Valemo V24B7-A3S

Valemo Motorized Zone Valve Instruction Manual

Model: V24B7-A3S | **Brand:** Valemo

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your Valemo Motorized Zone Valve. This device is designed to control the flow of hot or cold water in heating and air conditioning systems, such as fan convectors, bases, or other closed water systems. It features a motorized actuator that positions a valve paddle to regulate water flow, often in response to a thermostat.

The Valemo motorized zone valve consists of an actuator and a valve body. The actuator contains a motor, a spring, and mechanical components. When electrical power is applied, the motor moves the valve paddle to a desired position. When power is removed, the spring returns the paddle to its starting position. This model is a 2-way, DN25, normally closed valve operating on 230 VAC.

Figure 1: Valemo Motorized Zone Valve (V24B7-A3S) showing the brass valve body, the silver actuator, and the multi-colored electrical wires.

2. Safety Information

Please read all instructions carefully before installation and operation. Failure to follow these instructions may result in property damage, personal injury, or death.

- Installation and wiring must be performed by a qualified electrician or HVAC professional in accordance with local electrical codes and regulations.
- Ensure the power supply to the system is completely disconnected before performing any installation, wiring, or maintenance.
- Do not operate the valve outside its specified voltage and pressure ratings.
- Protect the valve from freezing temperatures.
- Do not attempt to disassemble or repair the internal components of the actuator unless specifically instructed.

3. Product Components

The Valemo Motorized Zone Valve consists of two primary parts:

1. **Valve Body:** Made of brass, this component contains the internal paddle that controls water flow. It has 1" BSP inlet and outlet connections.
2. **Motorized Actuator:** The silver housing containing the motor, gears, and electrical connections. It drives the valve

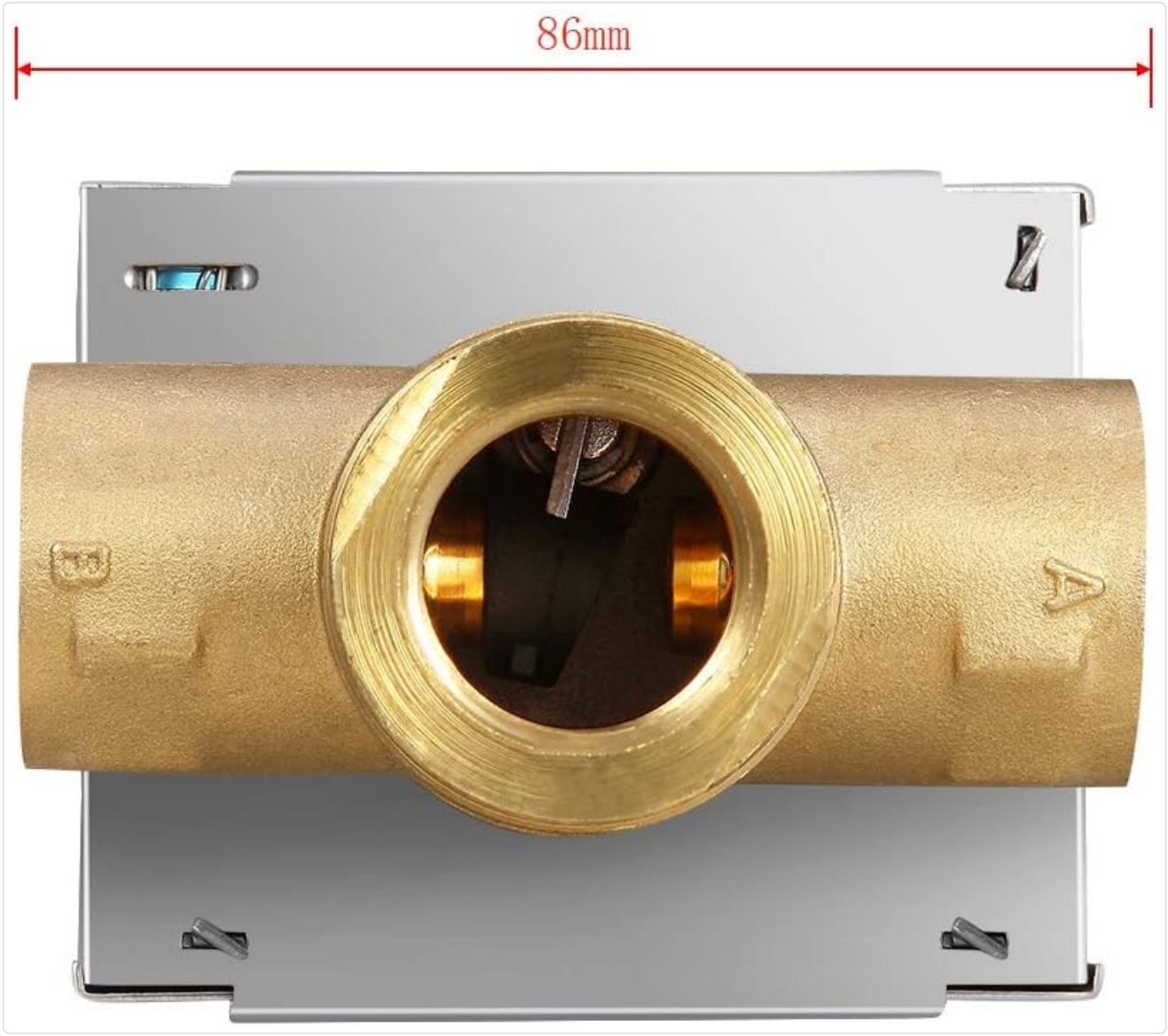
paddle.

