

Solenoid valve for high vacuum

HVB<sup>2</sup><sub>4</sub>12 Series • Orifice: Ø1, Ø2, Ø3, Ø4.5, Ø6 NC (Normally Closed)



General Purpose Valves Catalog No. CB-03-1SA

### JIS symbol NC (Open when energized)

#### Common specifications

Item	HVB*12						
Working fluid	Air/vacuum/inert gas (*1)						
Proof pressure MPa	5.0						
Fluid temperature °C	5 to 55						
Ambient temperature °C	0 to 55 (no freezing)						
Thermal class	Class 130 (B)						
Voltage fluctuation range	Rated voltage ±10%						
Atmosphere	No explosive or corrosive atmospheres						
Valve structure	Direct acting poppet structure						
Valve seat leakage Pa·m <sup>3</sup> /sHe	1.0 x 10 <sup>-9</sup> or less (*2)						
External leakage Pa·m <sup>3</sup> /sHe	1.0 x 10 <sup>-9</sup> or less						
Mounting orientation	Unrestricted						
Durability	2 million cycles						

# Individual specifications

Clean air components	Item Model No.	Port size (*3 )	Orifice size (mm)	CvValue(*5)	Working pressure Pa(abs) (*10)	Max. operation Pressure difference (*6) (MPa)	Back pressure (*7) (MPa)	Rated voltage	Power cons AC	umption (W) DC	Weight (*9)(kg)
5	L (Open when	n energized)									
Speed	HVB212	1/4"JXR male fitting 1/4"Double barbed fitting	1	0.04	1.0 x 10 <sup>-6</sup> to 1.0 x 10 <sup>6</sup>	1.0	0.6		4.3	4	0.16
Litting HVE		NPT 1/8,Rc 1/8	2	0.17	$1.0 \times 10^{-6}$ to $0.3 \times 10^{6}$	0.3	0.15	100 VAC 50/60Hz 200 VAC 50/60Hz 24 VDC 12 VDC	4.0	7	0.10
	HVB312	1/4"JXR male fitting 1/4"Double barbed fitting	2	0.17	$1.0 \times 10^{-6}$ to $0.8 \times 10^{6}$	0.8	0.5		6.5	6	0.29
	_	NPT 1/8,1/4,Rc 1/8,1/4	3	0.33	$1.0 \times 10^{-6}$ to $0.3 \times 10^{6}$	0.3	0.25				
Auxiliary valve	HVB412	1/4"JXR male fitting 1/4"Double barbed fitting	3	0.33	$1.0 \times 10^{-6}$ to $1.0 \times 10^{6}$	1.0	0.4		8.3	8 (*8)	
Tube Silencer		NPT 1/4,Rc 1/4	4.5	0.6	$1.0 \times 10^{-6}$ to $0.3 \times 10^{6}$	0.3	0.2				0.50
		3/8"JXR male fitting 3/8"Double barbed fitting NPT 3/8,Rc 3/8	6	1.05	1.0 x 10 <sup>-6</sup> to 0.2 x 10 <sup>6</sup>	0.1	0.05				
	HVB512	1/4"JXR male fitting 1/4"Double barbed fitting NPT 1/4,Rc 1/4	4.5	0.6	1.0 x 10 <sup>-6</sup> to 0.8 x 10 <sup>6</sup>	0.8	0.2		11.8 11.5		0.69
		3/8"JXR male fitting 3/8"Double barbed fitting NPT 3/8,Rc 3/8	6	1.05	1.0 x 10 <sup>-6</sup> to 0.3 x 10 <sup>6</sup>	0.3	0.15			11.5	

\*1: The number of durability times may become much lower depending on the degree of dryness.

\*2: Value when port A is on the vacuum side.

\*3: JXR fitting can be connected to VCR fitting.

\*4: The leakage current must be less than or equal to the values shown below.

\*5: Cv shown in the table are values for NPT connection.

\*6: The max. working pressure differential is the difference between port B (high-pressure side) and port A (low-pressure side).

\*7: Atmospheric pressure at port B that can be applied from port A.

\*8: 8.6 (W) for 12 VDC.

