

# NAMUR Interface 5 Port Solenoid Valve

## Series VFN2000N

### Specifications

Valve	Fluid	Air/Inert gas	
	Max. operating pressure	0.9 MPa {130 PSI}	
	Min. operating pressure	0.15 MPa {22 PSI}	
	Ambient and fluid temperature	-10 to +60°C <sup>(1)</sup>	
	Lubrication	Not required <sup>(2)</sup>	
	Pilot operator manual override	Non-locking push type (Flush)	
	Enclosure	Dustproof	
	Port size	1/4	
	Cv factor (Effective area)	Refer to "Flow Characteristics" table below.	
	Weight	Refer to "Weight" table below.	
	Other	Cylinder ports should be NAMUR hole pattern.	
Electrical entry	Rated voltage	AC	100/200 V (50/60 Hz)
		DC	24 V
	Allowable voltage range	-15 to +10% of rated voltage	
	Coil insulation	Class B or equivalent	
	Apparent power AC (Power consumption)	Inrush	5.0 VA/60 Hz, 5.6 VA/50 Hz
		Holding	2.3 VA (1.5 W)/60 Hz, 3.4 VA (2.1 W) 9/50 Hz
	Power consumption DC	1.8 W	
	Electrical entry	Grommet, Grommet terminal, Conduit terminal, DIN terminal	

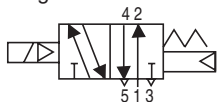
Note 1) Use dry-air at low temperature.

Note 2) Use turbine oil Class1 (ISO VG32), if lubricated.

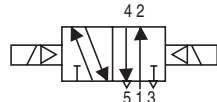


#### JIS Symbol

Single solenoid



Double solenoid



VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

### VFN2000N/Flow Characteristics

		Flow characteristics					
		1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)		
		C	b	Cv	C	b	Cv
2 position	Single solenoid	3.48	0.25	0.85	4.57	0.17	1.06
	Double solenoid	3.48	0.25	0.85	4.57	0.17	1.06

### Weight

(g)

Model	Weight
VFN2120N-5D-02F	260
VFN2220N-5D-02F	400

### How to Order

VFN2 **1** 20 N — **5** **D** **Z** — 02 **F**

Solenoid

1	Single solenoid
2	Double solenoid

NAMUR Interface

Voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3	110 to 120 VAC, 50/60 Hz
4	220 VAC, 50/60 Hz
5	24 VDC
6	12 VDC
7	240 VAC, 50/60 Hz
9	Other

Electrical entry

G	Grommet
E	Grommet terminal
T	Conduit terminal
D	DIN terminal
DO	DIN terminal (Without connector)

Thread type

Nil	Rc (PT)
F	G (PF)
N	NPTF

Manual override/Classification

Nil	Non-locking push type (Flush)
A	Non-locking push type (Extended)
B	Locking type (Tool required)

Light/Surge voltage suppressor

Nil	None
Z	With light/surge voltage suppressor
S	With surge voltage suppressor <sup>Note)</sup>

