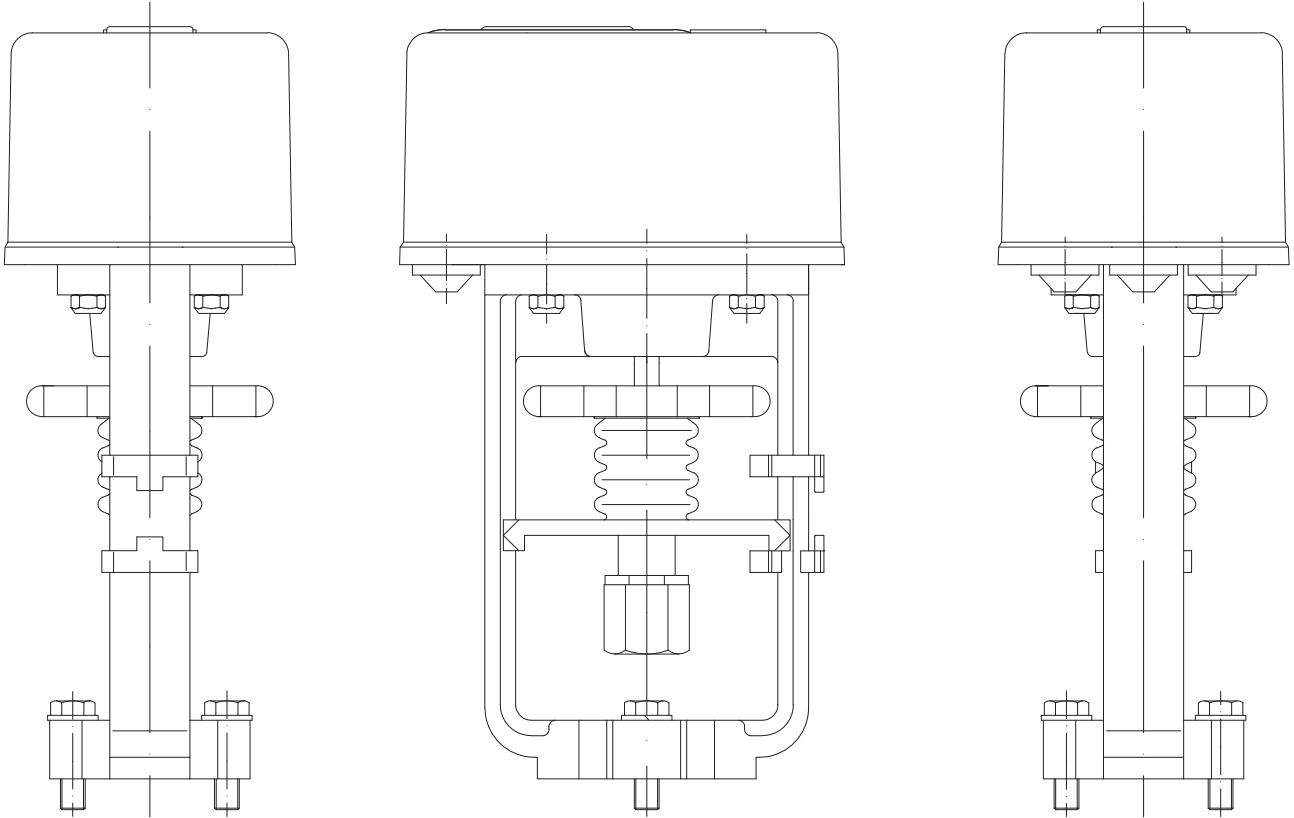


Operating and installation instructions

Electric thrust actuator

ARI-PACO 0,85kN



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1.0 General information on operating instructions

These operating instructions provide information on mounting and maintaining the thrust actuators. Please contact the supplier or the manufacturer in case of problems which cannot be solved by reference to the operating instructions.

They are binding on the transport, storage, installation, start-up, operation, maintenance and repair.

The notes and warnings must be observed and adhered to.

- Handling and all work must be carried out by expert personnel or all activities must be supervised and checked.

It is the owner's responsibility to define areas of responsibility and competence and to monitor the personnel.

- In addition, current regional safety requirements must be applied and observed when taking the fittings out of service as well as when maintaining and repairing them.

The manufacturer reserves the right to introduce technical modifications at any time.

These Operating Instructions comply with the requirements of EU Directives.

2.0 Notes on possible dangers

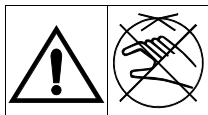
2.1 Significance of symbols



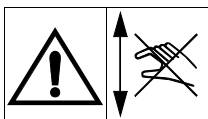
Warning of general danger.



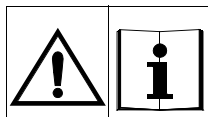
Warning of dangerous voltage.



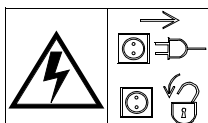
Exposed to injury!
Don't touch the turning handwheel when the motor is running.



Exposed to injury!
Don't put your hand into the up or downwards moving appliance.



Danger when not observing the operating and installation instructions!
Before installing, operating, maintenance or dismantling read and observe the instructions.



Danger though voltage!
Before dismantling the hood, switch of the electrical source and secure against turning on again.

2.2 Explanatory notes on safety information

In these Operating and Installation Instructions dangers, risks and items of safety information are highlighted to attract special attention.

Information marked with the above symbol and “**ATTENTION !**” describe practices, a failure to comply with which can result in serious injury or danger of death for users or third parties or in material damage to the system or the environment. It is vital to comply with these practices and to monitor compliance.

All other information not specifically emphasised such as transport, installation, operating and maintenance instructions as well as technical data (in the operating instructions, product documentation and on the device itself) must also be complied with to the fullest extent in order to avoid faults which in turn can cause serious injury to persons or damage to property.

3.0 Storage and transport



ATTENTION !

- Valve mountings such as drives, handwheels, hoods must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.

Non-compliance may lead to death, injury or damage to property due to persons falling or parts being dropped.

- Suitable materials handling and lifting equipment should be used.

Refer to point „4.4 Technical data - Remarks“ for weights.

- At 0°C to +50°C dry, free from dirt.
- Do not unpack thrust drive or setting equipment assembly prior to installation.
- Protect against external force (impact, vibration etc.).
- Do not soil or damage type identification plate and wiring diagram on the controller.

4.0 Description

4.1 Field of application

Actuating or shut-off valves are operated with the ARI-PACO linear actuators which have a linear nominal path of up to 20 mm and require a thrust force of 0,85 kN. The linear actuators are adjusted to the thrust forces denoted in the technical data. When delivered with the valve the linear actuator travel has been adjusted to the control path of the valves. The plant planner is responsible for the professional selection of the drive variant for the respective armature and the employment of the linear actuators according to the current technical data. Any use of the linear actuators in ways other than described in the technical data as well as inappropriate usage is hence not in accordance with the regulations. The environment must conform to the currently-valid EMV regulations. Annual inspection is required in order to sustain electromagnetic compatibility. Furthermore, the level of the electromagnetic load in the environment should be monitored if electrical or electronic components have been mounted in the surroundings.

4.2 Method of functioning

The linear actuator, fitted with a yoke, is mounted on the valve. The transfer of force is carried out by means of a coupling protected from torque. The torque protection also functions as the travel display. The actuating ranges can be read from the travel scale which is attached to the yoke.

The electrical modules are separated from the transmission and are located in the sealed housing, protected against operating and environmental conditions. After removing the housing, the switching and notification assemblies are easily accessible. The twisting movement of the motors is transferred to cylindrical gears on the stem nut. The drive stem, secured against torque, screws itself into the stem nut and thus, depending on the direction, a pulling or pushing movement is created. In the end positions of the valve, the stem nut is pressed against a spring assembly and generates a closing force. The motor is switched off by means of a force-dependent or electronic switch. The force-dependent switch will also switch off the motor if a foreign body has come between the valve seat and cone. The switch protects the valve and the linear actuator from damage.

