



ARM ProClick electric actuators

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NOTICE!

The product may only be used if you have fully read and understood these operating instruction. The manual is also available on the AFRISO websites on the Internet.

WARNING!

The product may only be mounted, commissioned and disposed of by qualified, specially trained staff. Electrical work should always be entrusted to a qualified electrician.

Alterations performed by unauthorized staff may cause a threat and are forbidden for safety reasons.



The product is powered by 230 V AC or 24V AC voltage. This may cause severe injuries or death.

Do not let the product go into contact with water.

Do not alter the product in any way.

Before mounting the product please read the manual of the mixing valve.

APPLICATION

Used in water-based heating and cooling systems, can be mounted on 3- and 4-way mixing valves. When connected to an appropriate controller, ARM 3-point actuators are used to mix two streams via the mixing valve, and ARM 2-point actuators are used to switch the stream between two connections. The ARM proportional actuator can be controlled, depending on the settings, with 0..10 V, 2..10 V, 0..20 mA, 4..20 mA or PWM signals and serve any function.

SCOPE OF DELIVERY

1. ARM ProClick electric actuator with a knob, double-sided scale ("from 0 to 10" and "from 10 to 0") and an electric cable with a plug.
2. Instruction manual.
3. Mixing valve mounting manual.

CONSTRUCTION

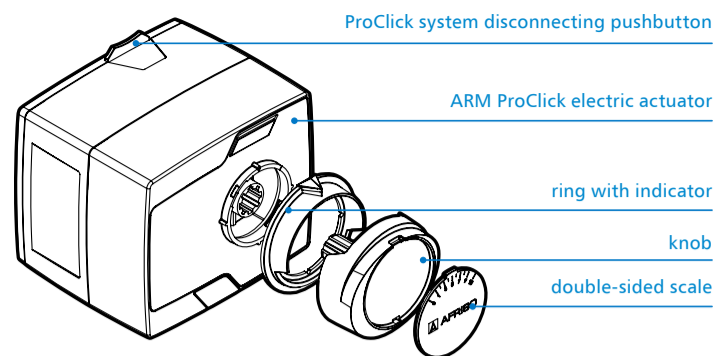


Fig. 1. Construction of the ARM ProClick actuator

The actuator can be mounted on the valve in four different positions. The blue ring with indicator must point upwards. If it does not, pull off the knob and blue ring. Then mount it back with the indicator pointing upwards. The blue ring has a special hole inside, allowing it to be lifted with a flat headed screwdriver.

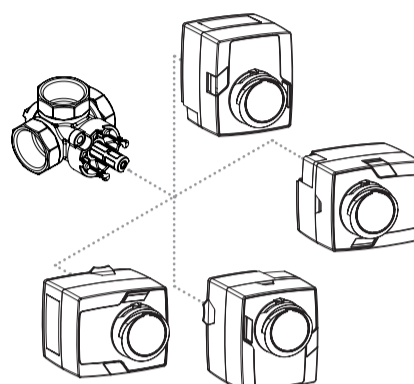


Fig. 2. Possible mounting positions and setting the ring with the pointer and the scale

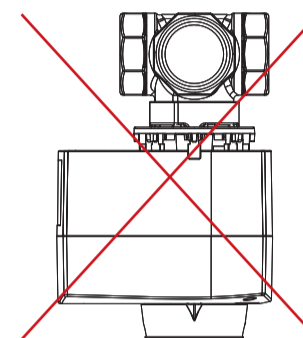


Fig. 3. Improper mounting position

The actuator power cable can be detached, which simplifies mounting and electrical work. To detach the actuator plug, lift the lever of the cover and slide it out of the actuator housing (Fig. 4.). Then proceed to take out the plug (Fig. 5.). The plug fits into the socket in only one position.



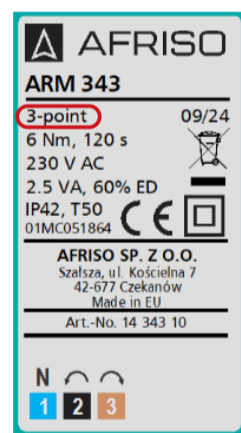
Fig. 4. Detaching the cover lid



Fig. 5. Electrical plug

ELECTRICAL CONNECTIONS

Make electrical connections in the controller depending on the version of the actuator. The version is marked on the nameplate on the actuator housing.



