

Process Valve: 2 Port Valve For Compressed Air and Air-hydro Circuit Control

Series VNA



[Option]
Note) CE compliant: For D or DZ only

How to Order

Seal material

A	NBR seals
B	FKM seals
C	EPR seals

Refer to "Table (1)" for availability.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Bracket (Valve size: 1/2/3/4.)

Nil	None
B (Note)	With bracket

Note) Only valve sizes 1, 2, 3 and 4.
Shipped after assembled at our factory.
Bracket part no.
Valve size 1: VN1-A16 (with thread)
Valve sizes 2 to 4: VN□-16
2 to 4

Air operated VNA 2 0 1 A - 15A -

External pilot solenoid VNA 2 1 1 A - 15A - 1 T -

Valve size

Symbol	Orifice dia. (mm)	1	2	3 (Note)	Symbol	Port size Rc
1	ø10	●	●	●	6A	1/8
		●	●	●	8A	1/4
		●	●	●	10A	3/8
2	ø15	●	●	●	10A	3/8
		●	●	●	15A	1/2
3	ø20	●	●	●	20A	3/4
4	ø25	●	●	●	25A	1
5	ø32	●	●	●	32A	1 1/4
6	ø40	●	●	●	40A	1 1/2
7	ø50	●	●	●	50A	2

Note) Air operated only

Valve type

Port size

Rated voltage

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
Note 2) 3	110 VAC 50/60 Hz
Note 2) 4	220 VAC 50/60 Hz
5	24 VDC
Note 2) 6	12 VDC
Note 2) 7	240 VAC 50/60 Hz
Note 2) 9	Other

Note 1) CE compliant: For D or DZ only
Note 2) Semi-standard

CE compliant

Nil	—
Q	CE compliant

Note) CE compliant: For D or DZ only

Manual override

Nil: Non-locking push type

A: Non-locking push type A (Note) (projecting)

B: Slotted locking type B (Note) (tool required)

Nil: Non-locking push type

Note) Option

Table (1) Applicable Fluids

Model	VNA□□□A (Valve material: NBR seal)	VNA□□□B (Valve material: FKM seal)	VNA□□□C (Valve material: EPR seal)
Fluid	Air (Standard, Dry) Carbon dioxide (CO ₂) (Less than 0.7 MPa) Nitrogen gas (N ₂) Turbine oil, (Kinematic viscosity 40 to 100 mm ² /s) Hydraulic fluid	Argon Helium Turbine oil, (Kinematic viscosity 40 to 100 mm ² /s) Hydraulic fluid	Carbon dioxide (CO ₂) (0.7 MPa or more)

Caution

This product cannot be used for water application.



Note 1) Except rated voltage 6, 7, 9.

Note 2) For valve sizes 5 to 7 of the DZ DIN terminal with light/surge voltage suppressor, be sure to add suffix -X200 at the end of the part number. (For CE compliant product, -X200 is not required.)
In this case, the pilot solenoid valve is VO307-□DZ.

Electrical entry/With light/surge voltage suppressor

Symbol	Electrical entry	Valve size
G	Grommet	Valve size 1 to 4
GS	Grommet with surge voltage suppressor	
E	Grommet terminal	
EZ	Grommet terminal with light/surge voltage suppressor	
T	Conduit terminal	
TZ	Conduit terminal with light/surge voltage suppressor	Note 2) Valve size 5 to 7
D	DIN terminal	
DZ	DIN terminal with light/surge voltage suppressor	
G	Grommet	
GS	Grommet with surge voltage suppressor	
C	Conduit	Note 2) Valve size 5 to 7
T	Conduit terminal	
TS	Conduit terminal with surge voltage suppressor	
TZ (Note 1)	Conduit terminal with light/surge voltage suppressor	
TL (Note 1)	Conduit terminal with indicator light	
D	DIN terminal	Note 2) Valve size 5 to 7
DL	DIN terminal with indicator light	

CE compliant

Symbol	Electrical entry	Valve size
D	DIN terminal	Valve size 1 to 7
DZ	DIN terminal with light/surge voltage suppressor	

Process Valve: 2 Port Valve For Compressed Air and Air-hydro Circuit Control **Series VNA**

Model

Model	Port size Rc	Orifice diameter ø (mm)	Flow characteristics				Mass (kg)	
			Measured by air		Measured by water ^{Note)}		Air operated	External pilot solenoid
			C [dm ³ / (bar·sec)]	b	Cv	Av x 10 ⁻⁶ m ²		
VNA1□□□-6A	1/8	10	3.5	0.35	0.88	25	0.1	0.2
VNA1□□□-8A	1/4		5.9	0.24	1.5	41		
VNA1□□□-10A	3/8		7.9	0.16	1.9	51		
VNA2□□□-10A	1/2	15	16	0.35	3.8	110	0.3	0.4
VNA2□□□-15A			23	0.25	4.8	130		
VNA3□□□-20A	3/4	20	34	0.16	7.5	210	0.5	0.6



Note) This product cannot be used for water application.

