Qualität von Anfang an.

Original Operating Manual
Electric Actuator
E1

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

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1 Foreword

Dear customer,
Dear assembler / user,

These mounting and operating manual are intended to give you the knowledge which is necessary for you to be able to carry out the mounting and adjustment of an **NE actuator** rapidly and correctly.

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

The **actuators NE** are supplied in various versions, depending on

- the actuating time for 90° rotation angle of the output drive shaft
- the operating voltage and
- the max. revolutions of the output drive shaft.

In addition optional extensions are available.

In case of the event of a power failure the output drive shaft of the actuator **NE** can be adjusted by the manual override.

The field of use of these actuators are predominantly

- in industrial fittings
- in chemical installations
- in ventilation and blower construction
- in heating and air-conditioning technology
- in machine and plant construction
- in water treatment, etc.

If you have any question in relation to the **actuator NE** we shall be pleased to answer them.
The telephone number will be found on the inside front cover of these mounting and operation manual.

Yours
END-Armaturen GmbH & Co. KG

2 General advice

2.1 Validity

The mounting and operating manual is valid for the standard versions of the **electric actuators NE.**

2.2 Inward monitoring

Please check directly after delivery the actuator for any transport damage and deficiencies with reference to the accompanying delivery note the number of the parts.

Do not leave any parts in the package.

2.3 Complains

Claims for the replacement of goods which relate to transport damage can only be considered valid if the parcel service / forwarder has notified without delay.

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

In case of a return, please mention the following:

- Name and address of the consignee
- Ordering- / Article- number
- Description of the defect.

2.4 Guarantee

For our actuators **NE** 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 **END-Armaturen GmbH & Co. KG** are applicable.

2.5 Symbols and their signification

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

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

This symbols 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 electric actuator is mounted, adjusted and commissioned, in each case you have to take into account particular safety aspects

If, for example, the actuator actuates a slide 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 on a „dry" part of the plant in the assembly room.

Since we do not know the circumstances at the time of 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 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 actuator NE and the accessories must be carried out only by trained specialised 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 switching off the devices / machines / plant will cause potential danger.

If appropriate, in the event of a fault in the actuator (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 the pneumatic / hydraulic devices / machines / plant.

If necessary, set up warning signs in order to prevent the inadvertant 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).

Before electrical installation of the actuator, check the voltage-free state of all lines to be connected.

3.1.2 Safety advice for adjustment and starting

As a result of the starting (electrically or by hand) of the actuator, the position of a slide / valve / flap or the like on which it is flange-mounted - referred to below as the actuating element - will be changed!

As a result, the flow of gases, steam, liquid, etc. may be enabled or interrupted.

Satisfy yourself that, as a result of the starting or the test adjustments on the actuator, no potential hazards will be produced for 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 adjustment, check the correct function and, if appropriate, compliance with the intended angular position of the actuator and the function of the switches of the adjusted to the angular positions!

Check the function of the end position switches.

Check whether the actuating element is actually 100 per cent closed when the controller signals the corresponding end stop.

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

Check the correct function of the safety devices (for example emergency push off buttons / safety valves, etc.

Carry out the starting or the adjustment only in accordance with the instructions described in this documentation!

In case of adjustments on an actuator which is open and switched on (ready to use), there is a risk that live parts can be touched.

The adjustments must therefore be carried out only by an electrician or a person having adequate training, who is aware of the potential hazard.

3.2 Device safety

The electric actuator **NE**

- is a quality product which is produced in accordance with the recognized industrial regulations
- and which has left the manufactures 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 descriptions of these instructions, technically correctly and with the greatest possible precision.

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

The actuator must be used only for the purpose corresponding to its construction.

The actuator must be used only within the values specified in the technical data.

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

Open the actuator only to such an extent as described in this documentation!

Do not mount the actuator, start the actuator or carry out any adjustments on it, if the actuator, the supply lines or the part of the plant on which the it is flange-mounted is damaged!

Before mounting the actuator, check the free running of the actuating element.

Before the electrical installation of the actuator, check that all the lines to connected are voltage-free.

After completing the mounting or the adjustments, check the correct function and, if appropriate, compliance with the intended angular position of the actuator and also the function of the switches adjusted to the angular positions.

If the actuator is used in the open air, check, on an approximately six monthly cycle, that the device is dry on the inside.

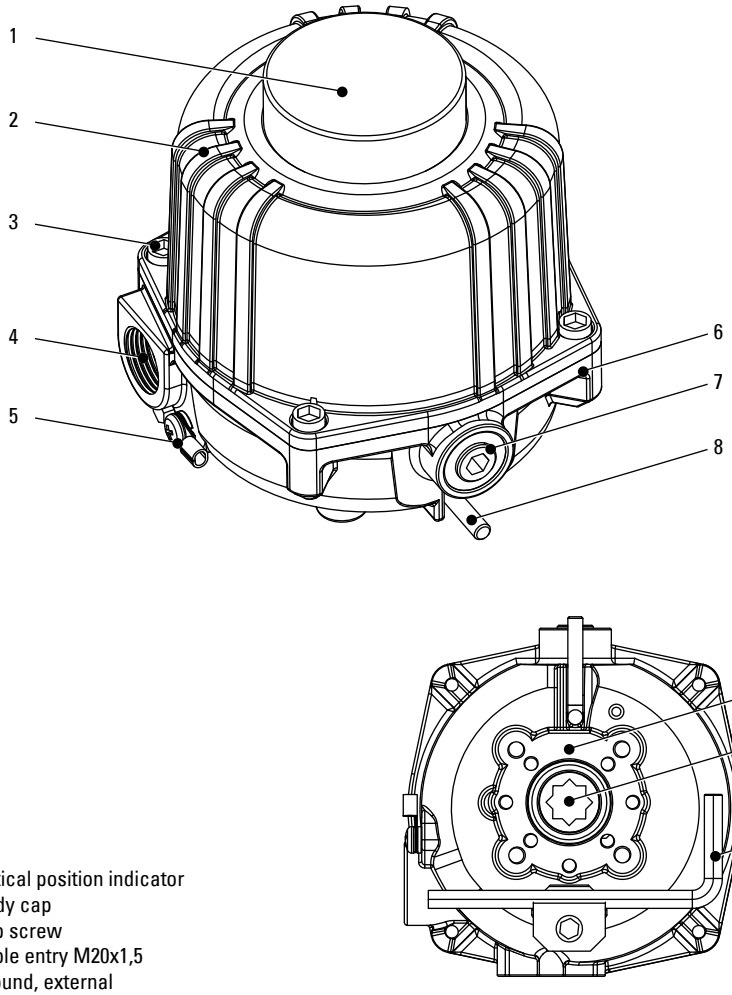
After fitting the housing cover, tighten the cross-point screws for fixing the housing cover with a torque screwdriver.

On this regard, observe the torque specified in chapter 8.3.

Do not use any abrasive, caustic or flammable cleaning aids for cleaning the housing, or any high-pressure cleaning devices.

