

- Torque 50Nm
- Open/Close 13s
- ISO 5211 F03/F05/F07
- Manual override
- Position indicator
- Position feedback

The AG-series is a range of high-quality quarterturn actuators to control the position of valves with an ISO 5211 flange of type F03, F05 and F07. The actuator can deliver 50Nm in a fast and smooth operation. The dome indicator provides a clear visual inspection of the valve position. The actuator features a manual override and 2 auxiliary limit switches for position feedback.



Figure 1. AG-5 Actuator.

Model	AG-550-A	AG-550-B
Response time	13s	13s
Voltage	100-230V AC ±10%	24 AC/DC ±10% (AC/DC automatically detected)
Utility frequency	50/60Hz	50/60Hz
Torque (Max.)	50Nm	50Nm
Current (Max.)	0.45A	1.2A
Current (Nom.)	0.13A	0.25A
Resolution	0.6°	0.6°
Housing material	Powder coated aluminum	Powder coated aluminum
Seal material	NBR	NBR
Ambient temperature range	-10°C to max. 50°C	-10°C to max. 50°C
ISO 5211 flange	F03, F05 and F07. 9, 10 and 12mm thread depth respectively	F03, F05 and F07. 9, 10 and 12mm thread depth respectively
Duty cycle	S2 30Min	
Properties	14 x 14 Star connection	
	IP67 weather proof rating for housing	
	Manual override lever for safety-control	
	Cable entry: 2 x 1/2" PF	
	Two auxiliary limit switches for position feedback	
	1W space heater	
	101,6 x 120,6 x 128,6 mm L x W x H	

Safety Instructions

General Safety Instructions

Please read the safety instructions carefully before installation, use or maintenance.

- The actuator only complies protection class IP67 (according to IEC 60529), if the device is properly connected.
- Improper use may be hazardous.
- This product is not a safety device and may not be used as such.
- Never put your hands/body parts or other objects into ports of mounted valves. The rotating motion can cause serious injuries or damages.
- Correct transport, proper storage and installation, and proper use and maintenance, are essential for reliable and error-free operation. The product may not function properly as a result of dirt, wear, damage (for example, by dropping) or improper use. Therefore, the product should not be used in applications where a malfunction can cause danger or damage.
- Check the compatibility of the valve, temperature and other operating conditions with the materials and specifications of the product. It is the responsibility of the user to select the right product for the application.
- Never exceed the limits for torque, temperature or voltage as indicated on the product and/or in the technical documentation.
- It is not allowed to change the construction of this device.
- Beware of electric shock, burnings or other injuries when working with electrical equipment.
- It is recommended to install the actuator in a dry environment. In moist environments, make sure that no moisture can penetrate the actuator. Make sure the actuator is not in contact with or in the vicinity of flammable materials. Ensure that the product is protected from frost. Frost may damage the product and/or block the moving parts, causing the electric ball valve to malfunction.
- Maintenance may only be performed when the system is not pressurized, electrically disconnected and cooled down.
- Turn off the power supply before performing any work on the actuator to prevent the risk of electrical shock and to prevent activation of the actuator.
- The product is only safe when properly installed and operated by qualified persons.
- Ensure a controlled commissioning after installation or maintenance.
- Improper installation can permanently damage the actuator or lead to dangerous situations.

Compliance

The actuators are CE marked and comply with the LVD Directive (2006/95/EC) and EMC Directive (2004/108/EC), provided that the cables and connectors are properly connected.

Intended Use

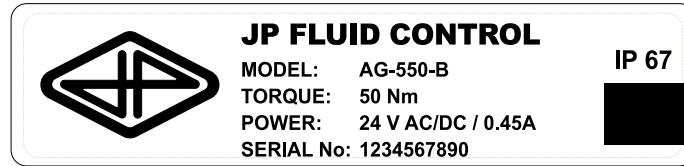
The AG-5-actuator can be applied to rotary type valves that require quarter-turn operation, such as 2-way or 3-way ball valves and butterfly valves. Common applications include ventilation, heating systems, solar water heaters, irrigation systems and industrial equipment.

