

ALV SERIES VALVE CONTROLLER



ATEX

NEMA 4,4X



CE

Introduction



ACHEM ALV series NAMUR solenoid valves are designed and manufactured by us based on advanced air control technology and our special patent technology. The valves of ALV500/600 armed with "environmentally-protected structure" offer environmental protection against the ingress of liquids, dusts or other foreign matter and provides a constant self cleaning action within every position shift enabling the valves to achieve over a million trouble-free cycles. All the exhaust ports of this spool valve are connectable, providing better environmental protection. In the family of ALV series NAMUR solenoid valves, the stainless steel, aluminum spool valve and the explosion proof coils can be used in any hazardous location and anywhere in the World.

Features

Main Features of the ALV500/600 valves

- Suitable for use of 3/2 NC or 5/2 functions to control double-acting and single-acting pneumatic actuators.
- Suitable for pilot operated with single/dual (mono/bi-stable) coils and low watt miniature pilot valve.
- Suitable for use of standard coil or various flame-proof and intrinsically safe coils certified for use in all hazardous areas (Class I, Div. 1&2, Group A, B, C and D, Ex d IICT6, Ex ia CT6 and Ex m II T6)
- Suitable for use of high temperature (150°C) and cold temperature (-40°C) applications.



Basic Operating Principle

-Port 1 is the supply (inlet) port and ports 5 and 3 are the exhaust port may be equipped with silencers or speed controls to control the actuation time. Port 2 and 4 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. AICHEM NAMUR solenoid valve is normal closed as standard (on requires: normal opening). It means that the solenoid valve will direct the flow of supply air to port B of actuator and return the pistons of actuator to closed position without electric power under standard assembly.



-Coil De-energized: From Fig.2, we can find that when the coil is de-energized, 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 without electric power on the coil.

-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 and plunger. 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.

-NAMUR Interface Plates: As for AICHEM NAMUR solenoid valve of ALV500/600, the same spool valve 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.

