



# KOGANEI

## VALVES GENERAL CATALOG

SOLENOID VALVES G010 SERIES

# SOLENOID VALVES HG010 SERIES INDEX

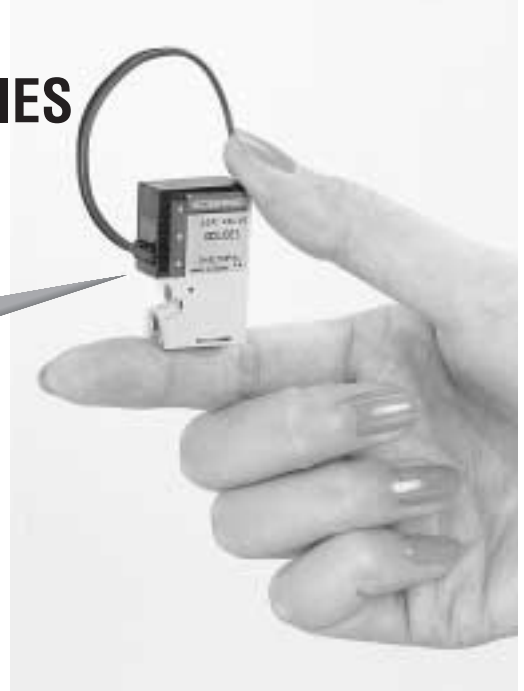
Features	35
Basic Models and Configuration	36
Handling Instructions and Precautions	37
Specifications	41
Solenoid Valve Order Codes	45
Manifold Order Codes	46
Operating Principles and Symbols	47
Dimensions of Solenoid Valve	48
Dimensions of Manifold	51

**Powerful & Widely Varied**

# SOLENOID VALVES HGO10 SERIES

In response to diversified control requirements, our new line-up includes positive pressure normally open (NO) specifications, and vacuum specifications!

Now you can select the best possible control system for your production line machinery and equipment.



**Total Height:  
32~34mm  
[1.26~1.34in.]**

More compact than ever, in response to down-sizing requirements.

Note: Excluding the AC200V specification.

Wide voltage selection

## STANDARD TYPE

Power consumption: 1.0W  
Effective area: 0.2mm<sup>2</sup>  
[Cv: 0.011]

Achieves power consumption of 0.5W

## LOW CURRENT TYPE

Power consumption: 0.5W  
Effective area: 0.1mm<sup>2</sup>  
[Cv: 0.006]

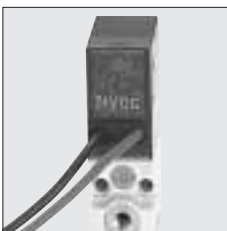
Meets large flow & quick response requirements

## LARGE FLOW TYPE

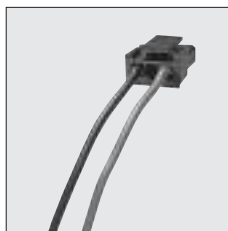
Power consumption: 3.2W<sup>Note</sup>  
Effective area: 0.45mm<sup>2</sup>  
[Cv: 0.025]

Note: With power-saving circuit

Positive pressure specifications	Normally closed (NC)	HG010E1	HG010LE1	HG010HE1
	Normally open (NO)	HG010E1-11	HG010LE1-11	HG010HE1-11
Vacuum specifications	Normally closed (NC)	HGV010E1	HGV010LE1	HGV010HE1
	Normally open (NO)	HGV010E1-11	HGV010LE1-11	HGV010HE1-11







LED indicator is standard for the grommet type connector.

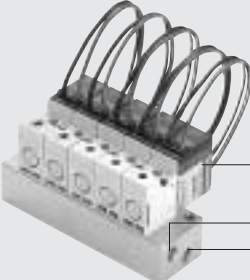
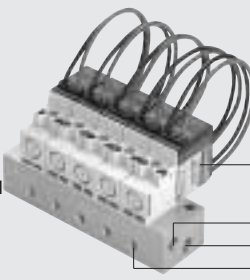
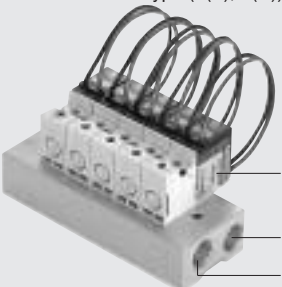
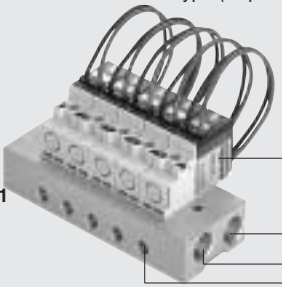


3-pin connector makes common wiring possible.



Locking type is standard for the manual override.

Single unit					
Direct acting solenoid valve					
Outward view	Normally closed (NC)		Normally open (NO)		
	Direct piping	Sub-base piping	Direct piping	Sub-base piping	
					
Type					
Positive pressure specifications	HG010E1 (Standard)	HG010E1-21	HGA010E1-25	HG010E1-11-21	HGA010E1-11-25
	HG010LE1 (Low current)	HG010LE1-21	HGA010LE1-25	HG010LE1-11-21	HGA010LE1-11-25
	HG010HE1 (Large flow)	HG010HE1-21	HGA010HE1-25	HG010HE1-11-21	HGA010HE1-11-25
Vacuum specifications	HGV010E1 (Standard)	HGV010E1-21	HGAV010E1-25	HGV010E1-11-21	HGAV010E1-11-25
	HGV010LE1 (Low current)	HGV010LE1-21	HGAV010LE1-25	HGV010LE1-11-21	HGAV010LE1-11-25
	HGV010HE1 (Large flow)	HGV010HE1-21	HGAV010HE1-25	HGV010HE1-11-21	HGAV010HE1-11-25

Manifold	
HG(V)010E1, HG(V)010LE1, HG(V)010HE1	
1(P), 3(R) port (10-32UNF) type	<p><b>HG010M□F</b> —F type (1(P), 3(R)) manifold</p>  <p>HG010E1, HG010LE1, HG010HE1 HGV010E1, HGV010LE1, HGV010HE1</p> <p>3(R) 1(P)</p>
	<p><b>HG010M□A</b> —A type (all ports) manifold</p>  <p>HGA010E1, HGA010LE1, HGA010HE1 HGAV010E1, HGAV010LE1, HGAV010HE1</p> <p>3(R) 1(P) 2(A)</p>
1(P), 3(R) port (NPT1/8) type	<p><b>HG010MH□F</b> —F type (1(P), 3(R)) manifold</p>  <p>HG010E1, HG010LE1, HG010HE1 HGV010E1, HGV010LE1, HGV010HE1</p> <p>1(P) 3(R)</p>
	<p><b>HG010MH□A</b> —A type (all ports) manifold</p>  <p>HGA010E1, HGA010LE1, HGA010HE1 HGAV010E1, HGAV010LE1, HGAV010HE1</p> <p>1(P) 3(R) 2(A)</p>

# Handling Instructions and Precautions



## Piping Precautions

Use the piping shown below for the manifold, as well.

### 2-, 3-port valves valve functions and connection port configurations

#### Positive pressure specifications

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

#### Vacuum specifications

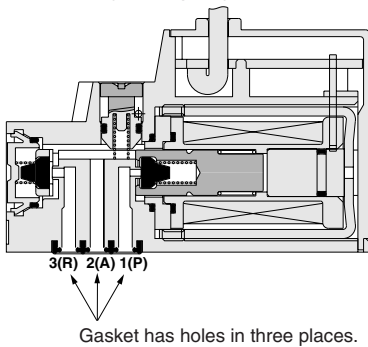
		De-energized	Energized
2-port	Normally closed (NC)		
	Normally open (NO)		
3-port	Normally closed (NC)		
	Normally open (NO)		

**Caution:** Normally closed (NC) and normally open (NO) valves cannot be mounted together on the same manifold.

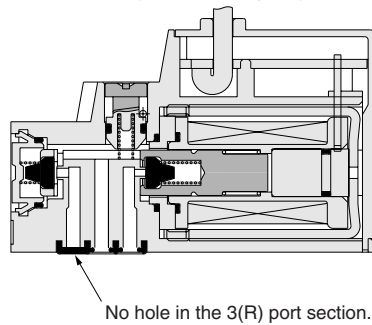
### About the 2-, 3-port valves

The HG010 series can be divided, by the types of gaskets used on the valves, into 3-port and 2-port valves. When replacing the valve, pay attention to the gasket shape and mounting direction.

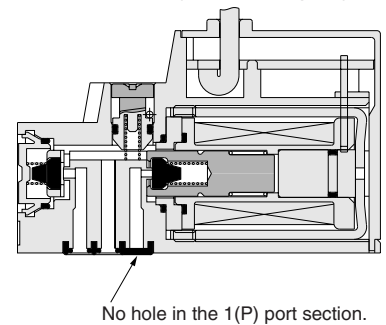
#### HG□010□E1 (For 3-port)



#### HG□010□E1-2 (For NC, 2-port)



#### HG□010□E1-2-11 (For NO, 2-port)





## Solenoid

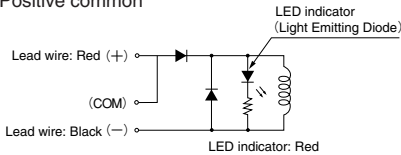
### Internal circuit

#### < Standard type, low current type >

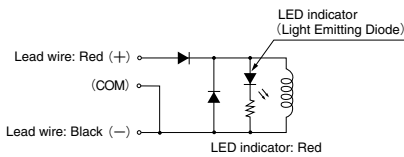
##### ● DC5V, DC6V, DC12V, DC24V

##### Solenoid with LED indicator (Surge suppression)

###### ● Positive common

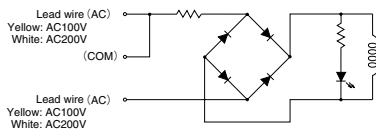


###### ● Negative common (Made to order)



##### ● AC100V, AC200V

##### Solenoid with LED indicator (Surge suppression)

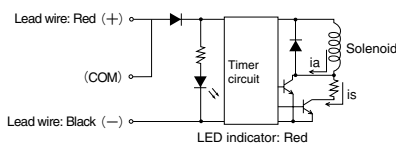


#### < Large flow type >

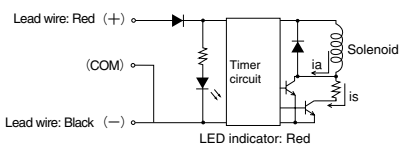
##### ● DC12V, DC24V

##### Solenoid with LED indicator (Surge suppression)

###### ● Positive common



###### ● Negative common (Made to order)

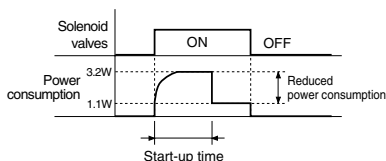


ia: Starting current  
is: Steady-state current

### Operating principles of large flow type

The large flow type uses a timer circuit, as shown above, that achieves power savings by switching to holding operations mode after a certain period of time to operate at about 1/3 of the starting power consumption.

#### ● Power waveform



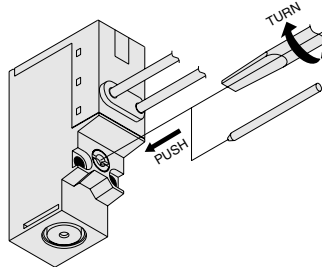
	Start-up time (Standard time)
DC12V	48ms
DC24V	27ms



## Manual override

### Locking type

To lock the manual override, use a small screwdriver to push down on the manual override all the way and turn it clockwise. When locked, turning the manual override in the counterclockwise direction releases a spring on the manual override, returns it to the original position, and releases the lock. When the manual override is not turned, this type acts just like the non-locking type, the valve is energized as long as the manual override is pushed down, and it returns to the rest position upon release.



- Cautions:**
1. Always release the lock of the locking type before commencing normal operation.
  2. Do not attempt to operate the manual override with a pin or other object having an extremely fine tip. It could damage the manual override button.

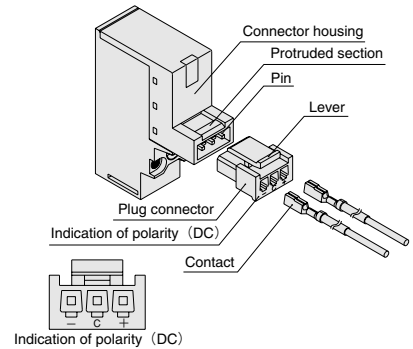
- Cautions:**
1. Do not apply megger between the lead wires.
  2. The DC solenoid will not short circuit even if the wrong polarity is applied, but the valve will not operate.
  3. Leakage current inside the circuit could result in failure of the solenoid valve to return, or in other erratic operation. Always use it within the range of the allowable leakage current. If circuit conditions, etc. cause the current leakage to exceed the maximum allowable leakage current, consult us.
  4. The large flow type will not operate if the supply voltage is increased slowly. Always apply the appropriate voltage.



## Plug connector

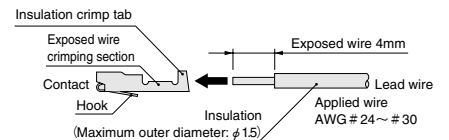
### Attaching and removing plug connector

Use fingers to insert the connector into the pin, push it in until the lever claw latches onto the protruded section of the connector housing, and complete the connection. To remove the connector, squeeze the lever along with the connector, lift the lever claw up from the protruded section of the connector housing, and pull it out.



### Crimping of connecting lead wire and contact

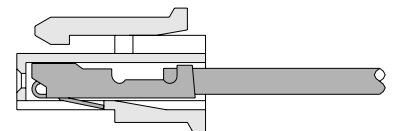
To crimp lead wires into contacts, strip off 4mm [0.16in.] of the insulation from the end of the lead wire, insert it into the contact, and crimp it. Be sure to avoid catching the insulation on the exposed wire crimping section.



### Attaching and removing contact and connector

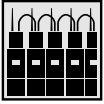
Insert the contact with lead wire into a plug connector hole until the contact hook latches on the connector and is secured to the plug connector. Confirm that the lead wire cannot be easily pulled out.

To remove it, insert a tool with a fine tip (such as a small screwdriver) into the rectangular hole on the side of the plug connector to push up on the hook, and then pull out the lead wire.



- Cautions:**
1. Do not pull hard on the lead wire. It could result in defective contacts, shorted lines, etc.
  2. If the pin is bent, use a small screwdriver, etc. to gently straighten out the pin, and then complete the connection to the plug connector.
  3. For crimping of connecting lead wire and contact, always use a dedicated crimping tool.  
Contact: Model 706312-2MK  
Manufactured by Sumiko Tech, Inc.  
Crimping tool: Model F1  
(for 706312-2MK)  
Manufactured by Sumiko Tech, Inc.

# Handling Instructions and Precautions

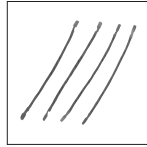


## Lead wire for common wiring (only lead wire)

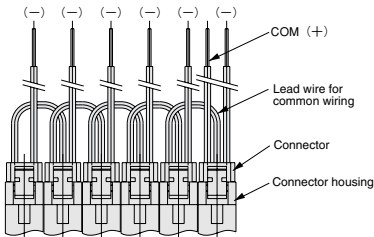
Using the lead wire for common wiring, provided as additional parts, saves wiring work.

