Assembly Instructions

for GULEX valve actuators

Please note before commissioning!

In order to guarantee safe, problem-free functional performance, the entire System design must be taken into account when selecting an actuator-valve combination. Valve functions, material compatibility, pressure and temperature ranges, appropriate Assembly, operation and maintenance are the responsibility of the system designer and the user.

The services, technical data, dimensions and weights specified in our catalog correspond to the latest status at the time of publication. The images are non-binding.

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Notes on types P4 and P7

Dear user,
we are pleased that you have chosen our products.

We provide you with dosing and control devices that can be controlled directly with commercially available control devices without the interposition of external control devices.

The following instructions are provided for this purpose, which must be observed by the operator:

Note the nameplate and order code

Power supply: 24 volts D.C. smoothed

The actuator already reacts to a control signal of approx. 0.006 mA (0.0033 volts). 0.006 mA correspond to approx. One switching point (calculation at 20 revolutions). This sensitivity can, but does not have to be used.

A stable, hum-free, interference-free, non-oscillating control current loop is an absolute prerequisite for operating the actuator. Otherwise the actuator may fail because it also reacts with the smallest, mostly invisible OPEN-CLOSE switchovers.

The parameters required for this on commercially available control devices must be selected so that a clean control signal is delivered as described.

The electronics of the actuator can only send the specified control signals within the measuring range of 4 - 20 mA or 2 -10 volts D.C. (Observe the nameplate). Control signals that are outside the range can cause adjustment errors.

The OPEN-CLOSE switching cycles of the actuator must not be less than 0.5 s. The duty cycle ED is approx. 80%.

Protection and operating light

Only actuators of type series N802 and K8

The actuators are equipped with an operating light and a thermal fuse. This does not apply to actuators of the TA 70 series. Their electrical protection must be carried out externally!

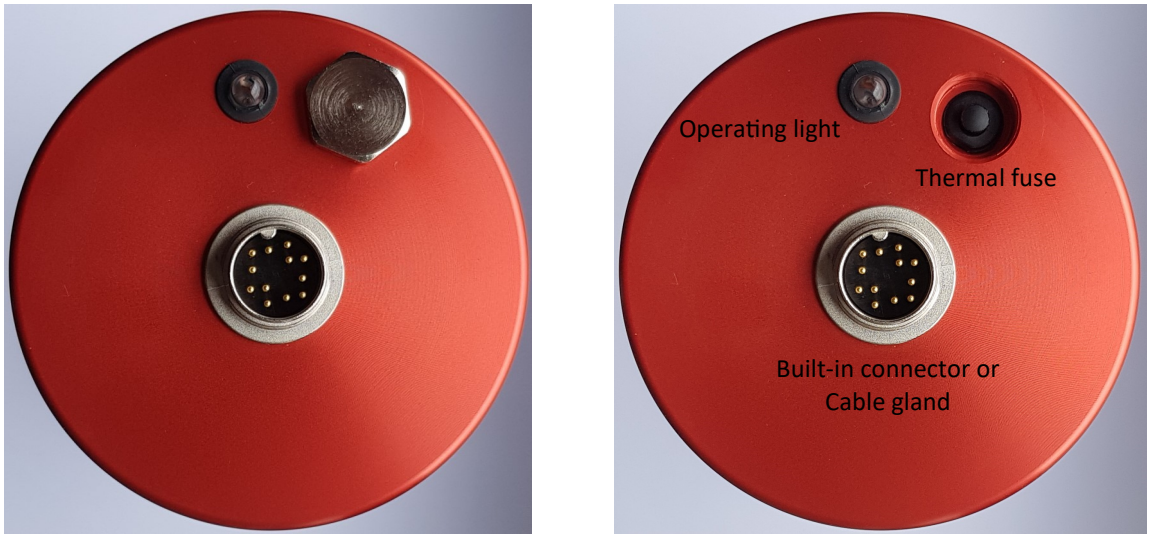

Fig .: Top view actuator with and without cover nut thermal fuse

Function

If the actuator is overloaded, the fuse reacts and the operating light goes out.
Open the cover nut (SW 14) with an open-end wrench and press the button on the fuse that is now visible. The actuator is ready for operation again. Close the fuse again with the cover nut and its sealing element. Investigate why the fuse tripped.

