



Installation and Maintenance Manual

Series VFN 200N NAMUR Interface Solenoid Valve (3 Port)

Series VFN 2000N NAMUR Interface Solenoid Valve (5 Port)

For future reference, please keep this manual in a safe place

This manual should be read in conjunction with the current valve catalogue

Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO4414 (Note 1), JIS B 8370 (Note 2) and other safety practices.

Note 1: ISO 4414: Pneumatic fluid power – Recommendations for the application of equipment to transmission and control systems.
Note 2: JIS B 8370: Pneumatic system axiom.

CAUTION : Operator error could result in injury or equipment damage.

WARNING: Operator error could result in serious injury or loss of life.

DANGER : In extreme conditions, there is a possible result of serious injury or loss of life.

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.
- 2) When equipment is to be removed, confirm the safety process as mentioned above. Switch off air and electrical supplies and exhaust all residual compressed air in the system.
- 3) Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Bleed air into the system gradually to create back-pressure, i.e. incorporate a soft-start valve).

4. 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) Installations 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.

CAUTION

Ensure that the air supply system is filtered to 5 micron.

Valve specifications VFN 200N Series (Fig 1)

Valve	Fluid	Air, inert gas	
	Valve type	Normally closed	
	Max. operating pressure	0.9 MPa (130PSI)	
	Min. operating pressure	0.15 MPa (22PSI)	
	Ambient and fluid temperature	-10° to +50°C (Note 1)	
	Lubrication	Not required (Note 2)	
	Pilot operator manual override	Non-locking push type (flush type)	
	Protection structure	Dust proof	
	Port size	1/4	
	Cv factor (effective area)	1.4 (25mm ²)	
Electrical entry	Weight	0.24kgf (single solenoid), 0.38kgf (double solenoid)	
	Other	CYL. port should be NAMUR hole pattern	
	Rated voltage	AC	100/200V (50/60Hz)
		DC	24V
	Allowable voltage range	-15 to +10% of rated voltage	
	Coil insulation	Class B or equivalent	
	Apparent power AC (Power consumption)	Inrush	5.0VA/60Hz, 5.6VA/50Hz
		Holding	2.3VA (1.5W)/60Hz, 3.4VA (2.1W) 9/50Hz
	Power consumption DC	1.8W	
	Electrical entry	Grommet, Grommet terminal, Conduit terminal, DIN connector	

Note 1: Use dry-air at low temperature.

Note 2: Use turbine oil No. 1 (ISO VG32), if lubricated.

Installation

CAUTION

Ensure all air and power supplies are isolated before commencing installation.

WARNING

DO NOT INSTALL THESE VALVES IN EXPLOSIVE ATMOSPHERES. If these valves are exposed to water or oil droplets, ensure that the valves are protected. If it is intended to energise a valve for an extended period please consult SMC.

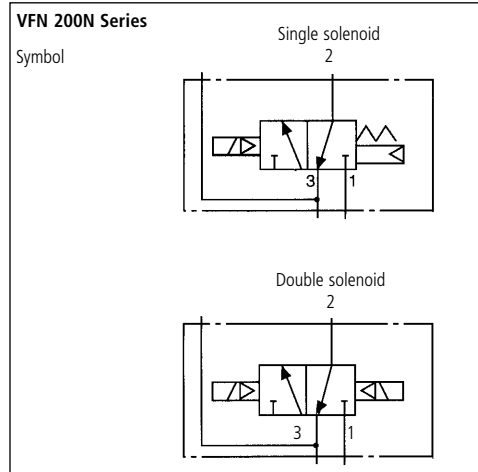


Fig 1

Valve specifications VFN 2000N Series (Fig 2)

Valve	Fluid	Air, inert gas	
	Max. operating pressure	0.9 MPa (130PSI)	
	Min. operating pressure	0.15 MPa (22PSI)	
	Ambient and fluid temperature	-10° to +50°C (Note 1)	
	Lubrication	Not required (Note 2)	
	Pilot operator manual override	Non-locking push type (flush type)	
	Protection structure	Dust proof	
	Port size	1/4	
	Cv factor (effective area)	1.4 (25mm ²)	
	Weight	0.26kgf (Single solenoid), 0.4 (double solenoid)	
Electrical entry	Other	CYL. port should be NAMUR hole pattern	
	Rated voltage	AC	100/200V (50/60Hz)
		DC	24V
	Allowable voltage range	-15 to +10% of rated voltage	
	Coil insulation	Class B or equivalent	
	Apparent power AC (Power consumption)	Inrush	5.0VA/60Hz, 5.6VA/50Hz
		Holding	2.3VA (1.5W)/60Hz, 3.4VA (2.1W) 9/50Hz
	Power consumption DC	1.8W	
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Note 1: Use dry-air at low temperature.