4 Device description

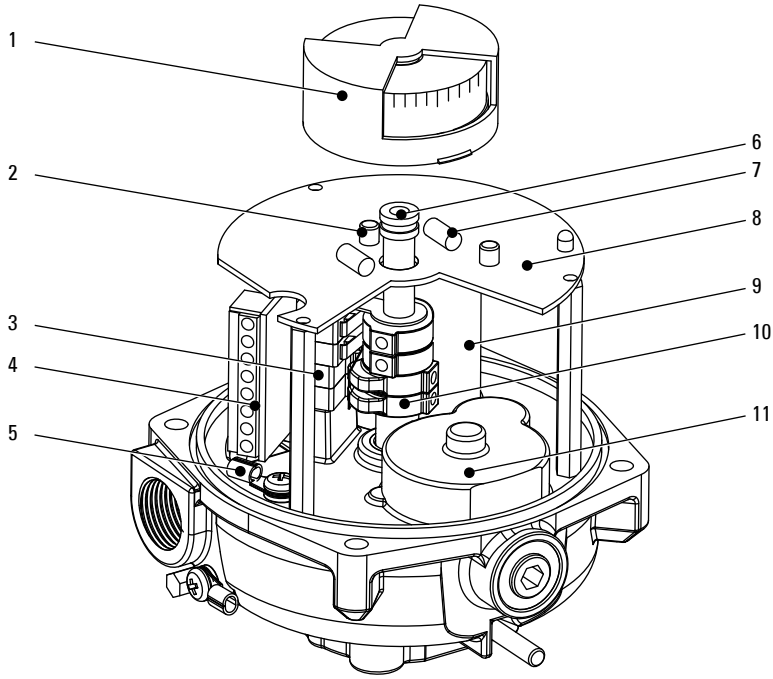
4.1 External parts



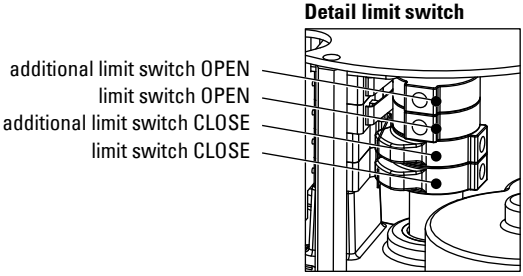
1 Optical position indicator
2 Body cap
3 Cap screw
4 Cable entry M20x1,5
5 Ground, external
6 Body
7 Manual override
8 Clutch lever for manual override
9 Mounting pad with hole cycle acc. to ISO 5211 F03, F04 and F05
10 Main shaft SW11
11 Allen key for manual override

Fig. 4.1 - External parts NE03

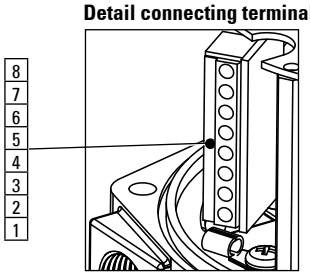
4.2 Internal parts



Detail limit switch



Detail connecting terminal



1 Optical position indicator
2 LED for optical position indicator
3 Limit switch
4 Connecting terminal
5 Ground, internal
6 Shaft for optical position indicator
7 Heater
8 Control board
9 Motor
10 Switch cam
11 Gear box

Fig. 4.2 - Internal parts NE03

4.3 Device variants

Ordering example: e.g. **NE034100**
= Electric actuator, type NE03, 230V 50/60Hz, with 2 additional limit switches

1.+ 2. Digit Product	**3.+ 4. Digit** Actuator type	**5. Digit** Voltage	**6. Digit** Options	**7.+ 8. Digit**
NE = Electric actuator	**03** = NE03 (30Nm)	**2** = 24V DC **4** = 230V AC	**1** = 2 additional limit switches (Standard)	**00** = reserved for mounting on valves

4.4 Name-plate

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

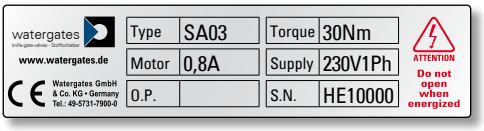


Fig. 4.3 - Name-plate

Type type of actuator. The type designation **NA** or **SA** (Watergates) is the same as **NE** (END-Armaturen)
Motor: nominal power supply [A]
O.P.: mounted additional options
Torque: nominal torque [Nm]
Supply: nominal voltage [V]
S.No.: serial number of the actuator

5 Ambient conditions

The actuators NE are designed for rough operating conditions.
However, some special conditions are to be observed for its mounting and subsequent operation.

Take care that

- **the actuator will be mounted in accordance with the mounting advice listed below.**
- **the actuator is used in accordance with the characteristic values specified on the name-plate or in the separate data sheet.**
- **mounting of the outdoors only after request.**
- **the actuators must be protected from environmental influences (e.g. UV radiation, frost, humidity).**

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

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

6 Assembly instructions

The mounting of the actuator NE is restricted to

- the mechanical mounting of the actuator on the part of the devices / machines / plant which contains the actuating element, and
- the connection of the actuator to the motor drive and control lines.

The actuator may be mounted in any desired position.

In the following description, we assume that you have carefully read the previous chapters and that you will observe the safety advice and the warning notes in chapter 3 „safety advice“ during the mounting / disassembly work.

If you have not yet read chapter 3 „safety advice“ please do so now and then return to this point!

The mounting and the electrical installation may be carried out only by trained specialist personnel with sound mechanical and electrical knowledge.

The **mechanical mounting** is identical in all variants.

The **electrical installation** is different, depending on the type of drive an equipment.
Therefore, for the electrical installation, observe the wiring diagrams at the end of these mounting and operating manual

The explanation of the designation will be found under

→ 4.3 “Device variants”.

6.1 Mechanical mounting

Two mounting variants are available:

- directly mounting, or
- mounting with bracket and stem (accessory)

Before mounting you have to fix a qualified mounting variant for your application.

Directly mounting will be able, if the dimensions of the shafts and the ISO - flanges of the actuator and the slide/valve/flap are the same. Differences of the dimension for the stem of the slide/valve/flap will be able to be equalized by available bushings (option) in some cases.

A mounting with bracket and stem will be necessary, if the differences of the dimensions between the shaft of the actuator and the stem of the slide/valve/flap are not able to be equalized by a bushing or the ISO-flanges did not match.

This mounting variant will also be used by high/low medium temperatures or voluminous isolated pipes.

By mounting with bracket and stem observe also the mounting device of the supplier of these parts.

Do not drill any holes into the body of the actuator- the damage of the actuator or a insufficient fastening of the actuator will be the result.

6.1.1 Directly mounting

Before starting the assembly of actuator and slide/valve/flap, observe that the actuator and the slide/valve/flap are in the same end position, e.g. both in OPEN or in CLOSE position. Furthermore the operating direction on actuator and slide/valve/flap must be the same.

Put the bottom side of the actuator to the slide/valve/flap that the stem will enter into the octagonal boring of the shaft of the actuator. If necessary use a appropriate bushing (options), to equalize differences of the dimension between the stem and the shaft.

Align the actuator to the slide/valve/flap.

Put the actuator onto the stem of the slide/valve/flap until the surface of the actuator cling to the ISO - flange of the slide/valve/flap. If this operation will be ponderous the shaft of the actuator will be driven onto the stem of the slide/valve/flap by slightly strokes without any tools.

Fasten the actuator with fit bolts. Observe the maximum depth of the threaded holes of the actuator. Would there be two sizes of hole circles to fasten the actuator, you have always to use the greater one.

Tighten the screws. Therefore observe the maximum torque of the choused screws.