Duty Cycle

The AG-5-series can be used for continuously for 30 minutes (S2 30 min according to IEC 60034-1), after this period the actuator must cool down to ambient temperature. High loads and long operating times may reduce the lifespan of the actuator.

Identification

The following figure shows an example of the type plate of the actuator. Observe the specifications and the connection diagram before using the product.



Components

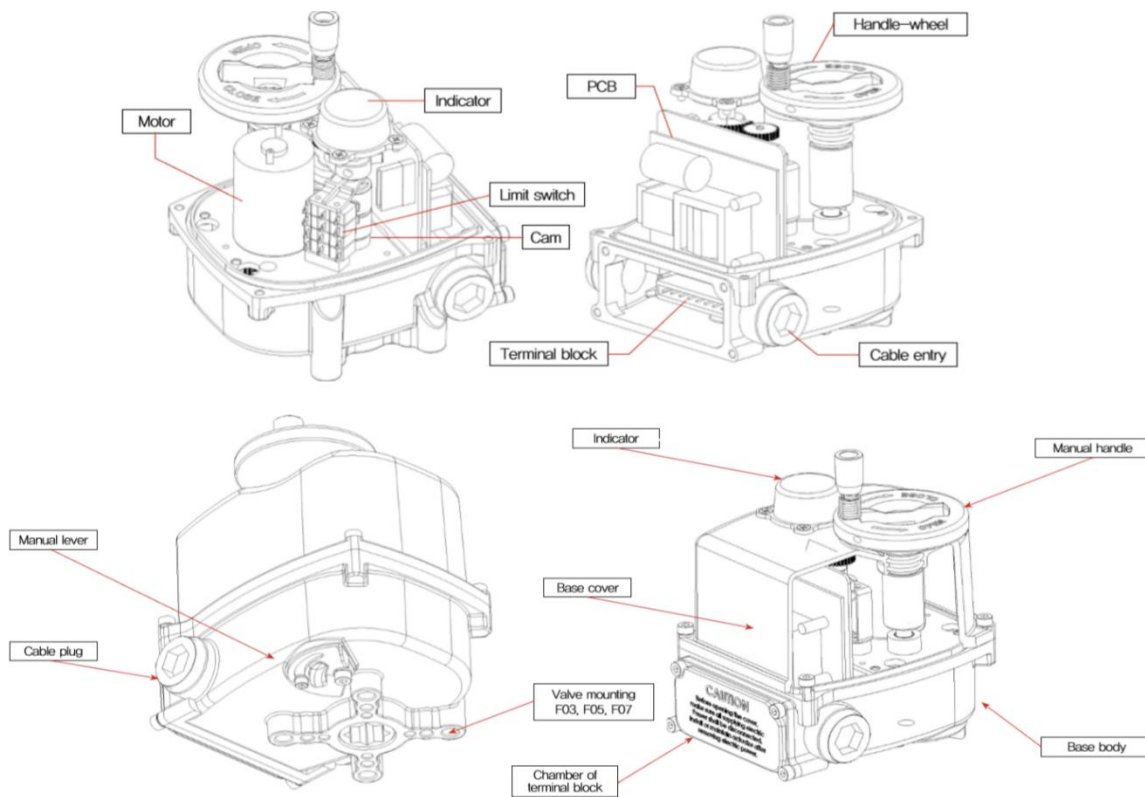


Figure 2: Components of the AG-5-Series Actuator.

Working conditions

It is recommended to install the actuator in a dry and ventilated environment to prevent overheating and entry of moisture. Moreover, the ambient temperature should lie in the operating temperature range of -10 °C up to 50 °C. The actuator may only be used to control valves that require a maximum torque of 50Nm. Please note that the operating torque strongly depends on medium type, pressure, temperature and period of standstill. Break away torque can increase the maximum torque requirement!

Step-by-step installation guide

! Do not use sharp objects while opening the box. Make sure the actuator is disconnected from any electricity before following the installation guide.

