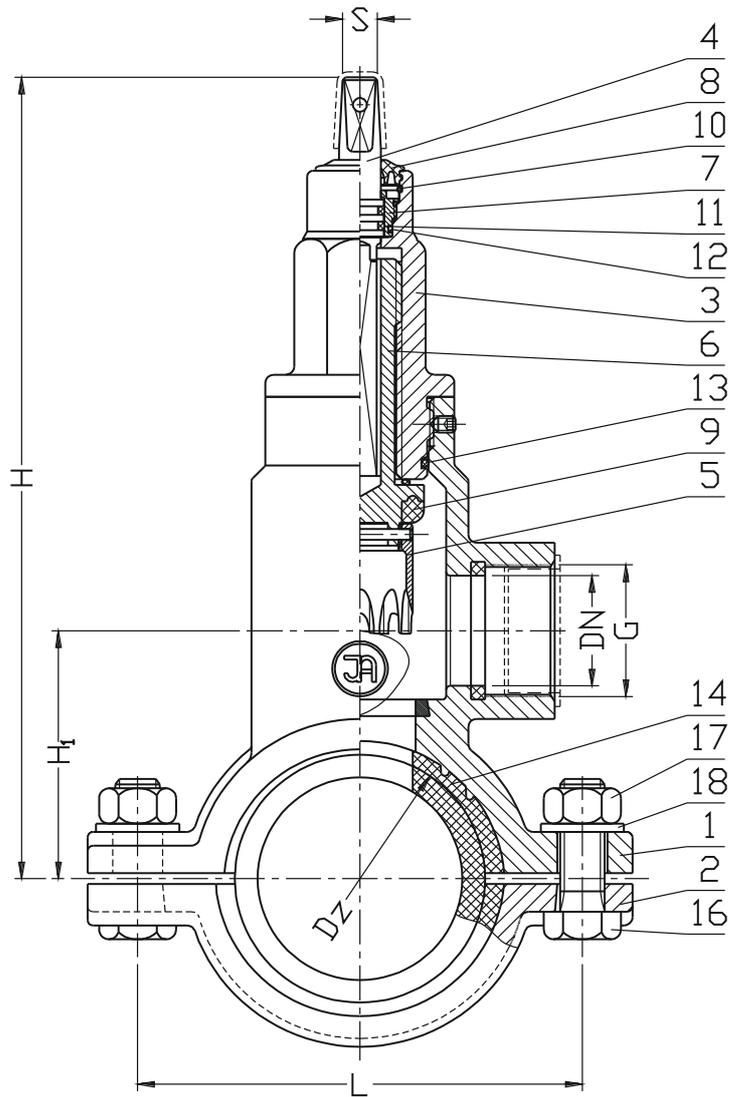
All inner and outer cast-iron surfaces of the pipeline spotting drill are epoxy powder coated. The stem may be operated manually using a hand wheel or, in case of pipeline spotting drills located underground, through a hood and gate valve casing, using a T socket.

2.2 MATERIALS

This table lists the materials used in the construction of pipeline spotting drills with soft seals.

Item	Part name	Material	Reference standard
1	Body	Cast iron: EN-GJS-400-15	PN-EN 1563: 2012
2	Clamp	Cast iron: EN-GJS-400-15	PN-EN 1563: 2012
3	Head	Cast iron: EN-GJS-400-15	PN-EN 1563: 2012
4	Stem	Stainless steel, 1.4021	PN-EN 10088-1: 2014
5	Cutter	Stainless steel, 1.4541	PN-EN 10088-1: 2014
6	Coupling unit	Brass, CuZn39Pb1Al-B	PN-EN 1982: 2010
7	Sealing plug	Brass, CuZn39Pb1Al-B	PN-EN 1982: 2010
8	Cleaning seal	Rubber: EPDM (or NBR)	PN-ISO 1629: 2005
9	Cutter gasket	Rubber: EPDM (or NBR)	PN-ISO 1629: 2005
10	Locking ring	Steel 1.1260	PN-74/H-84032
11, 12, 13	O-ring	Rubber: EPDM (or NBR)	PN-ISO 1629:2005
14 15	Pipe gasket	Rubber: EPDM (or NBR)	PN-ISO 1629: 2005
16	Bolt	Stainless steel, A2	PN-EN ISO 4017: 2011
17	Nut	Stainless steel, A4	PN-EN ISO 4032: 2013
18	Washer	Stainless steel, A2	PN-EN ISO 7091: 2003

2.3 DIMENSIONS



DN	G	Dz	H ₁	H	L	S	Weight
[mm]	[inch]	[mm]				[kg]	
32	5/4"	63	77	280	132	12	6,4
		90	90	293	160		7,9
		110	100	303	180		8,2
		125	112	315	200		8,5
		140	116	320	205		8,7
		160	126	330	225		10,2
		200	145	348	274		12,5
		225	158	360	300		13,6
50	2"	63	77	280	132	12	6,8
		90	90	293	160		7,9
		110	100	303	180		8,3
		125	112	315	200		8,8
		140	116	320	205		9,3
		160	126	330	225		10,1
		200	145	348	274		12,5
		225	158	360	300		13,3