4.3 Diagram

4.3.1 ARI-PACO 0,85 kN

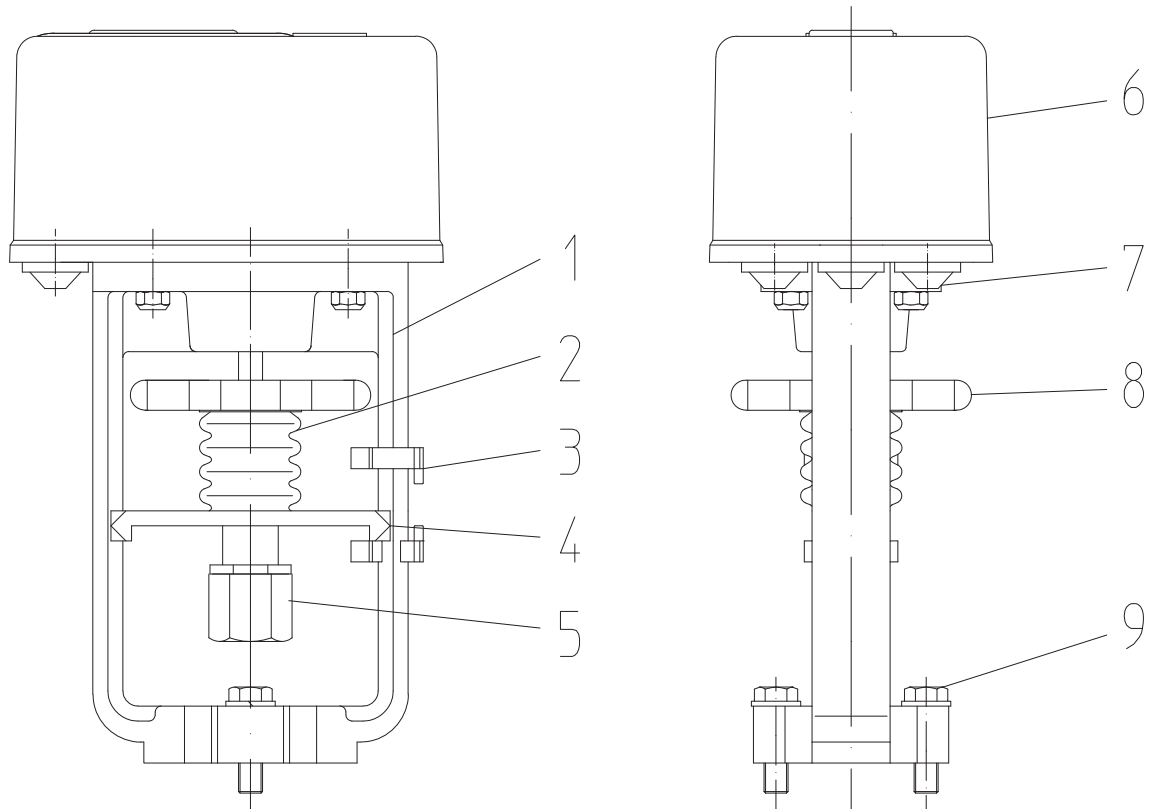


Fig. 1

4.3.1.1 Parts

Pos.	Designation
1	Yoke
2	Bellow
3	Travel indicator
4	Torsion safety feature
5	Coupling
6	Hood
7	Cable conduit fitting
8	Handwheel
9	Hexagon-head screw M8

4.4 Technical data - Remarks

Type		ARI-PACO	
Thrust	kN	0,85 D	0,85 Y
Travel	max. mm	3 ... 20	
Control speed	mm/sec.	0,11	
Motor voltage	(±10%)	230V - 50 / 60Hz*	24V - 50 / 60Hz*
Control signal (input)		Three-step signal	0 (2) - 10 V DC (invertable, max. 0,5 mA)
Feedback signal (output)		--	0 - 10 V DC (invertable, max. 5 mA)
Power consumption	VA	4,1	4,8
Operation mode		S3 50% cyclic duration factor	
Enclosure	IEC 60529	IP 54	
Max. operative ambient temperature		0 °C ... +50 °C	
Handwheel		Change-over switch and handwheel	
Mounting position		Horizontally to vertical above the valve body (any position 90° from vertical)	
Stem lubricant		Klüber: Microlube GB	
Weight	kg	1,3	
* Control speed and power consumption are 20% higher at frequency of 60 Hz.			

Accessories		
Additional torque switches	2 changeover contacts, potential-free, switching capacity 3A, 250 V~	--
Switch board (optional as 2 add. torque switches or 1 error message switch usable)	--	2 changeover contacts, potential-free, switching capacity 3A, 250 V~
Potentiometer	1 pc. - 1000 Ohm	1 pc. - 1000 Ohm (alternative to switch board)
Additional voltages/frequencies	24 V 50/60* Hz	--
* Control speed and power consumption are 20% higher at frequency of 60 Hz.		

4.5 Dimensions

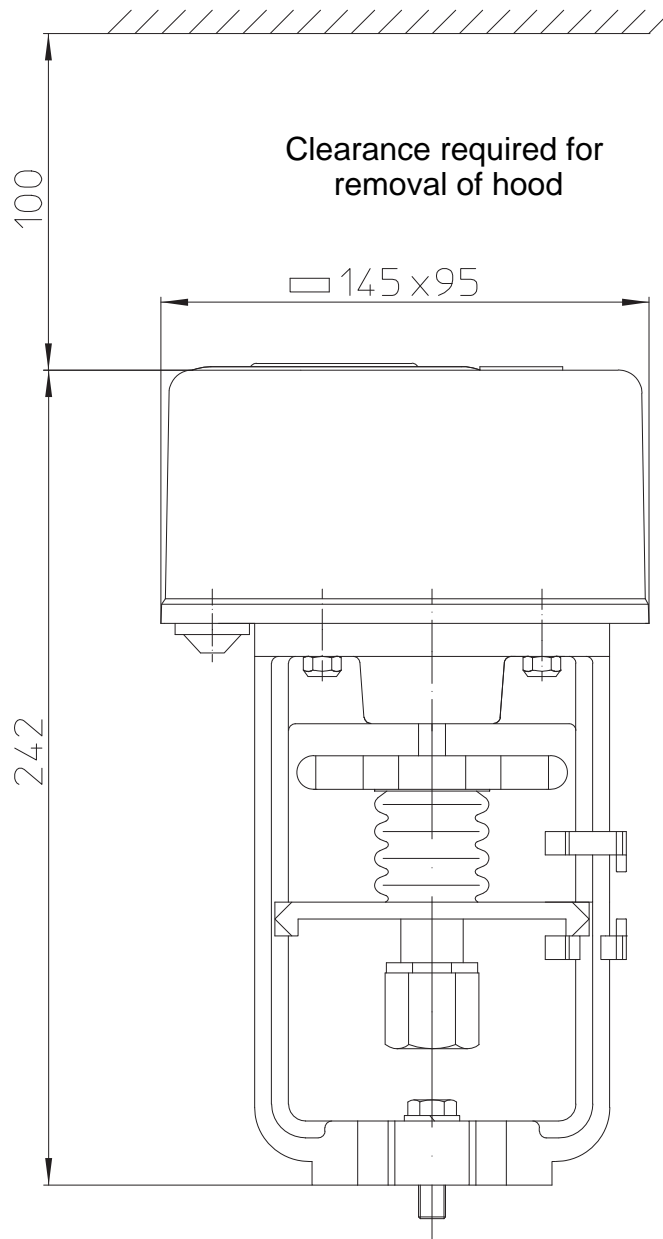


Fig. 2

5.0 Installation



ATTENTION !

- Work on electrical systems or equipment must only be carried out by qualified electricians or by trained individuals under the guidance and supervision of a qualified electrician in compliance with regional electrical safety requirements and regulations.
- Valve mountings such as drives, handwheels, hoods must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.
Non-compliance may lead to death, injury or damage to property due to persons falling or parts being dropped.
- Actuator components which rotate or move during operation.
Crushing and injury hazard!

5.1 General installation data

In addition to general installation guidelines, the following items are required to be observed:

- Planners / construction firms and operators are responsible for positioning and installing the products.
- Check thrust actuator for damage prior to fitting.
Damaged parts must be replaced by original spares.
- Existing operating instructions for valve.
- Complete valve with crossarm.
- Valve cone approximately in mid lift position - on no account supported inside a seat!
- Electrical installation in accordance with current regional regulations.
- Conductor cross-section selected to correspond to the given drive power and existing line length.
- Mains fuse rating max. 6A.
- Circuit breakers in the plant to cut off the mains supply to the actuator.
- Conformity of technical data on thrust actuator with field conditions.
- Mains voltage in accordance with data specified on rating plate of thrust actuator.
- Thrust actuator complete with yoke or distance columns and coupling parts intended for mounting to the corresponding valve.
- Ease of access to installation site.
- Adequate clearance space above the thrust actuator for removing the hood (refer to item „4.5 Dimensions“).
- Install where there is protection against high-energy heat radiation.
- The ambient temperature must not exceed +50 °C.
- Linear actuator installation orientation should be vertical above the valve up to a horizontal position.

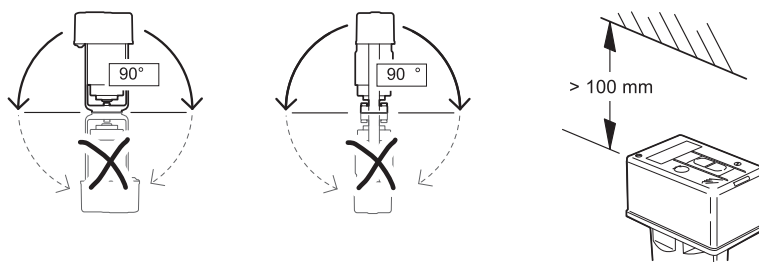



Fig. 3

5.2 Manual operation

5.2.1 ARI-PACO 0,85 kN



ATTENTION !
- Since the hand wheel always turns during motor operation (running display),
never use manual operation when the motor is running - danger of injury!

For the manual operation, the sliding switch above the housing must be switched to manual.

