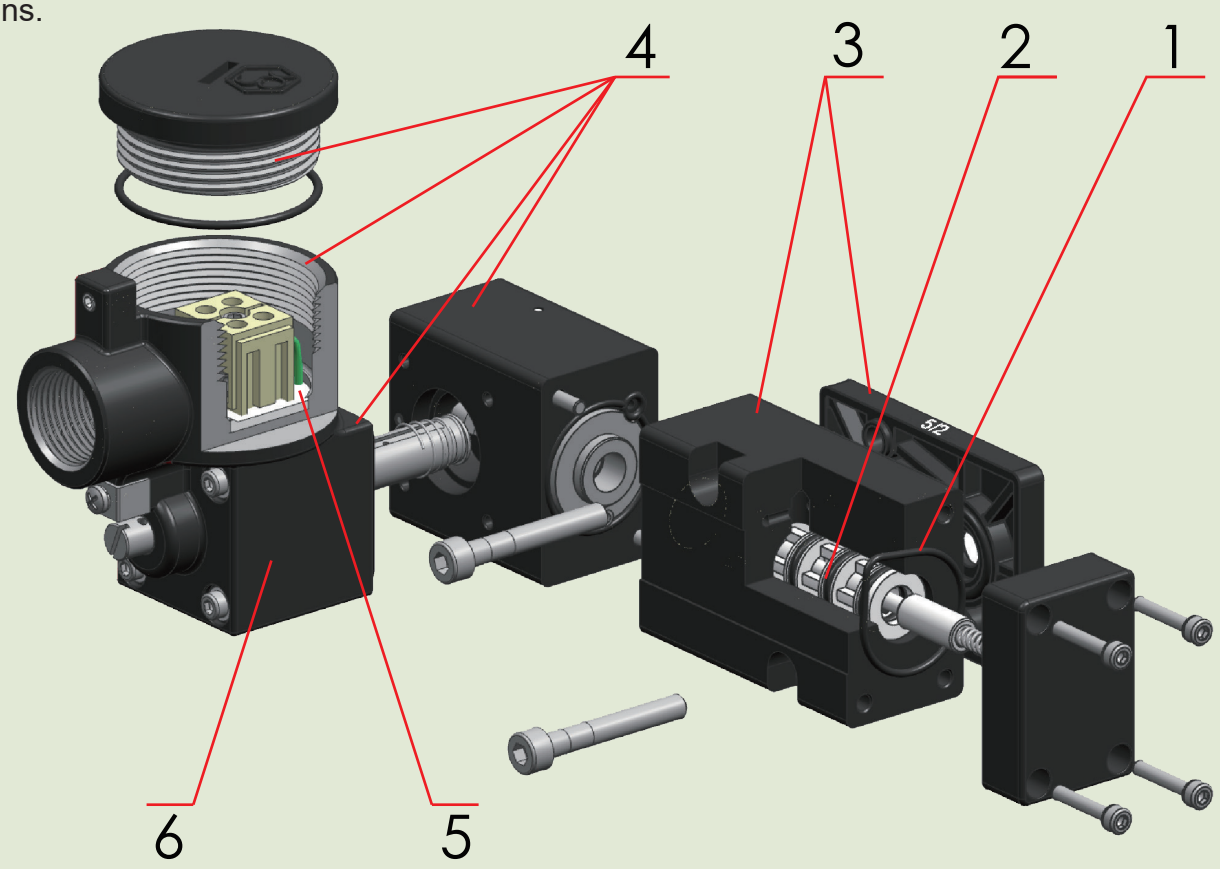
Low Power Consumption,Large Flow Rate, Rainproof,Explosion-Proof

ACHEM®

ALV Series Solenoid Valve (I) & Air Controller

Features

1. ALV series pneumatic solenoid valve adopts end cap O-ring fully sealed structure, and the external breathing ports of the valve body are connected with the exhaust ports (3 and 5 holes), effectively preventing external liquid, dust and other debris entering the valve body.
2. The valve body of ALV series pneumatic solenoid valve adopts cartridge structure (static "O" ring sealing technology), and the valve core sealing o-rings remain static at each switch, not only for long working life but also suitable for low temperature environment.
3.The valve body of ALV series pneumatic solenoid valve is designed with international standard mounting dimensions. The Namur adapter plates can be directly mounted on the air working interfaces between the actuator and solenoid valve, which can easily realize the conversion of 3 / 2 and 5 / 2 functions.



4.The ALV series C type coil enclosure is made of aluminum alloy or 316 stainless steel, which strictly implements the flameproof and waterproof design standards of IECEx and IP. The product is strong and durable and has high explosion-proof and waterproof grade.
5.Coils, connections, circuits, terminals in the coil are embed or fixed by epoxy resin in a solid enclosure, which can ensure the normal operation of electromagnetic coil without short circuit in high-temp, high humidity or even in a vibration environment.
6.ALV series solenoid valve C type coil introduced large section plunger and core of armature and metal enclosure protection, explosion-proof and waterproof level to Ex d IICT6 and IP68, coil power consumption can be as low as 0.45w

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Basic Operating Principle

◎**About air ports:** The air ports design and designation of ALV series solenoid valves are exactly according to the international standard of ISO/DIS 11727.

Refer to Fig.1, port 1(P) is the supply (inlet) port and ports 5(R) and 3(S) are the exhaust port may be equipped with silencers or speed controls to control the actuation speed. Port 2(B) and 4(A) are outlet ports to be connected with the actuator input ports (A and B ports) to move and return the pistons of the actuator by pressure air. ALV series solenoid valve is normal closed as standard (on requires: normal opening). It means that the solenoid valve will directs the flow of supply air to port B of actuator and return the pistons of actuator to closed position when coil de-energized under standard assembly (Refer to Fig.1 and 2)

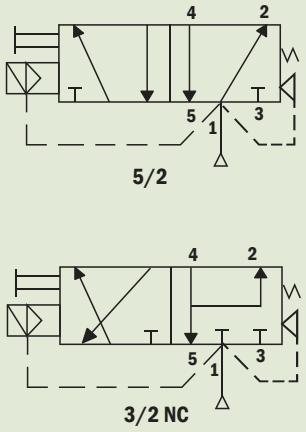
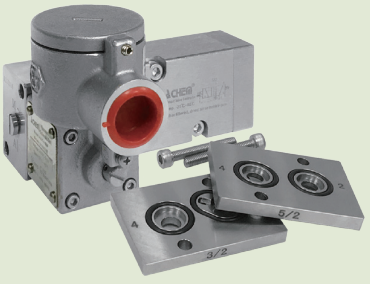
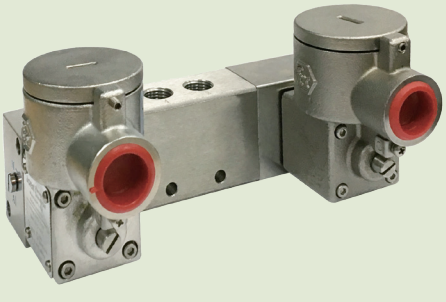


Fig.1 Air Ports





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ACHEM®

Basic Operating Principle

◎**Coil De-energized:** From Fig.2, we can find that when the coil is de-energized, the electromagnetic force disappears, a spring on the plunger will return the plunger to its seat, blocking internal pilot air, and open a vent port. This vent port will allow the air on the piston to escape, and the return spring will return the spool to its normal position. In this position, the spool directs flow of supply air from inlet port 1 to outlet port 4 while outlet port 2 is connected to exhaust port 3. As for the standard assembly, the outlet port 4 is connected with port B of actuator. The air from outlet port 4 will return the pistons of actuator to closed position when coil is De-energized.

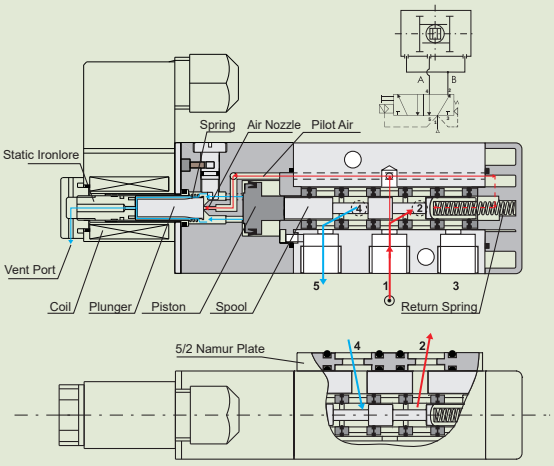


Fig. 2 Coil de-energized

◎**Coil Energized:** From Fig.3, we can find that when the coil is energized, the solenoid coil creates a magnetic field surrounding the plunger assembly. The plunger is lifted off its seat by this magnetic force and supply air provides an internal pilot pressure that is directed to the piston which shifts the spool and compress the return spring. This shifting directs the flow of supply air from inlet port 1 to outlet port 2 while outlet port 4 is connected to exhaust port 5. As for the standard assembly, the outlet port 2 is connected with port A of actuator. The air from outlet port 2 will move the pistons of actuator to opening position when the coil is energized.

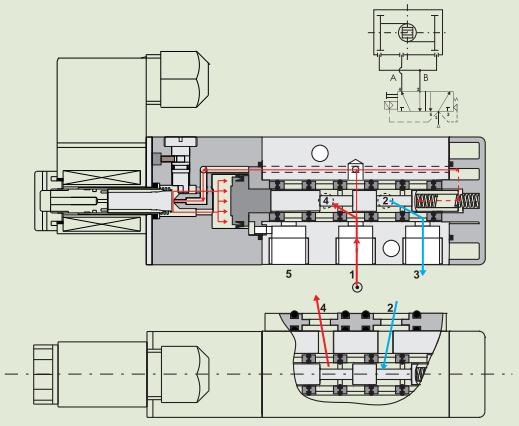
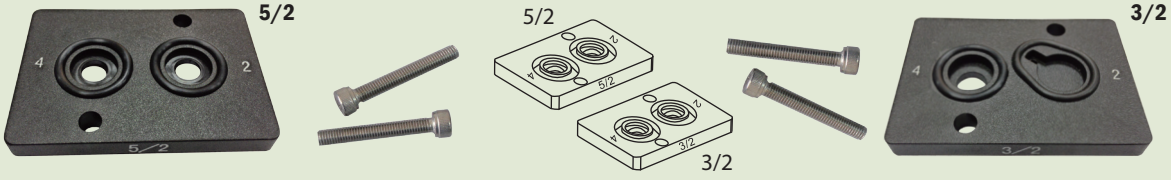


Fig. 3 Coil energized

◎**NAMUR Interface Plates:** As for ALV series Namur solenoid valve, the same spool valve is equipped with 3/2 and 5/2 function NAMUR interface plates can be adapted for 3/2 NC or 5/2 functions to control double-acting and single-acting actuators.



