

Operation and maintenance
manual for

CLEAN WATER
AIR
VALVES

P/N
7080

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 7080 air valve for water supply (clean tap water) installation:

- spheroidal CI body, bush and bracket; epoxy coated for anti-corrosive,
- stainless steel column and tank inner components,
- PE float,
- stainless steel fastening nuts, washers and bolts.

1.2 USE

The flanged air valve for direct buried installation is intended for venting air from / air intake to water supply pipelines during priming/draining. The valve is intended for underground systems and must be installed at the highest elevation point of the horizontal pipeline.

1.3 TECHNICAL SPECIFICATION

The **TYPE 7080** flanged air valves are intended for aeration and air venting of pipelines.

- Available diameters (dimensions): – DN50 to DN100 [mm]
- Maximum medium flow rate:
 - liquid: max. 4 [m/s]
 - gas: max. 15 [m/s]
- Nominal pressure: PN to 1.6 MPa
- Operating pressure 0.00 to 1.6 MPa
- Medium temperature: 70°C
- Max. aeration/venting rate 190 m³/h
- Max. venting rate, stage 2 7.5 m³/h

The valve connection flange design is acc. to PN-EN 1092-2: 1999, with the sizes compliant with the nominal pressure values (PN 10/16).

The **TYPE 7080** flanged air valves are as listed in the technical documentation.

The valves are selected for the air intake/exhaust volume, i.e. the pipeline diameter and the vented pipeline length. The maximum flow rate in the valve bore must not exceed 20 m/s to prevent entrainment of the float and isolating the flow through the main valve stage before the air venting ends.

2 DESIGN

2.1 DESCRIPTION OF THE VALVE DESIGN

F.A. "JAFAR" S.A. is the manufacturer of **Type 7080** flanged air valves for water supply installations.

The air valve bottom body is cast iron and contains a spring poppet check valve for isolating the flow during disassembly of the complete tank. The air valve body is attached to a shielding pipe which forms the valve column. Inside the valve column shielding pipe is the complete tank with a seal at the bottom port end in a bush. The tank top part is pressed into the bush with a bolt driven into the bracket and pressing the spacer tube. The bracket is inserted into the spline grooves of the column and thus supports the tank. The column is capped with a loose protection cover that prevents contamination of the valve interior. The tank bottom port end, when inserted into the bush in the working position, presses down the check valve poppet assembly to keep the check valve open in the working position. When removing the tank for maintenance, the pressure on the check valve is released until the check valve is closed, thus isolating the flow before the port end is clear from the bush. This prevents high-pressure water jet from being released into the column interior.

The tank top section features the air valve assembly, comprising a float suspended on a rod within the tank yoke. The float controls two valve stages of the air valve. Stage one (main valve) opens at low pressure values to vent

air when the pipeline is primed, and to aerate the pipeline being drained. Stage two (smaller secondary valve with a nozzle) operates across the entire pressure range to vent air from the primed pipeline in service.

The float is made of polyethylene with a density lower than water and remains afloat when the valve is primed. The float density has been selected to keep the device at the valve body bottom during the aeration of the pipeline and at rise with the water level during the pipeline priming to close the valves and stop the air flow. During aeration, the float descends with the falling water level to open the stages and admit air into the pipeline.

The tank is covered by the main valve seat and sealed with an o-ring which is pressed by the cover bolted down to the tank body.

Install the air valve in the vertical orientation at the highest elevation of the pipeline or at its bends.

