

# CSC Pure Technologies

426033, Russia, . Izhevsk, 50 let Pionerii 41  
tel.: +7(3412) 73-68-12, fax: +7(3412) 73-68-20, e-mail: puretech@cscptech.com, www.cscptech.com

## “Agate” Chlorine Dosing System User’s manual MM 1. 00.00. 000 PЭ

**PLEASE READ BEFORE USING AND KEEP IT**

### 1.3. Complete set of product

1.3.1. The structure and completeness of the system delivery shall correspond table 1.

**Table 1**

Name	Marking	Code	Note
1. Filter		1	inside reducer
2. Reducer	MM 1.01.00.000	1	
3. Valve	MM 1.03.00.000	1	
4. Rotameter PM-2,5 ГY3 PM-6,3 ГY3	TY 25-02.070213-82	1	purchased product Delivery upon agreement with customer
5. Safety valve		1	inside reducer
6. Ejector	MM 1.04.00.000 MM 1.04.00.000-01	1 1	from 0,2 to 4(kg/h) from 0,6 to 12(kg/h)
7. Connecting tube F-4 Dy=8 mm		1,5 m	
8. Board	MM 1.05.00.000	1	
9. User’s manual	MM 1.00.00.000PЭ		
10. Spare parts		Set	

### 1.4. Device and work

1.4.1. The system is a sealed line, in which pressure decrease, quantity control and input of gas chlorine into the water line take place.

1.4.2. The system consists of the following parts (picture 1 of appendix 1):

- 1 - filter;
- 2 - valve
- 3 - reducer;

- 4 - rotameter;
- 5 - safety valve (is inside the ejector, positions 2 and 3. Appendix 3);
- 6 - ejector.

1.4.3. Purification of chlorine from mechanical impurities takes place in the filter supplied with the filler.

1.4.4. The valve serves for regulating the supply of chlorine. The valve is of the needle, angular type. The diameter of the conditional pass is 5 mm.

1.4.5. The reducer lowers pressure and supports it at the set level and blocks the chlorine line when the pressure under the membrane is more than the specified one. The general view of the reducer is shown in picture 2 of appendix 2. Maintenance of the specified pressure is carried out with the help of moving the membrane (position 1) and the valve (position 2) under the influence of changing pressure in the reducer chamber. The pressure at which the reducer is closed, is determined with the spring (position 3).

1.4.6. The rotameter is the indicator of chlorine flow. The basic control of the flow is weight.

1.4.7. The safety valve is intended for automatic protection from water surges (throws), protection of the water line from chlorine hits at the idle ejector. The safety valve blocks the chlorine line when the pressure under the membrane increases or when the water pressure becomes lower than the specified one at the ejector gateway. The general view of the safety valve is shown in picture 3 of appendix 3.

When there is no underpressure the valve is in the closed position under the influence of the spring effort (position 1). When creating underpressure in the ejector there is an elastic deformation of the membrane (position 2). In this case the saddle of the membrane (position 2) is released from the flange needle (position 3), the chlorine passes through the safety valve. The size of underpressure at which the valve opens is determined with the spring (position 1).

1.4.8. The injection of chlorine into water takes place in the ejector mixture chamber.

## **1.5 Marking**

1.5.1. The system shall be marked according to the design documentation.

## **1.6 Packing**

1.6.1. The system and the passport shall be put into GOST 2991-85 box.

## **2. Destination Use**

### **2.1. Product Preparation for operation**

2.1.1. Before working with the system it is necessary to study the present manual.

2.1.2. Before operating the system check its completeness and by way of visual check be sure that there are no damages in any parts of the system.

2.1.3. Place the board, on which the system is assembled, on the wall (the distance between the board and the wall must be 100-150 mm) or on the rack with the massive basis. The board is placed vertically perpendicularly in correspondence with the rotameter axis. The adjusting sizes of the board are shown in picture 4 of appendix 4.

2.1.4. Put the ejector into the water line.

2.1.5. Connect the filter gateway with the chlorine line.

2.1.6. The starting position of the system: the valve is closed, the dosimeter is closed, the reducer is adjusted for pressure decrease up to 0,8 kgf/m<sup>2</sup>, the safety valve is adjusted for operation at pressure of 0,9 kgf/m<sup>2</sup>.