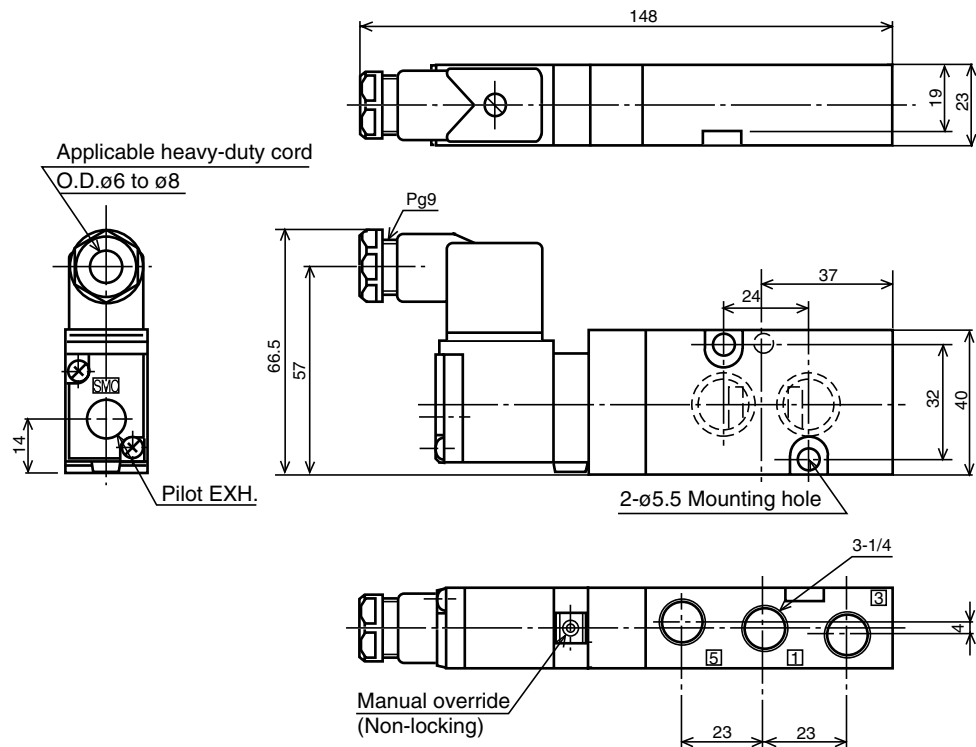
Note) Available for grommet type only.

# Series VFN2000N

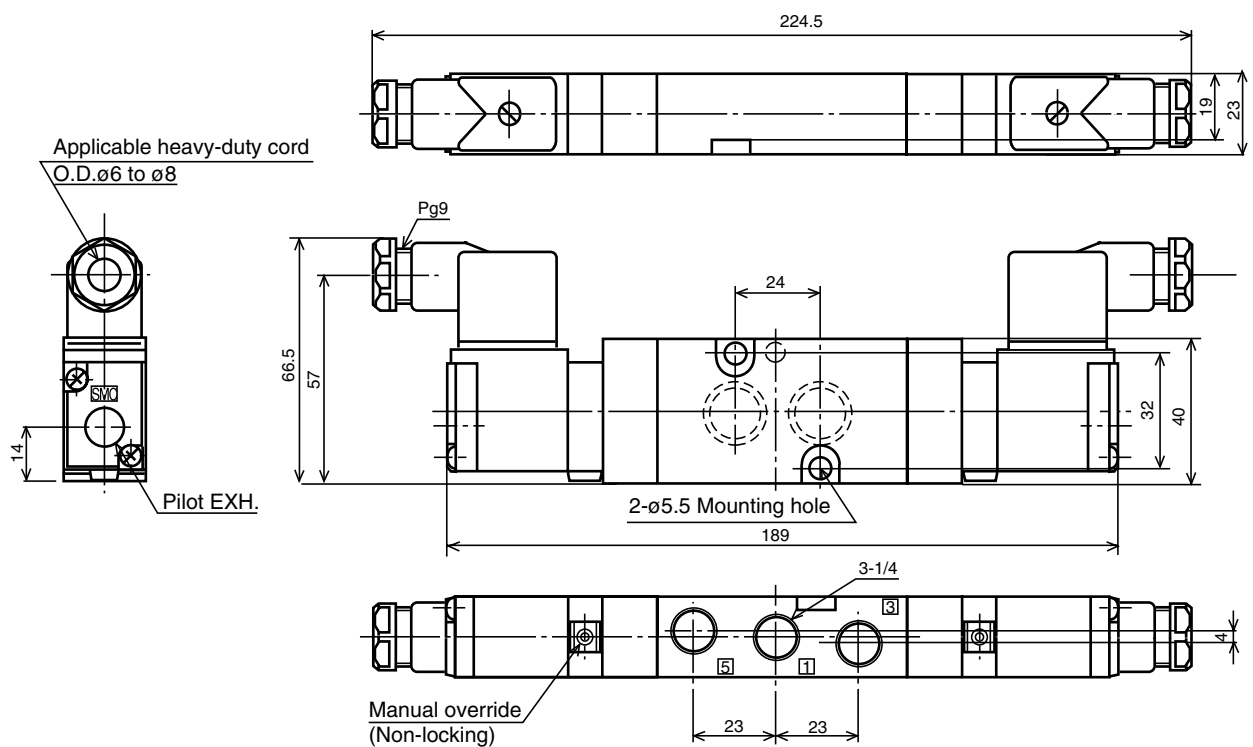
## Dimensions

(mm)