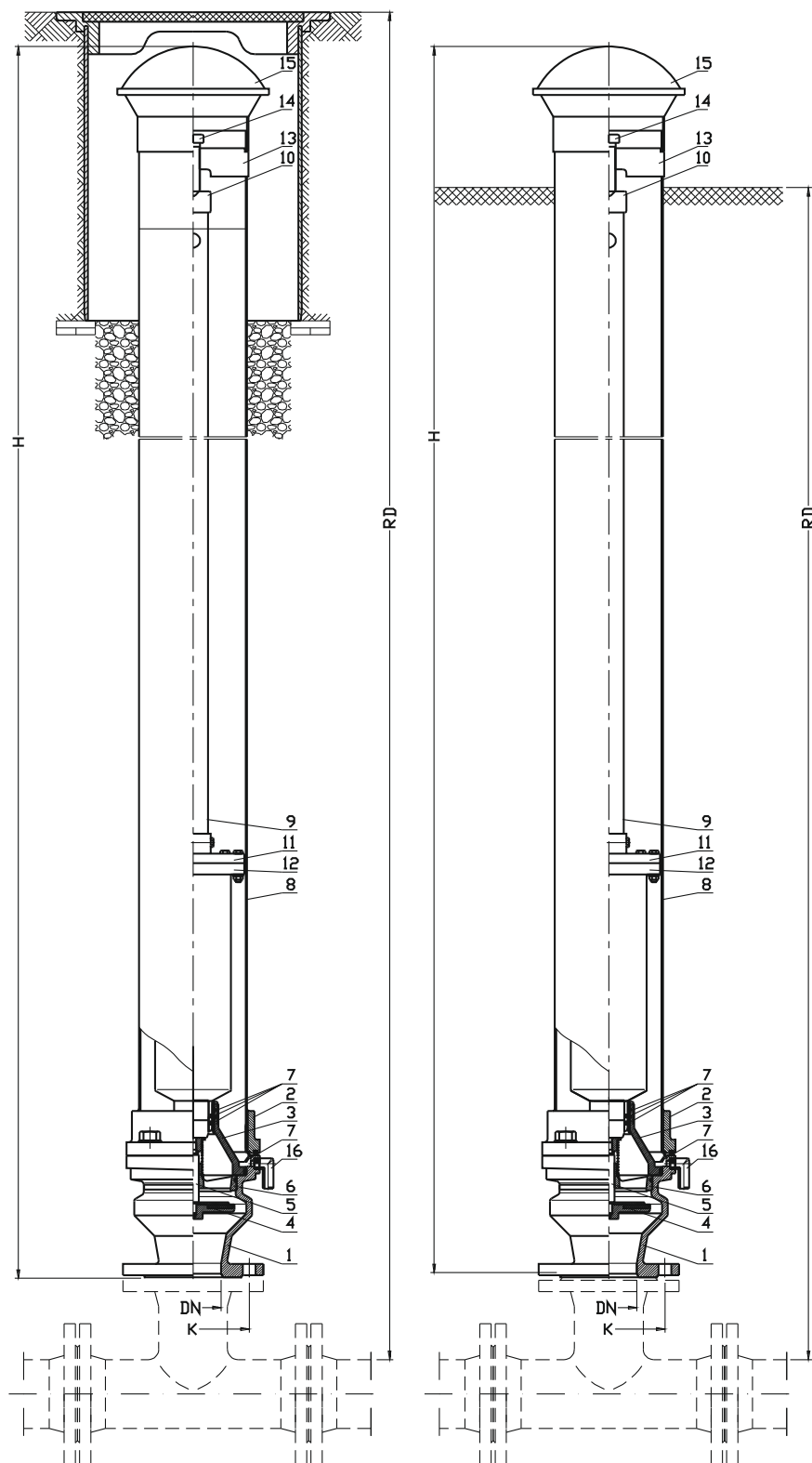
2.2 MATERIALS

The following tables list the materials used for the air valves.

TYPE 7080

| Item | Part designation | Material | Reference standard |
|------|---------------------|-------------------------|--------------------------------------|
| 1 | Body | EN-GJS 400-15 cast iron | PN-EN 1563: 2012 |
| 2 | Flange | EN-GJS 400-15 cast iron | PN-EN 1563: 2012 |
| 3 | Bush | EN-GJS 400-15 cast iron | PN-EN 1563: 2012 |
| 4 | Poppet | Brass + EPDM | PN-EN 1982: 2010 PN-EN 1629: 2005 |
| 5 | Pin | Stainless steel, 1.4301 | PN-EN 10088-1: 2014 |
| 6 | Guide | Brass, CuZn39Pb1Al-B | PN-EN 1982: 2010 |
| 7 | O-ring seal | EPDM | PN-ISO 1629: 2005 |
| 8 | Shielding pipe | Stainless steel, 1.4301 | PN-EN 10088-1: 2014 |
| 9 | Spacer tube | Stainless steel, 1.4301 | PN-EN 10088-1: 2014 |
| 10 | Spacer tube adapter | Stainless steel, 1.4301 | PN-EN 10088-1: 2014 |
| 11 | Top flange | Stainless steel, 1.4301 | PN-EN 10088-1: 2014 |
| 12 | Air valves | Stainless steel | PN-EN 10088-1: 2014 |
| 13 | Bracket | EN-GJS 400-15 cast iron | PN-EN 1563: 2012 |
| 14 | Bolt | Stainless steel, 1.4301 | PN-EN 10088-1: 2014 |
| 15 | Cover | Polyethylene | PN-EN ISO 1872-1: 2000 |
| 16 | Water drain | Polypropylene | PN-EN ISO 1872-1: 2000 |