### **2.2. Product Operation**

2.2.1. Starting of the chlorine dosing system must be done in following way:

- open the valve on the offtake water line;

- open the valve on the supply water line;
- open the valve on the container with chlorine;
- set the required chlorine supply with the valve (position 2) according to the rotameter (position 4) (pic. 1)

2.2.2. Stopping of the chlorine dosing system for the period of up to 30 minutes must be done in the following way:

- close the valve on the container with chlorine;
- close the valve (position 2);
- close the valve on the supply water line;
- close the valve on the offtake water line.

2.2.3. Stopping of the chlorine dosing system for a long period of time or repair must be done in the following way:

- close the valve on the container with chlorine;
- unscrew the nut connecting the chlorine line with the filter (position 1) completely;
- leave the system to work in such position for the period from three up to five minutes;
- close the valve on the supply water line.
- close the valve on the offtake water line.

#### 2.2.4. Malfunctions and ways of their elimination in table 1.

**Table 1**

Malfunction	Probable reason	Method of elimination
Outflow of chlorine in places of nipple connections	1. Poorly tightened coupling nuts 2. Old liners	1. Tighten the coupling nuts 2. Replace the liners
Outflow of chlorine through the valve	The gland is insufficiently tightened	Tighten the gland, replace the rubber liners
Outflow of chlorine at the rotameter glass	1. Poorly tightened coupling nuts 2. The glass is damaged	1. Tighten the coupling nuts 2. Replace the rotameter
Water break-through in the safety valve	1. Destruction of the membrane 2. Weakened spring compression	1. Replace the membrane 2. Replace the spring
The rotameter float is motionless	The rotameter is dirty	Clean the rotameter
Spontaneous change of chlorine supply, pressure increase	Destruction of the reducer membrane	Replace the reducer membrane
Breakdown of normal work of the valve and the dosimeter	Corrosion of rods or saddles	Replace the rod or the saddle

## **2.3. Safety measures**

2.3.1. It is forbidden to let the people who have not studied the present manual, who have not gone through industrial safety training and who have not gone through training to work with chlorine and to service the chlorination equipment, to work with the system.

2.3.2. The room where the system is placed must meet СНиП2.04.02-84 requirements "Water supply. External networks and constructions" and "Safety rules at chlorine production, storage, transportation and usage" ( ПБ-09-322-99).

2.3.3. It is forbidden to supply chlorine into the system before water.

2.3.4. It is necessary to control strictly the occurrence of chlorine outflow.

## **3. Maintenance service**

3.1. The shift operator inspects the chlorine line tightness with liquid ammonia and visual check of the water lines tightness every day.

3.2. Maintenance service of the system must be carried out with the observance of paragraph 2.3.1 of the present manual.

3.3. Before the beginning of maintenance service work the performance of work according to paragraph 2.2.3 of the present manual must be done.

3.4. Once a month it is necessary to disassemble the filter completely and to wash the filtering stuffing with acetone of GOST 2768-84. After washing the filtering stuffing to dry it at the temperature no higher than 150°C till full drying. The other parts of the filter to wash or wipe with acetone of GOST 2768-84, after that with gasoline Б-70 of GOST 1012- 72. After full drying the filtering stuffing is stuffed into the filter case.

3.5. Every three months of work the system must be fully disassembled, cleaned, washed and the worn out details replaced.

3.6. Chlorine lines must be washed and wiped with acetone of GOST 2768-84. After drying to wipe with gasoline Б-70 of GOST 1012-72. The other parts of the system to wash and wipe with gasoline Б-70 of GOST 1012-72 Б-7 of GOST 1012-72. When washing and wiping to use cotton rags.

3.7. To begin disassembling the reducer in the following sequence:

- disconnect the tube of the chlorine line from the filter;
- disconnect the filter from the reducer;
- disconnect the flanges;
- turn out the valve (position 2);
- further disassembly can be done in any order.

3.8. Assembly of the reducer is done in the reverse order according to paragraph 3.7

3.9. Disassembly of the valve (picture 5 of appendix 5) is done in the following sequence:

- by turn out the lateral screws (position 4) remove the handle (position 1);
- remove the lock ring (position 5) and unscrew the thread bushing (position 2);
- turn out the case (position 3);
- further disassembly can be done in any order.

