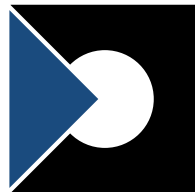
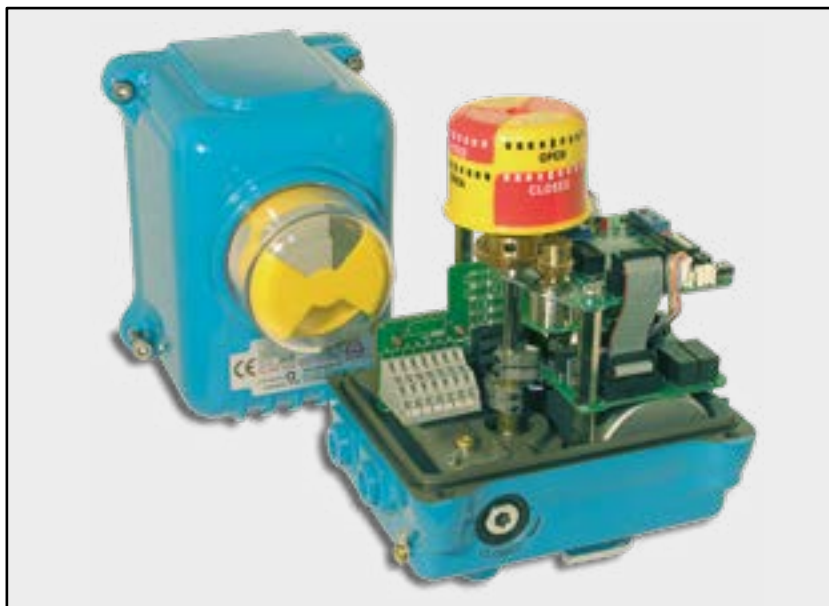


watergates

knife-gate-valves - Stoffschieber



Original Operating Manual Positioner PCU for Electric Actuator NA005



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

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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 the positioner PCU rapidly and correctly.



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

The field of use of the positioner is predominantly

- in food and drink industry
- in chemical installations
- in ventilation and blower construction
- in heating and air-conditioning technology
- in industrial fittings
- in water treatment etc.

If you have any questions in relation to the positioner PCU, 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 Corresponding Using

The positioner PCU is intend for mounting at the electric actuator NA. The positioner is directly mounted at the body of the actuator NA. The electrical connection between the positioner and the actuator takes place by a cable.

The positioner PCU should only be used with the actuator NA.

2.2 Validity

These mounting and installation manual is valid for the standard version of the **positioner PCU**.

2.3 Inward Monitoring

Please check

- directly after delivery the positioner 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.

2.4 Complains

Claims for replacement of 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 return, please mention the following:

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

2.5 Guarantee

For our positioner PCU we give a guarantee period in accordance with the sales contract.

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

2.6 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/advice or tips.



This bullet 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 electric actuator with the positioner PCU is mounted, adjusted and commissioned, you must in each case take into account particular safety aspects!

If, for example, the positioner 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 an „dry“ part of the plant in the assembly room.

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

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



The actuators 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 electric actuator NA with mounted positioner PCU and the accessories must be carried out only by trained specialist personnel having mechanical and electrical knowledge



**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 positioner (in a plant which is in operation) inform the shift forman / 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, relieve the pressure from pneumatic / hydraulic devices / machines / plant.



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



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



Check the correct functioning 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 commissioning of the actuator with the positioner the position of a valve/flap or the like on which the actuator is mounted - referred to below as the actuating element - will be changed.

As a result of the starting (electrical or by hand) of a actuator with positioner the flow of gases, steam, liquids, etc. may be enabled or interrupted!



Satisfy yourself that, as the result of the starting or the test adjustments of the positioner, no potential hazards 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.



After completing the adjustments, check the correct functioning of the positioner and the mounted armature.



Please check, whether the actuating element is fully closed, if the control signs the corresponding position of the limit switch.



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 discribed in this documentation!



When adjustments are being carried out on an opened and switch on (operational) limit switches, 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 hazards.

3.2 Device safety

The positioner



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



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



We assume, as trained specialist you are having mechanical and electrical knowledge !

The positioner must be used only for a purpose corresponding to its construction!



The positioner PCU and the electric actuator NA must be used within the values specified in the technical data! The nominal voltage of the positioner PCU and the electrical actuator NA must be identical!



The positioner must be used only with the the electric actuator NA and within the values specified in the technical data.



Satisfy yourself that, as the result of the mounting, the starting or as a result of the test adjusments on the valves, no potential hazards will be produced for devices / machines / plant!



Open the positioner only to such an extant as described in this documentation!



Do not mount the positioner, start the positioner or carry out any adjusments on it if the positioner, the supply lines or the part of the plant on which it is mounted is damaged !



Before mounting the positioner check the right function of the actuating element.



Before mounting the positioner secure that it is isolated from the power supply and the controll



By ending mounting check the correct function of the positioner.



The positioner shoud not be used outside or under wet conditions or in aresas with explosive atmosphere.



Clean the positioner as required using a slightly moistened, soft cloth and a normal household cleaner. Do not use any abrasive corrosive or flammable cleaning agents! Do not use any high pressure cleaning devices.

