ALV Series flameproof solenoid valves

Operation manual

(Direct Acting)

ALLIED AUTOMATION PTE. LTD.

⚠ WARNING

1、DO NOT OPEN ENCLOSURE IN AN EXPLOSIVE ATMOSPHERE WHEN ENERGIZED.

2、EARTHING FIRST BEFORE OPERATION.

3、DO NOT CHANGE THE PART OF THE PRODUCT BY YOURSELF. YOU SHOULD DISCUSS WITH THE SUPPLIER TO SETTLE THE PROBLEM, IN ORDER TO BE AWAY FROM BROKEN.

4、BE SURE THAT THE HARMFUL GAS CORRUPTED TO ALUMINUM IS NOT EXISTED IN AMBIENCE.

1. General Description

The ALV series explosion-proof solenoid valve is a 3/2 direct acting flameproof type solenoid valve that can be used in zone 1. The flameproof enclosure is made of aluminum alloy or stainless steel (316) alloy material, The electromagnetic coil is made of H class enameled wire and sealed in the alloy material enclosure with epoxy resin. The product is designed and manufactured according to the explosion-proof device requirements of EN IEC 60079-0:2018; EN 60079-1:2014. standards, and is widely used in explosive environment in automatic control field.

2. Type code designation

ALV**X**10**YZ**C**N**

X：Represents the valve body material, optional code and meaning:

1: aluminum

2: stainless steel (316)

Y：Stands for ambient temperature, optional code and meaning:

□**:** -20℃~+60℃

L1: -40℃~+60℃

L2: -53℃~+60℃

Z：Represents the valve body installation form, optional code and meaning:

F1: Namur

Q1: Cnomo

P1: In-line

N：Represents the coil enclosure size and material, optional code and meaning:

4: 25×25, stainless steel (316)

5: 25×25, aluminum

9: 31×31, aluminum

3. Service Condition

3.1 Ambient temperature: -20℃~+60℃， -40℃~+60℃ or -53℃~+60℃

3.2 Area Classification: Ex db IIC T6 Gb ; Class I Zone 1 Aex db IIC T6Gb

3.3 Enclosure Type 4 and 4X, IP67

3.4 Cable Entry: M20x1.5 or 1/2 " NPT

3.5 Terminal strip：2 points

3.6 Working medium：filtered (<=40μm), dry or lubricated air or neutral gas

3.7 Model number and Electricity parameter:

Model number	Installation form	Ambient temperature	Electricity parameters
ALV110F1C5	Namur installation	-20℃~+60℃	24 or 110 VDC (3.5W max) 120 or 240 VAC (4VA max, 50/60Hz)
ALV110Q1C5	Cnomo installation		
ALV110P1C5	In-line installation		
ALV110F1C9	Namur installation	-20℃~+60℃	24 VDC, ≤1W 110 or 220 VDC, ≤3.5W 24 or 110 or 220VAC，≤4VA (50/60HZ)
ALV110Q1C9	Cnomo installation		
ALV110P1C9	In-line installation		
ALV110L1F1C9	Namur installation	-40℃~+60℃	24 or 110 or 220 VDC, ≤5W 24 or 110 or 220VAC，≤6VA (50/60HZ)
ALV110L1Q1C9	Cnomo installation		
ALV110L1P1C9	In-line installation		
ALV110L2F1C9	Namur installation	-53℃~+60℃	24VDC, ≤7W 110 or 220 VDC, ≤6.5W 24 or 110 or 220VAC，≤7.5VA (50/60HZ)
ALV110L2Q1C9	Cnomo installation		
ALV110L2P1C9	In-line installation		
ALV210F1C4	Namur installation	-20℃~+60℃	24 or 110 VDC (3.5W max), 120 or 240 VAC (4VA max, 50/60Hz)
ALV210Q1C4	Cnomo installation		
ALV210P1C4	In-line installation		
ALV210L1F1C4	Namur installation	-40℃~+60℃	24 or 110 VDC (5.5W max), 120 or 240 VAC (6VA max, 50/60Hz)
ALV210L1Q1C4	Cnomo installation		
ALV210L1P1C4	In-line installation		

4. Applicable Standards

EN IEC 60079-0:2018; EN 60079-1:2014.

5. Pneumatic Installing and Dimension

5.1 Important Precautions

5.1.1 Prior installing the solenoid valve, depressurize the pipes and clean them internally to avoid particles entering the system (tape sealant, thread compound).

5.1.2 Connect pipes for the required functions in accordance with this documentation and the ports markings on the product.