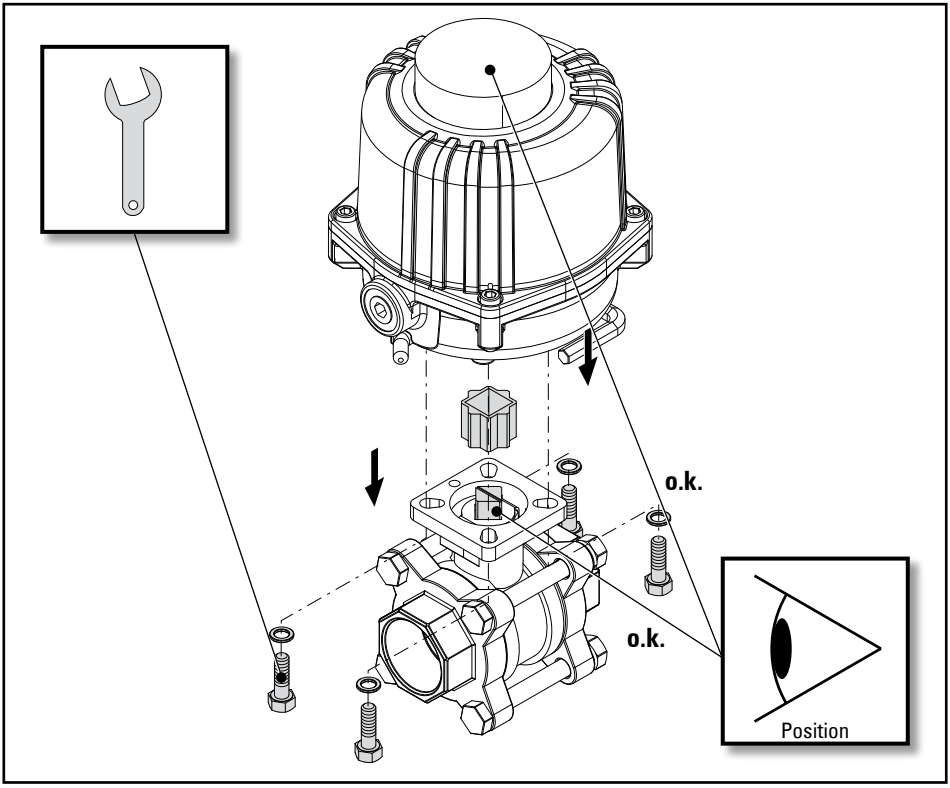


Fig. 6.1 - Assembly, directly mounting

6.1.2 Mounting via bracket and stem

Before starting the assembly of actuator and slide/valve/flap, observe that the actuator and the slide/valve/flap are in the same end position, e.g. both in OPEN or in CLOSE position. Furthermore the operating direction on actuator and slide/valve/flap must be the same.

Put the stem onto the stem of the slide/valve/flap. Therefore observe the position of possibly position indicators.

Put the bracket onto the slide/valve/flap and align them .

Fasten the bracket with fit bolts. Observe the maximum depth of the threaded holes of the actuator. Would there be two sizes of hole circles to fasten the actuator, you have always to use the greater one. Tighten the screws. Therefore observe the maximum torque of the choused screws.

Put the bottom side of the actuator to the slide/valve/flap that the stem will enter into the octagonal boring of the shaft of the actuator.

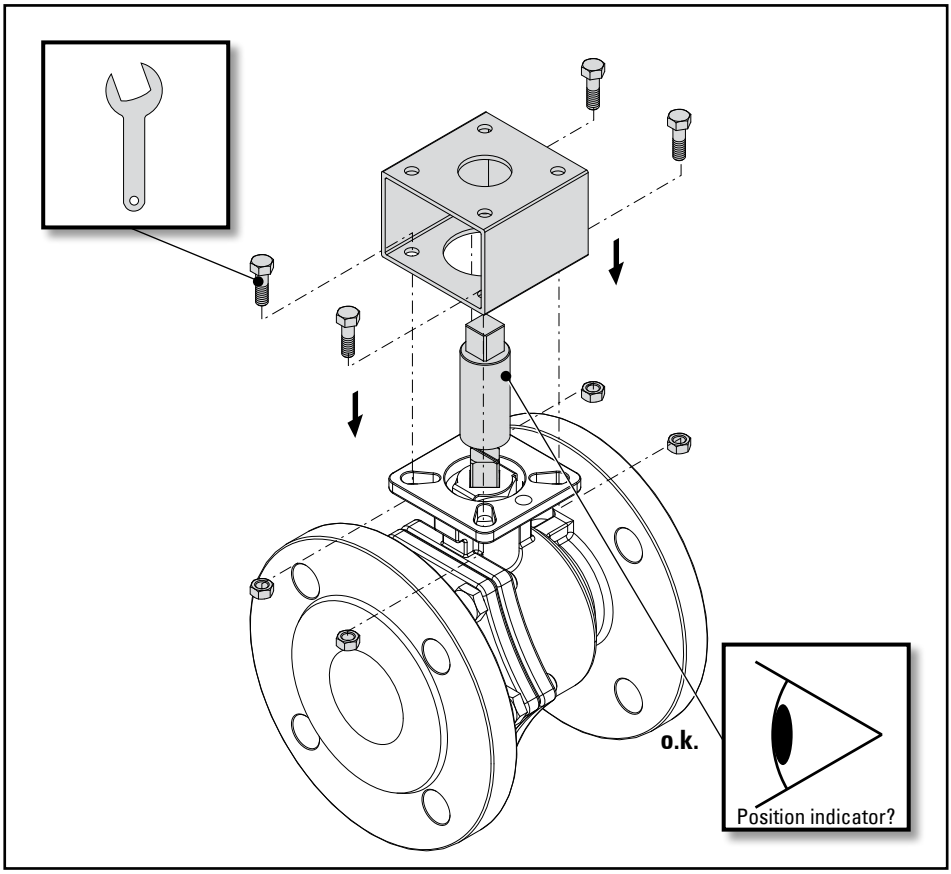


Fig. 6.2 - Assembly, mounting via bracket and stem

Align the actuator to the slide/valve/flap response to the console.

Put the actuator onto the stem of the slide/valve/flap until the surface of the actuator cling to the ISO - flange of the bracket. If this operation will be ponderous the shaft of the actuator will be driven onto the stem of the slide/valve/flap by slightly strokes without any tools.

Fasten the actuator with fit bolts. Observe the maximum depth of the threaded holes of the actuator. Would there be two sizes of hole circles to fasten the actuator, you have always to use the greater one.

Tighten the screws. Therefore observe the maximum torque of the chosen screws.

STOP **If necessary install a applicable protection device to prevent accidental touching into the bracket.**

