

# Operating Manual

**E program valves and manifolds (catalogue AS-2601)**

**Manifolds from the Modular Mounting System (catalogue AS-3601)**

**Soft seated needle valves and manifolds (catalogue AS-4302)**

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## **1 Description**

### **1.1 Intended use**

Shut-off valves and manifolds with E program valve head units are used for connecting measuring devices and for shutting off differential pressure pipes in chemical plants, power plants and similar facilities.

The permissible operating pressure depends on the temperature of the medium, materials and seals used. The respective pressure-temperature diagram shows the operating pressure.

Any other use and unauthorized changes are not permitted and will relieve the manufacturer of all liability for any resulting damage.

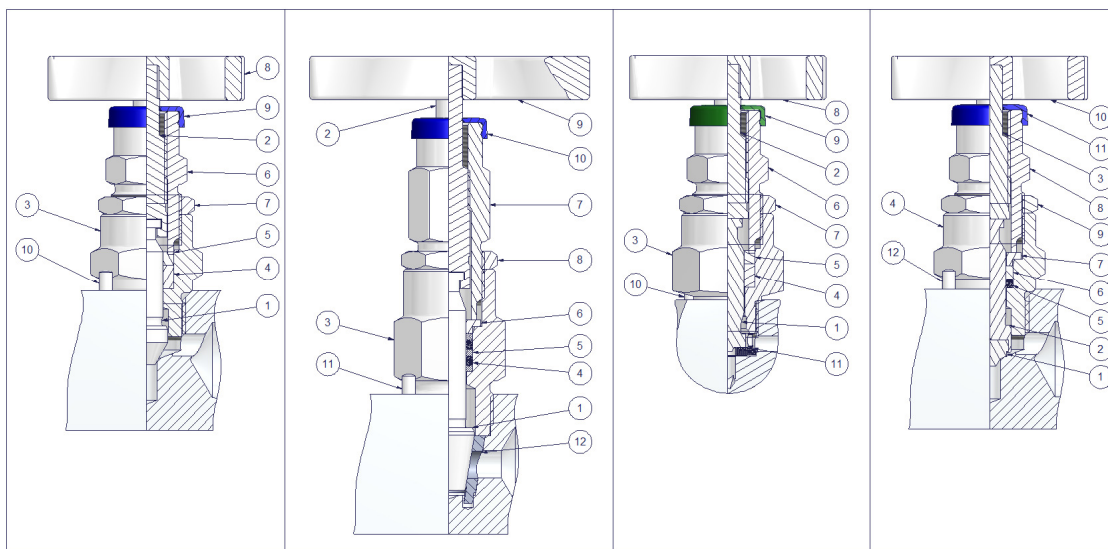
#### Material Suitability:

In particular, it must be ensured that the selected materials for the wetted parts of the shut-off valve for the media being used are appropriate. The manufacturer is not responsible for damage caused by corrosive media on the shut-off valve.

Failure to observe this precaution can mean danger for the user and the damage to the pipe system.

## 1.2 Information on the pressure equipment

The permissible operating pressure depends on the temperature of the medium and of the materials used and seals. This can be found in the corresponding catalogue sheets or drawings.