3-point control actuator

Connect the actuator to the controller according to the diagram (Fig. 6.).

The neutral wire of the actuator should be connected to the corresponding clamp on the controller, or directly into the mains neutral wire.

After making the connections, check whether the actuator turns in the required direction.

If needed, swap wires 2 and 3.

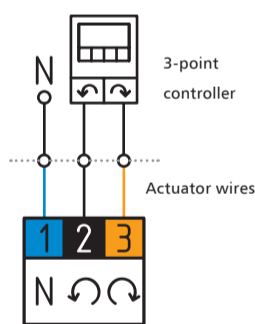
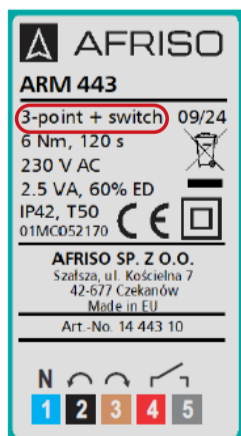


Fig. 6. Electrical diagram of a 3-point actuator



3-point control actuator with auxiliary switch

Connect the actuator with the controller as for the other 3-point actuators. Connect the controlled external device (e.g. circulating pump) via the auxiliary switch (Fig. 7.). The setting of the auxiliary switch can be changed using the switch (Fig. 8.) located under the control knob. Position on - switches the controlled appliance on, off - switches it off.

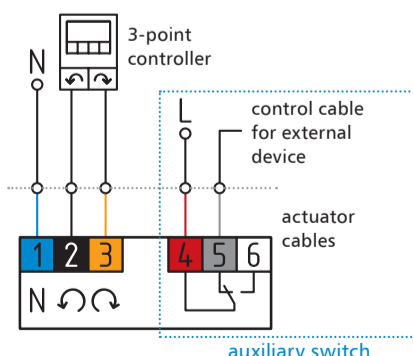
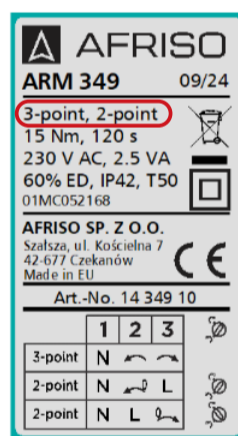


Fig. 7. Electrical diagram of a 3-point actuator with auxiliary switch



Fig. 8. Auxiliary switch

ELECTRICAL CONNECTIONS



2 and 3-point control actuator

Actuators marked like this can work as either 3-point or 2-point actuators.

To use the device in the 3-point mode, you need to:

Connect the actuator with a controller as shown in the diagram on Fig. 6.

After making the connections, check if the actuator turns in the direction required. If needed, swap wires 2 and 3.

To use the device in the 2-point mode, you need to:

Connect the neutral wire of the actuator directly to the mains neutral wire. Detach the knob and set the switch (Fig. 10.) according to the diagram (Fig. 9.). Next, connect the wires depending on the required actuator rotation direction.



Fig. 9. Actuator rotation direction switch

An example for 2-point control

When the switch (Fig. 9.) is set to the position, and voltage is applied to the black wire (2), the actuator will turn the valve counterclockwise to the end position. When voltage is applied to both the black (2) and brown (3) wires, the actuator will turn the valve clockwise to the other end position.

When the switch (Fig. 9.) is set to the position, and voltage is applied to the brown wire (3), the actuator will turn the valve clockwise to the end position. When voltage is applied to both the brown (3) and black (2) wires, the actuator will turn the valve counterclockwise to the other end position.

ELECTRICAL CONNECTIONS



2-point control actuator

The neutral wire of the actuator needs to be connected into the mains neutral wire. Detach the knob and set the switch (Fig. 10.) according to the diagram (Fig. 9.). Next, connect the wires depending on the required actuator rotation direction (example found on page 6).

