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Find the *SMC VJ3143* at our website: *Click HERE*

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

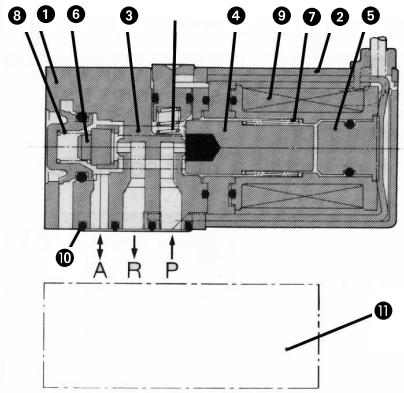
Electrical entry	Grommet (G) (H), plug connector (L or M)
Voltages	24VDC, 12VDC, 6VDC, 5VDC, 3VDC
Allowable voltage	±10% of rated voltage
Coil insulation	Class A
Power consumption	1W (with LED: 1.2W)
Surge voltage suppressor	Diode
Indicator light	LED

Installation

VJ100 (3 Port)

Construction/Parts list (Fig 2)

N.C



Main parts

No.	Parts name	Material	Notes
1	Body	PBT resin	Black
2	Cover	Polyacetal	Black
3	Push rod	Polyacetal	-
4	Armature assembly	NBR stainless steel	-
5	Core	Stainless steel	-
6	Exhaust poppet	NBR	-
7	Return spring	Stainless steel	-
8	Poppet spring	Stainless steel	-
9	Coil assembly	-	-

Spare parts

No.	Parts name	Material	Parts No.
10	Gasket	NBR	VJ100-6-1
11	Subplate	Zinc die cast	NVJ100-17-1

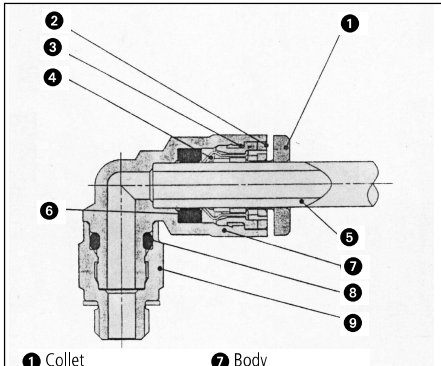
Fig 2

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 7 Body

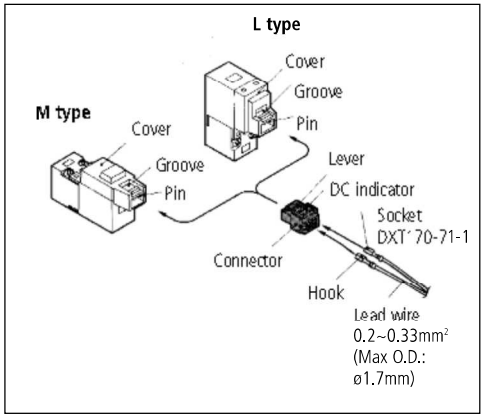
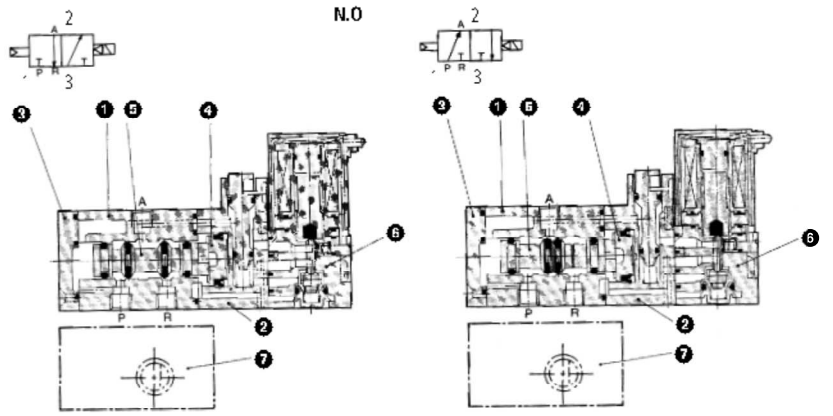


Fig 4

Surge voltage protection circuit (Fig 5)

Ensure the lead wires are correctly connected to the + (Plus) and Minus (-) indications on the connector.
Incorrect connection may result in the diode or switching element becoming damaged.

