



STEAM EQUIPMENT

INSTALLATION AND MAINTENANCE INSTRUCTIONS
LINEAR ELECTRIC ACTUATORS WITH FAIL-SAFE FUNCTION
Type ELR

ELR2.1/ ELR2.2/ELR2.3

SAFETY INSTRUCTIONS

Basic safety requirements

The end user or the contractor must ensure that all legal requirements, directives, guidelines, national regulations and recommendations with respect to assembly, electrical connection, commissioning and operation are met at the place of installation.

The end user or the contractor are responsible for implementing required protective measures on site, such as enclosures, barriers, or personal protective equipment for the staff.

All personnel working with this device must be familiar with the safety and warning instructions in this manual and observe the instructions given. Safety instructions and warning signs on the device must be observed to avoid personal injury or property damage.

Prior to working on this product, the staff must have thoroughly read and understood these instructions and, furthermore, know and observe officially recognised rules regarding occupational health and safety.

Assembly, electrical connection, commissioning, operation, and maintenance must be carried out exclusively by suitably qualified personnel having been authorised by the end user or contractor of the plant only.

Prerequisites for safe and smooth operation:

- Correct transport, proper storage, mounting and installation, as well as careful commissioning.
- Only operate the device if it is in perfect condition while observing these instructions.
- Immediately report any faults and damage and allow for corrective measures.
- Observe recognised rules for occupational health and safety.
- Observe the national regulations.
- During operation, the housing as well as internal parts warm up and surface temperatures > 60 °C may occur. To prevent possible burns, we recommend to check surface temperature with an appropriate thermometer prior to working with device and to wear protective gloves, if required.

TECHNICAL DESCRIPTION

Identification

Each actuator has a name plate, which provides information about the maximum operation conditions and has a unique serial number (F.-Nr.).

Technical data

Please refer to the technical data sheets

Service conditions

The actuators are suitable for installation in industrial units, in water or power plants with a low pollutant concentration.

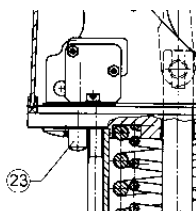
In the open, respectively an environment having high pollutant concentrations, e.g. areas having a high traffic rate, industrial areas (chemical plants, sewage works, etc.) coastal regions and open sea, the actuators must additionally be provided with external blinds of non-corrosive material and also with a special lacquering.

In open air the linear actuator can be protected with an additional coverage against

- rain
- direct insolation

Functioning

Manual operation



The linear actuator has an electric regulation set by hand, which is actuated via two push-button keys [23] located on the bottom side. The push-button keys are functioning only, if the actuator is electrically connected to the operating voltage.

Mounting

Mounting position

The installation position is arbitrary, however not overhead.

In case of an installation position with horizontally situated driving rod the linear actuator is mounted in a way that both columns of the yoke are situated in a vertical level one above the other

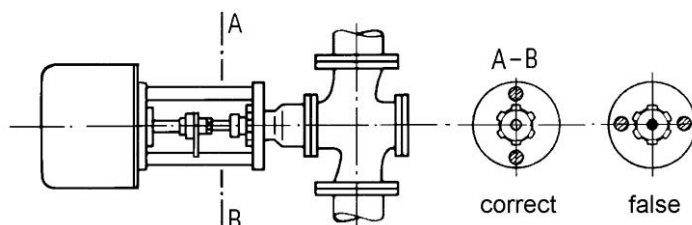


Figure 0-1: Assembly of the actuator with yoke with horizontally situated driving rod

Assembly with valve

Before making the assembly check whether

- the technical data of the linear actuator conform to the conditions of application.
- the valve is complete (tie-bar at actuator or valve).
- the thread of the valve stem conforms with the threaded bush of the linear actuator.

Make the electric connection before mounting the actuator type NR 2 to a valve.

- Remove Coupling parts anti rotation bar threaded bush by loosening hexagon socket screws [5]
- Move driving rod into middle position by manual override.
- Lift the actuator over the valve stem and put it onto the bonnet or yoke of valve.
- Assemble the coupling according to figure 0-1:
Screw counter nut onto the valve stem, Lay anti rotation bar over the valve spindle and screw threaded bush onto valve stem
- Tighten with hexagon socket screws [5]
- Tighten actuator with impact nut or fixing screws/fastening nuts [7]

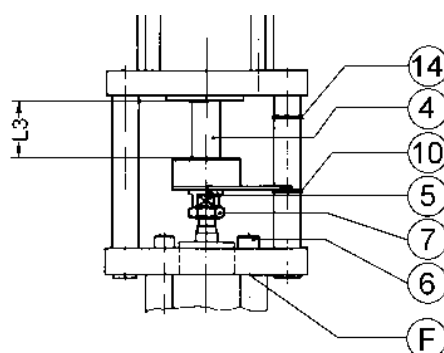


Figure0-1: Coupling / mounting the actuator onto a valve

Please pay attention that no offset occurs between the driving rod of the actuator and the spindle of the valve. Otherwise this would lead to a loss of performance and premature wear.