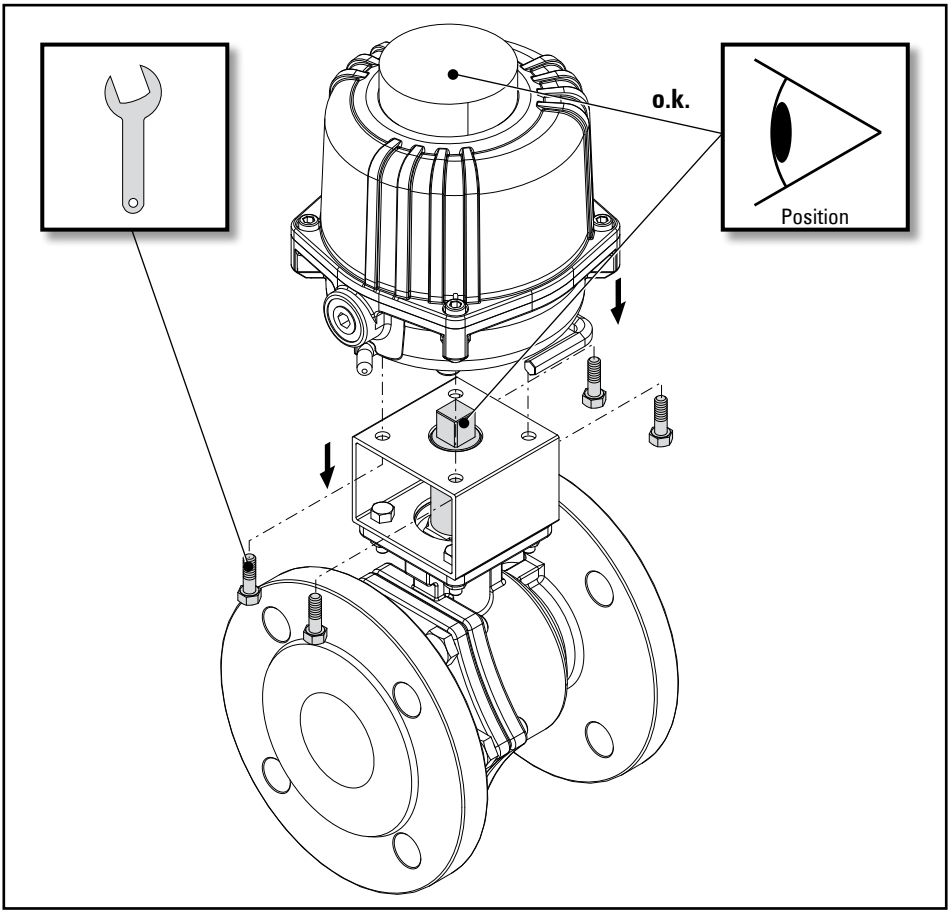


Fig. 6.3 - Assembly, mounting via bracket and stem

6.2 Electrical Installation

Please be sure that the voltage of the power supply must be in accordance with the specification of the name-plate

Protect the electric actuator appropriate to the current consumption.

Connect the actuator each with its own switching device.

6.2.1 Removing of the housing cover

Loosen the four socket screws with an Allen key and pull the housing cover hard to remove it!

For assistance, you can insert a screwdriver a few millimetres between housing cover and 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 IP 67 would no longer be ensured!

6.2.2 Stripping and connecting the cables / leads

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

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

Remove the sheaths of the motor drive cable and the control cable and the insulation from the leads in accordance with figure 6.3.

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

Lead the cable for the motor and the cable for the limit switches through the cable 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.

At actuators witch are provided with options additional operating manuals enclosed if possible. Please take notice of this manual, the references and the appropriate wiring diagram.

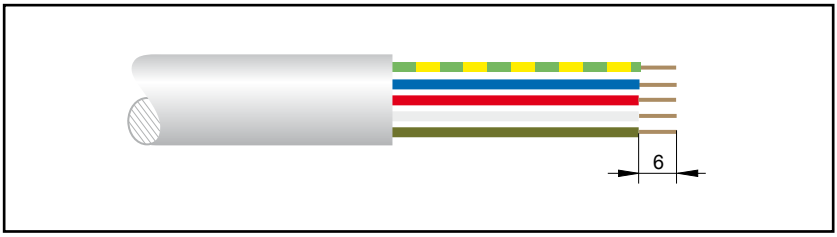


Fig. 6.4 -Electrical installation - stripping of the cables / leads

Don't miss to connect the two ground earth (Internal one marked by sticker, outer is between the mechanical bolt stops (see figure 6.5)).

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 fittings so firmly that the strain relief becomes effective and the cable lead through corresponds to the predefined degree of protection (IP67).

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).

Observe that no moisture come into the actuator along the cable. Install the cable by a bow into the actuator by example, so that moisture can drip of.

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.

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

→ **7. „Adjustment / Starting"**

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 screw it tight using the 4 screws. For this, observe the chapter

→ **7.6 „**Fitting the housing cover**".**

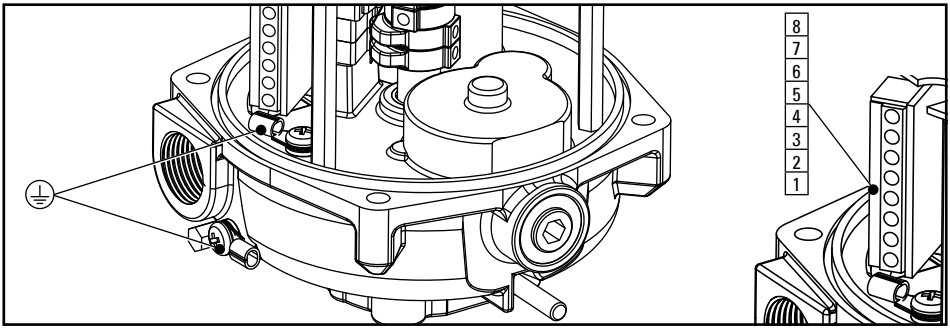


Fig. 6.5 -Electrical installation - connection of the earth conductor

7 Adjustment / Starting

Before you open the actuator, make adjustments by hand or start operating it you must have read chapter

➞ 3 „Safety advice“

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

Ensure that no liquid, moisture or any foreign bodies (sand, dust or the like) get into the open actuator

The following descriptions are based on the assumption that the actuator is installed on the device or the part of the plant which contains the actuating element and that the housing cover is fastened to the actuator.

If appropriate, please observe chapter

➞ 6 „Assembly“

on this point.

In order to carry out the adjustments you must remove the housing cover. On this point, see

➞ 6.2.1 „Removing the housing cover“

It is necessary to move the output drive shaft and , as a result, the actuating element and the cam disc. This can be done both via the electric drive and via the hand adjustment. In the following text, we will describe the electric method. The manual adjustment of the actuating element is explained under

➞ 8 „Emergency operation“

The following descriptions based on the assuming that the actuator drives clockwise to CLOSED position and counter clockwise to OPEN position by viewing from above to the optical position indicator. If necessary the following descriptions must be reverse corresponding to the operating direction.

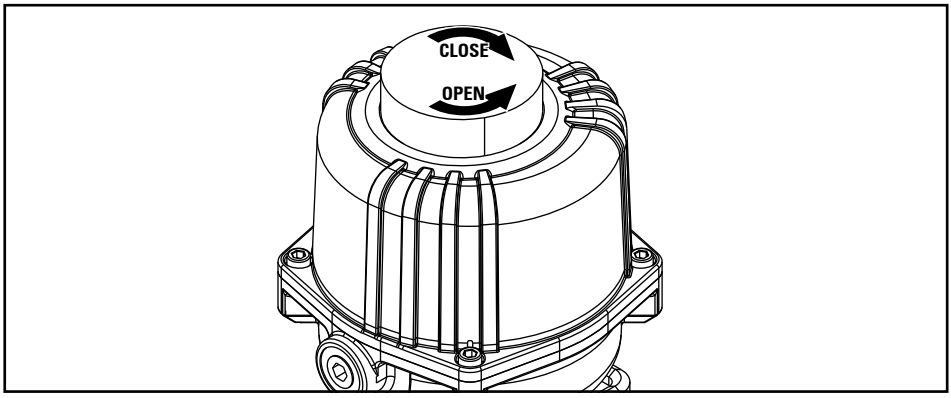


Fig. 7.1 - Rotating direction

7.1 Adjustment

Please turn to the wiring diagram at the end of these instructions. There you will find the components and terminals listed in the description.

Before you make adjustments to or changes to the settings on actuators which are installed in plants that are ready to operate, please find out whether (for example applying the motor drive voltage (power supply) for left / right operation) will influence further actuators or whether closing / opening micro switches will trigger (mal-)functions of other devices.

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

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

7.2 Check of the rotating direction of the actuator

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

To check the operating direction drive the actuator with the connected slide/valve/flap into a 45° closing position by using the manual override.

Supply the OPEN contact with current according to the wiring diagram and look to the operation direction of the actuator. The power shaft of the actuator must drive counter clockwise and open the mounted slide/valve/flap. By reaching the limit switch the actuator must switch off.