3.10. Assembly of the valve is done in the reverse order.

3.11. Maintenance service of the rotameter must be done according to the corresponding passport.

3.12. The ejector and connecting tubes must also be washed and wiped.

3.13. Before the assembly of the system the oversqueezed linings must be replaced.

3.14. During the assembly of the system the threads and rods must be oiled with preservative oil K-17 of GOST 10877-77. Fluorinated or chlorinated hydrocarbons can be used as lubricants, for example, cel-F, graphite powder.

3.15. The criterion of the amount of effort in tightening the coupling nuts on Wilson sealer is the absence of chlorine outflow. When overtightening the nuts the bush (position 3) (picture 5 of appendix 5) will become worn out quickly.

#### **4. Storage**

4.1. Storage of the system is according to group 1.2 of GOST 15150-69.

#### **5. Transportation**

5.1. The system can be transported in the package of the manufacturer by all types of covered transportation means according to the cargo transportation rules operating for the corresponding type of transportation.

5.2. Transportation conditions of the system in the transportation package of the manufacturer regarding the influence of climatic factors must meet storage conditions 1 of GOST 15150.

5.3. Transportation conditions of the system regarding the resistance to mechanical influences must meet group L of GOST 23216.

#### **6. Resources, service and storage life and manufacturer's warranty**

6.1. Resources, service and storage life

6.1.1. Warranty period of storage is two years from the date of manufacturing.

6.1.2. Warranty period of operation (without ejector) is 18 months from the date of putting into operation, but no more than 24 months from the date of shipment.

6.1.3. Warranty period of operation of the ejector is 12 months from the date of putting into operation, but no more than 24 months from the date of shipment.

#### **6.2. Manufacturer's warranties**

6.2.1. The manufacturer guarantees non-failure operation of the chlorine dosing system under the condition of observing the maintenance, operation and technical service rules described in the present user's manual.

6.2.2. Warranty certificates for the purchased units included into the system are established by their manufacturers and are specified in the passports of the corresponding units.

6.3. In case of fail in the work of the system during the warranty period it is necessary to prepare the technically reasonable act of claim and to prepare an extract of the paragraph "Acceptance certificate". The act of claim with the enclosure must be sent to the director of the manufacturer to the following address: 426033, Russian Federation, Udmurt republic, Izhevsk, 50 let pionerii street 41. Telephone (3412) 73-68-12, fax (3412) 73-68-20. puretech@cscptech.com

6.4. The manufacturer, regularly working on perfecting the product, reserves the right to introduce changes into the design and manufacturing techniques of some parts, which do not worsen the parameters of the system, without reflecting them in the present manual.

### **7 Acceptance certificate**

Chlorine dosing system

(name of product)

MM 1.00.00.000

(marking)