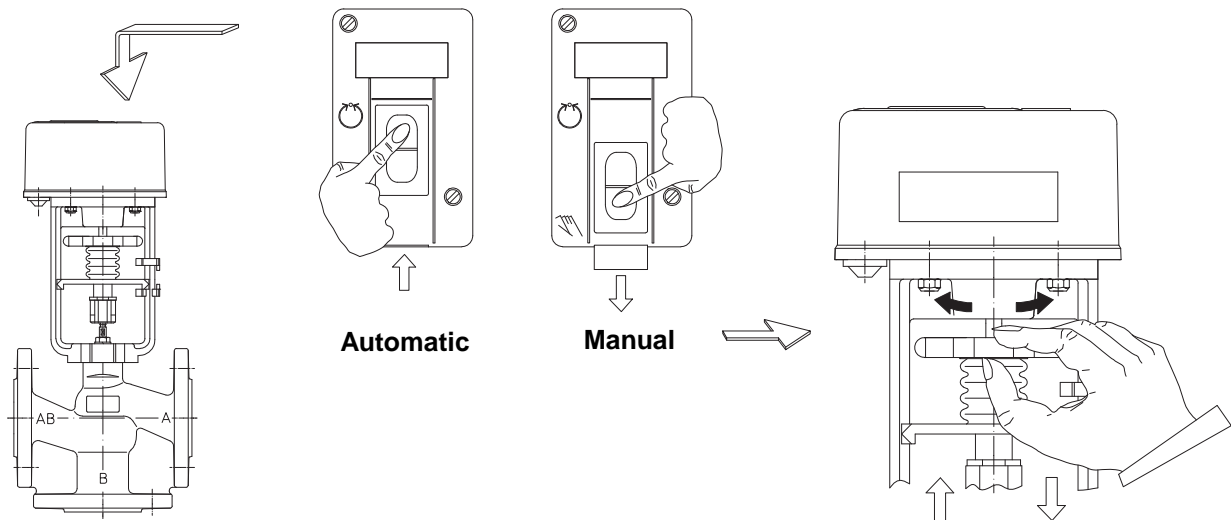


Fig. 4

Proceed as follows:

- Turning clockwise --> coupling moves in
- Turning counter-clockwise --> coupling moves out

On reaching the end positions, a slip coupling prevents further actuating force.

5.3 Assembly instructions to the mounting on valves

If the valve is already mounted at the plant, care must be taken that before the drive is assembled, no pressure difference occurs in the valve body.

If necessary, close shut-off slide valve or switch off pump.

5.3.1 Mounting of valve ARI-PACO 0,85 kN

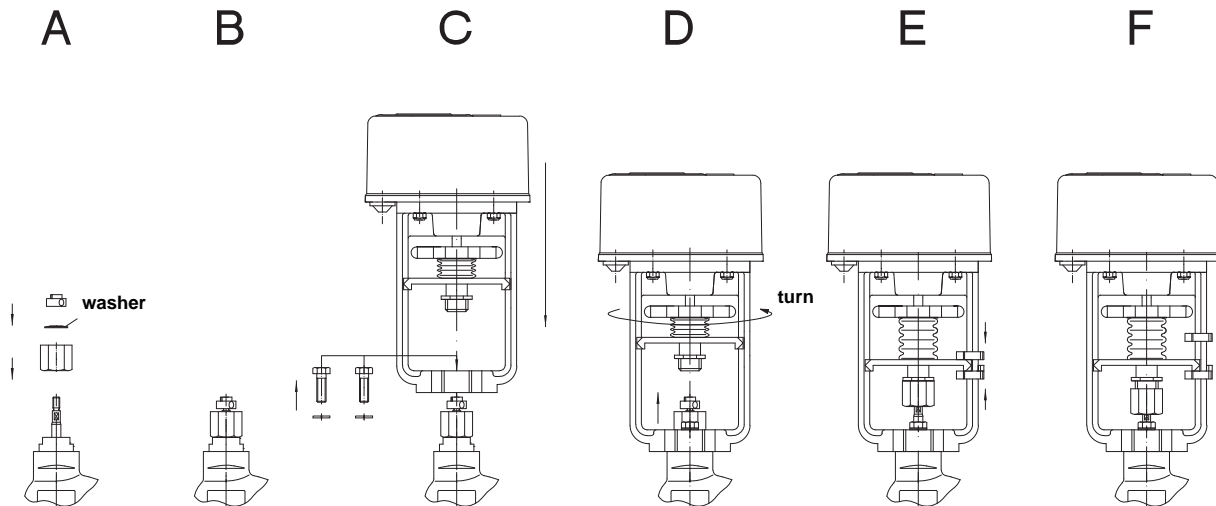


Fig. 5

Mount the linear actuator on a valve in the following way:

- screw the coupling out of the torque protection of the linear actuators.
- bring the valve cone about in the middle of the actuating range.

Bild A: - push the coupling over the valve stem.

Bild B: - Zumscrew the screw socket with toothed plate appropriate to the valve on the valve stem and secure with hexagon socket screw.

Bild C: - set linear actuator on the valve
- fasten linear actuator with two hex screws (M8 x 22) and two spring washers onto the armature.

Bild D: - move the torque protection with the hand wheel until it lies on the screw socket.
- tighten the coupling by hand and then secure with a wrench (SW24) at an angle of max. $1 \times 100^\circ - 110^\circ$ (refer also to notice on the drive hood)

Bild E: - push upper and lower setting mark of the travel display to the torque protection.

Bild F: - move the actuating drive into both end positions and determine that they can be reached with certainty. For type ARI-PACO 0,85, execute an initialization run (refer to pt. 6.2.1)
- the setting marks of the travel display move to the correct position when the end positions are set.
- make electrical connections (refer to pt. 5.4).

5.4 Electrical connection

5.4.1 Wiring diagram ARI-PACO 0,85 D

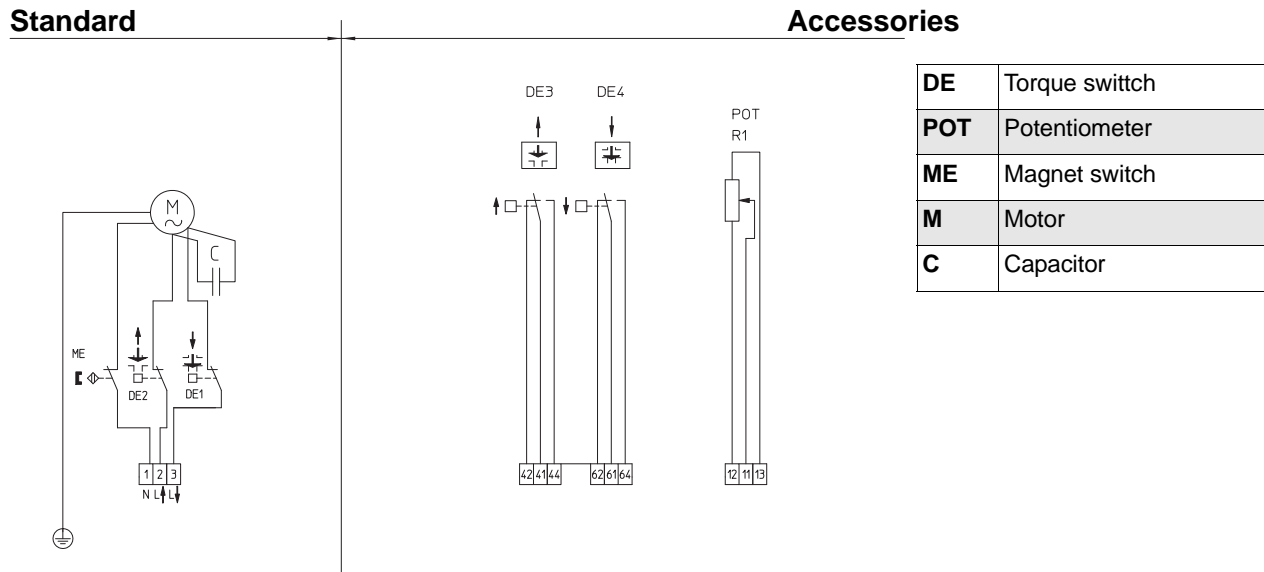
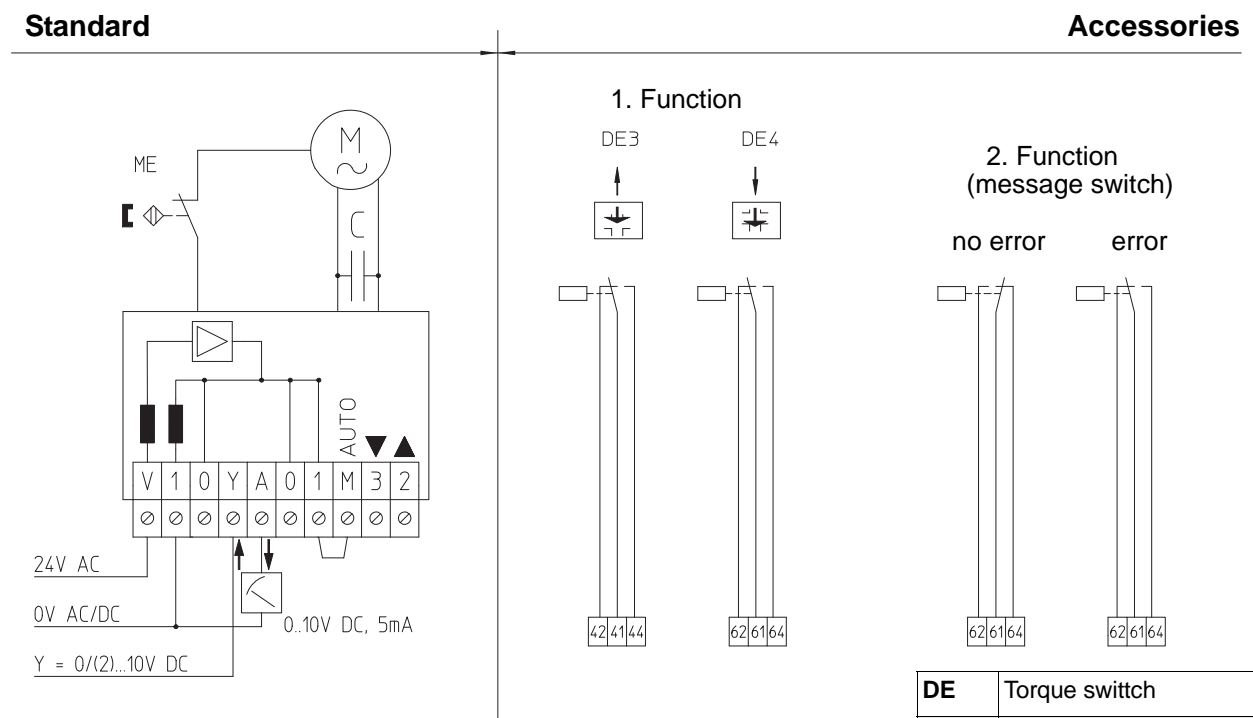


