SQUARE TYPE SOLENOID VACUUM VALVES

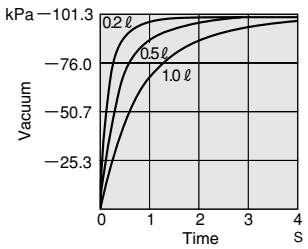
V200-F11 Series

Specifications

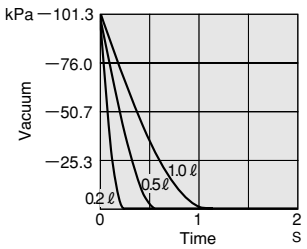
Item \ Basic model		V200E1-F11	MV200E1-F11-11	SV200E1-F11	MSV200E1-F11-11
Media		Vacuum		Vacuum, air	
Operation type		Direct acting			
Number of positions		2 positions			
Number of ports		2, 3 ports		3 ports	
Valve function		Normally closed (NC) or normally open (NO)	Normally open (NO)	Normally closed (NC)Note 1	Normally open (NO)
Effective area〔Cv〕	mm²	8.5〔0.47〕			
Port size		NPT1/4			
Lubrication		Not required			
Operating pressure range	kPa {mmHg} [in.Hg]	−100～0 {−750.1～0} [−29.53～0]		−100～0 {−750.1～0} [−29.53～0], 0～0.9MPa {0～9.2kgf/cm²} [0～131psi.]	
Proof pressure	MPa {kgf/cm²} [psi.]	—		1.32 {13.5} [191]	
Response timeNote 2 ON/OFF	DC24V	20/20 or below			
	AC100V, AC200V	20/20 or below			
Maximum operating frequency	Hz	5			
Maximum temperature range (atmosphere and media)	°C [°F]	0～50 [32～122]			
Shock resistance m/s² {G}	Lateral direction	980.7 {100.0}			
	Axial direction	588.4 {60.0}			
Mounting direction		Any			
Mass	g [oz.]	300 [10.58]			

Notes: 1. The positive pressure side is normally closed.
2. For V200E1, values when the vacuum is −100kPa {−750.1mmHg} [−29.53in.Hg]. For SV200E1, values when the air pressure is 0.5MPa {5.1kgf/cm²} [73psi].

Exhaust time



Air supply time



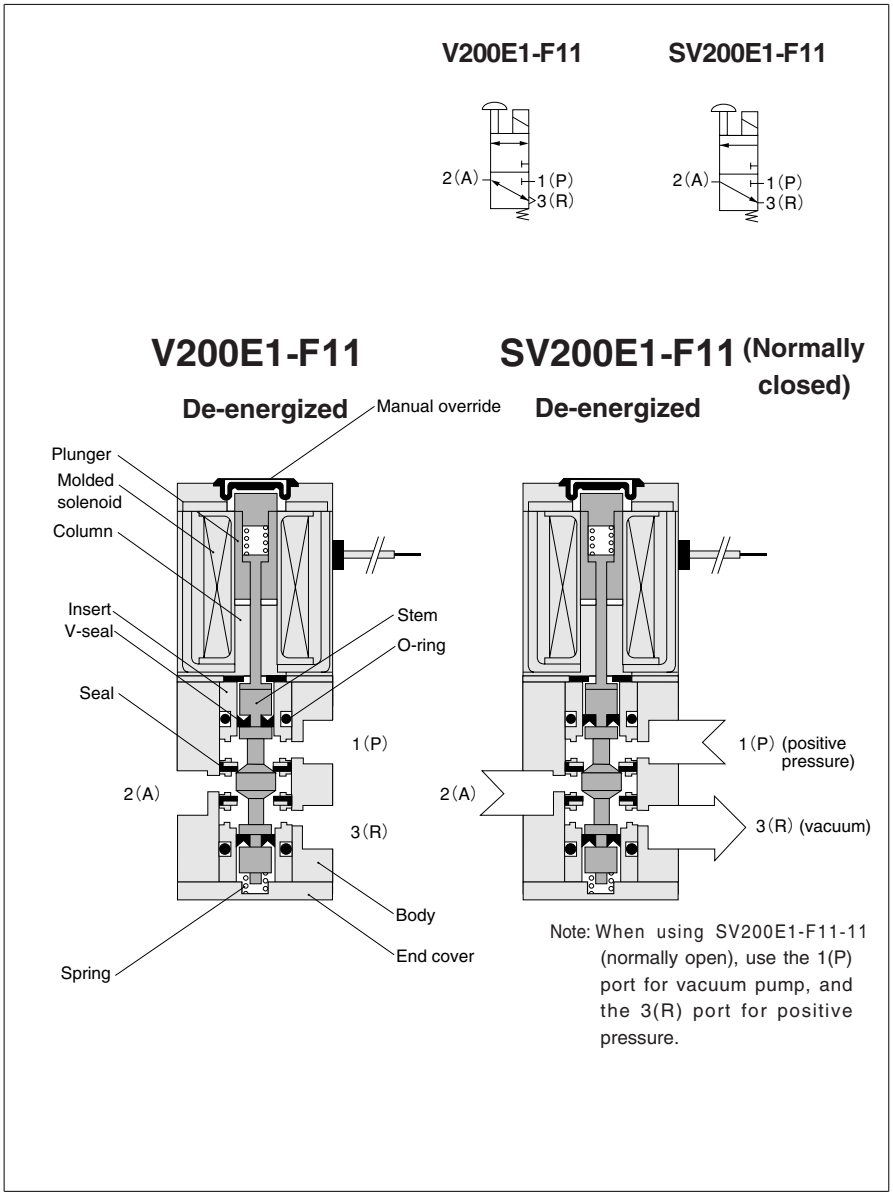
1kPa = 0.145psi.