VFN2120N-□□-02□

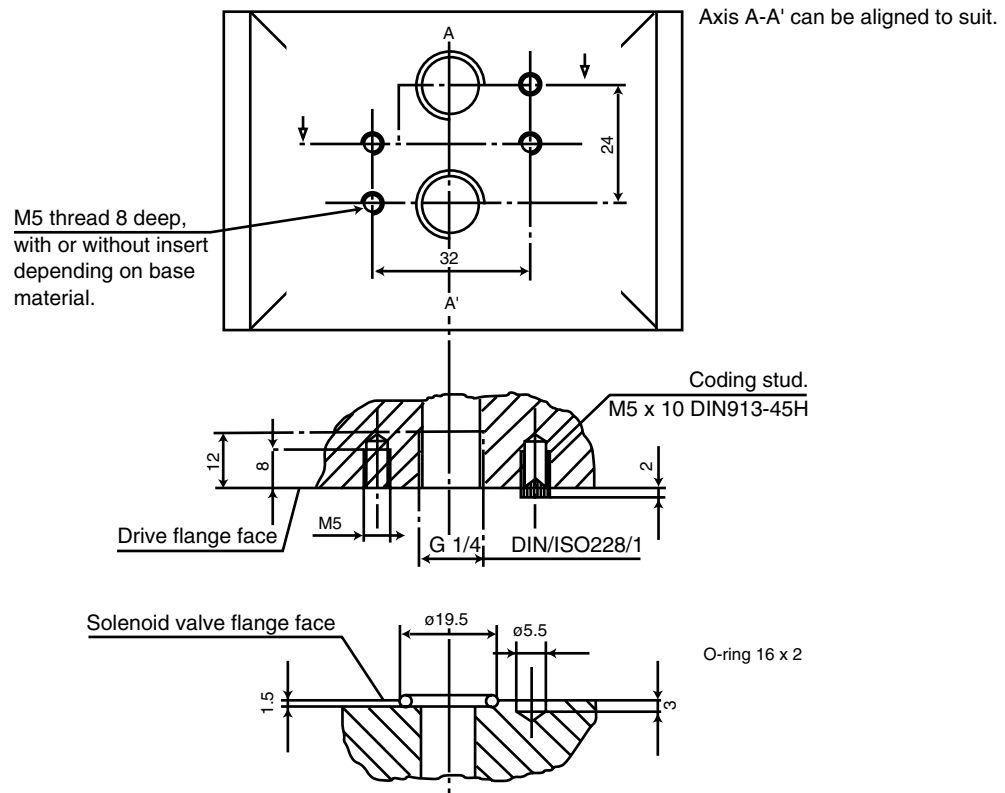


VFN2220N-□□-02□



\* Cylinder ports are NAMUR hole pattern.

## NAMUR Mounting Pattern



The solenoid valve can be attached with 2 mounting bolts.

The positioning of the coding stud hole is left up to the manufacture and thus also determines the location of the coding stud.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

**VFN**



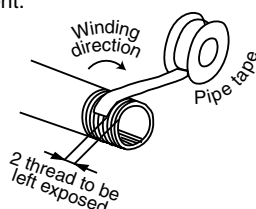
# NAMUR Valve/Series VFN2000N/3000N

## Specific Product Precautions

Be sure to read before handling.

### Piping

1. When piping, please use I.D. equivalent to or larger than N.B.
2. Before piping, flush the system to remove dust, scale, chips, seal tape etc. in the pipe line both on the supply side (supply pressure port side) and secondary side (operation equipment port side).
3. For 3 position closed center, perfect check valve, check for leakage from piping and fittings in-between valve and cylinder by means of soapy water to ensure that there is no leakage. Also check the leakage from cylinder rod seal and piston seal. If there is any leakage, the cylinder, when the valve is deenergized, may move without stopping at mid-position. Therefore leakage from piping and fittings should be completely removed. When applying teflon sealing tape to the thread area, wind it round the thread area 1-2 times while ensuring the thread extends one or two screw pitches beyond the taped area. Also when applying liquid seal materials, leave 1-2 threads from the end, and avoid over-application. Never apply to the female side of the equipment.



