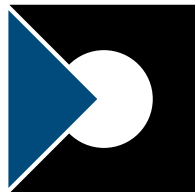
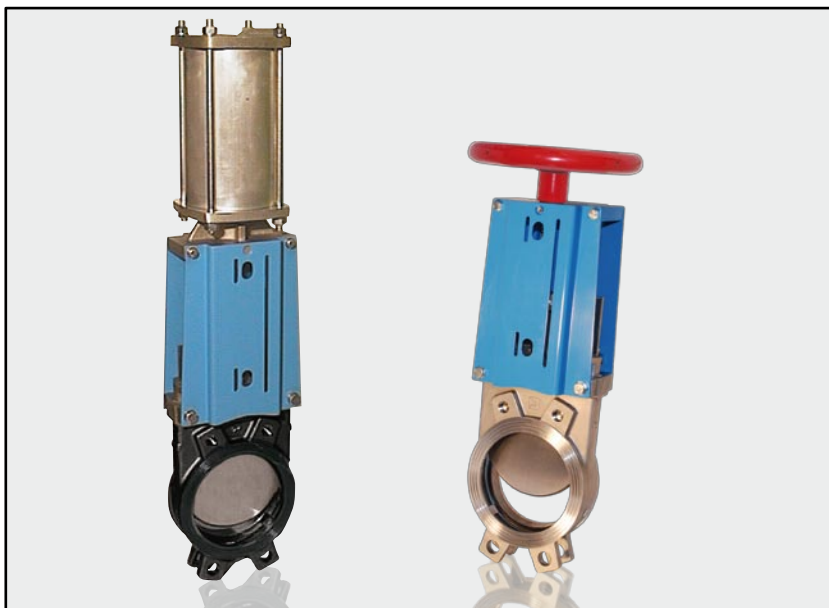


# watergates

knife-gate-valves - Stoffschieber



## Original Operating Manual Knife-gate valves



acc. to annex VI of the Directive 2006/42/EC

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Edition: 04/2012

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## 1 Foreword

Dear customer,  
Dear assembler / user,

these operation and installation manuals are intended to give you the knowledge which is necessary for you to be able to carry out the mounting and adjustment of a knife-gate valve rapidly and correctly.



**Please read these instructions carefully and pay particular attention to the advice and warning notes.**

Only instructed and qualified mechanician should mount, adjust or maintain the knife-gate valves.

If you have any questions in relation to the knife-gate valves we shall be pleased to answer them. The telephone number will be found on the inside cover of these operation and installation manual.

Yours  
**Watergates GmbH & Co. KG**

## 2 General advice

### 2.1 Validity

These operating manual is valid for the standard version of the knife-gate valve WG and all variations:

- Knife-gate valve, hand operated
- Knife-gate valve with pneumatic, electric or hydraulic actuator (partly completed machinery according to annex 2 paragraph g of the directive 2006/42/EC on machinery)

### 2.2 Inward monitoring

Please check

- directly after delivery the knife-gate valve for any transport damages and deficiencies.
- with reference to the accompanying delivery note the number of parts.

Do not leave any parts in the package.

### 2.3 Complaints

Claims for replacement or goods which relate to transport damage can only be considered valid if the delivery company is notified without delay.

In case of returns (because of transport damage / repairs), please make a damage protocol and send the parts back to the manufacturer, if possible in the original packaging.

In case of a return, please mention the following:

- Name and address of the consignee
- Stock-/ ordering-/ article-number
- Description of the defect

### 2.4 Guarantee

For our knife-gate valve we give a guarantee period in accordance with the sales contract. The end of the normal duration of life of the wearing parts represents no defect.

The warranty and guarantee rules of **Watergates GmbH & Co. KG** are applicable.

# Symbols and their signification

---

## 2.5 Symbols and their signification



Paragraphs which are identified with this symbol contain very important advices; this also includes advices for averting health risks. Observe these paragraphs without fail!



Paragraphs which are identified with this symbol contain very important advices, this also includes how to avoid damage to property. Observe these paragraphs without fail!



This symbol indicates paragraphs which contain comments / advices or tips.



This spanner identifies the description of actions which you should carry out.

## 3 Safety advice

Depending on the technical circumstances and the time under and at which the knife-gate valve is mounted, adjusted and commissioned, you must in each case take into account particular safety aspects!

If, for example, the valve works in an operational chemical plant, the potential hazards of commissioning have another dimension from that when this is only being carried out for test purposes in a „dry“ part of the plant in the assembly room.

Since we do not know the circumstances at the time of the mounting / adjusting / commissioning you may find advice on hazards in the following description which are not relevant to you.

Please observe (only) the advice which applies to your situation!



**The knife-gate valve must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive 2006/42/EC on machinery, where appropriate.**

### 3.1. Personal protection

#### 3.1.1. Safety advice for mounting



**We wish to point out expressly that the mounting, the electrical installation and the adjustment of the knife-gate valves and the accessories must be carried out only by trained specialist personnel having mechanical and electrical knowledge!**



**At first switch off all the devices / machines / plant affected by mounting or repair! If appropriate, isolate the devices / machines / plant from the mains.**



**Check (for example in chemical plants) whether the switching off of devices / machines / plant will cause potential danger!**



**If appropriate, in the event of a fault in the knife-gate valve (in a plant which is in operation) inform the shift foreman / safety engineer or the works manager without delay about the fault, in order, for example, to avoid an outflow / overflow of chemicals or the discharge of gases in good time by means of suitable measures!**



**Before mounting or repair, remove the pressure from pneumatic / hydraulic devices / machines / plant!**



**Empty the conduit from medium.**



**If necessary, set up warning signs in order to prevent the inadvertent starting up of the devices / machine / plant.**



**Observe the respective relevant professional safety and accident prevention regulations when carrying out the mounting / repair.**



**Check the correct functionality of the safety equipment (for example the emergency push off buttons / safety valves, etc.!).**

## 3.1.2 Safety advice for adjustment and starting



As a result of the starting of a knife-gate valve the flow of gases, steam, liquids, etc. may be enabled or interrupted. Satisfy yourself that, as the result of the starting or the test adjustment of the knife-gate valve, no potential hazard will be produced for the personnel or the environment!



If necessary, set up warning signs in order to prevent the inadvertent starting up or shutting down of the devices / machines / plant.



By ending mounting check the correct function and the tightness of the valve.



Check the right position and correct function of mounted limit switches (option).



Through suitable measures, prevent actuating links being trapped by moving actuating elements!



Check the right function of all safety devices (for example emergency off push buttons / safety valves, etc. )!



Carry out the starting and the adjustments only in accordance with the instructions described in this documentation!



When adjustments are being carried out on an opened and switch on (operational) limit switches or pilot valves, there is the risk that live parts(230V AC) can be touched!

Therefore the adjustment must be carried out only by the electrician or a person having adequate training, who is aware of the potential hazard.

## 3.1.3 Safety advice for adjustment / starting



Never try to repair or maintain a knife-gate valve under pressure.

Before disassembling the knife-gate valve some essential points should be clarified!

- Will the valve to be disassembled be replaced immediately by another?
- Could the valve remain in the pipe?
- If appropriate, does the production process of the plant need to be stopped?
- Is it necessary to inform specific personnel about the disassembly? etc.



If necessary, inform the shift foreman / safety engineer or the manager about the disturbance without delay in order, for example, to avoid an outflow / overflow of chemicals or a discharge of gases in good time by means of suitable measures!



Switch off the power and pilot media supply of the device / machine / plant.



If necessary, set up warning signs in order to prevent

- the inadvertent starting up of the devices / machines / plants, or
- the switching on of the pilot media supply, or
- the switching on of the medium.



In case of a defect in the solenoid valve make contact to the supplier. The telephone number will be found on the back cover of these operation and installation manual.



If you determine that there is a damage to the knife-gate valve, isolate it from the device/machine. However before doing this, it is essential to refer to the safety advice.



Don't mount the knife-gate valve, start the knife-gate valve or carry out any adjustments on it if the knife-gate valve, the supply lines or the part of the plant on which it is mounted is damaged!



After a repair / maintenance check the right function of the knife-gate valve and the tightness of all connections.