4 Device description

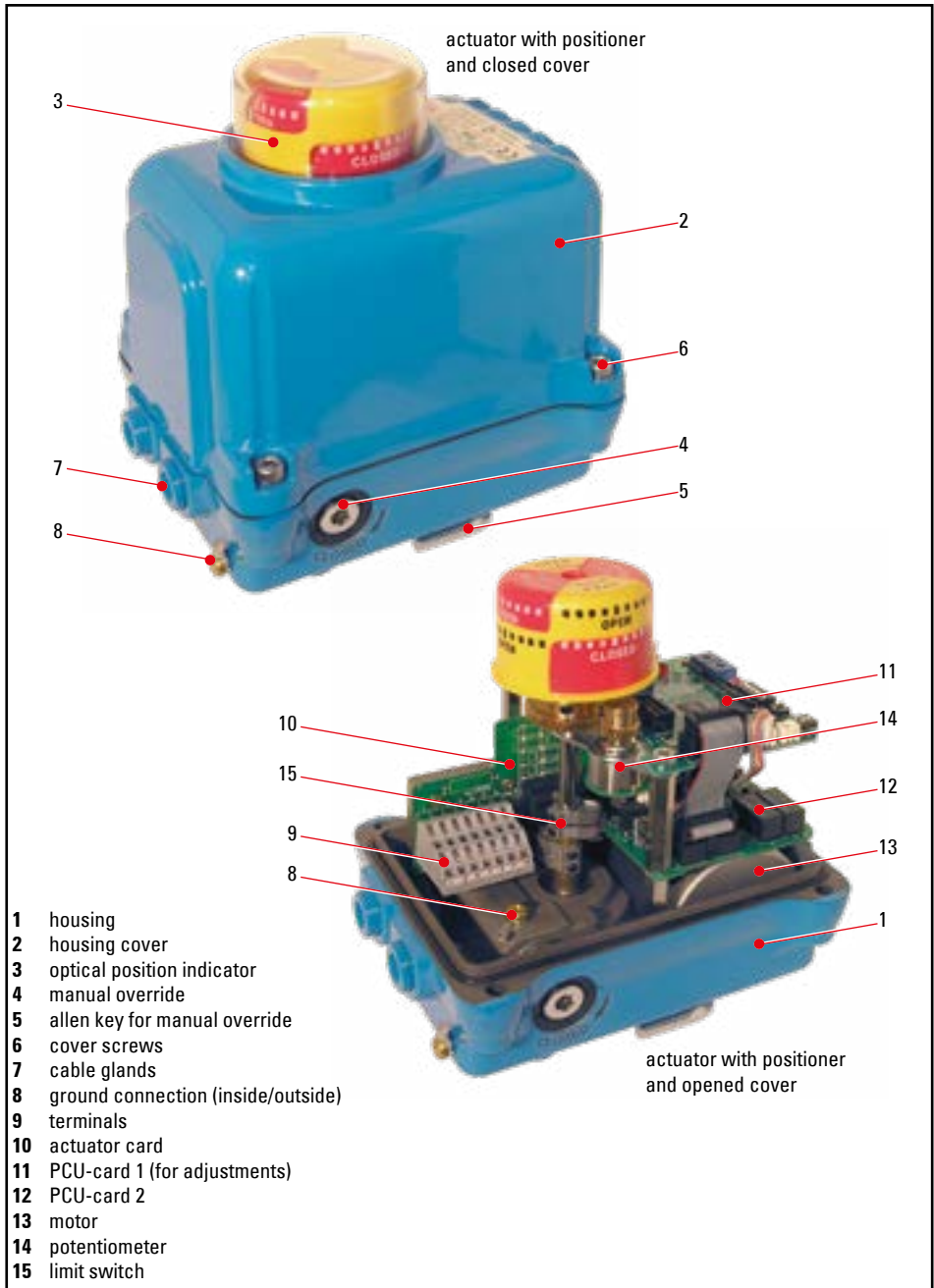


Fig. 4.1 - device description positioner PCU

5 Functional description

5.1 Construction

The cards of the positioner are mounted in the actuator housing. The positioner is connected with actuator card by electrical contacts.

The positioner PCU detects the current position of the actuator/valve by a potentiometer which is connected with the gear box of the actuator.

5.2 Features

- Automatic initialization function
- Safety function at input signal failure(Safety fail open / fail close)
- Protection class IP 68
- Simple handling and commissioning
- Simple electrical connection

5.3 Practicable functions

Auto Scan:	Automatically memorized each open/close position by the signal of potentiometer PIU.
Fail CLOSE:	Drives to CLOSE position if there is no certain input signal.
Fail OPEN:	Drives to OPEN position if there is no certain input signal.
Optional Setting:	It is possible to fix a certain signal as OPEN and CLOSE.
Manual Operating:	The actuator can be moved in open or close position without source of signal by direct use of the dip-switches on the PCU card.

6 Ambient conditions

The positioner PCU is designed for rough industrial operating conditions. However some special conditions are to be observed for its mounting and subsequent operation.

Take care that



- **the positioner is mounted in accordance with the mounting advices listed below.**
- **the positioner is used in accordance with the characteristic values specified in the technical data.**

The non-observance of the mounting advices or the use outside the specified characteristic values can have negative influence on the functional reliability of the positioner.

The use of the positioner under the influence of radioactive radiation may take place after discussions with the manufacturer only.

7 Assembly instructions

The positioner PCU is completely mounted at the actuator NA by the manufacturer. Therefore the mounting is restricted to:

- the mechanical mounting of the electric actuator NA,
- the electrical installation of the power supply line and the input / output signal lines,
- the commissioning of the positioner PCU and the actuator NA.



In this mounting and installation manual we describe only the processes which are necessary to install the positioner PCU. Please also observe the descriptions and safety advices of the installation and operation manual of the electric actuator.



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 from 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!

7.1 Electrical installation

7.1.1 Removing of the housing cover



Loosen the four housing screws with an allen key and pull the housing cover hardly to remove it!



For assistance you can insert a screwdriver a few millimeters between housing cover and the housing and lever the cover open.



Do not damage the cover and /or the sealing rubber in the process. In this case, the degree of protection (IP68) would no longer be ensured!