Solenoid Specifications

Item \ Rated voltage		DC24V	AC100V		AC200V	
Type		DC type	Flywheel type			
Operating voltage range	V	21.6～26.4 (24±10%)	90～110 (100±10%)		180～220 (200±10%)	
Current Note 1 (when rated voltage is applied)	Frequency Hz	—	50	60	50	60
	Energizing Note 2 mA (r.m.s.)	420 (10.1W) 〔432 (10.4W)〕	160 〔170〕	150 〔160〕	70 〔72〕	65 〔68〕
Allowable leakage current	mA	30	15		7	
Insulation resistance	MΩ	10				
Wiring type and lead wire length	Standard	Grommet type: 300mm [11.8in.]				
	Optional	With DIN connector				
Color of lead wire		Red 〔Red (+), Blue (−)〕 Note 1 Red (+), Black (−) Note 3	Yellow, Black		White, Black	
Color of LED indicator (optional)		Red	Yellow		Green	
Surge suppression	Standard	—	Flywheel diode			
	Optional	Flywheel diode	—			

Notes: 1. Figures and descriptions in brackets 〔 〕 are for solenoids with LED indicators.
2. Since the AC types have built-in flywheel diodes, the starting current value and energizing current value are virtually the same.
3. For solenoids with surge suppression, and solenoids with LED indicators and surge suppression.

Operating Principles and Symbols



Note: When using SV200E1-F11-11 (normally open), use the 1(P) port for vacuum pump, and the 3(R) port for positive pressure.

Valve functions and connection port configurations

V200-F11

When not using positive pressure

		De-energized	Energized
2-port	Normally closed (NC)	2(A) — 1(P) (vacuum pump, etc.), 3(R) (plug)	
	Normally open (NO)	2(A) — 1(P) (plug), 3(R) (vacuum pump, etc.)	
3-port	Normally closed (NC)	2(A) — 1(P) (vacuum pump, etc.), 3(R) (atmosphere)	
	Normally open (NO)	2(A) — 1(P) (atmosphere), 3(R) (vacuum pump, etc.)	
Selector valve		2(A) — 1(P) (vacuum pump, etc.), 3(R) (vacuum pump, etc.)	
Divider valve		(vacuum pump, etc.) 2(A) — 1(P), 3(R)	

SV200-F11

When using both vacuum and positive pressure

3-port	Normally closed (NC)	2(A) — 1(P) (positive pressure), 3(R) (vacuum pump, etc.)	
	Normally open (NO)	2(A) — 1(P) (vacuum pump, etc.), 3(R) (positive pressure)	

Major Parts and Materials

Parts		Materials
Valve	Body	Aluminum alloy (anodized)
	Stem	
	Seal	Synthetic rubber
	Insert	Aluminum alloy and brass
	Spring	Stainless steel
	Mounting base	Mild steel (zinc plated)
	Plunger	Magnetic stainless steel
	Column	Magnetic steel (zinc plated)
Manifold	Body	Aluminum alloy (anodized)
	Block-off plate	Mild steel (zinc plated)
	Seal	Synthetic rubber
	Mounting bracket	Mild steel (zinc plated)

Remark: Materials that generate copper ions are not used for the non-ion specification.

