3 Port Direct Operated Solenoid Valve

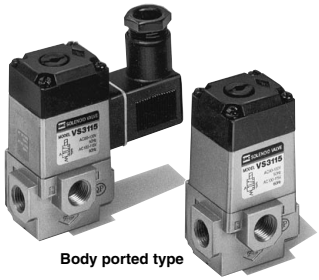
Series VS3115/3110

Metal Seal

Multiple pressure supply is possible with balanced spool sleeve.

Any given port can accept high or low pressure supply without affecting the system life or operation.

No-lubrication and dry-air operation possible.



Body ported type

With sub-plate

Standard Specifications

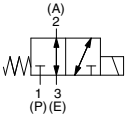
Fluid			Air	
Operating pressure range			0 to 1.0 MPa	
Proof pressure			1.5 MPa	
Ambient and fluid temperature			–20 to 60°C (No freezing)	
Response time (1)			10 ms or less (AC), 45 ms or less (DC)	
Max. operating frequency (2)			1,500 c.p.m. (AC), 180 c.p.m. (DC)	
Manual override			Non-locking	
Lubrication			Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)	
Enclosure			Dustproof [Degrees of protection 0] (4)	
Impact/Vibration resistance (m/s²)			150/50 (5)	
Electrical entry			Grommet, DIN terminal	
Coil rated voltage		**Standard**	100, 200 VAC, 50/60 Hz; 24 VDC	
		Option	220, 110, 48, and 24 VAC (50/60 Hz) 100, 48, and 12 VDC	
Allowable voltage fluctuation			–15 to +10% of rated voltage	
Coil insulation type			Class B or equivalent (130°C) (6)	
Apparent power (VA) (Power consumption (W))	**AC**	**Inrush**	50 Hz	51
			60 Hz	45
		Holding	50 Hz	17 (5.3)
			60 Hz	11 (2.9)
Power consumption (W)	**DC**		5.5	
Accessory (Option)			Bracket (AXT338-11)/For body ported type	
			Indicator light	
			Manual override	

Note 1) Based on JIS B 8375-1981. (at 0.5 MPa, without surge voltage suppressor)
Note 2) Minimum operating frequency is once in 30 days. (Based on JIS B 8375.)
Note 3) "Note 1)" and "Note 2)" are with controlled clean air.
Note 4) Based on JIS C 0920.
Note 5) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)
Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)
Note 6) Based on JIS C 4003.

Flow Characteristics/Weight

Body type	Valve model	Port size Rc	Flow characteristics						Weight (kg)	
			P → A			A → E				
			C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv	AC	DC
Body ported	**VS3115-01□□**	1/8	3.3	0.36	0.86	2.5	0.39	0.66	0.34	0.46
	VS3115-02□□	1/4	3.8	0.19	0.86	3.6	0.34	0.88	0.34	0.46
With sub-plate	**VS3110-02□□**	1/4	4.0	0.12	0.93	3.2	0.31	0.76	0.40	0.52
	VS3110-03□□	3/8	4.0	0.15	0.94	3.6	0.18	0.82	0.40	0.52
For manifold use	**VS3114-00□□**	Without sub-plate							0.32	0.44

Symbol



⚠ Caution

Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.

How to Calculate the Flow Rate

For obtaining the flow rate, refer to front matters 42 to 45.

Series VS3115/3110

How to Order

VS311 5 – 01 5 D □ L – □

Piping type

0	With sub-plate
4	Without sub-plate (For Manifold)
5	Body ported

Port size

	Size	Body ported	Sub-plate
01	1/8	○	—
02	1/4	○	○
03	3/8	—	○
00	—	Sub-plate (For Manifold)	

∗ Select 00 for manifold.

Coil rated voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
4	220 VAC (50/60 Hz)
5	24 VDC

For other rated voltages, please consult with SMC.

