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KOGANEI

VALVES GENERAL CATALOG

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POWERFUL & LOW POWER CONSUMPTION SOLENOID VALVES 010 SERIES

The Solenoid Valves 010 series achieves high reliability, powerful action, and low current with a thin-body 10mm [0.394in.] valve width.

All of these highly reliable 5-port valves incorporate flywheel diodes for surge suppression as a standard feature, to ensure highly reliable operation.

Capable of mounting values on the manifolds for up to 20 units, this series is the optimum response to customers' requirements for both economy and diversity, enabling operation for double acting cylinders up to ϕ 16 [0.630in.] bore.



Basic Models and Configuration



SOLENOID VALVES 010 series

Basic Models and Valve Functions

Basic model	Direct piping, F type manifold	Sub-base piping, A type manifold			
Item	010-4E1	A010-4E1 ^{Note}			
Number of positions	2 positions				
Number of ports	5 ports				
Valve function	Single solenoid				

Remark: For optional specifications and order code, see p.65.

Note: A010-4E1, except one with a sub-base, is for A type manifolds only. It cannot be used as a single unit.

Specifications

Basic mode	Direct piping, F type manifold	Sub-base piping, A type manifold			
Item	010-4E1	A010-4E1			
Media	Α	ir			
Operation type	Internal	pilot type			
Effective area (Cv) Note1 mm ²	1(P)→4(A) 0.2 [0.01] 4(A)→	•5(R1), 2(B)→3(R2) 0.3 [0.02]			
Port size Note2	M3>	<0.5			
Lubrication	Not re	quired			
Operating pressure range MPa {kgf/cm ² } [psi.]	0.15~0.7 {1.5~7.1} [22~102]				
Proof pressure MPa {kgf/cm ² } [psi.]	1.05 {10.7} [152]				
Response time Note 3 ms DC5V, DC12V	4/8 or below				
ON/OFF DC6V, DC24V	4/8 or below				
Maximum operating frequency Hz	5				
Minimum time to energize for self holding ms	—				
Operating temperature range (atmosphere and media) °C [°F]	5~50 [41~122]				
Shock resistance m/s ² {G}	1373.0 {140.0} (Axial	direction 392.3 {40.0})			
Mounting direction	Any				

Notes: 1. For details, see the effective area on p.64.

For details, see the port size on p.64.
 Values when air pressure is 0.5MPa {5.1kgf/cm²} [73psi.].

Solenoid Specifications

Rated voltage		DC5V	DC6V	DC12V	DC24V		
Item							
Туре			With built-in flywheel dioc	les for surge suppression			
Operating voltage	range DC 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%)		
Current (Power consumption when mA (W) rated voltage is applied)		246 (1.2)	201 (1.2)	103 (1.2)	52 (1.2)		
Maximum allowable	leakage current mA	30	25	15	5		
Insulation resistan	ce MΩ	Over 100					
Mixing the aNote	Standard	Grommet type					
winng typenote	Optional	Plug connector type					
Lead wire length ^{No}	te	300 mm [11.8in.]					
Color of lead wire		Green (+) Black (-) Blue (+) Black (-) Brown (+) Black (-) Red (+) Black (-)			Red (+) Black (-)		
Color of LED indicator Red							
Surge suppression	n (as standard)		Flywhee	el diode			

Note: See made to order on p.65.

Flow Rate





Solenoid Valve Mass

a loz.1

		4(A)-	→5(F	1)					
MPa	0.7				Supply	press	sure _		Rema
Θ	0.6		-			t	+		
ssur	0.5					0.6	0.7 V		
et pre	0.4		\vdash	$ \ge $	0.5	Ň	╢		Ma
outle	0.3		\vdash	\sim	<u>4</u>				
/alve	0.2	-	0.2	0.3	h	\vdash			
>	0.1		$\left \right\rangle$	\vdash				010-4E1	
	0		5 1	0 1	5 2	20	25	A010-4E1-25	

Flow rate *l*/min(ANR)



1MPa = 145psi., 1 & /min = 0.0353ft.3/min

How to read the graph (For $1(P) \rightarrow 4(A)$) When the supply pressure is 0.5MPa [73psi.] and flow rate is 12 ℓ /min [0.42ft3/min] (ANR), the valve outlet pressure becomes 0.36MPa [52psi.].

Basic model	Mass
010-4E1	20 [0.71]
A010-4E1	20 [0.71] (38 [1.34])
Pemark: Figures in perentheses () are the mass u	ith sub-base: -25

port on A type manifold.

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

nifold Mass

Manifold Mass		g [oz.]
Manifold model	Mass calculation of each unit (n=number of units)	Block-off plate
010MB_F	(8.5×n)+13 [(0.300×n)+0.46]	3 [0.11]
010MB A	(13.5×n)+15 [(0.476×n)+0.53]	3 [0.11]

Solenoid Valve Port Size

Basic model	Port	Port specification	Port size
010-4E1 ^{Note}	1(P), 4(A), 2(B)	Female thread	M3×0.5
A010-4E1-25	1(P)	Female thread	M5×0.8
	4(A), 2(B)	Female thread	M3×0.5
	3, 5(R)	Female thread	M5×0.8

Note: The 3(R2) and 5(R1) ports are 1.2mm diameter holes, not to be used for connecting.

