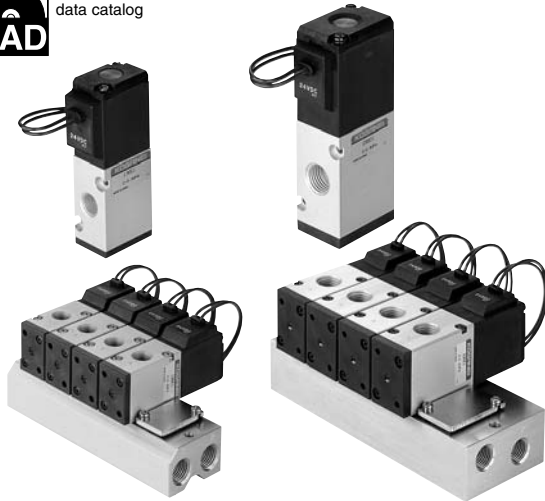




Presenting our CAD drawing  
data catalog



# KOGANEI

## VALVES GENERAL CATALOG

# SOLENOID VALVES

## 130, 230 SERIES

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# Solenoid Valves 130, 230 Series

Featuring the benefits of direct acting type valves, the Solenoid Valves 130, 230 Series Offers excellent reliability and durability for response to its requirement for "reliable operation."

## Applications

- Selector valve
- Divider valve
- Air blow
- Drive for low pressure specification actuator
- Drive for single acting cylinder
- For low pressure or vacuum, etc.

- Allows choice of NC or NO, and can also be used as a selector valve or a divider valve.
- Vacuum, and combination of vacuum and positive pressure types are also available.
- As a sealing method, new type poppet construction is used for high durability.
- Achieves low power consumption.  
4W DC/standard type, 2W DC/low current type



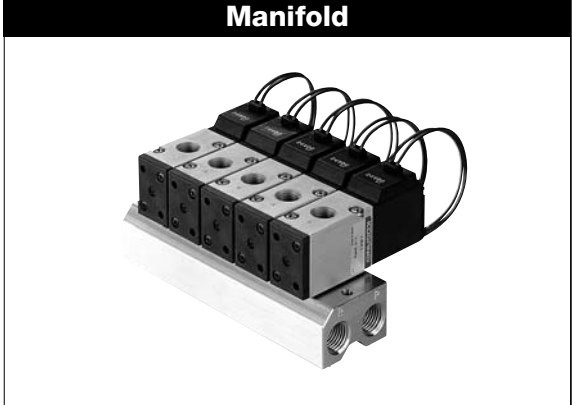
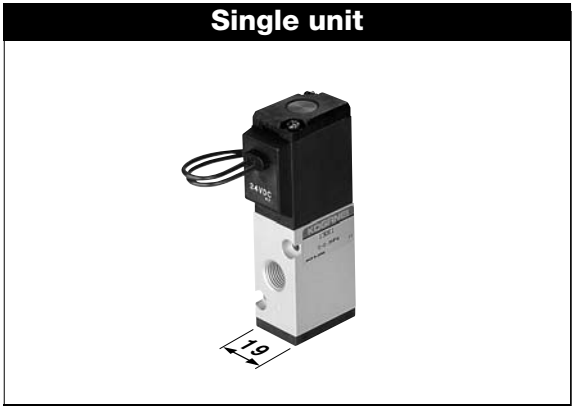
■ Compact by reducing 35% volume, but achieving larger flow rate.  
※In comparison with Koganei Solenoid valves 100 Series and 130 Series.

Solenoid valves 100 series 100E1	Solenoid valves 130 series 130E1
<p style="text-align: center;">27</p>	<p style="text-align: center;">19</p>

➔ Compact

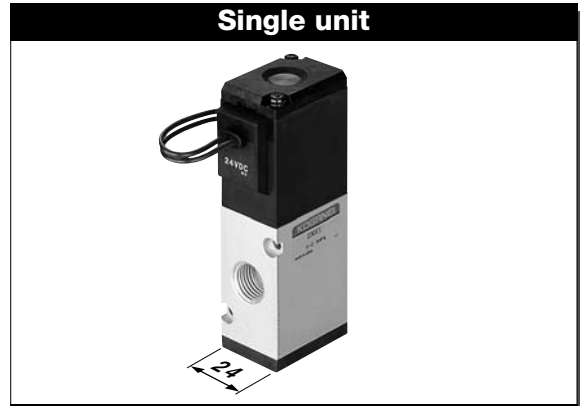
## Solenoid Valves 130 Series

- Valve width: 19mm
- Effective area: 4.5mm<sup>2</sup>
- ※ Low current type is 2.3mm<sup>2</sup>

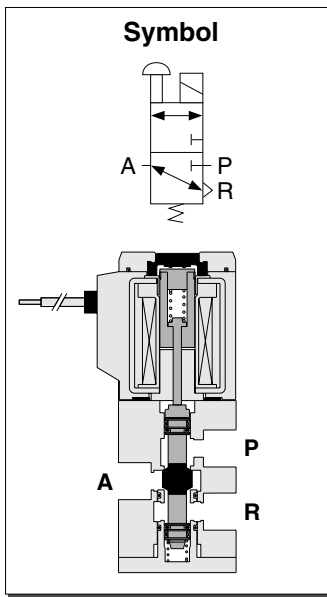


## Solenoid Valves 230 Series

- Valve width: 24mm
- Effective area: 8.0mm<sup>2</sup>
- ※ Low current type is 4.5mm<sup>2</sup>



## 2-, 3-port Valves Valve Functions and Connection Port Configurations



### 130E1, 230E1 (For Positive Pressure)

		De-energized	Energized
2-port	Normally closed (NC)		
	Normally open (NO)		
3-port	Normally closed (NC)		
	Normally open (NO)		
Selector valve			
Divider valve			

### V130E1, V230E1 (For Vacuum)

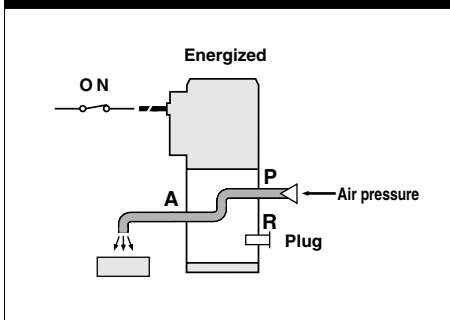
		De-energized	Energized
2-port	Normally closed (NC)		
	Normally open (NO)		
3-port	Normally closed (NC)		
	Normally open (NO)		
Selector valve			
Divider valve			

### SV130E1, SV230E1 (For both vacuum and positive pressure)

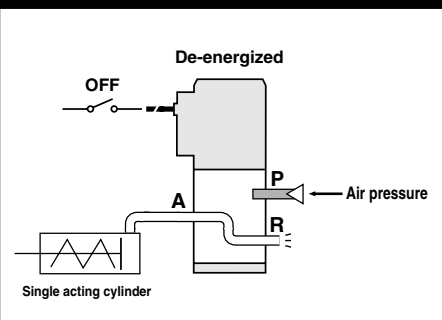
3-port	Normally closed (NC)		
	Normally open (NO)		