Protection class IP 67

Only actuators of type series N802 and K8

In order to achieve protection class IP 67, the actuators are equipped with the following design features

- The actuator shaft is sealed with a shaft seal
- The cover hood is equipped with O-rings
- For actuators with a plug connection, the built-in plug must be screwed to the cable socket!

Notes on operating the actuators with spindle valves and pressure regulators

The actuator and valve have been delivered to you assembled and adjusted with a test report. The technical data and information listed in the final inspection and test report, as well as additional type-specific information sheets, are an essential part of these instructions. In the event of a complaint, the unit (actuator with mounted valve) must be sent in!

OPEN-CLOSE alternating operation, duty cycle and polarity

- The switching frequency of the motor must not be less than 0.5 s
- The duty cycle OT is 80%
- The polarity is to be carried out according to the connection plans
- Failure to do so will result in heat or electronic damage

Vibration

- **Vibrations can damage the actuator electronics!**
  Therefore, do not expose the actuators to constant vibration, for example by attaching them to compressors, diesel engines, etc. Suitable vibration dampers are to be installed in such cases!

Slip clutch

The slip clutch is used to adjust the end points of the attached valve. It should also protect the actuator and the valve from overload and damage. The coupling is preset in the factory to match the valve mounted on the actuator. Avoid excessive tightening of the stuffing box on the valve, as this changes the torque for the actuator and the slipping clutch.

If the requirement parameters for the actuator-valve combination should change in daily operation, for example by readjusting the valve stuffing box and / or increasing the operating pressure, it may be necessary to adjust the slip clutch.

Readjustment of the slip clutch

Let the actuator turn with motor power so that you can easily get into the key bores of the coupling with a face spanner. (See picture). Adjust the adjuster plate clockwise in very small steps. In most cases, an adjustment of 10 ° is sufficient.
Now check in the test run whether the actuator-valve combination meets your requirements or whether the coupling still needs to be readjusted a little.

- The coupling must never be readjusted so tightly that it can no longer perform a protective function, otherwise damage to the gearbox or valve is inevitable!

Slipping clutch and shut-off of valves

If the spindle valve attached to the actuator (with shut-off function) does not shut off in daily operation, you can proceed as follows:

- Run the actuator to the CLOSED position with motor power
- There is a hexagon under the slipping clutch above the valve spindle. Hold this in place with an 8 mm open-ended wrench.
- Now allow the actuator to rotate approx. 1/8 turn in the OPEN direction under motor power (for fine metering valves, only adjust a few degrees so that the tip is not damaged), while holding the valve spindle with hexagon in the same position.
- Release the valve spindle (hexagon) and move the actuator to the CLOSED position with motor power until it switches itself off.
- The actuator-valve combination adjusts itself and the valve should shut off. The procedure may have to be repeated. If the valve seat is defective or unsuitable valves are shut off, the procedure described will not be successful.

Fig .: Slipping clutch with face spanner

Dosing and needle valve

A wide variety of needle valves are available, the main features of which are construction-related. For example, the packing can be above or below the spindle thread.
For gases and liquids that are suitable for washing out or contaminating the lubricant cleaning of the valve threaded spindle, valves whose threaded spindles are **outside the medium must always be selected**. Lubrication-free or washed-out threaded spindles are usually seized after a short time, so that no further actuator operation is possible!

So always choose valves with the packing under the threaded spindle for mounting on the actuators.

Visibly external threads of valve spindles must be lubricated from time to time!
The direction of flow of the medium is indicated on the valves by a directional arrow and must be observed!

If our instructions are taken into account, a long, trouble-free operation of our devices is ensured!
If you should ever have a problem that you cannot cope with with the information given here, we ask you to call us.