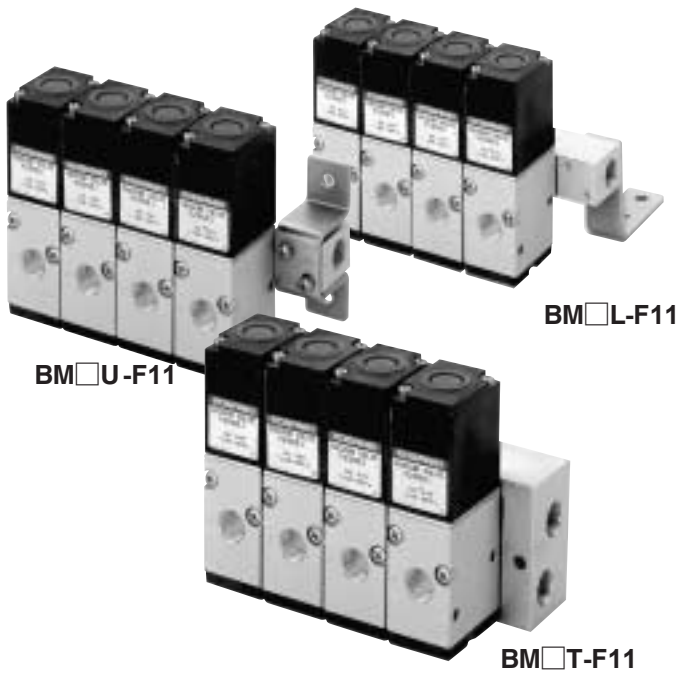
Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Port size
BM□T-F11	1(P)	Manifold	NPT1/4
	2(A)	Valve	
	3(R)	Manifold	
BM□U-F11	1(P)	Manifold	NPT1/4
	2(A)	Valve	
	3(R)	Valve	
BM□L-F11	1(P)	Manifold	NPT1/4
	2(A)	Valve	
	3(R)	Valve	