Model	Port size Rc	Orifice diameter ø (mm)	Flow characteristics		Mass (kg)	
			Cv	Effective area (mm) ²	Air operated	External pilot solenoid
VNA4□□□-25A	1	25	12	220	0.8	0.9
VNA5□□□-32A	1 1/4	32	18	320	1.3	1.4
VNA6□□□-40A	1 1/2	40	28	500	2.1	2.2
VNA7□□□-50A	2	50	43	770	3.1	3.2



External pilot
solenoid



Air operated

Specifications

Fluid (Main piping)		Refer to "Table (1)" on page 358.
Fluid temperature	VNA□□□ A	-5 to 60°C ^{Note 1)}
	VNA□□□ B	-5 to 99°C ^{Note 1)}
	□□□ C	(Air operated type only)
Ambient temperature		-5 to 50°C ^{Note 1)} (Air operated type: 60°C)
Proof pressure		1.5 MPa
Operating pressure range		0 to 1 MPa
External pilot air	Pressure range	0.2 to 0.7 MPa
	Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated. ^{Note 2)})
	Temperature	-5 to 50°C ^{Note 1)} (Air operated type: 60°C)
Mounting orientation		Unrestricted ^{Note 3)}



Note 1) No freezing

Note 2) Lubrication is not allowed for use with EPR seal material.

Note 3) For external pilot solenoid, it is recommended that the pilot solenoid valve be oriented either vertically upward or horizontally.

JIS Symbol

Style	Valve type	N.C.	N.O.	C.O.
		Normally closed	Normally open	Double acting
Air operated	VNA□01			
	VNA□11			
	VNA□12			

Pilot Solenoid Valve Specifications

Port size		6A to 25A	32A to 50A	32A to 50A (CE compliant)
Pilot solenoid valve		SF4-□□□-23	VO301-00□□□	VO307-00□□□-Q
Electrical entry		Grommet, Grommet terminal Conduit terminal DIN terminal	Grommet, Conduit DIN terminal Other (Option)	DIN terminal
Coil rated voltage (V)	AC (50/60 Hz)	100 V, 200 V, Other voltage (Option)		
	DC	24 V, Other voltage (Option)		
Allowable voltage fluctuation		-15% to +10% of rated voltage		
Temperature rise		35°C or less (When rated voltage is applied.)	70°C or less (When rated voltage is applied.)	50°C or less (When rated voltage is applied.)
Apparent power	AC	Inrush 5.6 VA (50 Hz), 5.0 VA (60 Hz)	12 VA (50 Hz), 10.5 VA (60 Hz)	12.7 VA (50 Hz), 10.7 VA (60 Hz)
	AC	Holding 3.4 VA (50 Hz), 2.3 VA (60 Hz)	7.5 VA (50 Hz), 6 VA (60 Hz)	7.6 VA (50 Hz), 5.4 VA (60 Hz)
Power consumption		DC 1.8 W (without light), 2 W (with light)	4.8 W (without light), 5 W (with light)	
Manual override		Non-locking push type Other (Option)	Non-locking push type	

Note) For "How to Order" pilot solenoid valves, refer to page 363.