Fig. 6

5.4.2 Wiring diagram ARI-PACO 0,85 Y




With input signals 0/2-10 V a bridge, connecting the terminals 1 and M, has to be installed. In case of a three-step controller signal the bridge is not required. A signal at the terminals 2 and 3 e.g. from an anti-freezing contact has always priority over the input signal.

For **automatic operation**, a jumper 1 / M must be installed, the priority switching is preserved


Fig. 7

For electromagnetic compatibility, it is recommended that insulated lines be used for the potentiometer and the electrical control signals.

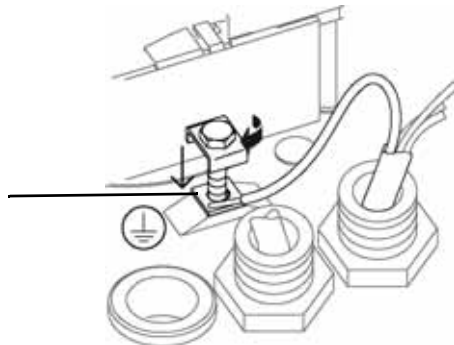


ATTENTION !

- When using low voltage installation (230 V AC), the installation has to be designed acc. to the requirements of protection class I !




Copper-side of the square washer (Cupal washer)



The wiring to the PE terminal must be connected between clamping yoke and square washer (cupal washer). Please note, that the copper coated side shows to the clamping yoke.

Bild 8

5.4.3 Connection ARI-PACO



ATTENTION !

- Work on electrical systems or equipment must only be carried out by qualified electricians or by trained individuals under the guidance and supervision of a qualified electrician in compliance with regional electrical requirement and regulations.

- When connecting the thrust actuator the supply line must be disconnected from the mains (not live) during connection work. It must be impossible to switch the power on unintentionally while the mains are disconnected in this way. The electrical connection of the actuator has to be done as a fixed installation! Failure to comply may result in death, serious injury or substantial damage to property.

To connect the thrust actuator up to the electrical power supply, proceed as follows:

- Mains voltage switched off and secured against being accidentally switched on.
- Set sliding switch on the housing to manual operation (for safety reasons, the linear actuator switches over to manual drive when the housing is removed)
- Release the two recessed screws on the housing, remove the housing carefully upwards.
- Install connection cables through the cable ducts.
- Remove the insulation of the connection lead approx. 1-1,5 cm above the cable entry.
- Remove the insulation of the individual leads approx. 5 mm from the ends (use lead sleeves for flexible leads).
- Connect the ground line of the connection lead with the ground terminal of the linear actuators.

5.4.3.1 ARI-PACO 0,85 D

- Connect the ground line of the connection lead to connector 1 of the connection strip of the linear actuators
- Connect the impulse lead for the extended thrust rod on connector 2 of the connection strip terminal.
- Connect the impulse lead for the retracted thrust rod on connector 3 of the connection strip terminal.
- Replace housing carefully from above and mount with two recessed screws on the linear actuator.
- Set sliding switch on the housing to automatic operation.
- Connect the supply lines to the mains and move the linear actuator into each of the end positions in order to test if the end position switches shut off, and if the direction of movement of the linear actuators is as desired.
- In case the direction of movement is opposite to that which is desired, the impulse cables for the extending and the retracting thrust rod should be exchanged.

5.4.3.2 ARI-PACO 0,85 Y

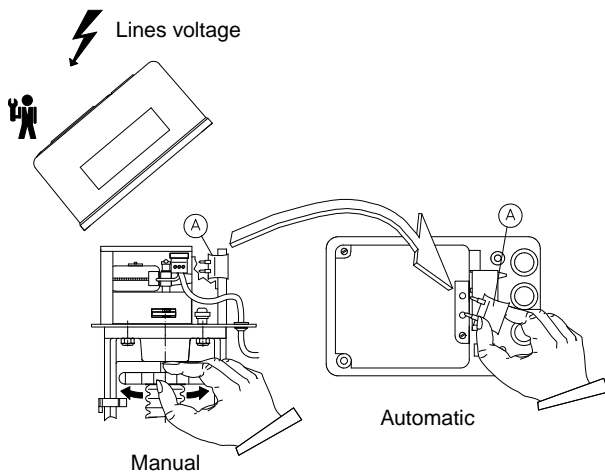
- Connect the 24 V AC - voltage supply on connector 1 and V terminals (connector 1 = 0 V)
- Connect the control with a continuous signal of 0(2)...10 V on connector 1 and Y terminals. (connector 1= 0 V)
- Connect the actuating output signal 0...10 V on connector 1 and A terminals (connector 1= 0 V).
 - For priority switching (frost protection limitation) for retracted thrust rod on connector 1 and 2 terminals.
 - For priority switching (frost protection limitation) for extended thrust rod on connector 1 and 3 terminals.
- Replace housing carefully from above and mount with two recessed screws on the linear actuator.
- Set sliding switch on the housing to automatic operation.
- Connect leads to mains and actuating signal
Carry out an initialization run (refer to 6.2.1)

5.5 Settings

ATTENTION !

- *The thrust actuator may only be operated for a short time without the hood for unavoidable setting operations to the potentiometers, travel switches and the electrical options. While these operations are in progress, the thrust actuator has hazardous, live, uninsulated parts exposed as well as moving and rotating parts.*
- *Improper execution of the setting operations or lack of care may cause death, grievous bodily injury or substantial property damage.*
- *Operation of the thrust actuator without the hood for any purpose other than that described above is strictly prohibited.*

When the housing is removed, the actuating drive is switched automatically into manual operation.



Only for qualified professional commissioning:

The actuator, with open hood, can be switched to automatic operation with the magnetic switch A. During this operation, the actuator has got dangerous, voltage leaded, blank as well as moving and rotating parts.

Fig. 9

5.5.1 Torque switch off

The torque switch-off is carried out on the linear actuator ARI-PACO 0,85 D by means of 2 torque switches. (DE1, DE2)

On **ARI-PACO 0,85Y**, the torque switch-off is carried out electronically.

5.5.2 Additional switching module in the ARI-PACO 0,85 D

Additional switching module in the actuating drive ARI-PACO 0,85 D for feedback of the two valve positions.

5.5.2.1 Insertion of the switching module in the ARI-PACO 0,85 D

⚠ ATTENTION !
 - Carry out insertion only on a linear actuator switched to a voltage-free state!
 (mains voltage switched off and secured against being accidentally switched on)