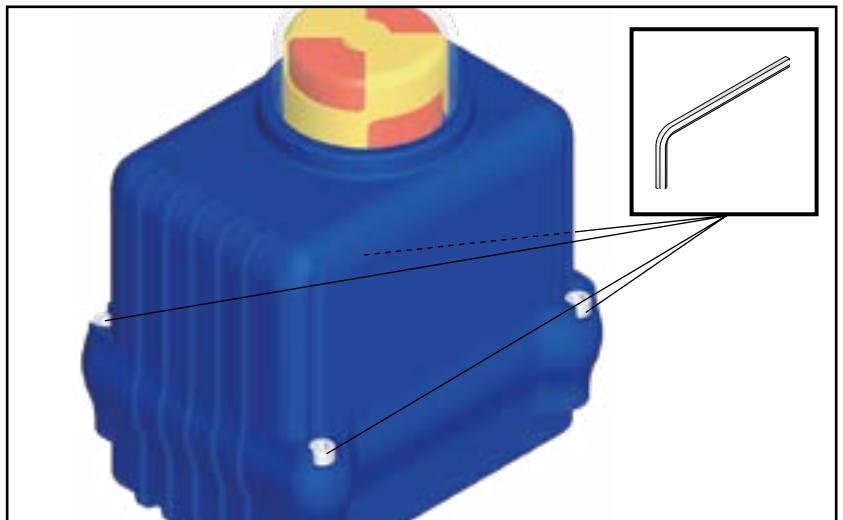


Fig. 7.1 -Electrical installation - Removing of the housing cover

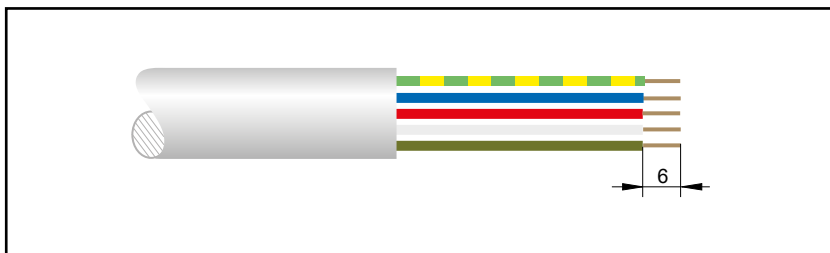


Fig. 7.2 -Electrical installation - stripping of the cables/leads

7.1.2 Stripping and connecting the cables / leads



Take care that all leads which have to be stripped and connected have all their poles isolated from the power supply during the installation work.

When stripping leads which are live, there is a risk of a life-threatening shock.



Remove the sheaths of the cables and the insulation from the leads in accordance with figure 7.2.



In case of leads with stranded conductors, provide the ends in each case with wire end sleeves.



Lead the cables through the PG screw fittings.



Feed the stripped ends of the leads into the terminals as far as the stop and then tighten them. The assignment of the connections can be seen from the wiring diagrams at the end of these mounting and operation manual.



The position of the terminals are in the sketch below.

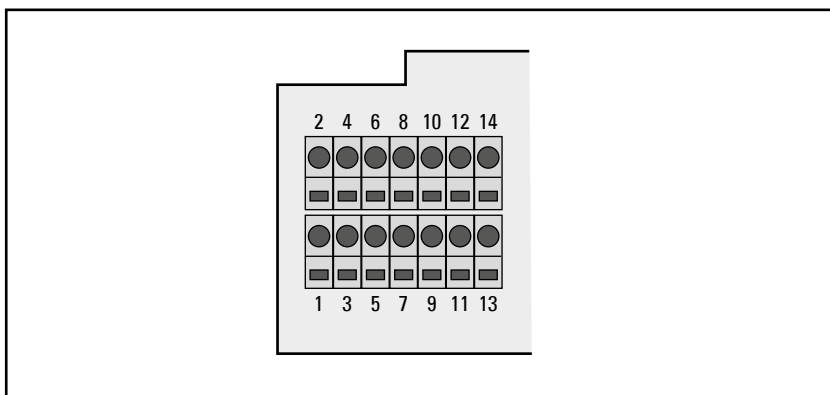


Fig. 7.3 -Electrical installation - positions of the terminals



Please be sure that the voltage of the power supply is in accordance with the specification on the name-plate. Do not miss to connect the two terminals for the protective earth leads. (The internal one is marked by a sticker, outer one is between the bolts for the mechanical stop (see figure 7.4).



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



Tighten the PG screw fittings so firmly that the strain relief becomes effective and the cable leadthrough corresponds to the degree of protection (IP68).



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 (if 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 leading to large current equipment. Strong electromagnetic fields may be induced in the control line and produce false signals.



Finally, carry out the adjustments to the actuator, for this please observe

→ chapter 8.

Close the actuator again.



Ensure that the circumferential rubber sealing ring in the housing is not damaged and correctly seated in the groove



Fit the housing cover and tighten the four screws.
For this observe chapter:



→ 8.5 „Fitting the housing cover“.

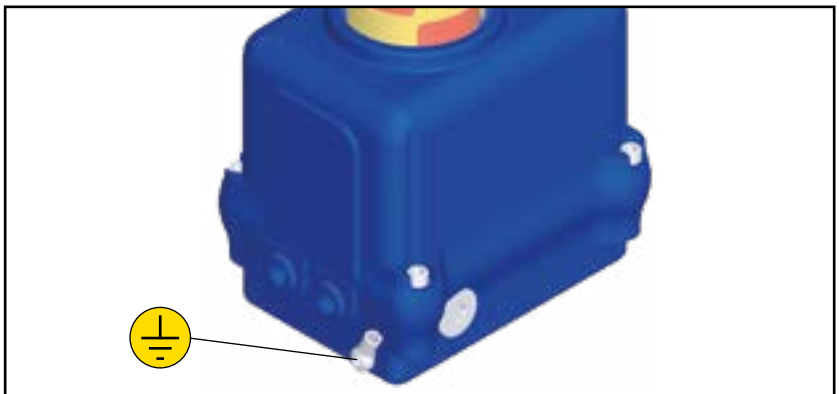


Fig. 7.4 -Electrical installation - connection of the protective earth lead

8 Adjustment / Starting

Before you open the actuator, undertake adjustments by hand or commission the actuator, you have to read chapter



→ 3 „Safety advice“

If you have not yet done this, read the important advice now and then return to this point.