## Application Examples for Solenoid Valves 130, 230 Series

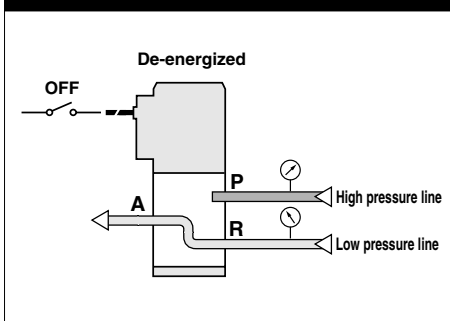
### 1. Air blow (used in NC state)



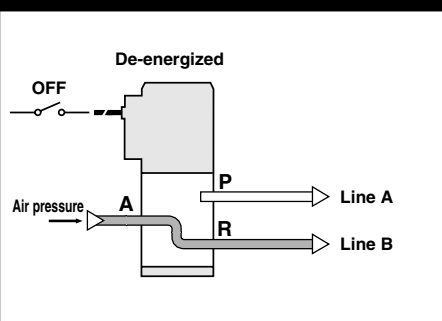
### 2. Drive for single acting cylinder (used in NC state)



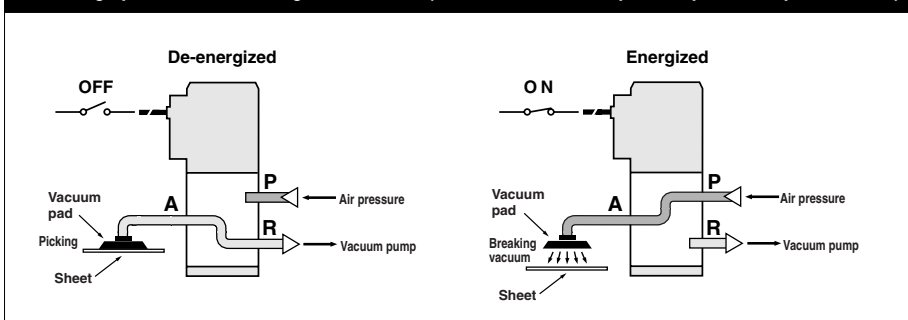
### 3. Selector valve (valve for switching between two pressure states)



### 4. Divider valve (valve used for allocation)



### 5. Picking up sheet and breaking vacuum, etc. (for both vacuum and positive pressure specifications)



# 130, 230 Series Product Range

## Single Unit

### Solenoid Valves 130 Series

2-, 3-port solenoid valve

<b>130E1</b> For positive pressure	<b>V130E1</b> For vacuum	<b>SV130E1</b> For both vacuum and positive pressure
---------------------------------------	-----------------------------	---



**130series**  
Specifications p. 142

**130series**  
Order code p. 144

**130series**  
Dimensions p. 147

### Solenoid Valves 230 Series

2-, 3-port solenoid valve

<b>230E1</b> For positive pressure	<b>V230E1</b> For vacuum	<b>SV230E1</b> For both vacuum and positive pressure
---------------------------------------	-----------------------------	---



**230series**  
Specifications p. 148

**230series**  
Order code p. 150

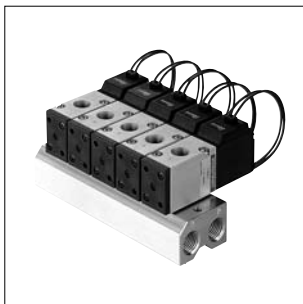
**230series**  
Dimensions p. 153

## Manifold (Direct piping type)

### Solenoid Valves 130 Series

Manifold for 2-, 3-port valves

**130M□T**



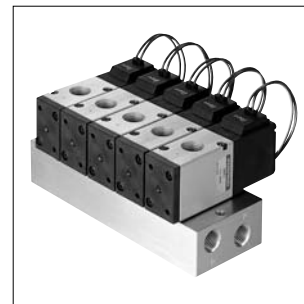
**130series**  
Order code p. 145

**130series**  
Dimensions p. 147

### Solenoid Valves 230 Series

Manifold for 2-, 3-port valves

**230M□T**



**230series**  
Order code p. 151

**230series**  
Dimensions p. 153



## Solenoid

### Internal circuit

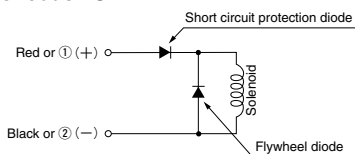
#### ● DC24V

##### Standard solenoid



##### Solenoid (surge suppression)

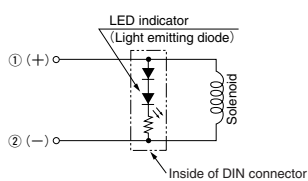
Order code: -SR



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

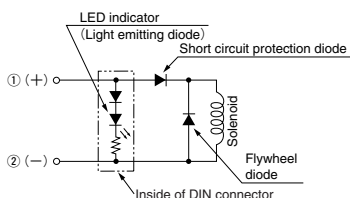
##### Solenoid with indicator

Order code: -39L



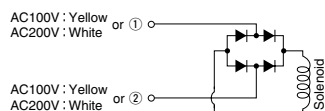
##### Solenoid with indicator (surge suppression)

Order code: -39L-SR



#### ● AC100V, AC200V (surge suppression)

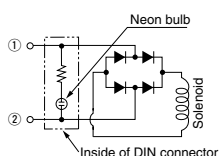
##### Standard solenoid



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

##### Solenoid with indicator

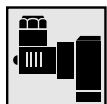
Order code: -39L



**Cautions:** 1. Do not apply megger between the lead wires.

2. With indicator can be used with DIN connector type only. Order code: -39L

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. If circuit conditions, etc., cause the leakage current to exceed the maximum allowable leakage current, consult us.



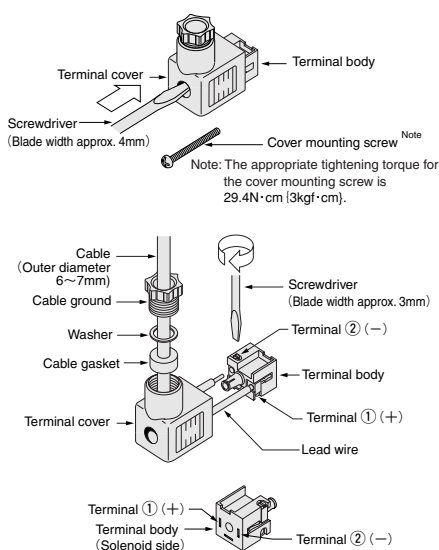
### DIN connector

#### Wiring instructions

Remove the cover mounting screws, and lift the terminal cover off from the solenoid. Use a screwdriver, etc., to push strongly against the terminal body through the hole of the terminal cover's mounting screw, and remove the terminal body.