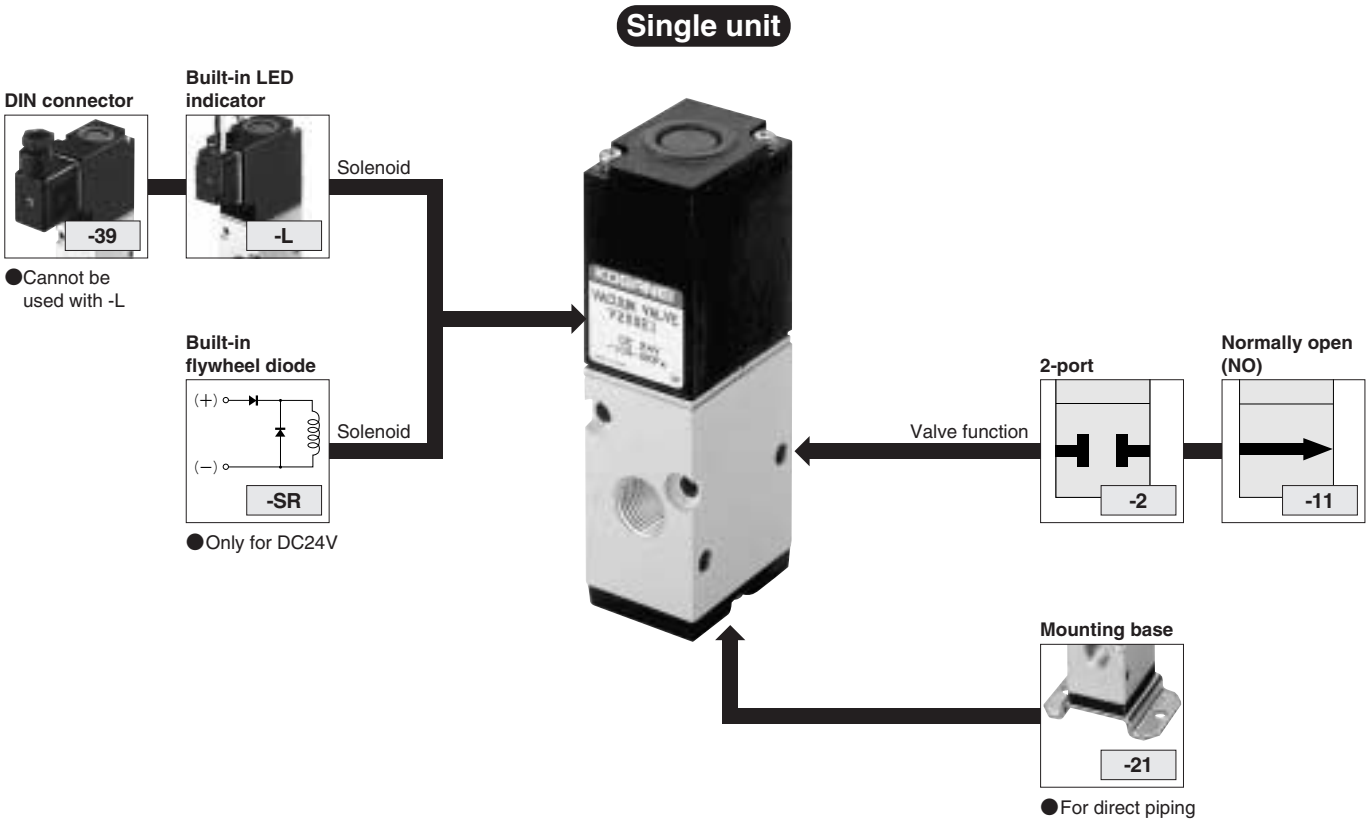
Manifold Mass

g [oz.]

Manifold model	Mass calculation of each unit (n=number of units)	Block-off plate
BM□T-F11	(138×n)+125 [(4.87×n)+4.41]	30 [1.06]
BM□U-F11	(50×n)+200 [(1.76×n)+7.05]	15 [0.53]
BM□L-F11	(50×n)+200 [(1.76×n)+7.05]	15 [0.53]



Optional System



Solenoid Vacuum Valve Order Codes

For vacuum

		Basic model	Valve function: 2-port	Valve function: Normally open (NO)	Option: Mounting base	DIN connector	LED indicator	Flywheel diode	Voltage
Direct piping	3-port normally closed	V200E1-F11	-2 Note 2		-21	-39	-L	-SR	DC24V AC100V AC200V
	2-port normally closed								
	2-port normally open		-2	-11					
For manifold only Note 1	3-port normally open	MV200E1-F11		-11		-39	-L	-SR	DC24V AC100V AC200V
	2-port normally open		-2	-11					

Notes: 1. They cannot be used as single units.
2. Plug included.

●Always make a selection.

●For DC24V only. Standard for AC100V and AV200V.

●Not available for DIN connector

For both vacuum and positive pressure

		Basic model	Valve function: Normally open (NO)	Option: Mounting base	DIN connector	LED indicator	Flywheel diode	Voltage
Direct piping	3-port Note 1 normally closed	SV200E1-F11	-11	-21	-39	-L	-SR	DC24V AC100V AC200V
	3-port normally open							
For manifold only Note 2	3-port normally open	MSV200E1-F11	-11		-39	-L	-SR	DC24V AC100V AC200V