Take care that no liquid, moisture and no foreign bodies (sand, dust or the like) get into the opened actuator.

The following descriptions are based on the assumption that

- the actuator is installed on the device or part of the plant which contains the actuating element
- the housing cover is fastened to the actuator.



If appropriate, take note to chapter

→ 7 „Mounting / disassembly“



To carry out the adjustment it is necessary to move the output drive shaft and consequently the actuating element.



The adjustment of the actuator takes place by using the manual override. Which particularities you have to observe by adjusting the actuator by using the manual override will be explained under

→ 9 „Emergency operation“

in the mounting and operating manual for the electric actuator NA.



Before you undertake adjustments on actuators which are installed in operational plant, find out whether applying current to control lines (e.g. for left/right operation) will have any influence on further actuators or whether the closing/opening of microswitches will trigger (mal) functioning of other devices



Ensure that no (mal-) function of further parts of the plant will be triggered by these adjustments or changes (for example by disconnecting lines or by variation of the cables).



For the adjustments described below, in each case apply the motor drive voltage (power supply) to the terminals of the actuator only until the intended rotational movement has been carried out, and then isolate all the poles of the power supply from the terminals again.



By using the name plate determine the voltage level and type of motor drive voltage. For this see

→ 4.3 „device variants“

in the mounting and operating manual for the electric actuator NA.

8.1 Check of the rotating direction of the actuator



When the electric actuator NA is started for the first time, the most important thing is to check the right rotating direction of the motor. Otherwise it may cause big damages to the actuator.



To check the rotation direction, put the actuating element in a 45° position by using the handwheel of the manual override.



Remove the housing cover of the positioner. By doing this please observe the advices at chapter:

→ 7.1.1 „Removing of the housing cover“



Turn on the power supply for the terminal OPEN in accordance to the wiring diagram and watch the turning direction of the actuator. The drive bushing has to turn counter clockwise and the mounted actuating element has to open. Reaching the limit switch the actuator turns off.



Turn on the power supply for the terminal CLOSE in accordance to the wiring diagram and watch the turning direction of the actuator. The drive bushing has to turn clockwise and the mounted actuating element has to close. Reaching the limit switch the actuator turns off.



If the actuating element turns in opposite to the description above stop the actuator immediately and check the wiring by using the correct wiring diagram belonging to the actuator.

8.2 Check of the input signal (4...20mA, 2...10V, 1...5V)



Check with help of the position of the source signal DIP-switch the correct adjustment of the input signal. For the appropriate switch positions please refer to table 8.1.



An adjustment of the input signal and a programming of the positioner should make in the factory.

Table 8.1 - Dip-switch: Input Signal

Input Signal	switch		
	1	2	3
4...20mA	ON	OFF	OFF
2...10V	OFF	ON	OFF
1...5V	OFF	OFF	OFF

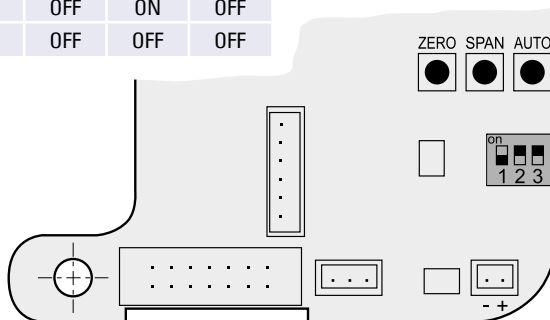


Fig. 8.1 - Adjustment / Starting - Dip-switch setting for the input signal



8.3 First commissioning with factory setting (supplied with ready mounted valve)

If the electric actuator with the positioner PCU will be supplied ready mounted to a ball valve or butterfly valve all settings have been done in the factory and the actuated valve is ready for operation.



Switch on the power supply.



Pretend a analog rated value.



Corresponding to the pretended analog rated value the actuator drives into the desired position.



If you won't adjust other eligible operating levels close the actuator housing again.



Ensure that the circumferential rubber sealing ring in the housing isn't damaged and correctly seated in the groove.

Fit the housing cover onto the actuator and tighten the four screws.
For this observe chapter:

→ 8.5 „Fitting the housing cover“.

The actuator with the positioner PCU is ready for operation.



8.4 First commissioning without factory setting (Delivery without mounted valve)

After the mounting of the electric actuator with the positioner PCU to a ball valve or butterfly valve you have to adjust the limit switches of the actuator and the positioner PCU must be initialized.



8.4.1 Adjustment of the limit switches

Adjusting the limit switches and the mechanical limit bolts please observe the advice at chapter

→ 8.3 „Adjustment of the limit switches“

of the mounting and operating manual of the electric actuator NA.



8.4.2 Initial commissioning of the Positioner PCU



Switch on the power supply.

Press the key „AUTO“ on the PCU-card 1 for more than two seconds. Therefore the initial commissioning starts automatically, this process could last a few minutes.



During the initialization process the valve/actuator drives into its open and close position. Take care that there won't be insert any objects on limbs into the armature. Heavy injuries or damages

will be the consequence.

-  After the automatically reaching of the final positions of the actuator the initialization process has been finished.
 -  Pretend a analog rated value.
 -  Corresponding to the pretended analog rated value the actuator drives into the desired position.
 - If you won't adjust other eligible operating levels (see chapter 9) close the actuator housing again.
 -  Ensure that the circumferential rubber sealing ring in the housing isn't damaged and correctly seated in the groove.
 -  Fit the housing cover and tighten the four screws.
- For this observe chapter:

→ 8.5 „Fitting the housing cover“.

The actuator with the positioner PCU is ready for operation.