Supply the CLOSE contact with current according to the wiring diagram and look to the operation direction of the actuator. The power shaft of the actuator must drive clockwise and close the mounted slide/valve/flap. By reaching the limit switch the actuator must switch off.

If the rotating direction of the actuating element is reverse, stop the actuator immediately and check the wiring.

7.3 Adjustment of the limit switches

In case of an actuator which is open and ready to operate, when tools are being used (for example small screwdrivers, forceps, etc.) there is the risk that you may touch live parts (up to 230V AC) and thus receive a shock.

Take care the line in voltage of the actuator is switched off.

Drive the actuator in CLOSE position by using the manual override.

Loose the screw of the CLOSE switching cam with a suitable Allen key. Rotate the switching cam on the cam shaft until the limit switch is activated. You can hear it by a Click of the limit switch.

Tighten the screw without any readjustment of the switching cam.

Reprise the above procedure for the additional CLOSE limit switch.

We advise to adjust the cam of the additional limit switch at a position shortly before the standard limit switch.

Drive the actuator in OPEN position by using the manual override.

Loose the screw of the OPEN switching cam with a suitable Allen key. Rotate the switching cam on the cam shaft until the limit switch is activated. You can hear it by a Click of the limit switch.

Tighten the screw without any readjustment of the switching cam.

Reprise the above procedure for the additional OPEN limit switch.

We advise to adjust the cam of the additional limit switch at a position shortly before the standard limit switch.

The correct adjustment of the limit switches must be checked in the following. Please notice the advices in chapter

→ 7.5 „Verify the adjustment“

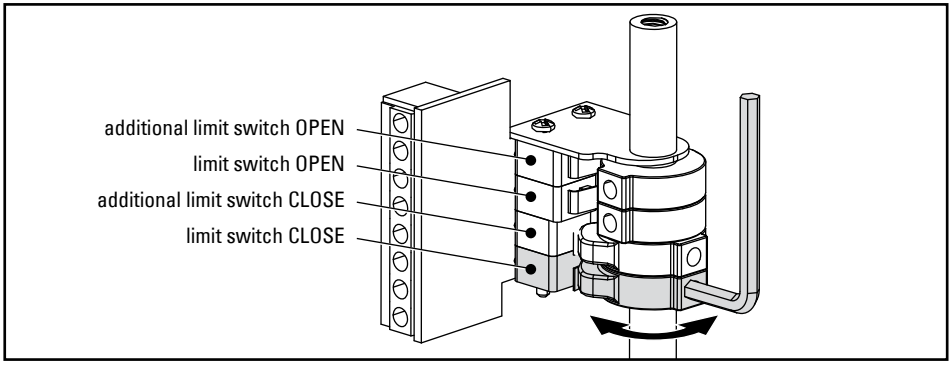


Fig. 7.2 - Adjustment of the limit switches

7.4 Adjustment of the optical position indicator

In case of an actuator which is open and ready to operate, when tools are being used (for example small screwdrivers, forceps, etc.) there is the risk that you may touch live parts (up to 230V AC) and thus receive a shock.

In some times an adjustment of the optical position indicator is necessary.

Drive the actuator in CLOSE position by using the manual override.

Loose the screw of the signal cap of the optical position indicator with a suitable Allen key moderately. Rotate the cap on the cam shaft until the Optical position indicator shows the right position.

Tighten the screw without any readjustment of the signal cap.

Attention! The maximum torque of the screw is 0,5Nm!

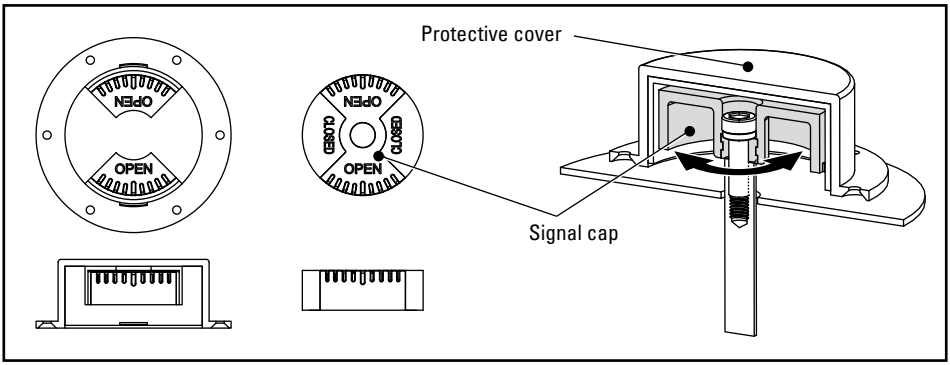


Fig. 7.3 - Adjustment of the optical position indicator

7.5 Verify the adjustment

In case of an actuator which is open and ready to operate, when tools are being used (for example small screwdrivers, forceps, etc.) there is the risk that you may touch live parts (up to 230V AC) and thus receive a shock.

Verify the adjustment and the positions of the limit switches, the additional limit switches and the optical position indicator.

Drive the actuator electrically or manually with the manual override in each end position. Observe that the limit switches and the additional limit switches works and that the optical position indicator shows the right position.

Repeat the adjustment if necessary.

7.6 Mounting of the housing cover

Before you mount the housing cover onto the actuator, check whether

- **the switching cams of the limit switch adjust correctly,**
- **the switching cams of the additional limit switch adjust correctly,**
- **the actuating element is actually 100 percent closed when the controller indicates the corresponding end stop,**
- **the position indicator adjust correctly,**
- **the connecting leads are correctly screwed tightly in the terminals.**

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

Ensure that the leads are not trapped between the housing and the housing cover.

Place the housing cover onto the actuator. The signal cap of the optical position indicator must be centric to the translucent protective cover of the housing cover.

Tighten the four screws of the housing cover by using an suitable Allen key.

Attention! The maximum torque of the body screws are 5Nm!

7.7 Starting

Before you start the actuator you must have read the chapter

→ 3 „Safety advice“

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

The starting of an actuator which is mounted on a plant that is ready to operate (for example in a refinery or in a plant in the chemical industry) must be carried out

- **only in compliance with the plant-specific regulations!**
- **only after the adjustments / operation described in sections**

→ 7.1 up to 7.5

have been carried out.

8 Emergency operation (manual override)

In the case of power or controller failure or a fault in the actuator, in order to be able to adjust the actuating element in an emergency, the actuator has the capability for manual adjustment.

Don't use the manual override at electric powered actuators.

If necessary, inform the shift foreman / safety engineer or the works 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 mean of suitable measures.

- Take care about the turning direction of manual override.
- Clutch-in the manual override with the clutch lever (see figure 8.1).
- Insert an Allen key into the hexagon of the manual override. A suitable Allen key is provided in a clamp on the rear side of the actuator.
- To close a connected slide/valve/flap turns the Allen key clockwise. To open the slide/valve/flap turns the Allen key counter clockwise.
- Take notice of the optical position indicator and don't drive the actuator out of the rotation angle.

To prevent any injury at humans or damage at the actuator pull the Allen key away from the manual override by ending the manual operation. Clutch-out the manual override with the clutch lever to allow a normal operation.