Pin assignment 12 pol. angled box type Binder

Only actuators of type series N802 and K8 with built-in connector

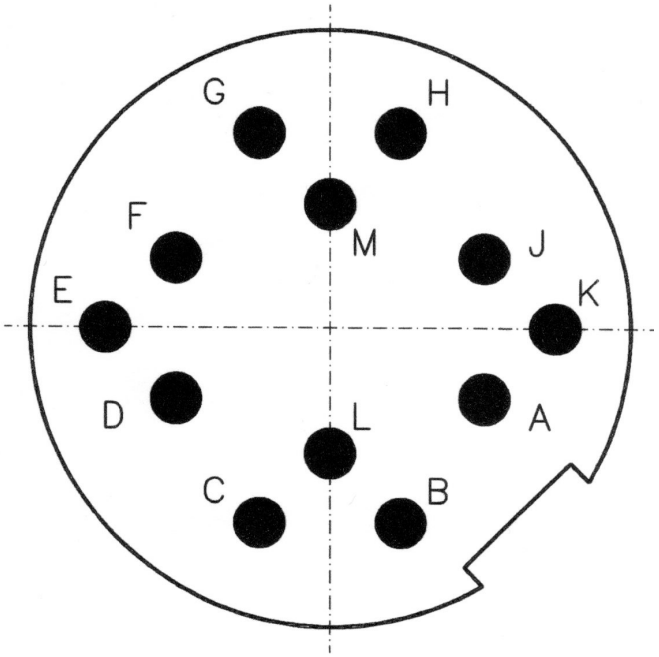

Fig.: View of solder side

Connection diagram N802 and TA70/../

12 pin built-in plug		Open Cable end			
PIN		**Color**			
A	=	**white**	=	+	**24 Volts D.C. operating voltage** Operating time OT = 100 % of max. operating time
B	=	**brown**	=	—	
C	=	**green**	=	+	**Control input CLOSED** (+12 to +24 Volt D.C.) OT = 80 %
D	=	**yellow**	=	+	**Control input OPEN** (+12 to +24 Volt D.C.) OT = 80 %
E	=	**grey**	=		**Valve end position feedback CLOSED** Potential-free contacts (Relay, NOC) Load capacitiy 24 Volts DC, 1 Ampere
F	=	**pink**	=		
G	=	**blue**	=		**Valve end position feedback CLOSED** Potential-free contacts (Relay, NOC) Load capacitiy 24 Volts DC, 1 Ampere
H	=	**red**	=		
J	=	**black**	=	NC	
K	=	**purple**	=	NC	
L	=	**white-brown**	=	NC	
M	=	**white-green**	=	NC	

NOTES

The power supply must be switched off during electrical installation of the actuator.

Pin C and D: Control input OPEN / CLOSE +12 to +24 volts D.C.

Pin E to H: Can be connected if required.

Pin E to H: Potential-free working contacts.

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Connection diagram N802/P3 and TA70/../P3

12 pole built-in plug		Open cable end			
PIN		COLOR			
A	=	white	=	+	**24 Volts DC operating voltage** Operating time OT = 100 % of max. operating time
B	=	brown	=	—	
C	=	green	=	+	**Control input CLOSE** (+12 to +24 Volts DC) OT = 80 %
D	=	yellow	=	+	**Control input OPEN** (+12 to +24 Volts DC) OT = 80 %
E	=	grey	=		**Valve end position feedback CLOSE** Potential-free contacts (relay, NOC) max. 24 Volts DC, 1 Ampere
F	=	pink	=		
G	=	blue	=		**Valve end position feedback OPEN** Potential-free contacts (relaiy, NOC) max. 24 Volts DC, 1 Ampere
H	=	red	=		
J	=	black	=	1	**Potentiometer output as positoning signal**
K	=	purple	=	2	
L	=	white-brown	=	3	
M	=	yellow-green	=	NC	

NOTES

The power supply must be switched off during electrical installation of the actuator.

Pin C and D: Control input OPEN/CLOSE +12 to +24 Volts DC

Pin E to L: Wiring as required

Pin E to H: Potential-free contacts

Pin J to L: Proportional to the position of the actuator axle is a potentiometer signal.