**CKD** 

- \*9: Weights shown in the table are for grommet lead wire/NPT connection.
- \*10: The working pressure vacuum does not guarantee the vacuum attainment time or that the vacuum will not change.
- \*11: FKM is used for sealant material, so consider the generation of discharge gas during use.

\*12: High vacuum grease is used on the O-rings of gas contacting parts.

ter Voltage کور Model No.	100 VAC	200 VAC	24 VDC	12 VDC
B HVB*12	2 mA or less	1 mA or lass	1 mA or lass	2 mA or less

Motor

Pneumatic auxiliary components

**Gas generator** 

Fluid control components

P4 Series

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# HVB 12 Series

How to order

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1. / P													Mode	el No.	
IVE	3 2	2) 12 -(4	RM)-	- 2	)-(2	2C )	<b>B</b> )-	DC24V					INIOUG	a no.	
			T	Ī									N	8	VB512
												HVB212	HVB312	HVB412	HVB512
								Voltage	Code		Description	i≚	ļŽ	Ž	- <b>T</b>
	l					0	ption			erie	s size			-	
	(	A Series size	(Coil						2	1	mm				ICK
		width)							3		mm	-			
									4		mm				products
									5	40	mm				• Isla
						<u> </u>			BC	onn	ection (refer to Table	1)			0
			B Co	onnec	tion						"JXR male fitting				• •
									6RM		"JXR male fitting				
									4S		"Double barbed fitting				
									6S	3/8	"Double barbed fitting				
									6N	NP	T 1/8				
									8N		T 1/4				
									10N		Т 3/8				
									6		1/8		•		
									8		1/4				
									10		3/8				
					Orific					rific	e size (refer to Table	1)			
					Onno				Z	ø1					ļ
									2	ø2			•		ļ] .
									3	ø3			•		6
									5	ø4. ø6	.0				
						DCo	oil optio	on	For A		option				
						*1			FOR A	1	Grommet lead wire/with	r –	1		
						*2			2CR	Standard	full-wave rectifier				•
									For D				1		
									2C	Standard	Grommet lead wire				•
											Grommet lead wire with				
									2CS	tion	surge suppressor				Va
									2G	Optic	With DIN terminal box (Pg11)				• valve
le 1:	Table of	fitting and orific	e size co	ombina	tion				2HS	0	DIN terminal box with lamp				
				<b>O</b> C	Orifice s	size			2110		With surge suppressor (Pg11)				•
		Connection	0:	Z	2	3	5	6			options				
3212	B 4RM	Fitting JXR male	Size 1/4"	ø1 ●	ø2	ø3	ø4.5	ø6	Blank		No				
	4S	Double barbed	1/4" 1/8"	•	•				в	Option	Mounting plate				
	6N 6	NPT Rc	1/8"	•	•					ð					
3312	4RM 4S	JXR male Double barbed	1/4" 1/4"		•	•			<b>6</b> V						
	45 6N	NPT	1/8"		•	•					0 VAC 50/60Hz				
	8N	NPT Rc	1/4" 1/8"		•	•					0 VAC 50/60Hz				
	6 8	Rc Rc	1/8"		•	•			DC24V		VDC				
3412	4RM	JXR male JXR male	1/4" 3/8"			•	•	•	DC12V		VDC				
	6RM 4S	Double barbed	1/4"			•	•				he combinations indicated wippressors are built into the full-w			tions as	standard
	6S	Double barbed	3/8"					•			212 Item $\bigcirc$ 2G/2HS, the compared				
	8N 10N	NPT NPT	1/4" 3/8"			•	•	•			, I		(	- '	
	8	Rc	1/4"			•	•	•							
3512	10 4RM	Rc JXR male	3/8" 1/4"				•								
	6RM	JXR male	3/8"				-	•							
	4S	Double barbed	1/4"												5

4S 6S

8N

10N

8 10 Rc Rc

Double barbed NPT NPT

1/4" 3/8" 1/4" 3/8"

1/4"

3/8"