Electrical entry

G	Grommet
D	DIN terminal

Accessory (Option)

L	With indicator light (Not available for DC, grommet type)
P	Manual override (With lock)

Mounting

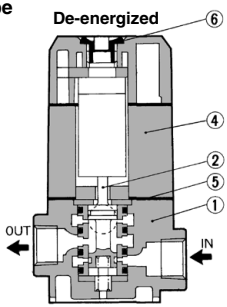
Nil	Without bracket
B	With bracket (Only Body ported type)

Thread type

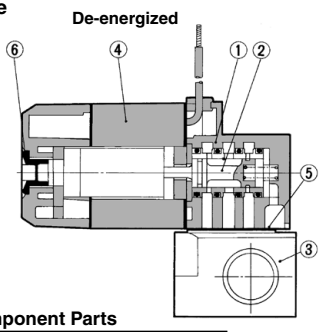
Nil	Rc
N	NPT
T	NPTF
F	G

Construction

Body ported type



With sub-plate



Sub-plate Assembly Part No.: VS3110-S-$^{02}_{03}$

∗ Mounting bolts and gaskets are not attached.

Part No. for Mounting Bolt and Gasket

BG-VS3010

Component Parts

No.	Description	Material
1	Body	Aluminum die-casted
2	Spool/Sleeve	Stainless steel
3	Sub-plate	Aluminum die-casted

Replacement Parts

No.	Description	Material	Part no.			
			VS3115-□G	VS3115-□D	VS3110-□G	VS3110-□D
4	Solenoid capsule assembly	AC	SCA006-□	SCAD001-□	SCA006-□	SCAD001-□
		DC	SCA001-□	SCAD001-□	SCA001-□	SCAD001-□
5	Gasket	NBR	AXT333-14		AXT338-15	
6	Plug for cap	Resin	AXT333-16			

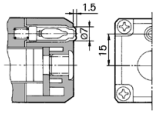
□: Enter the operating voltage.
(100 VAC: 01, 200 VAC: 02, 110 VAC: 03, 220 VAC: 04, 24 VDC: 52)

Accessory (Option)

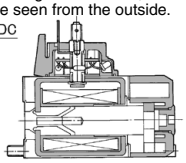
Indicator light

When solenoid is energized, indicator light illuminates, thus the electrical state of the solenoid can be seen from the outside.

AC



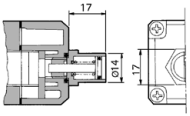
DC



Note) There is polarity of (1) +, (2) –.

Manual override

Remove the rubber plug on the top of the solenoid cap to mount the manual override. Push the override with a screwdriver to the required stroke and the valve will shift. Turn to the right or left at 90 degrees to lock it. Turn it back 90 degrees to unlock. Be sure to unlock the override before energizing the valve electrically.

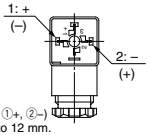


Description	Part no.	
	AC	DC
Manual override (With lock)	PB0111-3 (PB0111)	PB0111-1
Manual override (Non-locking)	PB0101	PB0101-1

( ): With indicator light

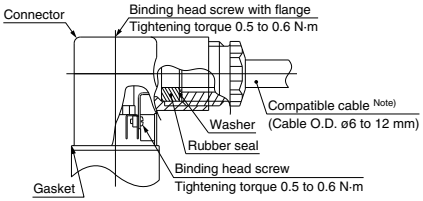
DIN terminal

Since internal connections are as shown below for the DIN terminal, make connections to the power supply accordingly.



Terminal no.	1	2
DIN terminal	+ (–)	– (+)

∗ There is no polarity. (DC type with indicator light has polarity. ①+, ②–)
· Use compatible heavy duty cords with cable O.D. of ø6 to 12 mm.
· Use the tightening torques below for each section.



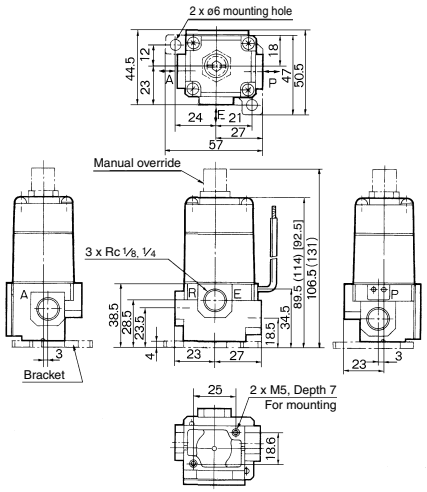
Note) For an outside cable diameter of ø9 to 12 mm, remove the internal parts of the rubber seal before using.

