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Sleeved Plug Valves - Operating Instruction PED  
Xomox® PFA Plug Valve



ChemPharma Flow Solutions

[www.cranechempharma.com](http://www.cranechempharma.com)

### 0 Introduction

These instructions are to support the user with installation, operation and maintenance of valves.

 <b>Caution</b>	<p>If the subsequent caution- and warning comments are not adhered to, <b>danger can result thereof</b> and the guarantee of the manufacturer becomes null and void.</p> <p>The manufacturer is at your disposal for further requests, for addresses see last page.</p>
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### 1 Intended use

TUFLIN plug valves are only intended to lock or pass through media within the permitted pressure- and temperature limits after set-up of the manual operating possibilities or after installation of the actuator to the control.

TUFLIN plug valves are only intended, after the installation in a pipeline system, after the set-up of the manual operating possibilities or after connection of the actuator to the control, to lock or pass through or divert flows of media or divide the flow or to mix several flows - depending upon the design of the plug - within the permissible pressure- and temperature limits.

The permitted pressure- and temperature range is described in the technical data sheet tdb\_127\_de<TUFLIN Two-way plug valves> (see last page <Information>).

Only plug valves, whose type-no. begins with a 5 are suitable for regulating, these plug valves are not recommended for media with wetted solid materials. All other plug valves are permitted only for the OPEN-CLOSE-operation.

 <b>Caution</b>	<p>If a valve with differential pressures larger than approx. 0.15 bar (liquid media) is used for the controlling in the continuous operation, the system limits are to be observed in accordance with XOMOX-data sheet TI018.01.</p>
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The multi-way plug valve in its standard design is designed accordingly that the medium has approximately the same pressure in each case in the piping branches that are connected with each other.

 <b>Caution</b>	<p>If for process engineering reasons the individual flow cross-section in the plug have to be of various sizes - e.g. because of different initial pressures in the inflow lines which are to be mixed - consultation with the manufacturer XOMOX is necessary.</p>
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### 2 Safety notes

#### 2.1 General safety notes

The same safety regulations apply for valves as for the piping system in which they are installed and as for the control system to which the actuator is connected. The instructions available provide only such safety notes which are to be observed additionally for valves.

For actuator units additionally safety notes are contained in the respective operating instructions.

#### 2.2 Safety notes for the operator

It is not within the responsibility of the manufacturer, and thus when using the valve, to ensure that

- the valve is used as intended in such a way as described in the Section 1

 <b>Danger</b>	<p><b>Safeguard against improper use of the valve:</b></p> <p>It must be particularly ensured that the selected materials of the wetted parts of the valve are suitable for the used media.</p> <p><b>Ignorance of these precautionary measures can mean danger for life and limb and cause damage in the piping system.</b></p>
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- an actuator or a manual operating possibility which has been installed subsequently onto the valve, and adapted to the valve is adjusted correctly in all positions of the valve
- the piping system (and the control system) was assembled professionally and are checked regularly. The wall thickness of the body of the valve is dimensioned in such a way that in such professionally assembled lines an additional load in the usual size ( $= \pi/4 \cdot DN^2 \cdot PS$ ) is taken into account (PS = maximal permissible design pressure at ambient temperature)
- the valve is connected professionally to these systems.
- in this piping system the usual flow speeds (e.g. 4 m/s for liquids) are not exceeded in the continuous operation, and abnormal operation conditions such as oscillations, water shocks, cavitation and larger portions of solid materials in the medium – in particular abrasive – are to be agreed upon with the manufacturer XOMOX
- valves which are operated at operating temperatures  $>50^{\circ}\text{C}$  or  $<-20^{\circ}\text{C}$  are protected together with the piping connections against being touched
- only for pressure-conducting pipelines, qualified employee operates, services and repairs the valve
- No marking according to directive 94/9/EG (ATEX)

XOMOX valves were examined in the scope of the directive 94/9/EG regarding of an assessment of danger of ignition in accordance with DIN EN 13463-1.