Order code

**G010-COM**

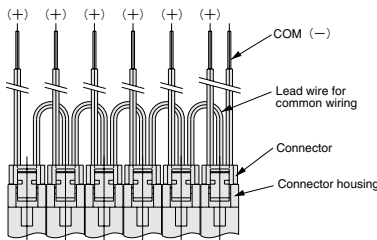


### 1. Wiring example of DC positive side and AC common terminal

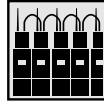


Shows polarity in DC case

### 2. Wiring example of DC negative side common terminal



- Cautions:**
1. The diagrams show the straight connector configuration.
  2. Since the COM terminal is connected to a crossover terminal inside the connector housing, the connector cannot be switched between a positive common and a negative common wiring by changing the connectors.



## Common pre-wired lead wire assembly

Using the common pre-wired lead wire assembly, provided as additional parts, saves wiring work.

Order code

**CR1652W** —



**Common specifications**  
**Blank** — Positive common  
**M** — Negative common

**Lead wire length**  
**Blank** — 300mm [11.8in.]  
**1** — 1000mm [39in.]  
**3** — 3000mm [118in.]

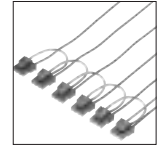
### Outlet position of common wiring

**S** — The type **PS** is **stn.1** side, the type **PL** is final **stn.** side.  
**E** — The type **PS** is final **stn.** side, the type **PL** is **stn.1** side.

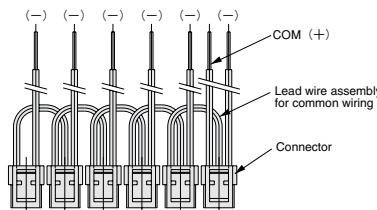
### Number of wiring units

**2** : 2 units  
 }  
**20** : 20 units

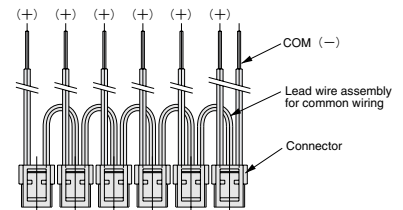
Common pre-wired lead wire assembly



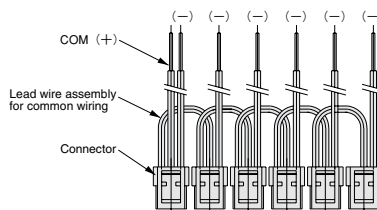
### 1. For CR1652W-6E□



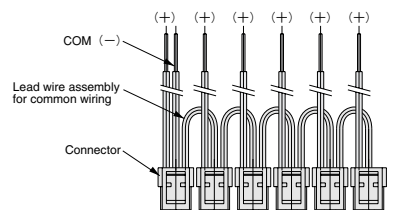
### 2. For CR1652W-6E□M



### 3. For CR1652W-6S□



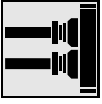
### 4. For CR1652W-6S□M



**Caution:** Since the COM terminal is connected to a crossover terminal inside the connector housing, the connector cannot be switched between a positive common and a negative common wiring by changing the connectors.

### Number of valves which can be energized simultaneously with common wiring

Voltage	Model	HG010		
		E1	LE1	HE1
DC5,6V		6	12	—
DC12V		12	20	4
DC24V		20	20	8
AC100V		20	—	—
AC200V		20	—	—



## Fittings

### Recommended fittings

#### HG(V) 010 □ E1-21

Fitting		Connection port	2(A) port	1(P), 3(R) port
Quick fitting			TS4-M3M TS3-M3M TSH4-M3M TSH3-M3M TL4-M3M TL3-M3M	—
TAC fitting	For urethane tube		BF4BU-M3 BF3BU-M3	BF4BU-M3 BF3BU-M3
	For nylon tube		BF4-M3	BF4-M3

#### HGA (V) 010 □ E1-25

Fitting		Connection port	2(A) port	1(P), 3(R) port
Quick fitting			TS4-M5M TSH4-M5M TL4-M5M TLL4-M5M	TS4-M5M TSH4-M5M TL4-M5M TLL4-M5M
TAC fitting	For urethane tube		BF4BU BF3BU	BF4BU BF3BU
	For nylon tube		BF4	BF4

# SOLENOID VALVES

## HG010 SERIES

### Specifications

#### Basic Models and Functions

Item	Basic model	For direct piping, F type manifold <sup>Note1</sup>			For A type manifold <sup>Note2</sup>		
		HG010E1(-11) HGV010E1(-11) (standard)	HG010LE1(-11) HGV010LE1(-11) (low current)	HG010HE1(-11) HGV010HE1(-11) (large flow)	HGA010E1(-11) HGA010E1(-11) (standard)	HGA010LE1(-11) HGA010LE1(-11) (low current)	HGA010HE1(-11) HGA010HE1(-11) (large flow)
Number of positions		2 positions					
Number of ports		2, 3 ports					
Valve function		Normally closed (NC, standard) or normally open (NO, option)					

Remark: For optional specifications and order code, see p. 45~46.

Notes: 1. When using the HG010□E1, HGV010□E1 as a single unit, select it with a mounting base.

2. When using the HGA010□E1, HGA010□E1 as a single unit, select it with a sub-base.

#### Specifications (Positive Pressure)

Item	Basic model	Direct piping, F type manifold			A type manifold		
		HG010E1 (standard)	HG010LE1 (low current)	HG010HE1 (large flow)	HGA010E1 (standard)	HGA010LE1 (low current)	HGA010HE1 (large flow)
Media		Air					
Operation type		Direct acting type					
Effective area [Cv] <sup>Note 1</sup> mm <sup>2</sup>	1 (P)→2 (A)	0.2 [0.011]	0.1 [0.006]	0.45 [0.025]	0.2 [0.011]	0.1 [0.006]	0.45 [0.025]
	2 (A)→3 (R)	0.3 [0.017]	0.2 [0.011]	0.6 [0.033]	0.3 [0.017]	0.2 [0.011]	0.6 [0.033]
Port size <sup>Note 2</sup>		M3×0.5			10-32 UNF		
Lubrication		Not required					
Operating pressure range MPa {kgf/cm <sup>2</sup> } [psi.]		0~0.7 {0~7.1} [0~102]					
Proof pressure MPa {kgf/cm <sup>2</sup> } [psi.]		1.05 {10.7} [152]					
Response time <sup>Note3</sup> ON/OFF ms		4/8	5/10	3/6	4/8	5/10	3/6
Maximum operating frequency Hz		5					
Operating temp. range (atmosphere and media) °C [°F] <sup>Note4</sup>		5~50 [41~122]					
Shock resistance m/s <sup>2</sup> {G}		1373.0 {140.0} (Axial direction 196.2 {20.0})					
Rated voltage <sup>Note 5</sup>		(DC5V,DC6V) DC12V,DC24V AC100V,(AC200V)	(DC5V,DC6V) DC12V,DC24V	(DC12V) DC24V	(DC5V,DC6V) DC12V,DC24V AC100V,(AC200V)	(DC5V,DC6V) DC12V,DC24V	(DC12V) DC24V
Mounting direction		Any					

Item	Basic model	Direct piping, F type manifold			A type manifold		
		HG010E1-11 (standard)	HG010LE1-11 (low current)	HG010HE1-11 (large flow)	HGA010E1-11 (standard)	HGA010LE1-11 (low current)	HGA010HE1-11 (large flow)
Media		Air					
Operation type		Direct acting type					
Effective area [Cv] <sup>Note 1</sup> mm <sup>2</sup>	2 (A)→1 (P)	0.3 [0.017]	0.15 [0.008]	0.55 [0.031]	0.3 [0.017]	0.15 [0.008]	0.55 [0.031]
	3 (R)→2 (A)	0.2 [0.011]	0.1 [0.006]	0.45 [0.025]	0.2 [0.011]	0.1 [0.006]	0.45 [0.025]
Port size <sup>Note 2</sup>		M3×0.5			10-32 UNF		
Lubrication		Not required					
Operating pressure range MPa {kgf/cm <sup>2</sup> } [psi.]		0~0.7 {0~7.1} [0~102]		0~0.5 {0~5.1} [0~73]	0~0.7 {0~7.1} [0~102]		0~0.5 {0~5.1} [0~73]
Proof pressure MPa {kgf/cm <sup>2</sup> } [psi.]		1.05 {10.7} [152]					
Response time <sup>Note 3</sup> ON/OFF ms		4/8	5/10	3/6	4/8	5/10	3/6
Maximum operating frequency Hz		5					
Operating temp. range (atmosphere and media) °C [°F] <sup>Note4</sup>		5~50 [41~122]					
Shock resistance m/s <sup>2</sup> {G}		1373.0 {140.0} (Axial direction 196.2 {20.0})					
Rated voltage <sup>Note 5</sup>		(DC5V,DC6V) DC12V,DC24V AC100V,(AC200V)	(DC5V,DC6V) DC12V,DC24V	(DC12V) DC24V	(DC5V,DC6V) DC12V,DC24V AC100V,(AC200V)	(DC5V,DC6V) DC12V,DC24V	(DC12V) DC24V
Mounting direction		Any					
Air supply port		3(R) port					

Notes: 1. For details, see the effective area on p.43.

2. For details, see the port size on p.43.

3. Values when air pressure is 0.5MPa {5.1kgf/cm<sup>2</sup>} [73psi.]. Due to switching phase timing, add a maximum of 5ms to the AC response time.

4. Provide heat radiation measures to ensure that the ambient temperature (or when used in a control box, the internal temperature of the box) always remains within the temperature range specifications.

And for long-time continuous energizing, consult us.

5. Values in parentheses ( ) are for made to order items. See the corresponding table of solenoid options/voltage on p.50.



## Specifications (Vacuum)

Item	Basic model	Direct piping, F type manifold			A type manifold		
		HGV010E1 (standard)	HGV010LE1 (low current)	HGV010HE1 (large flow)	HGAV010E1 (standard)	HGAV010LE1 (low current)	HGAV010HE1 (large flow)
Media		Air					
Operation type		Direct acting type					
Effective area $[C_v]$ mm <sup>2</sup>	1(P)→2(A)	0.3[0.017]	0.15[0.008]	0.55[0.031]	0.3[0.017]	0.15[0.008]	0.55[0.031]
	2(A)→3(R)	0.2[0.011]	0.1[0.006]	0.45[0.025]	0.2[0.011]	0.1[0.006]	0.45[0.025]
Port size <sup>Note 2</sup>		M3×0.5			10-32 UNF		
Lubrication		Not required					
Operating pressure range MPa [kgf/cm <sup>2</sup> ] [psi.]	1(P) port	-100kPa~0 [-750.1mmHg~0] [-29.53in.Hg~0]					
	3(R) port	0~0.5 [0~5.1] [0~73]		0~0.4 [0~4.1] [0~58]	0~0.5 [0~5.1] [0~73]		0~0.4 [0~4.1] [0~58]
Proof pressure	MPa [kgf/cm <sup>2</sup> ] [psi.]	1.05 [10.7] [152]					
Response time <sup>Note 3</sup> ON/OFF	ms	4/8	5/10	3/6	4/8	5/10	3/6
Maximum operating frequency	Hz	5					
Operating temp. range (atmosphere and media)	°C [°F] <sup>Note 4</sup>	5~50 [41~122]					
Shock resistance	m/s <sup>2</sup> {G}	1373.0 {140.0} (Axial direction 196.2 {20.0})					
Rated voltage <sup>Note 5</sup>	(DC5V,DC6V) DC12V,DC24V AC100V,(AC200V)	(DC5V,DC6V) DC12V,DC24V	(DC12V) DC24V	(DC5V,DC6V) DC12V,DC24V AC100V,(AC200V)	(DC5V,DC6V) DC12V,DC24V	(DC12V) DC24V	(DC12V) DC24V
Mounting direction		Any					
Air supply port	Vacuum	1(P) port					
	Positive pressure	3(R) port					

Item	Basic model	Direct piping, F type manifold			A type manifold		
		HGV010E1-11 (standard)	HGV010LE1-11 (low current)	HGV010HE1-11 (large flow)	HGAV010E1-11 (standard)	HGAV010LE1-11 (low current)	HGAV010HE1-11 (large flow)
Media		Air					
Operation type		Direct acting type					
Effective area $[C_v]$ mm <sup>2</sup>	2(A)→1(P)	0.2[0.011]	0.1[0.006]	0.45[0.025]	0.2[0.011]	0.1[0.006]	0.45[0.025]
	3(R)→2(A)	0.3[0.017]	0.2[0.011]	0.6[0.033]	0.3[0.017]	0.2[0.011]	0.6[0.033]
Port size <sup>Note 2</sup>		M3×0.5			10-32 UNF		
Lubrication		Not required					
Operating pressure range MPa [kgf/cm <sup>2</sup> ] [psi.]	1(P) port	0~0.5 [0~5.1] [0~73]		0~0.4 [0~4.1] [0~58]	0~0.5 [0~5.1] [0~73]		0~0.4 [0~4.1] [0~58]
	3(R) port	-100kPa~0 [-750.1mmHg~0] [-29.53in.Hg~0]					
Proof pressure	MPa [kgf/cm <sup>2</sup> ] [psi.]	1.05 [10.7] [152]					
Response time <sup>Note 3</sup> ON/OFF	ms	4/8	5/10	3/6	4/8	5/10	3/6
Maximum operating frequency	Hz	5					
Operating temp. range (atmosphere and media)	°C [°F] <sup>Note 4</sup>	5~50 [41~122]					
Shock resistance	m/s <sup>2</sup> {G}	1373.0 {140.0} (Axial direction 196.2 {20.0})					
Rated voltage <sup>Note 5</sup>	(DC5V,DC6V) DC12V,DC24V AC100V,(AC200V)	(DC5V,DC6V) DC12V,DC24V	(DC12V) DC24V	(DC5V,DC6V) DC12V,DC24V AC100V,(AC200V)	(DC5V,DC6V) DC12V,DC24V	(DC12V) DC24V	(DC12V) DC24V
Mounting direction		Any					
Air supply port	Vacuum	3(R) port					
	Positive pressure	1(P) port					

Notes: 1. For details, see the effective area on p.43.

2. For details, see the port size on p.43.

3. Values when air pressure is 0.5MPa {5.1kgf/cm<sup>2</sup>} [73psi.]. Due to the switching phase timing, add a maximum of 5ms to the AC response time.

4. Provide heat radiation measures to ensure that the ambient temperature (or when used in a control box, the internal temperature of the box) always remains within the temperature range specifications.  
And for long-time continuous energizing, consult us.

5. Values in parentheses ( ) are for made to order items. See the corresponding table of solenoid options/voltage on p.50.

## Mass

### Solenoid Valve Mass

g [oz.]

Basic model	Mass
HG (V) 010E1	14.6 [0.515] (16.8 [0.593]) <sup>Note1</sup>
HG (V) 010LE1	14.6 [0.515] (16.8 [0.593]) <sup>Note1</sup>
HG (V) 010HE1	15.3 [0.540] (17.5 [0.617]) <sup>Note1</sup>
HGA (V) 010E1	14.2 [0.501] (26.2 [0.924]) <sup>Note2</sup>
HGA (V) 010LE1	14.2 [0.501] (26.2 [0.924]) <sup>Note2</sup>
HGA (V) 010HE1	14.8 [0.522] (26.8 [0.945]) <sup>Note2</sup>

Notes: 1. Figures in parentheses ( ) are the mass with mounting base: -21.

2. Figures in parentheses ( ) are the mass with sub-base: -25.

### Manifold Mass

g [oz.]