5.1.3 Correctly support and align pipes to prevent mechanical strain on the valve.

5.1.4 When tightening, do not use the valve as a lever. Locate wrenches as close as possible to connection point.

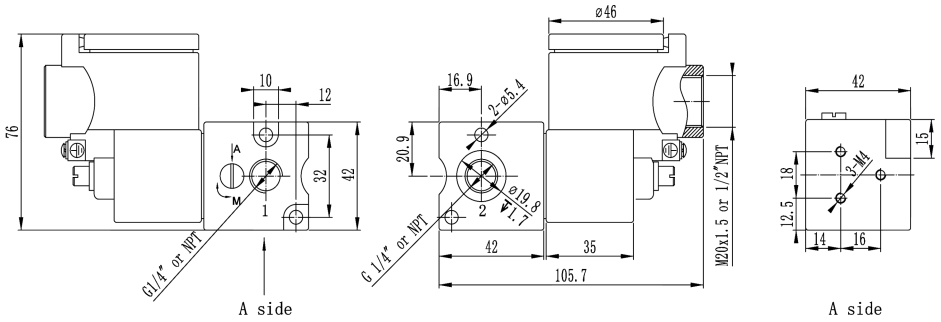
5.1.5 To avoid damage to the equipment, DO NOT OVER TIGHTEN pipe connections.

5.2 Installing and Dimension

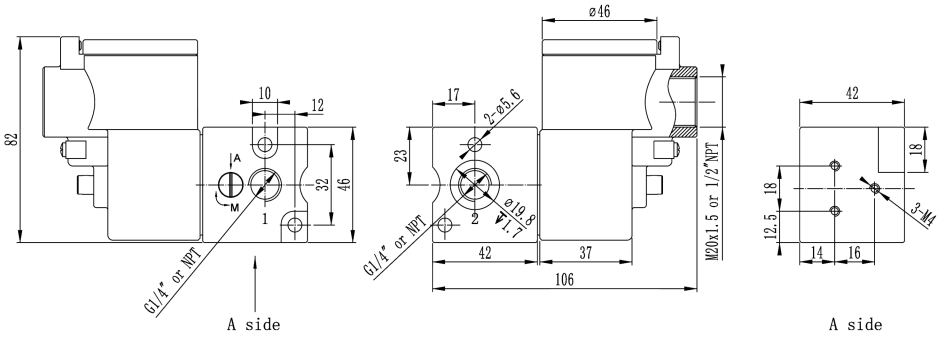
5.2.1 Namur installation

5.2.1.1 These series direct acting solenoid valve is multi-mount design. For the same body, the Namur and threaded connections are available. As for Namur connection, the body can be directly mounted to the Namur vent interface of the pneumatic actuator with two screws M5 (Torque 4-5Nm) provided.

5.2.1.2 Dimension (ALV210F1C4, ALV210L1F1C4, ALV110F1C5, ALV110L1F1C5)



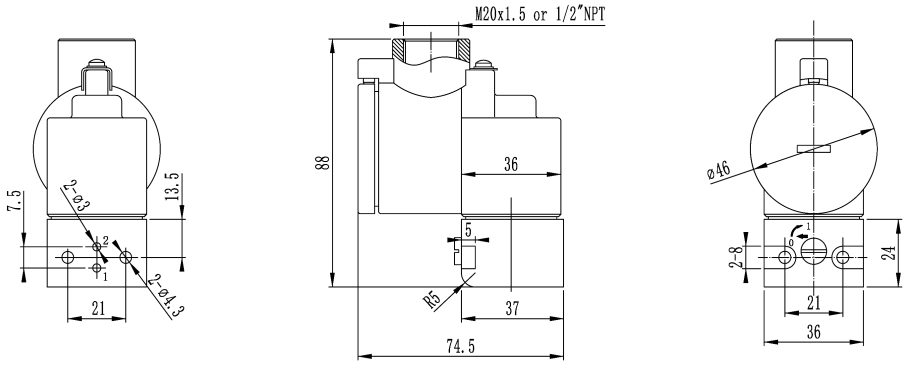
5.2.1.3 Dimension (ALV110F1C9, ALV110L1F1C9, ALV110L2F1C9)