8.5 Fitting the housing cover

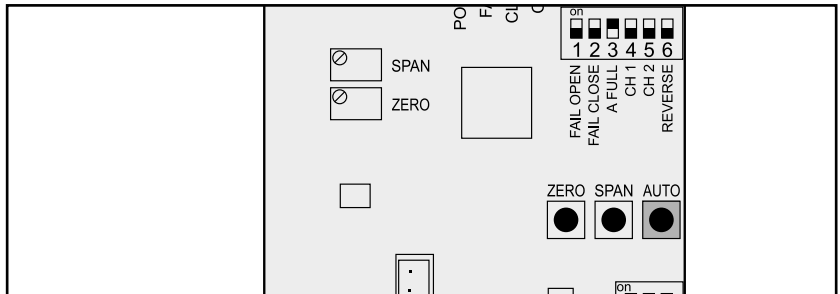


Fig. 8.2 - Adjustment / starting - initial commissioning of the positioner

Before you fit the housing cover onto the actuator check whether

- the positioner has been adjusted correctly.
- the connecting leads are correctly screwed tightly in the terminals.

-  Ensure that
 - the leads are not pinched between the housing and the housing cover and
 - the circumferential rubber sealing ring in the housing is not damaged and is correctly seated in the groove
-  Fit the housing covers onto the actuator and the positioner. Screw the housing covers tight using four screws and fit allen key.



Attention! The max. torque of the bolts is: 0,5 Nm!

9 Operating modes

9.1 DEAD BAND

The Dead Band states the max. permitted control deviation between the effective value and the rated value of the input signal. The adjustable value of Dead Band is 0,1 ... 7,5% (0,5% each step).



If you turn the controller of the DEAD BAND clockwise, the range of the permitted control deviation will be wider.

If you turn the controller of the DEAD BAND counter clockwise, the range of the permitted control deviation will be smaller (getting more sensitive).

Observe, that you don't adjust the range of the permitted control deviation too small, sometimes the actuator couldn't reach the limit positions and repeats to open and close continuously.

9.2 DELAY TIME

With the function DELAY TIME a delayed responding of the positioner to the input signal will be adjustable. The adjustable value of DELAY TIME is 0 ... 4s (0,5s each step).

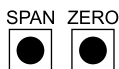


If you turn the controller DELAY TIME clockwise, the time delay of responding the input signal will be longer.

If you turn the controller DELAY TIME counter clockwise, the time delay of responding the input signal will be shorter.

9.3 Manual operation mode

With this function the actuator should be turned into fully open or close position without any input signal by pressing the keys on the PCU card.



By pressing the keys ZERO and SPAN simultaneously for 2 seconds the FAULT-LED starts flashing.

If you press the key ZERO the actuator will turn into the close position. If you press the key SPAN the actuator will turn into the open position.

If you didn't press any key for 15 seconds, the positioner will get back into automatic operation mode.

9.4 Safety function (FAIL CLOSE / FAIL OPEN)

By choosing one of the safety functions FAIL CLOSE or FAIL OPEN the actuator moves to the choosed limit position in case of a input signal failure. It should only be switched on one of the three variants. The operation direction depends on the position of the switch 6 REVERSE and may be inverse in some cases.



The actuator will stop, if there is no input signal.



FAIL OPEN: The actuator will moves automatically into open position, if there is no input signal.

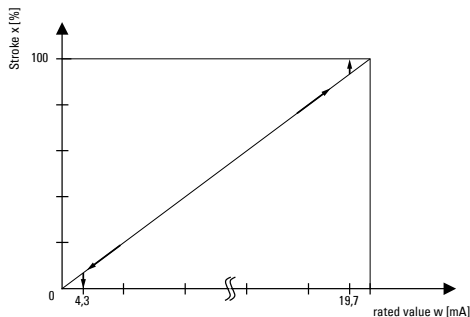


FAIL CLOSE: The actuator will moves automatically into close position, if there is no input signal (not at 0...5/10V).

9.5 A FULL



With this function the valve can be moved into the seat using the maximum actuator force. The function A FULL can be activated for both end positions. A FULL will be effective, if the input signal is lower than 4,3mA or the input signal is higher than 19,7mA



9.6 CH 1 setting (optional setting)

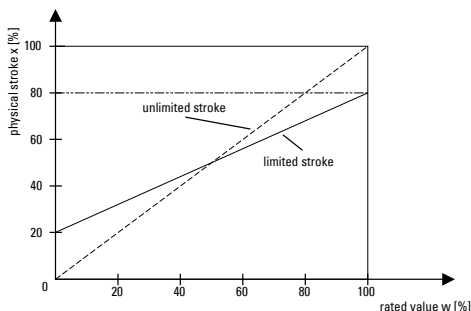
This function corresponds to a mechanical closing limit. With the CH 1 settings the mechanical regulating range of the actuator can be limited.



The set value limit could be activated for one or both limit positions. Set the input signal for the CLOSE position. The actuator moves into the desired position. Switch on the key CH 1, and press the key ZERO. The positioner had saved this position as the CLOSE position and sends a 4 mA output signal. Now switch off the key CH 1 again.

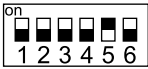
To adjust the input signal for the OPEN position, repeat the setting of the key CH 1 accordingly to the process described above.

The set value limit will be effective at a input signal range: 3...8 mA for CLOSE-position and 16...21 mA for OPEN-position.



9.7 Manual Initialization (CH 2)

With this function the positioner PCU should be initialized without the input signal. The electrical and mechanical limit switches have already been adjusted before.



Switch on the power supply. Move the actuator, by using the manual override or power supplying of the terminal CLOSE (see wiring diagram), into the CLOSE position. Switch on the the key CH 2, and press the key ZERO. The Positioner had saved this position as the CLOSE position. Now switch off the key CH 2 again.

Next move the actuator, by using the manual override or power supplying of the terminal OPEN (see wiring diagram) into the OPEN position. Switch on the the key CH 2 again, and press the key SPAN. The Positioner had saved this position as the OPEN position. Now switch off the key CH 2 again. Now the positioner has been initialized and is ready for operation.