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CKD



Solenoid valve for high vacuum



General Purpose Valves Catalog No. CB-03-1SA

Port size: Flange ø48,ø52



### Hand/ Chuck JIS symbol

P4 Series

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Related

**Pneumatic actuator** 





## Specifications

Model No.	Н	VB612-12	?F	HVB712-15F							
Item		-8 B	-8H	-12 B	-12 B	-12H	-15 B	-15H			
Working fluid		Vacuum and inert gas (*1)									
Working pressure	1.3 x 10 <sup>-6</sup>	1.3 x 10 <sup>-6</sup>	1.3 x 10 <sup>-6</sup>	1.3 x 10 <sup>-6</sup>	1.3 x 10 <sup>-6</sup>	1.3 x 10 <sup>-6</sup>	1.3 x 10 <sup>-6</sup>				
	PA(abs)	to 2.0 x 10⁵	to 3.0 x 10⁵	to 1.0 x 10⁵	to 1.5 x 10⁵	to 3.0 x 10 <sup>5</sup>	to 1.0 x 10 <sup>5</sup>	to 1.0 x 10⁵			
Max. working pressure diffe	erential (*7) MPa	0.2	0.3	0.1	0.15	0.3	0.1	0.1			
Orifice size mm		8	3	12	1	2	1	5			
Cv	Straight	1	.8	2.7	3	.2	4	.3			
	L direction	2	.1	3.2	3	.6	4.7				
Back pressure (*2) N			.1	0.02	-	.1	0.02	0.1			
Valve seat leakage F		1.0 x 10 <sup>-9</sup> or less (*6)									
External leakage Pa	·m³/s (He)	1.0 x 10 <sup>-9</sup> or less									
Proof pressure	MPa	0.5									
Fluid temperature °C	2	5 to 55									
Ambient temperature	e °C	0 to 55									
Frequency cycles/m	in. or less	10									
Mounting orientation	ו	Unrestricted									
Port size		ø48 flange ø52 fla					lange				
Weight kg		1.15 2.0									
Electrical specifi	cations										
Rated voltage		100/200 VAC (50/60Hz), 24 VDC									
Voltage fluctuation ra	ange	Rated voltage ±10%									
Power consumption W		14.3	28	14.3	19	AC: 32.5	19	AC: 32.5			
		14.5	20	14.3	19	DC: 40	19	DC: 40			
Thermal class		В	Н	В	В	Н	В	Н			
Temperature rise K		75	125	75	75	125	75	125			

\*1: The number of durability times may become much lower depending on the degree of dryness.

\*2: Atmospheric pressure at port B that can be applied from port A. (Reverse vacuum is not possible with HVB612-12F-12B and HVB712-15F-15B.)

\*3: Grease for high vacuum is used on the O-rings of gas contacting parts.

\*4: The working pressure vacuum does not guarantee the vacuum attainment time or that the vacuum will not change.

\*5: FKM is used for sealant material, so consider the generation of discharge gas during use.

\*6: Value when port A is on the vacuum side.

\*7: The max. working pressure differential is the difference between port B (high-pressure side) and port A (low-pressure side).

Silencer

Tube

Motorless

#### How to order Model No. P4 Series How to order Pneumatic cylinders **AC100V** 12 - (12F) 8 В 3N **HVB** 6 **Pneumatic actuator** HVB712 HVB612 Hand/ Chuck Model No. Description Code Related products A Series size A Series 6 60 mm 70 mm Cylinder Switch 7 B Connection B Connection 12F Flange ø48 Vacuum components Pneumatic valves 15F Flange ø52 C Orifice size C Orifice size 8 ø8 12 ø 12 15 ø 15 **D** Thermal class D Thermal class В Class 130 (B) \*1 н Class 180 (H) • Option Option Blank No \*2 3M HP terminal box G1/2 all Pneumatic auxiliary components 3 N HP terminal box with lamp G 1/2 controlle F With companion flange 3MF HP terminal box G1/2 + companion flange Fitting HP terminal box with lamp G 1/2 3NF + Companion flange Auxiliary valve F Voltage Voltage Ø AC100V 100 VAC (50/60 Hz) With full-wave rectifier \*3 AC200V 200 VAC (50/60 Hz) With full-wave rectifier Silencer DC24V 24 VDC

#### Precautions for model No. selection

- \*1: For Item **D** H, HVB612 with orifice size ø12 is not available.
- \*2: For 3M/3N/3MF/3NF of Item () with H selected for Item (), AC voltage type is not available.
- \*3: Surge suppressor is included as standard in the models with fullwave rectifier.

Tube

HVB7612 Series