Rometec srl - www.rometec.it - info@rometec.it - Rometec srl - www.rometec.it - info@rometec.it

How to order

It takes three steps to order the ALV series integrated pilot solenoid valve. Firstly, Selecting suitable spool valve, function and mounting according to the flow rate, action type and vent interface of the pneumatic actuator; Secondly, selecting the material. Temperature group, weather-proof and explosion-proof grade of the coils according to the requirements of the working environment; Finally, selecting the working voltage and wiring connector of the coils according to the field power supply and protection requirements.

ALV	3	1	0	L1	F	1	S	C0	A	24A

Code of Wilson Sol. Valve

Spool Valve type

3 - Medium Flow Aluminum Spool Valve

4 - High Flow Aluminum Spool Valve

5 - High Performance Aluminum Spool Valve

6 - High Performance AISI 316 Spool Valve

7 - Multi-functional Aluminum Spool Valve

8 - Multi-functional AISI 316 Spool Valve

Number of Coils

1 - Single Coil (Monostable)

2 - Dual Coils (Bistable)

Port Size

0 - 1/4”

2 - 1/2”

Working Temperature

☐ - -20°C~60°C

L1 - -40°C~60°C

Mounting

F - Namur

P - In-line

U - Namur & In-line

Function

1 - 3/2NC

2 - 5/2

3 - 3/2 and/or 5/2

4 - 5/3 CC

5 - 2x5/2

6 - 2x5/3

Wiring Direction

☐ - Front wiring

S - Side wiring

C - Central wiring

Coil / coil operator

C0 - Encapsulated with thermoplastic resin (9.15mm guide tube)

C1 - AMISCO 15mm Miniature Pilot Coil（2.5W）

C2 - AMISCO 15mm Miniature Pilot Coil（0.7W）

C3 - CROUZET 15mm Miniature Pilot Coil（Ex ia IIC T6）

C4 - Enclosure with stainless steel 316, 25×25, flameproof（Ex d IIC T6）

C5 - Enclosure with aluminum, 25×25, flameproof（Ex d IIC T6）

Wiring Connector

A - Internal threaded Din Plug Connector

B - Internal threaded Din Plug connector with LED

C - 1/2" NPT cable entry connector

D - External threaded Din Plug Connector (IP66)

M - M20-1.5 cable entry connector

F - Flying leads

Voltage*

12D - 12VDC

24D - 24VDC

110D - 110VDC

220D - 220VDC

24A - 24VAC

110A - 110VAC

120A - 120VAC

220A - 220VAC

240A - 240VAC

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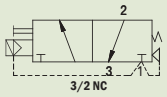
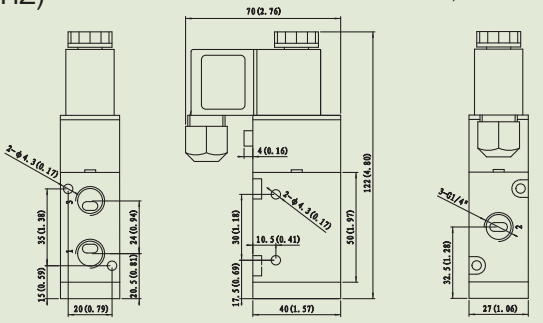
ALV310P1C0D, Aluminum, In-line Connection, IP66

Function: Pilot acting, 3/2NC (optional 5/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C, Optional -40°C～60°C
Flow rate (So): CV =1.4 (25mm²)
Wiring Connector: External threaded Din Plug

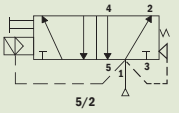


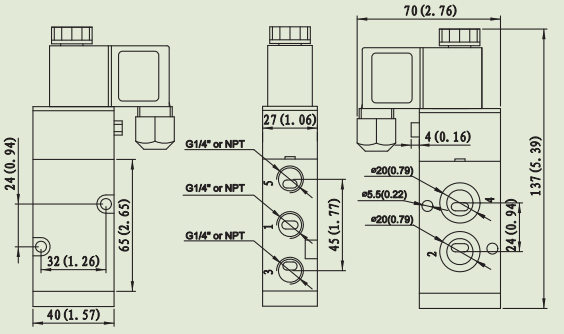


CE TYPE 4,4X

ALV310F2C0D, Aluminum, Namur Connection, IP66

Function: Pilot acting, 5/2 (optional 3/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C, Optional -40°C～60°C
Flow rate (So): CV =1.4 (25mm²)
Wiring Connector: External threaded Din Plug

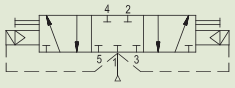


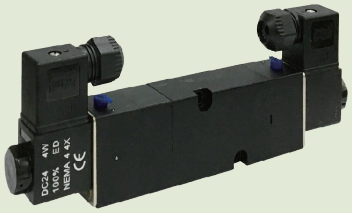


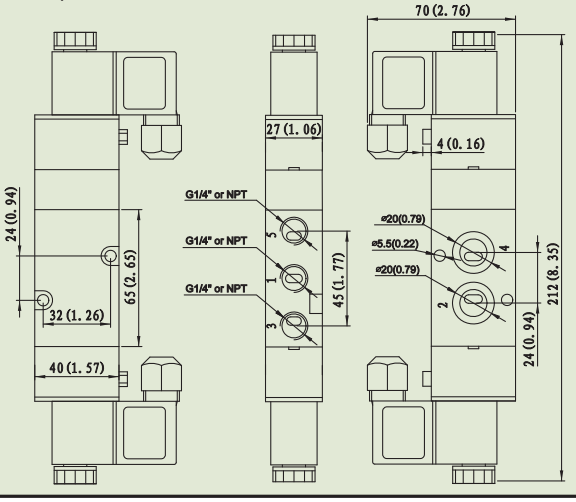
CE TYPE 4,4X

ALV320F4C0D, Aluminum, Namur Connection, IP66

Function: Pilot acting, 5/3 central closed (optional central vented or open), bi-stable
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C, Optional -40°C～60°C
Flow rate (So): CV =1.4 (25mm²)
Wiring Connector: External threaded Din Plug







CE TYPE 4,4X

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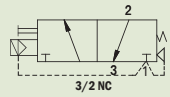
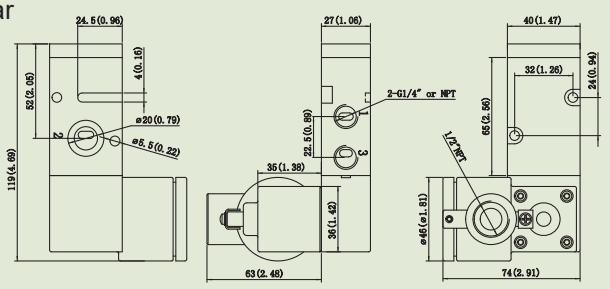
ALV310F1C5, Aluminum, Namur Connection, IP67

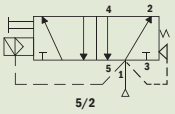
Function: Pilot acting, 3/2NC, Monostable, Namur mounting (optional in-line mounting)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C, Optional -20°C～60°C
Flow rate (So): CV =1.4 (25mm²)
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db

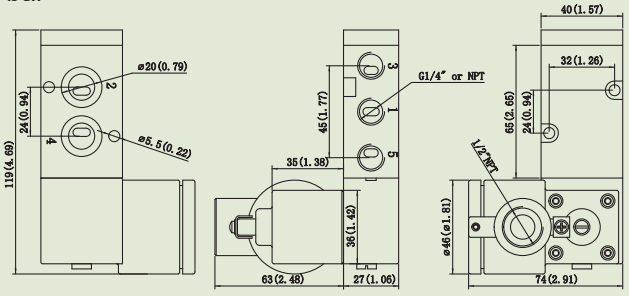




ALV310F2C5, Aluminum, Namur Connection, IP67

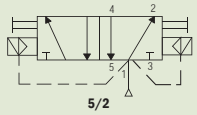
Function: Pilot acting, 5/2, Monostable, Namur mounting (optional in-line mounting)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C, Optional -20°C～60°C
Flow rate (So): CV =1.4 (25mm²)
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db

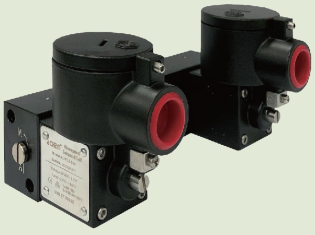


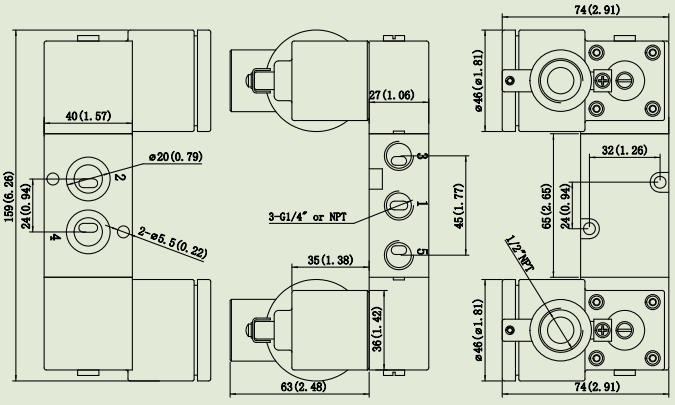


ALV320F2C5, Aluminum, Namur Connection, IP67

Function: Pilot acting, 5/2 (optional 5/3), bi-stable , Namur mounting (optional in-line mounting)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C, Optional -20°C～60°C
Flow rate (So): CV =1.4 (25mm²)
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db







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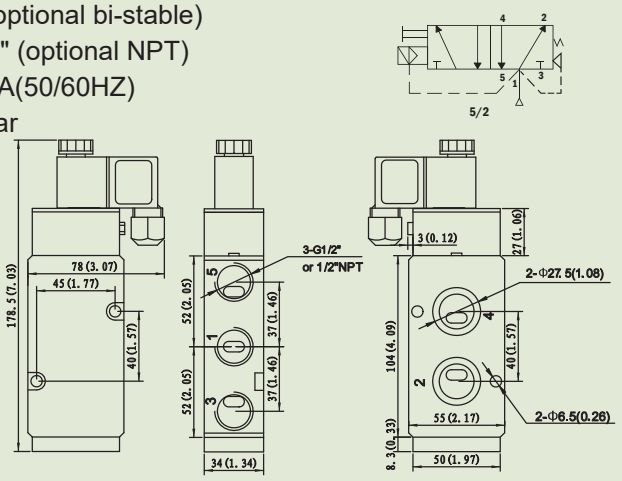
ALV412F2C0D, Aluminum, Namur Connection, IP67