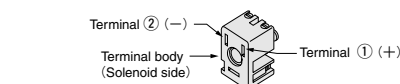
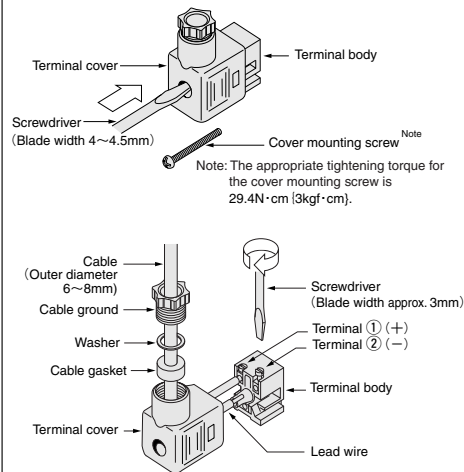
Slip a cable ground, washer, and cable gasket over a cable, insert the cable into the terminal cover's wiring port, and connect the lead wire to the terminal body (screwdriver blade width of about 3mm).

#### DIN connector for 130 series



※For the DC24V solenoid with surge suppression, connect (+) to terminal ①, and (-) to terminal ②.

#### DIN connector for 230 series



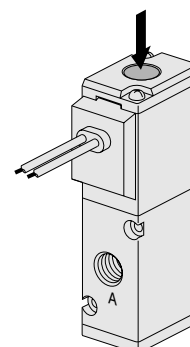
※For the DC24V solenoid with surge suppression, connect (+) to terminal ①, and (-) to terminal ②.



### Manual override

#### Non-lock type

To operate, press the manual override all the way down. The valve works the same as an energized state as long as the manual override is pushed down, and returns to the rest position upon release.



#### Others

Do not use this unit as a vacuum holding valve.

# 130 SERIES SPECIFICATIONS

## Specifications

### Basic Models and Functions

Item	Basic model	Standard type	130E1 (For positive pressure)	V130E1 (For vacuum)	SV130E1 (For both vacuum and positive pressure)
		Low current type <sup>Note</sup>	130LE1 (For positive pressure)	V130LE1 (For vacuum)	SV130LE1 (For both vacuum and positive pressure)
Number of positions	2 positions				
Number of ports	2, 3 ports				
Valve function	Normally closed (NC) or Normally open (NO) Single solenoid				

Note: Voltage is DC24V only.

### Specifications

Item	Basic model	Standard type	130E1	V130E1	SV130E1
		Low current type	130LE1	V130LE1	SV130LE1
Media			Air	Vacuum	Vacuum, air
Operation method	Direct acting type				
Effective area [Cv]	mm <sup>2</sup>		4.5(0.25 )/Low current type 2.3(0.13)		
Port size	Rc1/8				
Lubrication	Not required				
Operating pressure range	(Positive pressure) MPa {kgf/cm <sup>2</sup> }	0~0.9 {0~9.2}		—	0~0.7 {0~7.1}
	(Vacuum) kPa {mmHg}	—		-100~0 {-750.1~0}	-100~0 {-750.1~0}
Proof pressure	MPa{kgf/cm <sup>2</sup> }		1.35 {13.8}	—	1.05 {10.7}
Response time <sup>Note</sup> ms	DC24V	Max.10/20		Low current type Max. 15/20	
	ON/OFF AC100V, AC200V	Max. 15/25			
Maximum operating frequency	Hz				
Operating temperature range (atmosphere and media)	°C				
Shock resistance m/s <sup>2</sup> {G}	Lateral direction	1373.0 {140.0}			
	Axial direction	392.3 {40.0}			
Mounting direction	Any				

Note: Values when air pressure is 0.5MPa {5.1 kgf/cm<sup>2</sup>}. In addition, the values of DC24V at OFF are those with solenoid with surge suppression **-SR**.

Remark: Conversion to psi., 1MPa=145psi., 1kgf/cm<sup>2</sup>=14.2psi., e.g. 0.9MPa=131psi.

### Solenoid Specifications

Item	Rated voltage	DC24V		AC100V		AC200V	
		Standard type	Low current type				
Type		DC type		Full-wave rectification			
Operating voltage range	V	21.6~26.4 (24 ±10%)		90~110 (100 ±10%)		180~220 (200 ±10%)	
Current (When rated voltage is applied)	Frequency	Hz		50	60	50	60
	Energizing <sup>Note 2</sup> mA(r.m.s)	185 (4.4W) [177 (4.2W)] <sup>Note 1</sup>	88 (2.1W) [84 (2.0W)] <sup>Note 1</sup>	37	35	25	24
Maximum allowable leakage current	mA	10		4		2	
Insulation resistance	MΩ	10					
Wiring and lead wire length	Standard	Grommet type: 300mm					
	Option	With DIN connector					
Color of lead wire		Red Red (+), Black (-) <sup>Note 3</sup>		Yellow		White	
Indicator (For DIN connector <b>-39L</b> )		LED (Red)		Neon bulb			
Surge suppression	Standard	—		Bridge diode			
	Option	Flywheel diode		—			

Notes: 1. Figures in brackets [ ] are for solenoids with surge suppression **-SR**.

2. Since the AC types have built-in bridge diodes, the starting current value and energizing current value are virtually the same.

3. For solenoids with surge suppression **-SR**.

## Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Port size
130M□T	P	Manifold	Rc 1/4
	A	Valve	Rc 1/8
	R	Manifold	Rc 1/4

## Mass

### Valve Mass

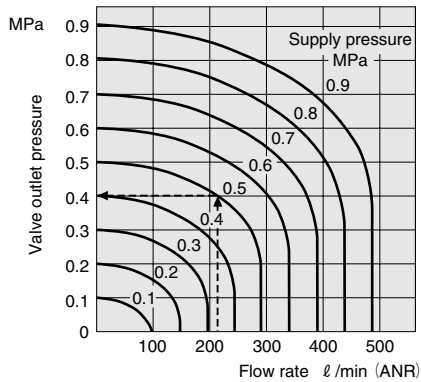
Basic model	Mass	
	130□E1, V130□E1, SV130□E1	Grommet type
	DIN connector type -39	114
	Mounting base -21 (additional mass)	15

### Manifold Mass

Manifold model	Mass calculation of each unit n=number of units	Block-off plate
130M□T	(39×n) +31	13

## Flow Rate

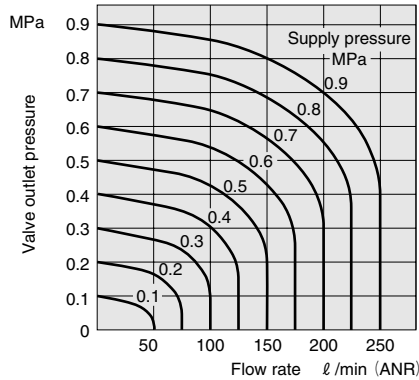
### ● 130E1



#### How to read the graph

If supply pressure is 0.5MPa and flow rate is 220 l/min (ANR), the valve outlet pressure becomes 0.4MPa.