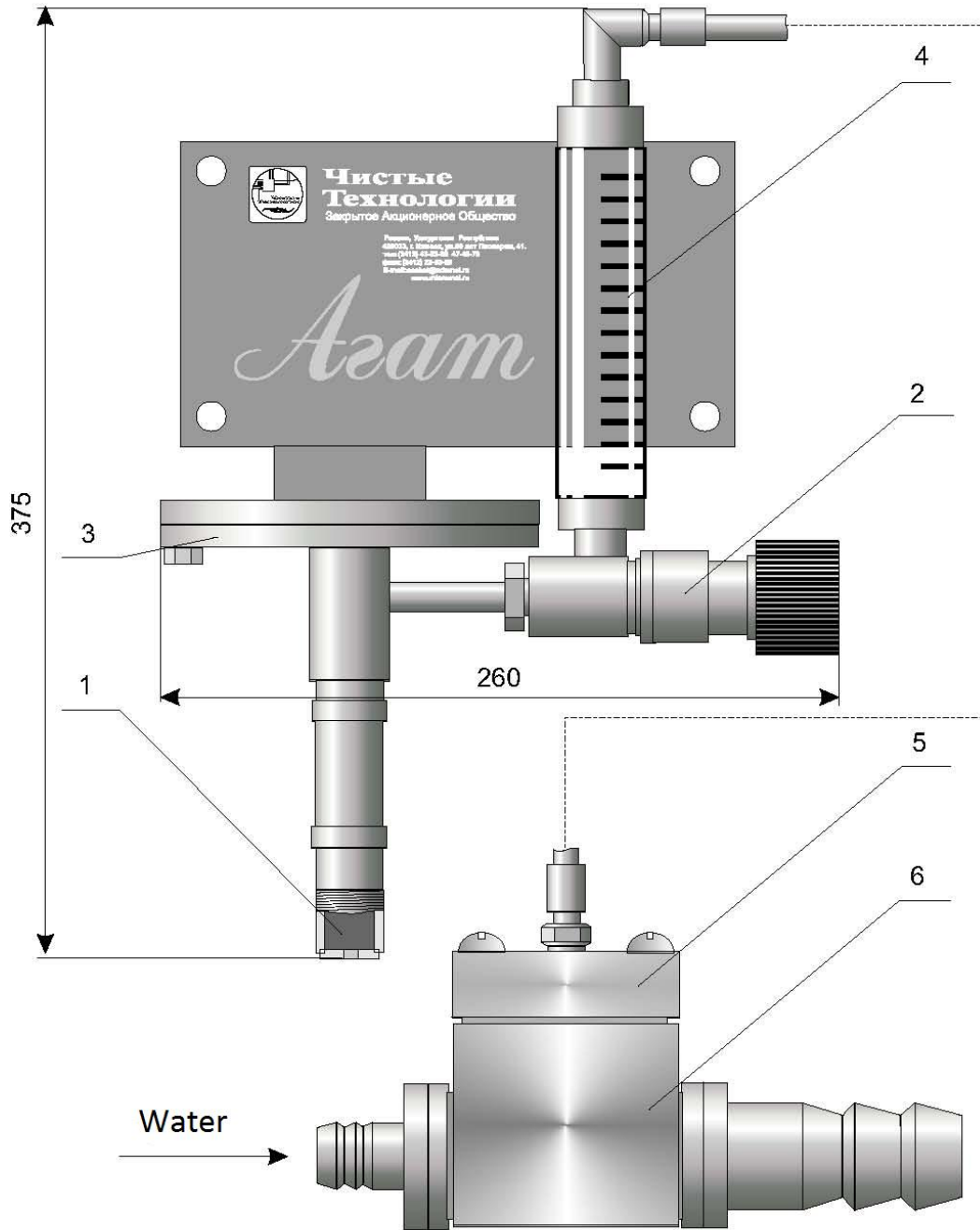
(factory number)

is made and accepted according to the obligatory requirements of the state standards, of the working engineering specifications, meets MM 1.00.00.000 technical specifications and is recognized as suitable for operation.