SMC

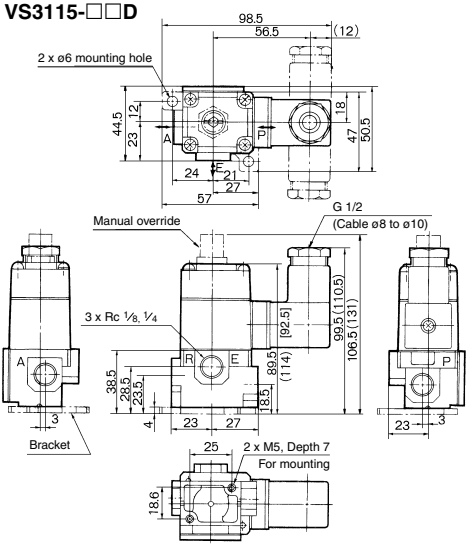
Dimensions

Body ported type

VS3115-□□G



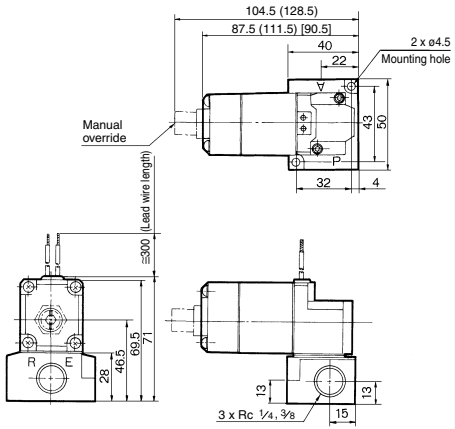
VS3115-□□D



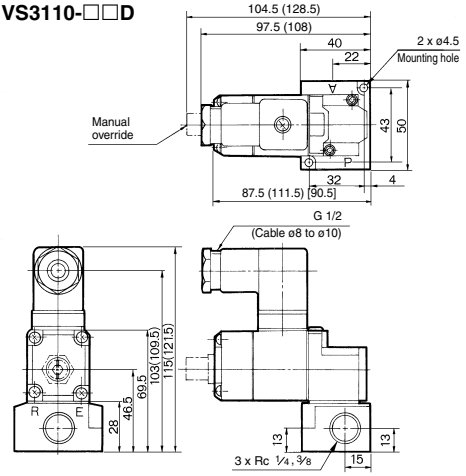
( ): DC
[ ]: AC, with indicator light

With sub-plate

VS3110-□□G

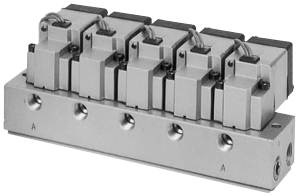


VS3110-□□D



( ): DC
[ ]: AC, with indicator light

Series VS3115/3110
Manifold Specifications



Specifications

Manifold type				B mount			
Max. number of stations				10 stations			
Exhaust type	Port location/Port size			Port direction			Applicable valve model
	P	**A**	**E**	**P**	**A**	**E**	
Common	Base 3/8	Base 1/4	Base 3/8	Side	Side	Side	VS3114-00□□
				Side	Bottom	Side	
Accessory	Blanking plate (With gaskets and screw)			AXT338-17A			

How to order manifold

VVS31 0 – 05 1 – □

	P	A	E
0	Side	Side	Side
1	Side	Bottom	Side

Valve stations

⋮	⋮
05	5 stations
⋮	⋮
10	10 stations

EXH port type

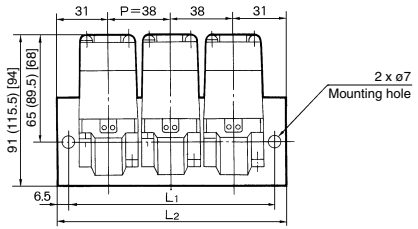
1	Common EXH

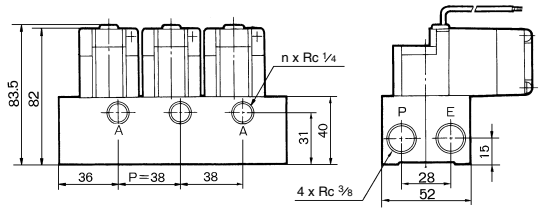
Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	Parallel thread