Manifold model	Mass calculation of each unit (n=number of units)	Block-off plate
HG010M□F	(7×n) + 9 [(0.247×n) + 0.317]	1 [0.035]
HG010M□A	(7×n) + 9 [(0.247×n) + 0.317]	1 [0.035]
HG010MH□F	(7.2×n) + 33 [(0.254×n) + 1.164]	1 [0.035]
HG010MH□A	(7.2×n) + 33 [(0.254×n) + 1.164]	1 [0.035]

# Solenoid Specifications

Rated voltage		DC5V	DC6V	DC12V	DC24V	AC100V <small>Note</small>	AC200V <small>Note</small>
Operating voltage range	V	4.5~5.5 (5±10%)	5.4~6.6 (6±10%)	10.8~13.2 (12±10%)	21.6~26.4 (24±10%)	90~110 (100±10%)	180~220 (200±10%)
G(A)(V)010E1	Current (when rated voltage is applied) mA(r.m.s)	200	168	84	42	11	8
	Power consumption	1.0W				1.1VA	1.6VA
	Allowable leakage current mA	2.0				1.0	
G(A)(V)010LE1	Current (when rated voltage is applied) mA(r.m.s)	100	84	42	21	_____	_____
	Power consumption	0.5W				_____	_____
	Allowable leakage current mA	1.0				_____	_____
G(A)(V)010HE1	Current (when rated voltage is applied)	Starting mA	_____	267	133	_____	_____
		Holding mA	_____	92	46	_____	_____
	Power consumption	Starting W	_____	3.2		_____	_____
		Holding W	_____	1.1		_____	_____
	Allowable leakage current mA	_____	_____	10	5	_____	_____
	Start-up time (standard time) ms	_____	_____	48	27	_____	_____
Insulation resistance	MΩ	Over 100					
Wiring type and lead wire length		Grommet type: 300mm [11.8in.], Plug connector type: 300mm [11.8in.]					
Color of lead wire		Red (+), Black (-)				Yellow	White
Color of LED indicator		Red					
Surge suppression (as standard)		Flywheel diode				Bridge diode	

Note: Since the AC types have built-in bridge diodes, the starting current value and energizing current value are virtually the same. In addition, the rated frequencies are 50Hz and 60Hz. Specification values are the same for both.

## Effective Area [Cv]

Basic model	Standard (Single valve)	Remarks	
HG010E1 (-11)	1(P)→2(A) 0.2[0.011] ( 2(A)→1(P) 0.3[0.017] ) 2(A)→3(R) 0.3[0.017] ( 3(R)→2(A) 0.2[0.011] )	<ul style="list-style-type: none"> <li>For the case with quick fitting TSH4-M3M attached to the 1(P) and 2(A) ports on the mounting base.</li> <li>Same values as for the case with quick fitting TSH4-M3M attached to the 2(A) port on F type manifold.</li> </ul>	
HG010LE1 (-11)	1(P)→2(A) 0.1 [0.006] ( 2(A)→1(P) 0.15 [0.008] ) 2(A)→3(R) 0.2 [0.011] ( 3(R)→2(A) 0.1 [0.006] )		
HG010HE1 (-11)	1(P)→2(A) 0.45 [0.025] ( 2(A)→1(P) 0.55 [0.031] ) 2(A)→3(R) 0.6 [0.033] ( 3(R)→2(A) 0.45 [0.025] )		
HGV010E1 (-11)	1(P)→2(A) 0.3 [0.017] ( 2(A)→1(P) 0.2 [0.011] ) 2(A)→3(R) 0.2 [0.011] ( 3(R)→2(A) 0.3 [0.017] )		
HGV010LE1 (-11)	1(P)→2(A) 0.15 [0.008] ( 2(A)→1(P) 0.1 [0.006] ) 2(A)→3(R) 0.1 [0.006] ( 3(R)→2(A) 0.2 [0.011] )		
HGV010HE1 (-11)	1(P)→2(A) 0.55 [0.031] ( 2(A)→1(P) 0.45 [0.025] ) 2(A)→3(R) 0.45 [0.025] ( 3(R)→2(A) 0.6 [0.033] )		
HGA010E1 (-11)	1(P)→2(A) 0.2 [0.011] ( 2(A)→1(P) 0.3 [0.017] ) 2(A)→3(R) 0.3 [0.017] ( 3(R)→2(A) 0.2 [0.011] )		<ul style="list-style-type: none"> <li>For the case with quick fitting TSH4-M5M attached to the 1(P) and 2(A) ports on the mounting sub-base.</li> </ul>
HGA010LE1 (-11)	1(P)→2(A) 0.1 [0.006] ( 2(A)→1(P) 0.15 [0.008] ) 2(A)→3(R) 0.2 [0.011] ( 3(R)→2(A) 0.1 [0.006] )		
HGA010HE1 (-11)	1(P)→2(A) 0.45 [0.025] ( 2(A)→1(P) 0.55 [0.031] ) 2(A)→3(R) 0.6 [0.033] ( 3(R)→2(A) 0.45 [0.025] )		
HGAV010E1 (-11)	1(P)→2(A) 0.3 [0.017] ( 2(A)→1(P) 0.2 [0.011] ) 2(A)→3(R) 0.2 [0.011] ( 3(R)→2(A) 0.3 [0.017] )		
HGAV010LE1 (-11)	1(P)→2(A) 0.15 [0.008] ( 2(A)→1(P) 0.1 [0.006] ) 2(A)→3(R) 0.1 [0.006] ( 3(R)→2(A) 0.2 [0.011] )		
HGAV010HE1 (-11)	1(P)→2(A) 0.55 [0.031] ( 2(A)→1(P) 0.45 [0.025] ) 2(A)→3(R) 0.45 [0.025] ( 3(R)→2(A) 0.6 [0.033] )		

Remark: Figures in parentheses ( ) are for the normally open (NO) type.

## Port Size

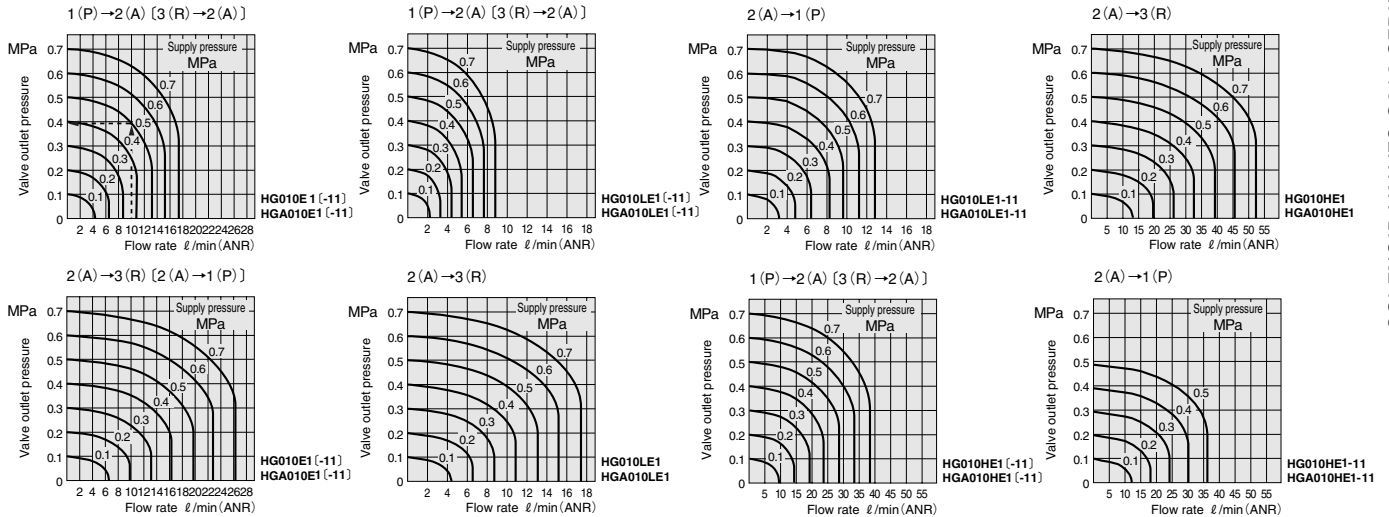
### Solenoid Valve Port Size (With Base)

Basic model	Port	Location of piping ports	Port size
HG (V) 010E1-21 HG (V) 010LE1-21 HG (V) 010HE1-21	1(P),3(R) 2(A)	Mounting base Valve	M3×0.5
HGA (V) 010E1-25 HGA (V) 010LE1-25 HGA (V) 010HE1-25	1(P),2(A),3(R)	Sub-base	10-32 UNF

### Manifold Port Size

Manifold model	Port	Location of piping ports	Port size
HG010M□F	1(P),3(R)	Manifold	10-32 UNF
	2(A)	Valve	M3×0.5
HG010M□A	1(P),3(R)	Manifold	10-32 UNF
	2(A)		M3×0.5
HG010MH□F	1(P),3(R)	Manifold	NPT1/8
	2(A)	Valve	M3×0.5
HG010MH□A	1(P),3(R)	Manifold	NPT1/8
	2(A)		10-32 UNF

## Flow Rate



1MPa = 145psi., 1 l /min = 0.0353ft.<sup>3</sup>/min.

Note: 0.6MPa [73psi.] and 0.7MPa [102psi.] are not available for HG010HE1-11, HGA010HE1-11.

### How to read the graph (for HG□010E1, 1(P)→2(A))

When the supply pressure is 0.5MPa [73psi.] and flow rate is 10 l /min [0.35ft.<sup>3</sup>/min.] (ANR), the valve outlet pressure becomes 0.39MPa [57psi.].

Figures in brackets [ ] indicate the normally open (NO) type.

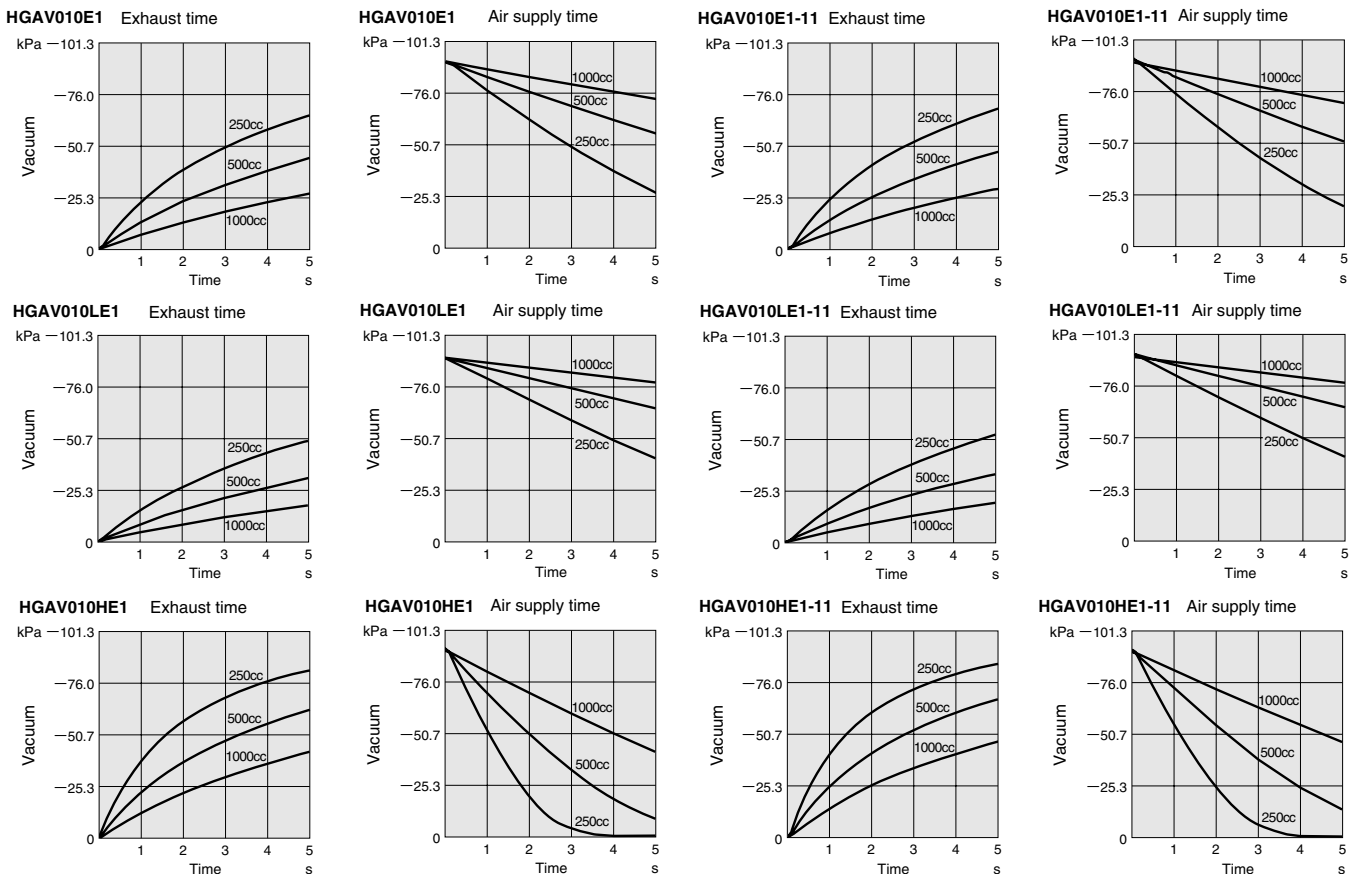
## Air Supply Time and Exhaust Time

**How to read the graph**  
 Exhaust time: Time required for chamber interior to convert from atmospheric pressure state to vacuum state.  
 Air supply time: Time required for chamber interior to convert from -100kPa [-29.53in.Hg] to atmospheric pressure state.

**Measurement conditions**

Primary tank (13.6 l [0.480ft.<sup>3</sup>])  
 Chamber (0.25 l [0.0088ft.<sup>3</sup>], 0.5 l [0.0177ft.<sup>3</sup>], 1.0 l [0.0353ft.<sup>3</sup>])  
 Pressure sensor TSH4-M5M  
 ① and ② are quick fittings.