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Connection diagram N802/P4 and TA70/../P4

12 pole built-in plug		Open cable end			
PIN		COLOR			
A	=	white	=	+	**24 Volts DC operating voltage** — Operating time OT = 100 % of max. operating time
B	=	brown	=	—	
C	=	green	=	+	**Control input** — **4-20 mA** (Ri= 500 Ω) or **2-10 Volts DC** (Ri= 10 kΩ) OT = 80 % (Note rating plate of actuator)
D	=	yellow	=	—	
E	=	grey	=		**Valve end position feedback CLOSE** — Potential-free contacts (relay, NOC) max. 24 Volts DC, 1 Ampere
F	=	pink	=		
G	=	blue	=		**Valve end position feedback OPEN** — Potential-free contacts (relaiy, NOC) max. 24 Volts DC, 1 Ampere
H	=	red	=		
J	=	black	=	1	**Potentiometer output as positoning signal**
K	=	purple	=	2	
L	=	white-brown	=	3	
M	=	yellow-green	=	NC	

NOTES

The power supply must be switched off during electrical installation of the actuator.

Pin C and D: Control input 4 - 20 mA (Ri= 500 Ω) or 2 - 10 VDC (Ri= 10 kΩ)

Pin E to L: Wiring as required

Pin E to H: Potential-free contacts

Pin J to L: Proportional to the position of the actuator axle is a potentiometer signal

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Connection diagram N802/P5 and TA70/../P5

12 pole built-in plug		Open cable end			
PIN		COLOR			
A	=	white	=	+	**24 Volts D.C. operating voltage** Operating time OT = 100 % of max. operating time
B	=	brown	=	—	
C	=	green	=	+	**Control input CLOSED** (+12 to +24 V DC) OT = 80%
D	=	yellow	=	+	**Control input OPEN** (+12 to +24 V DC) OT = 80%
E	=	grey	=		**Valve end position feedback CLOSED** Potential-free contacts (relay, NOC) max. 24 Volts DC, 1 Ampere
F	=	pink	=		
G	=	blue	=		**Valve end position feedback OPEN** Potential-free contacts (relay, NOC) Max. 24 Volts DC, 1 Ampere
H	=	red	=		
J	=	black	=	+	**Measuring output** 4 - 20 mA or 2 - 10 Volts D.C. (Ri= 500 Ω) (Please notice type label)
K	=	purple	=	—	
L	=	white-brown	=	NC	
M	=	white-green	=	NC	

NOTES

The power supply must be switched off during electrical installation of the actuator.

Pin C and D: Control input +12 to +24 Volts D.C.

Pin E to K: Wiring as required.

Pin E to H: Potential-free contacts.

Pin J and K: Proportionally to the position of the actuator axle a signal 4-20 mA or 2-10 VDC (Ri= 500 Ω) is applied.

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Connection diagram N802/P7 and TA70/../P7

12 pole built-in plug		Free cable end			
PIN		Colour			
A	=	white	=	+	**24 Volts DC operating voltage** Operating time (OT) = 100% of max. operating time
B	=	brown	=	—	
C	=	green	=	+	**Control input** **4 - 20 mA** (Ri= 500 Ω) or **2 - 10 Volts DC** (Ri= 10 kΩ) OT = 80 % (Note rating plate of the actuator)
D	=	yellow	=	—	
E	=	grey	=		**Valve end position feedback CLOSE** Potential-free contacts (Relay, NOC) max. 24 Volts DC, 1 A
F	=	pink	=		
G	=	blue	=		**Valve end position feedback OPEN** Potential-free contacts (Relay, NOC) max. 24 Volts DC, 1 A
H	=	red	=		
J	=	black	=	+	**Measurement output** **4 - 20 mA** or **2 - 10 Volts DC** (Ri= 500 Ω) (Note rating plate of the actuator)
K	=	purple	=	—	
L	=	white-brown	=	NC	
M	=	white-green	=	NC	

NOTES

The power supply must be switched off during electrical installation of the actuator.

Pin C and D: Control input 4-20 mA (Ri= 500 Ω) or 2 - 10 Volts DC (Ri= 10 kΩ)
Note rating plate of the actuator.

Pin E to K: Wiring as required.

Pin E to H: Potentialfree contacts (NOC).

Pin J and K: Proportional to the position of the actuator axle a signal 4-20 mA or 2-10 Volts DC (Ri= 500 Ω) is applied.

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