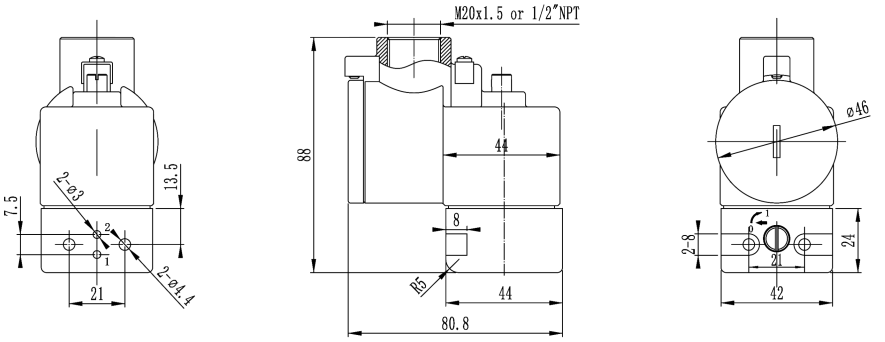
5.2.2 Cnomo installation

5.2.2.1 These series direct acting solenoid valve is Cnomo-30 standard design. The body can be directly mounted to vent interface of various Cnomo-30 standard pneumatic valves with two screws M4 (Torque 3-4Nm) provided to implement pilot control.

5.2.2.2 Dimension (ALV210Q1C4, ALV210L1Q1C4, ALV110Q1C5, ALV110L1Q1C5)



5.2.2.3 Dimension (ALV110Q1C9, ALV110L1Q1C9, ALV110L2Q1C9)

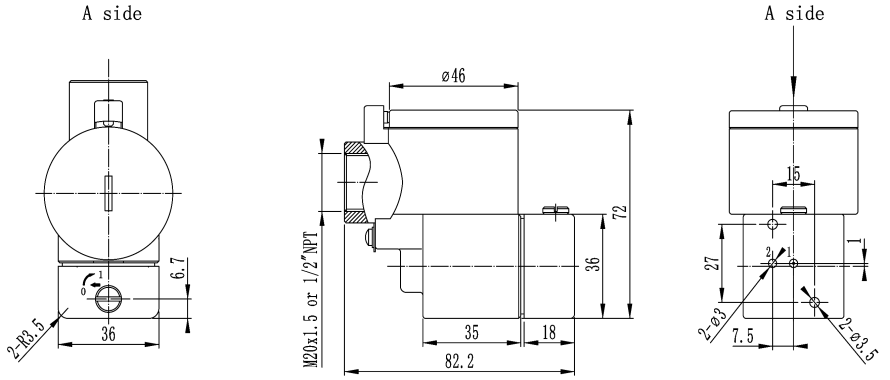


5.2.3 In-line installation

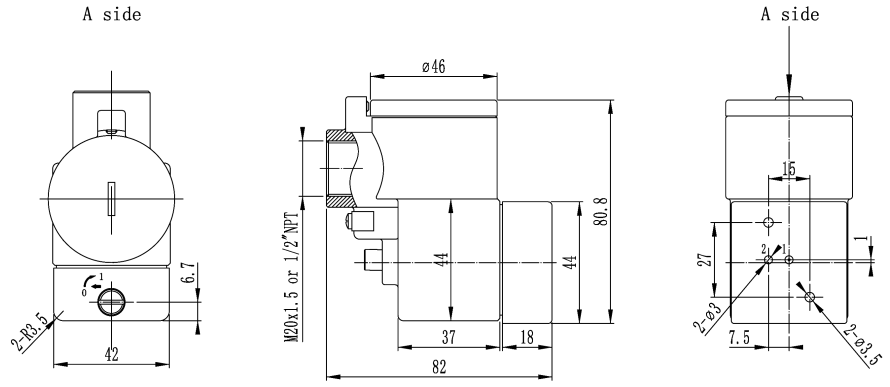
5.2.3.1 These series direct acting solenoid valve is in-line installing design. The body can be directly mounted to vent interface of various in-line spool valves with two screws M4 (Torque 3-4Nm)

provided to implement pilot control of the high-flow spool valve.

5.2.3.2 Dimension (ALV210P1C4, ALV210L1PQ1C4, ALV110P1C5, ALV110L1P1C5)



5.2.3.3 Dimension (ALV110P1C9, ALV110L1P1C9, ALV110L2P1C9)



6. Electrical connection

6.1 Important Precautions

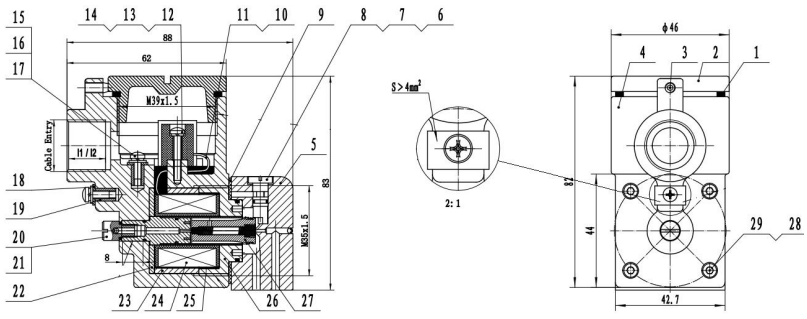
6.1.1 Electrical connection must be made by qualified personnel and according to applicable local standards and regulations.