Valve models: GAV010E1-25, GAV010E1-11-25, GAV010LE1-25, GAV010LE1-11-25, GAV010HE1-25, GAV010HE1-11-25



-100kPa = -29.53in.Hg, 250cc = 0.0088ft.<sup>3</sup>, 500cc = 0.0177ft.<sup>3</sup>, 1000cc = 0.0353ft.<sup>3</sup>

# HG010 Series Solenoid Valve Order Codes

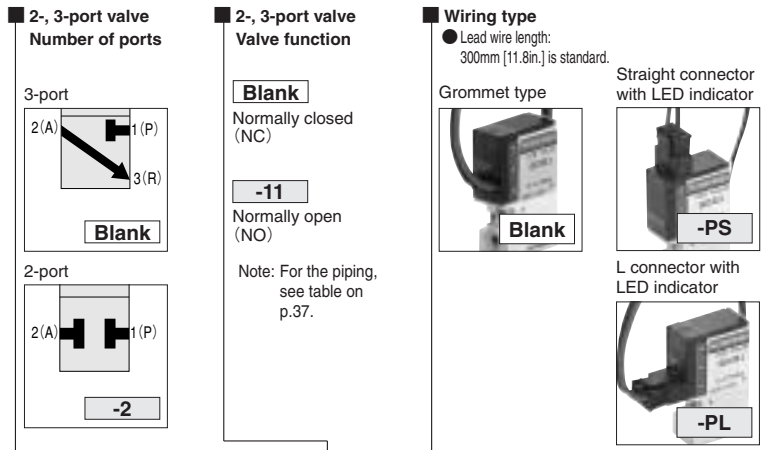
		2-, 3-port valve Number of ports	2-, 3-port valve Valve function	Mounting base	Sub-base	Wiring type	Voltage		
		3-port  <b>Blank</b>	<b>Blank</b> Normally closed (NC)  <b>-11</b> Normally open (NO)  Note: For the piping, see table on p.37.	Without mounting base  <b>Blank</b>	Without sub-base  <b>Blank</b>	● Lead wire length: 300mm [11.8in.] is standard. Grommet type with LED indicator  <b>Blank</b>			
		2-port  <b>-2</b>		With mounting base  <b>-21</b> ● Attached to a valve body at shipping.	With sub-base  <b>-25</b> ● Attached to a valve body at shipping.	Straight connector with LED indicator  <b>-PS</b>			
						L connector with LED indicator  <b>-PL</b>			
Direct piping	Positive pressure	2-, 3-port standard type	<b>HG010E1</b>	<b>-2</b>	<b>-11</b> Note 2	<b>-21</b> Note 1	<b>-PS</b>	<b>-PL</b>	<b>DC12V, DC24V, AC100V</b>
		2-, 3-port low current type	<b>HG010LE1</b>						<b>DC12V, DC24V</b>
		2-, 3-port large flow type	<b>HG010HE1</b>						<b>DC24V</b>
	Vacuum	2-, 3-port standard type	<b>HGV010E1</b>						<b>DC12V, DC24V, AC100V</b>
		2-, 3-port low current type	<b>HGV010LE1</b>						<b>DC12V, DC24V</b>
		2-, 3-port large flow type	<b>HGV010HE1</b>						<b>DC24V</b>
Sub-base piping	Positive pressure	2-, 3-port standard type	<b>HGA010E1</b>	<b>-2</b>	<b>-11</b> Note 2	<b>-25</b> Note 1	<b>-PS</b>	<b>-PL</b>	<b>DC12V, DC24V, AC100V</b>
		2-, 3-port low current type	<b>HGA010LE1</b>						<b>DC12V, DC24V</b>
		2-, 3-port large flow type	<b>HGA010HE1</b>						<b>DC24V</b>
	Vacuum	2-, 3-port standard type	<b>HGAV010E1</b>						<b>DC12V, DC24V, AC100V</b>
		2-, 3-port low current type	<b>HGAV010LE1</b>						<b>DC12V, DC24V</b>
		2-, 3-port large flow type	<b>HGAV010HE1</b>						<b>DC24V</b>

Notes: 1. If using the solenoid valve as a single unit, always select it either with mounting base or with sub-base.  
 2. Normally closed (NC) and normally open (NO) valves cannot be mounted together on the same manifold.

## Made to Order (After the wiring order code, enter the codes below.)

<b>Straight connector with LED indicator Negative common</b>  <b>-MS</b>	<b>L connector with LED indicator Negative common</b>  <b>-ML</b>	<b>Lead wire length</b>  <b>-1L</b> <b>-3L</b> ● For plug connector ● Length -1L: 1000 [39in.] (mm) -3L: 3000 [118in.]	<b>Voltage specifications</b> ● <b>G□010E1: DC5V, DC6V, AC200V</b> ● <b>G□010LE1: DC5V, DC6V</b> ● <b>G□010HE1: DC12V</b> ● For AC110V~120V, AC220V~240V specifications, consult us.				
<b>Straight connector with LED indicator (Without connector, contact and lead wire) Negative common</b>  <b>-MSX</b>	<b>Straight connector with LED indicator (Without connector, contact and lead wire) Positive common</b>  <b>-PSX</b>	<b>L connector with LED indicator (Without connector, contact and lead wire) Negative common</b>  <b>-MLX</b>	<b>L connector with LED indicator (Without connector, contact and lead wire) Positive common</b>  <b>-PLX</b>	<b>Straight connector with LED indicator (Connector, contact included. Without lead wire. Negative common)</b>  <b>-MSN</b>	<b>Straight connector with LED indicator (Connector, contact included. Without lead wire. Positive common)</b>  <b>-PSN</b>	<b>L connector with LED indicator (Connector, contact included. Without lead wire. Negative common)</b>  <b>-MLN</b>	<b>L connector with LED indicator (Connector, contact included. Without lead wire. Positive common)</b>  <b>-PLN</b>

# HG010 Series Manifold Order Codes



Manifold model Number of units		Station	Basic model	Valve function	Wiring type	Voltage	
P, R port (10-32UNF) type	HG010M	2 ⋮ 20	F	stn. <input type="checkbox"/>	-2	-11	-PS
			A	stn. <input type="checkbox"/>			-PL
				HG010E1			DC12V, DC24V, AC100V
				HG010LE1			DC12V, DC24V
				HG010HE1			DC24V
				HGV010E1			DC12V, DC24V, AC100V
				HGV010LE1			DC12V, DC24V
	HGV010HE1	DC24V					
	HGA010E1	DC12V, DC24V, AC100V					
	HGA010LE1	DC12V, DC24V					
	HGA010HE1	DC24V					
	HGAV010E1	DC12V, DC24V, AC100V					
	HGAV010LE1	DC12V, DC24V					
	HGAV010HE1	DC24V					
P, R port (NPT1/8) type	HG010MH	2 ⋮ 20	F	stn. <input type="checkbox"/>	-2	-11	-PS
			A	stn. <input type="checkbox"/>			-PL
				HG010E1			DC12V, DC24V, AC100V
				HG010LE1			DC12V, DC24V
				HG010HE1			DC24V
				HGV010E1			DC12V, DC24V, AC100V
				HGV010LE1			DC12V, DC24V
	HGV010HE1	DC24V					
	HGA010E1	DC12V, DC24V, AC100V					
	HGA010LE1	DC12V, DC24V					
	HGA010HE1	DC24V					
	HGAV010E1	DC12V, DC24V, AC100V					
	HGAV010LE1	DC12V, DC24V					
	HGAV010HE1	DC24V					

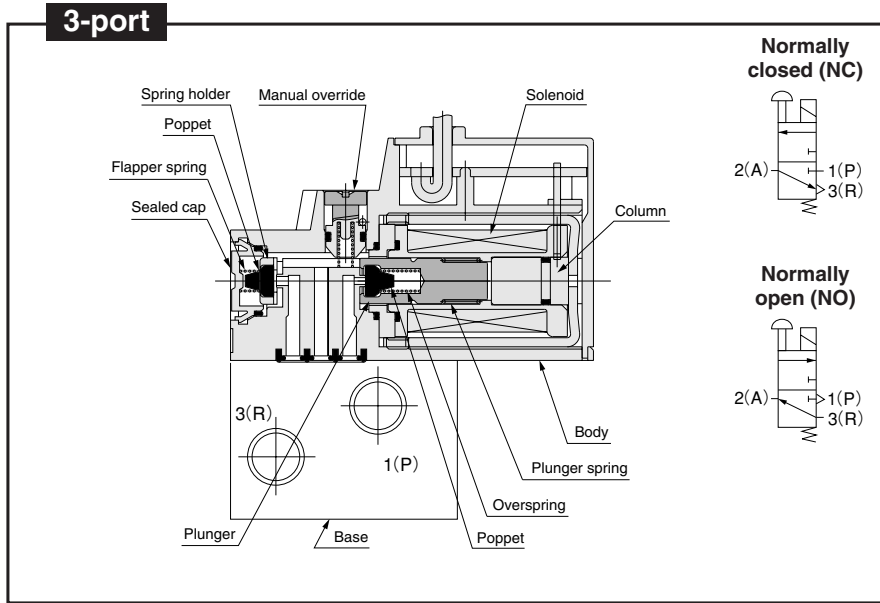
- Valve mounting location from the left-hand side when facing the 2(A) port (□: 1~20)
- Specify the valve type for each station.
- Enter -BP when closing a station with a block-off plate without mounting a valve.
- Normally closed (NC) and normally open (NO) valves cannot be mounted together on the same manifold.

## Additional Parts (To be ordered separately)

<p>Mounting base</p> <p><b>G010-21</b></p>	<p>Mounting base</p> <p><b>G010H-21</b></p>	<p>Sub-base</p> <p><b>HG010-25</b></p>	<p>Lead wire for common wiring</p> <p><b>G010-COM</b></p>	<p>Common pre-wired lead wire assembly</p> <p><b>CR1652W-□</b></p>	<p>Block-off plate</p> <p><b>G010-BP</b></p>
--	---	--	---	--	--

- For direct piping (With gasket)
- For direct piping. For G010HE1-11, GV010HE1 only (With gasket).
- For sub-base piping (With gasket)
- For -PS, -PL, -MS, -ML (Set of 10 pcs.)
- For details, see p.39.

# Operating Principles and Symbols



## Major Parts and Materials

Parts		Materials
Valve	Body	Plastic
	Poppet	Synthetic rubber
	Plunger	Magnetic stainless steel
	Column	Aluminum alloy (anodized)
	Base	Aluminum alloy (anodized)
Manifold	Body	Aluminum alloy (anodized)
	Block-off plate	Plastic
	Seal	Synthetic rubber

## Corresponding Table of Mounting Valve/Manifold

Valve specifications				Valve options				Applicable manifolds			
Piping configuration	Basic model	Power	Flow rate	-2 (2-port)	-11 Note 1 (Normally open, NC)	-21 (Mounting base)	-25 (Sub-base)	HG010M□F	HG010M□A	HG010MH□F	HG010MH□A
Direct piping	HG010E1	1.0W	Standard	●	●	●	□	●	□	●	□
	HG010LE1	0.5W	Small flow	●	●	●	□	●	□	●	□
	HG010HE1	3.2W (1.1W) <sup>Note2</sup>	Large flow	●	●	●	□	●	□	●	□
	HGV010E1	1.0W	Standard	●	●	●	□	●	□	●	□
	HGV010LE1	0.5W	Small flow	●	●	●	□	●	□	●	□
	HGV010HE1	3.2W (1.1W) <sup>Note2</sup>	Large flow	●	●	●	□	●	□	●	□
Base piping	HGA010E1	1.0W	Standard	●	●	□	●	●	□	●	●
	HGA010LE1	0.5W	Small flow	●	●	□	●	●	□	●	●
	HGA010HE1	3.2W (1.1W) <sup>Note2</sup>	Large flow	●	●	□	●	●	□	●	●
	HGAV010E1	1.0W	Standard	●	●	□	●	●	□	●	●
	HGAV010LE1	0.5W	Small flow	●	●	□	●	●	□	●	●
	HGAV010HE1	3.2W (1.1W) <sup>Note2</sup>	Large flow	●	●	□	●	●	□	●	●
2(A) port								(M3)	M3	(M3)	10-32
1(P), 3(R) port								10-32	10-32	NPT1/8	NPT1/8

●: Selectable or mountable

Notes: 1. Care should be taken when ordering, since the initial settings for the normally closed (NC) and normally open (NO) valves cannot be changed later on.

Normally closed (NC) and normally open (NO) valves cannot be mounted together on the same manifold.

2. Values in parentheses ( ) in power column are for holding state.

Dimensions of Direct Piping Solenoid Valve (mm)

HG010E1(-11)-21 (DC5V, DC6V, DC12V, DC24, AC100V)

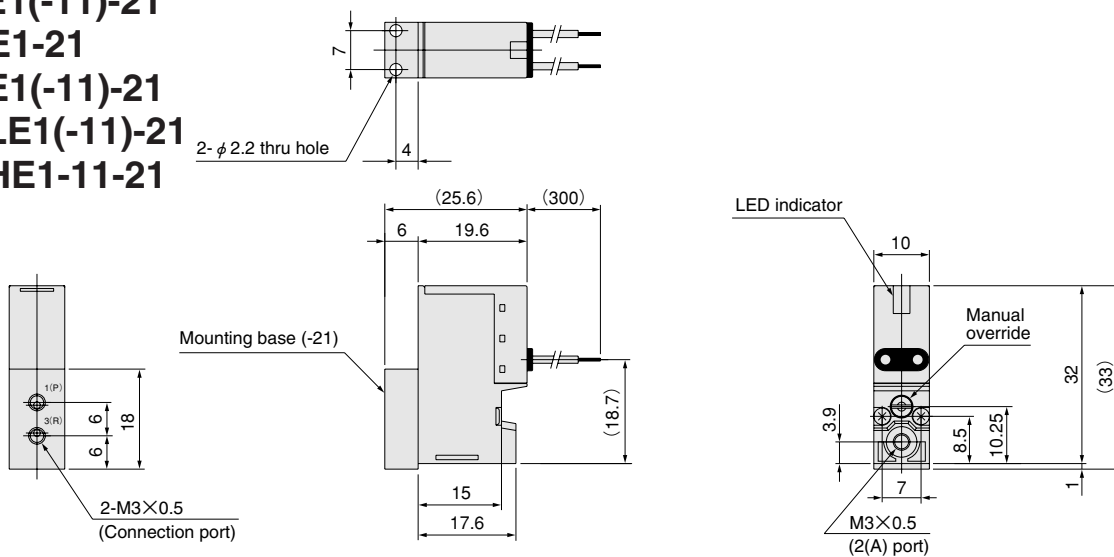
HG010LE1(-11)-21

HG010HE1-21

HGV010E1(-11)-21

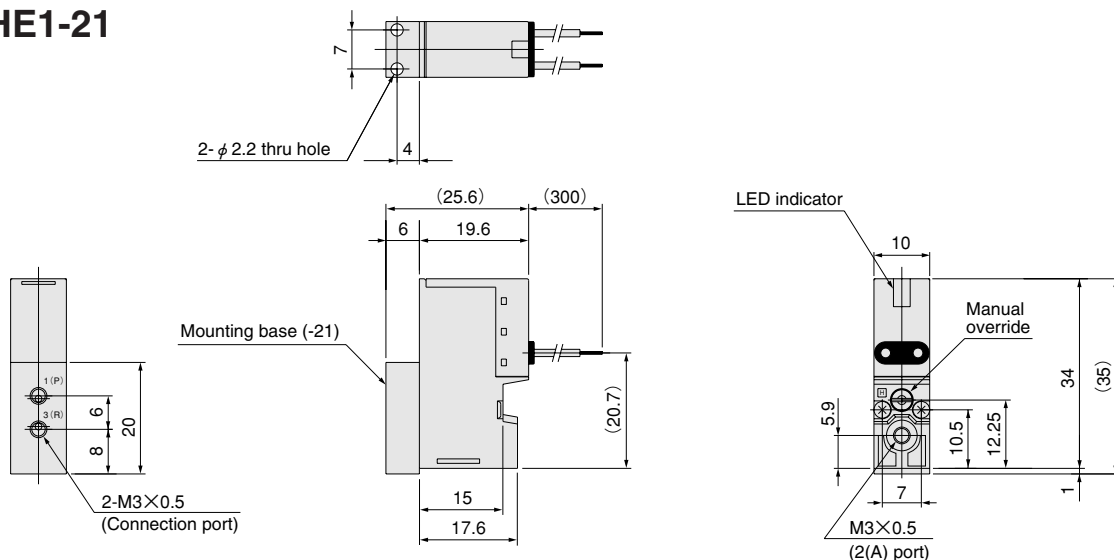
HGV010LE1(-11)-21

HGV010HE1-11-21



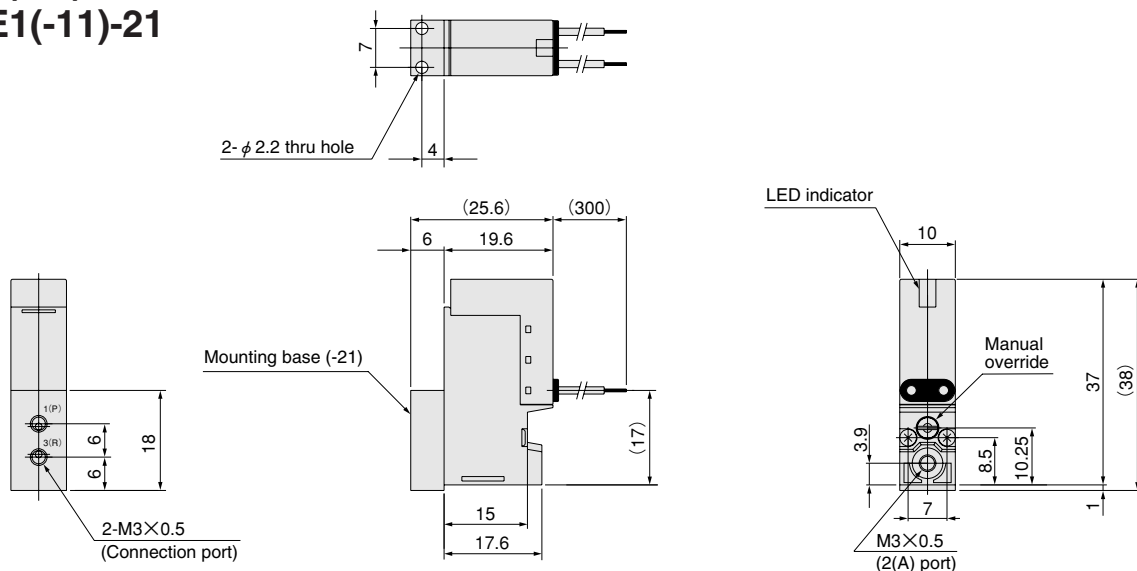
HG010HE1-11-21 (DC24V)

