

Solenoid valve for high vacuum

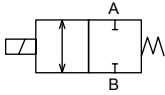
# HVB<sup>2</sup><sub>3</sub><sup>4</sup><sub>5</sub>12 Series

- Orifice:  $\varnothing 1$ ,  $\varnothing 2$ ,  $\varnothing 3$ ,  $\varnothing 4.5$ ,  $\varnothing 6$
- NC (open when energized)



## JIS symbol

- NC (open when energized)



## Common specifications

Item	HVB*12
Working fluid	Air/vacuum/inert gas (*1)
Proof pressure MPa	5.0 ( $\approx 730$ psi, 50 bar)
Fluid temperature °C	5 (41°F) to 55 (131°F)
Ambient temperature °C	0 (32°F) to 55 (131°F) (no freezing)
Thermal class	Class 130 (B)
Voltage fluctuation range	Rated voltage $\pm 10\%$
Atmosphere	No explosive or corrosive atmospheres
Valve structure	Direct acting poppet structure
Valve seat leakage Pa·m <sup>3</sup> /sHe	$1.0 \times 10^{-9}$ or less (*2)
External leakage Pa·m <sup>3</sup> /sHe	$1.0 \times 10^{-9}$ or less
Mounting orientation	Unrestricted
Durability	2 million times

## Individual specifications

1 MPa  $\approx$  145.0 psi, 1 MPa = 10 bar

Item	Port size (*3)	Orifice size (mm)	Cv (*5)	Working pressure Pa(abs)(*4)	Max. working pressure differential (*6)(MPa)	Back pressure (*7)(MPa)	Rated voltage	Power consump (W)		Weight (*9)(kg)
								AC	DC	
<b>NC (open when energized)</b>										
HVB212	1/4" JXR male fitting	1	0.04	$1.0 \times 10^{-6}$ to $1.0 \times 10^6$	1.0	0.6	100 VAC 50/60 Hz  200 VAC 50/60 Hz  24 VDC  12 VDC	4.3	4	0.16
	1/4" double barbed fitting NPT1/8, Rc1/8	2	0.17	$1.0 \times 10^{-6}$ to $0.3 \times 10^6$	0.3	0.15				
HVB312	1/4" JXR male fitting	2	0.17	$1.0 \times 10^{-6}$ to $0.8 \times 10^6$	0.8	0.5		6.5	6	0.29
	1/4" double barbed fitting NPT1/8, 1/4, Rc1/8, 1/4	3	0.33	$1.0 \times 10^{-6}$ to $0.3 \times 10^6$	0.3	0.25				
HVB412	1/4" JXR male fitting	3	0.33	$1.0 \times 10^{-6}$ to $1.0 \times 10^6$	1.0	0.4		8.3	8 (*8)	0.50
	1/4" double barbed fitting NPT1/4, Rc1/4	4.5	0.6	$1.0 \times 10^{-6}$ to $0.3 \times 10^6$	0.3	0.2				
HVB512	3/8" JXR male fitting	6	1.05	$1.0 \times 10^{-6}$ to $0.2 \times 10^6$	0.1	0.05		11.8	11.5	0.69
	3/8" double barbed fitting NPT3/8, Rc3/8	4.5	0.6	$1.0 \times 10^{-6}$ to $0.8 \times 10^6$	0.8	0.2				
	1/4" JXR male fitting									
	1/4" double barbed fitting NPT1/4, Rc1/4									
	3/8" JXR male fitting	6	1.05	$1.0 \times 10^{-6}$ to $0.3 \times 10^6$	0.3	0.15				
	3/8" double barbed fitting NPT3/8, Rc3/8									

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

\*2 : 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 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. (B port vacuum is unusable for HVB412-\*6)

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

\*9 : Weights shown in the table are for grommet lead wire/NPT connection.

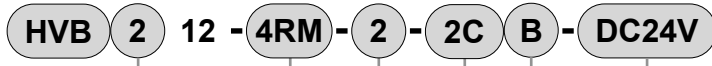
\*10 : The working pressure range vacuum does not guarantee the vacuum attainment time or that the vacuum will not change.

\*11 : FKM is used for sealant material, so consider the generation of discharge gas during use.

\*12 : Grease for high vacuum is used on the O-rings of gas contacting parts.