2.4 STANDARDS

PN-EN 1074-1: 2002	Valves for water supply. Fitness for purpose requirements and appropriate verification tests. General requirements.
PN-EN 1074-2: 2002	Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Isolating valves.
PN-89/H-02650	Fittings and pipelines. Pressures and temperatures for fittings, connectors and equipment with PN markings. Cast iron flanges.
PN-EN19: 2005	Industrial fittings. Metal fitting marking.
PN-EN 12266-1: 2012	Industrial valves. Testing of metallic valves. Pressure tests, test procedures and acceptance criteria. Mandatory requirements.
PN-EN ISO 6708: 1998	Definition and selection of the DN /nominal dimension/
PN-EN 10226-1: 2006	Pipe threads where pressure tight joints are made on the threads - Part 1: Taper external threads and parallel internal threads. Dimensions, tolerances and designation
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 2338: 2003	Parallel pins of unhardened steel and austenitic stainless steel.
PN-EN 1982: 2010	Copper and copper alloys. Ingots and castings.
PN-EN 12420: 2002	Copper and copper alloys. Forgings.
PN-EN ISO 4032: 2013	Hexagon regular nuts (style 1). Product grades A and B.
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 ISO 7091: 2003	Plain washers. Normal series. Product grade C
PN-EN 10088-1: 2014	Stainless steels. Grades of stainless steel.
PN-74/H-84032	Spring steel. Grades.
PN-EN ISO 4027: 2005	Hexagon socket set screws with cone point.
PN-EN ISO 4762: 2006	Hexagon socket head cap screws.
PN-EN ISO 4017: 2004	Hexagon head screws. Product grades A and B.
PN-EN 10204: 2006	Metallic products. Types of inspection documents.
PN-ISO 1629: 2005	Rubbers and latices. Nomenclature.
PN-EN ISO 1872-1: 2000	Plastic materials. Polyethylene (PE) moulding and extrusion materials. Designation system and basis for specifications.

PN-EN ISO 1873-1: 2000	Plastic materials. Polypropylene (PP) moulding and extrusion materials. Designation system and basis for specifications.
PN-EN ISO 1874-1: 2010	Plastic materials. Polyamide (PA) forming and extrusion moulding materials. Designation system and basis for specification.
PN-EN ISO 12944-5: 2009	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 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.

2.6 MANUFACTURE AND ACCEPTANCE

Cast-iron pipeline spotting drills with catalogue number 3250 are accepted and manufactured in accordance with: PN-EN 1074-1:2002 (Valves for water supply. Fitness for purpose requirements and appropriate verification tests. General requirements) and PN-EN 12266-1:2012 (Industrial valves. Testing of metallic valves). All gate pipeline spotting drills are leak tested (100%). The tests include external body tightness, closing tightness and tightness after clamping on a pipe.

2.7 MARKINGS

The markings of pipeline spotting drills are specified by standards: PN-EN-19: 2005, PN-EN-1074-1: 2002.

The pipeline spotting drills' bodies feature markings on the front and back walls of the body neck. The marking contains the following data:

- pipeline spotting drill 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 PN-EN ISO 12944-5: 2009.

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

3.2 PACKAGING

Pipeline spotting drills are packaged on EURO pallets (1200x800) and protected with shrink film.

3.3 STORAGE

Store the pipeline spotting drills in sheltered rooms.

3.4 TRANSPORT

Transport the pipeline spotting drills using sheltered vehicles.

4 ASSEMBLY AND INSTALLATION

4.1 INSTALLATION GUIDELINES

Cast iron pipeline spotting drills TYPE 3250 are appropriate for installation on the line pipe without the necessity of using additional sealing. Before installing the pipeline spotting drill, it is recommended to lubricate sealing assembly surfaces with industrial grade petroleum jelly to prevent adhesion and possible damage during the removal of rubber components. After installing the pipeline spotting drill body and clamp on the pipeline correct their positions and equally tighten the bolts. Following assembly check if the unit is installed correctly. It is now possible to make an opening in the line pipe by rotating the stem of the pipeline spotting drill. The pipeline spotting drill is its integral part and does not require using additional supports (bearing plates) below it. The pipeline spotting drill assembled and adjusted by the manufacturer is ready for installation. Any dismantling of the sealing components may result in loss of tightness.