### Clamping Torque

Thread	Correct clamping torque kgfcm (N·m)
1/4	120 to 140 (12 to 14)

Taking safety into the consideration, the piping system should always be mounted that disassembling and assembling can be carried easily.

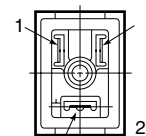
### Mounting

Single acting valves can be mounted in any direction, but in the case of double solenoid valve and 3 position valve in a place subjected to vibration, spool valve should be aligned perpendicular to the vibration. (Never use in a vibration condition of more than 5 G.)

### Wiring

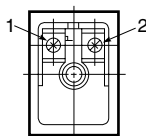
For DIN terminal and terminal block (with light/surge voltage suppressor), the interior wiring is shown below. Please connect with respective power terminals.

With DIN terminal block



Note) No polarity

With terminal block



Applicable terminal : 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S. But in the case of with DIN terminal block, it is not a terminal structure.

## Warning

1. **The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.**  
Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements.
2. **Only trained personnel should operate pneumatically operated machinery and equipment.**  
Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.
3. **Do not service machinery/equipment or attempt to remove component until safety is confirmed.**
  - 1) Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.

### Environmental Conditions

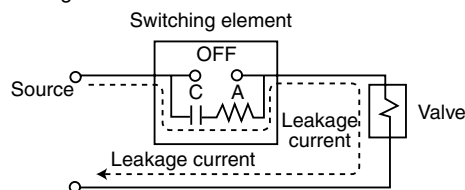
1. When valve is installed in a dusty area, protect cylinder rod to prevent dust from entering secondary piping from rod end. Install to prevent dust from entering secondary piping from rod area. Install silencer or elbow fitting with its outlet pointed downwards to prevent dust from entering the exhaust port of the valve.
2. When used in environmental conditions where corrosive gas, chemical solutions, steam, sea water or high temperatures higher than 60°C exist, please contact SMC.

### Lubrication

Valves are pre-lubricated. No further lubrication is necessary. If a lubricant is used (if lubrication is required for cylinder etc.), install lubrication (oil) on the supply side piping. Please note that the recommended lubricant is turbine oil #1 (ISO VG32). (Never use spindle oil or machine oil). In addition, when valve is used at low temperature, low temperature oil should be used. The used of turbine oil at temperatures lower than 0°C leads to increased viscosity and may cause the valve to malfunction.

### Leakage Voltage

It must be noted that when connecting C-R element parallel to switching element, leakage current flows through C-R element and the leak voltage increases.



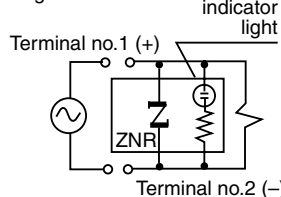
Ensure that voltage leakage across the coil as follows :  
AC coil : No more than 20% of the rated voltage  
DC coil : No more than 3% of the rated voltage

### Momentary Energizing Time

When the double solenoid type is used with momentary energizing, the energizing time should be taken as 0.1 second or more (At the supply pressure 50 kPa [75 PSI].)

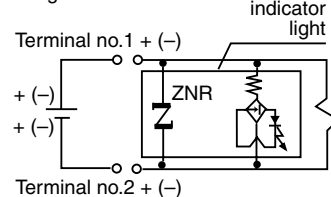
### Light/Surge Voltage Suppressor

AC and 100 VDC  
Single



Note) No polarity

24 VDC or less  
Single



- 2) When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
- 3) Before machinery/equipment is re-started, take measures to prevent shooting-out of cylinder piston rod etc. (Bleed air into the system gradually to create back-pressure.)
4. **Please contact SMC if the product is to be used in any of the following conditions:**
  - 1) Conditions and environments beyond the given specifications, or if product is used outdoors.
  - 2) Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.
  - 3) An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.