Leakage current	Voltage	100 VAC	200 VAC	24 VDC	12 VDC
	Model No.				
	HVB*12	2 mA or less	1 mA or less	1 mA or less	2 mA or less

## How to order



**A** Series size  
(coil width)

**B** Connection

**C** Orifice size

**E** Other options  
**F** Voltage

**D** Coil option

\*1

\*2

Table 1: Table of fitting and orifice size combination

	Connection			C Orifice					
	B	Fitting	Size	Z	2	3	5	6	
				ø1	ø2	ø3	ø4.5	ø6	
HVB212	4RM	JXR male	1/4"	●	●				
	4S	Double barbed	1/4"	●	●				
	6N	NPT	1/8"	●	●				
	6	Rc	1/8"	●	●				
HVB312	4RM	JXR male	1/4"		●	●			
	4S	Double barbed	1/4"		●	●			
	6N	NPT	1/8"		●	●			
	8N	NPT	1/4"		●	●			
	6	Rc	1/8"		●	●			
HVB412	4RM	JXR male	1/4"			●	●		
	6RM	JXR male	3/8"					●	
	4S	Double barbed	1/4"			●	●		
	6S	Double barbed	3/8"					●	
	8N	NPT	1/4"			●	●		
	10N	NPT	3/8"					●	
HVB512	4RM	JXR male	1/4"					●	
	6RM	JXR male	3/8"					●	
	4S	Double barbed	1/4"				●		
	6S	Double barbed	3/8"					●	
	8N	NPT	1/4"				●		
	10N	NPT	3/8"					●	

[Example of model No.]

**HVB212-4RM-2-2C-B-DC24V**

Model: HVB212

- A** Series size : 22 mm
- B** Connection : 1/4" JXR male fitting
- C** Orifice size : ø2
- D** Coil option : Grommet lead wire
- E** Other options : Mounting plate
- F** Voltage : 24 VDC

\*1 : Surge suppressor is included as standard in the models with full-wave rectifier.

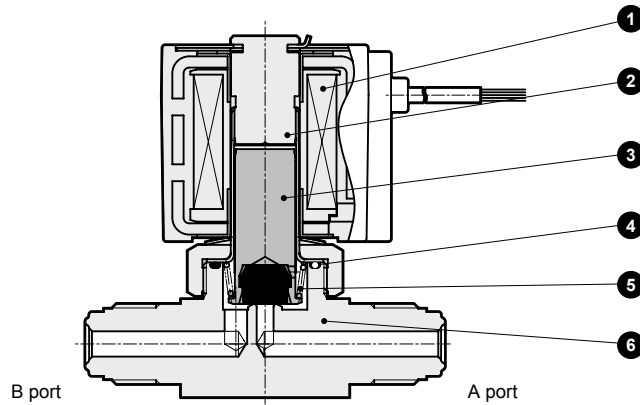
\*2 : For HVB212 Item **D** 2G/2HS, the compact terminal box (Pg9) is used.

		Model No.			
		HVB212	HVB312	HVB412	HVB512
Code	Description				
<b>A Series size</b>					
2	22 mm	●			
3	28 mm		●		
4	34 mm			●	
5	40 mm				●
<b>B Connection (refer to Table 1)</b>					
4RM	1/4" JXR male fitting	●	●	●	●
6RM	3/8" JXR male fitting			●	●
4S	1/4" double barbed fitting	●	●	●	●
6S	3/8" double barbed fitting			●	●
6N	NPT1/8	●	●		
8N	NPT1/4		●	●	●
10N	NPT3/8			●	●
6	Rc1/8	●	●		
8	Rc1/4		●	●	●
10	Rc3/8			●	●
<b>C Orifice size (refer to Table 1)</b>					
Z	ø1	●			
2	ø2	●	●		
3	ø3		●	●	
5	ø4.5			●	●
6	ø6			●	●
<b>D Coil option</b>					
<b>For AC</b>					
2CR	Standard Grommet lead wire/with full-wave rectifier	●	●	●	●
<b>For DC</b>					
2C	Std. Grommet lead wire	●	●	●	●
2CS	Grommet lead wire with surge suppressor	●	●	●	●
2G	Option With DIN terminal box (Pg11)	●	●	●	●
2HS	Option With DIN terminal box with lamp/surge suppressor (Pg11)	●	●	●	●
<b>E Other options</b>					
Blank	Std. None	●	●	●	●
B	Option Mounting plate	●	●	●	●
<b>F Voltage</b>					
AC100V	100 VAC 50/60 Hz	●	●	●	●
AC200V	200 VAC 50/60 Hz	●	●	●	●
DC24V	24 VDC	●	●	●	●
DC12V	12 VDC	●	●	●	●

Select from the combinations indicated with ● above.