- 1 Carefully open and unpack the box.
- 2 Loosen the four Captive Bolts of the Terminal Block chamber (Figure 3) and the four captive bolts of the housing cover (Figure 4).

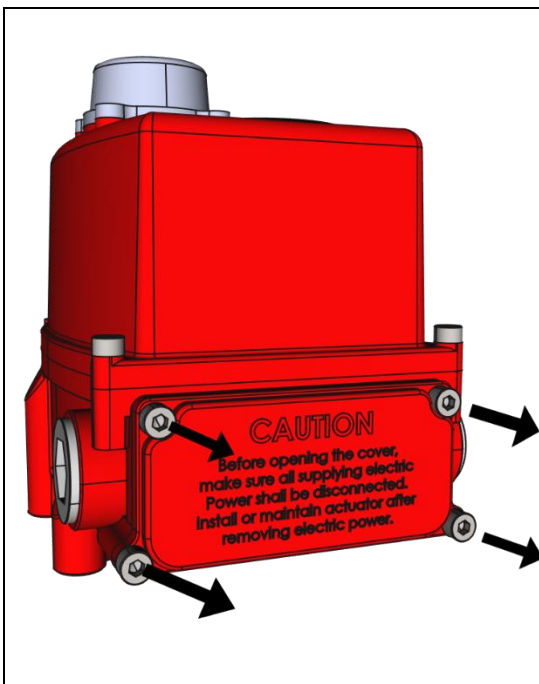


Figure 3: Captive bolts to remove.

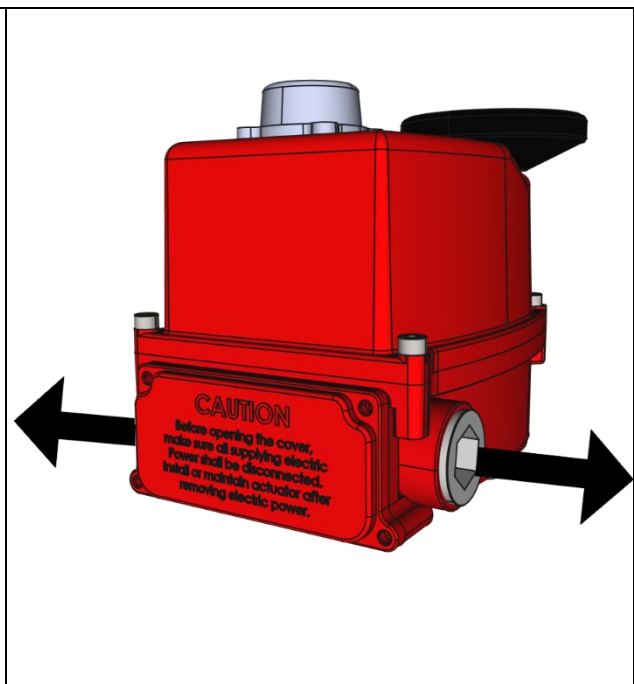


Figure 4: Removing the cable glands.

- 3 Remove the terminal block chamber cover, the housing cover and the cable glands.
- 4 Insert a suitable cable through the Cable Gland.
- 5 Remove the terminal block from the Terminal block chamber.

! The wires should be connected to the terminal block (Figure 1), according to the wiring diagram (Figure 5 a/b).