Also check the function of perhaps mounted accessories.

### 3.2 Device Safety



The knife-gate valve

- is a quality product which is produced in accordance with the recognized industrial regulations.
- left the manufacture's work in a perfect condition!



In order to maintain this condition, as installer / user you must carry out your task in accordance with the descriptions in these instructions, technically correctly and with the greatest possible precision!



Don't mount any lever, rods or arms at the knife or stem of the knife-gate valve. In any case of operation of the valve there is a risk of beats or injury.



We assume that you have, as a trained specialist, sound mechanical and electrical knowledge!

The knife-gate valve must be used only for a purpose corresponding to its construction!



The knife-gate valve must be used within the values specified in the technical data.

Operate the knife-gate valve inside the allowed temperature range.

Don't operate the knife-gate valve with a pressure as higher as the nominal pressure.



Never remove the bonnet or other parts from the knife-gate valve if it is under pressure.



Don't mount the knife-gate valve, start the knife-gate valve or carry out any adjustments on it if the knife-gate valve, the supply lines or the part of the plant on which it is flange-mounted is damaged!



By ending mounting check the correct function and the tightness of the solenoid valve and check the correct function.

## 4 Name-plate

The knife-gate valves will be provided with a name-plate, which permits a definite identification of the valves and shows the most important technical data to you. The name-plate should not be displaced or changed.

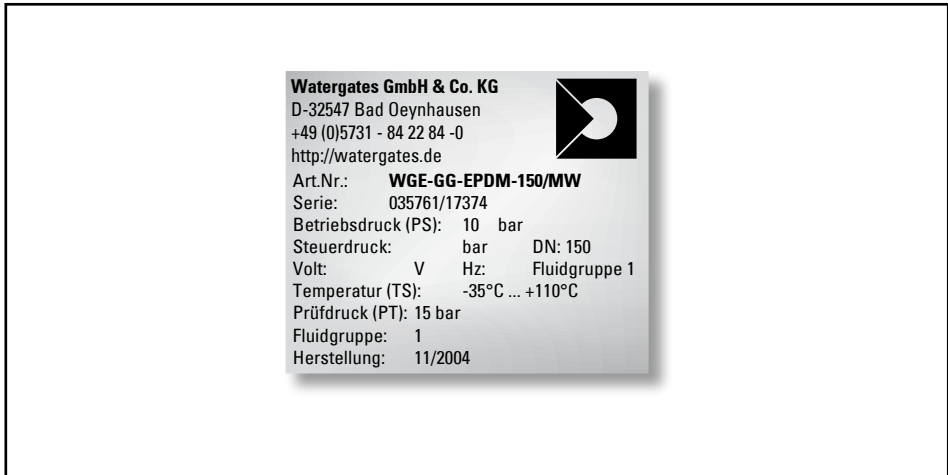


Fig. 4.1 - name-plate

Art.No.	article number of the valve
Serial	order- or production-number
Pressure range (PS)	max. admissible working pressure of the valve [bar]
Pilot pressure	recommended pilot pressure for a correct function of the valve stated in [bar] (only by pressure actuated valves)
Temperature (TS)	temperature range of the valve
Size (DN)	connecting size of the valve
Testing pressure (PT)	testing pressure of body
Fluidgroup	allowed fluid group of the valve
Date of manufacturing	month and year of manufacturing

An optionally advisable CE-marking is according to the 97/23/EG pressure equipment directive and/or to the directive 94/9/EG ATEX.

This CE-marking is not guilty to the directive 2006/42/EC on machinery, because the knife-gate valves with pneumatic or electric actuator in the conditions of our delivery are partly completed machinery according to annex 2 paragraph g of the directive 2006/42/EC on machinery.

## 5 Knife-gate valve

### 5.1 General



**Before unpacking, mounting or using the knife-gate valve you have to read the**

**→ safety advice**

**If you have not read the safety advices until now please read these important advices now and turn back to this point.**

### 5.2 Corresponding use

Knife-gate valves will be used to control and to cut off medium flow. It should only be used clean liquids and gases, on which the material of the knife-gate valve will be resistant. It should also be used for pulverised and pasteurised media and pouring goods if it suited to the knife-gate valve. Pollution or using outside the nominal pressure range and/or the nominal temperature range should causes damages on the knife-gate valve especially on the seals.

### 5.3 Operation

The knife-gate valve will be opened or closed by actuating a hand wheel, handle or actuator.



**During the operation of the knife-gate valve take care that there won't be insert any objects or limbs into the armature. If it is necessary you have to install a protective device. A lengthening of the control elements, e.g. by a handle, is not allowed**

### 5.4 Ambient conditions

Knife Gate Valves are designed for rough operating conditions.

Nevertheless you have to observe something special by mounting and operating the knife gate valve.

Take care, that

- the knife-gate valve will be mounted in accordance to the following advices.
- the knife-gate valve will only be used within the values specified in the technical data.
- the media in the knife-gate valve and at the knife not freeze

The non-observance of the mounting instruction and/or the use outside the specified technical values can affected the function of the knife gate valve.

### 5.5 Initial operation

The knife will be sealed by a 3part gland. The knife-gate valve will be delivered with a not pre-stressed gland packing. After mounting the valve into the pipe system the nuts of the gland must be tighten. Please read the chapter

**→ 7.3 Tighten of the gland packing**

### 6 Assembly instructions

The mounting of a knife gate valve restricts to

- the installation of a hand wheel (only knife gate valves with hand wheel)
- the mounting into a conduit
- the pneumatic connection of the pilot cylinder at the pilot port (only at knife-gate valves with pneumatic actuator)
- the mechanical and electrical mounting of accessories, e.g. pilot valve or limit switch



**In the following description we assume, that you have read the former chapters attentive. We also assume that you will observe the safety advices and warnings form chapter 3. "safety advice" during the mounting / disassembly.**

**If you have not read chapter 3. "safety advices" until now, read these important advices now and turn back to this page.**

**The mounting and the electrical installation must be carried out only by trained specialst personnel having mechanical and electrical knowledge.**

#### 6.1 Installation of a handwheel



The handwheel of manual actuated knife gate valves especially for the bigger dimensions comes dismantles with the delivery, please assemble before installation.



The borings and the pin are conical. Take care of a right position of the borings and put the pin into the boring as the picture show (please refer to Fig. 6.1).

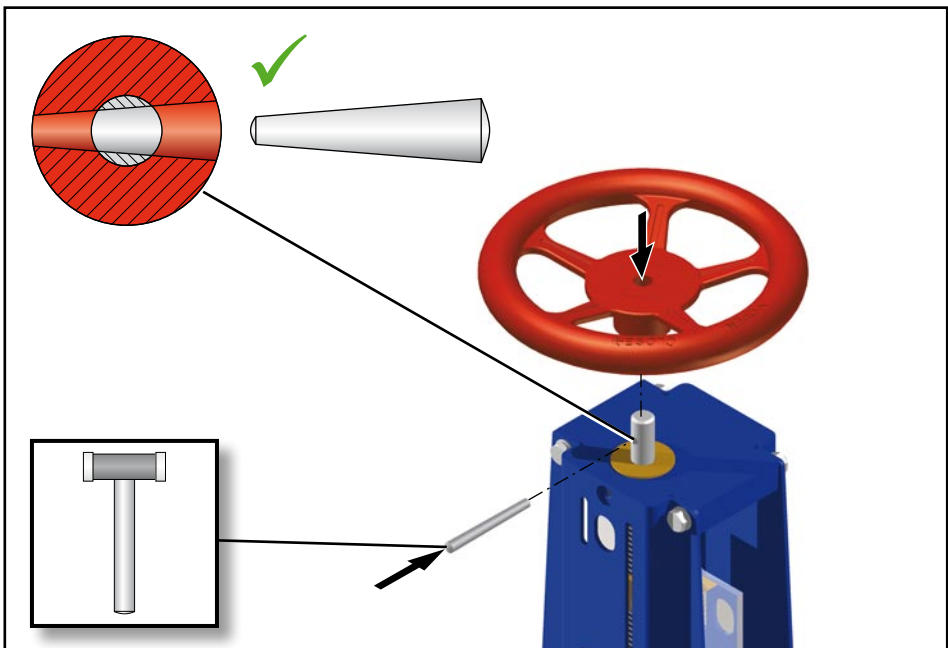





Fig. 6.1 - Mounting of the hand-wheel (picture shows Art. WGE-GG-xxx-100/MW)

## 6.2 Mounting into conduit

 Knife gate valves have to be installed with flange sealings between DIN- flanges (ANSI-flanges on request). Only use flanges witch are suitable for particular knife-gate valve (pease refer to the data sheet).