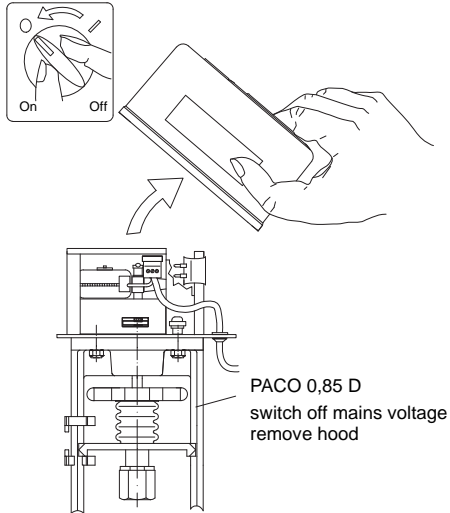


Fig. 10

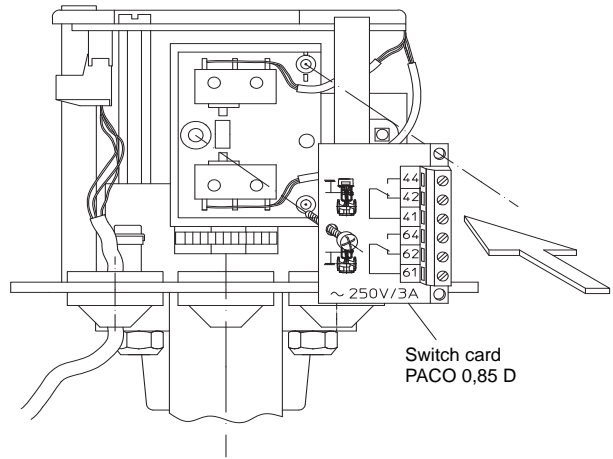


Fig. 11

Remount housing and fasten

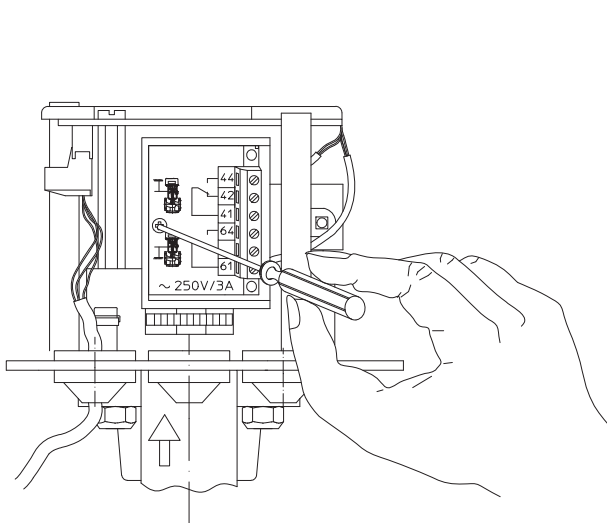


Fig. 12

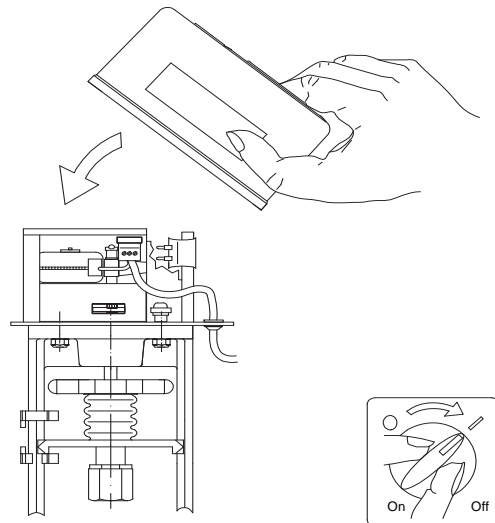
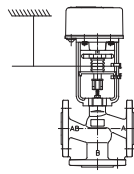
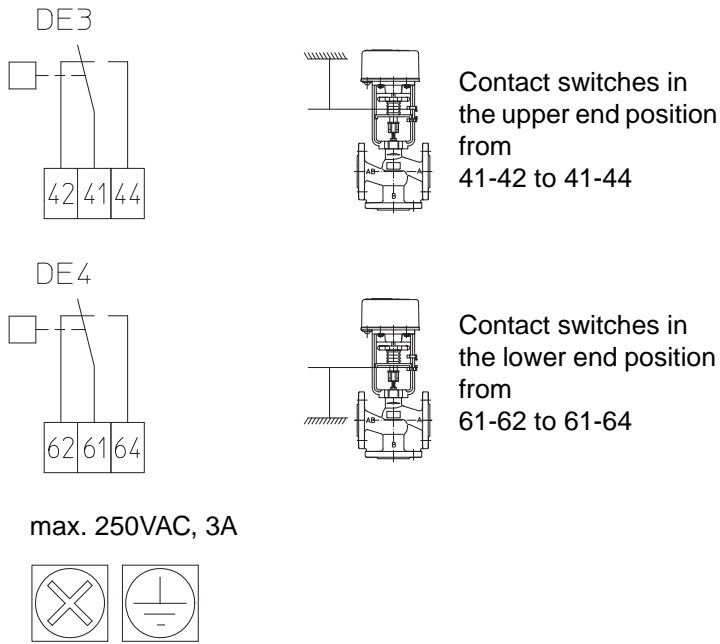
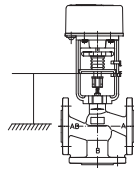


Fig. 13

5.5.2.2 Connection and adjustment of the switching module in the ARI-PACO 0,85 D



Contact switches in the upper end position from 41-42 to 41-44



Contact switches in the lower end position from 61-62 to 61-64

Fig. 12 shows how the electrical connection should be made.

No further adjustments are required.


After the electrical connection is made, the housing should be carefully seated from above and fastened with two recessed screws on the linear actuator (Fig. 11). Move sliding switch on the housing to automatic, switch on mains and test function controls

Fig. 14

5.5.3 Relay card ARI-PACO 0,85 Y

The relay card in the actuating drive ARI-PACO 0,85 Y functions for the feedback of disturbances or for valve position.

5.5.3.1 Insertion of the relay card in the ARI-PACO 0,85 Y



ATTENTION !
 - Carry out insertion only on a linear actuator switched to a voltage-free state!
 (mains voltage switched off and secured against being accidentally switched on)

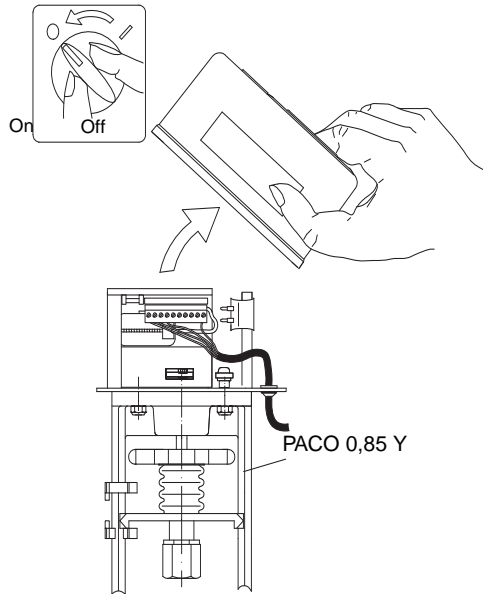


Fig. 15

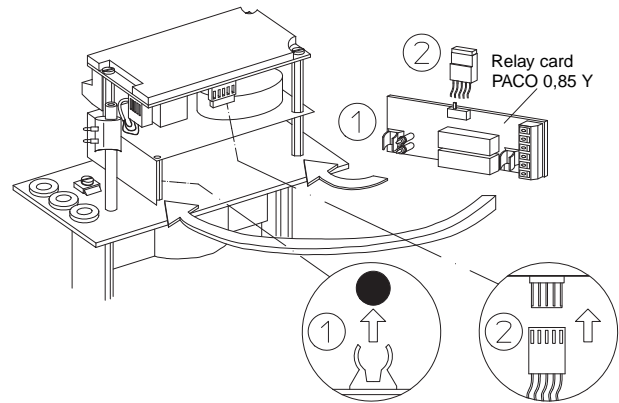


Fig. 16

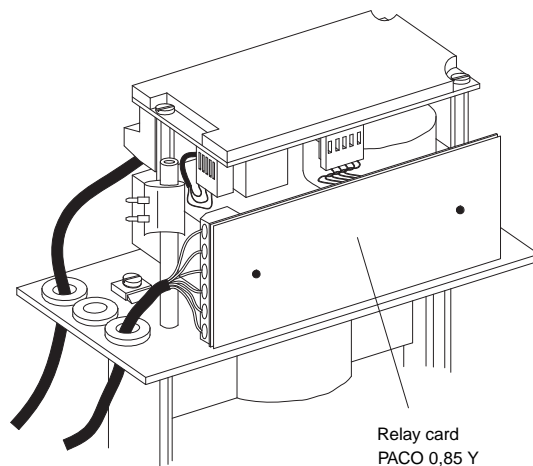


Fig. 17

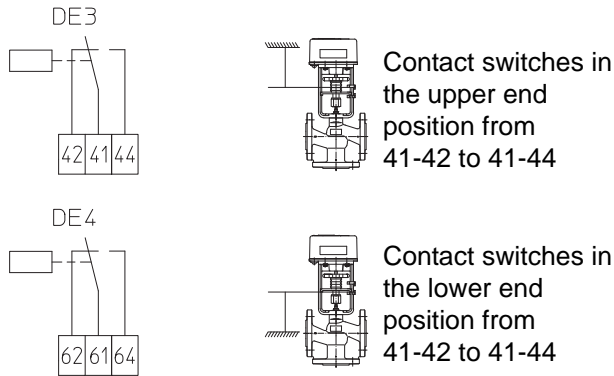
5.5.3.2 Connection and adjustment of the relay card in the ARI-PACO 0,85 Y

Two functions can be switched with the relay card.

1. function:

Feedback of the two valve positions OPEN/
SHUT:

(The relay contacts are voltage-free)



max. 250VAC, 3A



Fig. 18

Position sliding switch to the left !!