The valves exhibit no own potential ignition sources and do not fall thus under the requirements of the directive. A CE marking following this directive is not permissible. The valves can be used in a potentially explosive area.

The valve has to be included into the electric potential analysis of the plant with regard to all metal parts in potentially explosive atmospheres independently of the guideline.

### 2.3 Special types of danger

 <b>Danger to life</b>	<p>Before loosening the screw connection at the cover or before dismantling the valve of the pipeline, the <b>pressure in the pipeline must be completely diminished</b>, so that the media does not escape unchecked from the line.</p>
 <b>Danger</b>	<p><i>For valves, which are used as end valve:</i></p> <p>During normal use, in particular with gas-like, hot and/or dangerous media a blind flange must be mounted at the free connecting pieces or the valve must be securely locked in „CLOSE“-position</p>
 <b>Danger</b>	<p>If a valve has to be opened as end valve in a pressure containing line, this may take place with all caution only in such a way that the <b>spurting media</b> does not cause any damage.</p>
 <b>Danger</b>	<p>If a valve must be disassembled from a pipeline, media can escape from the line or from the valve. With unhealthy or dangerous media the pipeline must be completely emptied before the valve is disassembled. Caution with <b>residues which reflow from the line or which have remained in dead spaces of the valve (under pressure).</b></p>

### 2.4 Marking of the valve

We mark the valve according to EN 19 or on customer request. Markings may not be damaged, that the valve can be identified.

### 3 Transport and storage

Valves must be treated, transported and stored carefully:

- The valve is to be stored in its protective package and/or with the protective caps at the connection ends. Valves which are heavier than approx. 10 kg, should be stored and transported on a pallet (or similar supported) (also to the installation place).
- With storage before installation, valve, gear and actuator are to be protected from damaging influences such as dirt or humidity and are to be stored at ambient temperature.
- Particularly the actuator, the gear and the ends of the valve to the piping connection may neither be damaged through mechanical nor other influences.
- Valves must be stored in such a way as they were supplied. The operating device may not be activated.

### 4 Installation into the piping

#### 4.1 General instructions

For the installation of valves into a piping, the same instructions apply as for the connection of pipes and similar piping elements. For valves, the subsequent instructions apply additionally. For the transport to the installation place also the Section 3 (above) is to be considered.

 <b>Danger to life</b>	<p>If an actuator unit is retrofitted, torque, rotation direction, operating angle and the adjustment of the final impacts „OPEN“ and „CLOSE“ must be adapted to the valve.</p> <p><b>Ignoring these regulations could mean danger for life and limb and cause damage to the piping system.</b></p>
 <b>Danger</b>	<p><i>The actuator is adjusted for the operating data indicated in the order:</i></p> <p><b>The adjustment of the final impacts „OPEN“ and „CLOSE“ apted to the switching positions of the valve may not be changed without agreement of the manufacturer.</b></p>

 <b>Danger</b>	<p>Since a multi-way-plug valve has several flow directions, it is to be observed with the installation that the possible switching positions correspond with the required flow directions. The technical data sheet tdb_137_de – see Section 8 -&lt;Information&gt; - shows an appropriate outline. Appropriate markings are attached to the plug shaft.</p>
 <b>Danger</b>	<p><i>Only for valves with electric drive:</i></p> <p>It is to be ensured that the actuator is switched off in all final- and intermediate positions <b>by the signal of the limit switch</b>. The <b>signal of the torque switch</b> can be used for an alarm.</p> <p>For further information, see the operating instructions of the electric drive.</p>

### 4.2 Working steps

- Transport valve in the protective package to the installation place and remove it only there.
- Examine valve, gear and actuator for transport damage. Damaged units may not be installed.
- Ensure that only valves are installed whose pressure class, type of connection and connection dimensions correspond to the application conditions. The connection data for the actuator must correspond with the data of the control. See labelling at the actuator.