 Please remove all packing material or e.g. protection caps from the knife-gate valve.

 Before mounting clean the pipe system. Pollution will impair the duration of life of the knife-gate valve.

 The flanges have to be align parallel and centrally, must have carefully worked surfaces and have to be installed stress free.



**The sealing takes place with suited flange sealings. Other sealing compounds are not allowed. Take care that there won't be insert any rest of sealing compounds or other pollutions into the knife-gate valve.**



**The flanges should not be welded with the pipes if they are mounted at the knife-gate valve. The high temperatures would destroy the sealings of the knife-gate valve.**



**All knife-gate valves should be installed vertically up to max. 45° to the vertical. For other installation positions e.g. horizontally it is necessary to ensure that especially for larger diameters and actuators no bending stress appear at the stem/top- bridges, piston- stem etc., otherwise the function of the actuator and the tightness of the valve is not guaranteed. In such cases protective features are definitely needed (please refer to Fig. 6.2).**



**The installation of pneumatic single acting knife-gate valves with spring return is only with vertical upwards actuator allowed.**

**A hanging installation of the knife-gate vale must be avoided!**

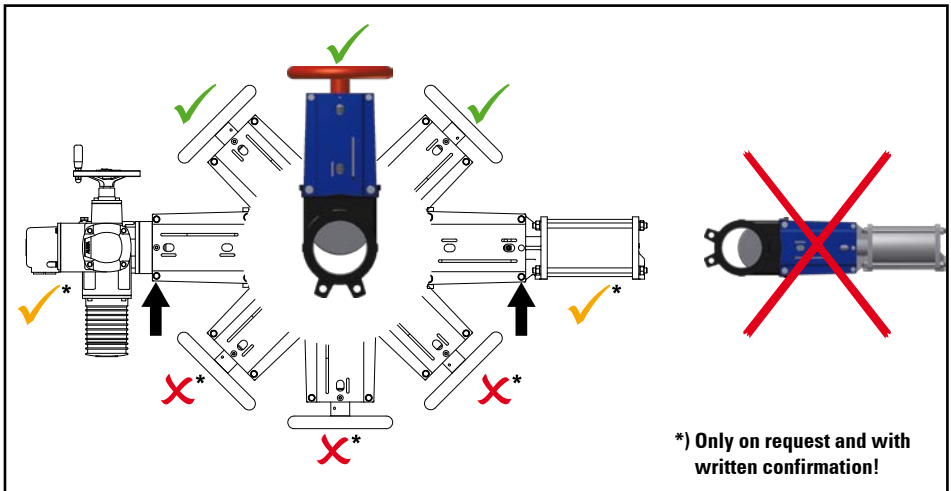


Fig. 6.2 - Knife-gate valve, installation positions

### 6.2.1 Mounting between two flanges



In the following description we assume that you have mounted the flanges at the of the pipes and the ball valve (welded flanges) and they are cooled down.



The pressure discharge of the knife-gate valve will be one-sided. The direction of the pressure discharge will be shown by an arrow on the body of the armature. Observe that the flow direction will not correspond with the direction of the pressure discharge in each case.



Push the knife-gate valve between the flanges by using the appropriate sealings. This process must happen easily to avoid the damage of the sealings (please refer to Fig. 6.3).



Align the borings of the flanges and the knife-gate valve and put some fit screws through the holes. Observe that the holes on the top of the armature's flange are blind holes. Use set screws for this holes. Please refer to table 6.1 for standard values.



Screw the fit nuts onto the screws and tighten them up crosswise.



Fasten all screws crosswise and check the function of the knife-gate valve. Observe the maximum torque of the screws.



Check the tightness of all connections.

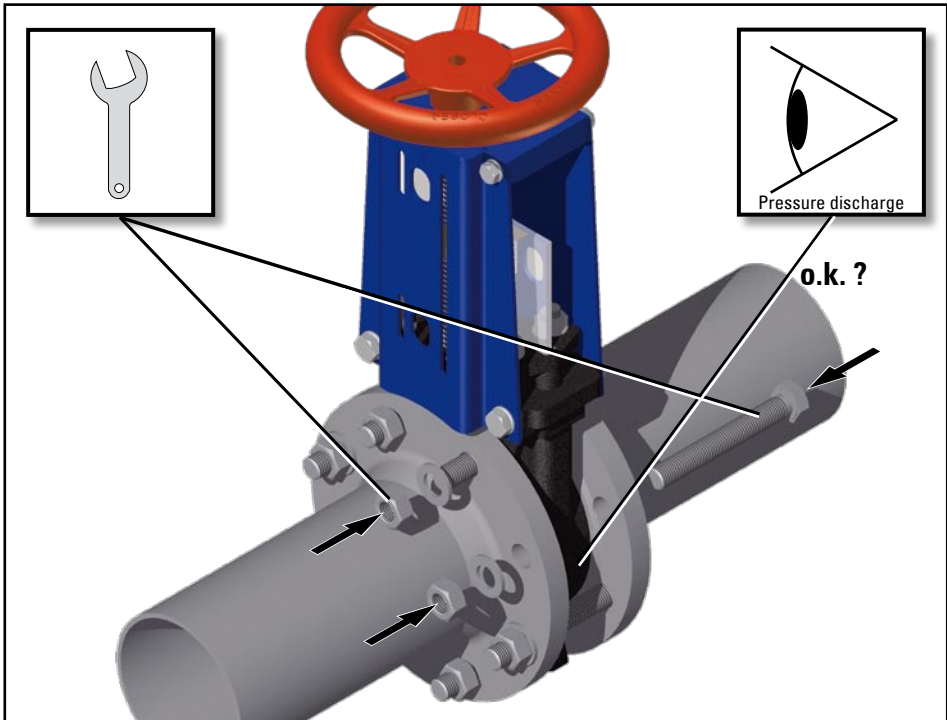


Fig. 6.3 - Mounting between two flanges (picture shows Art. WGE-GG-xxx-100/MW)

## 6.2.2 Mounting as dead end service



**In the following description we assume that you have mounted the flanges at the of the pipes and the ball valve (welded flanges) and they are cooled down.**



The pressure discharge of the knife-gate valve will be one-sided. The direction of the pressure discharge will be shown by an arrow on the body of the armature. Observe that the flow direction will not correspond with the direction of the pressure discharge in each case.



Screw the knife-gate valve by using the appropriate sealing for the fixed flange and save the valve with a lapped flange.



**The knife-gate valve does not use as dead end service without suitable lapped flange. You have to install a protective device, to prevent the insertion of any objects or limbs into the butterfly valve. Install protective devices, to prevent an uncontrolled outflow of the media.**



Align the borings of the flanges and the knife-gate valve and put some fit screws through the holes. Observe that the holes on the top of the armature's flange are blind holes. Use set screws for this holes. Please refer to table 6.1 for standard values.



Screw the fit nuts onto the screws and tighten them up crosswise.



Fasten all screws crosswise and check the function of the knife-gate valve. Observe the maximum torque of the screws.



Check the tightness of all connections.