HGV010HE1-21



HG010E1(-11)-21 (AC200V)

HGV010E1(-11)-21





Dimensions of Sub-base Piping Solenoid Valve (mm)

HGA010E1(-11)-25 (DC5V, DC6V, DC12V, DC24V, AC100V)

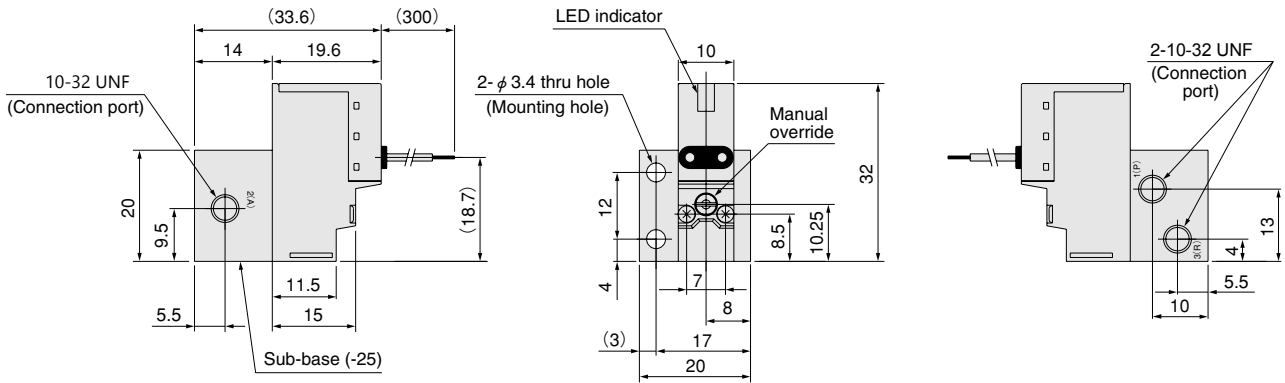
HGA010LE1(-11)-25

HGA010HE1-25

HGAV010E1(-11)-25

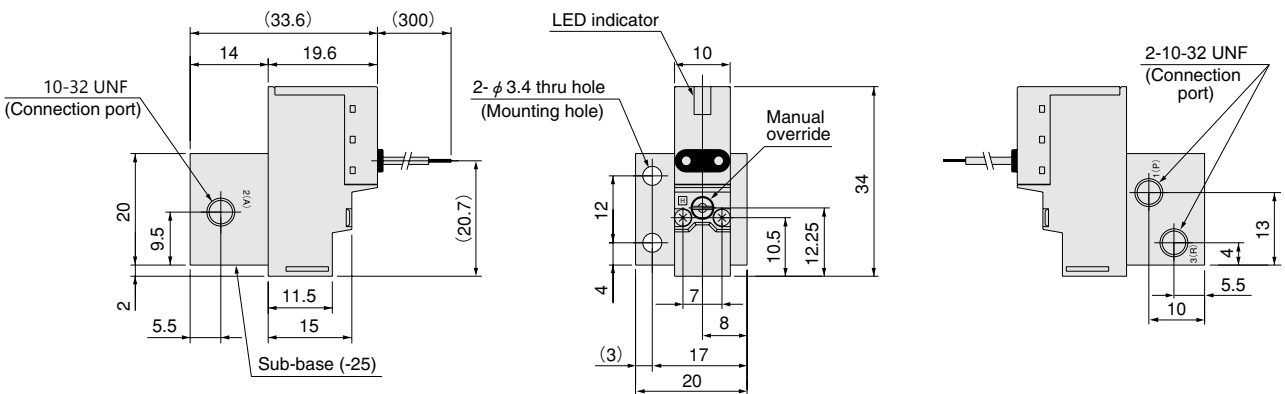
HGAV010LE1(-11)-25

HGAV010HE1-11-25



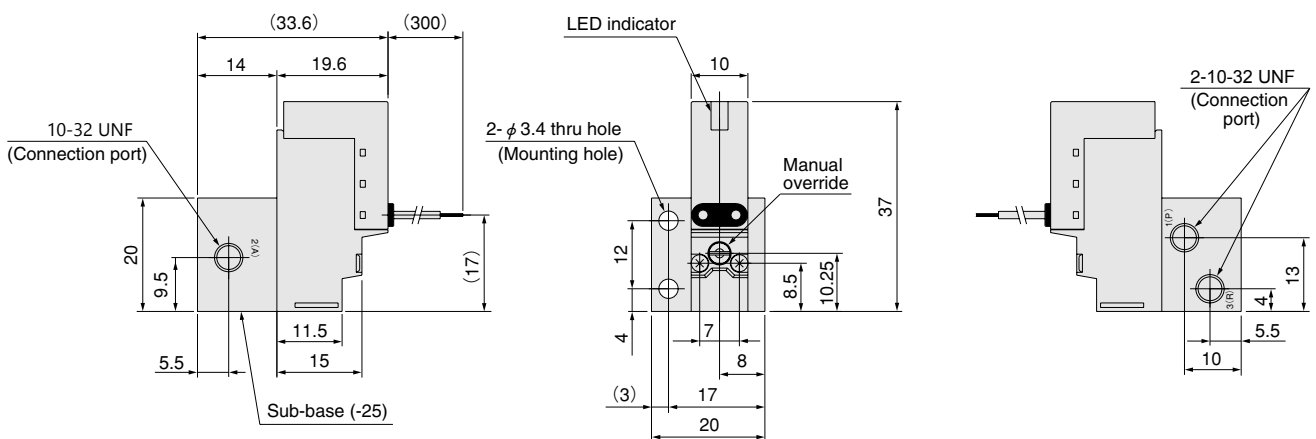
HGA010HE1-11-25 (DC24V)

HGAV010HE1-25



HGA010E1(-11)-25 (AC200V)

HGAV010E1(-11)-25





## Dimensions of Connector (mm)

### Options

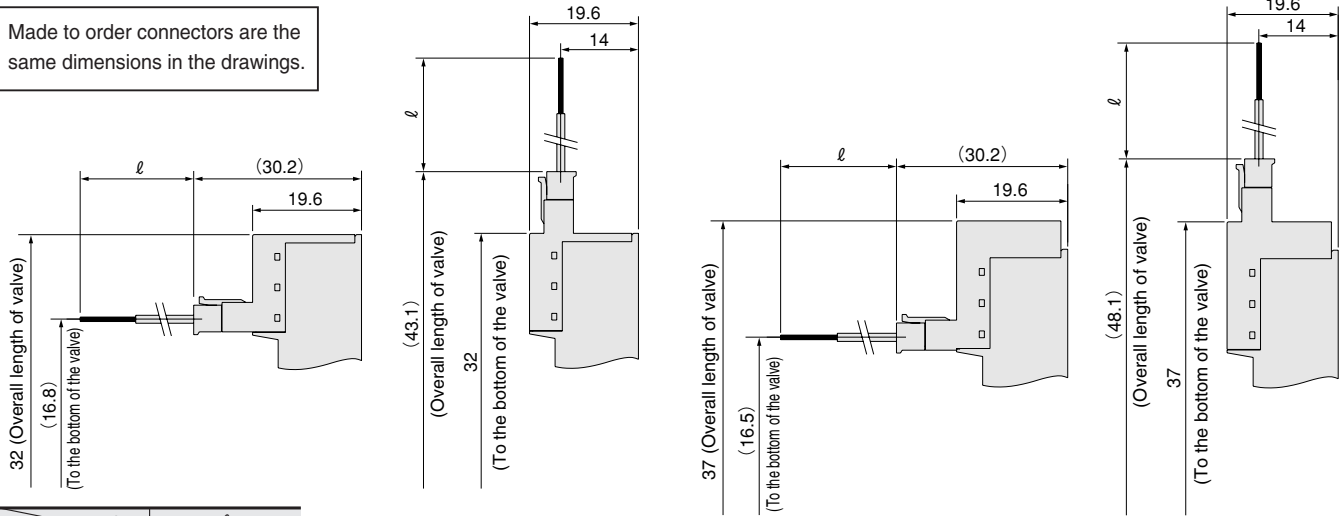
● Solenoid with L connector: **-PL**

● Solenoid with straight connector: **-PS**

● Solenoid with L connector (AC200V): **-PL**

● Solenoid with straight connector (AC200V): **-PS**

Made to order connectors are the same dimensions in the drawings.



Model	Code	$l$
Blank		300
-1L		1000
-3L		3000

## Corresponding Table of Solenoid Options/Voltage

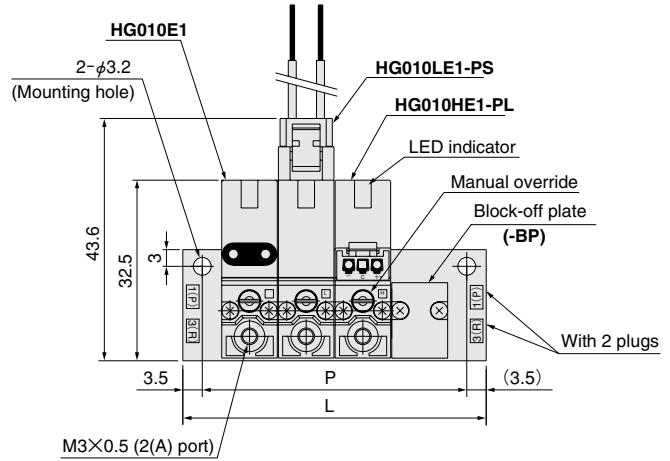
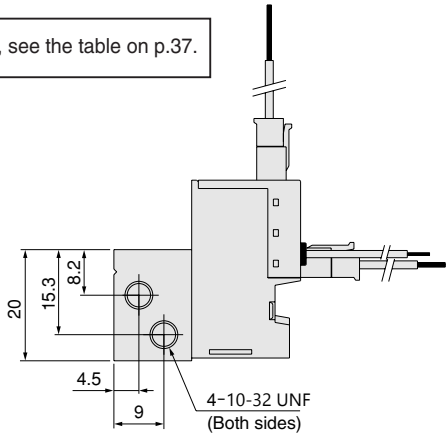
Basic valve models	Voltage specifications	Connector specifications													
		Blank (grommet)	-PS	-PL	-MS	-ML	-PSX	-PLX	-MSX	-MLX	-PSN	-PLN	-MSN	-MLN	
HG(A)010E1 [-11] HG(A)V010E1 [-11] (standard type)	DC5V	△	△	△	△	△	△	△	△	△	△	△	△	△	
	DC6V	△	△	△	△	△	△	△	△	△	△	△	△	△	
	DC12V	●	●	●	△	△	△	△	△	△	△	△	△	△	
	DC24V	●	●	●	△	△	△	△	△	△	△	△	△	△	
	AC100V	●	●	●	△	△	△	△	△	△	△	△	△	△	
	AC200V	△	△	△	△	△	△	△	△	△	△	△	△	△	
HG(A)010LE1 [-11] HG(A)V010LE1 [-11] (low current type)	DC5V	△	△	△	△	△	△	△	△	△	△	△	△		
	DC6V	△	△	△	△	△	△	△	△	△	△	△	△		
	DC12V	●	●	●	△	△	△	△	△	△	△	△	△		
	DC24V	●	●	●	△	△	△	△	△	△	△	△	△		
HG(A)010HE1 [-11] HG(A)V010HE1 [-11] (large flow type)	DC12V	△	△	△	△	△	△	△	△	△	△	△	△		
	DC24V	●	●	●	△	△	△	△	△	△	△	△	△		
Lead wire length options same for all basic models	-1L	△	△	△	△	△	△	△	△	△	△	△	△		
	-3L	△	△	△	△	△	△	△	△	△	△	△	△		

●: Standard specifications △: Made to order

**Dimensions of F Type Manifold (for Direct Piping with Positive Pressure Solenoid Valves) (mm)**

**HG010M□F(1(P), 3(R) port: 10-32 UNF)**

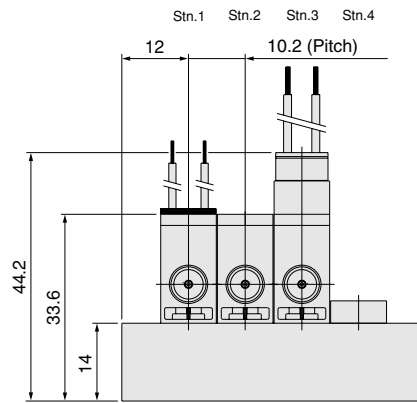
For the piping, see the table on p.37.