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- SøB/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combust
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending

## Internal structure and parts list



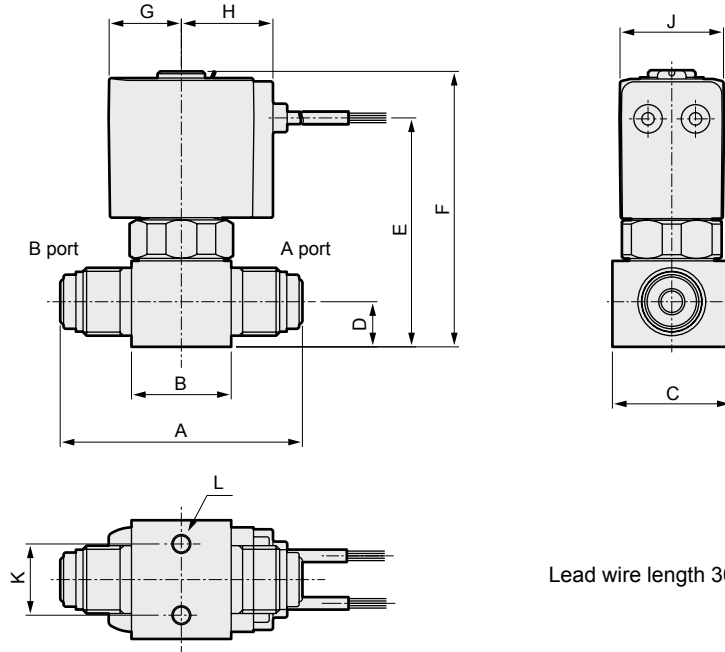
No.	Part name	Material	No.	Part name	Material
1	Coil assembly	(Molded coil)	4	O-ring	FKM Fluoro rubber
2	Core assembly	SUS405, SUS316L Stainless steel	5	Spring	SUS304 Stainless steel
3	Plunger assembly	SUS405, FKM Stainless steel, fluoro rubber	6	Body	SUS304 or SCS13 Stainless steel

## Dimensions



● Grommet lead wire (voltage: DC type)/JXR male fitting

HVB\*12-4RM -.\*- 2C  
6RM

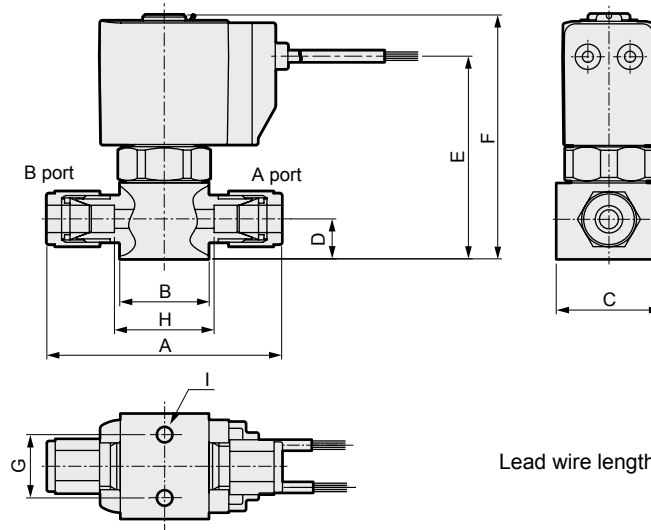


Model No.	A	B	C	D	E	F	G	H	J	K	L
HVB212-4RM	51	21	25	9.5	48	58	15.5	19.5	22	15	M4 x 0.7 depth 6
HVB312-4RM	64	30	25	9.5	53.5	64.5	18.5	22.5	28	18	M5 x 0.8 depth 8
HVB412-4RM	64	34	32	11.6	66	79.5	22.5	26	34	18	M5 x 0.8 depth 8
HVB412-6RM	75	34	32	11.6	66	79.5	22.5	26	34	18	M5 x 0.8 depth 8
HVB512-4RM	64	34	32	11.6	71.5	86.5	26	29.5	40	18	M5 x 0.8 depth 8
HVB512-6RM	75	34	32	11.6	71.5	86.5	26	29.5	40	18	M5 x 0.8 depth 8

