

ANGLE VALVES „T”
in cast iron

1” ÷ 2”

PFA 16

ANGLE VALVES T - TECHNICAL INSTRUCTION MANUAL				
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1. TECHNICAL DESCRIPTION

1.1. Product name and main features

This manual contains information concerning ductile cast iron angle valves T with the following features:

- Rubber-covered obturator
- Not rising stem
- Internal stem thread
- Soft sealing of the stem in the bonnet

1.2. Intended use of a product

The angle valves as described in section 1.1 are designed for building in installations of chemically neutral clean consumption water, free from sand, gravel, metallic particles or other impurities. These valves should be installed in vertical position.

Table 1: Flow speed, pressure and temperature range of angle valves

DN	Allowable Operating Pressure PFA	Leak tightness test of the shell PEA	Seat tightness test 1,1 x PFA	Minimal value of the flow coefficient Kv	Allowable temperature
				[m ³ /h]	
	[bar]				° C
G1÷G2	10	17	11	11,28	0÷70
	16	25	18		

1.3 Construction and principle of operation (Fig.1, Tab.2)

The main parts of the valve are shown on the fig.1.

The valve's outer shell consists of valve bonnet and body that are bolted together. The sealing is provided by a special profile gasket.

The internal parts there are stem and resilient obturator. Closing of the valve proceeds by turning the stem in the clockwise direction.

The threads are normalised (the threads according to PN-EN ISO 228-1).

The body consists of a chamber that contains the brass obturator partly rubber covered that opens or closes the valve. The obturator is specially shaped to match the recess that divides the main waterway. The chamber on its sides has wedge guides that force and stabilise wedge's sliding motion. Valve bonnet is of spherical shape with a tubular gland at the top.

There is a brass bush in the gland that stabilises the stem's position and works as slide bearing. All mentioned elements are sealed by o-rings. The bush also contains a protective cap that protects the stem and other valve elements from dust and dirt.

The monolithic stem is made of stainless steel and has a thrust flange that stabilises the stem's longitudinal position. Section of the stem that is placed inside valve body under the thrust flange has a trapezoidal thread that mates with rubber - covered wedge.

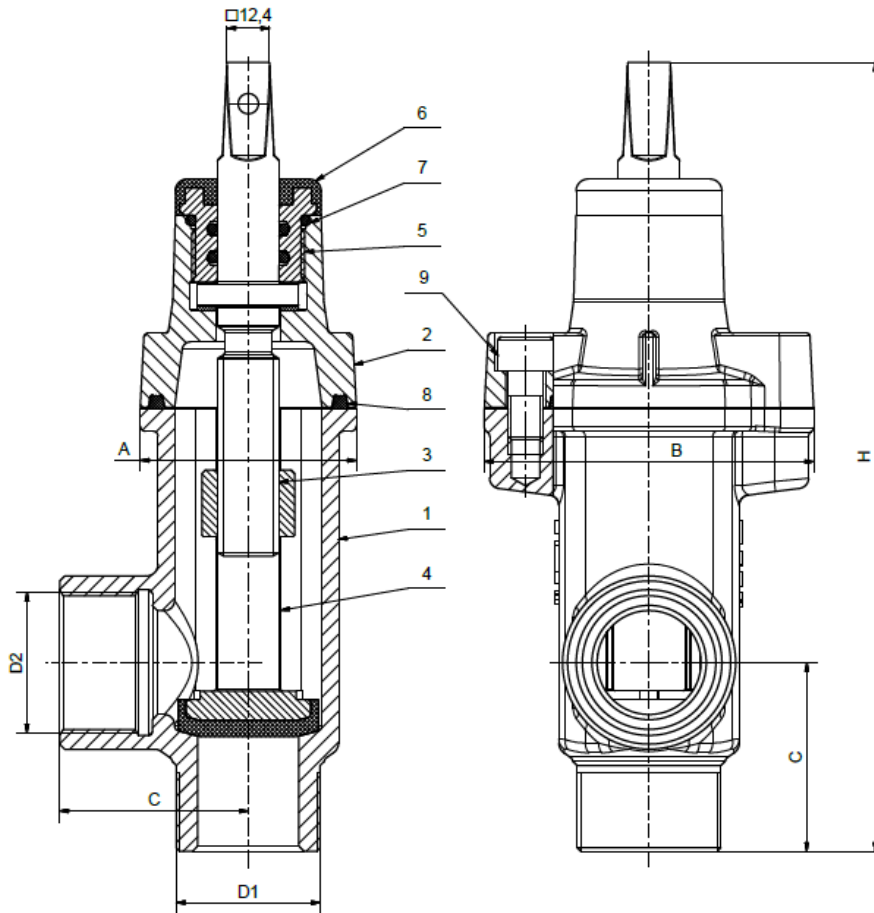


Fig. 1 – The construction of angle valves T.