Manifold Port Size

Manifold model Port		Location of piping port	Port size
	1(P)	Manifold	M5×0.8
010MB□F	4(A), 2(B)	Valve	M3×0.5
	3, 5(R)	Manifold	M5×0.8
010MB□A	1(P)		M5×0.8
	4(A), 2(B)	Manifold	M3×0.5
	3, 5(R)		M5×0.8

010 Series Solenoid Valve Order Code

		Mounting base/su Without mounting base and sub-base	b-base	Muffler Without muffler	Wiring Lead 300mm Gromm	type wire length: [11.8in.] is standard. et type Blank	
		With mounting base -21 • Attached to the valve body at shipping.	With sub-base	With muffler -75 •For sub-base piping	Straight with LEI	connector L connector with LED indicator	
Solenoid Valve	Order Code	Basic model		V	¥	Voltage]
Direct piping	5-port single solenoid	010-4E1	-21		-PSL	DC5V, DC6V	
Sub-base piping	5-port single solenoid	A010-4E1 ^{Note}	-25	-75	-PLL	DC12V, DC24V	

Note : Cannot be used as a single unit.



plate without mounting a valve.

Manifold Order Code

	Manif	Manifold model Number of units			Basic model]	Voltage
5-port single solenoid	010MB	2 : 20	F	stn.□ : stn.□	-010-4E1 -A010-4E1	-PSL -PLL	DC5V, DC6V DC12V, DC24V
●Valve mounting location from the —— left-hand side when facing the				Specify the Enter -BP	e valve type for e when closing a s	each station. station with a block-off	

left-hand side when facing the 4(A), 2(B) ports. (\Box : 1 \sim 20)

Additional Parts (To be ordered separately)





Made to Order





Locking protruding type manual override



● For plug connector ● For 010-4E1, ● Length -1L: 1000 [39in.] A010-4E1 (mm) -3L: 3000 [118in.]

-1L

-3L



Major Parts and Materials

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

010-4E1

010-4E1

19.5





Options



Made to Order



		mm	
Model	Code	ℓ (Lead wire length)	
-PSL, -PLL, -L (standard length)		300	
Made to order	-1L	1000	
	-3L	3000	
-			

010MB 🗌 F

010MBF







For wiring options and made to order, see p.68.

Unit dimensions

Model	P	L	Model	Р	L
010MB2F	27.2	34.2	010MB12F	129.2	136.2
ЗF	37.4	44.4	13F	139.4	146.4
4F	47.6	54.6	14F	149.6	156.6
5F	57.8	64.8	15F	159.8	166.8
6F	68.0	75.0	16F	170.0	177.0
7F	78.2	85.2	17F	180.2	187.2
8F	88.4	95.4	18F	190.4	197.4
9F	98.6	105.6	19F	200.6	207.6
10F	108.8	115.8	20F	210.8	217.8
11F	119.0	126.0		—	—

010MB 🗌 A







For wiring options and made to order, see p.68.

Unit dimensions

Model	Р	L	Model	Р	L
010MB2A	27.2	34.2	010MB12A	129.2	136.2
ЗA	37.4	44.4	13A	139.4	146.4
4A	47.6	54.6	14A	149.6	156.6
5A	57.8	64.8	15A	159.8	166.8
6A	68.0	75.0	16A	170.0	177.0
7A	78.2	85.2	17A	180.2	187.2
8A	88.4	95.4	18A	190.4	197.4
9A	98.6	105.6	19A	200.6	207.6
10A	108.8	115.8	20A	210.8	217.8
11A	119.0	126.0	_	—	—

010MBA



Internal circuit



Standard solenoid (Surge suppression)



Solenoid with LED indicator (Surge suppression) Order code: -PSL, -PLL



- 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 leakage current to exceed the maximum allowable leakage current, consult us.



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.



※Illustration shows the 110 series

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.



Cautions: 1. Do not pull hard on the lead wire. 2. Always use a dedicated tool for crimping of connecting lead wire and contact. Contact: Model 702062-2M Manufactured by Sumiko Tech, Inc. Crimping tool: Model F1-702062 Manufactured by Sumiko Tech, Inc.

Attaching and removing contact and connector

Insert the contact with lead wire into a plug connector
hole until the contact hook latches on 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, breaking wires, 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.



Non-locking type

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



Locking protruding type

Use a small screwdriver to turn the adjusting knob several times in the clockwise direction, and lock the manual override in place. When locked, turning the adjusting knob several times in the counterclockwise direction releases a spring on the manual override, returns it to the original position, and releases the lock.

For the locking protruding type, when the adjusting knob 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. The 010 series valves are internal pilot type solenoid valves. As a result, the manual override cannot switch the main valve without air supplied from the the 1(P) port.
 - 2. Always release the lock of the locking protruding type manual override before commencing normal operation.
 - 3. 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.
 - 4. Do not turn the adjusting knob more than needed. It could result in defective operation.



Recommended fittings

010-4E1

Parts	Connection port	4(A), 2(B) port	1(P) port
Quick fitting		TS3-M3M TL3-M3M TLL3-M3M	TS3-M3M TL3-M3M TLL3-M3M
TAC fitting	For urethane tube	BF4BU-M3 BF3BU-M3	BF4BU-M3 BF3BU-M3
	For nylon tube	BF4-M3 BF3.2-M3	BF4-M3 BF3.2-M3
Muffler (for re	eference)		_

A010-4E1-25

Connection port Parts	4(A), 2(B) port	1(P) port	3, 5(R) port
Quick fitting	TS3-M3M TS4-M3M TSH4-M3M	TS3-M3M TS4-M3M TSH4-M3M	TS3-M3M TS4-M3M TSH4-M3M
Muffler (for reference)	—	—	KM-03