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

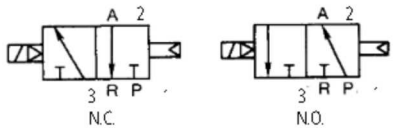
No.	Parts name	Material	Parts No.
❻	Pilot valve assembly	-	VJ114- ○○○○
❼	Subplate	Zinc die cast	VJ300-9-1

Fig 11

VJ300 3 port

Symbol

Internal Pilot Type



External Pilot Type

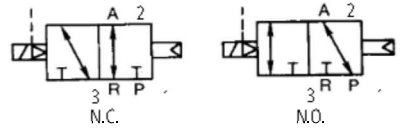


Fig 12

Manifold mounting of VJ300 and VJ3000 series (Fig 13)

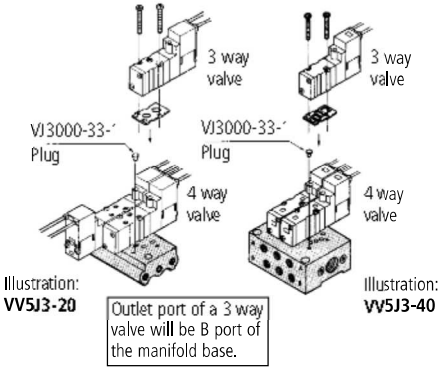


Fig 13

Tube connection (Fig 3)

For tube connection details refer to Fig 3.

Connecting plug connector (Fig 4)

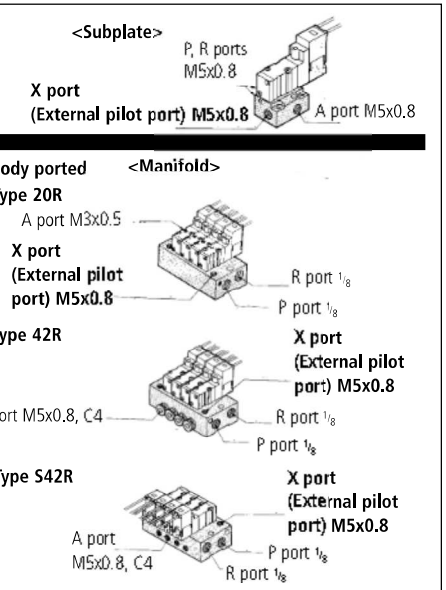


Fig 14

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

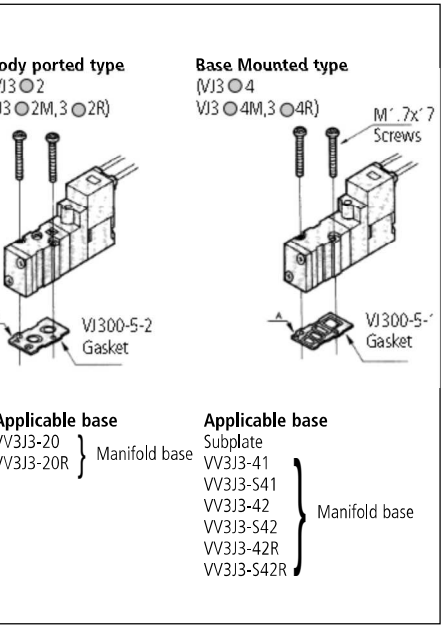


Fig 15

Correct combination of blanking plate and manifold base (Fig 16)

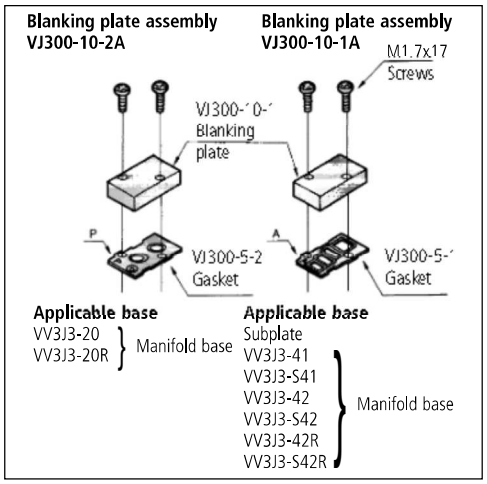


Fig 16

External pilot type valve/internal pilot type (Fig 17)

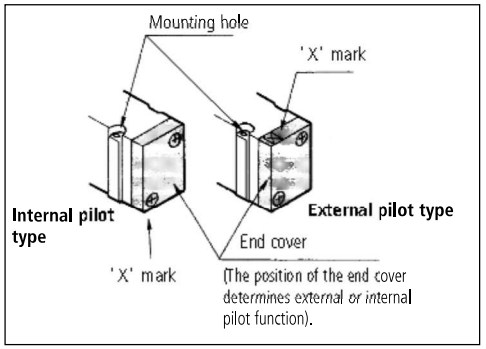


Fig 17

Correct tightening torque for push-in fittings

Thread	Correct tightening torque kgf·cm (N·m)
M3	3~5 (0.3~0.5)
M5x0.8	15~20 (1.5~2)
1/8	70~90 (7~9)

VJ3000 (5 Port)

Specifications

Fluid	Air and inert gas

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