9.8 REVERSE

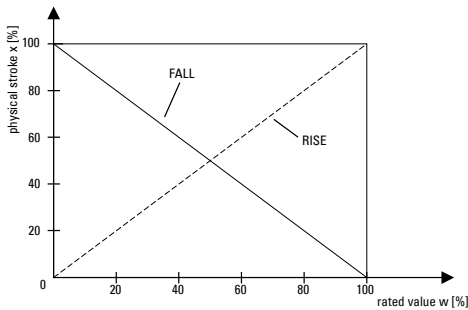
The setting of the rated value direction serves to reverse the effect of the rated value.



REVERSE-function is not activated, e.g.:
Input signal 4mA, actuator moves into CLOSE position, output signal 4mA.
Input signal 20mA, actuator moves into OPEN-position, output signal 20mA.



REVERSE-function is activated, e.g.:
Input signal 4mA, actuator moves into OPEN-position, output signal 4mA.
Input signal 20mA, actuator moves into CLOSE position, output signal 20mA.



10 Technical data and Dimension

10.1 Technical data

General	
Protection class acc. to EN 60529	IP 68
Dimension	168 x 132 x 208mm
Weight	3,5kg
Housing	Aluminium, Polyester coated
Installation	as desired
EC-EMV directive	89/336/EWG
EC low voltage directive	73/23/EWG
Specials	safety function during input signal failure
Electrical data	
Voltage	24V DC 230V $\pm 10\%$, 50/60Hz power supply by the actuator
Input signal	• 4 ... 20mA DC • 1 ... 5V DC • 2 ... 10V DC
Input resistance	200k Ω
Re-transmitted output	4 ... 20mA, active
Position conversation accuracy	$\pm 1\%$
Resolution	1/500
DEAD BAND adjustment	adjustable 1 ... 7,5% (0,5% each step)
DELAY TIME adjustment	adjustable 0 ... 4s (0,5s each step)
Input power supply	inapplicable, by the cable entry of the actuator
Entry Input-/ Output signal	inapplicable, by the cable entry of the actuator
Operating conditions	
Ambient temperature	-10 ... 55°C
Storage temperature	0 ... 50°C
Humidity	90% RH max. (non condensing)
Functional data	
Operation	• Automatic calibration • Automatic • Manual
Parameter	adjustable (see electrical data)