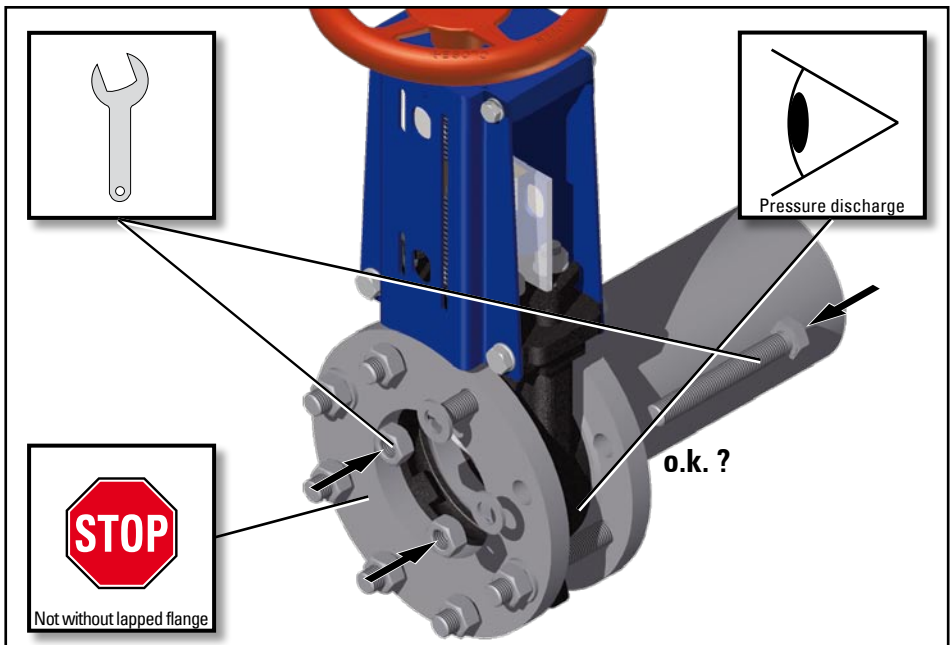


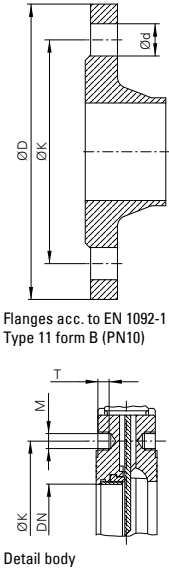
Fig. 6.4 - Mounting as dead end service (picture shows Art. WGE-GG-xxx-100/MV)

# Mounting / Disassembly

## 6.2.3 Flange and boring details, EN 10921-1, PN10



For the assembly we recommend following mounting material. Please use only bolts and nut with sufficiently strength value. The stated dimensions are only for general information.



DN		Flange			Body		Mounting material			
		ØD	ØK	n x Ød	M	T	Screws	Tight. torque	Bolts/Nuts	Tight. torque
mm	inch	mm	mm	mm	mm	mm	mm	Nm	mm	Nm
50	2"	165	125	4 x 18	M16	8	4 x M16 - 30	71	2 x M16 - 90	Tightening torque according to the selected screws/nuts
65	2½"	185	145	4 x 18	M16	9	4 x M16 - 45	71	2 x M16 - 90	
80	3"	200	160	8 x 18	M16	9	4 x M16 - 45	71	6 x M16 - 100	
100	4"	220	180	8 x 18	M16	9	4 x M16 - 45	71	6 x M16 - 100	
125	5"	250	210	8 x 18	M16	9	4 x M16 - 45	71	6 x M16 - 110	
150	6"	285	240	8 x 22	M20	10	4 x M20 - 50	138	6 x M20 - 110	
200	8"	340	295	8 x 22	M20	10	4 x M20 - 55	138	6 x M20 - 120	
250	10"	395	350	12 x 22	M20	12	8 x M20 - 60	138	8 x M20 - 130	
300	12"	445	400	12 x 22	M20	14	8 x M20 - 60	138	8 x M20 - 140	
350	14"	505	460	16 x 22	M20	20	12 x M20 - 65	138	10 x M20 - 160	
400	16"	565	515	16 x 26	M24	24	12 x M24 - 70	235	10 x M24 - 160	

Dimensions ally to standard flanges, washers and 2mm flange sealings, without engagement.

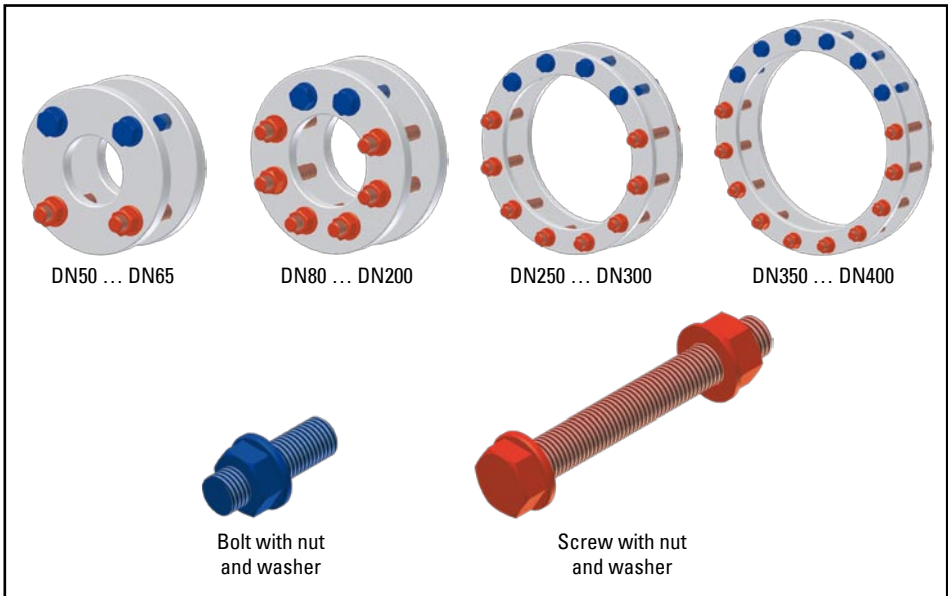


Abb. 6.5 - Flange and boring details, flanges are pictured simplified

## 6.3 Pneumatic Installation



The installation of the air supply have to take place with great care. Especially the threaded connections, fittings and sealings have to be cleaned and free of pollution. Pollution which attains inside the actuator, will causes hasten wear and the damage of the sealings and the treads.

The pneumatic actuator is available in two operation variants:

- function double acting, or
- function single acting with spring return.

Observe the descriptions to the name plate in chapter

→ 4 Name plate.



Single acting actuators with spring return have a additional red warning decal. Don't remove this decal.



Use only the correct hose and pneumatic fittings for your application.



By laying the hose take care, that the hose will not be creased, squeezed or shared or that the hose won't be layed over edges. Also take care that there will be no tension or stress in the hose.



If appropriate lay the hoses in conduits or cable ducts.



As a alternative to the shown variant the control of the actuator could take place by a directly mounted pilot valve. In this case see the enclosed operation and installation manual of the pilot valve.

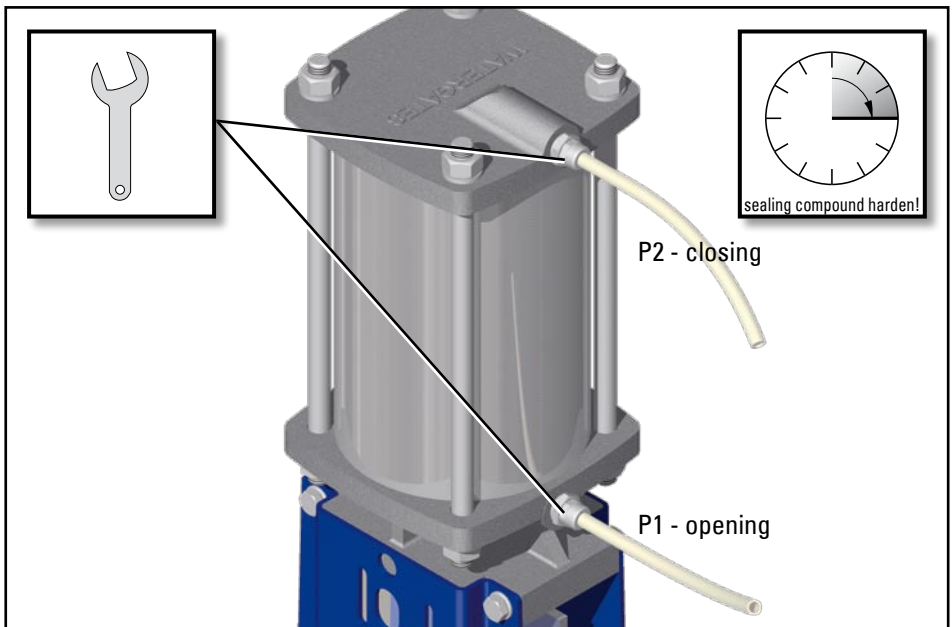


Fig. 6.6 - Electric installation AUMA multi-turn actuator - function: double acting (picture shows Art. WGE-GG-xxx-125/PD)

### 6.3.1 Function „double acting“



First remove the caps from the air supply ports P1 and P2.