Model Standard Packing	Model O-ring + soft seat (cone design)	Model soft seat (cup design)	Model O-ring + soft tip																																																																																										
<table><tr><td>1</td><td>Needle</td></tr><tr><td>2</td><td>Valve stem</td></tr><tr><td>3</td><td>Bonnet</td></tr><tr><td>4</td><td>Packing</td></tr><tr><td>5</td><td>Gland</td></tr><tr><td>6</td><td>Gland nut</td></tr><tr><td>7</td><td>Hexagon nut</td></tr><tr><td>8</td><td>T-handle with pin</td></tr><tr><td>9</td><td>Dust cap</td></tr><tr><td>10</td><td>Lock pin</td></tr></table>	1	Needle	2	Valve stem	3	Bonnet	4	Packing	5	Gland	6	Gland nut	7	Hexagon nut	8	T-handle with pin	9	Dust cap	10	Lock pin	<table><tr><td>1</td><td>Needle</td></tr><tr><td>2</td><td>Valve stem</td></tr><tr><td>3</td><td>Bonnet</td></tr><tr><td>4</td><td>O-ring</td></tr><tr><td>5</td><td>Supporting ring</td></tr><tr><td>6</td><td>Gland</td></tr><tr><td>7</td><td>Gland nut</td></tr><tr><td>8</td><td>Hexagon nut</td></tr><tr><td>9</td><td>T-handle with pin</td></tr><tr><td>10</td><td>Dust cap</td></tr><tr><td>11</td><td>Lock pin</td></tr><tr><td>12</td><td>Soft seat</td></tr></table>	1	Needle	2	Valve stem	3	Bonnet	4	O-ring	5	Supporting ring	6	Gland	7	Gland nut	8	Hexagon nut	9	T-handle with pin	10	Dust cap	11	Lock pin	12	Soft seat	<table><tr><td>1</td><td>Needle</td></tr><tr><td>2</td><td>Valve stem</td></tr><tr><td>3</td><td>Bonnet</td></tr><tr><td>4</td><td>Packing</td></tr><tr><td>5</td><td>Gland</td></tr><tr><td>6</td><td>Gland nut</td></tr><tr><td>7</td><td>Hexagon nut</td></tr><tr><td>8</td><td>T-handle with pin</td></tr><tr><td>9</td><td>Dust cap</td></tr><tr><td>10</td><td>Lock pin</td></tr><tr><td>11</td><td>valve seat</td></tr></table>	1	Needle	2	Valve stem	3	Bonnet	4	Packing	5	Gland	6	Gland nut	7	Hexagon nut	8	T-handle with pin	9	Dust cap	10	Lock pin	11	valve seat	<table><tr><td>1</td><td>Needle</td></tr><tr><td>2</td><td>Cone holder</td></tr><tr><td>3</td><td>Valve stem</td></tr><tr><td>4</td><td>Bonnet</td></tr><tr><td>5</td><td>O-ring</td></tr><tr><td>6</td><td>Supporting ring</td></tr><tr><td>7</td><td>Gland</td></tr><tr><td>8</td><td>Gland nut</td></tr><tr><td>9</td><td>Hexagon nut</td></tr><tr><td>10</td><td>T-handle with pin</td></tr><tr><td>11</td><td>Dust cap</td></tr><tr><td>12</td><td>Lock pin</td></tr></table>	1	Needle	2	Cone holder	3	Valve stem	4	Bonnet	5	O-ring	6	Supporting ring	7	Gland	8	Gland nut	9	Hexagon nut	10	T-handle with pin	11	Dust cap	12	Lock pin
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Note: Spindle seals, packing and O-ring can be used with the various valve seats combined may occur.

## **2 Transport and storage**

The valve may be used only in original packed status stored to avoid soiling or damage. The transport of the valve may only be carried out in a pressure-free condition.

## **3 Installation**

### **3.1 Installation conditions**

The following installation conditions apply to the industrial valves:

Industrial valves must be installed so that employees or third parties are not compromised.

The required safety distances for installation in accordance with the applicable national legal provisions shall be complied with.

The industrial valves must be so positioned or installed, that

- they are accessible for any necessary inspection and are clearly visible,
- the labelling is clearly legible,
- operation of the industrial valve is possible from a safe distance.

The valve must be protected against mechanical impact from outside as far as protected so that damage to the valve is not expected to occur.

The industrial valve must be protected from tampering by unauthorised persons.

### **3.2 Connect the industrial valve**

The industrial valve must be connected via the inlets and outlets provided. Additional forces, bending moments on track support through pipe connections are to be avoided. Welding seams on connections must be in a valid and recognized weld procedures implemented and checked. Steel welded connections must be painted after welding to prevent corrosion.

## **4 Commissioning**

Commissioning may only be carried out when the industrial valves

- are properly installed in a plant and
- have been inspected for correct assembly, the installation conditions and the safe function have been checked.

The pre-commissioning test must be arranged by the system operator. The applicable national regulations for testing in the countries of installation must be complied with.