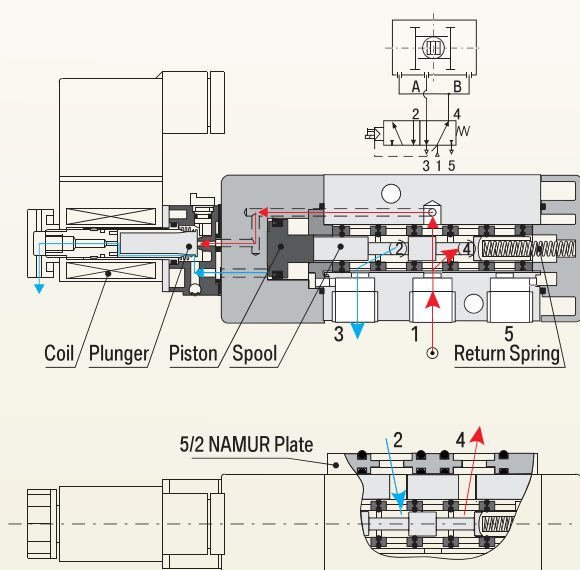


Fig.2 Coil de-energized

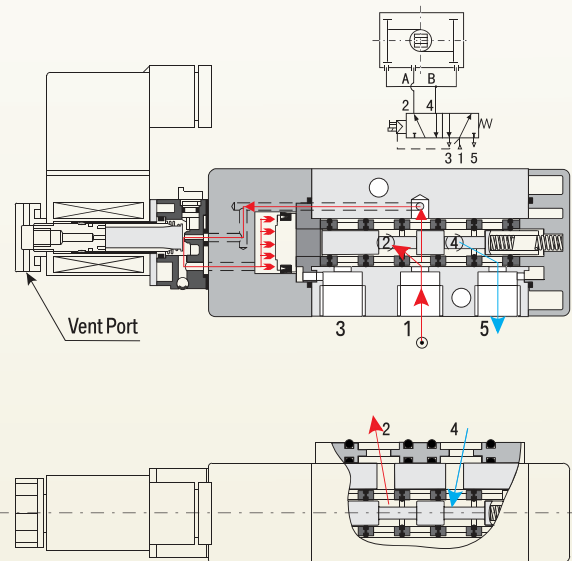







Fig.3 Coil energized


Ordering Guide

ALV	5	10	F1	C0
Code of ACHEM Solenoid Valve	Type of Spool Valve/Body		Function of the Valve	
	2-PA + 30% glass fiber (1/8" or 1/4" Ports and Screw Connection) 3-Anodized Aluminum Spool Valve (1/4" Ports, 24x32 Namur Connection, 3/2 or 5/2) 4-Anodized Aluminum Spool Valve (1/2" Ports, 40x45 Namur Connection, 3/2 or 5/2) 5-Anodized Aluminum Spool Valve (1/4" Ports, 24x32 Namur Connection, 3/2 and 5/2) 6-Stainless Steel Spool Valve (1/4" Ports, 24x32 Namur Connection, 3/2 and 5/2)		10-Single Coil(Monostable) 20-Dual Coils (Bistable)	
			Coil and Pilot C0-Standard Coil (Nema4, 4X, IP65) C1-15mm Miniature Pilot Coil(IP65) For ASi or PLC Connected C2-10mm Miniature Pilot Coil(IP65) For ASi or PLC Connected C3-15mm Miniature Pilot Coil(Ex ia IIC T6) For ASi or PLC Connected C4-Flameproof Coil(Ex d IIC T6) C5-Intrinsical Safe Coil(Ex ia IIC T6) C6-Encapsulation Coil(Ex mB II T4 or T6)	
			F1-3/2, three ways and two positions F2-5/2, five ways and two positions F3-Both for 3/2 and 5/2 with interface plates	

Spool Valve Performance Data

Model No	ALV200	ALV300	ALV400	ALV500	ALV600
Body and Fluid Contact Materials	Glass-filled PA, NBR and Stainless Steel	Anodized Aluminum, Glass-filled PA and NBR	Anodized Aluminum, Glass-filled PA and NBR	Anodized Aluminum, Glass-filled PA, POM and NBR	S.S.304/316/316L, Glass-filled PA, PTFE and NBR
Fastenres	SS304	Carbon steel with zinc coated		SS304/316	
Air Ports	1/8" or 1/4" BSPP or NPT	1/4" BSPP or NPT	1/2" BSPP or NPT	1/4" BSPP or NPT	1/4" BSPP or NPT
Namur Mount	-	24x32	40x45	24x32	24x32
Function	3/2	3/2 or 5/2	3/2 or 5/2	3/2 and 5/2	3/2 and 5/2
Orifice Area	1.54mm ² (CV=0.15)	25.00mm ² (CV=1.40)	50.00mm ² (CV=2.79)	19.63mm ² (CV=1.10)	19.63mm ² (CV=1.10)
Working Temperature	-25℃ ~ 80℃	-5℃ ~ 80℃	-5℃ ~ 80℃	-25℃ ~ 80℃ On requires: -40℃ ~ 80℃ -5℃ ~ 200℃	-25℃ ~ 80℃ On requires: -40℃ ~ 80℃ -5℃ ~ 200℃
Application Area	Indoor and outdoor	Indoor	Indoor	Indoor and outdoor	Indoor and outdoor
Max Action Frequency	5 Cycle / Sec	5 Cycle / Sec	5 Cycle / Sec	5 Cycle / Sec	5 Cycle / Sec
Photo					