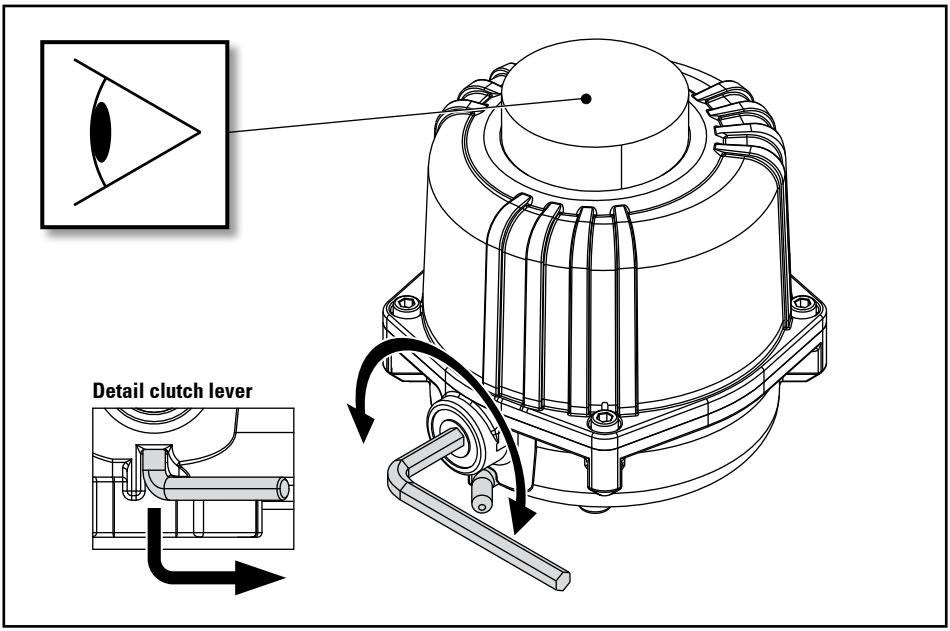


Fig. 8.1 -Manual override

9 Faults

If, during the test run or during operation, a functional fault of the actuator should occur, you are requested to carry out the adjustment to the actuating element (in an emergency) by hand.
For this observe

➡ 8 „Emergency operation“

If necessary inform the shift foremen / safety engineer or the works manger 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.

Next using the following list, attempt to find the reason for the causes of the fault and if it lies within your capabilities, to correct this.

Do not, however, carry out any repairs on the actuator!

Isolate the defective actuator from the power supply!

In the event of a defect in the actuator, make contact with the manufacturer.
The telephone number will be found on the inside front cover of these mounting and operation manual.

9.1 Fault causes

- Is the power supply to the actuator and to the controller switched on?
- Is the controller supplying the necessary signals?
- Are the leads from the controller to the actuator undamaged ?
- Is the actuator correctly flange-mounted to the actuating element ?
- Does the actuating element move freely?
- Are the end stop switching cams set correctly?
- Are the other switching cams set correctly?
- Are the leads in the terminal connected correctly and screwed tight?
- Can the actuating element be rotated into the end positions by means of the manual adjustment of the actuator?

9.2 Disassembly

Although the disassembly of an actuator in principle proceeds in the reverse sequence to the mounting, some essential points should be clarified before.

Will the actuator to be disassembled replaced immediately by another?
If not, in which position should the actuating element be following the disassembly?

Must the actuating element be fixed in its intended position?

If appropriate, does the production process of the plant need to be stopped?

Is it necessary to inform specific personnel about the disassembly?

9.2.1 Electrical disassembly

Using the actuator, rotate the actuating element into the intended position!

Switch off all the poles of the power supply and the controller of the actuator.

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

- **the inadvertent starting up of the part of the devices / machines / plant which is affected by the disassembly, or**
- **the switching on of the power supply / the controller of the actuator.**

Open the housing cover by loosening the screws and pulling the housing cover hard to remove it. On this point , see chapter

→ 6.2.1 „Removing the housing cover“.

Loosen the screws of the terminals and pull the leads out of the terminals.

Loosen the cable fittings and pull the cables out of the device.

Insulate the bare lead ends if the cables are not also being disassembled or are not to be immediately reconnected to another actuator.

9.2.2 Mechanical disassembly

Loosen the four screws of the actuator and pull the actuator from the mounting position.

If appropriate, screw the housing cover back on. On this point, observe chapter

→ 7.6 „Mounting of the housing cover“.

10 Maintenance / Cleaning

10.1 Maintenance

The actuators of the series **NE** are maintenance free.

Check on an approximately six monthly cycle, that the device is dry inside, at least after 1/2 year.

In the case of an actuator which is open and ready to operate, when tools are being used (for example small screwdrivers, forceps, etc.) there is the risk that you may touch live parts (up to 230V AC) and thus receive a shock.

In the event of a defect in the actuator, make contact with the manufacturer. The telephone number will be found on the inside front cover of these mounting and operating instructions.

Open the housing cover by loosening the 4 screws and pulling the housing cover hard to remove it. In this context, see:

➡ 6.2.1 „Removing the housing cover“

If you find moisture in the interior of the device, attempt to find the cause for this and eliminate it.

- Is the moisture condensation?
- Is the circumferential rubber sealing ring damaged?
- Do the metric screw fittings leak?
- Are there cracks in the housing or the housing cover?

If you determine that there is damage to the actuator, isolate the device from the power supply. However, before doing this, it is essential to refer to chapter:

➡ 3 „Safety advice“

10.2 Cleaning

Clean the housing of the actuator 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.

Prevent moisture or liquid penetrating into the interior of the device

11 Technical data and dimensions

11.1 Technical data

General	
Protection acc. to EN 60529	IP 67
Dimensions (B x H x T)	113 x 131,5 x 117mm
Weight	1,46kg
Body	Aluminium, Polyester coated
Mounting	DIN ISO 5211 • F03 (Ø36mm) • F04 (Ø42mm) • F05 (Ø50mm)
Output shaft	Internal octagon SW11
Cable entry	1x M20x1,5
Mounting position	Preferred with vertical upward optical position indicator. All other installations only after request.
Features	Manual override after power failure
Electrical data	
Line voltage	• 24V ±10%, DC • 230V ±10%, 50/60Hz
Heater	2x 1,5W (3W)
Duty cycle	50%
Capacity of the additional limit switch	max. 5A bei 230V AC
Performance data	
Torque	30Nm
Current consumption	• 24V DC: 0,8A (3A) • 230V AC: 0,1A (1,1A)
Operating time for 90°	• 24V DC: 7s • 230V AC: 12s
Rotation angle	90° ±5°
Operating conditions	
Ambient temperature	-20 ... +70°C
Storage temperature	+10 ... +30°C
Humidity	max. 90% absolutely (no condensed)
Conformity	
EC Machinery Directive	2006/42/EG
EC EMC directive	2004/108/EG
EC Low Voltage Directive	2006/95/EG

Please notice: The performance is dependent of the necessary torque, all stated data regarded under best conditions.
Tolerance ±20%! Value in brackets = break-away current.
Please take notice to the technical informations in the data sheet.