Function: Pilot acting, 5/2 (optional 3/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/2" (optional NPT) Exhaust G1/2" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C
Flow rate (So): CV =2.79 (50mm²)
Wiring Connector: External threaded Din Plug

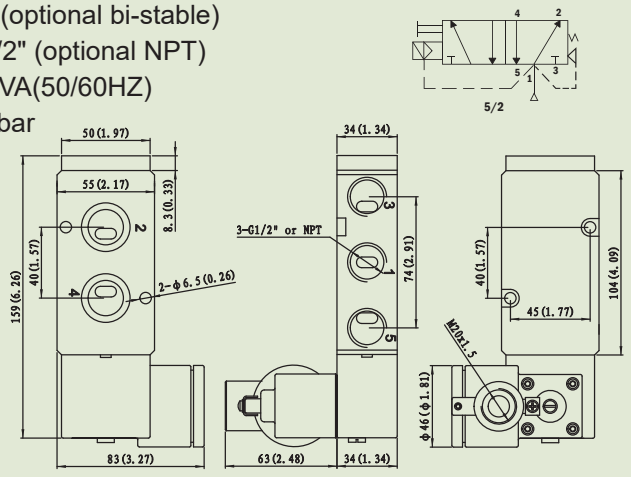
CE TYPE 4,4X



ALV412F2C5, Aluminum, Namur Connection, IP67

Function: Pilot acting, 5/2 (optional 3/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/2" (optional NPT) Exhaust G1/2" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C, Optional -20°C～60°C
Flow rate (So): CV =2.79 (50mm²)
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db

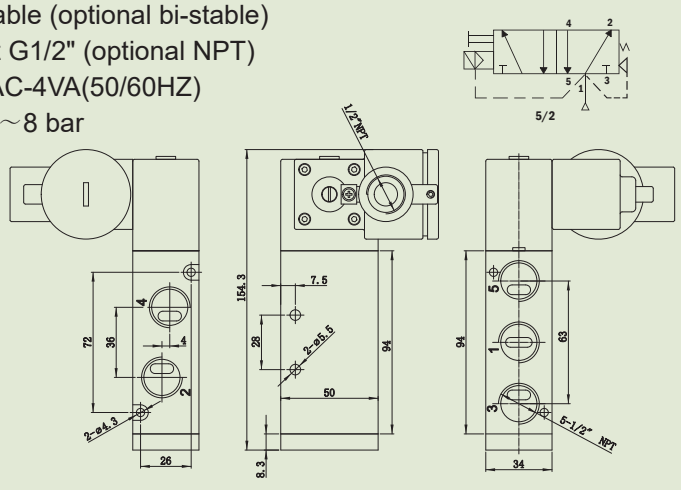
ATEX IECEx CCC SIL3



ALV412P2C5, Aluminum, In-line Connection, IP67

Function: Pilot acting, 5/2 (optional 3/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/2" (optional NPT) Exhaust G1/2" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -5°C～60°C, Optional -20°C～60°C
Flow rate (So): CV =2.79 (50mm²)
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db

ATEX IECEx CCC SIL3



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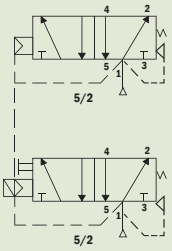
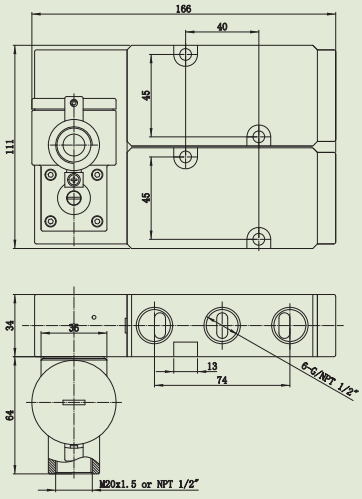
ALV412F5C5, Aluminum, Namur Connection, IP67

Air Ports & Mounting: Air ports G1/2" (or NPT) Exhaust G1/2" (or NPT), Namur Mounting
Function: Pilot acting, 2×5/2 (optional 2×3/2), Monostable
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db
Working Temperture: -5°C～60°C Optional -20°C～60°C
Flow rate (So): CV =2×2.79 (2×50mm²)

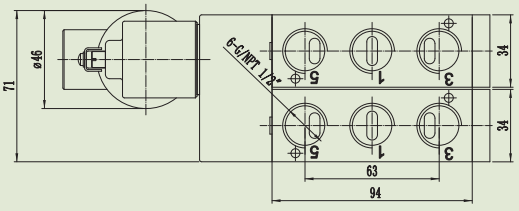


ATEX IEC TECEx CCC SIL3

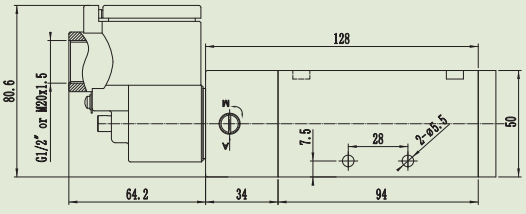


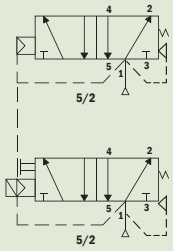
ALV412P5C5, Aluminum, In-line Connection, IP67

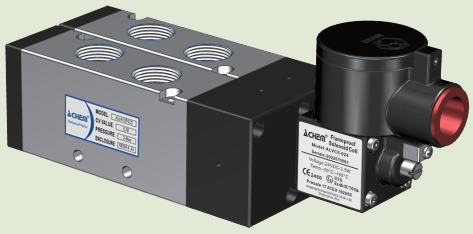
Air Ports & Mounting: Air ports G1/2" (or NPT) Exhaust G1/2" (or NPT), Namur Mounting
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Function: Pilot acting, 2×5/2 (optional 2×3/2)
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db
Working Temperture: -5°C～60°C Optional -20°C～60°C
Flow rate (So): CV =2×2.79 (2×50mm²)

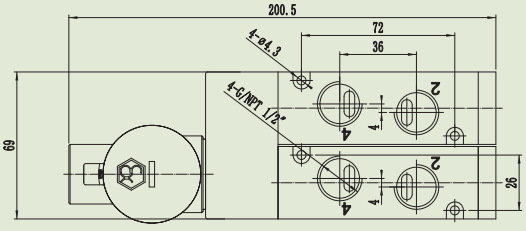


ATEX IEC TECEx CCC SIL3







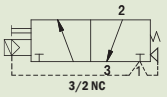


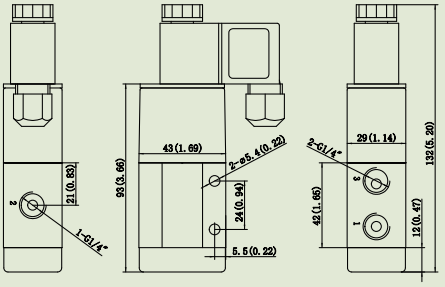
What we're good at is technology and solutions. P.9

ACHEM®

ALV510P1C0D, Aluminum, In-line Connection, IP66

Function: Pilot acting, 3/2NC (optional 5/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C (Optional -40°C～60°C)
Flow rate (So): CV =1.1 (19.63mm²)
Wiring Connector: External thread Din Plug

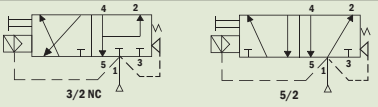


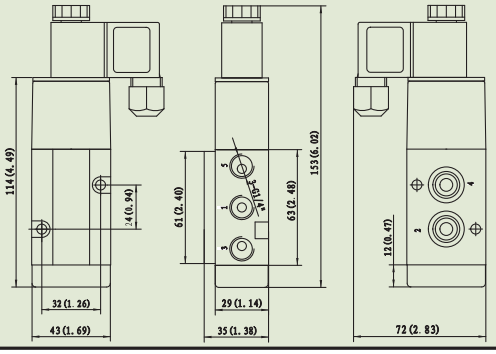


CE TYPE 4,4X

ALV510F3C0D, Aluminum, Namur Connection, IP66

Function: Pilot acting, 3/2NC and/or 5/2, Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C (Optional -40°C～60°C)
Flow rate (So): CV =1.1 (19.63mm²)
Wiring Connector: External thread Din Plug

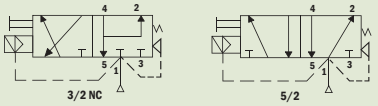


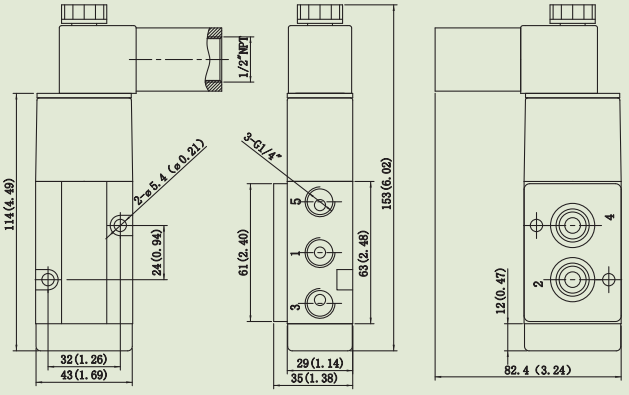


CE TYPE 4,4X

ALV510F3C0F, Aluminum, Namur Connection, IP66

Function: Pilot acting, 3/2NC and/or 5/2, Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C (Optional -40°C～60°C)
Flow rate (So): CV =1.1 (19.63mm²)
Wiring Connector: 1/2" NPT cable entry connector with flying Leads





CE TYPE 4,4X

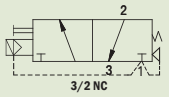
What we're good at is technology and solutions. P.10

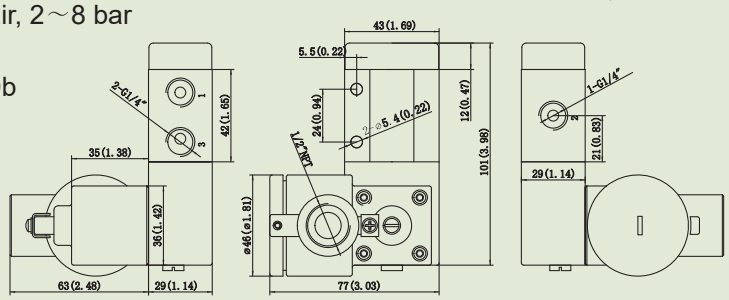
ACHEM®

ALV510P1C5, Aluminum, In-line Connection, IP67

Function: Pilot acting, 3/2NC (optional 5/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db
Flow rate (So): CV =1.1 (19.63mm²)