Electrical wiring

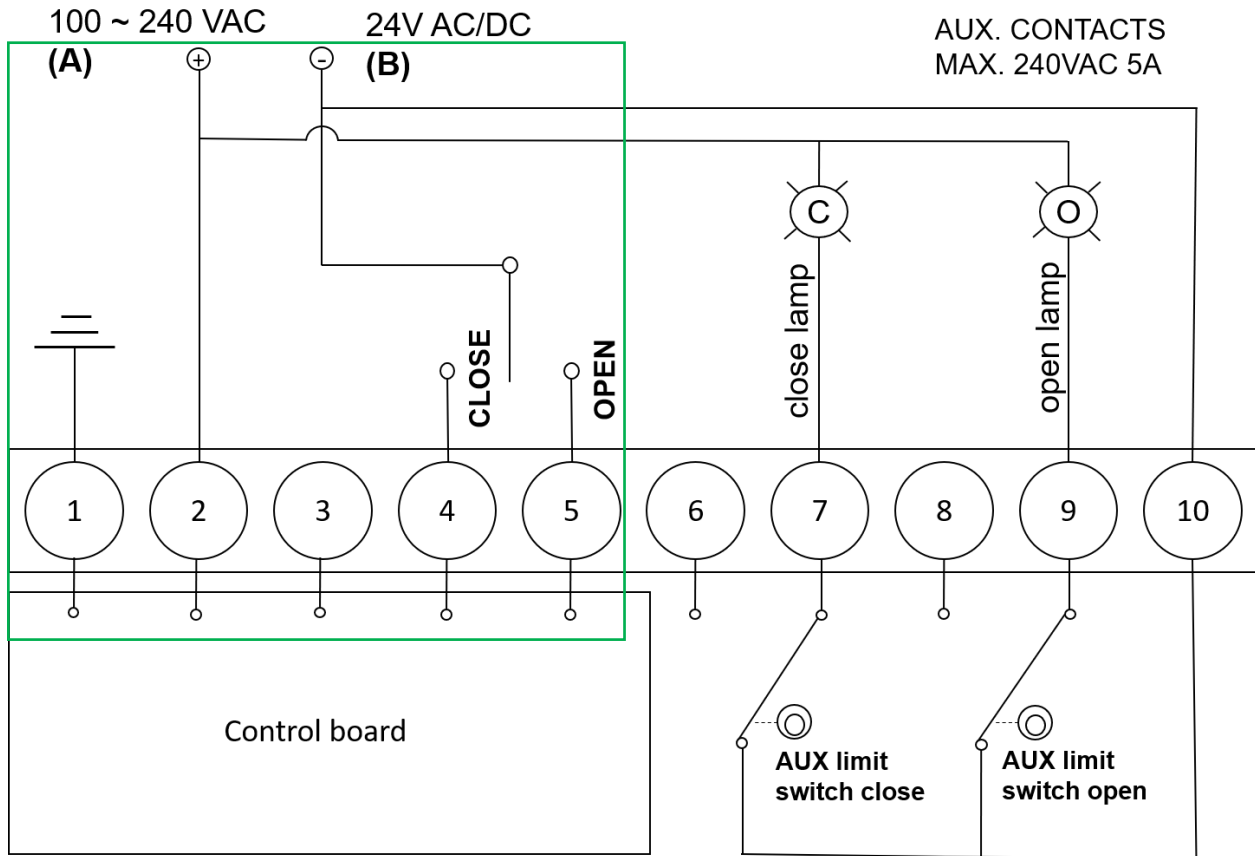


Figure 5: Wiring diagram (3 point connection) for the AG-550 models. The minimally required wiring for operation is shown in the green box.

- 6** **AG – 550 – A (100-240VAC):** Connect terminal 2 to the power supply, connecting terminal 4 to the power supply closes the actuator, connecting terminal 5 to the power supply opens the actuator.
- AG – 550 – B (24V AC/DC):** Connect terminal 2 to the positive terminal of the power supply. Connecting terminal 4 to the negative terminal of the power supply closes the actuator, connecting terminal 5 to the negative terminal of the power supply opens the actuator.



Never use the piping to ground the electrical equipment.



Always connect the ground, which is provided with a residual current device at voltages above 50 volts.

- 7** Connect the ground to terminal 1 (Figure 5a & b).

Feedback (optional)

! Always apply a load (max. 5A) in the feedback circuit to prevent permanent damage. Always apply the correct polarity/phasing. The limit switches share a common source, do not use different power supplies on both limit switches at the same time. Terminal 7, 8, 9 & 10 must have the exact same polarity, voltage & frequency when both are being used.