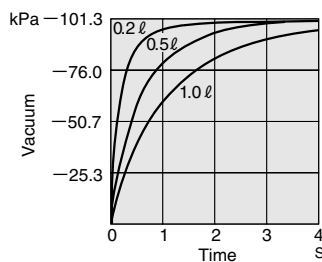
### ● 130LE1



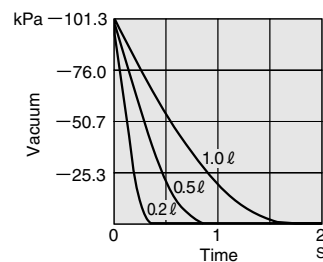
## Time to Exhaust and Supply Air

### ● V130E1, SV130E1

#### Exhaust time



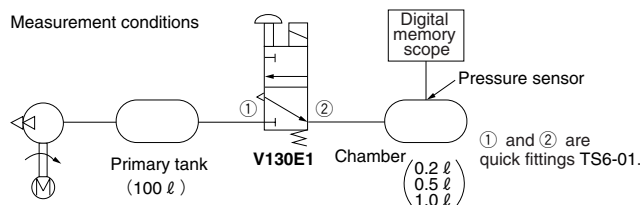
#### Air supply time



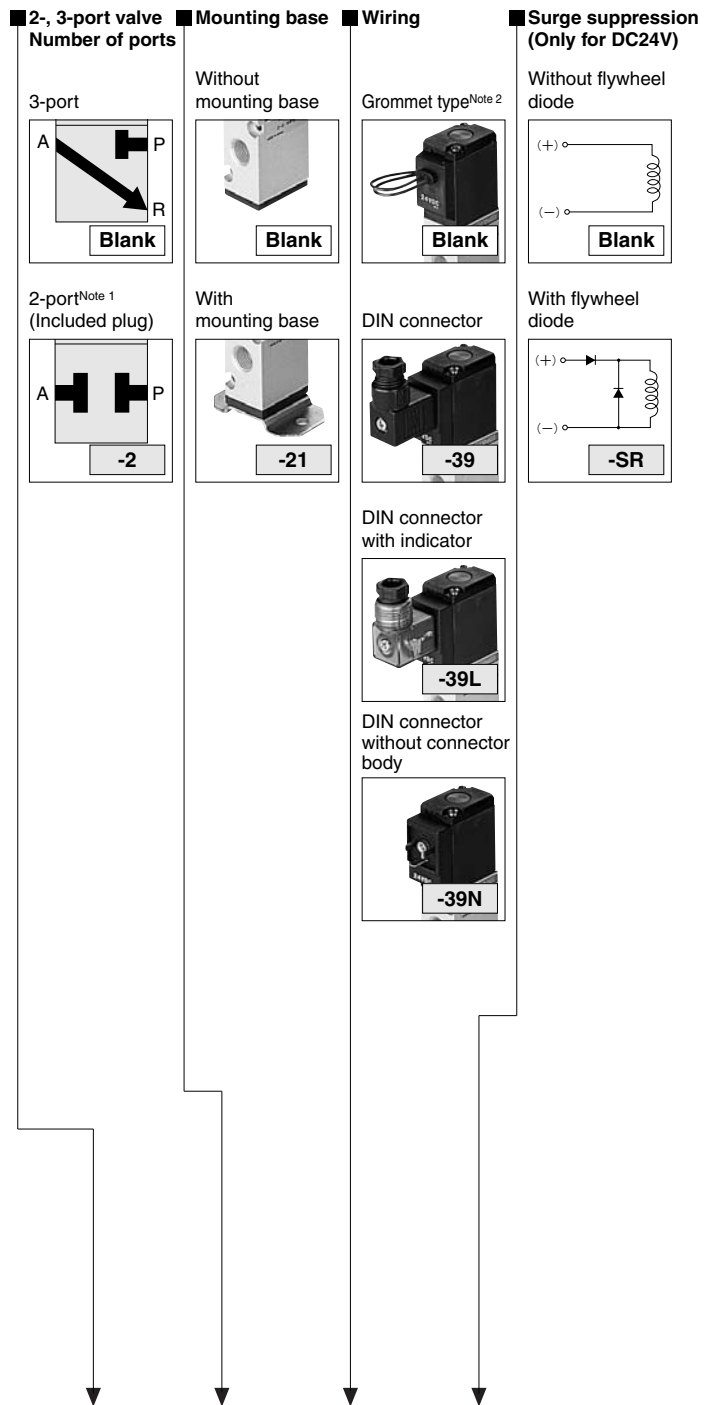
#### How to read the graph

Exhaust time: Time required for chamber inside to convert from atmospheric pressure to vacuum.

Air supply time: Time required for chamber inside to convert from -100kPa to atmospheric pressure state.



# 130 Series Solenoid Valve Order Code



		Basic model	2-, 3-port valve Number of ports	Mounting base	Wiring	Surge suppression	Voltage		
Direct piping	Standard type	For positive pressure	2-, 3-port single solenoid	<b>130E1</b>	<b>-2<sup>Note 1</sup></b>	<b>-39</b> <b>-39L</b> <b>-39N</b>	<b>DC24V</b> <b>AC100V</b> <b>AC200V</b>		
		For vacuum	2-, 3-port single solenoid	<b>V130E1</b>				<b>-21</b>	<b>-SR<sup>Note 3</sup></b>
		For both vacuum and positive pressure	2-, 3-port single solenoid	<b>SV130E1</b>					
Low current type		For positive pressure	2-, 3-port single solenoid	<b>130LE1</b>	<b>-2<sup>Note 1</sup></b>	<b>-39</b> <b>-39L</b> <b>-39N</b>	<b>DC24V</b>		
		For vacuum	2-, 3-port single solenoid	<b>V130LE1</b>				<b>-21</b>	<b>-SR<sup>Note 3</sup></b>
		For both vacuum and positive pressure	2-, 3-port single solenoid	<b>SV130LE1</b>					

Notes: 1. Before use, always attach the included plug. For details, see the 2-, 3-port valves valve functions and connection port configurations on p. 139.

● Only for DC24V.

2. Indicators not available for the grommet type.

3. Enter this code when voltage is DC24V and surge suppression is used. Entering the **-SR** code is not necessary for AC100V and AC200V, since surge suppression is already incorporated.