ATEX IEC TECEx CCC SIL3

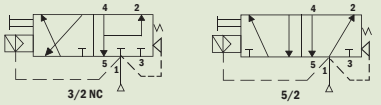


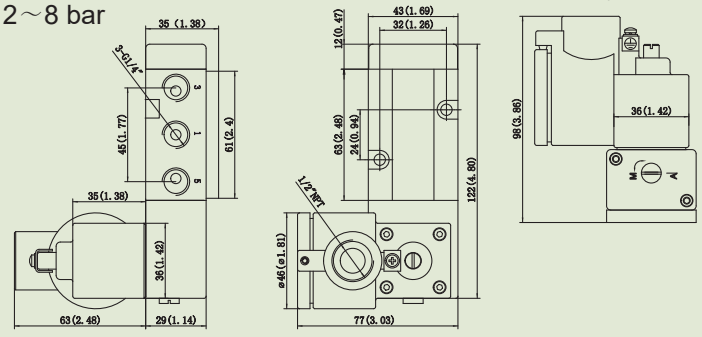


ALV510F3C5, Aluminum, Namur Connection, IP67

Function: Pilot acting, 3/2NC and/or 5/2, Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db
Flow rate (So): CV =1.1 (19.63mm²)

ATEX IEC TECEx CCC SIL3

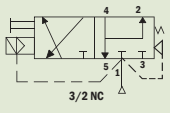


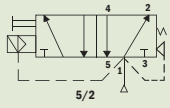


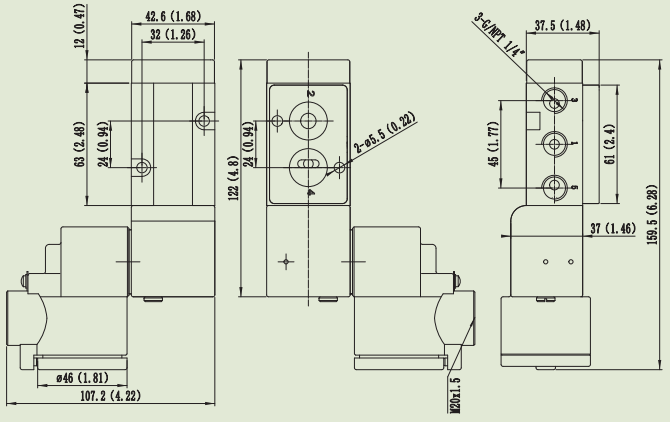
ALV510F3sC5, Aluminum, Namur Connection, IP66

Function: Pilot acting, 3/2NC and/or 5/2, Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db
Flow rate (So): CV =1.1 (19.63mm²)

ATEX IEC TECEx CCC SIL3







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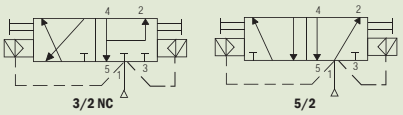
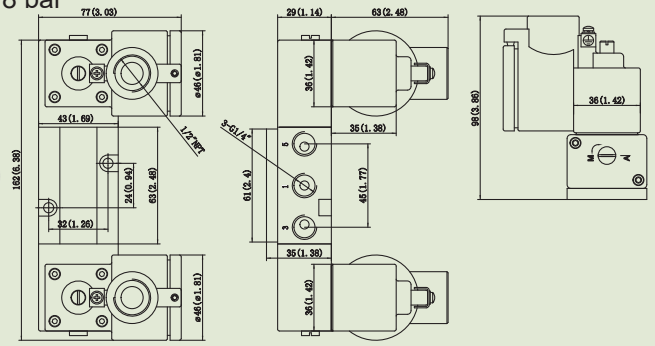
ACHEM®

ALV520F3C5, Aluminum, Namur Connection, IP67

Function: Pilot acting, 3/2NC and/or 5/2, bi-stable (optional Monostable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db
Flow rate (So): CV =1.1 (19.63mm²)

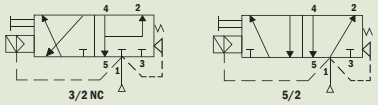
ATEX IECEx CCC SIL3

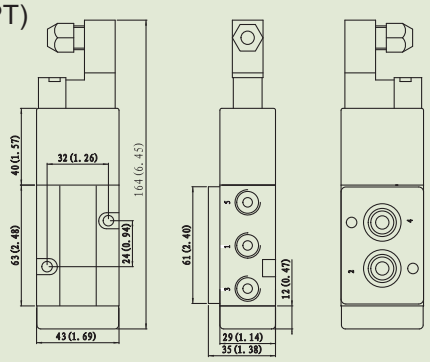




ALV510F3C1/C2/C3, Aluminum, Namur Connection, IP64

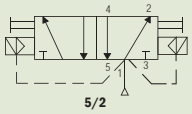
Working Voltage: C1:24VDC-2.5W,110/220VAC-2.8VA (50/60HZ); C2:24VDC-1W; C3:24VDC-0.7W
Function: Pilot acting, 3/2NC and/or 5/2, Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Area Classification: Ex ia IIC T6 Ga available for C3 only
Flow rate (So): CV =1.1 (19.63mm²)

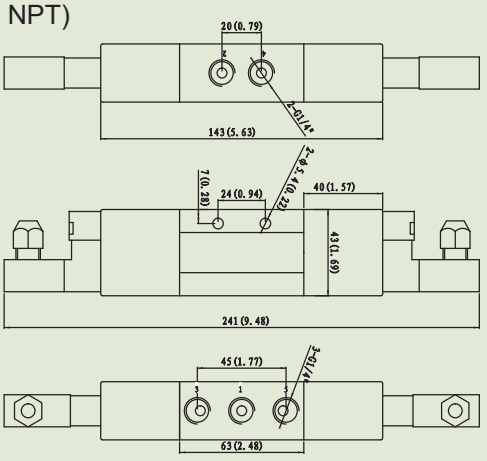




ALV520P2C1/C2/C3, Aluminum, In-line Connection, IP64

Working Voltage: C1:24VDC-2.5W,110/220VAC-2.8VA (50/60HZ); C2:24VDC-1W; C3:24VDC-0.7W
Function: Pilot acting, 5/2 (optional 3/2NC), bi-stable (optional Monostable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Area Classification: Ex ia IIC T6 Ga available for C3 only
Flow rate (So): CV =1.1 (19.63mm²)



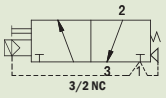


What we're good at is technology and solutions. P.12

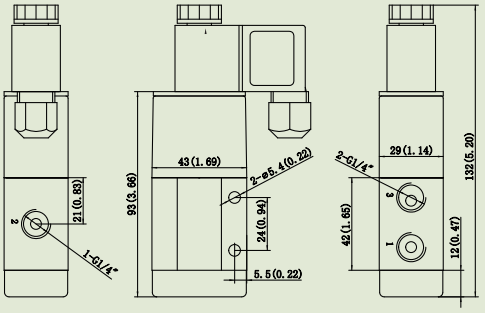
ACHEM®

ALV610P1C0D, Stainless steel 316, In-line Connection, IP66

Function: Pilot acting, 3/2NC (optional 5/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C (Optional -40°C～60°C)
Wiring Connector: External thread Din Plug
Flow rate (So): CV =1.1 (19.63mm²)

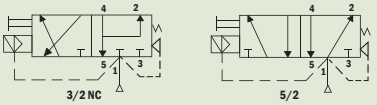


CE TYPE 4,4X

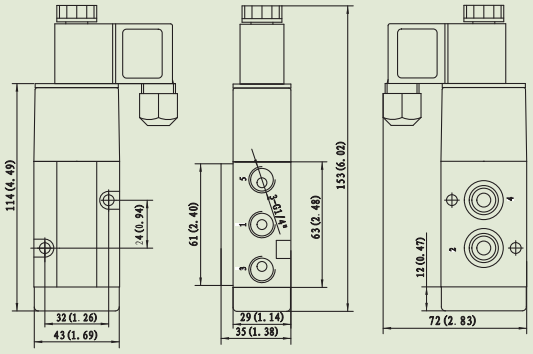


ALV610F3C0D, Stainless steel 316, Namur Connection, IP66

Function: Pilot acting, 3/2NC and/or 5/2, Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C (Optional -40°C～60°C)
Wiring Connector: External thread Din Plug
Flow rate (So): CV =1.1 (19.63mm²)

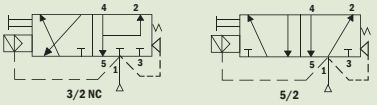


CE TYPE 4,4X

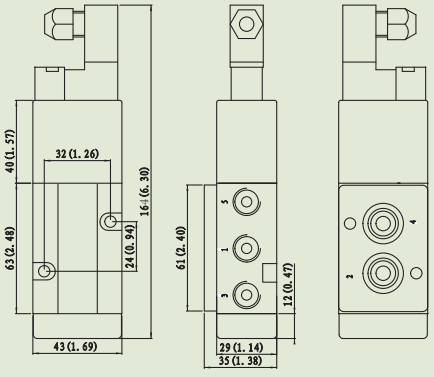


ALV610F3C1/C2/C3, Stainless steel 316, Namur Connection, IP64

Function: C1:24VDC-2.5W,110/220VAC-2.8VA (50/60HZ); C2:24VDC-1W; C3:24VDC-0.7W
Air Ports: Pilot acting, 3/2NC and/or 5/2, Monostable (optional bi-stable)
Working Voltage: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Wiring Connector: Ex ia IIC T6 Ga available for C3 only
Flow rate (So): CV =1.1 (19.63mm²)



CE ATEX



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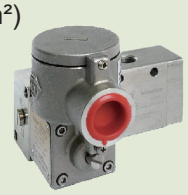
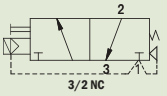
ACHEM®

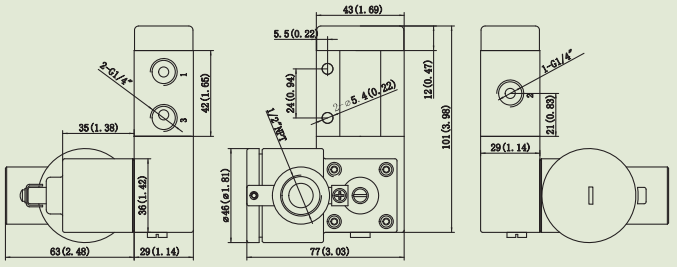
ALV610P1C4, Stainless steel 316, In-line Connection, IP67