Screw pneumatic fittings (e.g. Art C12xx or R12xx) with a fit sealing material into the supply ports and tighten them.



Insert the hose into the pneumatic fitting at port P1, this port will be under pressure by opening the knife gate valve.



Insert the hose into the pneumatic fitting at port P2, this port will be under pressure by closing the knife gate valve.



Fix the hoses into the fittings in such a way according to your choused pneumatic fittings.



Check the tightness of all the connections.

### 6.3.2 Function „single acting“



At the single acting actuators we difference between switching function normally close (NC) and normally open (NO). During the installation procedure of the pneumatic hose you must take at switching function NC the pilot port P1 and at switching function NO the pilot port P2.



First remove the caps from the air supply ports P1 and P2.



Screw one pneumatic fittings (e.g. Art C12xx or R12xx) with a fit sealing material into the apply port and tighten them.



**Close the second (open) pilot port with a suitable filter or throttle valve to prevent any intrusion of pollutions or water into the actuator. Pollutions which attains inside the actuator, will causes hasten wear and the damage of the sealings and the treads.**



Insert the hose into the pneumatic fitting of the pilot port.



Fix the hoses into the fittings in such a way according to your choused pneumatic fittings.



Check the tightness of all the connections.

## 6.4 Electric installation AUMA multi-turn actuator

The mounting and the electrical installation may be carried out only by trained specialist personnel with sound mechanical and electrical knowledge. Please notice for a right and professional installation and implementing the instructions and the safety advices in the



→ AUMA operating manual,

which is attached at any actuator.

Please be sure that the voltage of the power supply must be in accordance with the specification of the name-plate. Connect cables with the terminal according to the wiring diagram and do not miss to connect two ground earth.



Ensure that no bare wires protrude from the terminals and thus produce the risk of a shock or of a short circuit.



Tighten the cable entries so firmly that the strain relief becomes effective and the cable lead through corresponds to the predefined degree of protection.



Bend the leads in the actuator such that they are not trapped when the housing cover is fitted.



Lay the cables to their starting positions (as appropriate, in conduits or cable ducts).



Ensure that the cables are not crushed or sheared and that they are not under pressure or tension..



**Do not lay the control cable parallel to other cables which lead to high-power loads. Powerful electromagnetic fields could induce currents in the control lines which may possibly lead to malfunctions.**



For a right adjustment of the multi-turn actuator, notice the corresponding chapter of the AUMA operating manual.

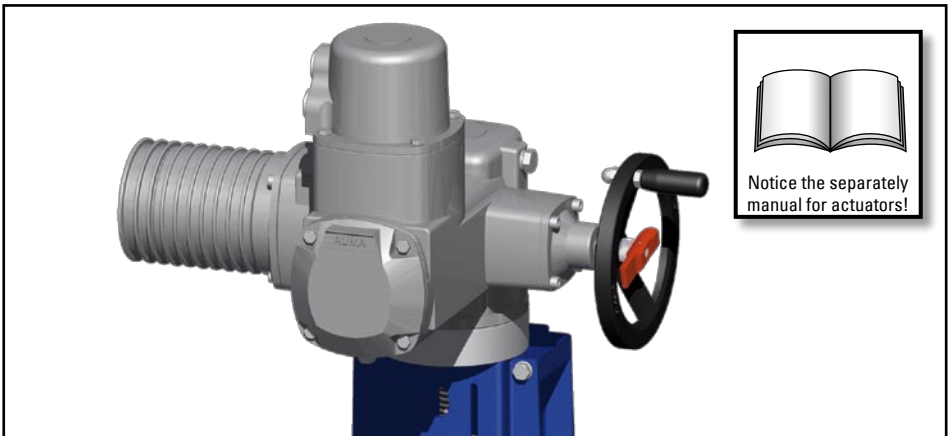


Fig. 6.7 - Electric installation AUMA multi-turn actuator (picture shows Art. WGE-GG-xxx-150/ELA)

## 6.5 Mounting of the side protection



The knife-gate valves are designed for mounting into a machinery. The knife-gate valve must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive 2006/42/EC on machinery, where appropriate.



With following article numbers you can order suitable side protections, witch increase the safety and makes impossible to reach the movable parts.

Table 6.2

Side protection, 2 pieces

DN	50	65	80	100	125	150	200	250	300	350	400
inch	2"	2½"	3"	4"	5"	6"	8"	10"	12"	14"	16"
Art. WGS-LP-xxx	050	065	080	100	125	150	200	250	300	350	400



Loosen the nuts of the top side of the knife-gate valve on one side.



Put the side protection under the washer and lay it to the mounting bridges as the figure 6.8 shows.



Fasten the nut and replay the procedure at the other side of the knife-gate valve.



At size DN350 and DN400 the side protection will be screwed directly to the mounting bridges.

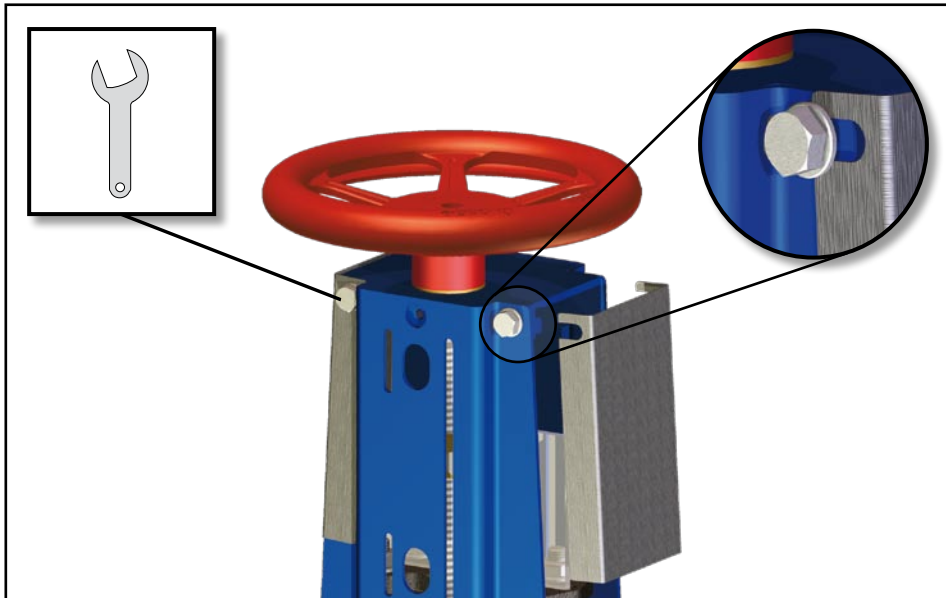


Fig. 6.8 - Mounting of the side protection (picture shows Art. WGE-GG-xxx-100/MW)

## 6.6 Disassembly

The disassembly of a knife gate valve in principle proceeds in the reverse sequence to the mounting, but some essential points should be clarified:

- Will the knife gate valve to be disassembled be replaced immediately by another ?
- If appropriate, does the production process or the plant need to be stopped?
- Is it necessary to inform specific personnel about the disassembly? etc.



**Stop the medium flow. Never remove the knife gate valve under pressure.**

**If necessary, set up warning signs in order to prevent**

- the in inadvertent starting up of the device / machines / plants, or
- the switching on of the pilot media supply, or
- the switching on of the medium.



Keep ready some fit tanks to catch up leaking liquids.

### 6.6.1 Pneumatically disassembly



**Switch off the supply of the compressed air and the control unit of the actuator!**

**If necessary, set up warning signs in order to prevent**

- the inadvertent starting up of the device / machine / plant or
- the switch on of the power supply / control unit of the pneumatic actuator!



Loosen the pneumatic fittings and pull off the hoses.



Close the hose of the pilot air if the hose is not also being disassembled or is not to be reconnected to another device.