Seal \_\_\_\_\_  
signature

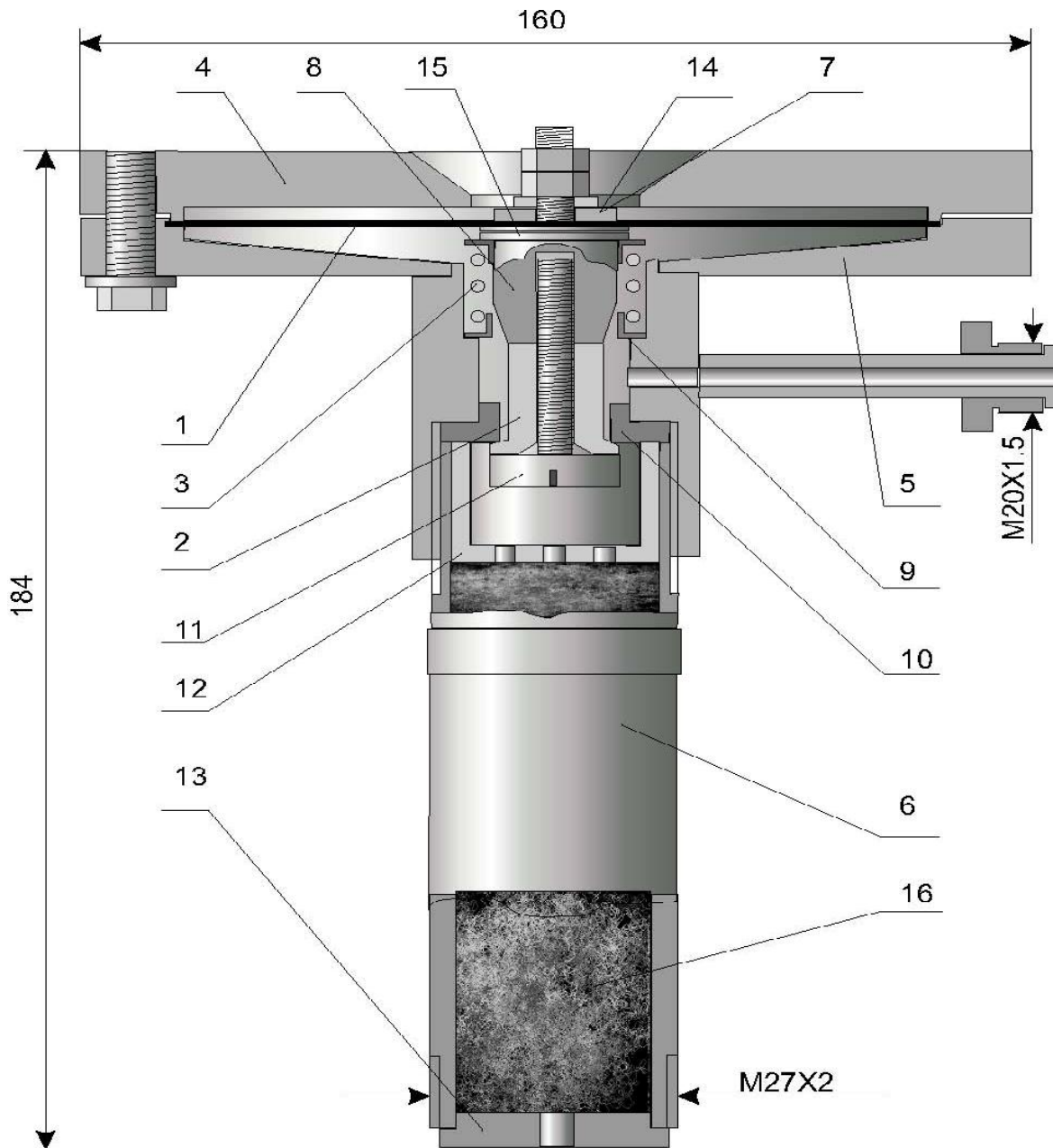
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Appendix 1