* Option

Dimensions





( ): DC
[ ]: AC, with indicator light

L \ n	2	3	4	5	6	7	8	9	10
L1	87	125	163	201	239	277	315	353	391
L2	100	138	176	214	252	290	328	366	404

L1 = 38n + 11, L2 = 38n + 24 n: Station
Formula for manifold weight M = 0.16n + 0.1 (kg)

3 Port Direct Operated Solenoid Valve

Series VS3135/3145

Metal Seal

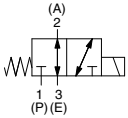
Terminal type

Specifications

Fluid		Air
Proof pressure		1.5 MPa
Operating pressure range		0 to 1.0 MPa
Ambient and fluid temperature (°C) (1)		–20 to 60
Lubrication (2)		Not required
Manual override		Option (Non-locking type available)
Electrical entry		Grommet, Conduit terminal, Dripproof conduit terminal
Coil rated voltage	**AC**	100, 200 V 50/60 Hz
	DC	24 V
Allowable voltage fluctuation		–15 to +10% of rated voltage
Coil insulation type		Class B or equivalent (130°C) (3)
Impact/Vibration resistance (m/s²)		150/50 (4)

Note 1) If it is low temperature, dry air should be used. (No freezing)
Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.
Note 3) Based on JIS C 4003.
Note 4) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)
Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Symbol



⚠Caution

Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.

How to Calculate the Flow Rate

For obtaining the flow rate, refer to front matters 42 to 45.

Model

Valve model			VS3135						VS3145					
			P → A			A → E			P → A			A → E		
Flow characteristics			C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv
	1/4		6.1	0.3	1.5	6.1	0.4	1.6	—	—	—	—	—	—
	3/8		7.2	0.2	1.8	7.3	0.2	1.8	—	—	—	—	—	—
	1/2		9.0	0.2	2.3	9.0	0.3	2.4	18	0.27	4.8	16	0.34	4.1
	3/4		—	—	—	—	—	—	20	0.21	5.1	15	0.46	4.5
Response time (1) (ms)	AC		30 or less						30 or less					
	DC		60 or less						80 or less					
Max. operating frequency (c.p.m.) (2)	AC		300 or less						180 or less					
	DC		180 or less						180 or less					
Weight (kg)	AC		0.8						1.6					
	DC		1.1						2.4					
Apparent power (VA)	AC	Inrush	50 Hz	100					300					
			60 Hz	90					360					
		Holding	50 Hz	20					50					
			60 Hz	14					60					
Power consumption (W)	DC		13.2						24					

Note 1) Based on JIS B 8375-1981. (at 0.5 MPa, without surge voltage suppressor)
Note 2) Min. operating frequency is once in 30 days. (Based on JIS B 8375.)
Note 3) "Note 1)" and "Note 2)" are with controlled clean air.

How to Order

VS31 [3] 5 – [02] [1] [ ] [ ] – [ ]

Body size

3	3/8 Standard
4	1/2 Standard

Port size

	Size	3135	3145
02	1/4	○	—
03	3/8	○	—
04	1/2	○	○
06	3/4	—	○

Coil rated voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
4	220 VAC (50/60 Hz)
5	24 VDC

For other rated voltages, please consult with SMC.

Option

Nil	None
P	Manual override AC coil: Locking type DC coil: Non-locking type

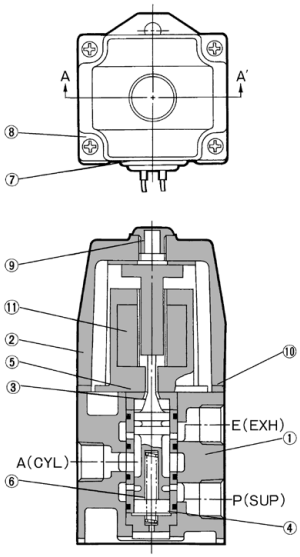
Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