Function: Pilot acting, 3/2NC (optional 5/2), Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db
Flow rate (So): CV =1.1 (19.63mm²)

ATEX IEC TECEx CCC SIL3



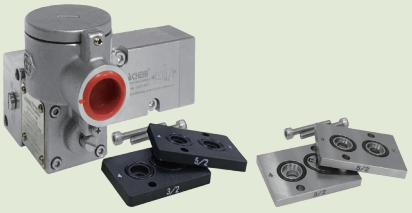


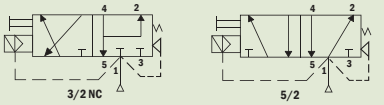


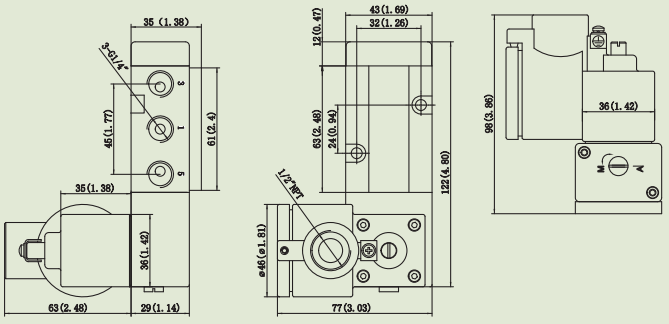
ALV610F3C4, Aluminum, Namur Connection, IP67

Function: Pilot acting, 3/2NC and/or 5/2, Monostable (optional bi-stable)
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 24/110 VDC-3.5W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C
Area Classification: Ex d IIC T6 Gb; Ex tb IIIC T85°C Db
Flow rate (So): CV =1.1 (19.63mm²)

ATEX IEC TECEx CCC SIL3



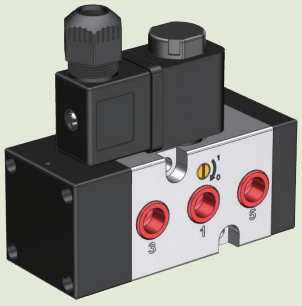


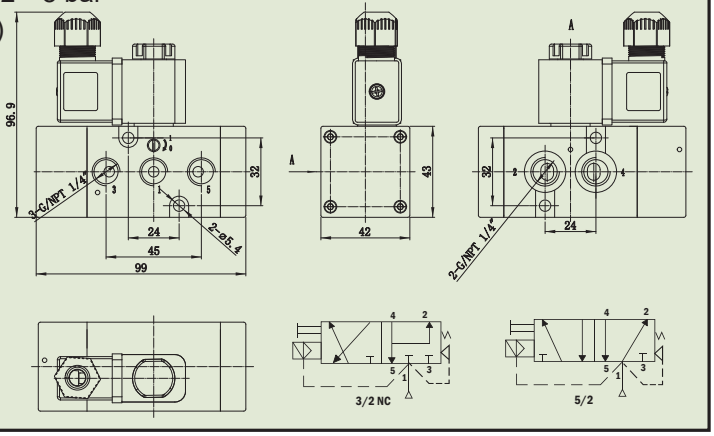


ALV710U3cC0D, Aluminum, Namur Connection, IP66

Function: Pilot acting, 3/2 and 5/2, Monostable
Air Ports: Air ports G1/4" (optional NPT) Exhaust G1/4" (optional NPT)
Working Voltage: 12/24VDC-4W; 110/120/220/240VAC-4VA(50/60HZ)
Working Medium: less than 40μm filtered and dried air, 2～8 bar
Working Temperture: -20°C～60°C (Optional -40°C～60°C)
Flow rate (So): CV =1.1 (19.63mm²)

SIL3 CE





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ACHEM®

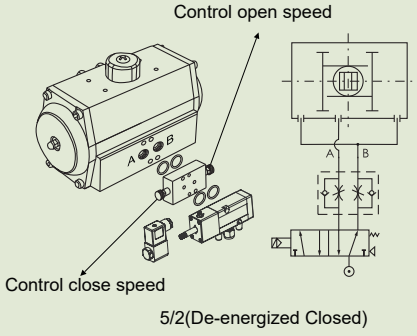
Introduction of ASC

ASC series speed controller is designed and manufactured according to NAMUR international standard,mounted directly to pneumatic actuator, used with Namur solenoid valves and / or positioner for the use of controlling the opening & closing speeds of pneumatic actuators. This kind of speed controller equipped with external manual knobs, which are able to control the rotary speed of the actuator at any rate accurately & safely. ASC is widely used in the speed control of pneumatic valve.

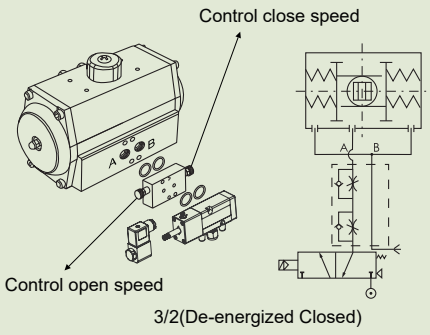
Features & Benefits

Item	ASC-DA	ASC-SR
Materials in contact with fluid	Aluminum,Brass,Buna NBR	
Coating	Anodized Coated	
Seal	Buna N	
Assembly and Connection	24X32 Namur, it can be installed and connected in-line with adapter plate	
Fasteners	Stainless Steel	
Working Type	Double Acting(5/2)	Single Return(3/2)
Working Medium	Less than 40μm Filtered and Dried Air	
Maximum Orifice of Flow	Φ3.74 (11.07mm²)	
Maximum Flow Coefficient	500L/M	
Working Temperature	-20℃-80℃	
Working Pressure	1.5bar~8bar	
Environment	Type 4、4X (indoor and outdoor)	

Assembly and Installation (According to Namur VDI/VED 3845)

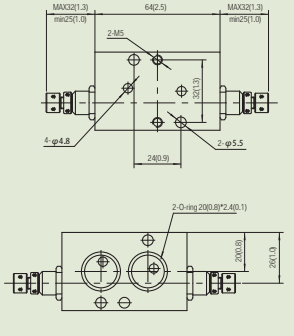


5/2(De-energized Closed)

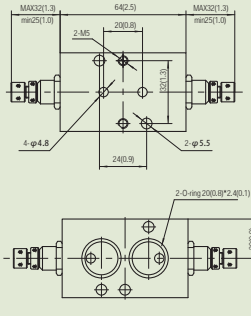


3/2(De-energized Closed)

Most important hint.
Armed with the speed controller,the opening and closing speed of the actuator can be adjusted separately or simultaneity by two manual knobs conveniently located on both ends. The orifice range can be adjusted fromΦ0 mm to Φ 3.74mm.



ASC-SR



ASC-DA

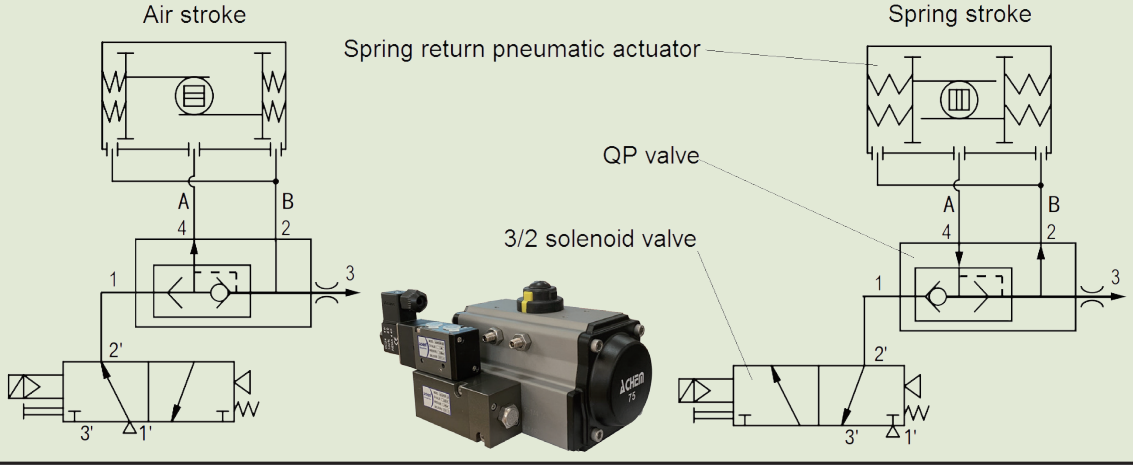
Introduction of ALV series QP Valves

ALV Series QP Valve (Quick Exhaust & Breather Protection valve) is a unique design to be used on applications where the pneumatic spring-return actuator/valve need to be shutdown fast. This QP valve also provides a breather protection function which can effectively avoid direct contact between the actuator's spring chambers with corrosive and/or moisture atmosphere air. Here are the main features of the valve.

Features & Benefits

- ✓ Easy installation on actuators with a VDI/VDE 3845 (NAMUR) interface.
- ✓ Built-in quick exhaust function to help spring-return actuator shutdown fast.
- ✓ Provides corrosion protection of the actuator's spring chambers.
- ✓ Durable hard anodized aluminium design.
- ✓ Suitable for Namur or in-line mounted solenoid valves.
- ✓ Available with 1/4" ,1/2" or 3/4" BSPP (or NPT) pneumatic connection.

How Does the QP Valve work?



Air stroke: Solenoid coil energized, the flow of supply air is from inlet port 1', port 2' to port 1 of the QP valve and moves the shuttle valve to the right and allows the air goes into port A of actuator through port 4, which force the pistons outwards and compress the springs, while air is being exhausted from port 3 of the QP valve through port B of the actuator.

Spring stroke: Solenoid coil de-energized, the air is exhausted at port 1 of the QP valve through port 3' and the shuttle valve moves to the left allowing the air from port A, port 4 and port 2 to fill and be sucked into the spring chamber of the actuator through port B of the actuator firstly, and at the same time, the excess air exhausting rapidly to atmosphere at port 3 through the silencer.

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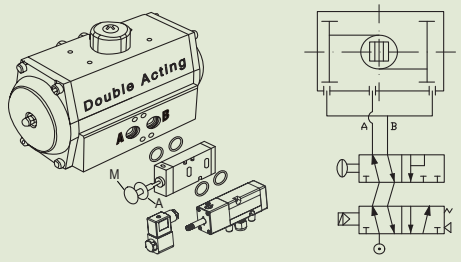
Introduction of ABV001

ABV series block and vent device is installed between the actuator and solenoid valve, which is used to manually "Block and Vent" the air supply to the actuator. The device is usually in the application of the pneumatic + manual control valve system. When the control valve is on the manual operation position, the device could immediately isolate the actuator from the air supply, at the same time venting all compressed air from the chambers of the actuators.When the control valve is on pneumatic operation position, the device connects the actuator with air supply to ensure the automation of pneumatic valve. The device is available both for double acting and spring return actuators.