TYPE 7080



| DN | RD | | H | K | Weight |
|------|---------------------|-------------------------|------|------|--------|
| | Buried installation | Overground installation | | | |
| [mm] | | | | [kg] | |
| 50 | 1250 | 1000 | 1095 | 125 | 29.5 |
| | 1500 | 1250 | 1345 | | 32.0 |
| | 1750 | 1500 | 1595 | | 34.0 |
| | 2000 | 1750 | 1845 | | 36.0 |
| | 2250 | 2000 | 2095 | | 38.0 |
| 80 | 1250 | 1000 | 1095 | 160 | 33.0 |
| | 1500 | 1250 | 1345 | | 35.5 |
| | 1750 | 1500 | 1595 | | 38.2 |
| | 2000 | 1750 | 1845 | | 41.2 |
| | 2250 | 2000 | 2095 | | 44.0 |
| 100 | 1250 | 1000 | 1095 | 180 | - |
| | 1500 | 1250 | 1345 | | - |
| | 1750 | 1500 | 1595 | | - |
| | 2000 | 1750 | 1845 | | - |
| | 2250 | 2000 | 2095 | | - |

2.4 REFERENCE STANDARDS

| | |
|-------------------------|--|
| PN-EN 1074-1: 2002 | Valves for water supply. Fitness for purpose requirements and appropriate verification tests. General requirements. |
| PN-89/H-02650 | Valves and pipelines. Pressure and temperature ratings. |
| PN-EN 1074-2: 2002 | Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Isolating valves. |
| PN-EN 1074-4: 2002 | Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Part 4. Air valves. |
| PN-EN 19: 2005 | Industrial valves. Marking of metallic valves. |
| 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 | Pipework components. Definition and selection of DN (nominal size). |
| PN-EN 1561: 2012 | Founding. Grey cast irons. |
| PN-EN 1562: 2012 | Founding. Malleable cast iron. |
| PN-EN 1563: 2012 | Founding. Spheroidal graphite cast irons. |
| PN-EN 10088-1: 2014 | Stainless steels. List of stainless steels. |
| PN-74/H-84032 | Spring steel. Grades. |
| PN-EN 1982: 2010 | Copper and copper alloys. Ingots and castings. |
| PN-EN 1706: 2011 | Aluminium and aluminium alloys. Castings. Chemical composition and mechanical properties. |
| PN-ISO 1629: 2005 | Rubbers and latices. Nomenclature. |
| PN-EN 1092-2: 1999 | Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, PN designated. Cast iron flanges. |
| 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. |
| PN-EN ISO 4017: 2011 | Hexagon head screws. Product grades A and B. |
| PN-EN ISO 4762: 2006 | Hexagon socket head cap screws. |
| PN-EN ISO 1872-1:2000 | Plastics. Polyethylene (PE) moulding and extrusion materials. Designation system and basis for specifications. |
| PN-EN ISO 1873-1:2000 | Plastics. Polypropylene (PP) moulding and extrusion materials. Designation system and basis for specifications. |
| PN-EN ISO 1874-1: 2004 | Plastics. Polyamide (PA) moulding and extrusion materials. Designation system and basis for specification. |
| PN-EN ISO 12944-5: 2009 | Paints and varnishes. Corrosion protection of steel structures by protective paint systems. Protective painting systems. |

2.5 ORDERING INFORMATION

Water valves are special purpose valves; please specify the following in your order:

- part number (P/N, equal to the product type)
- intended use (e.g. for tap water)
- and:
 - 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 1561: 2012
 - maximum operating temperature, acc. to PN-89/H-02650

2.6 PRODUCTION AND ACCEPTANCE

The **TYPE 7080** flanged air valves are manufactured and accepted according to PN-EN 1074-4: 2002 (Valves for water supply. Fitness for purpose requirements and appropriate verification tests. Part 4. Air valves) and PN-EN 12266-1: 2012 (Industrial valves. Testing of valves). All valves (100%) are subject to tightness testing. The test includes the outer body integrity and the valve closure integrity at low and high pressures, and valve operation efficiency.