The valve is equipped with a 1-meter heat-resistant cable with 5 conductors for power and limit switch feedback.

Figure 2: Left: Close-up of the actuator showing the model label (V33B3-A3S, similar to V24B7-A3S) and wire colors. Right: Internal view of the actuator revealing the motor, spring mechanism, and gears.

4. Technical Specifications

Feature	Specification
Model Number	V24B7-A3S
Valve Type	2-way, Normally Closed (N.C.)
Nominal Diameter (DN)	DN25
Connection Size	1" BSP (British Standard Pipe)
Voltage	230 VAC, 50/60 Hz
Wattage	6.5 watts
kV Value	5.0
Static Pressure	20 bar (2.0 MPa)
Closing Pressure	1.38 – 3.45 bar
Material	Brass (valve body), Aluminum (actuator housing)
Cable Length	1 meter
Operating Temperature Range	0°C to 100°C (for liquid)
Durability	Tested for over 100,000 cycles
Certifications	ASME B16.34, CE, MSS SP 72, UL


86mm
B
A

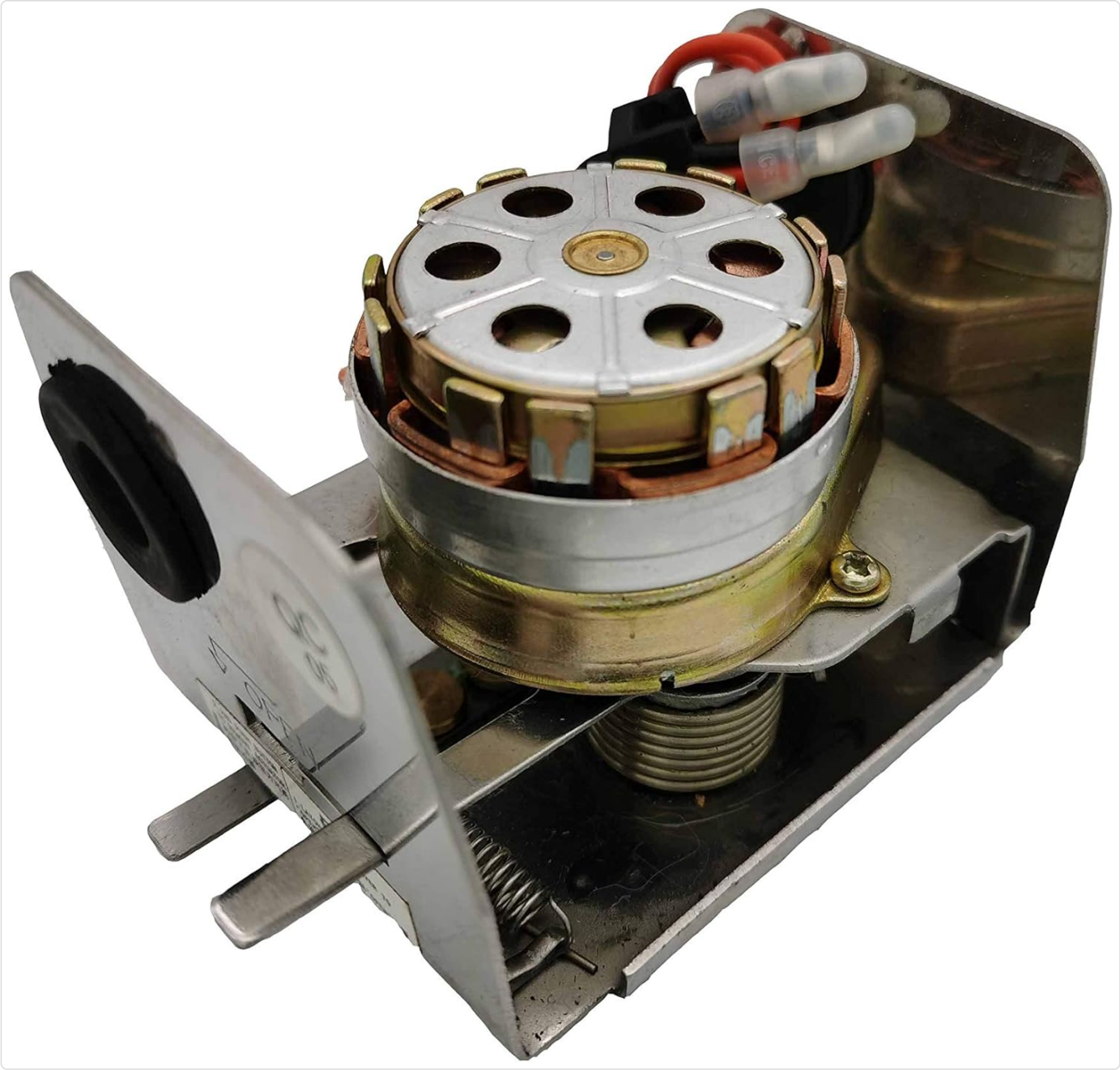


Figure 3: Dimensional drawings of the valve, showing a top view with an 86mm width and a side view with a 32mm pipe diameter.

5. Installation and Setup

5.1. Pre-Installation Checks

- Verify that the valve's specifications (voltage, size, pressure) match your system requirements.
- Ensure the power supply is OFF before beginning installation.
- Inspect the valve for any visible damage.

5.2. Mechanical Installation

- Install the valve body into the piping system, ensuring the flow direction matches the arrows on the valve body (if present).
- Use appropriate sealing materials (e.g., PTFE tape) on threaded connections to prevent leaks.
- The valve can be installed in any orientation, but ensure sufficient clearance for wiring and actuator removal.

5.3. Electrical Wiring

The valve comes with a 5-conductor cable. Refer to the wiring diagram below for proper connections:

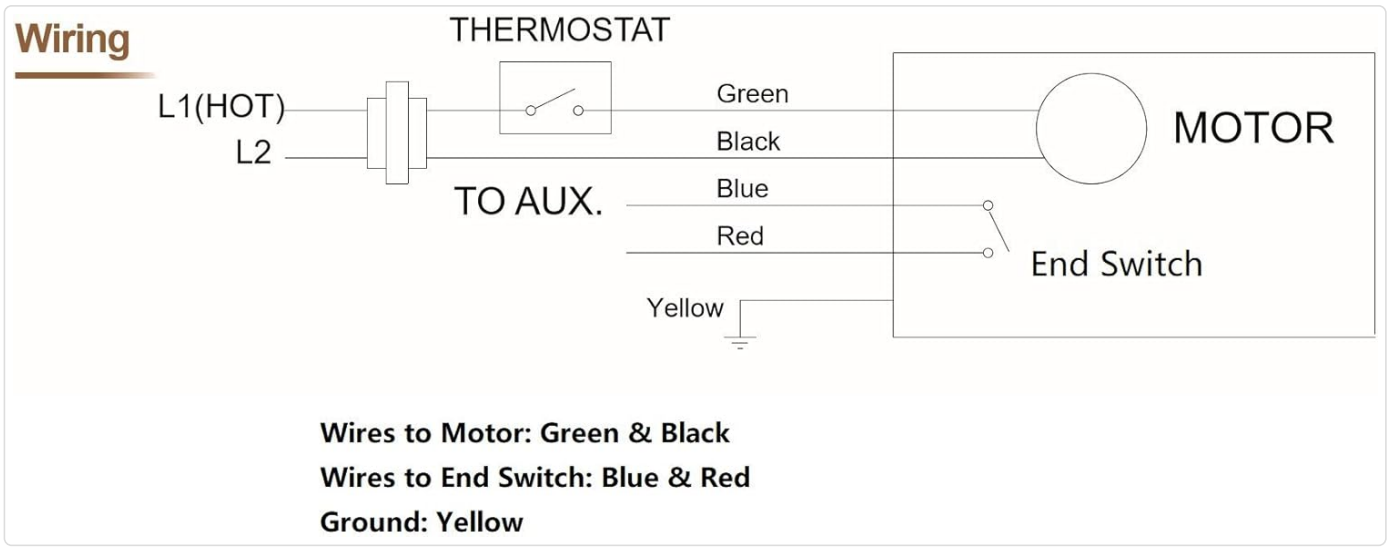


Figure 4: Wiring diagram for the Valemo motorized zone valve. Green and Black wires connect to the motor. Blue and Red wires are for the end switch. Yellow is for ground. L1 (HOT) and L2 are power lines, typically connected via a thermostat.

- **Green & Black Wires:** These wires connect to the motor. They should be connected to your 230 VAC power supply, typically controlled by a thermostat or control unit.
- **Blue & Red Wires:** These wires are for the internal limit switch. When the valve is fully open, these two wires become short-circuited (connected). When the valve is closed, they are disconnected. This allows external systems to monitor the valve's position.
- **Yellow Wire:** This is the ground wire. Ensure it is properly connected to an earth ground.

Note: This valve is a Normally Closed (N.C.) type. This means that when no power is applied to the motor wires (Green & Black), the valve will be in its closed position. When power is applied, the motor will open the valve.

6. Operation

The Valemo motorized zone valve operates by controlling the flow of hot or cold water in your system. It is typically integrated with a thermostat or building management system.

- **Valve Opening:** When the thermostat or control system calls for heating/cooling, it sends 230 VAC power to the motor wires (Green and Black). The motor then drives the valve paddle to the open position. This process takes approximately ten seconds for the paddle to move completely.