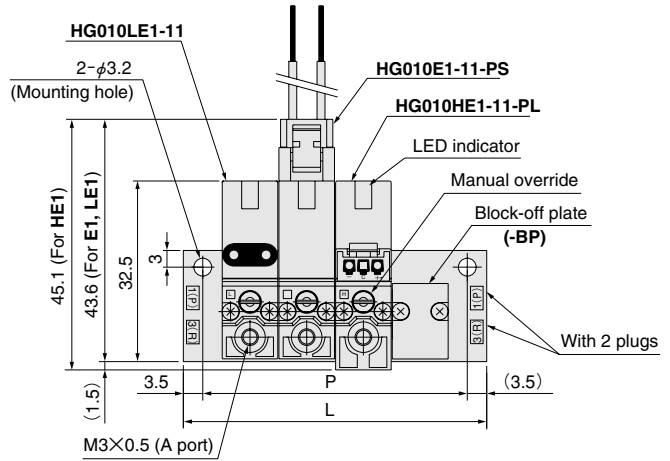
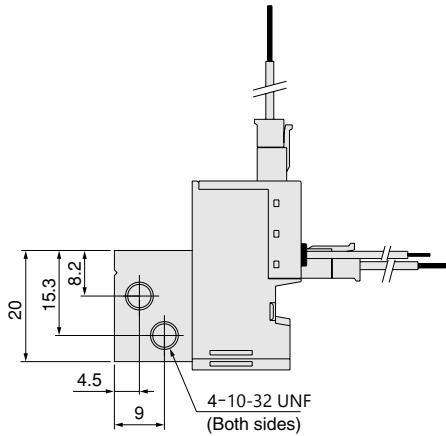
**Unit dimensions**

mm

Number of units	L	P	Number of units	L	P
2	34.2	27.2	12	136.2	129.2
3	44.4	37.4	13	146.4	139.4
4	54.6	47.6	14	156.6	149.6
5	64.8	57.8	15	166.8	159.8
6	75	68	16	177	170
7	85.2	78.2	17	187.2	180.2
8	95.4	88.4	18	197.4	190.4
9	105.6	98.6	19	207.6	200.6
10	115.8	108.8	20	217.8	210.8
11	126	119	—	—	—



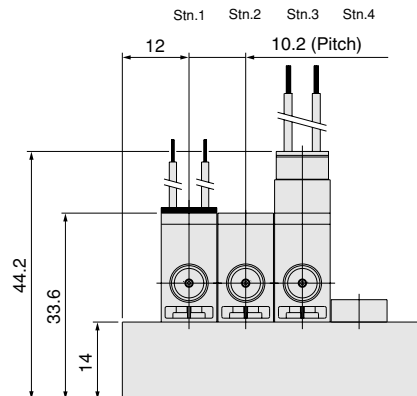
**HG010M□F(1(P), 3(R) port: 10-32 UNF)**



**Unit dimensions**

mm

Number of units	L	P	Number of units	L	P
2	34.2	27.2	12	136.2	129.2
3	44.4	37.4	13	146.4	139.4
4	54.6	47.6	14	156.6	149.6
5	64.8	57.8	15	166.8	159.8
6	75	68	16	177	170
7	85.2	78.2	17	187.2	180.2
8	95.4	88.4	18	197.4	190.4
9	105.6	98.6	19	207.6	200.6
10	115.8	108.8	20	217.8	210.8
11	126	119	—	—	—

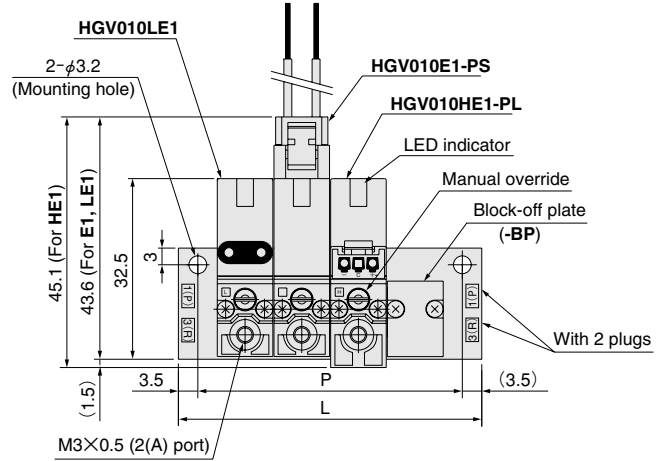
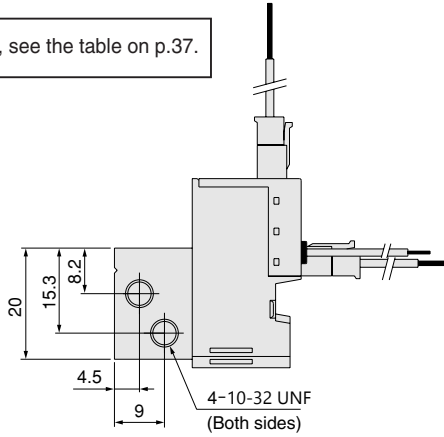


For optional wiring, see p.50.

## Dimensions of F Type Manifold (for Direct Piping with Vacuum Solenoid Valves) (mm)

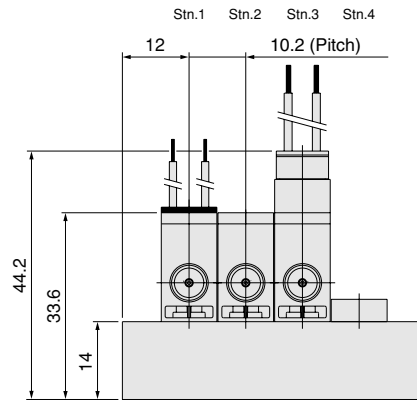
### HG010M□F(1(P), 3(R) port: 10-32 UNF)

For the piping, see the table on p.37.

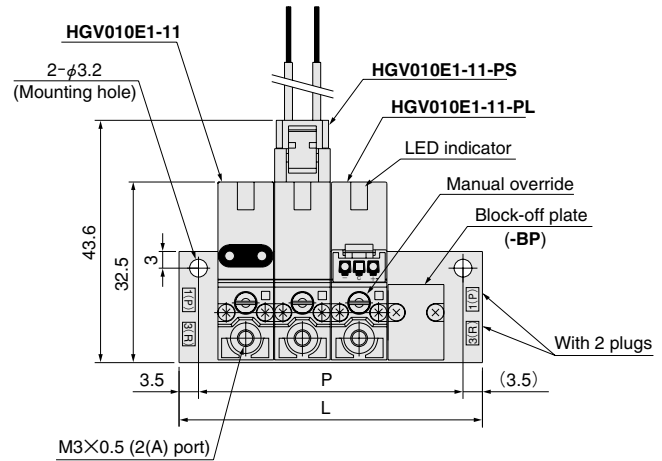
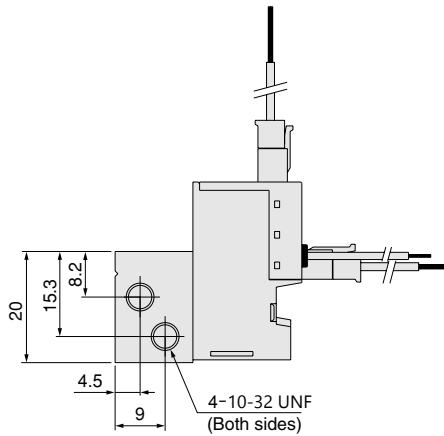


### Unit dimensions

		mm			
Number of units	L	P	Number of units	L	P
2	34.2	27.2	12	136.2	129.2
3	44.4	37.4	13	146.4	139.4
4	54.6	47.6	14	156.6	149.6
5	64.8	57.8	15	166.8	159.8
6	75	68	16	177	170
7	85.2	78.2	17	187.2	180.2
8	95.4	88.4	18	197.4	190.4
9	105.6	98.6	19	207.6	200.6
10	115.8	108.8	20	217.8	210.8
11	126	119	—	—	—

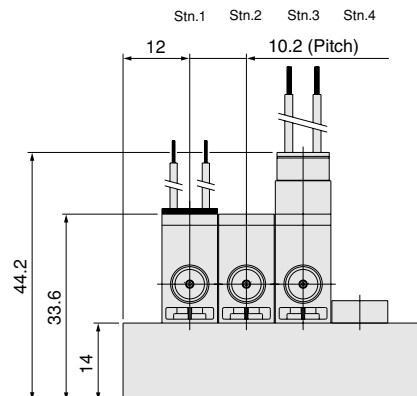


### HG010M□F(1(P), 3(R) port: 10-32 UNF)



### Unit dimensions

		mm			
Number of units	L	P	Number of units	L	P
2	34.2	27.2	12	136.2	129.2
3	44.4	37.4	13	146.4	139.4
4	54.6	47.6	14	156.6	149.6
5	64.8	57.8	15	166.8	159.8
6	75	68	16	177	170
7	85.2	78.2	17	187.2	180.2
8	95.4	88.4	18	197.4	190.4
9	105.6	98.6	19	207.6	200.6
10	115.8	108.8	20	217.8	210.8
11	126	119	—	—	—

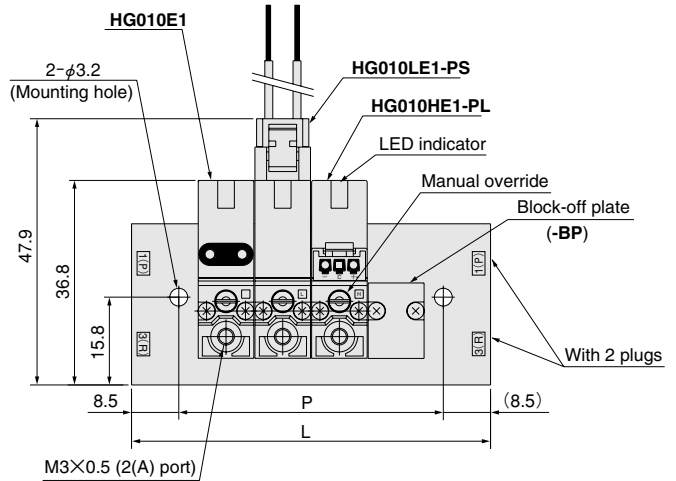
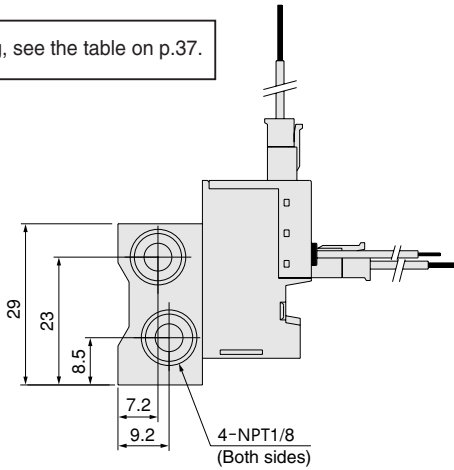


For optional wiring, see p.50.

**Dimensions of F Type Manifold (for Direct Piping with Positive Pressure Solenoid Valves) (mm)**

**HG010MH□F(1(P), 3(R) port: NPT1/8)**

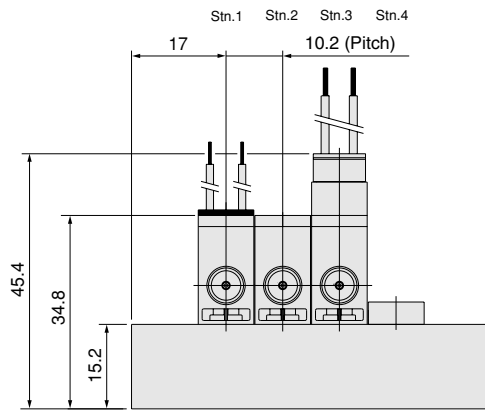
For the piping, see the table on p.37.



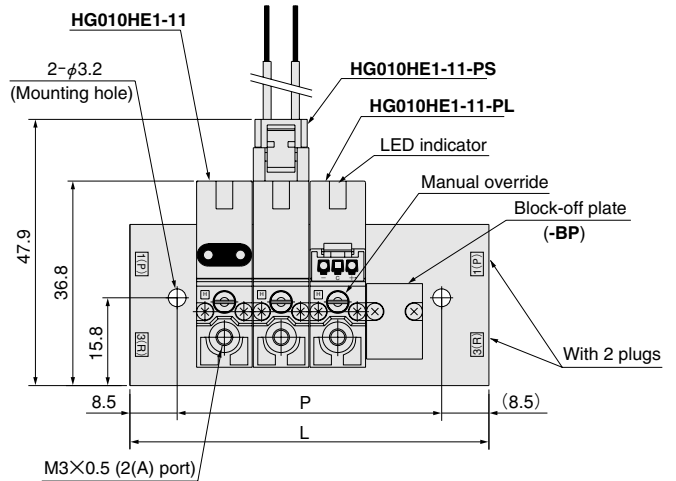
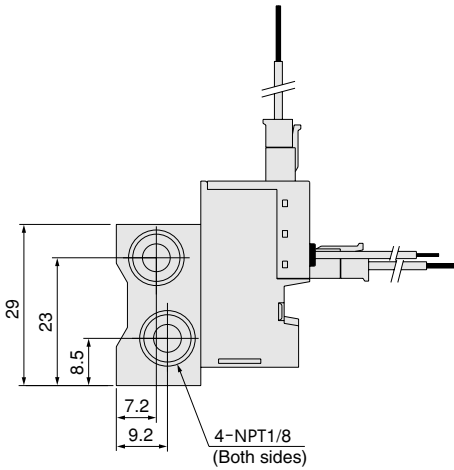
**Unit dimensions**

mm

Number of units	L	P	Number of units	L	P
2	44.2	27.2	12	146.2	129.2
3	54.4	37.4	13	156.4	139.4
4	64.6	47.6	14	166.6	149.6
5	74.8	57.8	15	176.8	159.8
6	85	68	16	187	170
7	95.2	78.2	17	197.2	180.2
8	105.4	88.4	18	207.4	190.4
9	115.6	98.6	19	217.6	200.6
10	125.8	108.8	20	227.8	210.8
11	136	119	—	—	—



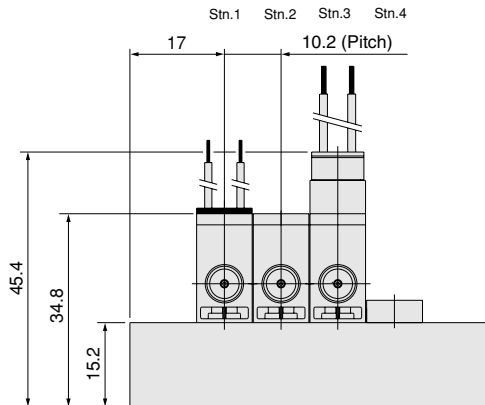
**HG010MH□F(1(P), 3(R) port: NPT1/8)**



**Unit dimensions**

mm

Number of units	L	P	Number of units	L	P
2	44.2	27.2	12	146.2	129.2
3	54.4	37.4	13	156.4	139.4
4	64.6	47.6	14	166.6	149.6
5	74.8	57.8	15	176.8	159.8
6	85	68	16	187	170
7	95.2	78.2	17	197.2	180.2
8	105.4	88.4	18	207.4	190.4
9	115.6	98.6	19	217.6	200.6
10	125.8	108.8	20	227.8	210.8
11	136	119	—	—	—

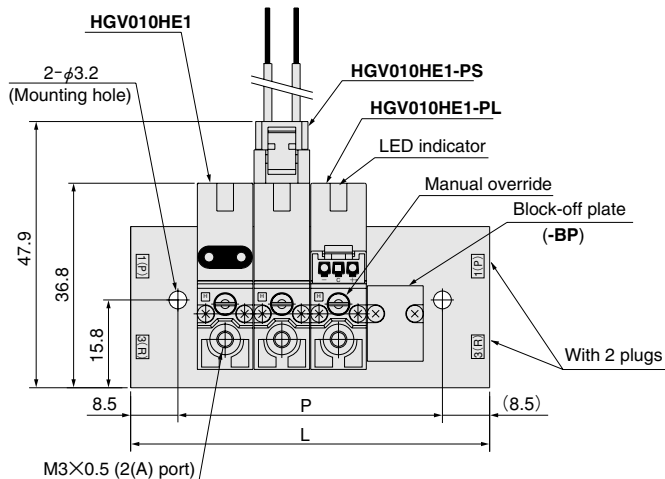
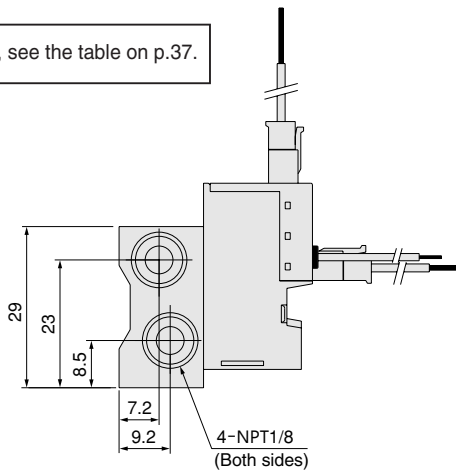


For optional wiring, see p.50.