Features & Benefits

Item	ABV001
Materials in contact with fluid	Aluminum, Brass, Buna NBR
Coating	Anodized Coated
Seal	NBR
Assembly and Connection	24x32 Namur Connection,In-line is available with plate adaptor
Function	Block/Vent (Available for double acting and spring return actuators)
Vent Port	1/8" or 1/4"BSPP
Working Medium	Less Than 40μm Filtered and Dried Air
Maximum Orifice of Flux	Φ 5.6 (24mm²)
CV	1.4
Working Temperature	-20°C-80°C
Working Pressure	0～8 bar

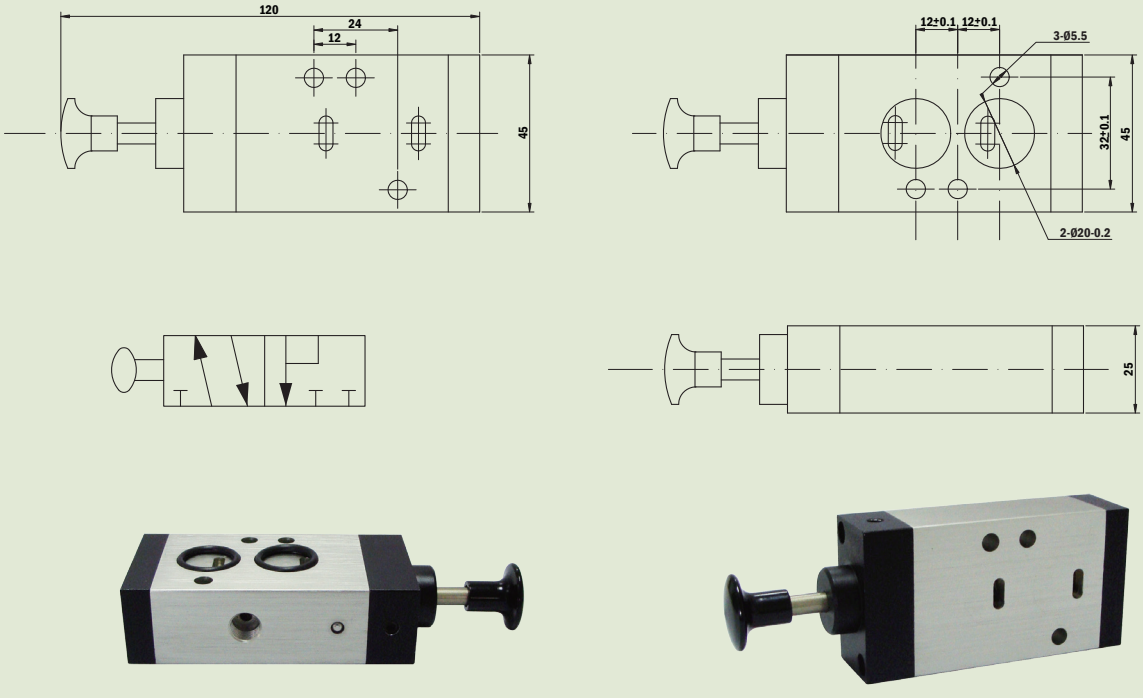
Installation Instruction



On the "A" position: the knob close to the body, the actuator (port A and B) are open to solenoid valve.

On the "B" position: the knob far from the body, the actuator (port A and B) are close to the solenoid valve, and venting all compressed air from the chambers of the actuators.

Dimensional Drawing



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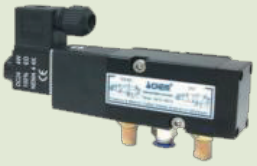
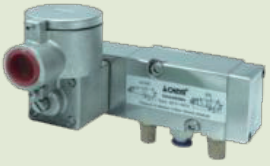
Air silencer and connector

Name of Product	Model	Specification	Photo	Application
Silencer (Brass)	BM10	G orNPT1/8"		
	BM11	G orNPT1/4"		
	BM12	G orNPT3/8"		
	BM13	G orNPT1/2"		
Plain Silencer (Brass)	BM20	G orNPT1/8"		
	BM21	G orNPT1/4"		
	BM22	G orNPT3/8"		
	BM23	G orNPT1/2"		
Plain Silencer (Stainless Steel)	SM20	G orNPT1/8"		
	SM21	G orNPT1/4"		
	SM22	G orNPT3/8"		
	SM23	G orNPT1/2"		
Silencer (Plastic)	PM30	G orNPT1/8"		
	PM31	G orNPT1/4"		
	PM32	G orNPT3/8"		
	PM33	G orNPT1/2"		
Speed Control Silencer (Brass)	BM40	G orNPT1/8"		
	BM41	G orNPT1/4"		
	BM42	G orNPT3/8"		
	BM43	G orNPT1/2"		
Speed Control Silencer (Brass)	BM50	G orNPT1/8"		
	BM51	G orNPT1/4"		
	BM52	G orNPT3/8"		
	BM53	G orNPT1/2"		
Soft Pipe Connector (Brass)	BP10	G orNPT1/8"-6/8mm		
	BP11	G orNPT1/4"-6/8mm		
	BP12	G orNPT3/8"-6/8mm		
	BP13	G orNPT1/2"-6/8mm		
Soft Pipe Connector (Nickel Coated)	NP10	G orNPT1/8"-6/8mm		
	NP11	G orNPT1/4"-6/8mm		
	NP12	G orNPT3/8"-6/8mm		
	NP13	G orNPT1/2"-6/8mm		
Hard Pipe Connector (Stainless Steel)	SP10	G orNPT1/8"-6/8mm		
	SP11	G orNPT1/4"-6/8mm		
	SP12	G orNPT3/8"-6/8mm		
	SP13	G orNPT1/2"-6/8mm		
Explosion-Proof Cable Gland (Brass Nickel Plated)	Ex-CM20	M20-1.5, 6~12mm		
	Ex-CP12	1/2", 6~12mm		
	Ex-CP34	3/4", 8.5~16mm		

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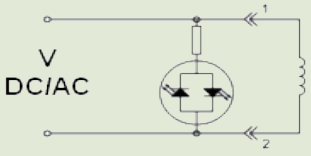
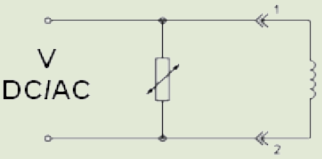
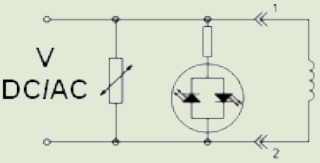
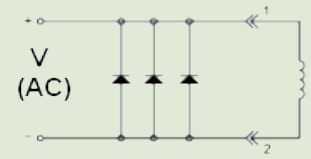
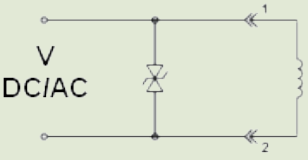
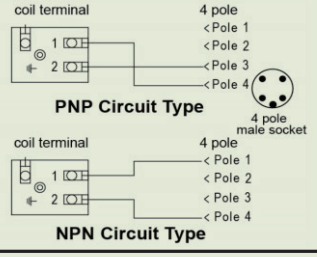
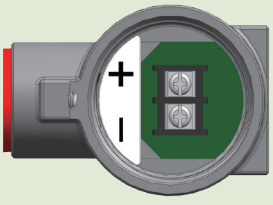
Introduction about ALV series solenoid valve

The junction box of the ALV series solenoid valve can be equipped with LED circuit, surge protect circuits and field bus adapter per need on site. The user can take the following function as a reference and choose the required one, please remark while placing the order.

Circuit Type	Code	Circuit Schematic	Circuit function	Coil available
LED Circuit	C0B		Equipped with a bipolar diode circuit, the coil can provide a clear light signal after being energized.	C0B
Surge Protection (VDR)	R		The VDR can effectively resist the input voltage surge and the voltage surge generated during the opening and closing of the coil.	COA/COB C4/C5/C9
LED +Surge Protection (LED+VDR)	C0B-R		The bipolar diode varistor circuit can effectively resist internal and external surge voltages while also providing obvious coil electroluminescence signals.	C0B
Surge Protection (DIODES)	D		The diode circuit can effectively resist the voltage surge generated while the coil is powered off.	C4/C5/C9
Surge Protection (Transil)	T		The transient uppressor circuit can not only effectively resist the voltage surge generated while the coil is de-energized, but also effectively resist the input voltage surge.	C4/C5/C9
Fieldbus adapter circuit	S		Coils equipped with fieldbus adapters (four-pin aviation sockets) can be easily and directly installed in multi-port electrical systems and ieldbus systems.	C0A/C0B

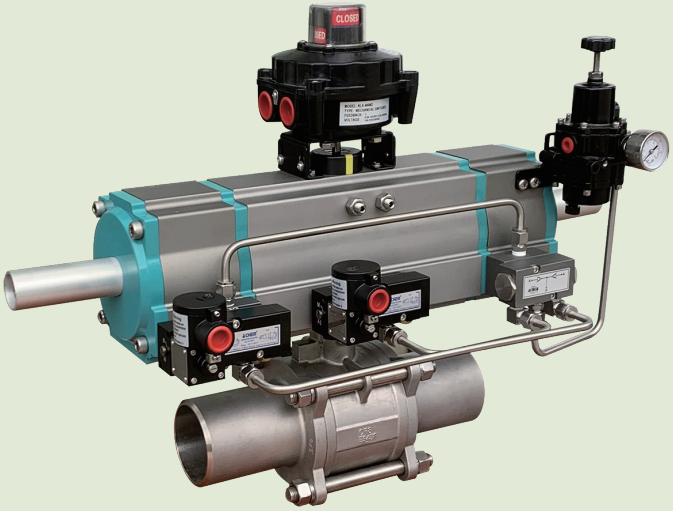
C0A/C0B coil with fieldbus adapter



C4/C5/C9 coil with anti-surge circuit in box

Preparation Before Installation

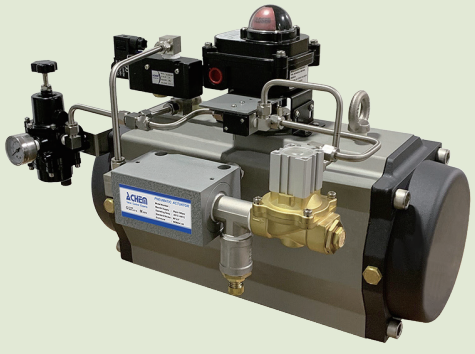
Before installing the solenoid valve, the corresponding air pipe must be relieved of pressure, and the inside of the air pipe and pipe joints must be cleaned to prevent particles from entering the valve body (tape, sealant, debris, etc.). About half of the solenoid valve failures on site are caused by particles from outside entering the valve body. Many pneumatic valves can be directly installed on the air port working surface (NAMUR interface) of the pneumatic actuator.