- **Valve Closing:** When the thermostat or control system no longer requires heating/cooling, it removes power from the motor wires. The internal spring then returns the valve paddle to its normally closed position. This closing action typically takes about five seconds.
- **Position Feedback:** The blue and red wires provide feedback on the valve's fully open status. When the valve is fully open, these wires are short-circuited, indicating to the control system that the desired flow has been achieved.

For example, in a heating system, if the room temperature is higher than the setpoint, the controller will cut power to the valve, causing it to close and stop the flow of hot water. When the temperature drops below the setpoint, the controller will apply power, opening the valve to allow hot water to flow and heat the room.

7. Maintenance

The Valemo motorized zone valve is designed for long-term, reliable operation with minimal maintenance. However, periodic checks can help ensure optimal performance.

- **Visual Inspection:** Periodically check the valve and wiring for any signs of leaks, corrosion, or damage.

- **Actuator Removal (FastFit Design):** The motorized head can be easily removed without tools for inspection or replacement.

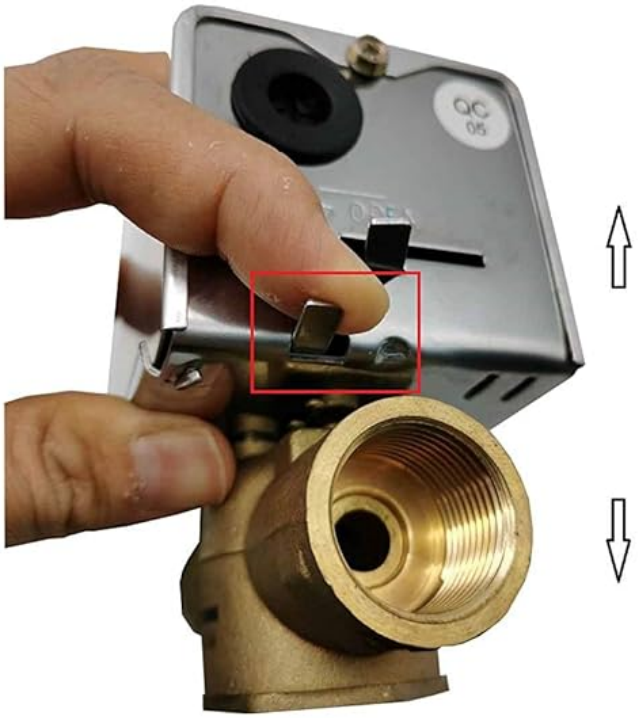
7.1. Removing the Actuator from the Valve Body