1 – valve body
 2 – valve bonnet
 3 – stem
 4 – obturator
 5 – threaded bush

6 – protective cap
 7 – stem sealing
 8 – body/bonnet seal
 9 – wrench-head bolts

Tab. 2 Dimensions of angle valves

DN	Combination D1 / D2		Indication of combination	H	A	B	C	Mass [kg]
	D1	D2						
G1 - G1 1/4	G1	G1	A	230	63	96	55	2,03
	G1 1/4	G1	B					2,09
	G1 1/4	G1 1/4	C					2,20
G1 1/2 - G2	G1 1/2	G1 1/2	D	278	84	118	70	3,40
	G2	G1 1/2	E					3,45
	G2	G2	F					3,55

Tab. 3 Number of turns to open/close the angle valve

DN	Tr – LH	□ a Operating nut	Stem thread pitch ±1	No of turns to open/close valve ±0,5
[mm]				1/n
G1	18 x 4	12,4	37	9
G1 1/4	18 x 4	12,4	37	9
G1 1/2	18 x 4	12,4	57	14
G2	18 x 4	12,4	57	14

Tab. 4 Angle valve opening and closing torque

DN	Maximum closing torque [Nm]
G1	48
G1 1/4	48
G1 1/2	48
G2	48

1.4 Tightness class

The angle valves as described herein (the pressure range from the Tab. 1 and at room temperature 20°C) have been categorised as class A devices according to EN-12266-1.

1.5. Materials

- Valve body, valve bonnet ductile cast iron
- Stem stainless steel
- Threaded bush, obturator
Sliding rings, brass
- Obturator lining, o-rings,
Body/bonnet seal rubber
- Bolted parts galvanised carbon steel or stainless steel on request
- Protective coating furnace-hardened epoxy powder paint

The materials grades are given in the component list and design documentation.

1.6. Technical verification and approval

Hygienic certificate PZH

1.7. Applicable norms and regulation

- PN-EN 1074-1 - Valves for water supply. Fitness for purpose requirements and appropriate verification tests –Part 1: General requirements
- PN-EN 1074-2 - Valves for water supply. Fitness for purpose requirements and appropriate verification tests –Part 2: Isolating valves.
- PN-EN 1563 - Founding. Spheroidal graphite cast irons.
- EN 12266-1 - Industrial valves. Testing of valves. Part 1: Mandatory requirements.
- EN 12266-2 - Industrial valves. Testing of valves. Part 2: Supplementary requirements
- PN-EN ISO 228-1 - Pipe threads where pressure-tight joints are not made on the threads Part 1: Dimensions, tolerances and designation.
- PN-EN 681-1 - Elastomeric seals – Material requirements for pipe Joints seals used in water and drainage applications – Part 1: Vulcanized rubber
- PN-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
- PN-EN 12420 - Copper and Copper alloy. Forgings
- PN-EN ISO 4762 - Hexagon socket head cap screws.

2. ASSEMBLY AND OPERATION

2.1. Transport and storage

The gate valve is delivered in open position. The gate valve is packed in a plastic bag and placed in cardboard box. Transport should be done in a manner that does not present a risk of permanent damage to external or internal protective coating. Valves should be stored in rooms, which are free from mechanical, chemical and bacteriological impurities.

2.2. Assembly in pipeline

The angle valves T described herein should be installed in vertical position. The angle valves shall be installed in such a way that they are not subjected to shearing forces in the pipeline. Pipeline designer should indicate a proper installation configuration.

Note: Any impurities, dirt or sharp particles on any valve's parts may cause loss of tightness or irreversible damage to sealing surfaces.

During priming, the valve must be fully open.

2.3. Operation and maintenance

The angle valves T described herein do not require any special operation and maintenance. Worn out o-rings in valve gland can be replaced after cutting off water supply. In order to replace the o-rings, the following steps must be taken:

1. cut off the water supply
2. remove the threaded bush
3. replace the o-rings
4. verify the condition of upper sliding ring and replace, if necessary
5. coat the bush thread with a small amount of protective emulsion in order to prevent unscrewing
6. screw the bush in until resistance is felt

If there is loss of tightness around the valve obturator the following steps must be taken:

- cut off water supply
- fully open the valve
- withdraw the internal unit and inspect all sealing surfaces
- if there is damage to valve obturator it must be replaced
- if there is damage to obturator recess in valve body, it must be replaced
- re-assemble the valve (in reverse order with the principles as during priming)

Note: The manufacturer shall not be liable for damage to angle valves caused by improper transport, handling, installation or operation in violation of recommendations and procedures contained herein.

Tab. 8 O-ring and T- key dimensions for use with gate valves

DN	„O”ring		T-key S M33x2 (mm)
	D x d (mm)	Szt.	
G1 – G2	18,2 x 3	1	32
	29,3 x 3	2	

2.4. Proceeding during remove the angle valve T

Never it was found that any part of the angle valves produced by METALPOL WĘGIERSKA GÓRKA, has a negative influence for environment, people and animals. This fact is confirmed by Hygienic Certificate issued by PZH in Warsaw. None of the parts of valve in chemical analysis holds substances from the list of Substances of Very High Concern (SVHC).

In case of remove the angle valve, each part of valve is subjected to recycling and as a raw material it may be using in the other manufacturing process.

Please note that sediment gathered inside the valve or the pipeline may be dangerous to man or to the environment. Therefore adequate safety requirements must be applied. At the end of lifecycle the valve must be disposed in accordance to adequate environmental safety regulations.

3. MANUFACTURE’S GUARANTEE

The guarantee covers the products installed and used according to the rules indicated in this Document.

Detailed provisions of manufacturer’s guarantee are available in manufacturer’s ‘Guarantee conditions’ constituting attachment to pricelist

Tampering with products (changes, replacement of parts, loosening original connections, etc. without the consent of the Producer) is not permitted and causes the expiration of the guarantee obligations and product liability.