## 130 Series Additional Parts Order Code

### ● Block-off plate (10 set unit)



#### 130T-BP

(Block-off plate, gasket and 2 block-off plate mounting screws) × 10

### ● Parts for mounting valves (10 set unit; for mounting on manifold)



#### 130T-GS

(Gasket, 2 mounting screws) × 10

### ● Mounting base (10 set unit)



#### 130Z-21

(Mounting base and 2 base mounting screws) × 10

### ● DIN connector (1 set unit)



#### 130Z-39 (Without indicator)

**130Z-39L-DC24V** (For DC24V with indicator)

**130Z-39L-AC100V** (For AC100V with indicator)

**130Z-39L-AC200V** (For AC200V with indicator)

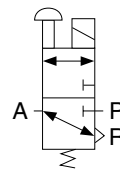
(DIN connector body, 1 mounting screw, gasket)

## Operating Principle and Symbol

### Major Parts and Materials

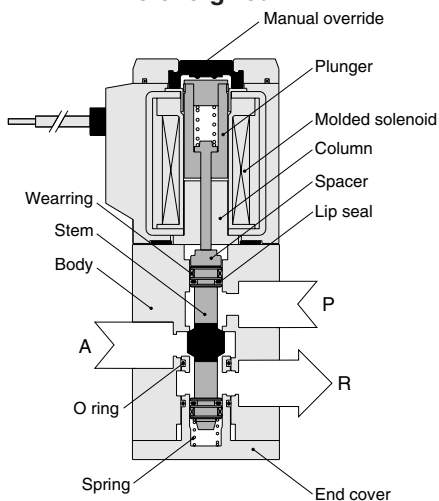
	Parts	Materials
Valve	Body	Aluminum alloy (anodized)
	Stem	Aluminum alloy (anodized)
	Lip seal	Synthetic rubber
	Plunger	Synthetic rubber
	Column	Magnetic stainless
	Mounting base	Steel (zinc plated)
Manifold	Body	Aluminum alloy (anodized)
	Block-off plate	Steel (nickel plated)
	Seal	Synthetic rubber

### Symbol

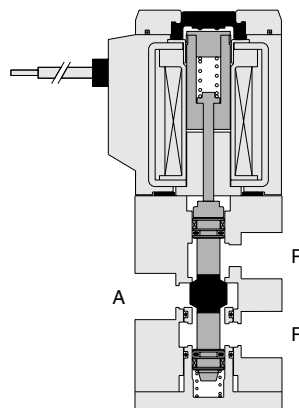


## 3-port

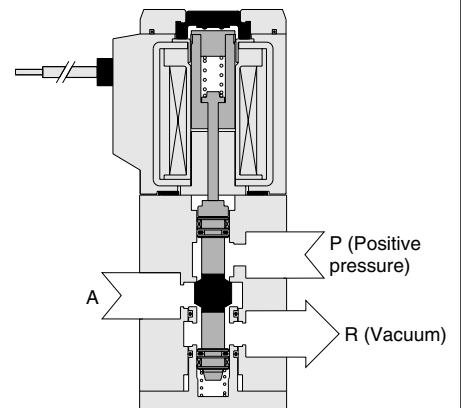
### 130E1 (For positive pressure) De-energized



### V130E1 (For vacuum) De-energized



### SV130E1 (For both vacuum and positive pressure) De-energized



Remark: For details about valve functions and connection port configurations, see the 2-, 3-port valves valve functions and connection port configurations, and application examples on p. 139.

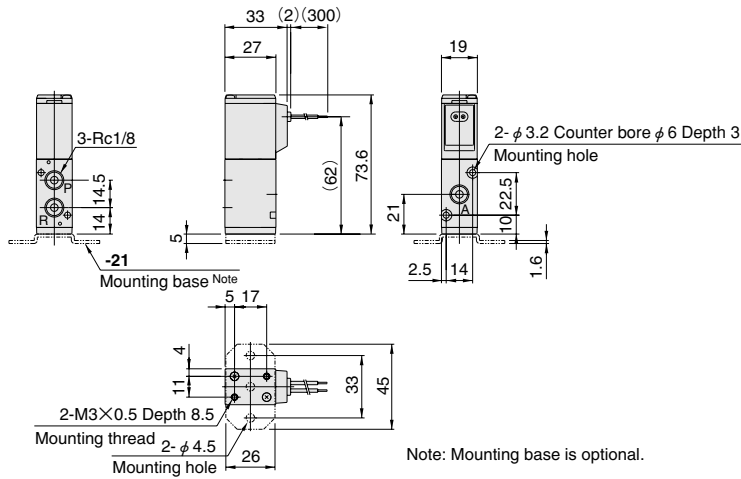
Dimensions of Solenoid Valve

2-, 3-port

130E1

130LE1

Grommet type

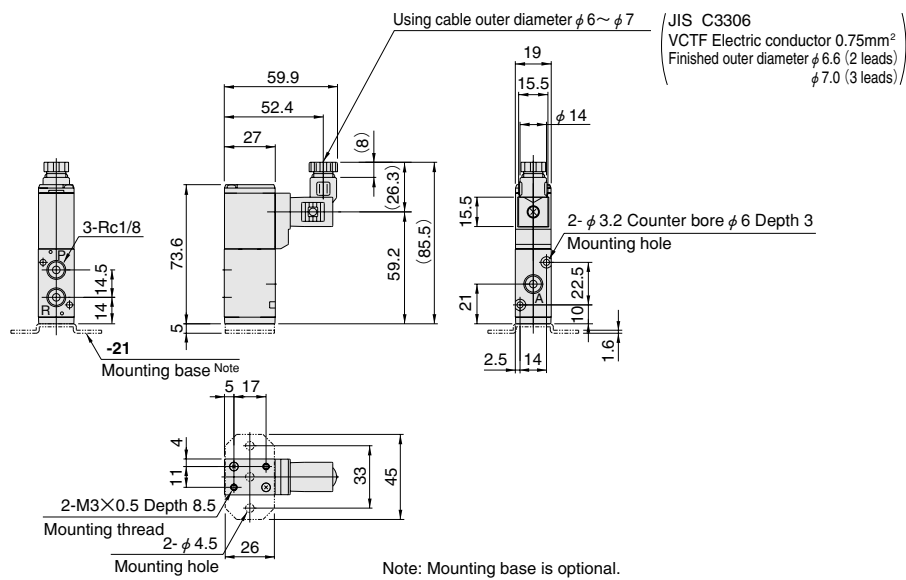
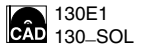


2-, 3-port

130E1-39 (L)

130LE1-39 (L)

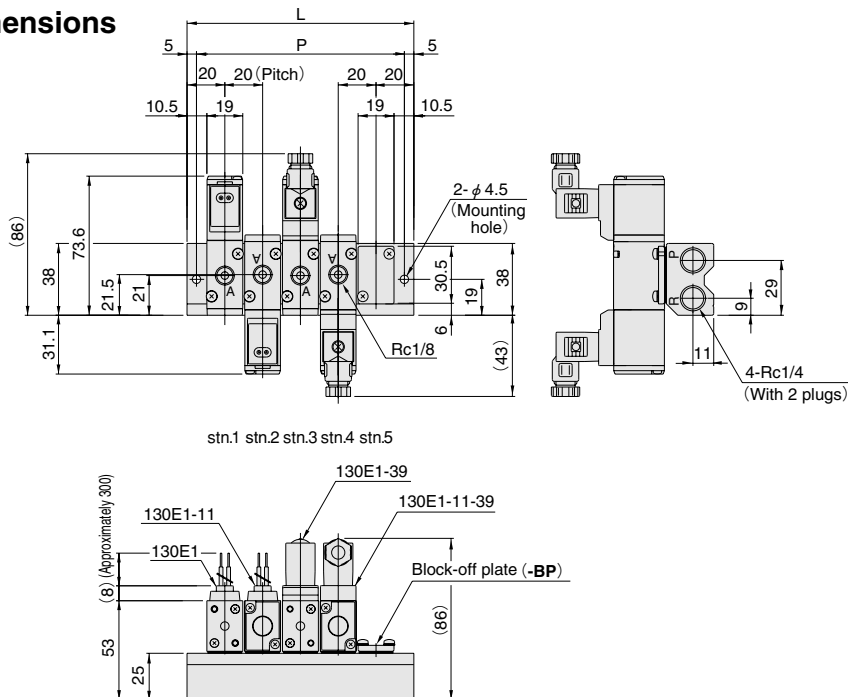
DIN connector



Manifold Dimensions

For 2-, 3-port

130M□ T



Unit dimensions

Number of units	L	P
2	60	50
3	80	70
4	100	90
5	120	110
6	140	130
7	160	150
8	180	170
9	200	190
10	220	210
11	240	230
12	260	250
13	280	270
14	300	290
15	320	310
16	340	330
17	360	350
18	380	370
19	400	390
20	420	410