### 6.6.2 Mechanical disassembly



**Switch off the media flow, release the pressure in the pipes and take care to prevent the inadvertent switching on.**



Prevent the drop down off the knife gate valve be qualified measures e.g. with a suspension or by supporting the knife gate valve.



Loose the flange connection and pull out the knife gate valve between the flanges.



Close the pipe, if the pipe is not also being disassembled or is not immediately reconnected to another knife gate valve.



Herewith the disassembly of the knife gate valve will be finished.

## 7 Maintenance

Before you maintain or shut down the knife gate valve you have to read the



→ Safety advice

**If you have not read the safety advices until now, read this important advices now and turn back to this page.**

The controlling of the function and the tightness should happen in periodical turns:



- Check the tightness of the gland packing
- resp. readjusting of the gland packing
- Lubrication of the stem
- Check the tightness of the pipe connections
- Check the tightness of the pilot cylinder (only at pneumatic actuator)
- Check the knife-gate valve and/or the actuator and attaching parts of a defect in paint work. To prevent corrosion damage you should repair any defects carefully.



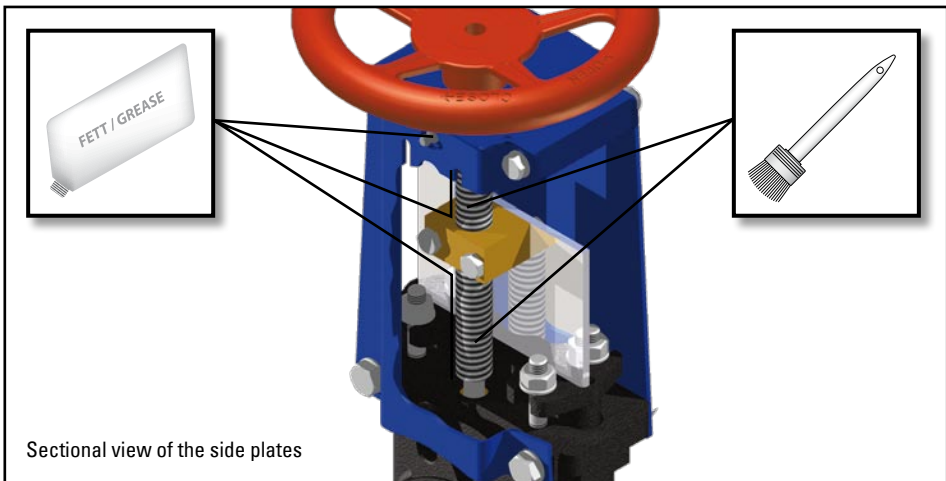
**By maintaining the knife-gate valve you are allowed to remove the protection devices after the part of the plant at which the knife-gate valve is mounted will be without pressure. At knife-gate valves with a pneumatic or electric actuator you have to switch off the pressure and power supply and to prevent the inadvertent starting of the plant.**



**In case of a defect of the knife-gate valve make a contact to the supplier. The telephone number will be found on the back or these operation and installation manual.**

**If you determine that there is a damage to the knife-gate valve switch off the device/ machine/ plant! However before doing this, it is essential to refer to the**

→ Safety advice.



Sectional view of the side plates

Fig. 7.1 - Lubrication of the stem (picture shows Art. WGE-GG-xxx-100/MW)

**7.1 Cleaning and lubricating**

At regular intervals you have to lubricate the stem, the stem nut and the bearings with standard grease. The interval is dependent to the frequency and type of the operation and to the ambient conditions.



**EPDM-seals don't come in touch with grease made of mineral oil. For food application special grease with corresponding permission is possible.**



Before lubrication remove all pollutions and old grease rest.



Manual operating knife-gate valves will be equipped with a lubrication nipple on the top of the top bridge. The lubrication should happen in periodical turns by using a grease press.



**Clean the stem of the pneumatic actuator continuously and carefully. Lubricate the stem slightly. Pollution which attains inside the actuator or the sealing and bearing system, will causes hasten wear and the damage of the sealings and the treads.**



Lubricate the stem and all bearings with a brush.



Operate the knife-gate valve some times and remove the excess grease

**7.2 List of lubricants**

For the lubrication of the several parts and the bearings of the knife-gate valve and the actuator we recommend following lubricants (without engagement).

Table 7.1		
Product	Lubricant	Remarks
<b>Seals</b>		
NBR, EPDM, FKM	Silicone grease Berulub SIHAF2	EPDM-sealings don't come in touch with grease made of mineral oil.
<b>Knife-gate valve with hand wheel</b>		
Stem	Energrease LS 0, 2, 3	
Stem nut	Aseol Calla 2 9-2	
Bearing	Klüber Microlube GBUY 131	
<b>Knife-gate valve with hand lever</b>		
Stem	Energrease LS 0, 2, 3	
Bearing	Aseol Calla 2 9-2 Klüber Microlube GBUY 131	
<b>Knife-gate valve with pneumatic actuator</b>		
Piston sealing	Energrease LS 0, 2, 3	
Cylinder	Aseol Calla 2 9-2	
Stem sealing		
Stem		
<b>Knife-gate valve with electric actuator</b>		
Stem	Energrease LS 0, 2, 3	
Stem nut	Aseol Calla 2 9-2	
Bearing	Klüber Microlube GBUY 131	

## 7.3 Tighten of the gland packing

The knife will be sealed by a 3part gland. The knife-gate valve will be delivered with a not pre-stressed gland packing. After mounting the valve into the pipe system or in case of decreasing tightness the nuts of the gland must be tighten.



**Make sure that there is no operation of the knife-gate valve during the fighting procedure. At knife-gate valves with a pneumatic or electric actuator you have to switch off the pressure and power supply and to prevent the inadvertent starting of the plant.**



A careful adjusting of the zero-leakage should happen during operation conditions (max. one nut revolutions).



Fasten the nuts of the gland packing regular and crosswise until the tightness of the gland will be restored. The gland does not have to be canted.



Than the valve has to open and close for 3-5 times to set the packing and check the positioning force (if not repeat the process). Too fast ore irregular tighten of the gland nuts will causes hasten wear of the gland packing or too high operating force. In worst case the elastic moment of the gland packing materials will exceed and the packing destroy.



The stated data are only for general information.

**Table 7.2**

**Torque of the gland nuts**

DN	50	65	80	100	125	150	200	250	300	350	400
inch	2"	2½"	3"	4"	5"	6"	8"	10"	12"	14"	16"
Nm	20	20	20	25	25	25	30	30	30	35	35
lbf ft	14,8	14,8	14,8	18,5	18,5	18,5	22,2	22,2	22,2	25,9	25,9

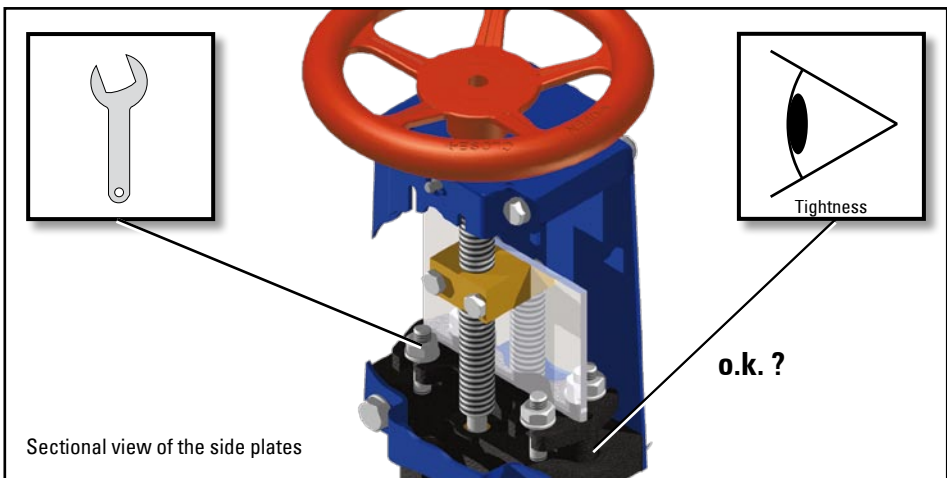


Fig. 7.2 - Tighten of the gland packing (picture shows Art. WGE-GG-xxx-100/MW)

## 7.4 Maintenance of the electric actuator AUMA

AUMA multi-turn actuators require very little maintenance. Precondition for reliable service is correct commissioning.