Note 2: Use turbine oil No. 1 (ISO VG32), if lubricated.

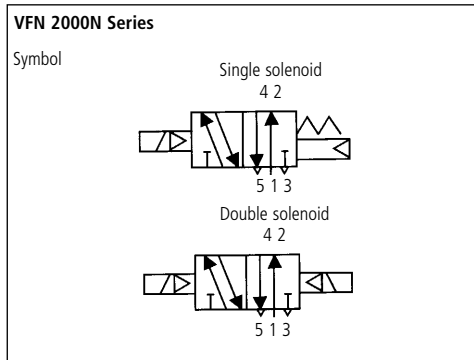


Fig 2

VFN 200N / VFN 2000N Series NAMUR mounting pattern (Fig 3)

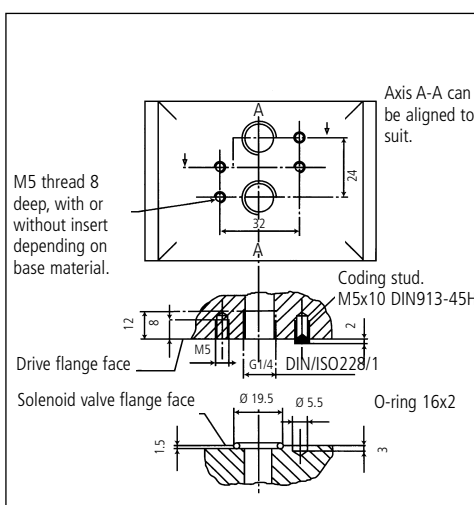


Fig 3

The solenoid valve can be attached with 2 mounting bolts. The positioning of the coding stud hole is left up to the manufacturer and thus also determines the location of the coding stud.

DIN Connector wiring (Fig 4)

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

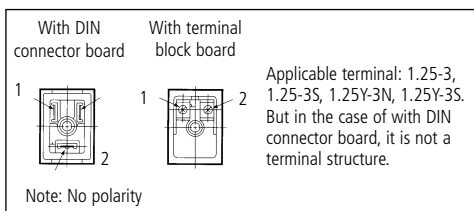


Fig 4

Clamping torque

Thread	Correct clamping torque kgf/cm (N-m)
1/4	120 to 140 (12 to 14)

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

For additional information please contact your local SMC office, see below:

When you enquire about the product, please contact the following

SMC Corporation:

ENGLAND	Phone 01908-563888	TURKEY	Phone 212-2211512
ITALY	Phone 02-92711	GERMANY	Phone 6103-402-0
HOLLAND	Phone 020-5318888	FRANCE	Phone 01-64-76-10-00
SWITZERLAND	Phone 052-396 31 31	SWEDEN	Phone 08-603 07 00
SPAIN	Phone 945-184100	AUSTRIA	Phone 02262-62-280
	Phone 902-255255	IRELAND	Phone 01-4501822
GREECE	Phone 01-3426076	DENMARK	Phone 70 25 29 00
FINLAND	Phone 09-68 10 21	NORWAY	Phone 67-12 90 20
BELGIUM	Phone 03-3551464	POLAND	Phone 48-22-6131847
		PORTUGAL	Phone 02-610 8922

Leakage voltage (Fig 5)

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

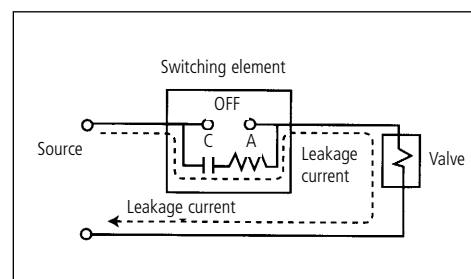


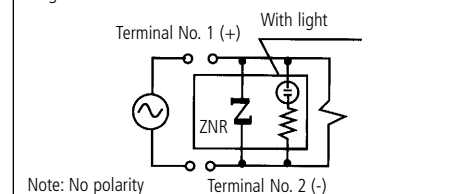
Fig 5

Ensure that the voltage leakage across the coil is as follows:

AC coil: No more than 20% of the rated voltage
DC coil: No more than 3% of the rated voltage.

Lamp and surge voltage suppressor (Fig 6)

AC and 100VDC Single



24VDC or less Single

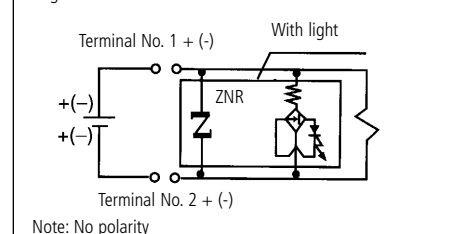


Fig 6

Momentary energising time

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

Mounting

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