Picture 1

Appendix 2

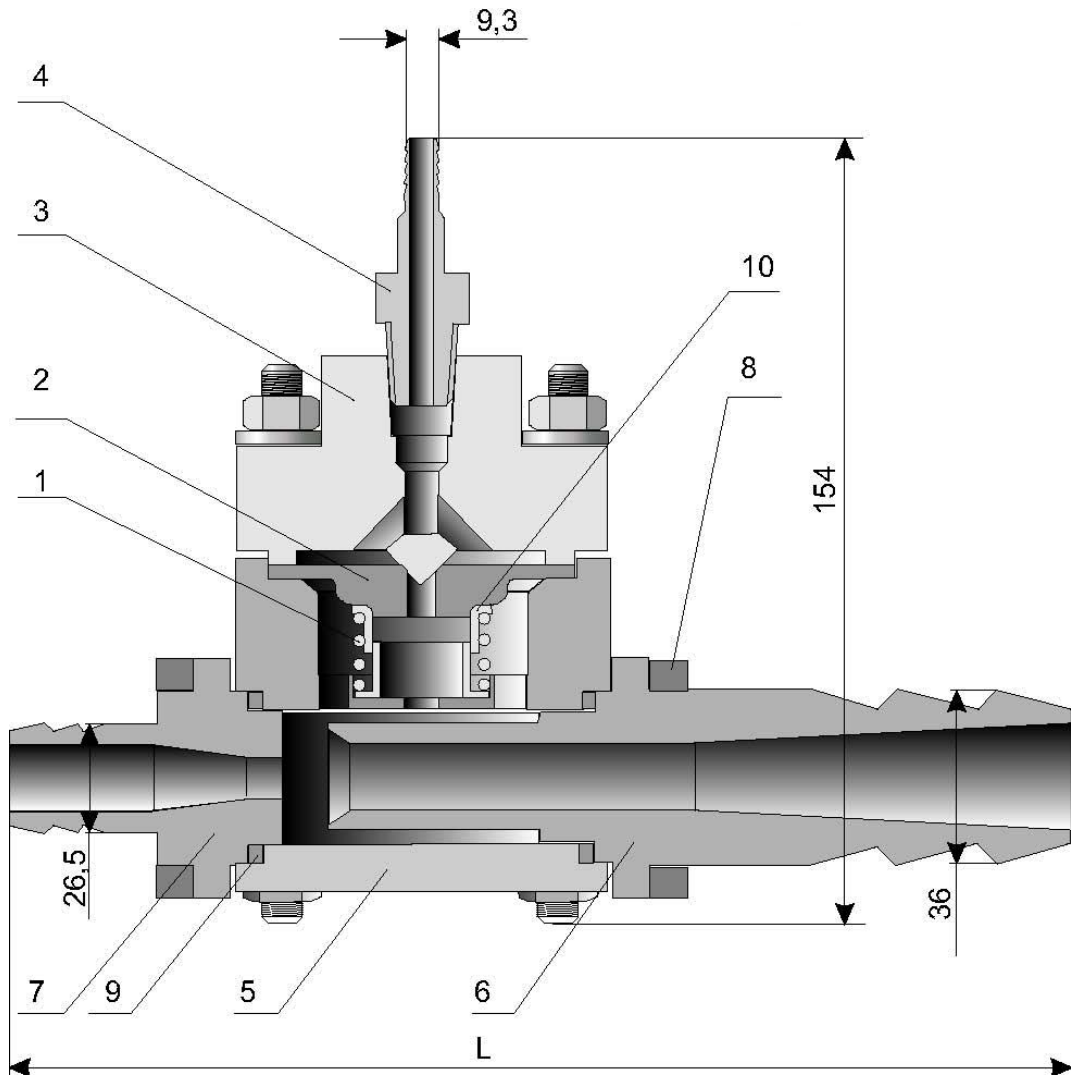


Picture 2. Reducer

1 - diaphragm (steel 12X19H10T - 1 piece; polyethylene terephthalate - 2 pieces); 2 - safety valve; 3 - spring; 4 - flange; 5 - case; 6 - branch pipe; 7 - liner; 8 - bolt; 9 - washer; 10 - saddle; 11 - screw; 12 - sieve; 13 - bottom; 14 - thread washer 15 - thread washer 16 - filter.