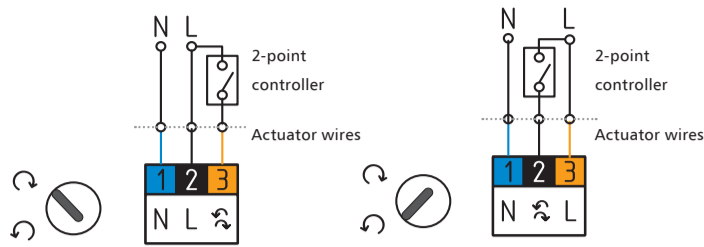
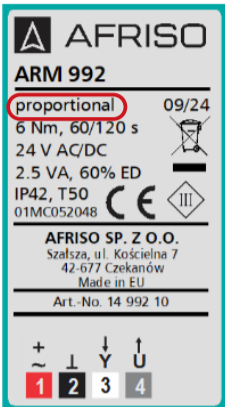


Fig. 10. Electrical diagram of a 2-point actuator, switching function



Proportional control actuator

Detach the knob and use a flat headed screwdriver to select the appropriate letter on the switch (Fig. 11.) depending on the used control signal and the required valve opening time according to the table (Fig. 12.). Next, make the electrical connections as shown in the diagram (Fig. 13.). The actuator turn direction can be changed using the switch (Fig. 9.) located under the knob.

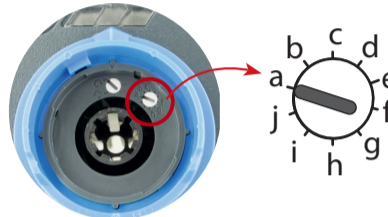


Fig. 11. The switch used to set the actuator function and the accepted control signal

Switch setting	Control signal	Time of full valve rotation
a	0-10 V	60 s
b	0-10 V	120 s
c	2-10 V	60 s
d	2-10 V	120 s
e	0-20 mA	60 s
f	0-20 mA	120 s
g	4-20 mA	60 s
h	4-20 mA	120 s
i	PWM*	60 s
j	PWM*	120 s

Fig. 12. Description of the switch functions

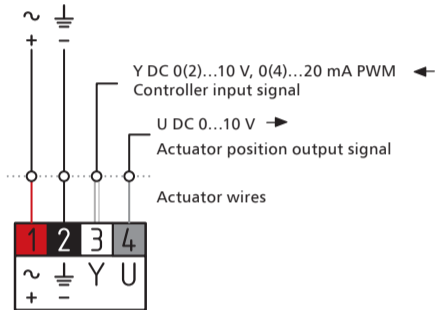


Fig. 13. Electrical connection diagram

* The frequency range for the PWM signal is 100-2000 Hz and the voltage range is 5-15 V.

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USING THE ARM PROCLICK ACTUATOR

1. Signaling LEDs

The LEDs on the left and right indicate the turning direction of the actuator and valve (Fig. 14.). The left one indicates the actuator turning counter-clockwise and the right one indicates turning clockwise.



Fig. 14. LEDs in 2- and 3-point actuators



Fig. 15. LEDs in proportional actuators

On proportional actuators, there is an additional green LED signaling the proper operation of the actuator, and an additional red LED signaling a malfunction (Fig. 15.). The signals description can be found in Tab. 1.

TAB. 1. LED SIGNALS ON PROPORTIONAL ACTUATORS

LED Signals	State	Notes
Green LED is on constantly	Power is on, the actuator is working correctly	-
Green LED is blinking	Power is on, manual mode is enabled (Fig. 16.)	-
Green LED is on, additionally orange LED on the left or right is on depending on the rotation direction	The actuator is turning left or right	-
Green LED is on while the red LED is blinking	The actuator is stuck on an obstacle, turning the valve further is not possible	Clean the mixing valve, remove the obstacle
Red LED is on constantly	No signal, damaged wire	This function is active when controlling the actuator with a 2..10 V (c, d) or a 4..20mA (g, h) signal

2. Proportional actuator protection mode

The actuator is protected against destroying itself. When the actuator encounters an obstacle, it enters an alarm state, indicated by a constant green and blinking red light.

Every 20 seconds, the actuator will attempt to turn the valve. If the actuator successfully turns the valve, it will return to normal operation mode, otherwise it stays in the alarm mode.

Double pressing the manual mode pushbutton (Fig. 16.) from automatic to manual mode on the proportional actuator will clear the displayed errors.

3. Actuator operation mode

It's possible to switch the actuator from automatic to manual mode using the manual mode pushbutton

When the pushbutton is in the upper position, the actuator is in the automatic mode. When the pushbutton is pressed down, manual operation, meaning freely turning the actuator knob, is possible.