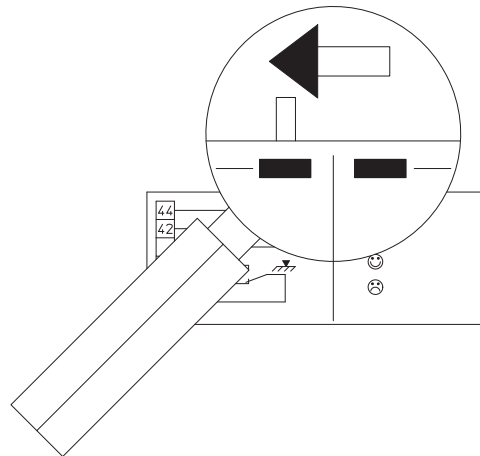
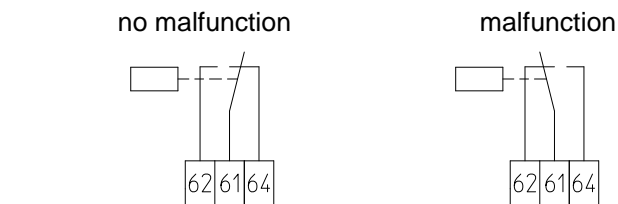


Fig. 19

2. function:

Malfunction message monitoring for valve
blockage and power loss of the 24V
voltage supply:

(The relay contacts are voltage-free)



max. 250VAC, 3A

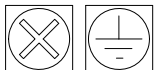


Fig. 20

Position sliding switch to the right !

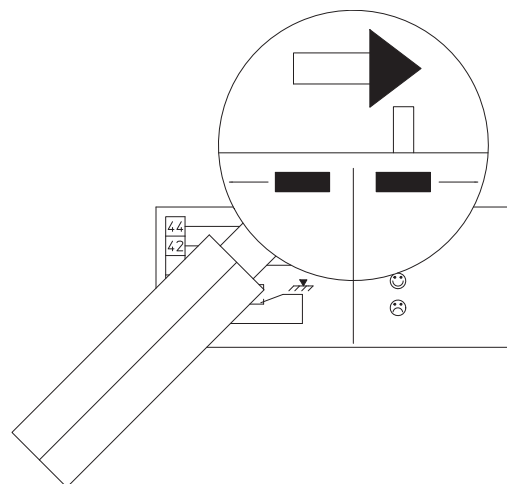


Fig. 21

After the electrical connections and the function adjustment are made, remount the housing carefully from above and fasten with two recessed screws on the linear actuator. Set the sliding switch on the housing on automatic operation, switch on mains and carry out a function control.

5.5.4 Potentiometer in the ARI-PACO 0,85

ATTENTION !
 - Insert only when the linear actuator is switched to a voltage-free state !
 (mains voltage switched off and secured against being accidentally switched on).

The pot card with the 1000 ohm potentiometer relays the actuating feedback signal. It is delivered as a module and can be inserted without tools..

1 pcs. card with potentiometer

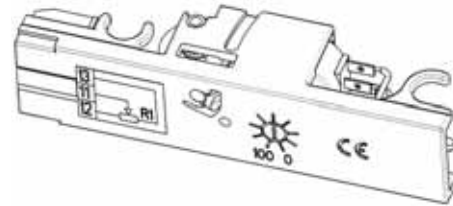


Fig. 22

5.5.4.1 Mounting of the potentiometer in the ARI-PACO 0,85

The potentiometer is connected to the actuating drive transmission by means of a slip coupling. It can be set to an initial value of the potentiometer axis.

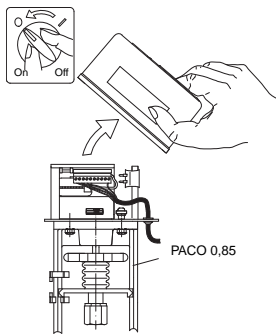


Fig. 23

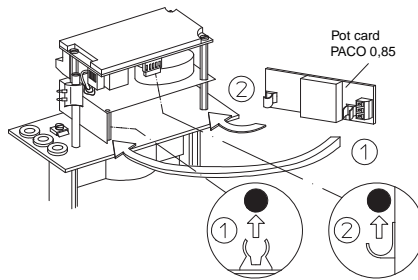


Fig. 24

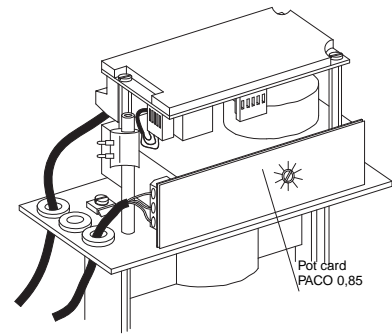


Fig. 25

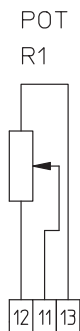


Fig. 26: Connection

ATTENTION !

For an adjust path of 16 mm, the resistance is about 80% of the pot limit value.

For max. extended drive coupling, the resistance value between connector 11 and 12 is 0 Ohm (zero point)

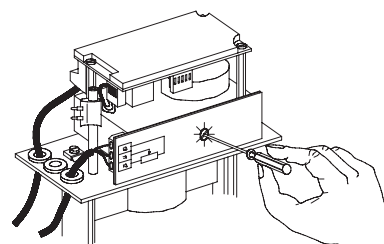


Fig. 27: Adjustment

6.0 Putting the actuator into operation



ATTENTION !

- Actuator components which rotate or move during operation.
Crushing or injury hazard!

Before putting a new plant into operation or restarting a plant after repairs or modification, always make sure that:

- all works has been completed!
- Regional safety instructions must be observed as a matter of policy.
- hood of thrust actuator assembled.

6.1 Putting the actuator into operation ARI-PACO 0,85 D



ATTENTION !

- Before any commissioning, the correct insertion of the valves as well as the electrical connections should be checked.

Automatic operation without housing:

- For safety reasons, the actuating drive switches over to manual operation when the housing is removed.

In order to test the functions during commissioning, the drive can be set to automatic operation with the magnet switch A.

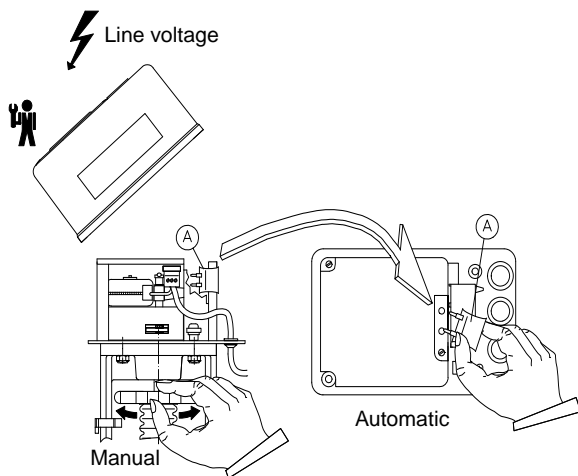


Fig. 28

- Actuating direction ARI-PACO 0,85 D

Drive clutch moves IN	Drive coupling moves OUT
Connection earth (connector 1) - connector 2	Connection earth (connector 1) - connector 3

6.1.1 Overload recognition ARI-PACO 0,85 D

Long-lasting, impermissibly high pressure differences in the valve can lead to overloading witch could limit the working life of the actuating drives.

On commissioning, impermissibly high pressure differences can be determined immediately in the windows in the transmission cover beneath the housing.

If the transmission gear wheel is displaced from the middle window position upwards or downwards, then the pressure difference in the valve too high.

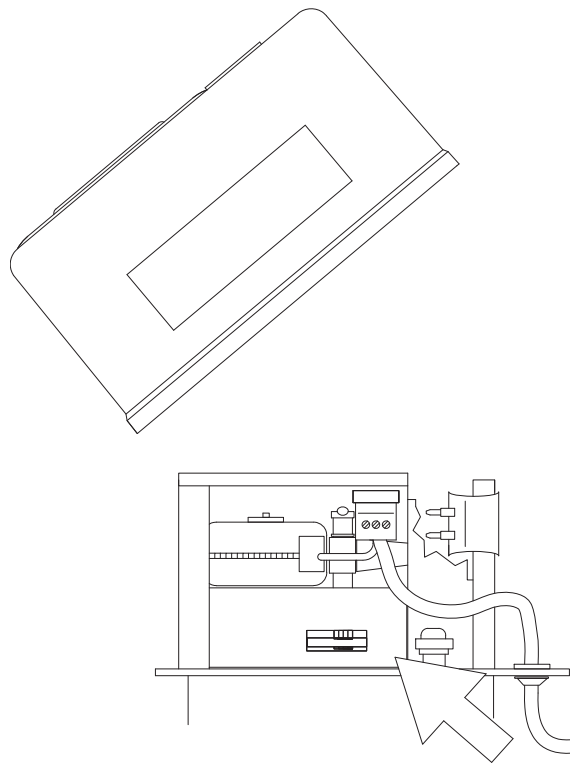


Fig. 29

6.2 Putting the actuator into operation ARI-PACO 0,85 Y



ATTENTION !

- Before commissioning, check the correct insertion of the valves, as well as the electrical connection.

Automatic operation without housing:

- For safety reasons, the actuating drive switches over to manual operation when the housing is removed.
- For function testing during commissioning, the drive can be switched to automatic operation with the magnet switch A.