SOLENOID VALVES 130, 230 SERIES

# 230 SERIES SPECIFICATIONS

## Specifications

### Basic Models and Functions

Item	Basic model	Standard type	230E1 (For positive pressure)	V230E1 (For vacuum)	SV230E1 (For both vacuum and positive pressure)
		Low current type <sup>Note</sup>	230LE1 (For positive pressure)	V230LE1 (For vacuum)	SV230LE1 (For both vacuum and positive pressure)
Number of positions	2 positions				
Number of ports	2, 3 ports				
Valve function	Normally closed (NC) or Normally open (NO) Single solenoid				

Note: Voltage is DC24V only.

### Specifications

Item	Basic model	Standard type	230E1	V230E1	SV230E1
		Low current type	230LE1	V230LE1	SV230LE1
Media			Air	Vacuum	Vacuum, air
Operation method	Direct acting type				
Effective area [Cv]	mm <sup>2</sup>		8.0 (0.45) / Low current type 4.5 (0.25)		
Port size	Rc1/4				
Lubrication	Not required				
Operating pressure range	(Positive pressure) MPa {kgf/cm <sup>2</sup> }	0~0.9 {0~9.2}		—	0~0.7 {0~7.1}
	(Vacuum) kPa {mmHg}	—		-100~0 {-750.1~0}	-100~0 {-750.1~0}
Proof pressure	MPa{kgf/cm <sup>2</sup> }	1.35 {13.8}		—	1.05 {10.7}
Response time <sup>Note</sup> ms	DC24V	Max. 15/35		Low current type Max. 20/40	
	AC100V, AC200V	Max. 20/40			
Maximum operating frequency	Hz	10			
Operating temperature range (atmosphere and media)	°C	0~50			
Shock resistance m/s <sup>2</sup> {G}	Lateral direction	1373.0 {140.0}			
	Axial direction	392.3 {40.0}			
Mounting direction	Any				

Note: Values when air pressure is 0.5MPa {5.1kgf/cm<sup>2</sup>}. In addition, the values of DC24V at OFF are those with solenoid with surge suppression -SR.

Remark: Conversion to psi., 1MPa=145psi., 1kgf/cm<sup>2</sup>=14.2psi., e.g. 0.9MPa=131psi.

### Solenoid Specifications

Item	Rated voltage	DC24V		AC100V		AC200V	
		Standard type	Low current type				
Type		DC type		Full-wave rectification			
Operating voltage range	V	21.6~26.4 (24 ± 10%)		90~110 (100 ± 10%)		180~220 (200 ± 10%)	
Current (When rated voltage is applied)	Frequency	—		50	60	50	60
	Energizing <sup>Note 2</sup> mA(r.m.s)	178 (4.3W) [170 (4.1W)] <sup>Note 1</sup>	80 (1.9W) [77 (1.8W)] <sup>Note 1</sup>	45	43	22	21
Maximum allowable leakage current	mA	10		4		2	
Insulation resistance	MΩ	10					
Wiring and lead wire length	Standard	Grommet type: 300mm					
	Option	With DIN connector					
Color of lead wire		Red Red (+), Black (-) <sup>Note 3</sup>		Yellow		White	
Indicator (For DIN connector -39L)		LED (Red)		Neon bulb			
Surge suppression	Standard	—		Bridge diode			
	Option	Flywheel diode		—			

Notes: 1. Figures in brackets [ ] are for solenoids with surge suppression -SR.

2. Since the AC types have built-in bridge diodes, the starting current value and energizing current value are virtually the same.

3. For solenoids with surge suppression -SR.

## Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Port size
230M□T	P	Manifold	Rc 1/4
	A	Valve	
	R	Manifold	

## Mass

### Valve Mass

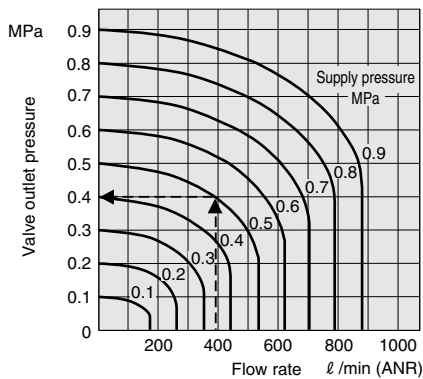
Basic model	Mass	
	230□E1, V230□E1, SV230□E1	Grommet type
	DIN connector type -39	225
	Mounting base -21 (additional mass)	21

### Manifold Mass

Manifold model	Mass calculation of each unit n=number of units	Block-off plate
230M□T	(102×n)+93	22

## Flow Rate

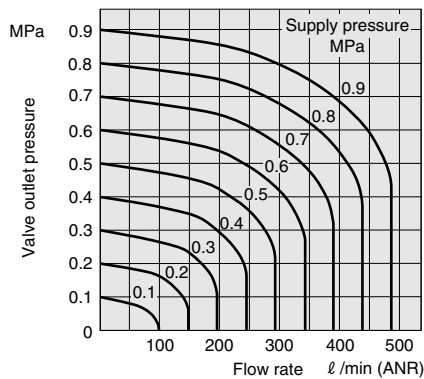
### ● 230E1



#### How to read the graph

If supply pressure is 0.5MPa and flow rate is 390 l/min (ANR), the valve outlet pressure becomes 0.4MPa.