Installation Example of Namur Mounted Solenoid Valve In Three-position pneumatic actuator

Installation of Solenoid Valve

ALV series solenoid valves are mainly applied for the air supply and control of rotary and linear pneumatic actuators. In-line solenoid valves are usually applied in linear pneumatic actuators or some non-NAMUR standard rotary pneumatic actuators; Plate-connected pneumatic solenoid valves are mainly used for quarter-stroke pneumatic actuators. There are two installation methods: plate-mounted and surface-mounted. The installation dimensions of most plate-connected valve bodies are designed and produced in strict accordance with NAMUR (VDI/VDE3845 and BSEN15714-3; 2009E) international standards.

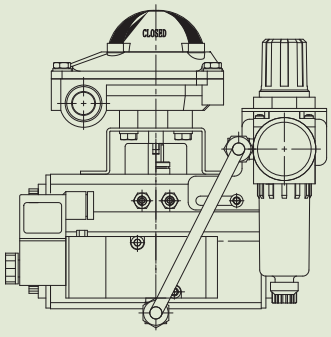


Installation Example of In-line Solenoid Valve in Quick Cut-off Solution

Installation Example of Namur Solenoid Valve in On/Off Control Solution

Installation of Namur Solenoid Valve (Air Ports Down)

For convenient wiring and piping connection, Namur Solenoid Valve is the best choice for most of the rotary pneumatic actuators. It is named Namur Connection because the solenoid valve and the pneumatic actuator is assembled together with an adapted Namur between them. Each ALV500/600 series pneumatic solenoid valve is equipped standardly with two Namur adapted plates, one is for 3/2 and the other is for 5/2, for the purpose of controlling the single acting or double acting penuematic actuators. As Fig.2, firstly to choose the suitable adapted plate, then to fix the solenoid valve and the adapted plate on the air port face of the actuators by 2xM5 supporting inner-hexagon screws, with tightenting torque approximately 4-5Nm. The function and direction of the adapted plates shall be insured during assembling. The pneumatic actuators couldn't work normally if the plates are asssembled incorrectly.



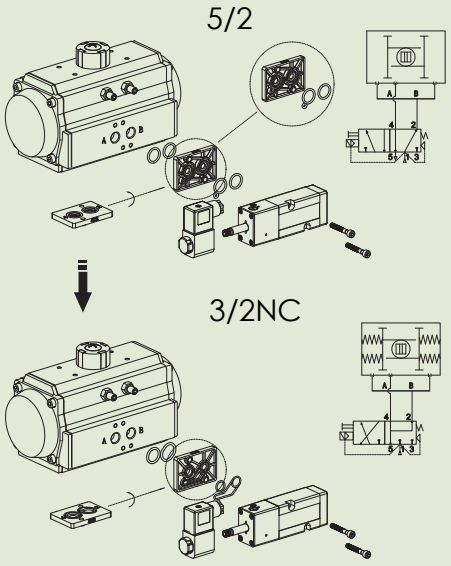


Fig.2, Installation of Plated Solenoid Valve (Air Port Down)

Non-standard Installationof Namur Solenoid Valve (Air Ports Facing Down)

States reverse the air port of the actuator. As shown in the function diagram in Figure 7, port B is on the left (push the piston of the actuator to close), and port A is on the right (push the piston of the actuator to open). For this kind of actuator, specially configured ALV series NAMUR solenoid valve could be directly installed. Figure 7 is the installation diagram.

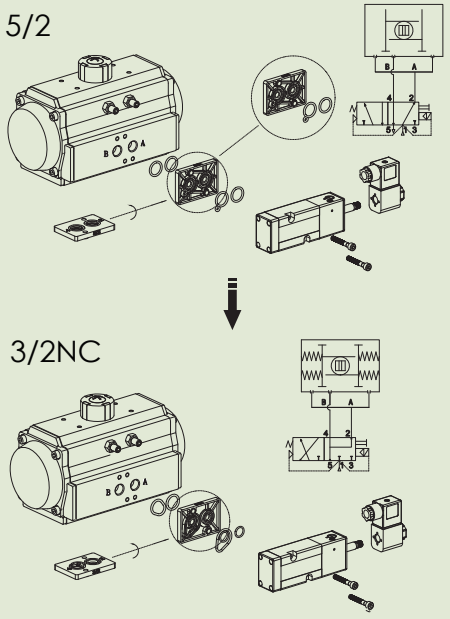


Figure 7. Non-standard installation diagram and photo of NAMUR solenoid valve (air port facing down)

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Installation of Plated Solenoid Valve (Air Ports Up)

Fig 3 is the diaghram for the actuator triplet solution, adopting the plated solenoid valve with the air ports upwards. The international market prefers the installation solution of the plated solenoid valves upwards which has become more and more popular nowadays due to the convenience and pipe saving for connecting the filter regulator and the solenoid valve. ALV series pneumatic solenoid valves are available with the solution of the air ports upwards as per the requirements. The customers only need to indicate “air ports upwards” on the purchasing orders when necessary. Fig.4 is the installation and functional principle diaghram of plated solenoid valve upwards.

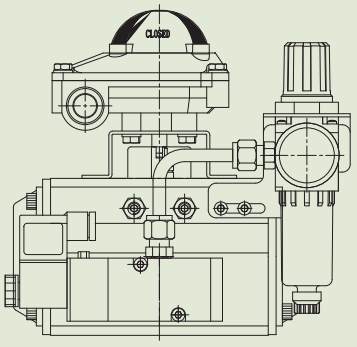


Fig.3, Pneumatic Actuator Triplet Solution

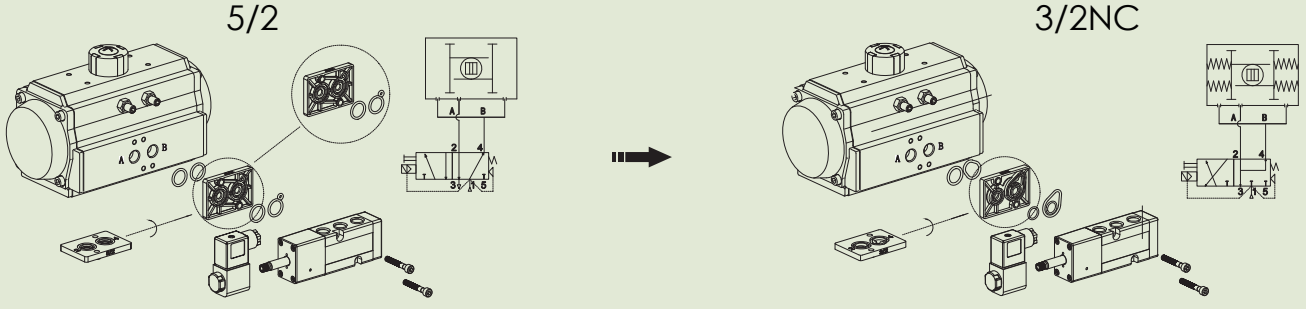


Fig.4, Installation of Plated Solenoid Valve (Air Port Upwards)

Installation of Direct Mouting Solenoid Valve (NAMUR Standard)

It’s very convenient to install ALV300 series direct mouting Namur solenoid valves which can be fixed directly on the air port face of the pneumatic actuators by 2xM5 supporting inner-hexagon screws, with tightenting torque approximately 4-5Nm. There are air-port down and air-port up two solutions avaialbe for direct mounting Namur solenoid valves, which depends on the reqirements when ordering. Fig.5 is the installation and functional principle diaghram of direct mounting Namur solenoid Valve.

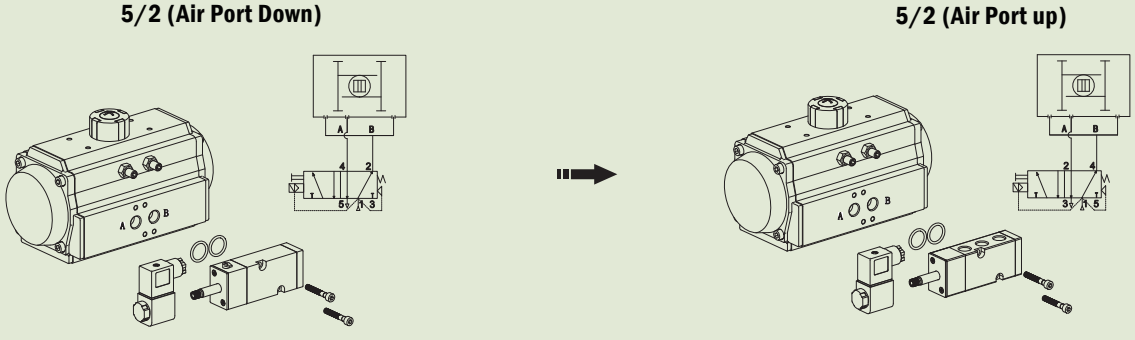
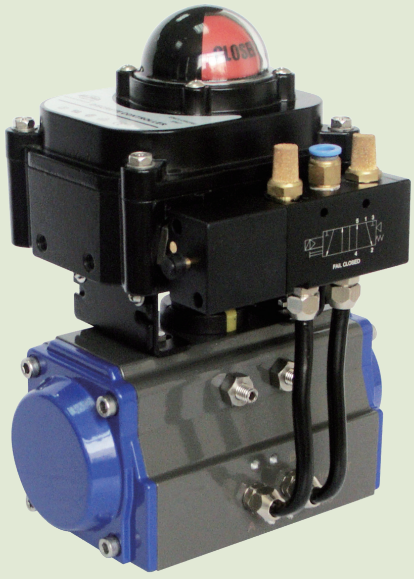


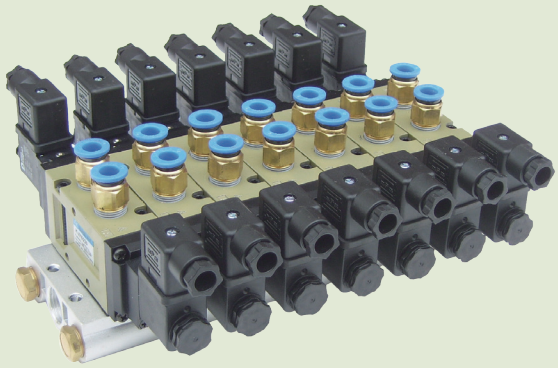
Fig.5, Installation of Namur direct mounting Solenoid Valve

Figure 7. Non-standard installation diagram and photo of NAMUR solenoid valve (air port facing down)

Installation of In-line Solenoid Valve

The main difference between In-line solenoid valve and NAMUR solenoid valve is that the connection type between the air port of solenoid valve (port 4 and 2) and the air port of actuator (port A and B). The former is connected with pipe and sealed by pipe joint and raw material belt, while the latter is connected with O-ring. ALV series In-line solenoid valve usually adopts 2*M5 internal hexagon screws (with a torque about 4 to 5Nm), fixed on a suitable platform. Some of them are installed on the Group Base. The solenoid valve (port 4 and 2) are connected with the actuator (port A & B) by plastic or stainless steel pipes.





