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Installation and Maintenance Manual
Series VJ100/300/500/700 Solenoid Valves

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 (Note1), JIS B 8370 (Note2) 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.

VJ100 (3 Port)

Specifications

Fluid	Air and inert gases
Ambient and fluid temperature	Max. 50°C
Response time	10ms or less
Max. operating frequency	20c/s
Manual override	Non-locking type, slotted locking type
Lubrication	Not required
Mounting position	Free
Impact/Vibration resistance	15G/3G (8.3~2000Hz)
Enclosure	IP40

Solenoid specifications

Electrical entry	Grommet (G) (H), plug connector (L or M)
Voltages	24VDC, 12VDC, 6VDC, 5VDC, 3VDC
Allowable voltage	±10% of rated voltage
Coil insulation	Class A
Power consumption	1W (with LED: 1.2W)
Surge voltage suppressor	Diode
Indicator light	LED

Installation

⚠ WARNING

Ensure all air and power supplies are ISOLATED before commencing installation.
Do not install these valves in explosive atmospheres.
If these valves are exposed to oil and/or water droplets ensure that they are protected.
If it is intended to energise a valve for an extended period of time please consult SMC.

VJ100 (3 Port)

Symbol

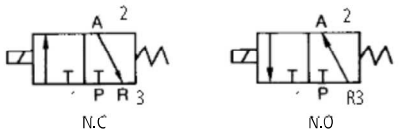


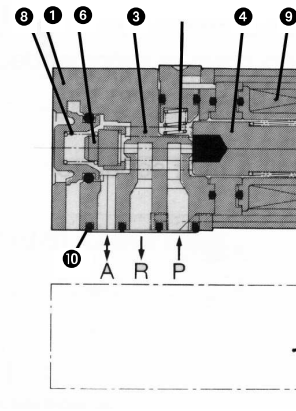
Fig 1

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

Construction/Parts list (Fig 2)

N.C



Main parts

No.	Parts name	Materi
1	Body	PBT res
2	Cover	Polyace
3	Push rod	Polyace
4	Armature assembly	NBR stainle
5	Core	Stainless
6	Exhaust poppet	NBR
7	Return spring	Stainless
8	Poppet spring	Stainless
9	Coil assembly	-

Spare parts

No.	Parts name	Materi
10	Gasket	NBR
11	Subplate	Zinc die

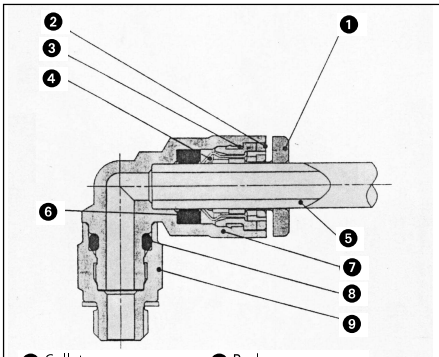
Fig 2

Tube Connection (Fig 3)

Ensure that the tube 5 is cut square.
Push tube 5 into the fitting 7 until it stops.
Pull back on tube 5 to ensure it is gripped by retainer 4.

Tube disconnection (Fig 3)

Push down on the collet 1.
Holding down the collet 1, withdraw the tube from the fitting 5.



1 Collet
2 Guide
3 Collar
4 Tube retainer
5 Tube
6 Tube seal
7 Body
8 O-ring
9 Stud

Fig 3

⚠ CAUTION

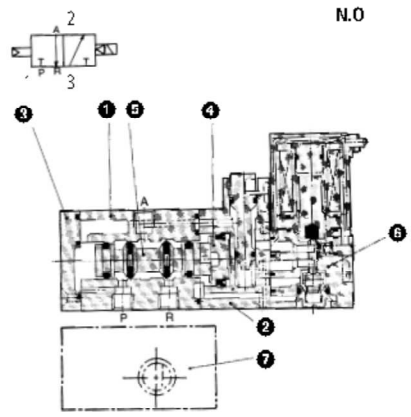
Connecting plug connector (Fig 4)

Ensure the connector is pushed onto the pins in a straight line.
Ensure that the lip of the lever is securely positioned in the groove in the solenoid cover.

Disconnecting plug connector (Fig 4)

1. Press the lever against the connector and pull the connector away from the solenoid in a straight line.

Construction Parts list (Fig 11)



Main parts

No.	Parts name	Material	Notes
❶	Body	Zinc die cast	Platinum silver
❷	Piston plate	PBT resin	Black
❸	End cover	PBT resin	Black
❹	Piston	Polyacetal	-
❺	Spool assembly	Aluminum·NBR	-

Spare parts

No.	Parts name	Material	Parts No.
❻	Pilot valve assembly	-	VJ114- ○○○○
❼	Subplate	Zinc die cast	VJ300-9-1

Fig 11

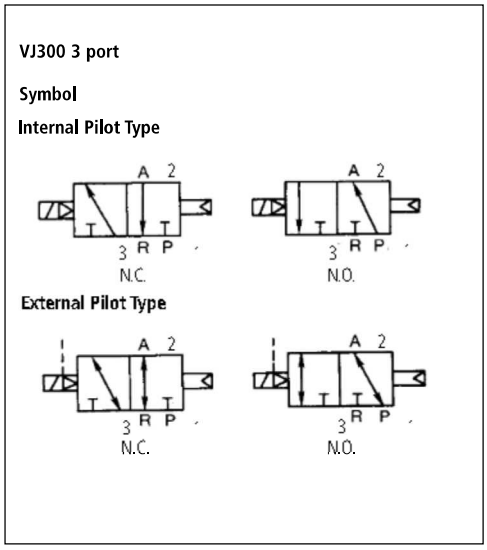


Fig 12

Manifold mounting of VJ300 and VJ3000 series (Fig 13)