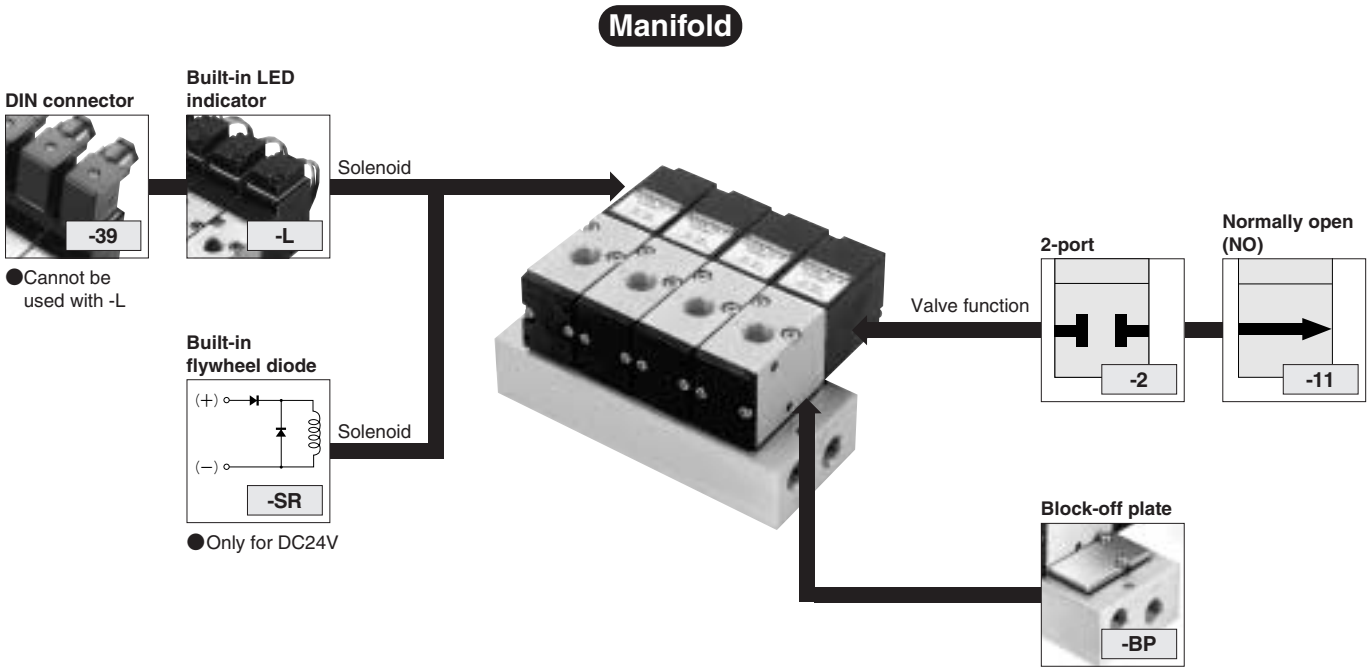
Notes: 1. The positive pressure side is normally closed.
2. They cannot be used as single units.

●Always make a selection.

●For DC24V only. Standard for AC100V and AV200V.

●Not available for DIN connector

Optional System



Manifold Order Codes

For vacuum

Manifold model: Number of units	Station	Valve model: Basic model	2-port	Normally open (NO)	Option: DIN connector	LED indicator	Flywheel diode	Voltage
BM	stn.□ ⋮ stn.□	V200E1-F11	-2		-39	-L	-SR	DC24V AC100V AC200V
2 ⋮ 10		MV200E1-F11		-11				
T-F11 U-F11 L-F11			-2	-11				

●Valve mounting location from the left-hand side when facing the 2(A) port

●Specify the valve model for each station.
●Enter **-BP** when closing a station with a block-off plate without mounting a valve.

●Always make a selection.

●Not available for DIN connector

●For DC24V only. Standard for AC100V and AV200V.

For both vacuum and positive pressure

Manifold model: Number of units	Station	Valve model: Basic model	Normally open (NO)	Option: DIN connector	LED indicator	Flywheel diode	Voltage
BM	stn.□ ⋮ stn.□	SV200E1-F11		-39	-L	-SR	DC24V AC100V AC200V
2 ⋮ 10		MSV200E1-F11	-11				
T-F11							

Note: The positive pressure side is normally closed.

●Valve mounting location from the left-hand side when facing the 2(A) port

●Specify the valve model for each station.
●Enter **-BP** when closing a station with a block-off plate without mounting a valve.

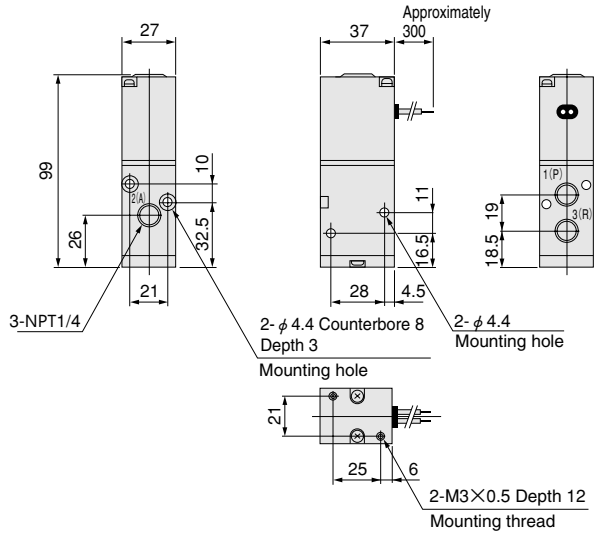
●Always make a selection.