10.2 Dimension

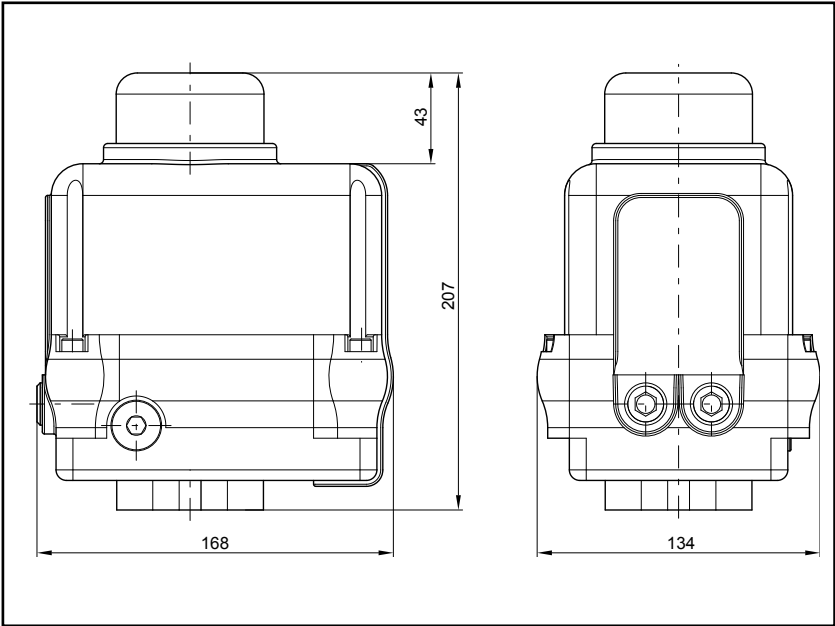


Fig. 10.1 - Technical data - dimension: actuator housing with positioner

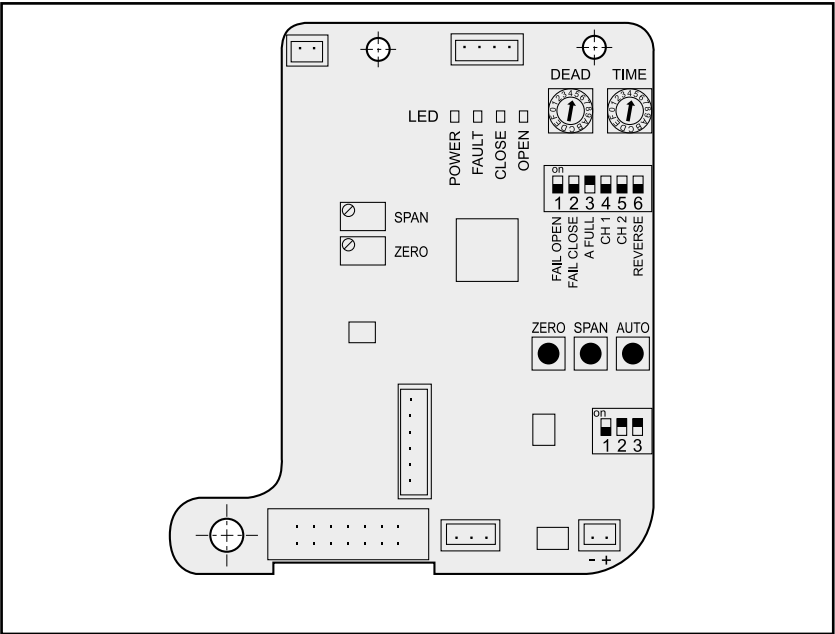
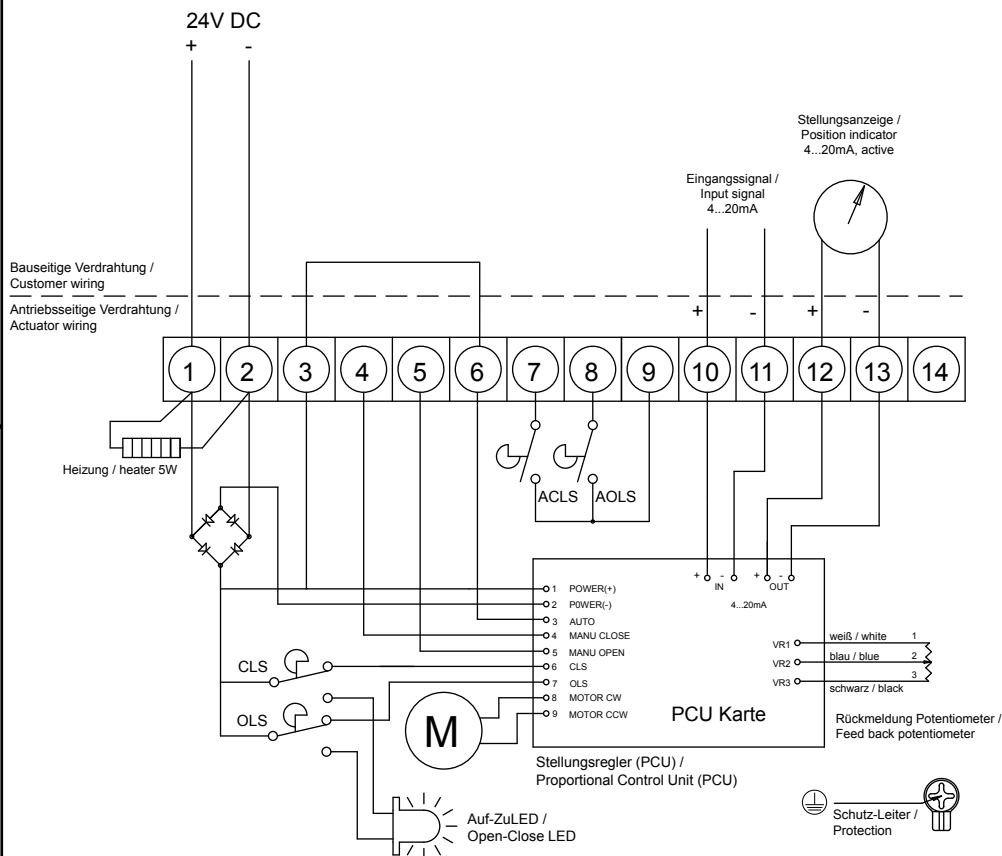


Fig. 10.2 - Technical data - PCU-card 1

CLS: Endlagenschalter 'ZU' / limit switch 'CLOSE'
 OLS: Endlagenschalter 'AUF' / limit switch 'OPEN'
 ACLS: zus. Endlagenschalter 'ZU' / add. limit switch 'CLOSE' (250V AC 3A)
 AOLS: zus. Endlagenschalter 'AUF' / add. limit switch 'OPEN' (250V AC 3A)



Allgemeintoleranzen nach ISO 2768 -

Werkstückkanten nach DIN 6784

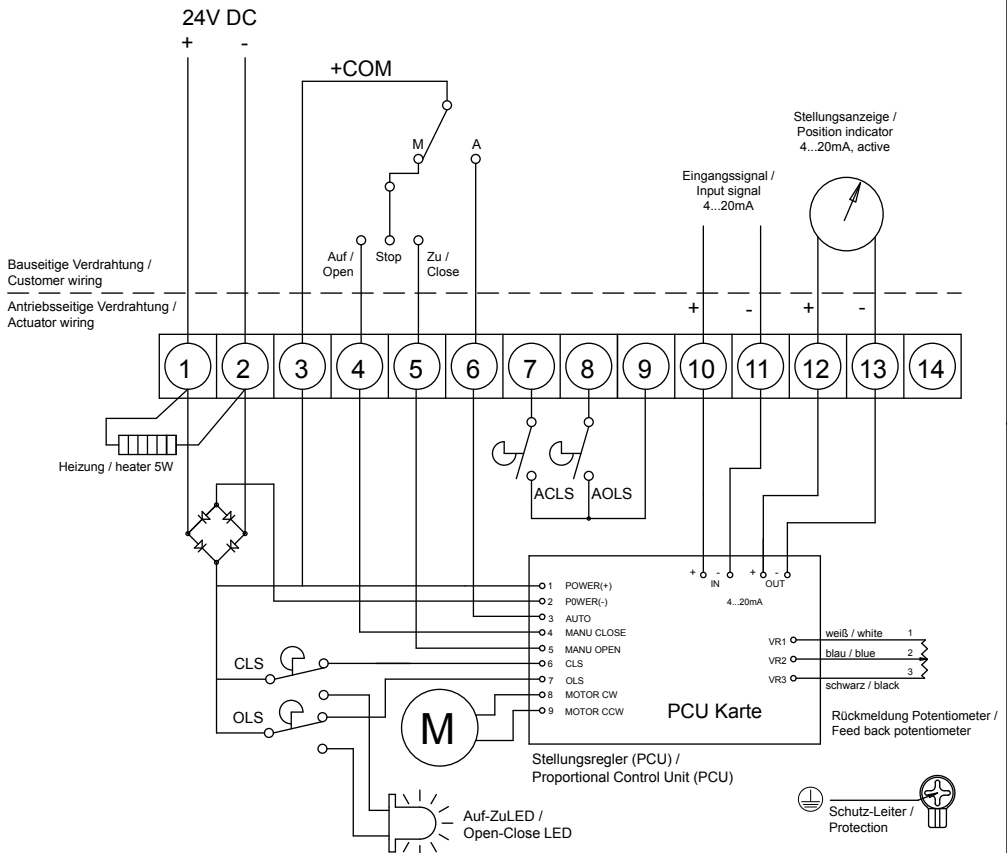
Material	Datum	Änderung	Name	Bemerkung

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 knife-gate-valves - Stoffschieber