Fig. 16. Manual mode pushbutton

USING THE ARM PROCLICK ACTUATOR

4. Mounting and dismantling the actuator on a mixing valve

To mount or dismount the actuator, you need to press and hold the ProClick mechanism pushbutton (1), and then slide the actuator on or off the valve spindle (2).

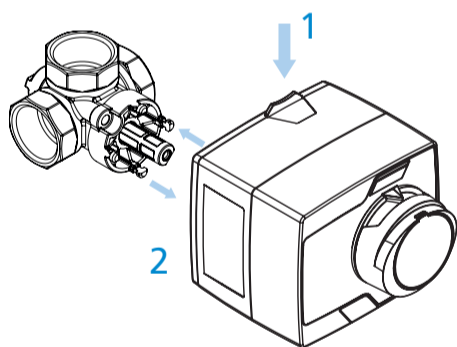


Fig. 17. Mounting/dismounting of an ARM ProClick actuator on a valve

5. Selecting the scale and the position

The double-sided scale of the knob should be inserted in the position corresponding to the required direction of the valve opening and closing ("from 0 to 10" or "from 10 to 0"), following the rule:

- if the valve closes when turned to the right, clockwise, choose the "from 0 to 10" scale,

- if the valve closes when turned to the left, counterclockwise, choose the "from 10 to 0" scale.

After choosing the correct scale, the "0" position will correspond to the valve being fully closed (no hot water input), while the "10" position will correspond to the valve being fully open (hot water input fully open). Other position on the scale will correspond to the respective valve opening percentage (ex. position "4" will correspond to the valve being 40% open).

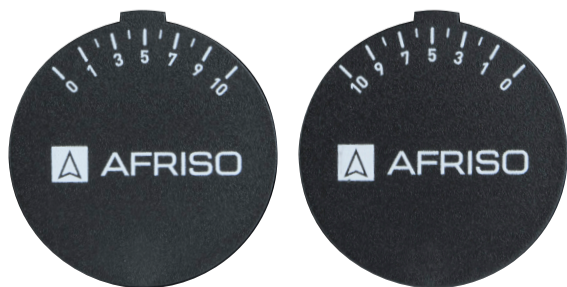


Fig. 18. Two sides of the cover with the scale

ELECTRICAL CONNECTIONS

AFRISO Sp. z o.o. hereby states that this product is compliant with the following directives:

- LVD (2014/35/EU) on low-voltage equipment,
- EMC (2014/30/EU) on electromagnetic compatibility,
- RoHS II (2011/65/EU) on restricting the use of hazardous substances in electrical and electronic equipment,

The full text of the EU declaration of conformity can be found at the following website: www.afriso.pl and www.afriso.com.



TECHNICAL SPECIFICATIONS

Parameter / piece	Value / material			
Control	3-point	2-point	2- and 3-point	Proportional
Torque	6 Nm	6 Nm	6 Nm, 15 Nm	6 Nm
90° turning time	60 s, 120 s	12 s	120 s	depending on settings: 60 s, 120 s
Control signal / power supply	230 V AC	230 V AC	230 V AC, 24 V AC	depending on settings: 24 V AC/DC - 0..10 V, 2..10 V, 0..20 mA, 4..20 mA, PWM
Turning angle	90°			
Ambient temperature range	0÷50°C			
Power consumption	2,5÷4 VA			
Safety class (EN 60730)	II (230 V), III (24 V)			
Fastening type for permanently connected cables	Type M			
Mode of action	Type 1			
Pollution degree	2			
Rated impulse voltage	2500 V (for 230 V appliances), 500 V (for 24 V appliances)			
Protection class	IP42			
Dimensions (H x W x D)	85,5×97×99 mm			
Housing	PC			
Cable length	2 m			

MAINTENANCE

The ARM ProClick actuator is a maintenance-free product.

DECOMMISSIONING, DISPOSAL



1. Disconnect the power supply.
2. Dismount the device.
3. To protect the environment, this product must not be disposed of together with regular household waste. Dispose of the product according to local directives and guidelines.

This device consists of materials that can be reused by recycling companies.

WARRANTY

Product warranty in accordance with the general conditions of sale and delivery. The warranty becomes invalid as a result of unauthorized modifications or installation that is inconsistent with these operating instructions.

CUSTOMER SATISFACTION

For AFRISO customer satisfaction is paramount. If you have any questions, suggestions or product problems, please contact us.