# Dimensions of F type Manifold (for Direct Piping with Vacuum Solenoid Valves) (mm)

## HG010MH□F(1(P), 3(R) port: NPT1/8)

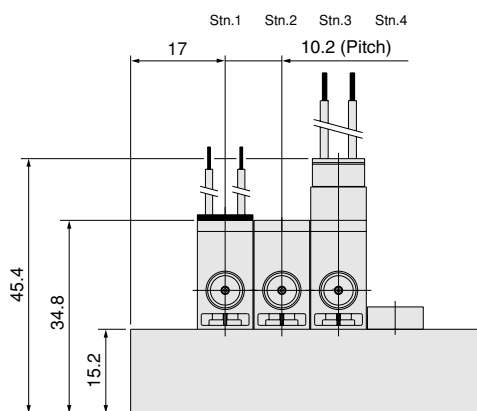
For the piping, see the table on p.37.



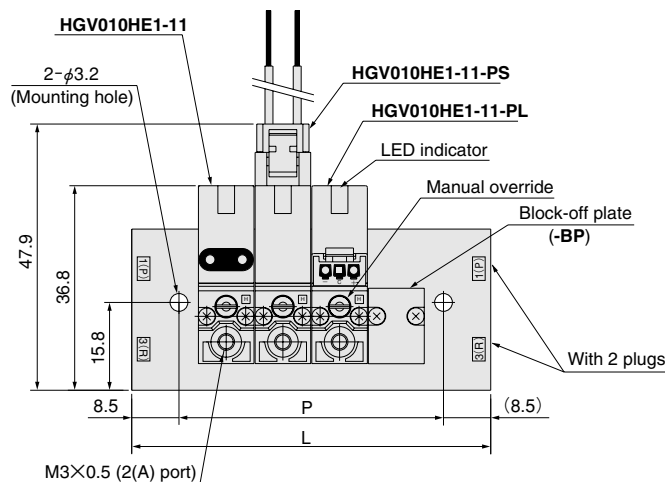
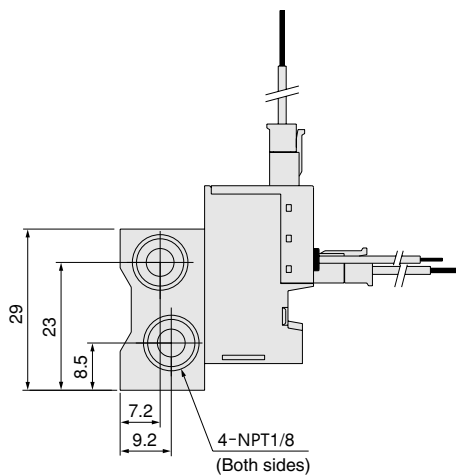
### Unit dimensions

mm

Number of units	L	P	Number of units	L	P
2	44.2	27.2	12	146.2	129.2
3	54.4	37.4	13	156.4	139.4
4	64.6	47.6	14	166.6	149.6
5	74.8	57.8	15	176.8	159.8
6	85	68	16	187	170
7	95.2	78.2	17	197.2	180.2
8	105.4	88.4	18	207.4	190.4
9	115.6	98.6	19	217.6	200.6
10	125.8	108.8	20	227.8	210.8
11	136	119	—	—	—



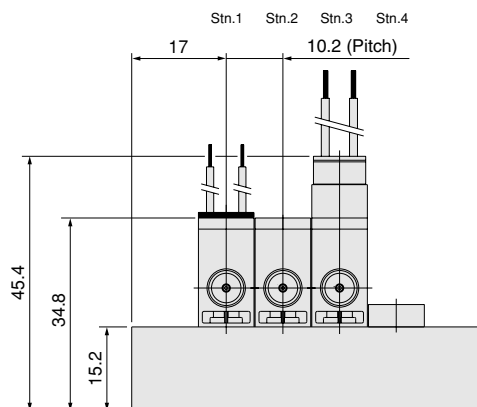
## HG010MH□F(1(P), 3(R) port: NPT1/8)



### Unit dimensions

mm

Number of units	L	P	Number of units	L	P
2	44.2	27.2	12	146.2	129.2
3	54.4	37.4	13	156.4	139.4
4	64.6	47.6	14	166.6	149.6
5	74.8	57.8	15	176.8	159.8
6	85	68	16	187	170
7	95.2	78.2	17	197.2	180.2
8	105.4	88.4	18	207.4	190.4
9	115.6	98.6	19	217.6	200.6
10	125.8	108.8	20	227.8	210.8
11	136	119	—	—	—

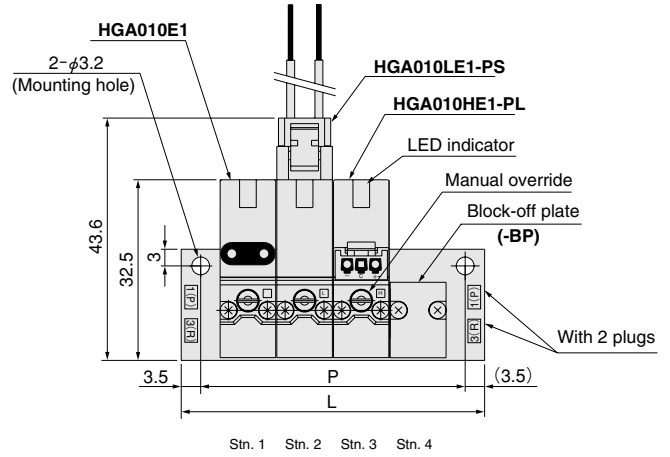
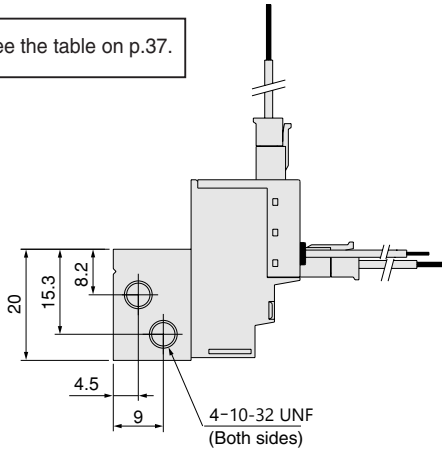


For optional wiring, see p.50.

**Dimensions of A Type Manifold (for Manifold Piping with Positive Pressure Solenoid Valves) (mm)**

**HG010M□A (1(P), 3(R) port: 10-32 UNF)**

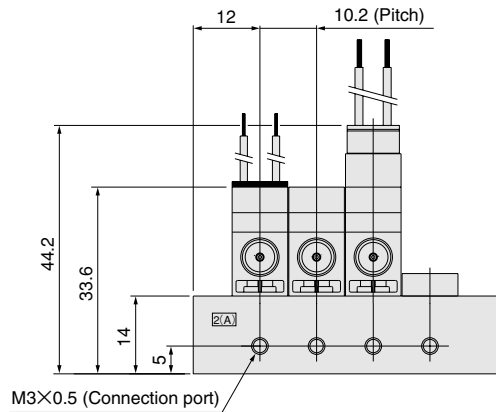
For the piping, see the table on p.37.



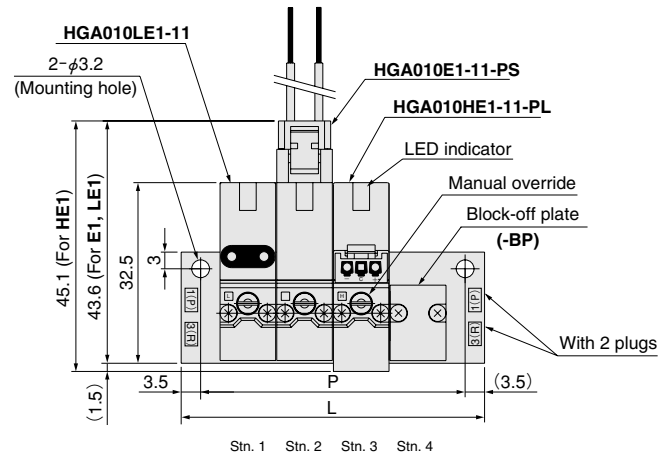
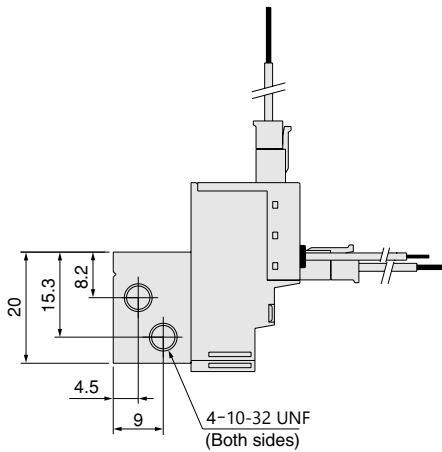
**Unit dimensions**

mm

Number of units	L	P	Number of units	L	P
2	34.2	27.2	12	136.2	129.2
3	44.4	37.4	13	146.4	139.4
4	54.6	47.6	14	156.6	149.6
5	64.8	57.8	15	166.8	159.8
6	75	68	16	177	170
7	85.2	78.2	17	187.2	180.2
8	95.4	88.4	18	197.4	190.4
9	105.6	98.6	19	207.6	200.6
10	115.8	108.8	20	217.8	210.8
11	126	119	—	—	—



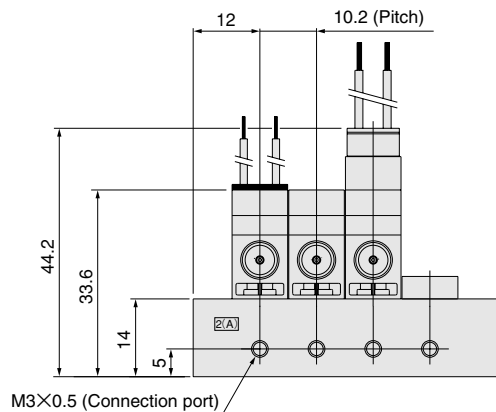
**HG010M□A (1(P), 3(R) port: 10-32 UNF)**



**Unit dimensions**

mm

Number of units	L	P	Number of units	L	P
2	34.2	27.2	12	136.2	129.2
3	44.4	37.4	13	146.4	139.4
4	54.6	47.6	14	156.6	149.6
5	64.8	57.8	15	166.8	159.8
6	75	68	16	177	170
7	85.2	78.2	17	187.2	180.2
8	95.4	88.4	18	197.4	190.4
9	105.6	98.6	19	207.6	200.6
10	115.8	108.8	20	217.8	210.8
11	126	119	—	—	—

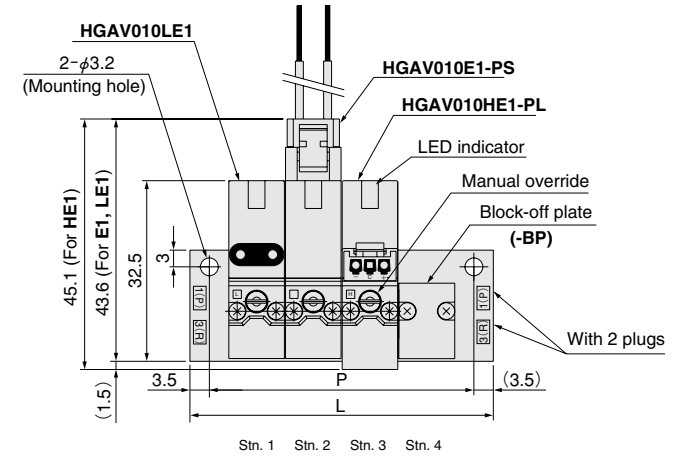
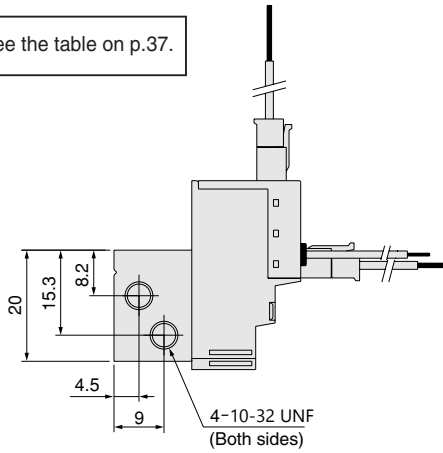


For optional wiring, see p.50.

**Dimensions of A Type Manifold (for Manifold Piping with Vacuum Solenoid Valves) (mm)**

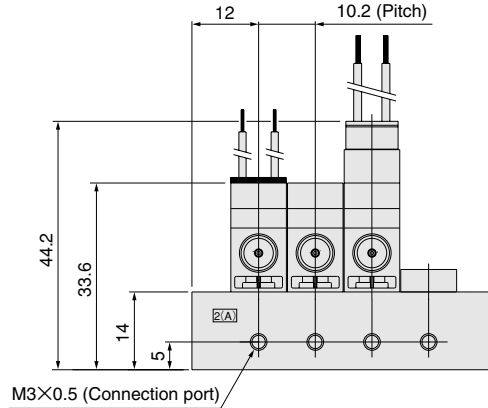
**HG010M□A (1(P), 3(R) port: 10-32 UNF)**

For the piping, see the table on p.37.