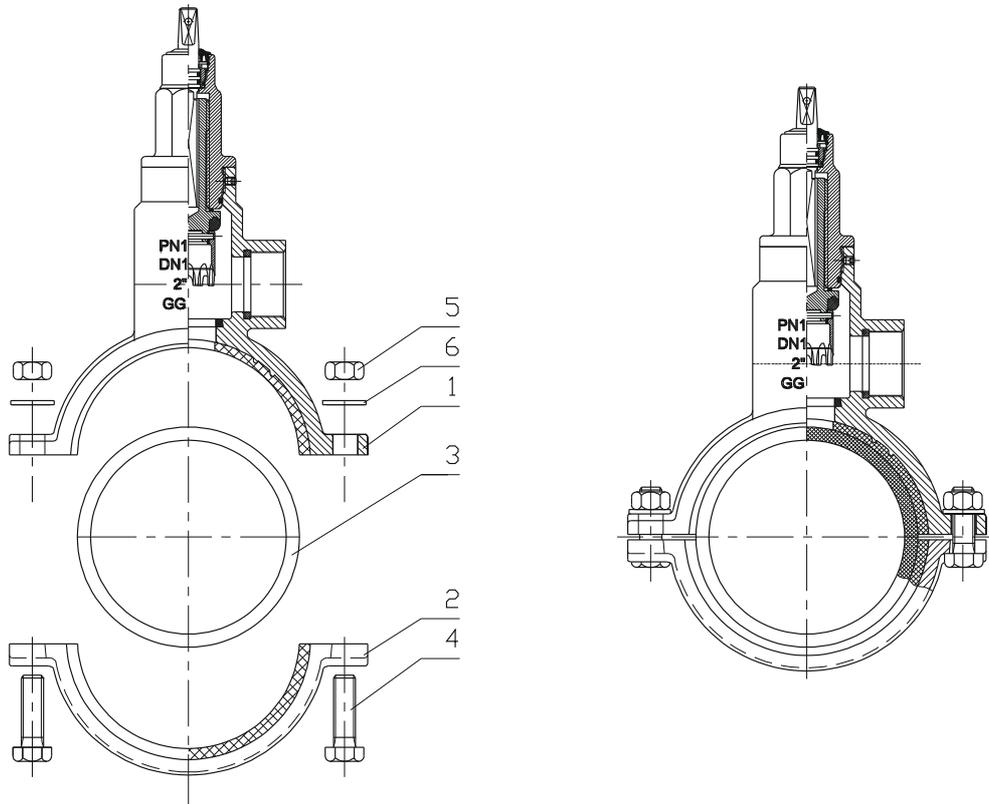
4.2 INSTALLATION INSTRUCTIONS

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.

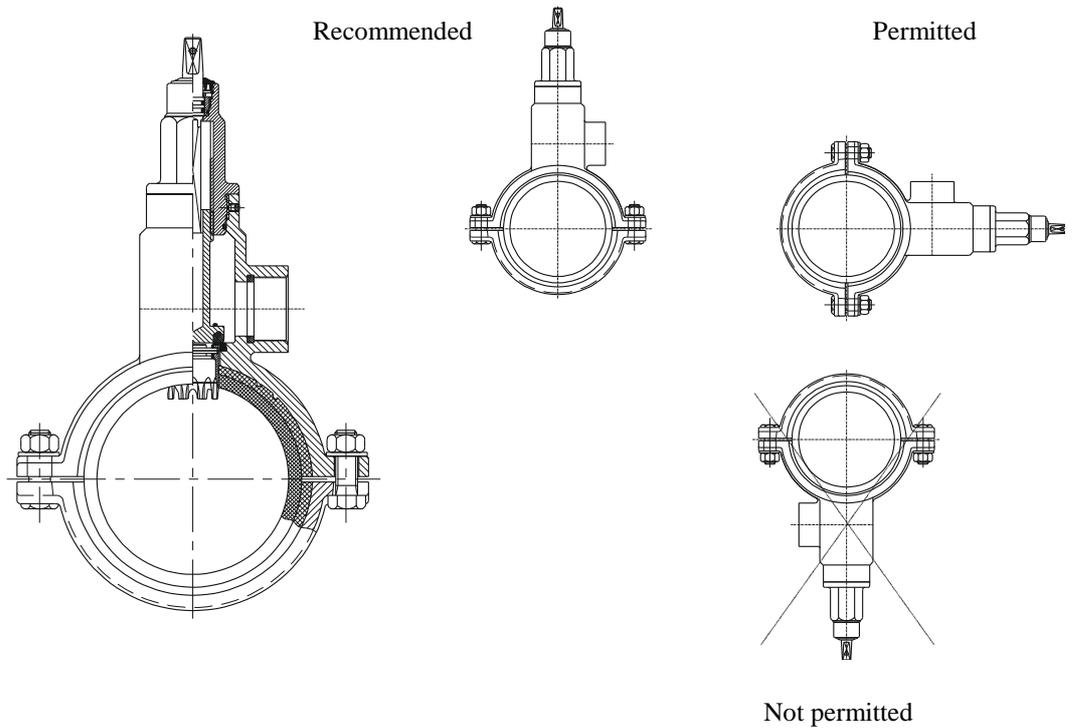
Before attempting to assemble the fitting, remove the main bore plugs, check the inner surfaces of the fitting and thoroughly flush with water, if necessary.

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

The installation and design of the pipeline spotting drill is shown in the following figure:



1.-pipeline spotting drill body, 2.-clamp, 3.-pipeline, 4.- bolt, 5.-nut, 6.-washer,



4.3 OPERATION

The pipeline spotting drills should be operated according to the requirements for cut-off fittings. To ensure full performance, switch the pipeline spotting drill 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 pipeline spotting drill.

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.