8 **AG-550-A/B:** The position of the limit switches can be measured by the terminal pairs 8&10 (closed) and/or 9&10 (open).

Limit switch closed position (pair 7&10): Connect terminal 7 to a signal indicator that is connected to a load and connect terminal 10 to the same load.

Limit switch open position (pair 9&10): Connect terminal 9 to a signal indicator that is connected to a load and connect terminal 10 to the same load

Mounting

! In order for the mechanical indicator to show the correct position of the valve, the actuator and the valve have to be aligned. Hence, both should be either in the open or in the closed position.

10 Align the position of the valve and the actuator. That is, open or close both the actuator and the valve

! The actuator may be installed in any position, but it is recommended to install the actuator in a vertical position, with the position indicator facing upwards. This reduces the probability of moisture entering the actuator. When the electric ball valve is mounted at an angle, it is recommended to deviate maximally 90° from the vertical position. Ensure that drops cannot slip along the cable and enter the actuator. See figure 8 for a visual explanation.

! The actuator can be mounted to valves with a flange according to ISO 5211 type F03, F05 or F07. For valves with a shaft of 9x9mm or 11x11mm, an enclosed adapter can be used. The valve must be fixed to the actuator by four bolts of M5 (type F03), M6 (type F05) or M8 (type F07).

11 Mount the actuator to the valves with the appropriate flange.

! Play between actuator and valve may damage the valve or the actuator and/or reduce its performance.

12 Remount the Terminal Block chamber cover and the housing cover with the Captive Bolts (figure 3).

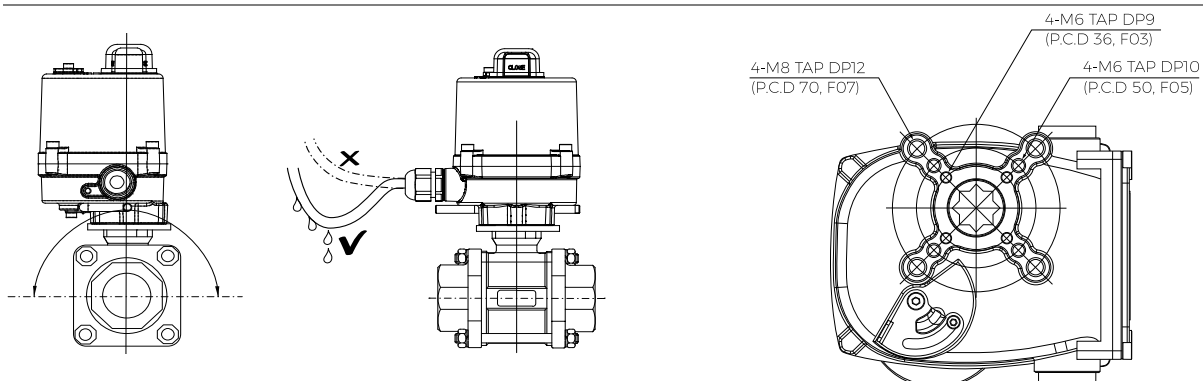


Figure 8: Mounting angle actuator and ISO 5211 mounting flange.

Actuator Setting and Configuration

Manual override

! Always disconnect the power supply before using the manual override. Do not use excessive force when shifting the lever and lever wheel to prevent damage.

- 1 Shift the lever on the bottom of the actuator from “auto” to “manual” to set the actuator to manual override, a small “wiggle” of the lever wheel might be necessary to shift the lever (Figure 9).
- 2 Fold the gripping rod from the lever wheel (Figure 9).