Electrical entry

Nil	Grommet	**WTB**	Dripproof conduit terminal (Metallic fittings compliant with standards used.)
T	Conduit terminal	**WTBL**	Dripproof conduit terminal (Metallic fittings compliant with standards used.), With light
TL	Conduit terminal, With light	**WTBZ**	Dripproof conduit terminal (Metallic fittings compliant with standards used.), With surge voltage suppressor (With AXT307-1-□)
TZ	Conduit terminal, With surge voltage suppressor (With AXT307-1-□)	**WTBLZ**	Dripproof conduit terminal (Metallic fittings compliant with standards used.), With light/surge voltage suppressor (With AXT307-1-□)
TLZ	Conduit terminal, With light/surge voltage suppressor (With AXT307-1-□)		

Construction



A-A' cross section

Component Parts

No.	Description	Material
1	**Body**	Aluminum die-casted
2	**Solenoid cover**	Aluminum die-casted
3	**Spool/Sleeve**	Stainless steel

⑪ Solenoid Coil Assembly Part No.

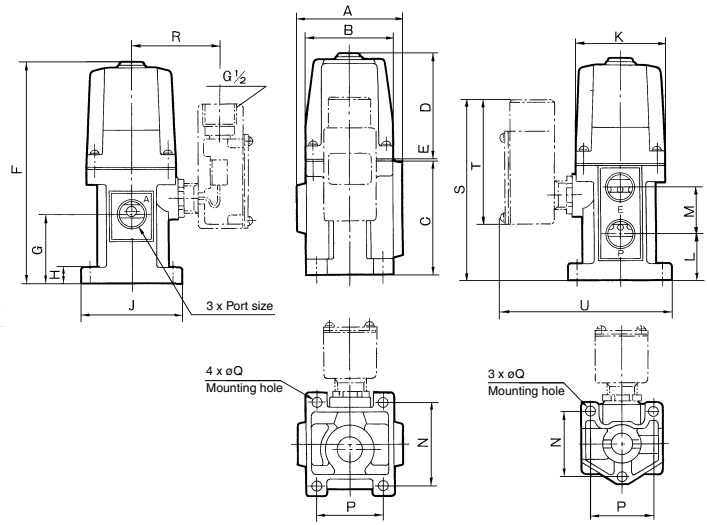
Electrical entry	Voltage	Part no.	
		VS3135	**VS3145**
Grommet	100 VAC	A01-01	A12-01
	200 VAC	A01-02	A12-02
	24 VDC	VS4000-A07-52	A08-52
Conduit terminal	100 VAC	A01-01-63	A12-01-63
	200 VAC	A01-02-63	A12-02-63
	24 VDC	VS4000-A07-52	A08-52-63

Replacement Parts

No.	Description	Material	Part no.	
			VS3135	**VS3145**
4	**Cap**	Resin	—	—
5	**Bushing**	Resin	XT013-13-2	XT021-12
6	**Spring**	Steel wire	—	—
7	**Rubber plug for wire**	NBR	XT010-20	XT010-20
8	**Round head combination screw**	Steel wire	XT010-21[#1]	XT010-21[#1]
9	**Plug for cover**	NBR	XT041-1	XT041-1
10	**Gasket**	NBR	XT013-31-2	NXT030-8

Dimensions

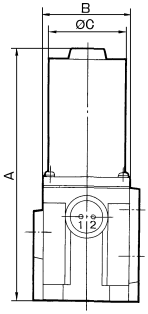
VS3135/3145



VS3135

Model	Port size Rc	A	B	C	D	E	F	G	H	J	K	L	M	N	P	øQ	Terminal dimensions R	S	T	U
VS3135-02 **VS3135-03** **VS3135-04**	¼, ⅜, ½	64	64	65	70	1	136	35	9	64	54	19	32	50	50	7	60	120	96	118
VS3145-04 **VS3145-06**	½, ¾	82	68	88	92	1	181	53	12	81	70	35	36	66	52	9	66	140	96	133

DC



Model	Port size Rc	A	B	øC
VS3135-02 **VS3135-03** **VS3135-04**	¼, ⅜, ½	129	64	50.8
VS3145-04 **VS3145-06**	½, ¾	196	68	60.5