**Please notice for a right and professional installation and implementing the instructions and the safety advices in the**



→ **AUMA operating manual,**

**which is attached at any actuator.**



Seals made of elastomers are subject to aging and must therefore regularly be checked and, if necessary, exchanged.



It is also very important that the O-rings at the covers are placed correctly and cable glands fastened firmly to prevent ingress of dirt or water.



We recommend:

- If operated seldom, perform a test run about every 6 months. This ensures that the actuator is always ready to operate.
- Approximately six months after commissioning and then every year check bolts between actuator and valve/gearbox for tightness. If required, re-tighten applying the torques given in table 1, page 5.
- For multi-turn actuators with output drive type A: at intervals of approx. 6 months press in several squirts of ball bearing grease at the lubrication nipple with grease gun.



**We recommend to use original AUMA lubricants**



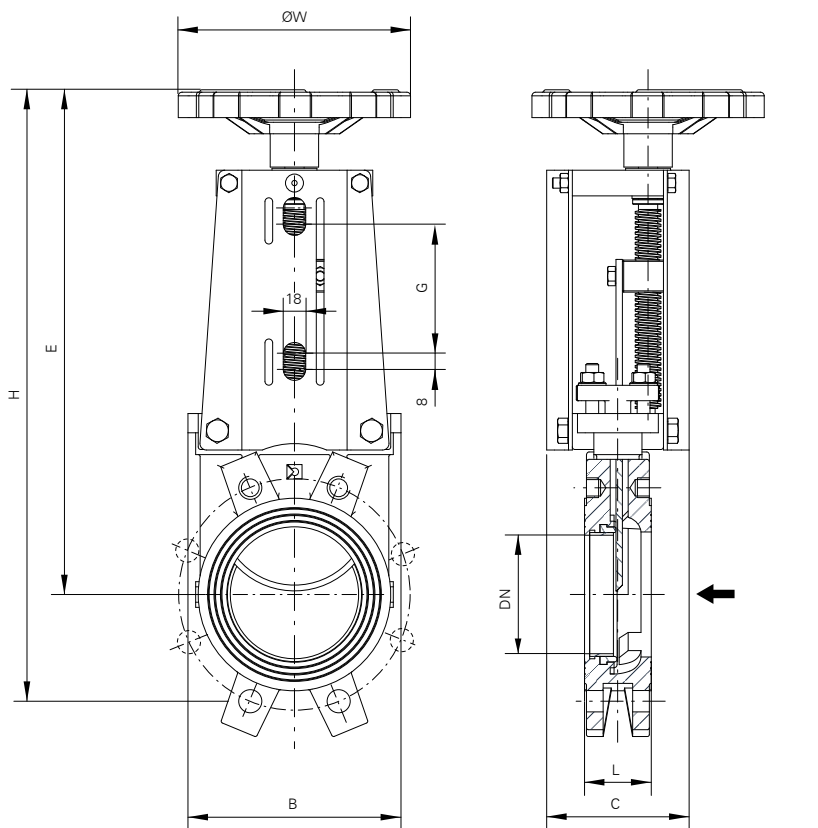
The gear housing is filled with lubricant in the factory.

A grease change is recommended after the following operation time:

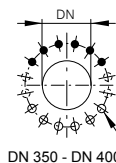
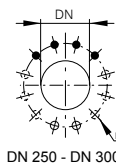
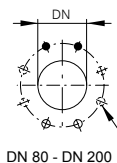
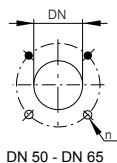
- If operated seldom after 10 - 12 years
- If operated frequently after 6 - 8 years

# Dimension

## 8 Dimension 8.1 Dimension knife-gate valve with hand-wheel

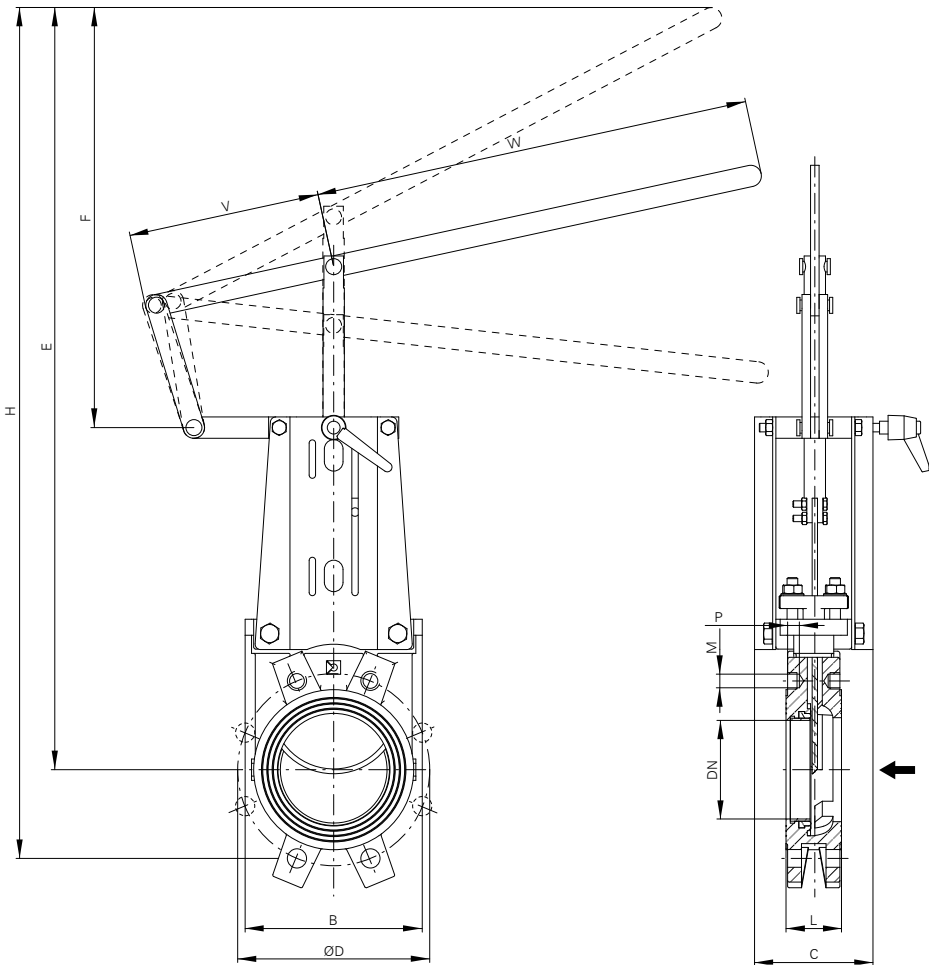


● blind hole, threaded  
⊕ through hole



DN	ØD	H	L	E	B	C	G	W	n	M	P	●	⊕	bar	kg
50	125	372	43	328	116	102	53	200	4	M16	8	2	2	10	8
65	145	405	46	354	131	102	53	200	4	M16	9	2	2	10	9
80	160	441	46	367	146	102	82	200	8	M16	9	2	2	10	10
100	180	479	52	396	166	112	102	200	8	M16	9	2	2	10	13
125	210	510	56	413	197	112	130	250	8	M16	9	2	2	10	17
150	240	573	56	462	222	112	156	250	8	M20	10	2	2	10	20
200	295	714	60	578	275	130	205	350	8	M20	10	2	2	8	34
250	350	878	68	709	332	130	270	350	12	M20	12	4	2	7	50
300	400	1.010	78	815	386	130	320	350	12	M20	12	4	2	6	66
350	460	1.180	96	955	437	196	-	400	16	M20	12	6	6	6	ca.105
400	515	1.311	100	1.059	491	196	-	400	16	M20	12	6	6	5	ca.135