11.2 Dimensions

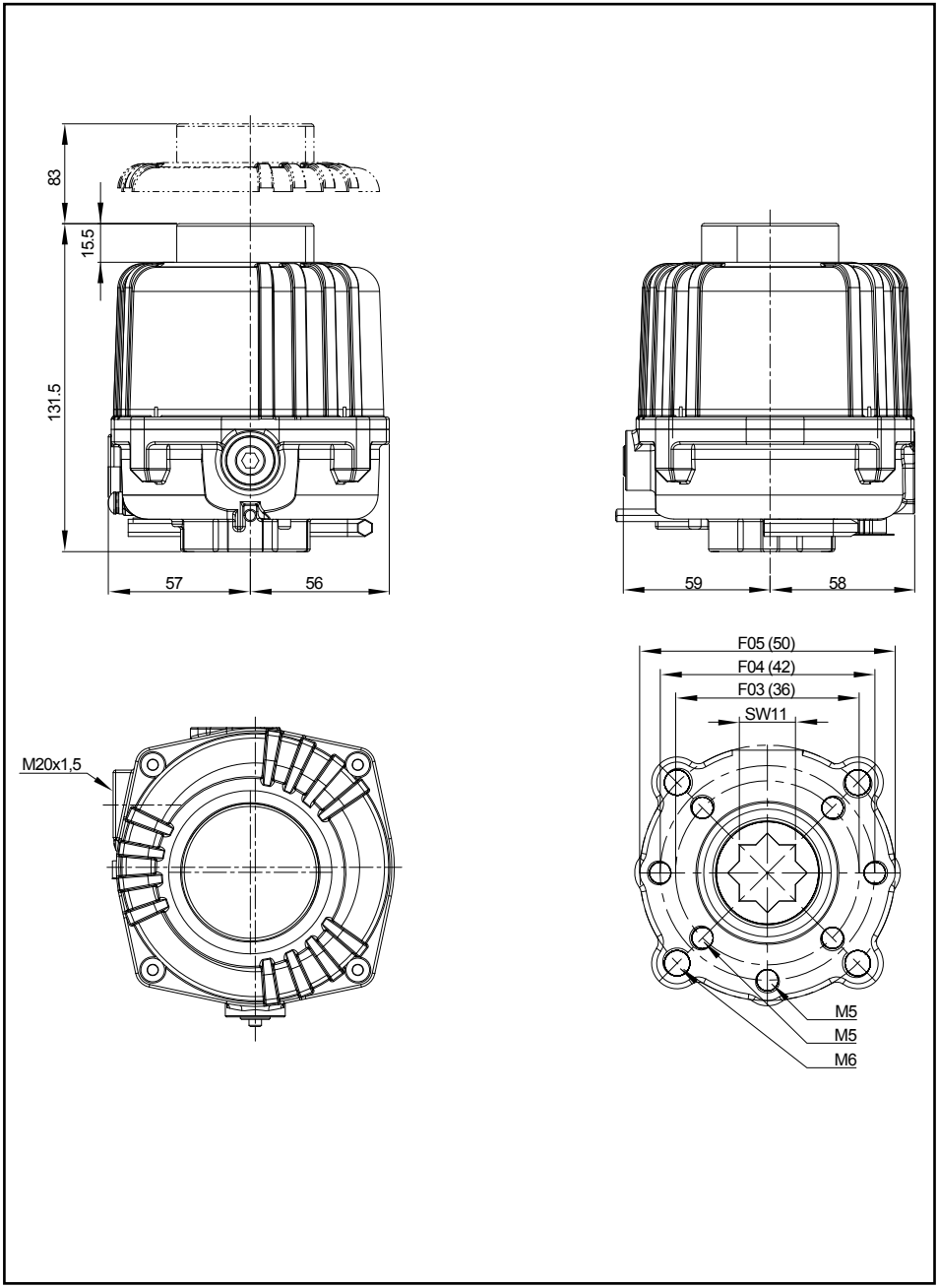
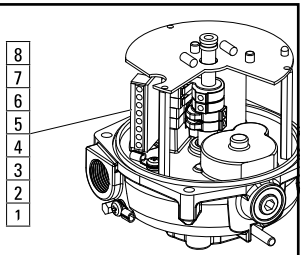
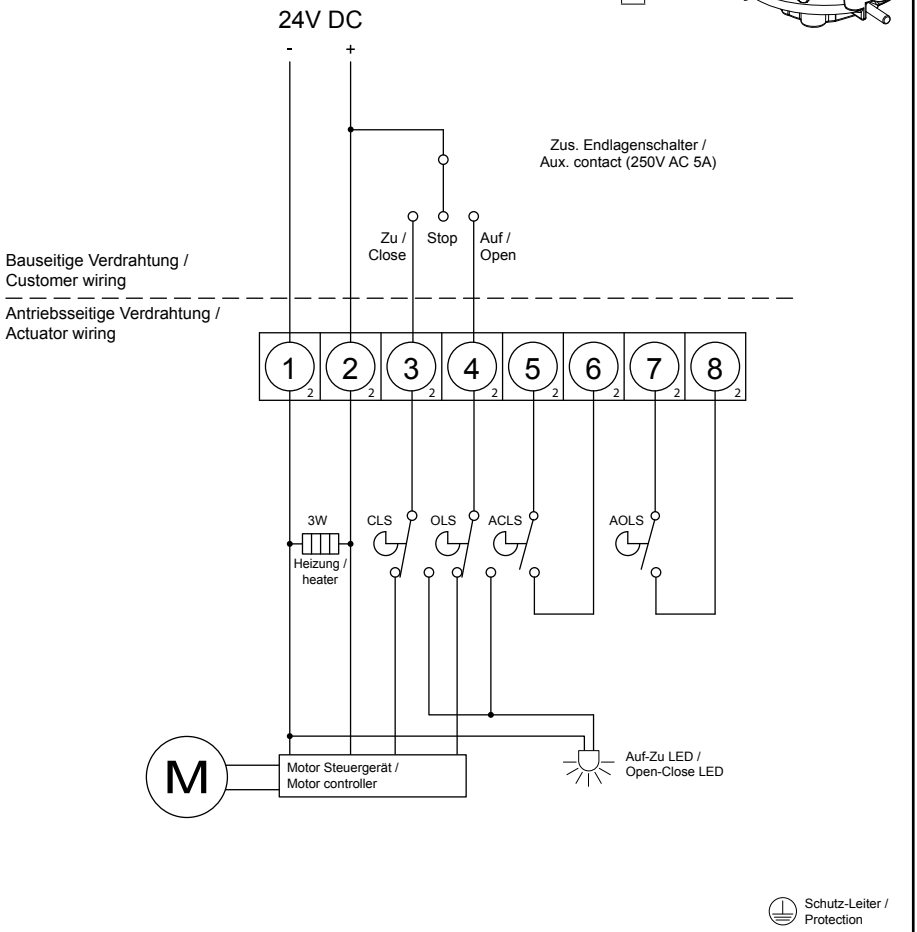


Fig. 11.1 - Dimensions

11.3 Wiring diagram - 24V DC (only for standard actuators without options)

CLS: Endlagenschalter 'ZU' / limit switch 'CLOSE' (250V AC 5A)
OLS: Endlagenschalter 'AUF' / limit switch 'OPEN' (250V AC 5A)
ACLS: Zus. Endlagenschalter 'ZU' / aux. limit switch 'CLOSE' (250V AC 5A)
AOLS: Zus. Endlagenschalter 'AUF' / aux. limit switch 'OPEN' (250V AC 5A)





Terminal plan shows the actuator in intermediate position.
Switches are not actuated!