## 5 Operation

### 5.1 General Information



Shut-off valves and manifolds with E program valve head units are used for shutting off different media. They can be **poisonous, explosive, irritant, very hot or very cold**. Installation and maintenance work must only be performed by skilled personnel.

In addition to these operating instructions are also the general safety and accident prevention regulations as well as the operating instructions of the plant and the measuring device used to Note.

For example oxygen operation.

The valve should only be operated by qualified and authorized personnel.

### 5.2 Operating Conditions

The permissible operating conditions should be taken in accordance with the valve drawing. The respective pressure/temperature diagrams represent the permissible operating conditions.

### 5.3 Operation

The valves are operated with a T-handle.

The valves are closed in the clockwise direction.

Closing torques for different valve head units are shown in the following table:

Type (See in chapter1.2)	Seat material	Closing torque
Standard with PTFE or graphite packing	metallic	2Nm
Soft seat (Cone design 3/8")	ETFE	7Nm
	POM	7Nm
	PEEK	10Nm
Soft seat (Cone design 1/4")	ETFE	7Nm
	POM	7Nm
	PEEK	10Nm
Soft seat (Cup design)	PCTFE	4Nm
	POM	4Nm
	PEEK	4Nm
Soft cone	KEL-F	3Nm

The valves are equipped with a metal back seal between the valve tip or the valve stem and bonnet. The valve head units must therefore always be opened completely.



This back seal is pressure supported. The higher the system pressure, the greater the force with which the tip is pressed into the back seat.

Do not increase the closing torque when the valve tip is in the back seat position. This is unnecessary and could cause damage in the stem-tip connection.

## 6 Maintenance

### 6.1 Resealing of the packing (not for O-Ring Type)

As shown in the illustration in Chapter 1.2:

The factory setting for the packing (4; spindle seal to the outside) is 1.5 times the nominal pressure on the test stand. Due to long-term storage, the packing that is not under pressure may lose its leak tightness. In this case, it must be readjusted.

Readjustment is as follows:

Open the stem (2), release the hexagon nut (7) and retighten the gland nut (6). Usually, 1/4 to 1/2 a rotation is enough. If that is not enough, repeat the procedure. After this, secure the hexagon nut (7) again and check that the stem moves easily.

Necessary tools: A/F 16, A/F 19 and A/F 22 flat wrench.

If resealing is not successful, you must replace the valve head unit (see chapter 6.2.1).

### 6.2 Maintenance and repair

The valves are regularly for leaks and damage to check.



**The valves must only be disassembled when they are pressure free!**  
**Even when depressurised, the components can stay very hot for a long time! Small amounts of medium may escape during disassembly!**  
**Protective goggles and gloves must be worn!**

**6.3** Replacing the valve head unit / valve seat

Necessary tools: A/F2.5 hex. socket wrench, A/F19 socket wrench, Combination pliers, A/F16 and A/F22 torque wrench; hammer, punch.

To do this, proceed as follows:

- a) Depressurize the pipe;
- b) Open the valve stem counter clockwise completely. In the case of valves with a T-handle or hand wheel, then take off the T-handle or hand wheel;
- c) Remove the lock pin;
- d) Screw out the valve head unit. If necessary, remove the seat too;
- e) Grease the thread of the new valve head unit before remounting. (For the oil- and fat-free version for oxygen operation is a suitable lubricant to use!) Turn the stem to the top position;
- f) It is important to make sure that all of the sealing surfaces in valve body and on valve head unit (if necessary also on valve seat) are free of contamination;
- g) If necessary places the new valve seat in valve body;
- h) Screw the valve head unit into the body and tighten it with torque of 100 Nm;
- i) Plug the lock pin again;
- j) In the case of valves with a T-handle / Hand wheel, then remount the T-handle / hand wheel;
- k) Apply pressure to the pipe;
- l) Check the tightness of packing and that the stem moves smoothly.

**7 Applicable documents**

- Pressure Equipment Directive 2014/68/EU/AD-2000 Technical Rules

Other countries: Applicable national regulations