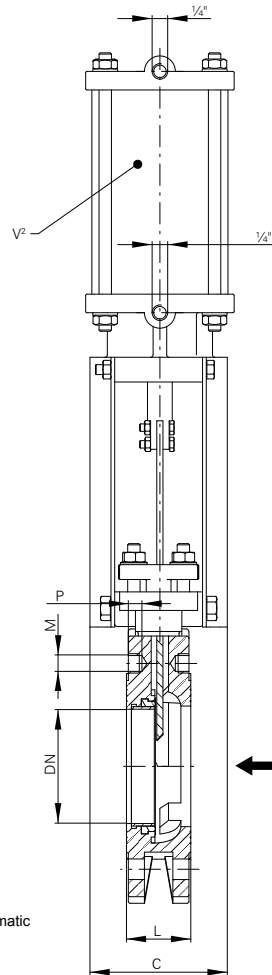
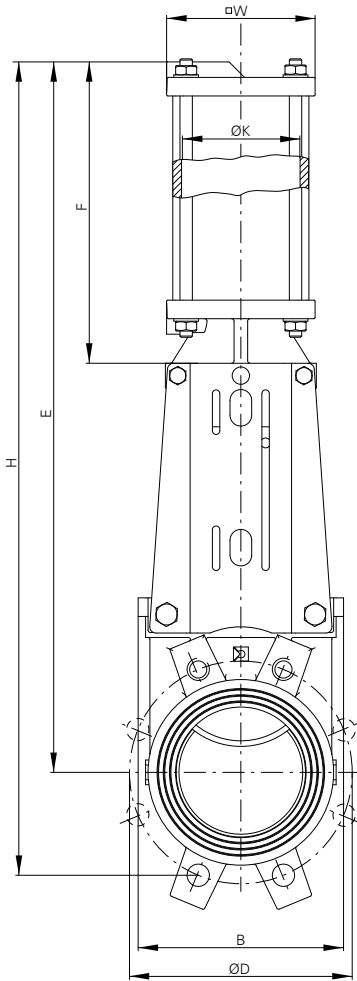
8.2 Dimension knife-gate valve with lever



DN	ØD	H	L	B	C	E	F	V	W	n	M	P	bar	kg
50	125	488	43	116	102	444	217	115	325	4	M16	8	10	8
65	145	552	46	131	102	501	264	115	325	4	M16	9	10	9
80	160	629	46	146	102	555	311	115	325	8	M16	9	10	10
100	180	720	52	166	112	637	398	170	400	8	M16	9	10	13
125	210	845	56	197	112	478	482	170	400	8	M16	9	10	17
150	240	961	56	222	112	850	564	170	400	8	M20	10	10	20
200	295	1151	60	275	130	1015	608	340	600	8	M20	10	8	34
250	350	1403	68	332	130	1234	768	340	600	12	M20	12	7	50
300	400	1654	78	386	130	1459	908	340	600	12	M20	12	6	66

# Dimension

## 8.3 Dimension knife-gate valve with pneumatic actuator



\* volume of the pneumatic actuator [cm³]

DN	ØD	H	L	E	F	B	C	□W	n	M	P	V*	J	bar	kg
50	125	491	43	446	195	116	102	103	4	M16	8	573	1/4	10	9
65	145	543	46	491	205	131	102	103	4	M16	9	625	1/4	10	10
80	160	591	46	519	220	146	102	103	8	M16	9	692	1/4	10	11
100	180	664	52	575	245	166	112	120	8	M16	9	1.260	1/4	10	14
125	210	738	56	640	280	197	112	150	8	M16	9	2.342	1/4	10	19
150	240	829	56	714	300	222	112	150	8	M20	10	2.610	1/4	10	22
200	295	1.025	60	885	365	275	130	185	8	M20	10	5.231	1/4	8	38
250	350	1.230	68	1.056	438	332	130	228	12	M20	12	10.053	1/4	7	57
300	400	1.413	78	1.216	488	386	130	228	12	M20	12	11.574	1/4	6	75
350	460	1.590	96	1.360	515,5	437	196	278	16	M20	12	19.145	3/8	6	127
400	515	1.770	100	1.512	565,5	491	196	278	16	M20	12	21.300	3/8	5	138



(1) **Declaration in conformity**  
(2) **as defined by Pressure-Equipment-Directive 97/23/EC**

(3) This declaration apply to the article groups with the nominal sizes:

Article	Description
WGE-EL	Knife-gate valve with electric actuator
WGE-HD	Knife-gate valve with hydraulic actuator
WGE-ML	Knife-gate valve with lever
WGE-MW	Knife-gate valve with handwheel
WGE-PD	Knife-gate valve with pneumatic actuator
WGE-PSNC	Knife-gate valve with pneumatic actuator
WGEB-EL	Knife-gate valve with electric actuator
WGEB-HD	Knife-gate valve with hydraulic actuator
WGEB-ML	Knife-gate valve with lever
WGEB-MW	Knife-gate valve with handwheel
WGEB-PD	Knife-gate valve with pneumatic actuator
WGEB-PSNC	Knife-gate valve with pneumatic actuator

and all variations of these articles

(4) of the company **Watergates GmbH & Co. KG**  
D-32547 Bad Oeynhausen  
Germany

(5) Herewith we declare that the above-mentioned articles in the conditions of our delivery are in conformity with the regulations of Article 3 Part 3 of the directive 97/23/EG. These products bear no CE mark, but are in line to the good engineering practice designed and manufactured.

(6) Applied harmonized standards, in particular:

**DIN EN 12516:2005      Industriearmaturen - Gehäusefestigkeit**

(7) On behalf

Karl-Hendrik Storch  
Technical Manager

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knife-gate-valves - Stoffschieber  
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post@watergates.de · www.watergates.de



Bad Oeynhausen, 04. Dezember 2009

Michael End  
Quality Manager

Declaration without signature or company stamp shall not be valid. The declaration may be circulated only without alteration. Extracts or alternations are subject to approval by Watergates GmbH & Co. KG.



(1) **Declaration of incorporation**  
(2) **according to annex II of the Directive 2006/42/EC on machinery**

(3) This declaration apply to the article groups:

Article	Description	Article	Description
<b>WGE-EL</b>	Knife-gate valve with electric actuator	<b>WGEB-EL</b>	Knife-gate valve with electric actuator
<b>WGE-HD</b>	Knife-gate valve with hydraulic actuator	<b>WGEB-HD</b>	Knife-gate valve with hydraulic actuator
<b>WGE-PD</b>	Knife-gate valve with pneumatic actuator	<b>WGEB-PD</b>	Knife-gate valve with pneumatic actuator
<b>WGE-PS</b>	Knife-gate valve with pneumatic actuator	<b>WGEB-PS</b>	Knife-gate valve with pneumatic actuator

and all variations of these articles

(4) of the company: **Watergates GmbH & Co. KG**      Documentation authorized: **Lars-Michael Rolfmeier**  
Oberbecksener Str. 70      Oberbecksener Str. 70  
D-32547 Bad Oeynhausen      D-32547 Bad Oeynhausen

(5) Herewith we declare that the above mentioned articles in the conditions of our delivery are partly completed machinery according to annex 2 paragraph g of the directive 2006/42/EC on machinery. These products have no CE marking because of this directive.  
The relevant technical documentation is compiled in accordance with part B of annex VII.

Applied harmonized standards, in particular:

**DIN EN ISO 12100-1:2004**      **Safety of machinery - Basic concepts, general principles for design - Part 1**  
**DIN EN ISO 12100-2:2004**      **Safety of machinery - Basic concepts, general principles for design - Part 2**  
**DIN EN ISO 14121-1:2007**      **Safety of machinery - Risk assessment - Part 1**

If necessary the partly completed machinery are in conformity to the directives


**94/9/EC**      **ATEX Directive**  
**97/23/EC**      **Directive on pressure equipment**

This conformity will declare in separately declarations.

(6) In response to a reasoned request the national authorities can demand the relevant information on the partly completed machinery. The transmission takes place by post or e-mail.

(7) The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive 2006/42/EC on machinery, where appropriate.

(8) Bad Oeynhausen, 09. November 2009, on behalf:

  
Karl-Hendrik Storch  
Technical Manager

  
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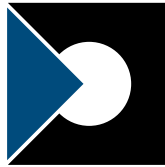
  
Michael End  
Quality Manager

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# watergates

knife-gate-valves - Stoffschieber



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