Solenoid Coil

There're 11 different options of ALV series solenoid coil (coil controller).The selection of coil should consider flow of medium, working condition and power supply of the work field etc. Please refer to the main technical data as below, you can also require from our sales engineers for more details.

Technical Specifications for Ordinary Coils

Model	C0	CG	CF
Type/Technical Specification	Resin Encapsulated Coil	Resin Encapsulated Coil	Resin Encapsulated Coil with Flying Lead
Working Voltage	12V/24VDC-4W 24/110/120/ 220/240VAC-4VA (50/60HZ)	12V/24VDC-4W 24/110/120/ 220/240VAC-4VA (50/60HZ)	24VDC-6.3W 120VAC-6.3VA (50/60HZ)
Allowable Voltage Fluctuation	±10%		
Insulation Protection	H Class		
Insulated Voltage	1000V		
Duty Factor	100%ED (Continuous Operation)		
Coil Enclosure	Thermosetting Resin Pouring		
Cable Entry	Depending on Selection of Wiring Connector		With 400mm flying lead, 3 core, Dia2.5mm, 1/2"NPT cable entry
Installation Method	9.15mm Plug type	13.15mm Plug type	9.15mm Plug type
Weather Proof Level	Depending on Selection of Wiring Connector		IP66
Area Classification	-	-	-
Working Temperature	-20°C~80°C	-20°C~60°C	-20°C~80°C

Technical Data for Low-Watt, Explosion Proof Coils

Model	C1	C2	C3	C4	C5
Type	15mm Pilot Valve			Stainless Steel (SS) Enclosure Explosion Proof Coil	Aluminum (AL) Enclosure Explosion Proof Coil
Working Voltage	24VDC-2.5W 110/220VAC-2.8VA (50/60HZ)	24VDC-1W	24VDC-0.7W	12VDC/24VDC-3.5W,24VDC -0.7W 24/110/120/220/240VAC-4VA (50/60HZ)	
Allowable Voltage Fluctuation	±10%				
Insulation Protection	H Class				
Insulated Voltage	1000V				
Duty Factor	100%ED (Continuous Operation)				
Coil Enclosure	Epoxy Resin			316 Stainless Steel	Aluminum
Cable Entry	External Thread Water Proof Connector (Wire Dia 3-5.5mm)			1/2"NPT or M20*1.5, with Terminal Strip	
Installation Method	Comply to CNOMO-15 International Standard			Static Iron Core Embedded	
Weather Proof Level	IP64			IP67	
Area Classification	-	-	Ex ia IIC T6	Ex d IIC T6 Gb; Ex tb IIIC T85°C Db	
Working Temperature	-10°C~50°C			-20°C~60°C	

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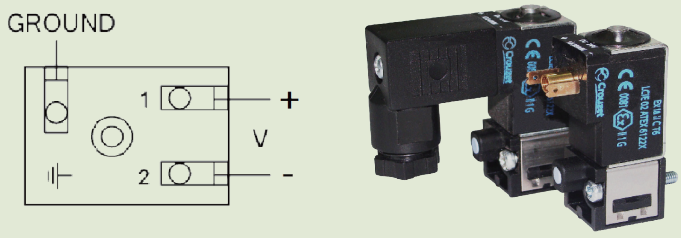
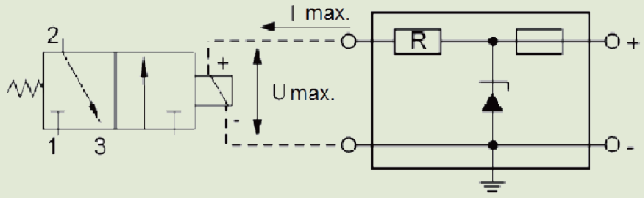
Power Supply and Wiring of C3 Intrinsically Safe Coil

Wiring Diagram of C3 Intrinsically Safe Coil



Power Supply Diagram of C3 Intrinsically Safe Coil



Intrinsically Safe Pilot Solenoid Valve Installed in Hazardous Area

Safety Barrier

Power Supply Notice of C3 Intrinsically Safe Coil

According to the power supply diagram, the power supply to intrinsically safe solenoid coil must be supplied by safety barrier which is installed in safety area. The safety barrier which meets the power supply parameters must be approved barrier. The electrical connection between the intrinsically safe coil installed in hazardous area and the safety barrier can be ordinary wires or cables. But it must be insured that the inductance value is under 0.5mH. Notice: The intrinsically safe coils have positive and negative poles, and there is polarity mark on the back of the coils. Please identify the correct pole when wiring.

Power Supply Parameters of C3 Intrinsically Safe Coil

Voltage U Max (in)	<28V
Current I Max (in)	<37mA
Capacitance C Max (in)	0
Resistance R at +20°C	580 Ohm+/-7%
Resistance R at -10°C	>476 Ohm
Resistance R at +50°C	<690 Ohm

Selection of Wiring Connector

There're 3 main types of wiring connectors for ALV Series solenoid coils, first type is screw on junction box (detachable plug connector), second type is pipe threaded junction box (the user should select water-proof or explosion-proof connector), third type is bus type aviation socket, for fieldbus system. The user can choose the suitable type according to the environment and requirements.

Name or Junction Box	Model Code	Suitable Coils	IP Level	Suitable Cable or Connection Method
Internal Thread Din Plug	A	Resin Encapsulated Coils (C0, CG)	IP65	Dia. 6-8mm
Internal Thread Din Plug with LED	B	Resin Encapsulated Coils (C0, CG)	IP65	Dia. 6-8mm
1/2" NPT Cable Entry	C	Resin Encapsulated or Enclosure Explosion Proof Coils (C0, CF, C4/C5)	≥IP66 Depends on the selected cable connector.	
M20*1.5 Cable Entry	H	Resin Encapsulated or Enclosure Explosion Proof Coils (CF, C4/C5)		
External Thread Din Plug	D	Resin Encapsulated Coils (C0)	IP66	Dia. 5-10mm
Bus Type Aviation Socket	AF	Resin Encapsulated Coils (C0)	IP64	M12 Plug (4 needles)
Bus Type Aviation Socket with LED	BF	Resin Encapsulated Coils (C0)	IP64	M12 Plug (1 needle)

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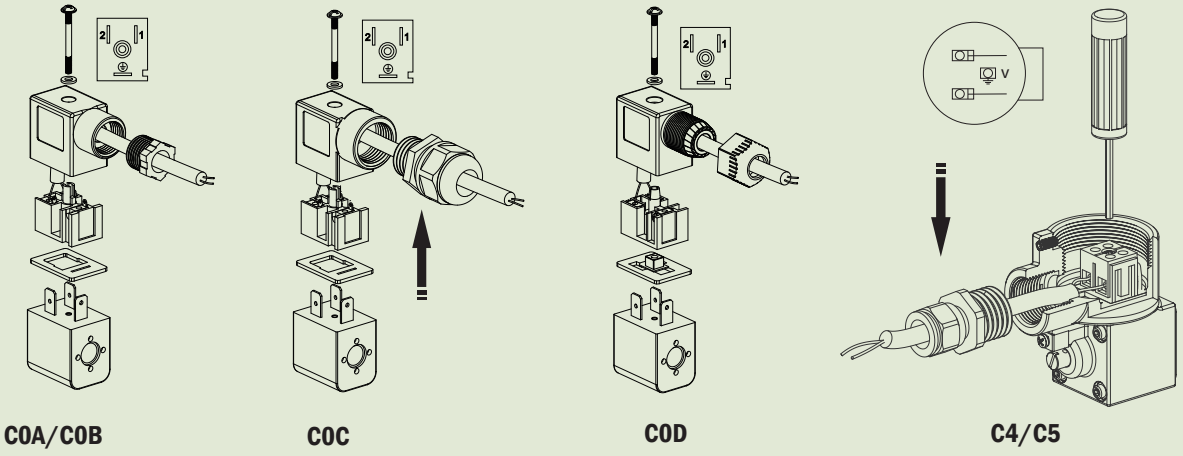
List of Pictures and Models of ALV Series Solenoid Valve Coils

			
C0A	C0B	C0C	C0D
			
C0BF/C0AF	C4/C5	ALV110Q1C5/ALV210Q1C4	

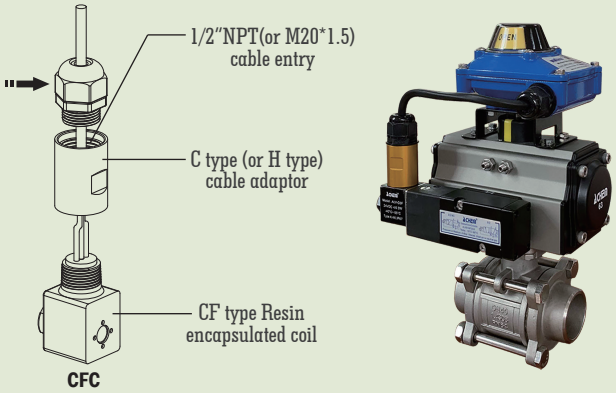
Structure and Wiring Diagram of Junction Box



C0A/C0B C0C C0D C4/C5

Note: The waterproof cable connector indicated by the arrow in C0C drawing and the explosion-proof cable connector indicated by the arrow in C4 / C5 drawing are not standard configured accessories, and the customer needs to inquire separately.

Wiring Diagram of Outgoing Coil



CFC

Note: The waterproof cable connector indicated by the arrow in the above picture is not a standard configured accessory, and the customer needs to inquire separately.

Notes for solenoid valve power

1.The power operation of solenoid valve should be carried out by qualified personnel (with electrician certificate) according to local standards and regulations.

2.Before power operation, turn off the power supply and do not allow live operation.

3.According to the different voltage, the electromagnetic coil should be grounded.

4.Some coils are divided into positive and negative poles. The polarity must be clearly seen before wiring, otherwise the solenoid valve will not work normally.