●Not available for DIN connector

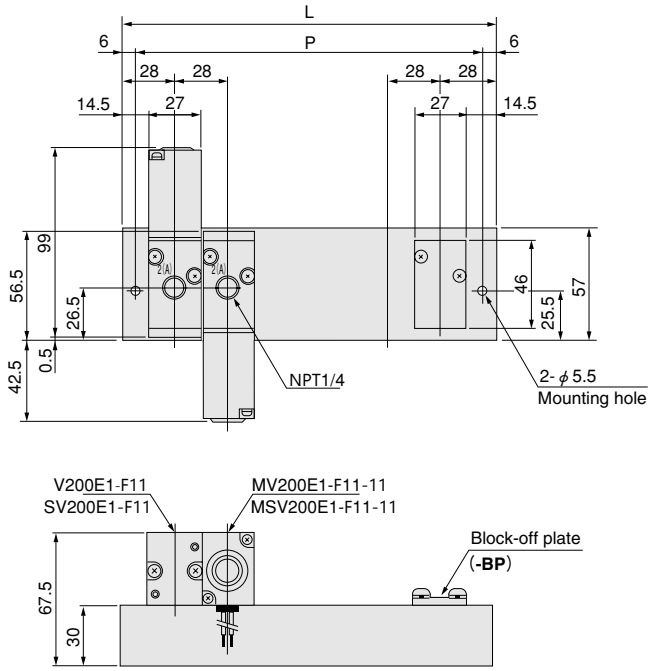
●For DC24V only. Standard for AC100V and AV200V.

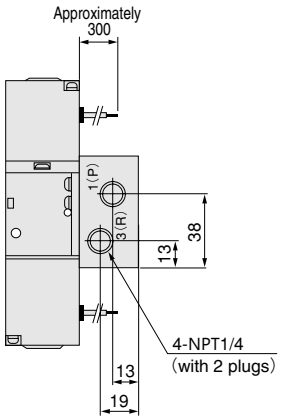
Dimensions (mm)

V200E1-F11
SV200E1-F11



BM□T-F11



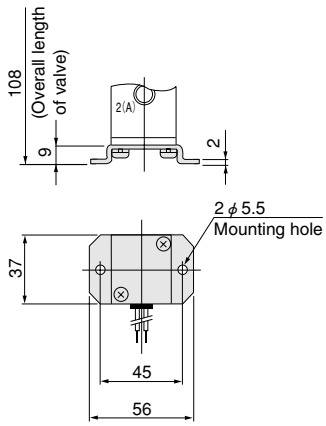


Unit dimensions

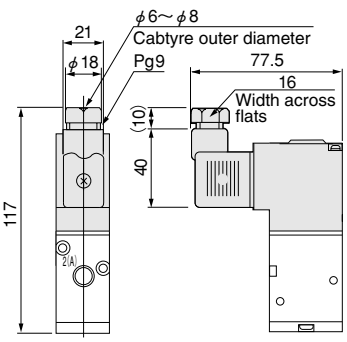
Model	L	P
BM2T	84	72
3T	112	100
4T	140	128
5T	168	156
6T	196	184
7T	224	212
8T	252	240
9T	280	268
10T	308	296