2.7 MARKINGS

The valve marking is defined in the following standards: PN-EN 19: 2005, PN-EN-1074-1: 2002.

The valve bodies have markings placed on the front and rear chamber walls which include the following data:

- 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 250 µm.

The part surfaces are pre-treated for epoxy coating in accordance with the relevant technical documentation and PN-EN ISO 12944-5: 2009.

The cover-to-body fastening bolts are stainless steel grade 1.4301.

3.2 PACKAGING

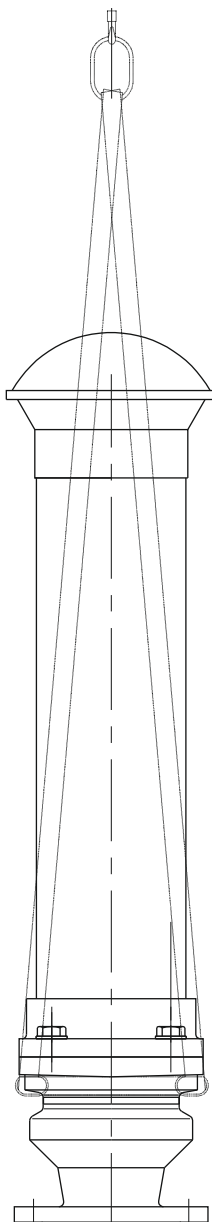
TYPE 7080 flanged air valves are packed on EURO pallets (1200x800) and protected with heat-shrunk film.

3.3 STORAGE

Store the **TYPE 7080** flanged air valves in sheltered rooms.

3.4 TRANSPORT

Transport the **TYPE 7080** flanged air valves on sheltered vehicles.



The manufacturer recommends slings for installation of valves with the bore size from DN50 to DN200 at all length (H) sizes.

4 ASSEMBLY AND INSTALLATION

4.1 ASSEMBLY GUIDELINES

The **TYPE 7080** flanged air valves can be installed in the vertical orientation in underground and overground horizontal pipelines. The flanged valves 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 valve to bending or tensile stress from loading with the unsupported pipeline sections. Assemble with consideration to pressure and

temperature compensation of the pipeline. Install the valve in a readily accessible location to enable periodic inspections. The system design must allow openings of sizes which assure unobstructed inlet and outlet of air. The valve must not be exposed to low temperatures that may cause the medium to freeze. For underground installation, use an installation vault with the minimum opening size of 300 mm (or an access manhole) with perforation for sufficient air supply and exhaust.

The valve assembled and delivered by the manufacturer is ready for installation. Disassembly of the valve components without proper care may result in loss of integrity.