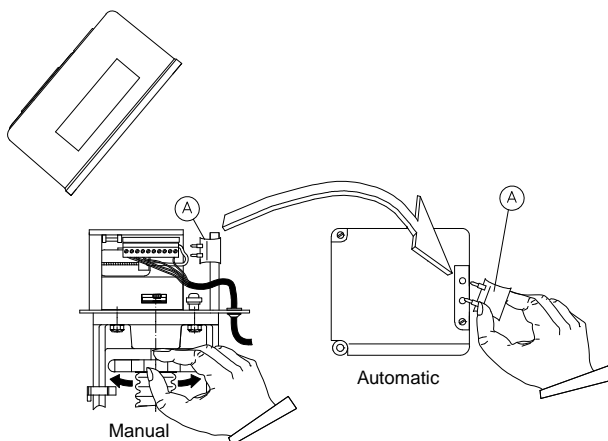


Fig. 30

6.2.1 Automatic initialization, ARI-PACO 0,85 Y

The ARI-PACO 0,85 Y mounted on the valve can be automatically initialized. By automatic initialization, the ARI-PACO 0,85 Y adjusts itself automatically to the valve travel. A distinction is made between full initialization and partial initialization.

Full initialization, ARI-PACO 0,85 Y

In the case of full initialization, which is started by means of a short push on the button INIT, the operating end positions are determined. During the full initialization, the valve is once fully opened and fully closed, the hand wheel makes short intermediate stops. During the initialization, the LED next to the button INIT blinks. The button INIT is located beneath the drive housing; refer to figure

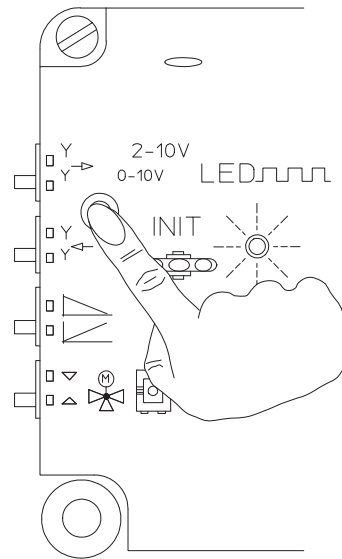


Fig. 31



ATTENTION !

- Full initialization may not be carried out under insufficient voltage!

Partial initialization, ARI-PACO 0,85 Y

A partial initialization should be carried out for safety reasons after every voltage loss or after every time the valve has been switched to manual operation. The direction valve open or valve closed should be carried out according to plant conditions.

6.2.2 Functions table for LED display in the ARI-PACO 0,85 Y

Working mode	LED-Funktionsanzeige	Rückmeldesignal
Automatic mode	—————	LED lit constantly
Initialisation runs	-----	LED blinking regular Handwheel is running with short stops
Valve blocking	— _ _ _ _	LED blinking irregular (until new initialisation is done)
Manual mode	—————	LED lit constantly

ATTENTION !
- The 13 V Feedback signal can only be used without Z diode "D" A/O.

6.2.3 Frost protection function, ARI-PACO 0,85 Y

Frost protection function, 3-point regulation or priority switching, can be selected with earth connections.

With input signals 0/2-10 V a bridge, connecting the terminals 1 and M, has to be installed. In case of a three-step controller signal the bridge is not required. A signal at the terminals 2 and 3 e.g. from an anti-freezing contact has always priority over the input signal.

For **automatic operation**, a jumper 1 / M must be installed, the priority switching is preserved

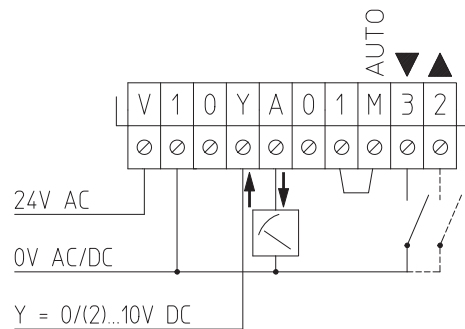


Fig. 32

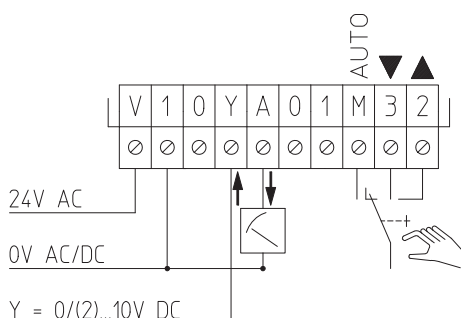


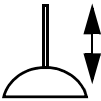
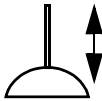
Fig. 33: Example for a Manual-/Automatic switching

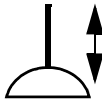
- Actuating direction ARI-PACO 0,85 Y

Drive clutch moves IN	Drive coupling moves OUT
Connection earth (connector 1) - connector 2	Connection earth (connector 1) - connector 3

6.2.4 Valve blocking protection, ARI-PACO 0,85 Y

At the time of delivery, the valve blocking protection is switched off. If plant conditions allow, the valve blocking protection can be activated. The valve blocking protection prevents the cone from freezing fast after a long-term lack of movement, for example, in the summer pause for heating systems. For active valve blocking protection, the valve cone is lifted for a few seconds if there is no travel movement within 24 hours.

Enabling of the valve blocking protection	Disabling of the valve blocking protection
by pressing the key 	by pressing the key once more 
For confirmity of the switched-on valve blocking protection, the LED-indication flashes for 3 sec.	For confirmity of the switched-off valve blocking protection, the LED-indication switches off for 3 sec.

The key  with the LED is below the actuator hood.

6.2.5 Adaptation of the valve functions, ARI-PACO 0,85 Y

The valve function is set with 4 switches beneath the actuating drive housing.

Switch 1

Adjustment of the actuating signals Y from the regulator 0...10 V DC or 2...10 V

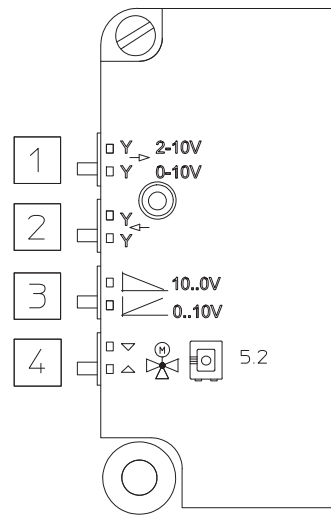


Fig. 34

Switch 2

Actuating signal output:
Adjustment only necessary for connected actuating signal output.

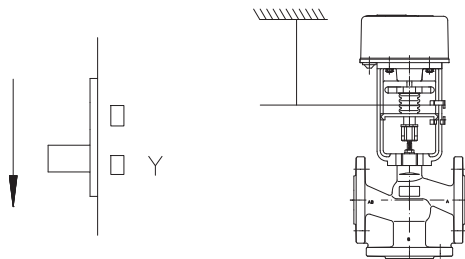


Fig. 35: Upper valve end position,
Position signal output = 10 V

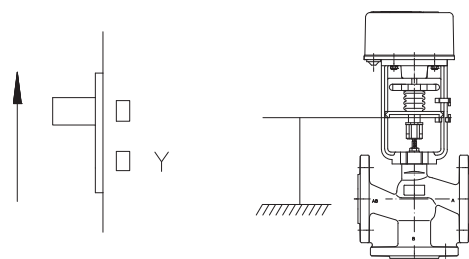


Fig. 36: Lower valve end position,
Position signal output = 10 V

Switch 3

Adjustment of the actuating direction.
(action direction selection)

Valve open or closed with actuating signal input 10 V DC.

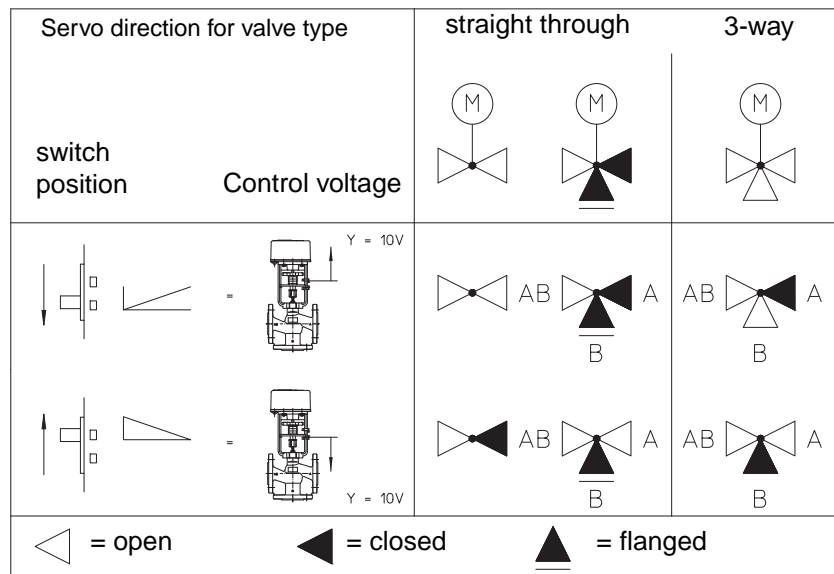


Fig. 37

Switch 4

Actuating direction for partial initialization.

In the case of power loss or manual switched usage, the actuating drive carries out a partial initialization for safety reasons. The direction valve open or valve closed are determined by the plant conditions.

6.2.6 Automatic Malfunction message, ARI-PACO 0,85 Y

If during the valve travel a blockage from a foreign body occurs in the pipeline, the drive notifies this malfunction by means of a feedback signal of approx. 13 V DC (only without voltage limitation of the Z diode between connector A or 0 possible), on connection terminal A. Furthermore, the LED beneath the drive housing blinks.