 <b>Danger to life</b>	<p>No valve may be installed whose approved pressure-/temperature range (=„Rating“) is not sufficient for the operating condition: This approved range is described in the XOMOX-catalogue B &lt;TUFLIN Two-way-plug valves&gt; – see Section 8 &lt;Information&gt;.</p> <p><b>Ignoring these regulations could mean danger for life and limb and cause damage to the piping system.</b> In the case of doubt the manufacturer XOMOX is to be consulted.</p>
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- Check the function of the multi way valves before the installation: The type of the plug must be selected correctly for the intended flow directions in the pipe system.

 <b>Danger</b>	<p>Multi-way-plug valves are – according to function – supplied with the suitable plug: The type of the plug form is indicated in the shaft in accordance with the technical data sheet tdb_137_de &lt;Multi-way-plug valves&gt;.</p>
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- The connection ends of the piping must align with the connection ends of the valve and have plane parallel ends.
- Before the installation, the valve and the subsequent piping must be cleaned carefully of dirt, in particular from hard foreign substances.
- The valve can be installed in arbitrary installation position. The actuator is, however, to be arranged – if possible – not directly underneath the valve: Leakage at the switching shaft can damage the actuator.
- When inserting the valve (and the necessary sealings) in an already mounted pipeline the distance between the piping ends must be dimensioned in such a way that all connection- and/or sealing surfaces (and sealings) remain undamaged.
- For the connection of the actuator unit to the control, the appropriate instructions apply.
- For the termination of the installation a functional test with the signals of the control is to be executed with the actuated valves: The valve must close and open correctly according to the control commands. Detectable functioning
- Faults are absolutely to be remedied before the commissioning. See also Section 7 <Help with faults>.

### 7 Help with faults

With the remedying of faults the Section 2 <Safety notes> is absolutely to be adhered to.

Type of the fault	Measurement	Note
Leakage at screw-/ flange connections to the pipeline	Retighten connection. <i>If the leakage cannot be remedied:</i> Disassemble valve (thereby observe the notes from Section 2.3 <Special dangers> ) and replace sealing.	<p><b>Note 1:</b> <i>Only original XOMOX-spare parts may be installed.</i></p> <p><b>Note 2:</b> <i>If it is detected after the disassembly that the wetted inner parts are not sufficiently resistant towards the medium, parts of suitable material are to be selected.</i></p>
Leakage at the cover sealing	Retighten cover screw connection. <i>If the leakage cannot be remedied by this:</i> Repair is necessary: Spare parts and necessary instructions are to be requested from XOMOX.	
Leakage in the locking position Leakage at the plug shaft sealing	Readjust pretension of the sealing: With 3 Allen screws in the cover the pretension of the seat sealing can be increased: Screw in all 3 screws alternatingly through a ¼ rotation each <b>in the clockwise direction</b> until the leakage is remedied.  With type 127 3D: Screw in the additional 3 cylinder screws alternatingly through a ¼ rotation each <b>in the clockwise direction</b> until the leakage is remedied.  If the leakage can not be remedied by this or the plug valve moves then too heavily: Repair is necessary: Spare parts and necessary instructions are to be requested from XOMOX. Observe Section 2.3 <Special dangers> If these 3 Allen screws in the cover are loosened or the cover have to be unscrewed: Observe Section 2.3 <Special dangers>.	
Malfunction	<div style="text-align: center;">   <b>Danger to life</b> </div> <p>To safeguard the operating staff against danger, ensure that the line is completely depressurized beforehand</p> <p>Check actuator unit and control commands. <i>If actuator and control are okay:</i> Dismantle valve (observe thereby the notes of Section 2.3 &lt;Special dangers&gt;) and inspect. <i>If the valve is damaged:</i> Repair is necessary: Spare parts and necessary instructions are to be requested from XOMOX.</p>	

With faults at the actuator unit, see appropriate instructions.