6.1.2 Carefully check the working voltage on the product nameplate. When the field input voltage is not consistent with the working voltage, the product will not be normal, and the product will be seriously damaged.

6.1.3 Before any electrical connection, turn off the electrical current to power off the components.

6.1.4 Ground before operation

6.1.5 There should be no harmful gas corrosive to aluminum alloy at the installation site.



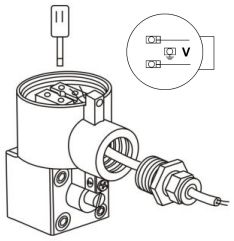
6.2 Wiring procedure

6.2.1 Loosen the lock screw (3) on the coil enclosure (4), rotate and remove the cover (2).

6.2.2 Install Exd cable Gland (user self-purchase) on the cable entry (M20x1.5 or 1/2 " NPT)

6.2.3 Ground according to the wiring diagram. Note that there are two ground terminals, one is located below the cable entry (19), two is inside of the enclosure(17).

6.2.4 Electrical connection is made with junction box with M20-1.5 or 1/2" cable entry, two points terminal strip for electric pins + ground pins and outside ground pins is available.



7. Maintenance

7.1 Important Precautions

7.1.1 Observe the warning on labels for on site installation and maintenance.

7.1.2 Prior any maintenance work, switches off power supply, depressurize and vent the valve to prevent the risk of personal injury or damage equipment.

7.1.3 There should be no harmful gas corrosive to aluminum alloy at the installation site.

7.2 Preventive maintenance: Operate the valve at least once a month to check its function.

Avoid obstruction of exhaust port when it is not connected or protect it with a cap.

7.3 Cleaning: Maintenance of the valve depends on the operating conditions.They must be cleaned at regular intervals. Cleaning must be done when a slowing down of the cycle, a leakage or an abnormal noise is noticed. The components must be checked for excessive wear. Cleaning must be made with suitable solvent.

7.4 Spare parts: After a prolonged use, it can be necessary to replace the active components of the valve. A spare Parts Kitis available for each version of plunger and spool valve. Contact the manufacturer or his representative.

8. Troubleshooting

8.1 Valve fails to operate (No switching noise)	-Check that electrical supply complies with values mentioned on the nameplate or coil -Check coil for shorts or damage -Check that plunger is not blocked by foreign particles -Check if the mounted incorrectly
8.2 Valve fails to return	-Check if the pilot plunger spring is broken -Check if the pilot exhaust port is blocked
8.3 Valve switches but without effect	-Check if the correct installation -Check if leaks -Verify if the pilot plunger spring is broken
8.4 External leakage	-Verify connectors and tightening of the valve on its interface plate. -Check if the O-ring of each vent is properly installed

9. Precautions for product use

9.1 The installation, use and maintenance of the products shall be in accordance with the provisions of the operation manual.

9.2 The product must be equipped with explosion-proof cable gland (user self-purchase), and the connection thread of the product M20X1.5 (1/2 "NPT) shall comply with the relevant requirements of the operation manual of the cable gland.

9.3 The product is equipped with grounding terminal. Users should be grounded reliably when using the product.

9.4 The user shall not replace the components and parts of the product by himself, and shall work with the product manufacturer to solve the faults in operation to prevent the occurrence of damage.

10. Important reminder

10.1 Install, debug and use the product after reading this manual.

10.2 If you have any questions about the technology, installation, use and other aspects of the product, please contact the supplier in time.

10.3 For the safety of the installation personnel, the product and the system, please observe the safety matters indicated in this manual when installing the product. Our company will not guarantee the safety of those who fail to comply with the safety instructions in this manual.

10.4 Our company will not compensate for personal injury or material loss caused by user's arbitrary modification or maintenance of the product. If you need to repair or modify this product, please contact us in advance.

10.5 When the product is not in use and placed outdoors for a long time, cover the product shell to prevent rainwater from entering the product, and prevent moisture from agglutinating inside the product in a high temperature and high humidity environment.

10.6 In principle, the warranty period shall be subject to the warranty period indicated on the quotation sheet.

10.7 During the warranty period, our company will charge for the repair of any problem caused by the following reasons.

10.7.1 Problems caused by product disassembly or improper maintenance.

10.7.2 Problems arising from improper transportation and storage.

10.7.3 Problems Caused by Incorrect Installation.

10.7.4 Problems arising from fire, earthquake, storm, flood, lightning and other natural disasters or natural and man-made disasters such as riot, war and radiation.

*Any information please contacted with original manufacturer:

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