Options

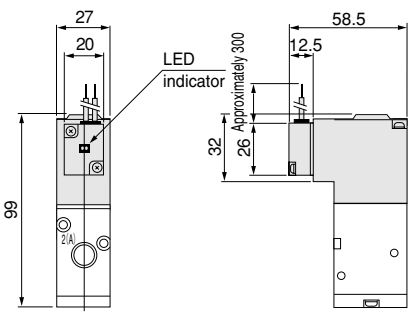
●Mounting base: **-21**



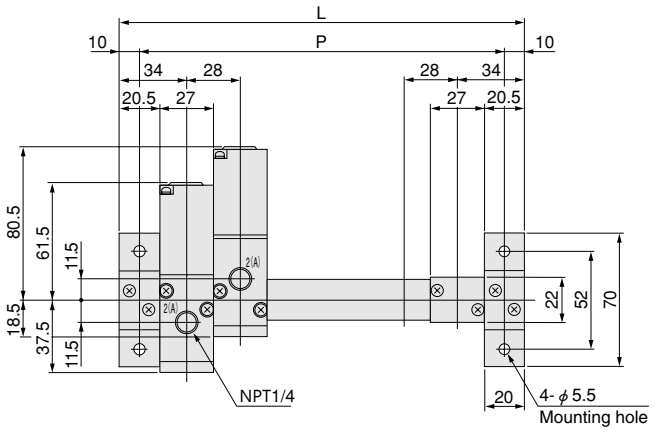
●Solenoid with DIN connector: **-39**

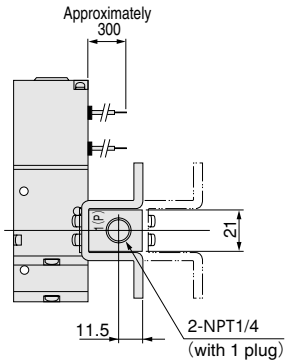


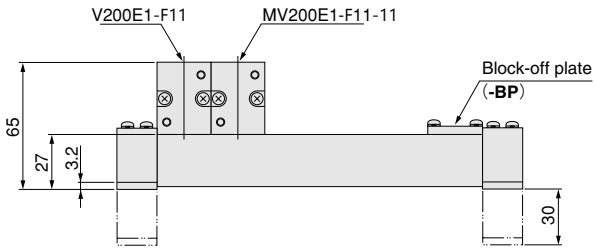
●Solenoid with LED indicator: **-L**



BM□U-F11



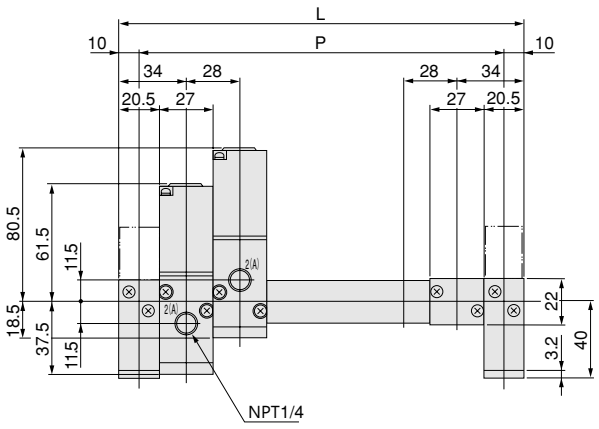


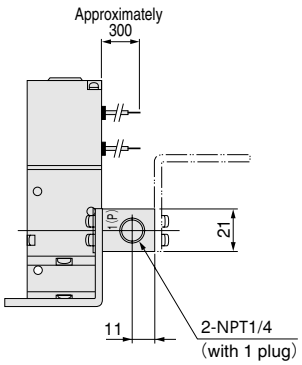


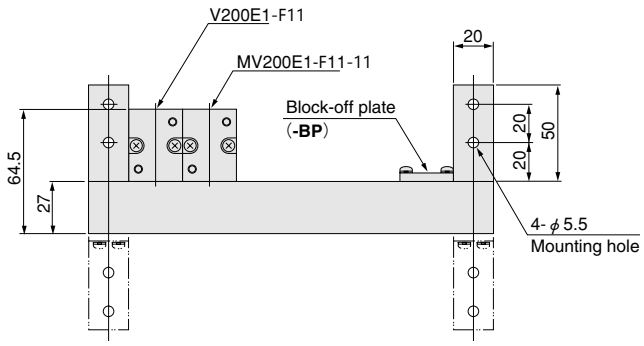
Unit dimensions

Model	L	P
BM2U	96	76
3U	124	104
4U	152	132
5U	180	160
6U	208	188
7U	236	216
8U	264	244
9U	292	272
10U	320	300

BM□L-F11







Unit dimensions

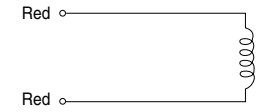
Model	L	P
BM2L	96	76
3L	124	104
4L	152	132
5L	180	160
6L	208	188
7L	236	216
8L	264	244
9L	292	272
10L	320	300