VNA

VNB

SGC

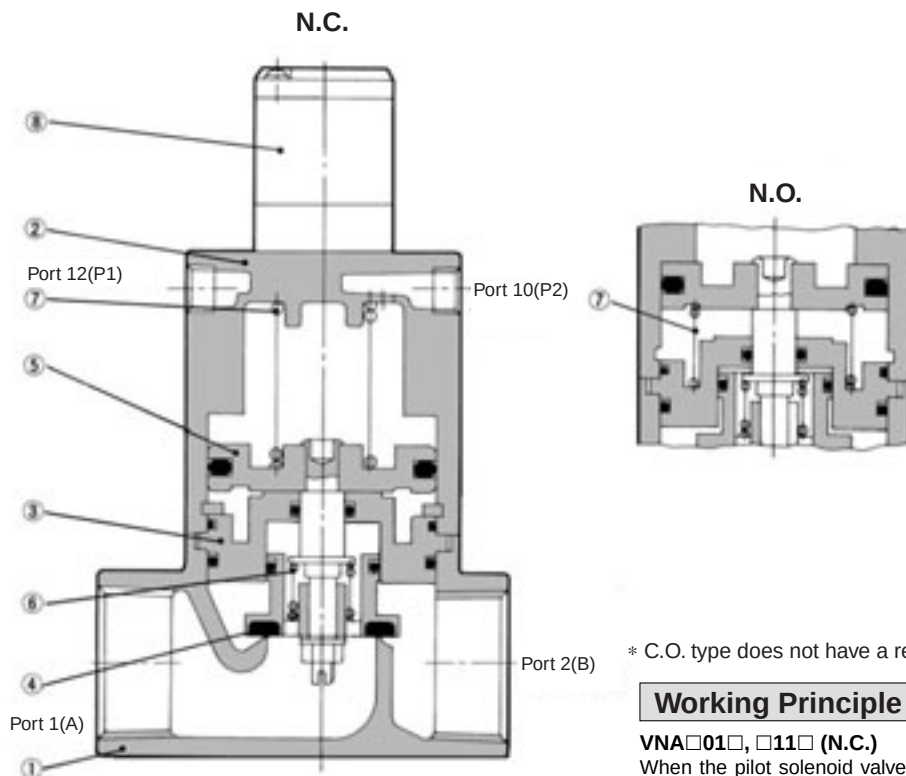
VNC

VNH

VND

VCC

Construction



* C.O. type does not have a return spring ⑦.

Working Principle

VNA□01□, □11□ (N.C.)

When the pilot solenoid valve ⑧ is not energized (or when air is exhausted from the port 12(P1) of the air operated style), the valve element ④ linked to the piston ⑤ is closed by the return spring ⑦.

● When valve element opens

When the pilot solenoid valve is energized (or when pressurized air enters through the port 12(P1) of the air operated style), the pilot air that has entered under the piston moves upward to open the valve element.

● When valve element closes

When the power to the pilot solenoid valve is turned off (or when fluid is exhausted from the port 12(P1) of the air operated style), the pilot air under the piston is exhausted, and the return spring closes the valve element.

VNA□02□, □12□ (N.C.)

In contrast with the N.C., when the power to the pilot solenoid valve is turned off (or when air is exhausted from the port 10(P2) of the air operated style), the valve is held open by the return spring. When the pilot solenoid valve is energized (or when pressurized air enters through the port 10(P2) of the air operated style), the valve element closes.

VNA□03□ (C.O.)

The valve element of the C.O. type, which has no return spring, is in an arbitrary position when air is exhausted through the ports 12(P1) and 10(P2). When pressurized air enters the port 12(P1) (exhaust from the port 10(P2)), the valve element opens, and it closes when pressurized air enters the port 10(P2) (exhaust from the port 12(P1)).

Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Platinum silver painted
2	Cover assembly	Aluminum alloy	Platinum silver painted
3 Note)	Plate assembly	Aluminum alloy	Valve material (NBR, FKM, EPR)
4 Note)	Valve element	Aluminum alloy	Valve material (NBR, FKM, EPR)
5	Piston assembly	Aluminum alloy	—
6	Travel spring	Stainless steel	—
7	Return spring	Piano wire	—
8	Pilot solenoid valve	—	—



Note) Parts ③ and ④ are for selection of valve composition.

Replacement Parts

No.	Description			Part no.						
				VNA1□□A -6A, 8A, 10A	VNA2□□□ -10A, 15A	VNA3□□□ -20A	VNA4□□□ -25A	VNA5□□□ -32A	VNA6□□□ -40A	VNA7□□□ -50A
3	Plate assembly	Seal material	NBR	VN1-A3AA	VN2-A3AA	VN3-A3AA	VN4-A3AA	VN5-A3AA	VN6-A3AA	VN7-A3AA
			FKM	VN1-A3AB	VN2-A3AB	VN3-A3AB	VN4-A3AB	VN5-A3AB	VN6-A3AB	VN7-A3AB
			EPR	VN1-A3AC	VN2-A3AC	VN3-A3AC	VN4-A3AC	VN5-A3AC	VN6-A3AC	VN7-A3AC
4	Valve disc (Valve disc assembly for 25A-50A)	Seal material	NBR	VN1-4AA	VN2-4AA	VN3-4AA	VN4-A4AA	VN5-A4AA	VN6-A4AA	VN7-A4AA
			FKM	VN1-4AB	VN2-4AB	VN3-4AB	VN4-A4AB	VN5-A4AB	VN6-A4AB	VN7-A4AB
			EPR	VN1-4AC	VN2-4AC	VN3-4AC	VN4-A4AC	VN5-A4AC	VN6-A4AC	VN7-A4AC
8	Pilot solenoid valve			SF4-□□□-23 (Refer to page 363 for details.)				VO301-00□□□ (Refer to page 363 for details.)		