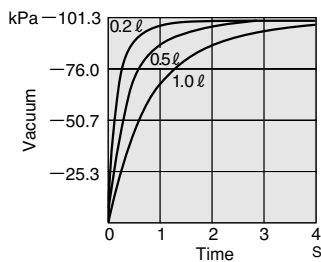
### ● 230LE1



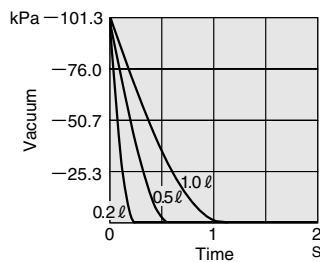
## Time to Exhaust and Supply Air

### ● V230E1, SV230E1

#### Exhaust time



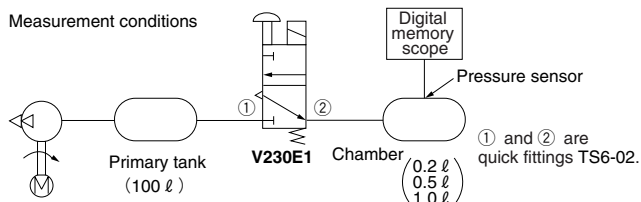
#### Air supply time



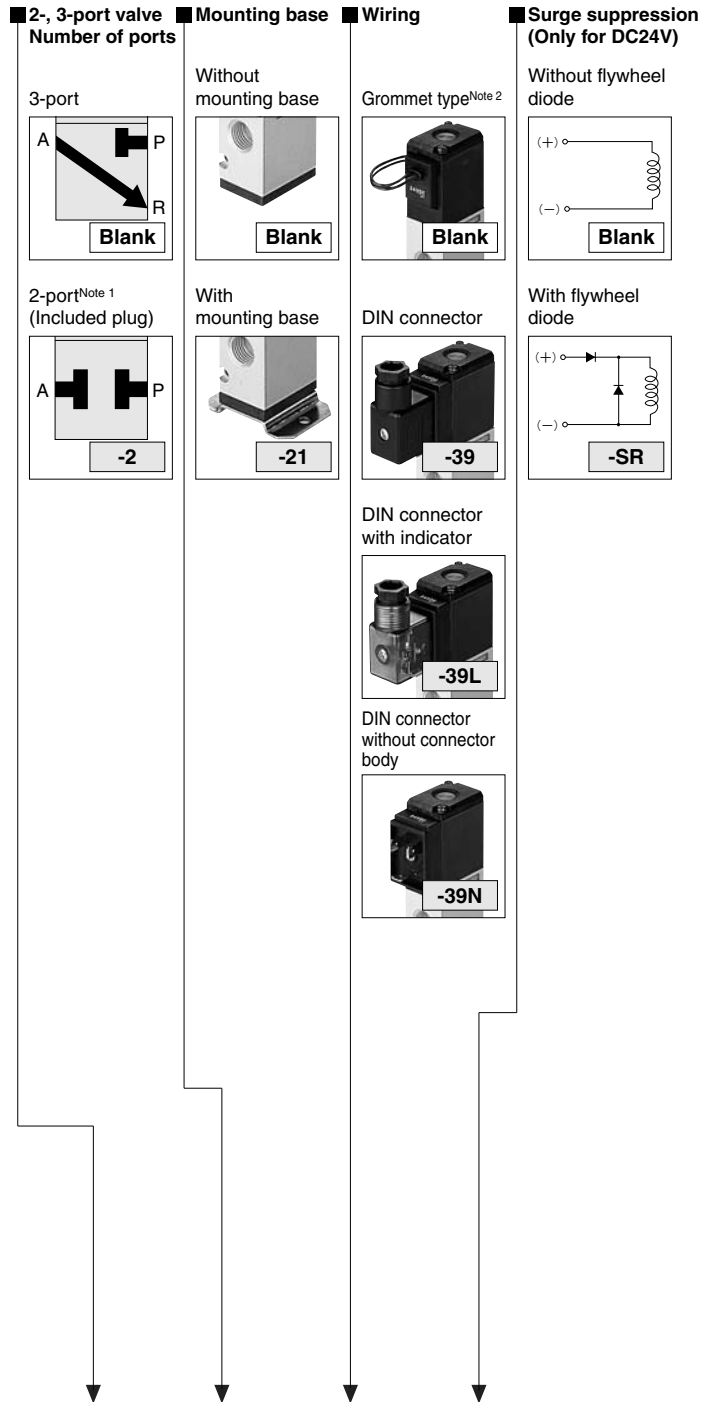
#### How to read the graph

Exhaust time: Time required for chamber inside to convert from atmospheric pressure to vacuum.

Air supply time: Time required for chamber inside to convert from -100kPa to atmospheric pressure state.



# 230 Series Solenoid Valve Order Code



		Basic model	2-, 3-port valve Number of ports	Mounting base	Wiring	Surge suppression	Voltage		
Direct piping	Standard type	For positive pressure	2-, 3-port single solenoid	<b>230E1</b>	<b>-2</b> <sup>Note 1</sup>	<b>-39</b>	<b>-39L</b>	<b>-SR</b> <sup>Note 3</sup>	<b>DC24V</b> <b>AC100V</b> <b>AC200V</b>
		For vacuum	2-, 3-port single solenoid	<b>V230E1</b>					
		For both vacuum and positive pressure	2-, 3-port single solenoid	<b>SV230E1</b>					
	Low current type	For positive pressure	2-, 3-port single solenoid	<b>230LE1</b>	<b>-2</b> <sup>Note 1</sup>	<b>-39</b>	<b>-39L</b>	<b>-SR</b> <sup>Note 3</sup>	<b>DC24V</b>
		For vacuum	2-, 3-port single solenoid	<b>V230LE1</b>					
		For both vacuum and positive pressure	2-, 3-port single solenoid	<b>SV230LE1</b>					

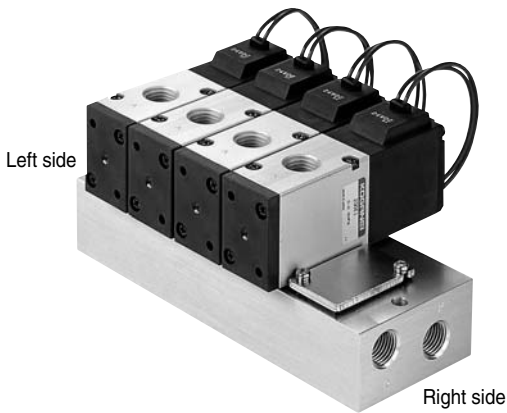
Notes: 1. Before use, always attach the included plug. For details, see the 2-, 3-port valves valve functions and connection port configurations on p. 139.