By means of an automatic blockage removal algorithm, the actuating drive next attempts to free the valve blockage by itself by briefly lifting the valve cone a number of times.

Additional malfunction messages by means of potential-free relay contacts can be made with the relay card (accessories). The relay card can be retrofitted easily. Refer to Pt. 5.5.3 .

6.2.7 Overload recognition, ARI-PACO 0,85 Y

Long lasting, impermissibly high pressure differences in the valve lead can lead to overloading which can affect the life span of an actuating drive.

Impermissibly high pressure differences can be recognized immediately in the windows of the transmission cover beneath the housing upon commissioning.

If the transmission gear wheel is displaced from the middle window position upwards or downwards, then the pressure difference in the valve is too high.

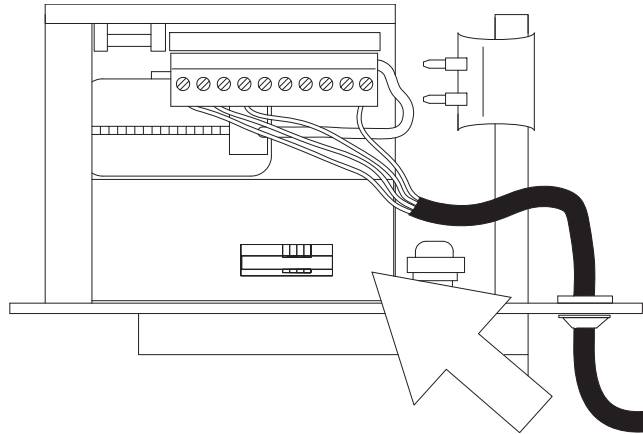


Fig. 38

6.2.8 Zero-Crossing, ARI-PACO 0,85 Y

The actuating signal input 0(2)..10V is read in the zero-crossing of the 24 V voltage, because then the voltage losses on a common earth lead are minimized. This results in a higher precision, and it is insured that lead resistances up to approx. 15 Ohm do not form disturbance influences such as oscillations.

7.0 Care and maintenance

The linear actuator requires little maintenance, so that no maintenance is required at fixed time intervals.

Depending on conditions of use, the maintenance and the repair intervals should be determined by the operator.

The linear actuator may not be cleaned with high-pressure devices or with solvents of cleaning materials that are aggressive, harmful to health or easily flammable.

During or after cleaning, the sealing elements of the linear actuator should be carefully examined.

If there is any sign of a lubricant leak or contamination, the sealing elements should be repaired.

8.0 Troubleshooting

In the event of malfunction or faulty operating performance check that the installation and adjustment work has been carried out and completed in accordance with these Operating Instructions.




ATTENTION !

- It is essential that the safety regulations are observed when identifying faults.

If malfunctions cannot be eliminated with the help of the following table

“**9.0 Troubleshooting table**”, the supplier or manufacturer should be consulted.


9.0 Troubleshooting table



ATTENTION !

- read item 10.0 and 11.0 prior to dismantling and repair work!

- read item 6.0 before restarting the plant !



Fault	Possible Causes	Remedy
Linear actuator does not move	Power loss	Determine cause and correct
	Fuse burned out	Change fuse
	linear actuator incorrectly connected	Connect the linear actuator correctly according to the wiring diagram
	Short circuit: - dampness - incorrect connection motor or control is burned out	Determine exact cause, - dry linear actuator and check and correct for leaks - correct connection according to the wiring diagram in the linear actuator - determine if the mains voltage conforms with voltage on the nameplate. Replace motor or control.
	Plug contacts or cable are not or not correctly plugged in the socket bar	Plug contacts or cable firmly in
Linear actuator switches between running left and running right	Motor -operating condenser defective	Replace motor – operating condenser
Linear actuator does not go into the end positions and vibrates	Load-dependant limit switches are maladjusted / defective	Remove linear actuator and send back for repair to the company
	Loss of voltage because of too long connection cables or a too small cable diameter	Install connection cables according to the required power
	Mains deviations outside the allowed tolerances	Ensure "clean" electrical supplies within the tolerances
	Too high plant pressure	Reduce plant pressure or employ appropriate actuating drive
Linear actuator sometimes fails to work	Lead has a loose contact	Tighten connections on the clamping strips
	Initialization run for ARI-PACO 0,85 Y	There is no current error
Malfunction message ARI-PACO 0,85Y	Refer to table 6.2.2	Refer to table 6.2.2

10.0 Dismantlement of thrust actuator



ATTENTION !



- *The supply line for connecting up the thrust actuator must be in the dead state i.e. disconnected while dismantlement work is being carried out. After being disconnected, the mains power must be prevented from being switched back on again accidentally.*
- *The system must be run down (depressurised state) as the valve cone is not held without the thrust actuator and would thus be conducted by the system pressure.*
- *Valve plug approximately in mid lift position - on no account supported inside a seat!*

For the disassembly of the thrust actuators, proceed in the following way:

- Release the two recessed screws on the housing, remove the housing carefully upwards.
- Disconnect all leads that enter into the linear actuator and pull them out of the linear actuator.
- Replace housing carefully from above and mount with two recessed screws on the linear actuator.
- Loosen the coupling with a wrench (SW24). Take care not to damage the coupling with the wrench.
- Remove the two hex screws and the linear actuator from the valve.
- Take the linear actuator from the valve.
- Remove the hex socket screw.
- Remove screw socket and coupling from the valve stem.

11.0 Warranty / Guarantee

The extent and period of warranty cover are specified in the "Standard Terms and Conditions of Albert Richter GmbH & Co. KG" valid at the time of delivery or, by way of departure, in the contract of sale itself.

We guarantee freedom of faults in compliance with state-of-the-art technology and the confirmed application.

No warranty claims can be made for any damage caused as the result of incorrect handling or disregard of operating and installation instructions, datasheets and relevant regulations.

This warranty also does not cover any damage which occurs during operation under conditions deviating from those laid down by specifications or other agreements.

Justified complaints will be eliminated by repair carried out by us or by a specialist appointed by us.

No claims will be accepted beyond the scope of this warranty. The right to replacement delivery is excluded.

The warranty shall not cover maintenance work, installation of external parts, design modifications or natural wear.

Any damage incurred during transport should not be reported to us but *rather* to the competent cargo-handling depot, the railway company or carrier company immediately or else claims for replacements from these companies will be invalidated.



Technology for the Future.
GERMAN QUALITY VALVES

ARI-Armaturen Albert Richter GmbH & Co. KG, D-33750 Schloß Holte-Stukenbrock
Telephone (+49 5207) 994-0 Telefax (+49 5207) 994-158 or 159
Internet: <http://www.ari-armaturen.com> E-mail: info.vertrieb@ari-armaturen.com

12.0 EC declaration of conformity

Translation of the Declaration of Incorporation and Conformity

ARI-Armaturen
Albert Richter GmbH & Co. KG
Mergelheide 56-60, D-33758 Schloß Holte-Stukenbrock, www.ari-armaturen.com

**Translation of the Declaration of Incorporation and Conformity
according to Machinery directive 2006/42/EG**
the EU-directive about electromagnetic compatibility 2014/30/EU,
the EU-Low voltage directive 2014/35/EU
and the EU-directive 2011/65/EU (RoHS II)

for the supplied model of ARI electric thrust actuators:

- **ARI-PACO: 0,85D**
- **ARI-PACO: 0,85Y**

ARI-Armaturen GmbH & Co. KG as manufacturer herewith declares, that the products mentioned above meet the following basic requirements of the Machinery Directive (2006/42/EC):

Anhang I, Ziffern 1.1.2, 1.1.5, 1.1.6, 1.2.1, 1.2.2, 1.2.5, 1.3.2, 1.3.3, 1.3.4, 1.3.7, 1.3.8, 1.3.9, 1.4.1, 1.5.1, 1.5.3, 1.5.4, 1.5.6, 1.5.7, 1.5.15, 1.6.3, 1.6.4, 1.7

The following harmonised standards have been applied:

- DIN EN 60730-2-14:2009-06
- DIN EN 12100:2011-03

ARI-thrust actuators are designed for assembling with valves. ARI-thrust actuators must not be put into service until the final machinery, into which they are to be incorporated has been declared in conformity with the provisions of the EC Directive 2006/42/EC.

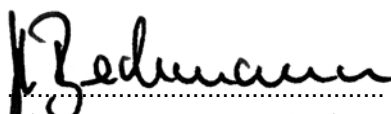
The relevant technical documentation pertaining to the machinery described in Annex VII, part B has been prepared. The manufacturer commits to submitting the documents to the competent national authority via electronic transmission upon request.

Authorised person for documentation: Dieter Richter

The thrust actuators further meet the requirements of the following european directives:

39. **EU-directive about electromagnetic compatibility 2014/30/EU**
40. **EU-Low voltage directive 2014/35/EU**
41. **EU-directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2011/65/EU (RoHS II)**

Schloß Holte-Stukenbrock, den 22.02.2017



(Brechmann, Managing director)

The declaration certifies the conformity with the mentioned directives, it does not contain any warranty of properties in the sense of the product liability law, however. The safety hints of the product information supplied with the product must be observed. In case of a modification of the appliance not agreed with the manufacturer and of non-observance of the safety hints this declaration loses its validity.