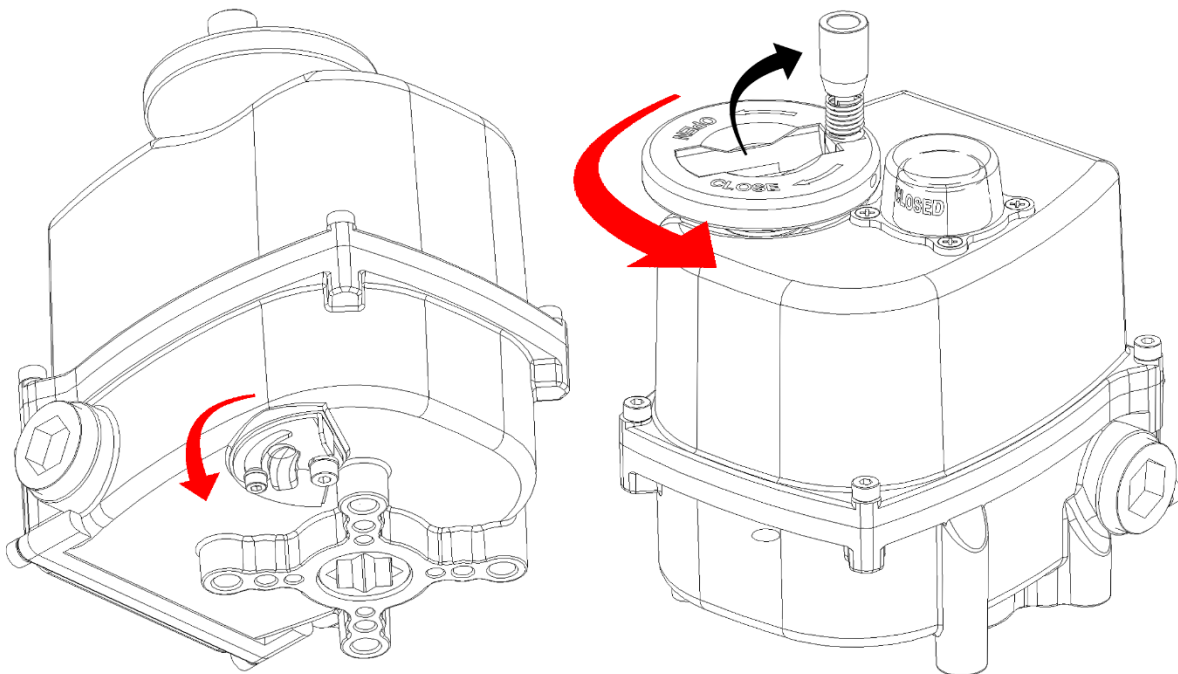


Figure 9: Manual Operation.

- 3 Rotate the lever wheel until the actuator has reached the desired position.

! Make sure the lever wheel is disconnected from the gears when electrically operating the actuator (lever at “auto” position).

- 4 When finished, shift the bottom lever back to the original position and wiggle the lever wheel until a click is heard, this is to couple the gears to the motor. Test to see if the gear is re-coupled to the motor by turning the lever wheel and inspecting the valve position. If the valve does not move the gears are re-connected to the motor. Fold the gripping rod back in the lever wheel.

Limit Switch Adjustment

The limit switch cams can be adjusted to the desired angle. The standard setting is such that ball valves are fully closed or fully opened. For special applications the cam position may be altered by loosening the locking bolt (6), adjusting the cam to the right angle and locking the locking bolt again.



The angle may be altered only for a few (<10) degrees since the actuator has a limited range.

Component	
1	Close Limit Switch
2	Auxiliary Close Limit Switch
3	Auxiliary Open Limit Switch
4	Open Limit Switch
5	Close Limit Switch Cam
6	Locking M4 Bolt
7	Open Limit Switch Cam

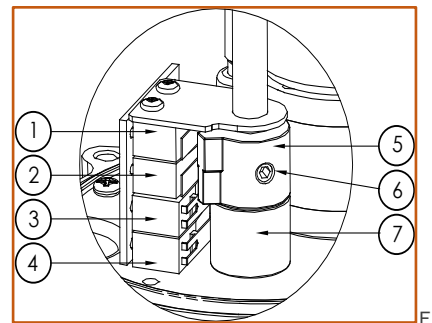


Figure 10: Limit Switch Adjustment.

Disposal

The removal of the product should be performed in accordance with the applicable laws. Keep in mind the media that are still present in the valve.

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