2. Indicators not available for the grommet type.

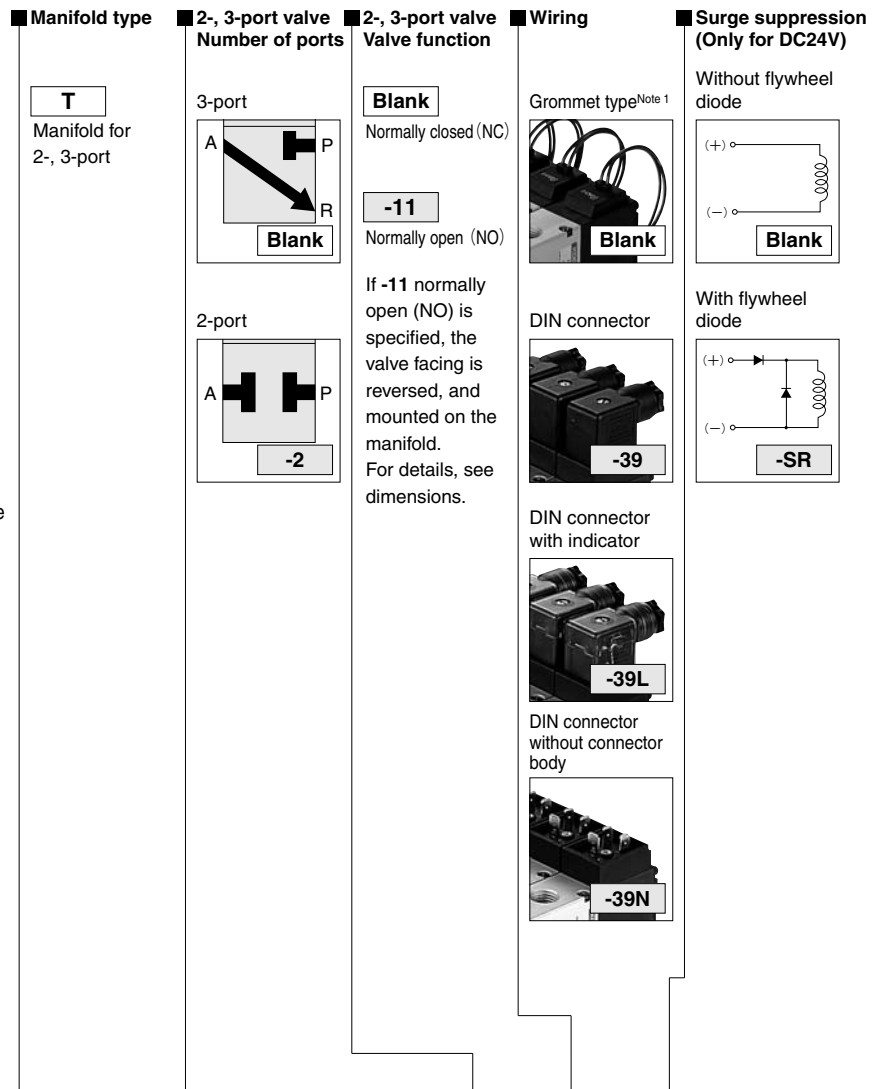
3. Enter this code when voltage is DC24V and surge suppression is used. Entering the **-SR** code is not necessary for AC100V and AC200V, since surge suppression is already incorporated.

● Only for DC24V.

# 230 Series Manifold Order Code



Configuration example  
**230M5T stn.1~4 -230E1 DC24V**  
**stn.5 -BP**



	Manifold model		Mounting valve type							
	Number of units	Manifold type	Station	Basic model	2-, 3-port valve Number of ports	2-, 3-port valve Valve function	Wiring	Surge suppression	Voltage	
Standard type	230M	2 ⋮ 10	T	stn. □ ⋮ stn. □	-230E1 <sup>Note 2</sup>	-2	-11	-39 -39L -39N	-SR <sup>Note 5</sup>	DC24V AC100V AC200V
					-V230E1 <sup>Note 3</sup>					
					-SV230E1 <sup>Note 4</sup>					
Low current type	230M	2 ⋮ 10	T	stn. □ ⋮ stn. □	-230LE1 <sup>Note 2</sup>	-2	-11	-39 -39L -39N	-SR <sup>Note 5</sup>	DC24V
					-V230LE1 <sup>Note 3</sup>					
					-SV130LE1 <sup>Note 4</sup>					

- Notes: 1. Indicators not available for the grommet type.
2. Cannot be combined with **V230(L)E1** and **SV230(L)E1** on the manifold.
3. Cannot be combined with **230(L)E1** and **SV230(L)E1** on the manifold.
4. Cannot be combined with **230(L)E1** and **V230(L)E1** on the manifold.
5. Enter this code when voltage is DC24V and surge suppression is used. Entering the **-SR** code is not necessary for AC100V and AC200V, since surge suppression is already incorporated.
- A made to order can handle up to 20 units.
- Specify the valve type for each station.
- Enter **-BP** when closing a station with a block-off plate without mounting a valve.
- Valve mounting location from the left-hand side when facing A, B port.
- Only for DC24V.

## 230 Series Additional Parts Order Code

### ● Block-off plate (10 set unit)



#### 230T-BP

(Block-off plate, gasket and 2 block-off plate mounting screws) × 10

### ● Parts for mounting valves (10 set unit; for mounting on manifold)



#### 230T-GS

(Gasket, 2 mounting screws) × 10

### ● Mounting base (10 set unit)



#### 230Z-21

(Mounting base, 2 base mounting screws) × 10

### ● DIN connector (1 set unit)



230Z-39 (Without indicator)

230Z-39L-DC24V (For DC24V with indicator)

230Z-39L-AC100V (For AC100V with indicator)

230Z-39L-AC200V (For AC200V with indicator)

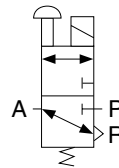
(DIN connector body, 1 mounting screw, gasket)

## Operating Principle and Symbol

### Major Parts and Materials

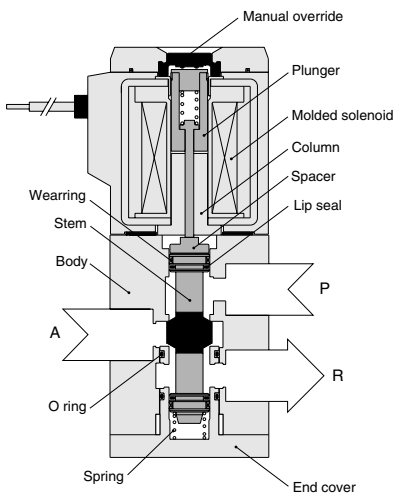
	Parts	Materials
Valve	Body	Aluminum alloy (anodized)
	Stem	Aluminum alloy (anodized)
	Lip seal	Synthetic rubber
	Plunger	Synthetic rubber
	Column	Magnetic stainless
	Mounting base	Steel (zinc plated)
Manifold	Body	Aluminum alloy (anodized)
	Block-off plate	Steel (nickel plated)
	Seal	Synthetic rubber

### Symbol

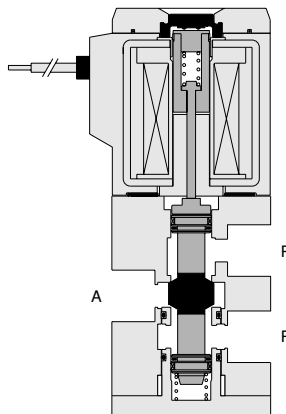


## 3-port

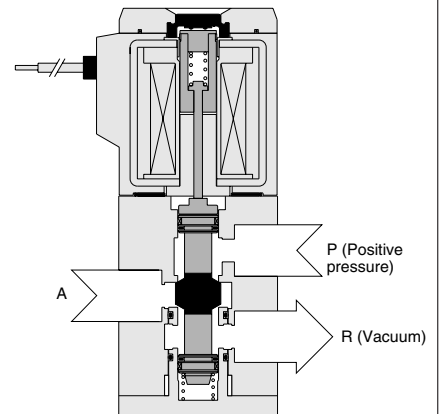
### 230E1 (For positive pressure) De-energized



### V230E1 (For vacuum) De-energized



### SV230E1 (For both vacuum and positive pressure) De-energized



Remark: For details about valve functions and connection port configurations, see the 2-, 3-port valves valve functions and connection port configurations, and application examples on p. 139.