Appendix 3

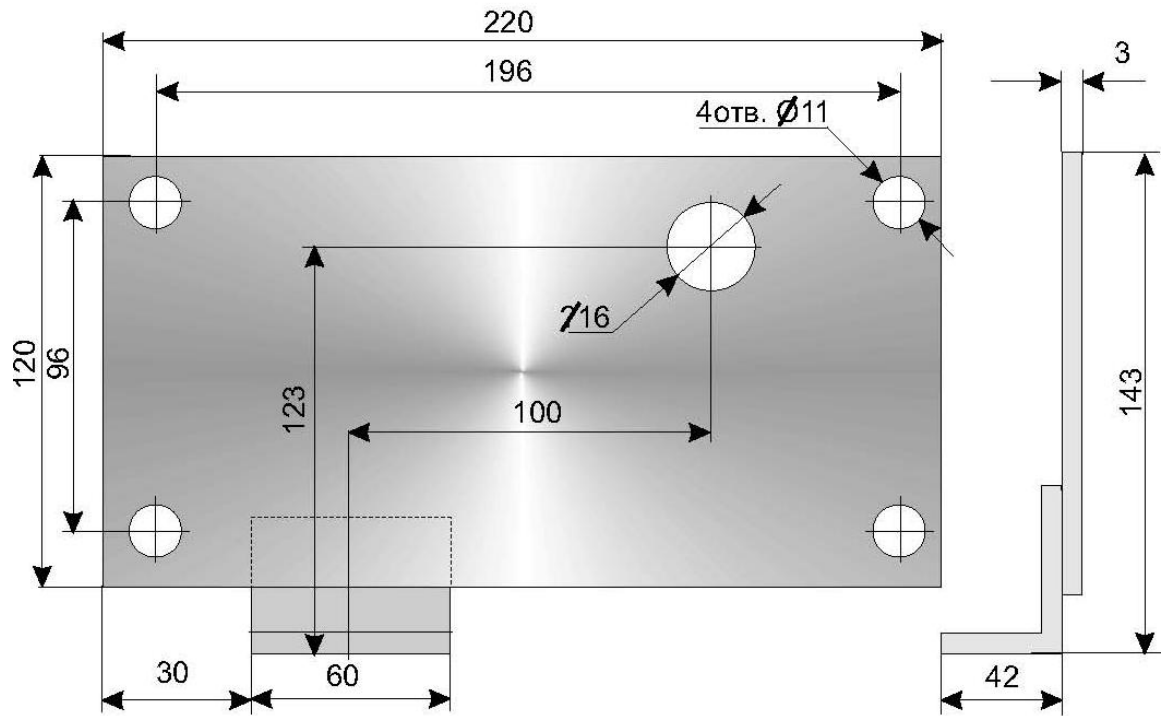


Picture 3

CHARACTERISTICS	L,mm
Chlorine productivity up to 4 kg/h	258
Chlorine productivity up to 12 kg/h	342

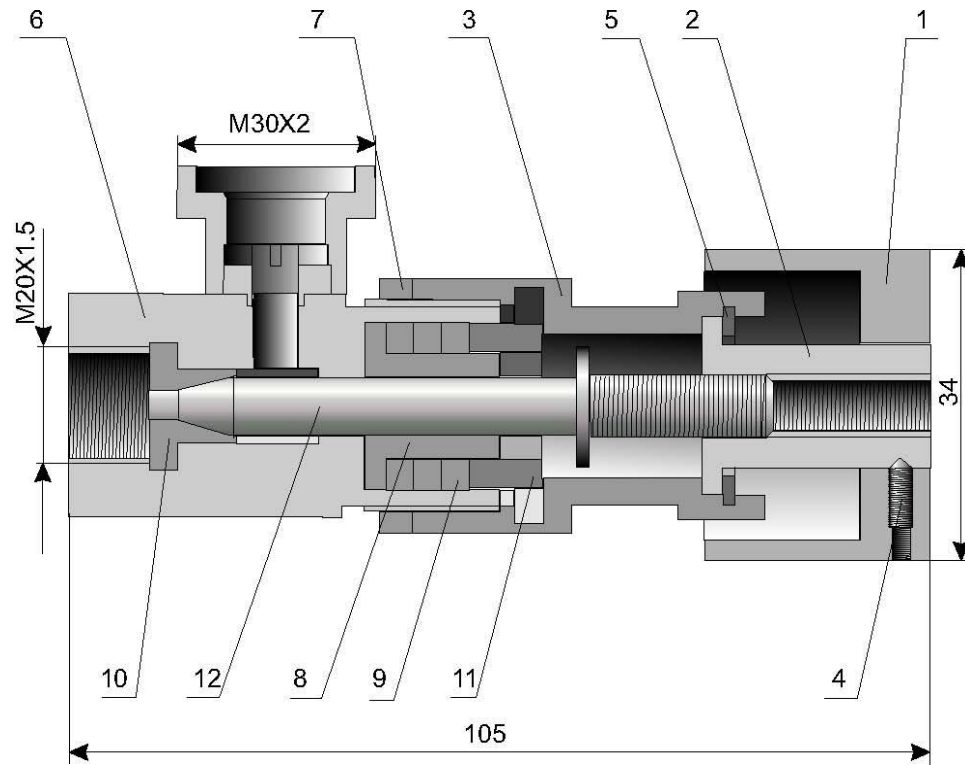
1 - spring; 2 - thread diaphragm; 3 - flange, 4 - connecting pipe; 5 - case; 6 - diffuser; 7 - connecting pipe; 8 - clamp; 9 - liner; 10 - bush.

Appendix 4



Picture 4. Shield

Appendix 5



Picture 5. Valve

1 - handle; 2 - bushing; 3 - case; 4 - lock screw; 5 - ring; 6 - base; 7 - nut; 8 - fluoroplastic bushing; 9 - liner; 10 - saddle; 11 - bushing; 12 - rod.