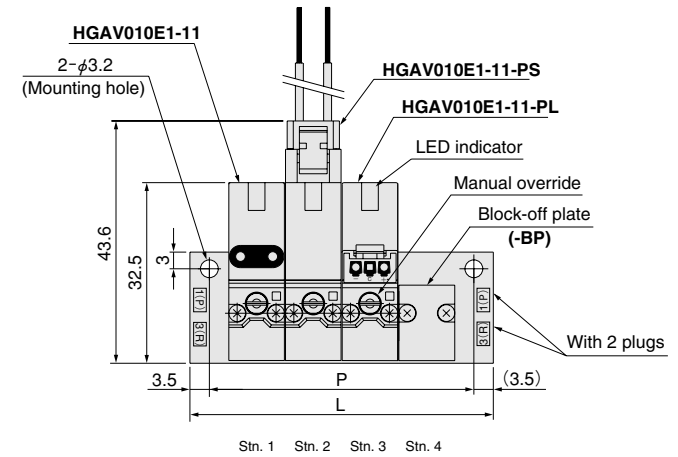
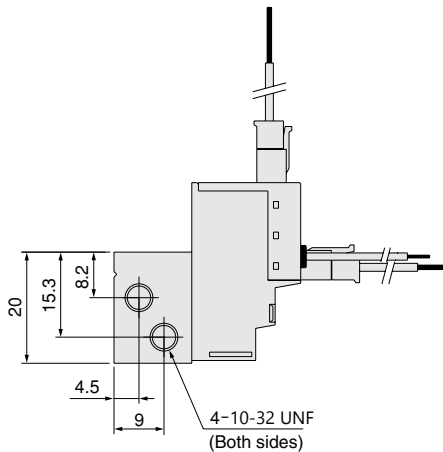


**Unit dimensions**

		mm			
Number of units	L	P	Number of units	L	P
2	34.2	27.2	12	136.2	129.2
3	44.4	37.4	13	146.4	139.4
4	54.6	47.6	14	156.6	149.6
5	64.8	57.8	15	166.8	159.8
6	75	68	16	177	170
7	85.2	78.2	17	187.2	180.2
8	95.4	88.4	18	197.4	190.4
9	105.6	98.6	19	207.6	200.6
10	115.8	108.8	20	217.8	210.8
11	126	119	—	—	—

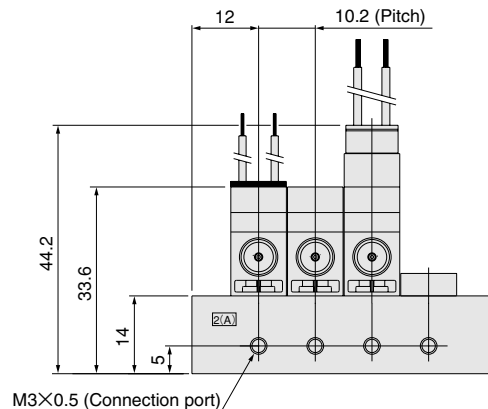


**HG010M□A (1(P), 3(R) port: 10-32 UNF)**



**Unit dimensions**

		mm			
Number of units	L	P	Number of units	L	P
2	34.2	27.2	12	136.2	129.2
3	44.4	37.4	13	146.4	139.4
4	54.6	47.6	14	156.6	149.6
5	64.8	57.8	15	166.8	159.8
6	75	68	16	177	170
7	85.2	78.2	17	187.2	180.2
8	95.4	88.4	18	197.4	190.4
9	105.6	98.6	19	207.6	200.6
10	115.8	108.8	20	217.8	210.8
11	126	119	—	—	—

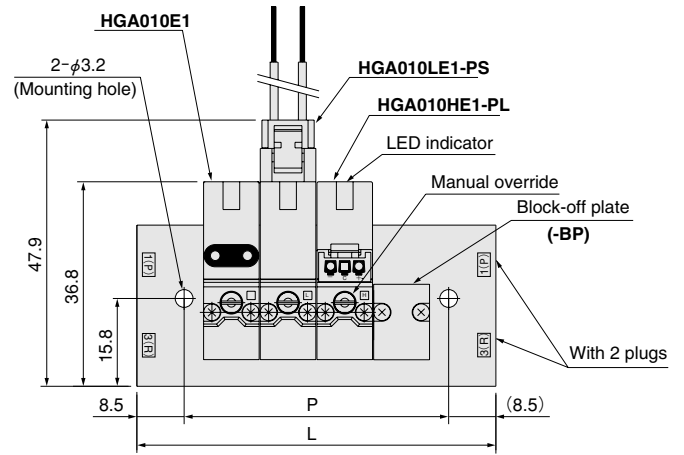
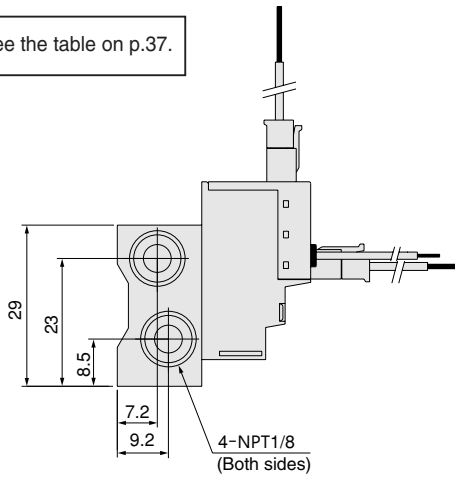


For optional wiring, see p.50.

**Dimensions of A Type Manifold (for Manifold Piping with Positive Pressure Solenoid Valves) (mm)**

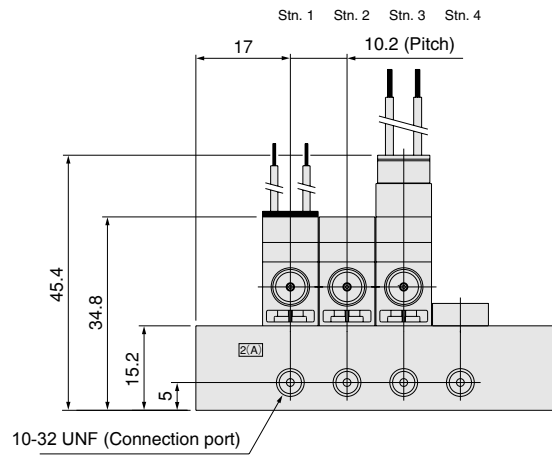
**HG010MH□A (1(P), 3(R) port: NPT1/8)**

For the piping, see the table on p.37.

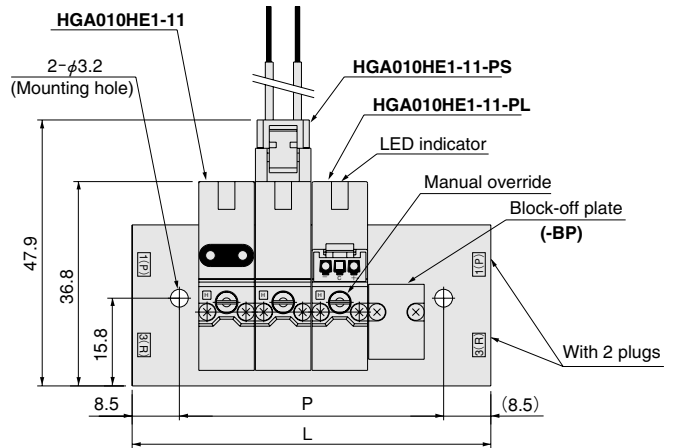
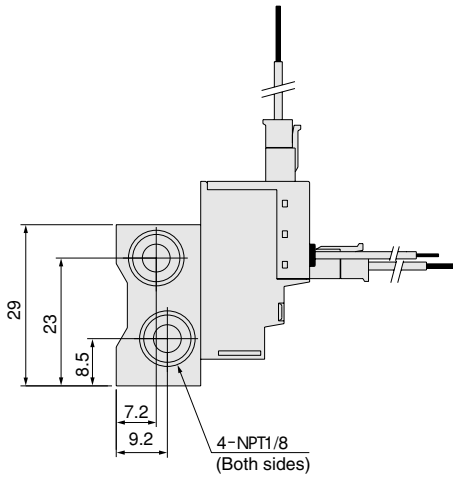


**Unit dimensions**

		mm			
Number of units	L	P	Number of units	L	P
2	44.2	27.2	12	146.2	129.2
3	54.4	37.4	13	156.4	139.4
4	64.6	47.6	14	166.6	149.6
5	74.8	57.8	15	176.8	159.8
6	85	68	16	187	170
7	95.2	78.2	17	197.2	180.2
8	105.4	88.4	18	207.4	190.4
9	115.6	98.6	19	217.6	200.6
10	125.8	108.8	20	227.8	210.8
11	136	119	—	—	—

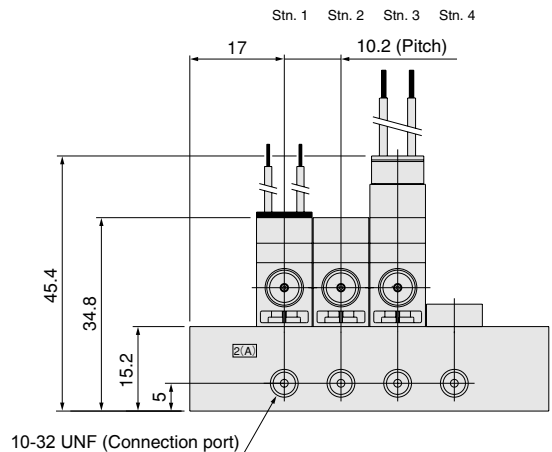


**HG010MH□A (1(P), 3(R) port: NPT1/8)**



**Unit dimensions**

		mm			
Number of units	L	P	Number of units	L	P
2	44.2	27.2	12	146.2	129.2
3	54.4	37.4	13	156.4	139.4
4	64.6	47.6	14	166.6	149.6
5	74.8	57.8	15	176.8	159.8
6	85	68	16	187	170
7	95.2	78.2	17	197.2	180.2
8	105.4	88.4	18	207.4	190.4
9	115.6	98.6	19	217.6	200.6
10	125.8	108.8	20	227.8	210.8
11	136	119	—	—	—



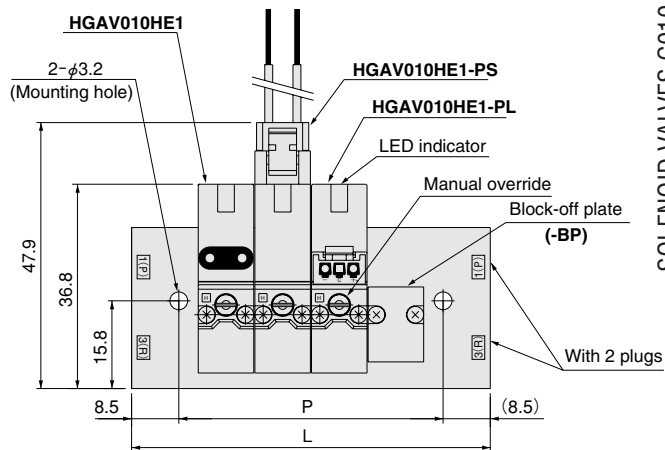
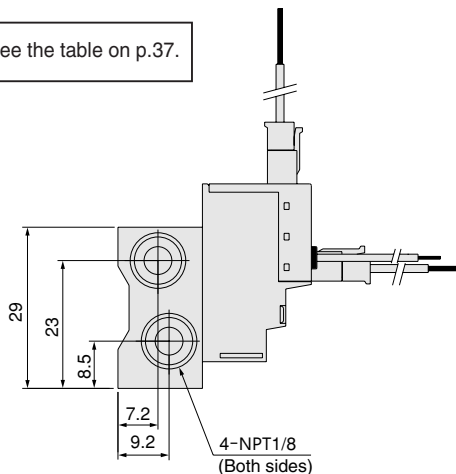
For optional wiring, see p.50.



# Dimensions of A Type Manifold (for Manifold Piping with Vacuum Solenoid Valves) (mm)

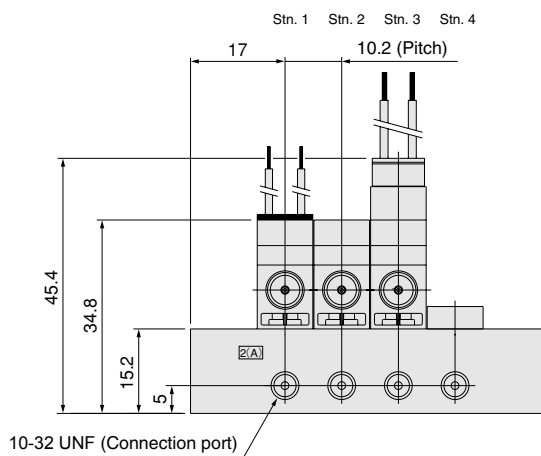
## HG010MH□A (1(P), 3(R) port: NPT1/8)

For the piping, see the table on p.37.

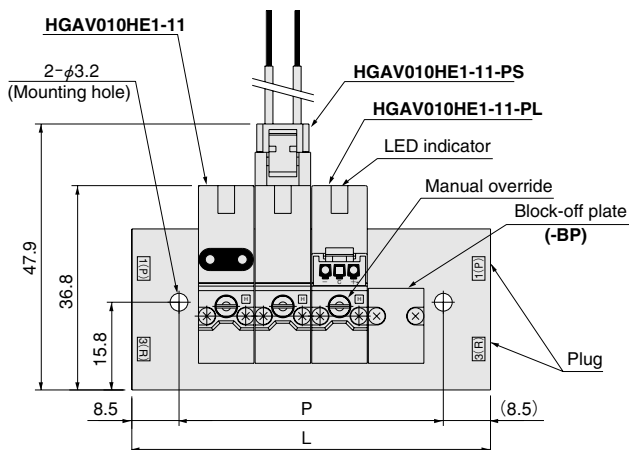
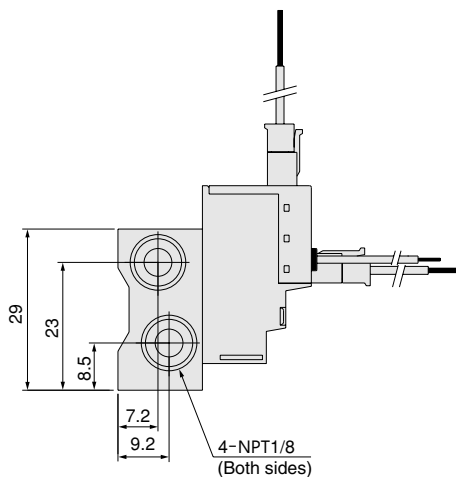


### Unit dimensions

		mm			
Number of units	L	P	Number of units	L	P
2	44.2	27.2	12	146.2	129.2
3	54.4	37.4	13	156.4	139.4
4	64.6	47.6	14	166.6	149.6
5	74.8	57.8	15	176.8	159.8
6	85	68	16	187	170
7	95.2	78.2	17	197.2	180.2
8	105.4	88.4	18	207.4	190.4
9	115.6	98.6	19	217.6	200.6
10	125.8	108.8	20	227.8	210.8
11	136	119	—	—	—

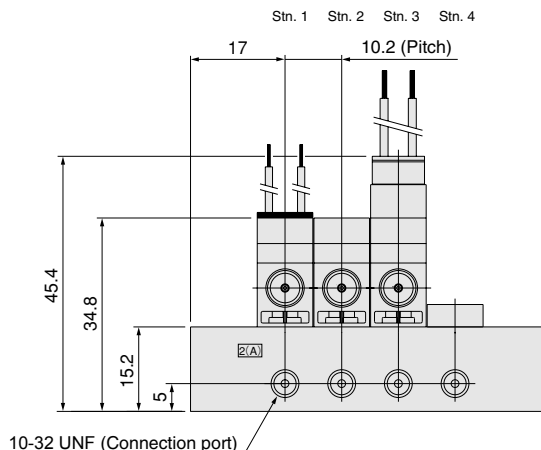


## HG010MH□A (1(P), 3(R) port: NPT1/8)



### Unit dimensions

		mm			
Number of units	L	P	Number of units	L	P
2	44.2	27.2	12	146.2	129.2
3	54.4	37.4	13	156.4	139.4
4	64.6	47.6	14	166.6	149.6
5	74.8	57.8	15	176.8	159.8
6	85	68	16	187	170
7	95.2	78.2	17	197.2	180.2
8	105.4	88.4	18	207.4	190.4
9	115.6	98.6	19	217.6	200.6
10	125.8	108.8	20	227.8	210.8
11	136	119	—	—	—



For optional wiring, see p.50.