 <b>Danger to life</b>	<p>Faulty executed control commands could <b>mean danger for life and limb and cause damage to the piping system.</b></p>
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### 5 Pressure test of the piping section

For the pressure test of the valves the same instructions apply as for the piping. Additionally applies:

- Rinse new installed line systems carefully in order to wash out foreign substances.

The pressure test of an opened valve may not exceed the value  $PT=1,5 \times PN/PS$ . A closed valve may be tested under pressure only with  $PT=1,1 \times PN/PS$  according to marking

### 6 Normal operation and maintenance

The valves are to be operated manually or with the signals of the control. Valves which were supplied ex-factory with actuator or gear are exactly adjusted and may not be adjusted as long as a valve operates perfectly.

For the manual operation or the hand emergency operation at the actuator (if available) normal hand force is sufficient; the usage of extension for the increase of the actuation moment is not permissible.

 <b>Caution</b>	<p>The position of the two-flax at the shaft indicates the position of the valve: Two-flax 90° transverse to the flow: valve closed, two-flax parallel to the flow: valve opened.</p>
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 <b>Danger to life</b>	<p>Only for valves with hand lever: The opening and closing may not take place jerkily, but must be effected quickly in such a way that pressure surges and/or temperature shocks in the line system are avoided. Ignoring this warning information can cause extreme danger for persons or for the piping system</p>
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Regular maintenance work are not necessary at valves, but no medium may escape when checking the line section. With leakage and repairs see Section 2 <Safety notes> and Section 7 <Faults>.

 <b>Caution</b>	<p><i>The sealing (pressed on sleeve in the body) is pretensioned for seat sealing:</i> This pretension, which is adjusted ex-factory by means of 3 adjusting screws in the cover, is not to be modified <b>as long as the plug valve is leak-proof.</b></p>
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Declaration of conformity according directive 97/23 EC

The manufacturer XOMOX International GmbH & Co, D-88131 Lindau/Bodensee declares that the valves:

TUFLIN two-way plug valves  
 TUFLIN multi way plug valves  
 Tuflin two- and multiway sleeved control plug valves

in accordance with  
**XOMOX technical data sheets: tdb\_127\_gb <TUFLIN two-way-plug valves>**  
**XOMOX tdb\_137\_gb <TUFLIN multi-way-plug valves>**

- with pneumatic-/ electro-/ hydraulic actuator
- with free plug shaft for later installation of operating possibilities
- with hand lever/worm gear and hand wheel

1. pressure bearing accessories within the meaning of the EC pressure equipment directive 97/23 EC and which are in conformity with the requirements of this directive,
2. may be operated only in compliance with the appropriate operating instruction.

<i>Applied standards:</i>	<b>AD 2000 A4</b>	<b>Accessories of pressurized reservoirs</b>
<i>Description of type and technical features:</i>		<b>XOMOX technical data- sheet: tdb_127_gb</b> <b>XOMOX technical data- sheet: tdb_137_gb</b> <b>XOMOX technical data- sheet: tdb_control_gb</b>
<i>Applied conformity-evaluation methods:</i>		<b>in accordance with Annex II of the pressure equipment directive 97/23 EC</b>
<i>Name of the designated places:</i>		<b>Det Norske Veritas (No. 0575)</b>
<i>Identification number of the designated place</i>		<b>identification No. 0575, Module H</b>

If not otherwise required by the customer XOMOX classifies all valves as category 3, module H. Modifications to valves and/or units, which have consequences for the technical data of the valve, for the <intentional use> according to Section 1 of the operating instructions, and which modify essentially the valve and/or a supplied unit, make these declarations invalid

October 2011



Lindau/Bodensee, Date

S. Uebelher, V.P. General Manager

Further information

This operating manual, the XOMOX-prospectus stated, XOMOX-data- and safety sheet and further information and details can be obtained– also in other language versions – under [www.cranechempharma.com](http://www.cranechempharma.com). or from the following:

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