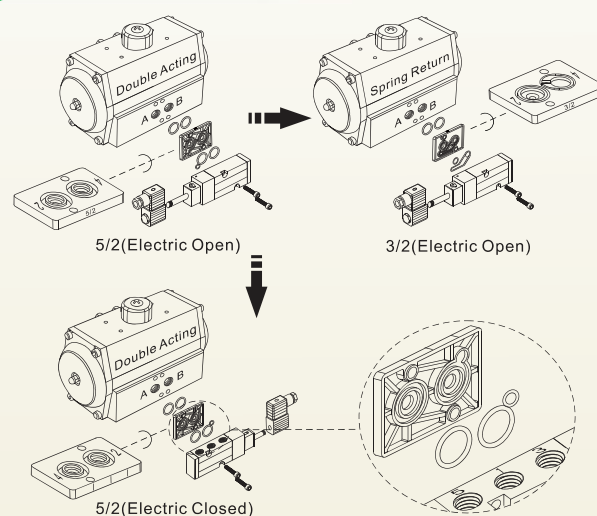
Coils and Pilot Coils Performance Data

Model No	C0		C1	C2	C3	C4	C5	C6
Name	Standard Coil		15mm Miniature Pilot Coil	10mm Miniature Pilot Coil	15mm Miniature Pilot Coil	Flameproof coil	Intrinsical Safe Coil	Encapsulation Coil
Voltage/Watt	12VDC-2.8W 24VDC-2.8W 48VDC-2.8W	110VAC-4VA 210VAC-4VA 220VAC-4VA 240VAC-4VA (50/60HZ)	12VDC-2.3W 24VDC-2.3W 110VAC-2.5VA 220VAC-2.5VA (50/60HZ)	6VDC-1.3W 12VDC-1.3W 24VDC-1.3W	24VDC-0.7W	24VDC-3W 110VAC-4VA 220VAC-4VA (50/60HZ)	24VDC-3W	24VDC-3W 110VAC-4VA 220VAC-4VA (50/60HZ)
Insulation Protection	IEC60317-H H Class Coil		F Class Coil	F Class Coil	F Class Coil	H Class Coil	H Class Coil	H Class Coil
Max Temperature	180°C		155°C	155°C	155°C	180°C	180°C	180°C
Insulated voltage	1000V		1000V	1000V	1000V	1000V	1000V	1000V
Duty factor	100% ED							
Connector (DIN43650)	Spade plug (cable Ø6-8mm or Ø6-10mm)		Spade plug (cable Ø4-6mm)			-	-	-
Weather Proof	IP65 NEMA4,4X		IP65	IP65	IP65	IP67	IP65	IP65
Operating Temperature	-50°C~150°C		-5°C~50°C	-5°C~51°C	-10°C~50°C	-50°C~150°C	-50°C~150°C	-50°C~150°C
Explosion	-		-	-	Ex ia IIC T6	Ex d IIC T6	Ex ia IIC T6	Ex mB IIT 4 or T5
Approve	CE, NEMA 4, 4X		CE	CE	CE Ex ATEX	CE Ex ATEX	CE Ex ATEX	CE Ex ATEX
Photo						-	-	

Assembly on the Actuator

Prior installing the solenoid valve, depressurize the pipes and clean them internally to avoid particles entering the system (tape sealant, thread compound). The valves may be mounted on the NAMUR interface of the pneumatic actuator.

The dimension design of the AChem spool valve is exactly in light of NAMUR standard. The same spool valve equips with 3/2 and 5/2 function NAMUR interface plates. According to the direction of the interface plate, Fix the spool valve and the interface plate on the NAMUR interface of the pneumatic actuator with 2 screw M5(Torque 4 to 5 Nm) provided. Details see right Fig.



Different Colour for Choice



Packing Condition



Silencer and Pipe Connector

Model No.	Dimension			Drawing	Photo	Model No.	Dimension			Drawing	Photo
	G	L	S				G	L	S		
M11	1/4"	29	15			M41	1/4"	38	14		
M12	3/8"	37	18			M42	3/8"	38	17		
M13	1/2"	41	21			M43	1/2"	42	21		
M21	1/4"	17	16			M51	1/4"	27	14		
M22	3/8"	18	19			M52	3/8"	33	17		
M23	1/2"	20	24			M53	1/2"	33	21		
M31	1/4"	39	Ø17			P11	1/4"	20.8	6		
M32	3/8"	65	Ø25			P12	1/4"	20.8	8		
M33	1/2"	70	Ø25			P21	1/2"	7.5	6		
						P22	1/2"	7.5	8		