The Valemo valve features a "FastFit" design, allowing for tool-free removal of the motorized head from the valve body. This is useful for maintenance or if the actuator needs to be replaced.

Come rimuovere l'attuatore dal corpo valvola?

1. La posizione originale della leva superiore e della leva inferiore.

2. Spostare la leva superiore da destra a sinistra e premerla verso il basso, in modo che possa essere fissata dalla tacca.



3. Premere la leva inferiore da destra a sinistra e tenerla premuta, quindi allontanare l'attuatore dal corpo valvola.

4. L'attuatore e il corpo valvola possono essere separati facilmente.

Figure 5: Illustrated guide for removing the actuator. 1. Start with the lever in its original position. 2. Move the upper lever from right to left and press down to secure it in the notch. 3. Press the lower lever from right to left and hold it. 4. The actuator and valve body can then be easily separated.

1. Ensure the valve is in its original, normally closed position.
2. Locate the upper lever on the actuator. Move this lever from right to left and press it down into the notch to secure it.
3. Locate the lower lever. Press this lever from right to left and hold it.
4. With both levers manipulated, the actuator can be lifted straight up and separated from the brass valve body.
5. To reattach, align the actuator with the valve body and push down until it clicks into place, ensuring the levers are released.

8. Troubleshooting and FAQs

8.1. Common Questions

Q: What is the difference between a zone valve and other valves?
A: A zone valve is specifically designed to be operated by an electric AC or DC motor, allowing it to be controlled by other electrical units like thermostats. It is built to produce sufficient power to move the paddle and maintain its position. Additionally, it is designed to work with liquids within a temperature range of 0°C to 100°C.

Q: Can a zone valve also be used elsewhere in addition to temperature control?
A: Theoretically, a zone valve acts as an electrically controlled switch to turn water flow on and off. Some users have successfully used it in irrigation systems or for controlling water levels in sinks. However, it's important to note that a zone valve is not suitable for applications requiring a quick reaction, as it takes approximately ten seconds for the motor to fully open the paddle and five seconds for the spring to return it to the closed position.

Q: What is the difference between zone valves with and without an end switch?
A: Valves with an end switch (like this model) have two additional wires (blue and red) that indicate the position of the valve paddle. When the paddle is moved by the motor to the fully open position, it activates the end switch, causing the blue and red wires to short-circuit. By monitoring the connection between these two wires, external control systems can determine if the valve is completely open or not. Valves without an end switch do not provide this positional feedback.

Q: What do "N.C." and "N.O." mean?
A: **N.C.** stands for "Normally Closed," and **N.O.** stands for "Normally Open." This refers to the valve's default state when no energy is applied to the motor. This Valemo valve is an N.C. type, meaning it is closed when unpowered and opens when power is applied.

Q: What is the difference between "static pressure" and "closing pressure"?
A: **Static pressure** is the maximum pressure that can be applied to the valve body without causing leakage. It is a measure of the valve body's structural integrity. For this valve, the static pressure is 20 bar. **Closing pressure** is the water pressure under which the motor can still fully move the paddle to the desired position (i.e., close the valve against the pressure). For this valve, the closing pressure is 1.38–3.45 bar, which is suitable for most residential water supply systems.

9. Warranty Information

Valemo products are manufactured to high-quality standards and are backed by a manufacturer's warranty. Please refer to the warranty card included with your product or visit the official Valemo website for detailed warranty terms and conditions. Keep your proof of purchase for warranty claims.

10. Customer Support

If you encounter any issues or have questions regarding the installation, operation, or maintenance of your Valemo Motorized Zone Valve, please contact Valemo customer support. Contact information can typically be found on the

product packaging or the official Valemo website.
For technical assistance, please have your product model number (V24B7-A3S) and purchase details ready.