ELECTRIC CONNECTION

Make sure that, appropriate power supplies are utilised assuring that during normal operation or in case of plant or plant parts failure no dangerous voltages can reach the appliance.

If you do not observe this warning, death, severe body injuries or essential material damages can occur.

For short-circuit protection and for disconnecting the actuator from the mains, fuses and disconnect switches have to be provided by the customer. The current values for respective sizing can be derived from the current consumption of the motor (refer to nameplate).

The electrical connection must be carried out exclusively by suitably qualified personnel.

- Prior to connection, observe basic information contained in this chapter.
- After connection but prior to applying the voltage, observe the <Commissioning> chapter.
- Carry out mains connection only with power supply switched off! Safeguard against unintentional switching on.

- For installing electric lines and the mains connection the regulations for the installation of power systems and equipment, as well as the provisions of the local Electricity Board must be observed!
- Check the mains connection voltage and frequency for conformity on the name plate of the linear actuator and also the name plate of the driving motor.
- The conductor cross section must always be laid out according to the respective power consumption of the linear actuator and the required length of the line. Minimum cross section of the conductor for this type of linear actuator: 1 mm²

In case of a fault: Hazardous voltage while protective earth conductor is NOT connected! Electric shock possible.

→ Start running the device only after having connected the protective earth conductor.

Short-circuit due to pinching of cables! Electric shock and functional failures possible.

Cable connection

Hazardous voltage! Electric shock possible.

→ Disconnect device from the mains before lifting hood.

On principle the wiring diagram enclosed or glued into the hood is applicable.

Replace blanking plug by suitable cable glands.

1. Remove cable sheathing.
2. Strip wires.
3. For flexible cables: Use end sleeves according to DIN 46228.
4. Connect cables according to order-related wiring diagram.

The enclosure protection IP... stated on the name plate is only ensured if suitable cable glands are used.

COMMISSIONING

The thrust of the actuator and set of travel has to be compared with the valve data.

Overstressing can cause serious damage to the valve.

Pay attention to moving parts during the mounting and adjustment. There exists the danger of being injured and the risk of essential material damages.

The linear actuator without hood may be short-term-operated only during test run respectively for indispensable adjusting works on electrical options such as potentiometer, travel switch or electronic positioner.

During this activity there exists access to dangerous live, blank, moving and rotating parts. In case of inappropriate or incautious execution of the adjusting works can cause death, severe physical injuries or essential material damages.

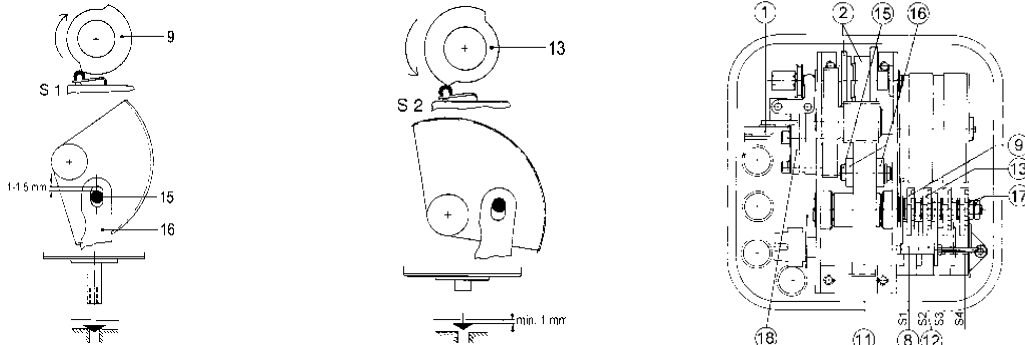
The operation of the linear actuator without hood is interdicted for a purpose different to what has been described as mentioned before.

Setup of the limit switching

Setup of limit switches in direction extending rod

- Cut off voltage from the device (simulating voltage failure) and travel actuator into closed position by means of closing springs
- Turn the cam [9] with a screwdriver (blade width 3 mm) so far, until the switching bevel of the cam will be adjacent to the switching roller of the switch, without actuating the switch though

As the driving rod is already in closed position, the gear – upon approaching the end position by means of the motor – will be moving in the end position until the switch will be actuated via the cam bevel and will stop the motor. During this after-run of the gear the bolt in the oblong hole [15] of the connection levers [16] will move about 1 to 1.5 mm down. That will ensure that the full closing pressure of the closing springs is available.



End position “Close”
extending rod

End position “Open”
retracting rod

Top view on actuator

Figure 0-1: Position of the limit switches

Setup of limit switches for retracting rod:

- Move rod with manual operation to the upper position
- Turn cam [13] with a screwdriver (blade width 3 mm) so far, until the switching bevel of the cam will actuate the switch.

It must absolutely be observed that the motor is electrically switched off via the limit switch. Otherwise damages to gear and malfunction of actuator may occur.