Solenoid

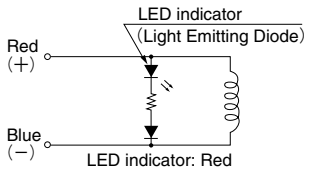
Internal circuit

●DC24V

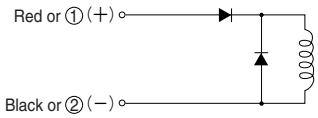
Standard solenoid



Solenoid with LED indicator
Order code: -LF,-L

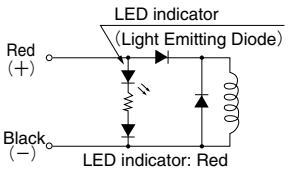


Solenoid with surge suppression
Order code: -SR



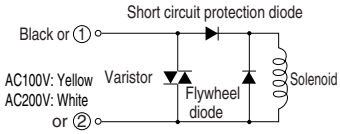
① and ② are for with DIN connector (Order code: **-39**).

Solenoid with LED indicator and surge suppression
Order code: -L-SR



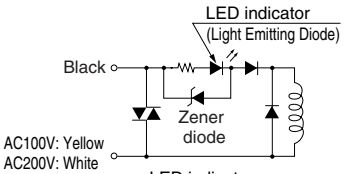
●100V, AC200V
(Surge suppression)

Standard solenoid



① and ② are for with DIN connector (Order code: -39).

Solenoid with LED indicator
Order code: -LF,-L



LED indicator
AC100V: Yellow
AC200V: Green

Cautions:
1. Do not apply megger between the lead wires.
2. The DC24V solenoid will not short circuit even if the wrong polarity is applied, but the valve with surge-suppression will not operate. Also, the LED indicator will not turn on, for units with LED indicators.
3. Leakage current inside the circuit could result in failure of the solenoid valve to return, or in other erratic operation. Always use within the range of the allowable leakage current. When circuit conditions, etc. cause the leakage current to exceed the allowable leakage current, consult us.
4. Since the AC solenoid uses a diode for the solenoid, always connect lead wires of the same color when wiring a number of solenoid valves in parallel. The DC24V standard solenoid, however, has no polarity, so any lead wire connection is acceptable.

Manifold

Piping

The 1(P) port and 3(R) port are located at both end surfaces of the manifold, and the mounting location determines selection of piping direction.
At shipping, ports on one side are plugged. Remove them, and then use sealing tape or other sealing agent, and then tighten.

Block-off plate

To close the unused stations, use a block-off plate (Order code: **-BP**).

Cautions:
1. For the 1(P) port piping, use a size that matches the manifold's piping connection port.
2. When installing piping or mufflers to the 3(R) port, ensure there will be minimum exhaust resistance.
3. When multiple number of valves are operated simultaneously on a multi-units manifold, or when used at high frequency, use the 1(P) and 3(R) ports on both end surfaces.

General precautions

Mounting

1. While any mounting direction is acceptable, for installation using the mounting base (Order Code: **-21**), make sure to avoid applying strong shocks in the lateral direction.
2. When using in locations subject to dripping water or oil, or in extremely dusty locations, use a cover, etc. to protect the unit. In addition, install a muffler, etc. to the exhaust port to prevent dust from entering the unit.
3. Before piping with valves, always thoroughly blow off foreign materials (blow by compressed air) in the piping interior. Entering machining chips or sealing tape, rust, etc., generated during plumbing could result in air leaks and other defective operations.
4. When mounting a valve unit inside the control panels or when the operation requires long energizing periods, provide heat radiation measures.

Piping

In the SV200-F11 series, the flow direction is limited. See p.870 for the valve functions and piping port configurations, then make the piping.

Media

1. Use air for the media. For use of any other media, consult us.
2. Air used for the valve should be clean air that contains no deteriorated compressor oil, etc. Install an air filter (filtration of 40μm or less) near the valve to remove collected liquid or dust. In addition, drain the air filter periodically.

Lubrication

While the unit can be used without lubrication, the Turbine Oil Class 1 (ISO VG32) or equivalent is recommended when using dry air (air that contains no moisture or oil content).
Avoid using spindle oil or machine oil.

Atmosphere

Cannot be used when the substances listed below are found in the media and atmosphere.
Organic solvents, phosphate ester type hydraulic oil, sulphur dioxide, chlorine gas, or other acids, etc.