Fig. 11.5 - Wiring diagram for actuator 24V DC

11.4 Wiring diagram - 230V AC (only for standard actuators without options)

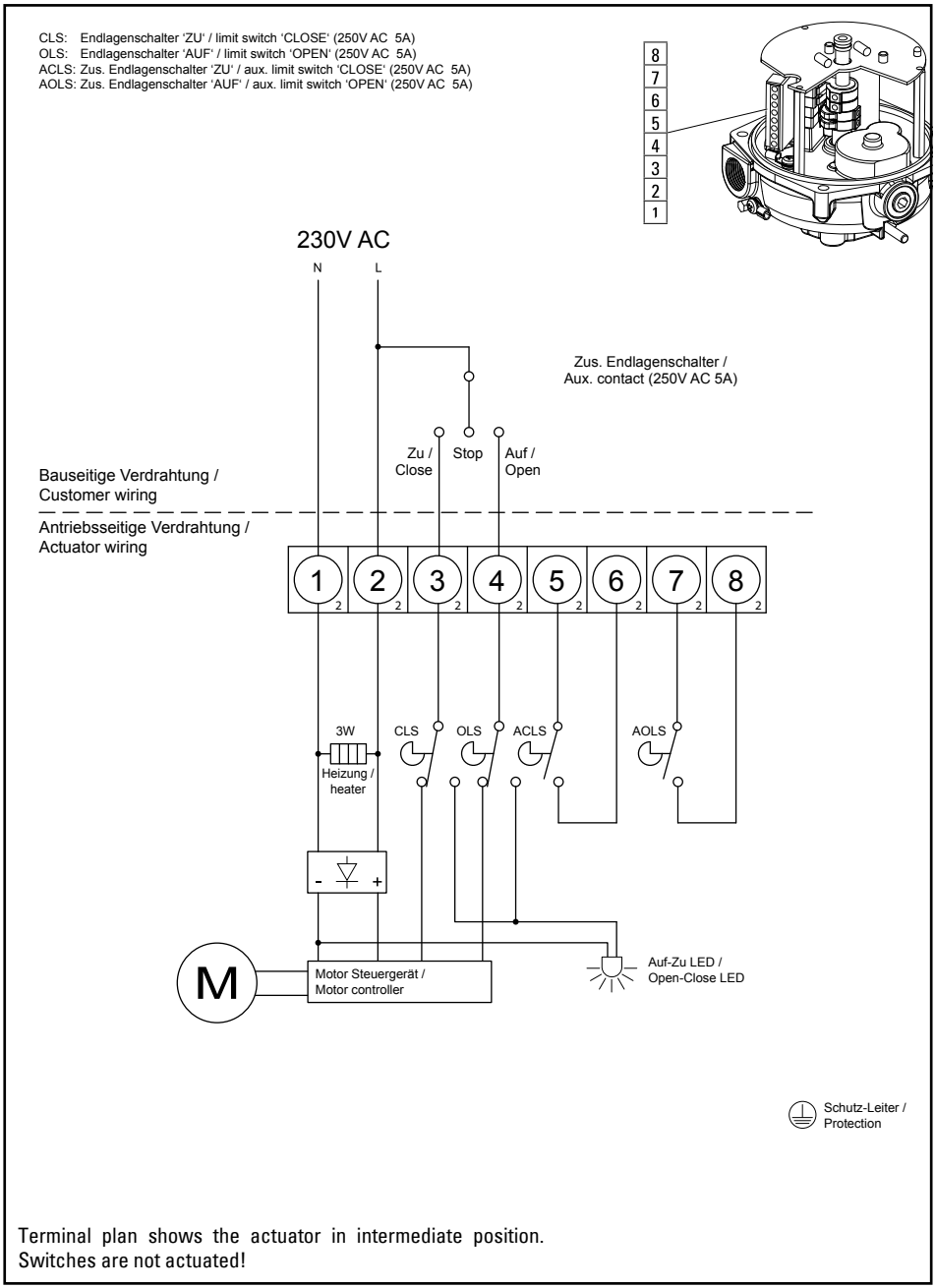


Fig. 11.4 - Wiring diagram for actuator 230V AC

12 **Index**

Qualität von Anfang an.

(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
NE03	Electric actuator, 30Nm
NE05	Electric actuator, 50Nm
NE06	Electric actuator, 60Nm
NE09	Electric actuator, 80Nm
NE15	Electric actuator, 150Nm
NE28	Electric actuator, 280Nm

Article	Description
NE38	Electric actuator, 380Nm
NE50	Electric actuator, 500Nm
NE60	Electric actuator, 600Nm
NE80	Electric actuator, 800Nm
NE10	Electric actuator, 1.000Nm

and all variations of these articles

(4) of the company: **END-Armaturen GmbH & Co. KG**
Oberbecksener Str. 78
D-32547 Bad Oeynhausen

Documentation authorized: **Lars-Michael Rolfsmeier**
Oberbecksener Str. 78
D-32547 Bad Oeynhausen

(5) Herewith we declare that the above mentioned actuators 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.

The actuators are further in conformity with the regulations of the following directives:
Low Voltage Directive 2006/95/EC
Directive on Electromagnetic Compatibility (EMC) 2004/108/EC

Applied harmonized standards, in particular:

EN ISO 12100-1: 2004	**Safety of machinery - Basic concepts, general principles for design - Part 1**
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**
DIN EN 60204-1:2006	**Safety of machinery - Electrical equipment of machines - Part 1**
DIN EN 15714-2:2009	**Industrial valves - Actuators - Part 2: Electric actuators for industrial valves**

(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, 20. Mai 2011, on behalf:

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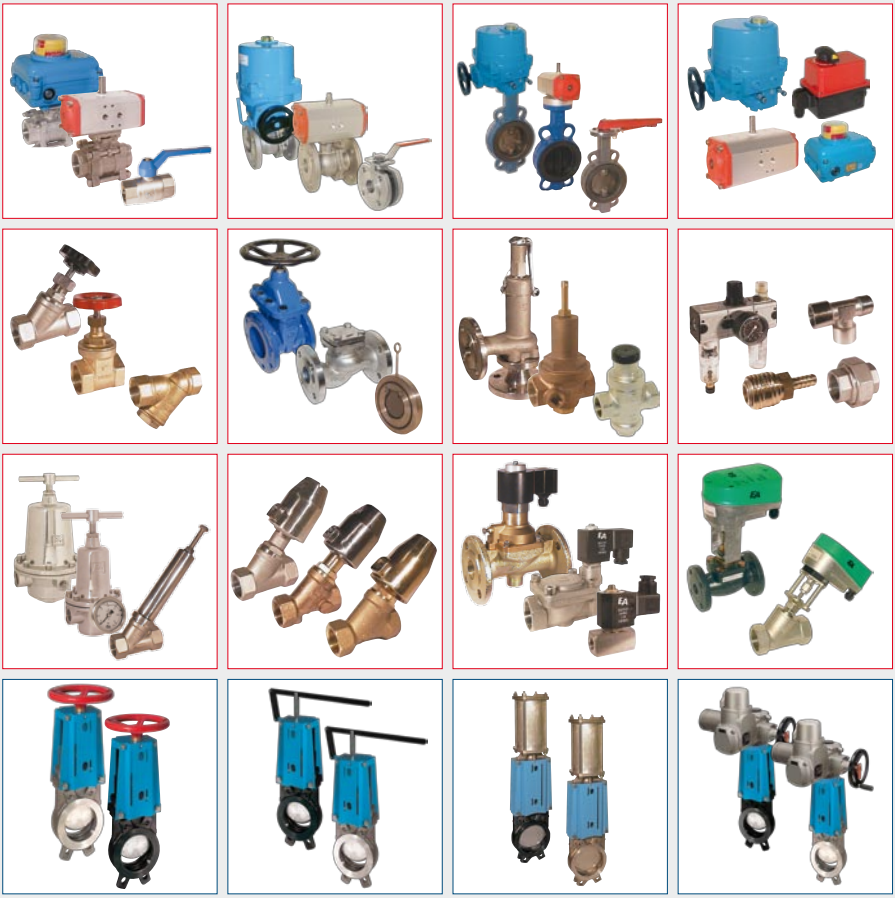
Oberbecksener Str. 78
32547 Bad Oeynhausen · Germany
Telefon: +49 (0)5731 - 7900-0
Telefax: +49 (0)5731 - 7900-199
http://www.end.de · post@end.de

Karl-Hendrik Storch

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



END ARMATUREN

Qualität von Anfang an.

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