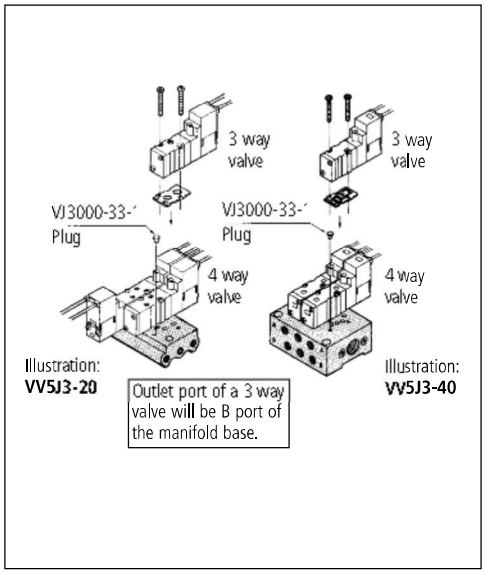


Fig 13

Tube connection (Fig 3)

For tube connection details refer to Fig 3.

Connecting plug connector (Fig 4)

Refer to Fig 4.

Disconnecting plug connector (Fig 4)

Refer to Fig 4.

Surge voltage protection (Fig 5)

Refer to Fig 5.

Lamp and surge protection (Fig 6)

Refer to Fig 6.

⚠ **CAUTION**

Solenoid manual override operation (Fig 7)

Refer to Fig 7.

Leakage voltage (Fig 8)

The VJ300 series valve is mountable on the manifold base of the VJ3000 series.

❶ **In case of type VV5J3-20**
Insert the plug (VJ3000-33-1) into the R port, which is not used for a 3 way valve.
Applicable valve: **VJ312, VJ312M. VJ322, VJ322M**

❷ **For type VV5J3-31, S31, VV5J3-32,S32, and VV5J3-46,S46**
Mount VJ300 in the usual fashion.
Outlet port of a 3 way valve will be B port of the manifold base.
Applicable valve: **VJ314, VJ314M. VJ324, VJ324M**

❸ **For type VV5J3-41,S41**
Insert the plug (VJ3000-33-1) into the R port, which is not used for a 3 way valve.
Outlet port of a 3 way valve will be B port of the manifold base.
Applicable valve: **VJ314, VJ314M. VJ324, VJ324M**

External pilot type (Fig 14)

An external pilot type will be required when the main valve pressure is lower than 1.5kgf/cm². In the case of the body ported version external pilot is only available on the manifold mounted version.

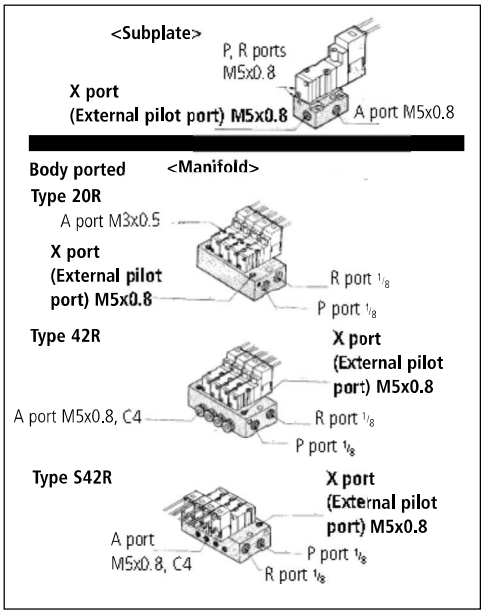


Fig 14

Correct combinations of solenoid valve, gaskets and manifold/sub-base (Fig 15)

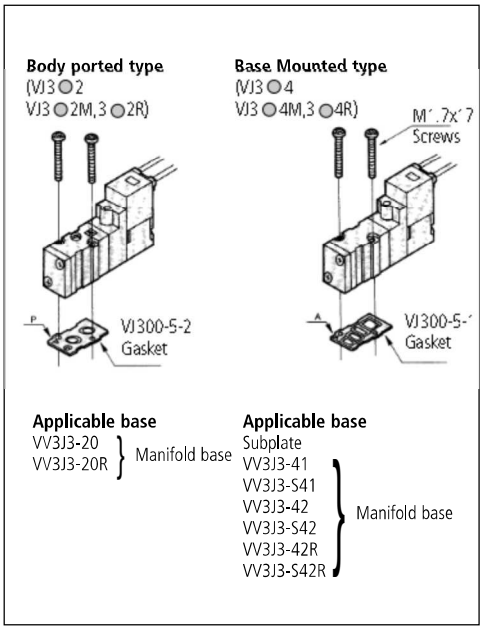


Fig 15

VJ3000 (5 Port)

Specifications

Fluid		
Operating pressure range	2 position single solenoid	
	2 position double solenoid	
	3 position	
Ambient and fluid temperature		
Response time	2 position	
	3 position	
Max. operating frequency	2 position	
	3 position	
Manual override		
Pilot exhaust		
Lubrication		
Mounting position		
Impact/vibration resistance		
Enclosure		

Solenoid specifications

Electrical entry	
Voltage	
Allowable voltage	
Coil insulation	
Power consumption	

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