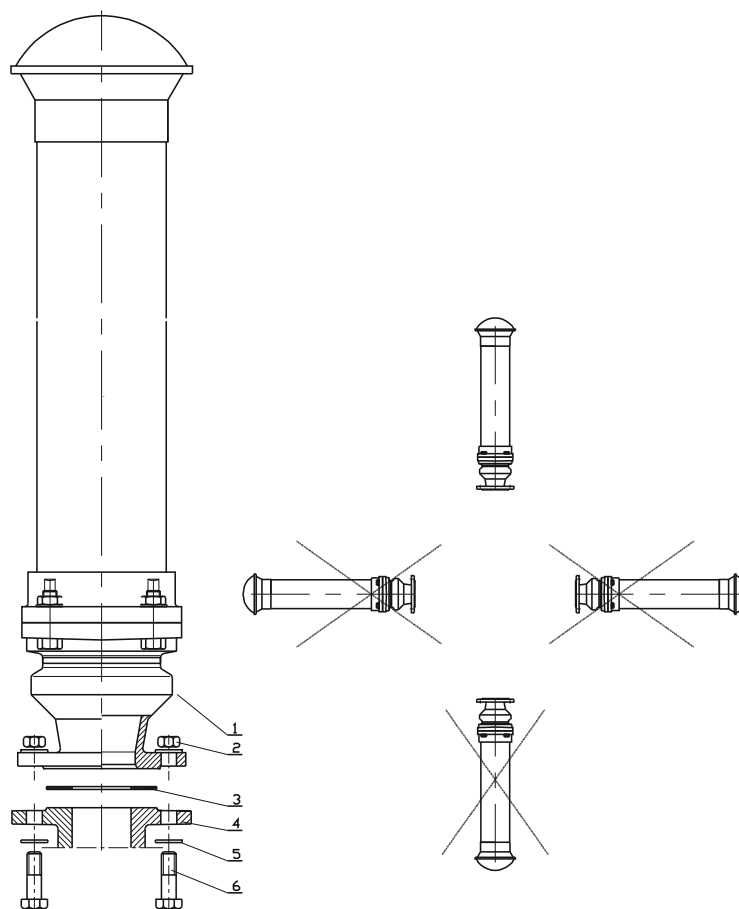
4.2 ASSEMBLY INSTRUCTIONS

Before attempting to assemble the valve, check the technical and commercial documents for compliance of the valve with order and its intended medium and operating parameters of the pipeline in which the valve is to be installed. 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.

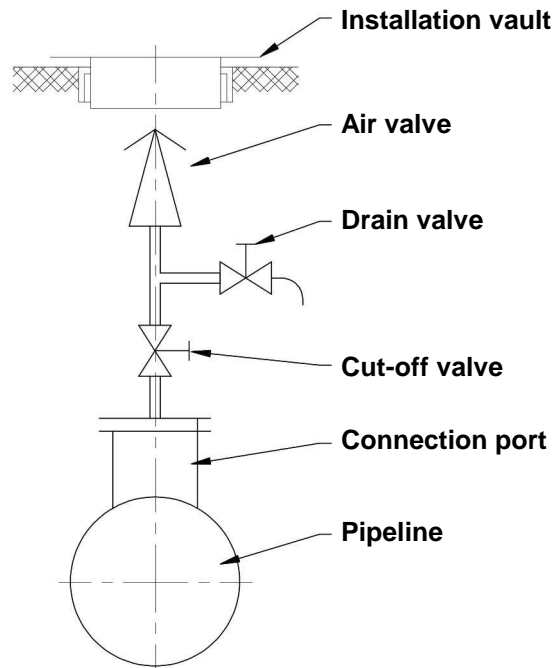
Caution! If the product has mechanical damage, do not install it in the pipeline.

The assembly method is shown in the following figure:



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

The recommended connection method for the air valve is shown in the diagram above.



The connection port (turret) diameter must be adequately large and be at least the size of the air valve. The connection port orientation shall be vertical. The drain valve is intended for manual air relief or aeration, and for depressurizing (by draining) prior to maintenance work. The cut-off valve allows installing and removing the air valve and the drain valve.

Keep the cut-off valve closed during the system pressure test.

Flush the system thoroughly before installing the air valve.

4.3 OPERATION

The **TYPE 7080** flanged steel air valves shall be operated according to the requirements for air valves, i.e. in the orientation shown in the permitted orientation diagram. It is recommended to periodically purge the valve with fresh water (once a year) to assure full performance. This is also recommended to prevent jamming of the flange and valve stages in the body.

Caution! The manufacturer highly recommends periodic inspection and maintenance of the air valve. This requires removing the valve from service.

Flush the valves periodically with clean water.

Flushing procedure:

1. Close the cut-off valves
2. Open the drain valves
3. Remove the bracket screw (14)
4. Remove the valve clear from the installation site
5. Attach a water supply hose to the valve outlet port
6. Flush the valve with clean water
7. Prepare the valve for reassembly in the shielding pipe
8. New o-ring seals (7) are recommended for reassembly
9. Lubricate the o-ring seals with e.g. petrolatum before assembly
10. Insert the valve into the shielding pipe
11. Bolt down the bracket
12. Open the cut-off valves

4.4 OCCUPATIONAL HEALTH AND SAFETY

The air valves 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.