Name	Datum	Maßstab	Benennung	Zeichnungs-Nr.
gez. Rofsmeier	16.04.2007	/	Wiring diagram NA005, 24V DC with option ALS and PCU	ESP-NA005-24VDC-PCU-1
gepr.			Watergates GmbH & Co. KG · Oberbeckseener Str. 70 · 32547 Bad Oeynhausen · www.watergates.de	

CLS: Endlagenschalter 'ZU' / limit switch 'CLOSE'
 OLS: Endlagenschalter 'AUF' / limit switch 'OPEN'
 ACLS: zus. Endlagenschalter 'ZU' / add. limit switch 'CLOSE' (250V AC 3A)
 AOLS: zus. Endlagenschalter 'AUF' / add. limit switch 'OPEN' (250V AC 3A)

Schaltplan für HAND/AUTO und AUF/ZU über Schaltschrank/
 Wiring diagram for MANUAL/AUTO and OPEN/CLOSE by control cabinet



Allgemeintoleranzen nach ISO 2768 -

Werkstückkanten nach DIN 6784

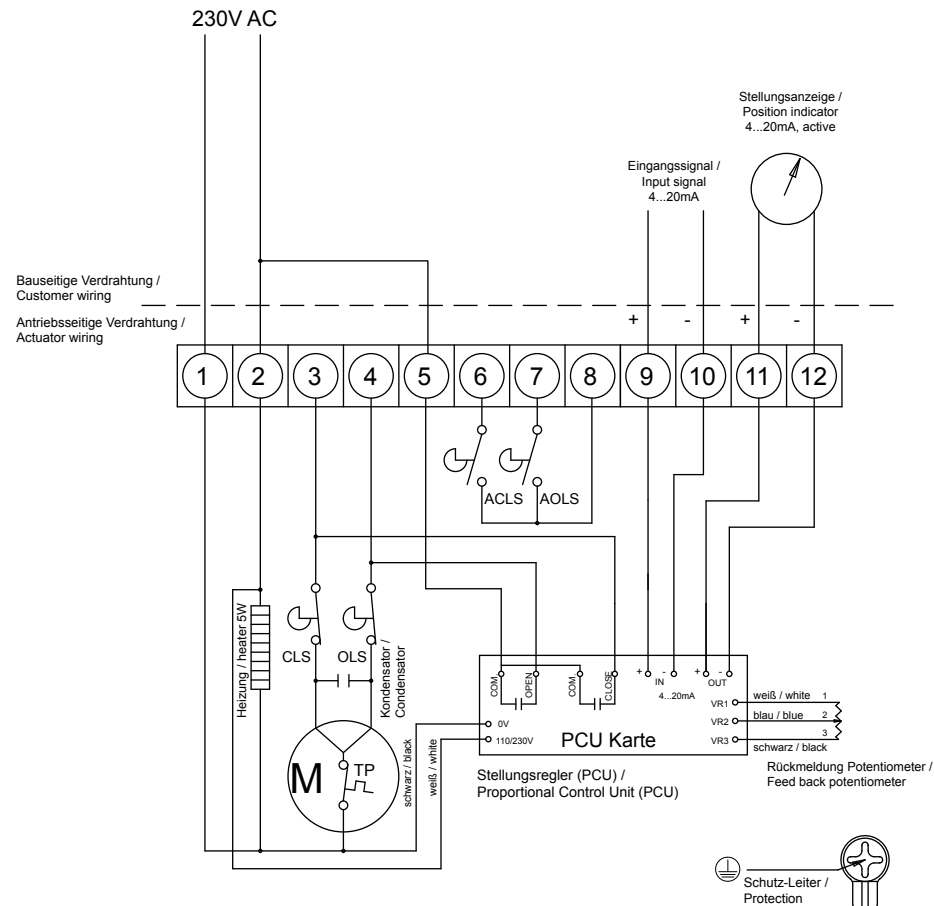
Material	Datum	Änderung	Name	Bemerkung

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Name	Datum	Maßstab	Benennung	Zeichnungs-Nr.
gez. Rofsmeier	16.04.2007	/	Wiring diagram NA005, 24V DC with option ALS and PCU	ESP-NA005-24VDC-PCU-2
gepr.			Watergates GmbH & Co. KG · Oberbeckseener Str. 70 · 32547 Bad Oeynhausen · www.watergates.de	

CLS: Endlagenschalter 'ZU' / limit switch 'CLOSE'
 OLS: Endlagenschalter 'AUF' / limit switch 'OPEN'
 ACLS: zus. Endlagenschalter 'ZU' / add. limit switch 'CLOSE' (250V AC 3A)
 AOLS: zus. Endlagenschalter 'AUF' / add. limit switch 'OPEN' (250V AC 3A)
 TP: Thermischer Schutzschalter / thermal protector (250V AC 3A)



Allgemeintoleranzen nach ISO 2768 -

Werkstückkanten nach DIN 6784

Material	Datum	Änderung	Name	Bemerkung

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Name	Datum	Maßstab	Benennung	Zeichnungs-Nr.
gez. Rolfmeier	15.03.2006	/	Wiring diagram NA005, 230V AC with option ALS and PCU	ESP-NA005-230VAC-PCU-1
gepr.			Watrgates GmbH & Co. KG · Oberbecksener Str. 70 · 32547 Bad Oeynhausen · www.watrgates.de	



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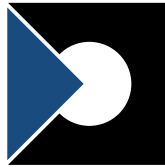
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