## Dimensions

- Grommet lead wire (voltage: DC type)/double barbed fitting

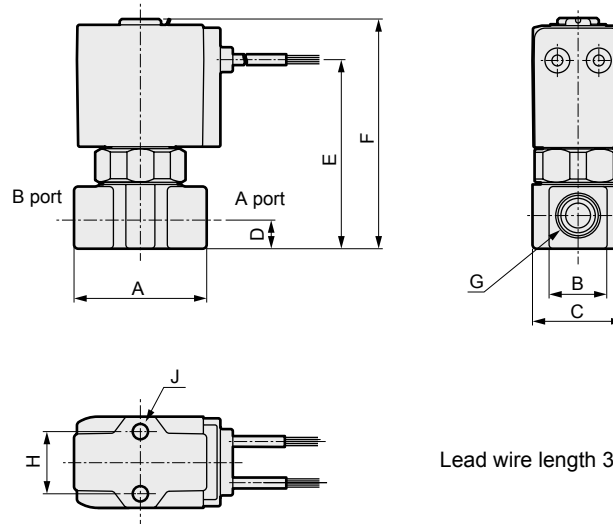
HVB\*12-4S -\*- 2C  
6S



Model No.	A	B	C	D	E	F	G	H	I
HVB212-4S	(56)	21	25	9.5	48	58	15	22	M4 x 0.7 depth 6
HVB312-4S	(69)	30	25	9.5	53.5	64.5	18	35	M5 x 0.8 depth 8
HVB412-4S	(69)	34	32	11.6	66	79.5	18	35	M5 x 0.8 depth 8
HVB412-6S	(78)	34	32	11.6	66	79.5	18	43.5	M5 x 0.8 depth 8
HVB512-4S	(69)	34	32	11.6	71.5	86.5	18	35	M5 x 0.8 depth 8
HVB512-6S	(78)	34	32	11.6	71.5	86.5	18	43.5	M5 x 0.8 depth 8

- Grommet lead wire (voltage: DC type)/NPT type Rc screw-in

HVB\*12-6N -\*- 2C  
8N  
10N  
6  
8  
10



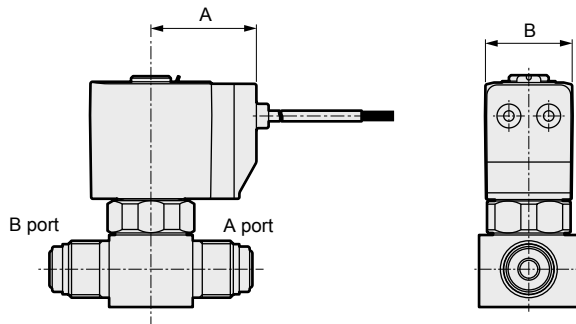
Model No.	A	B	C	D	E	F	G	H	J
HVB212-6N/6	32	14	22	8	45.5	56	NPT1/8	15	M4 x 0.7 depth 6
HVB312- <sup>6</sup> / <sub>8</sub> N/ <sup>6</sup> / <sub>8</sub>	36	18	28	11	57.5	68.5	NPT1/8, NPT1/4	18	M5 x 0.8 depth 6
HVB412- <sup>8</sup> / <sub>10</sub> N/ <sup>8</sup> / <sub>10</sub>	40	21	34	12	67	81	NPT1/4, NPT3/8	18	M5 x 0.8 depth 8
HVB512- <sup>8</sup> / <sub>10</sub> N/ <sup>8</sup> / <sub>10</sub>	40	21	34	12	73.5	89	NPT1/4, NPT3/8	18	M5 x 0.8 depth 8

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL**
- S<sup>6</sup>B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combust
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending

EXA  
FWD  
HNB/G  
USB/G  
FAB/G  
FGB/G  
FVB  
FWB/G  
FHB  
FLB  
AB  
AG  
AP/  
AD  
APK/  
ADK  
DryAir  
EX-  
XPLNprf  
XPLNprf  
**HVB/  
HVL**  
S ⚡ B/  
NAB  
LAD/  
NAD  
Water-  
Rela  
NP/NAP/  
NVP  
SNP  
CHB/G  
MXB/G  
Other  
valves  
SWD/  
MWD  
DustColl  
CVE/  
CVSE  
CCH/  
CPE/D  
LifeSci  
Gas-  
Combus  
Auto-  
Water  
Outdoor  
SpecFld  
Custom  
Ending

## Optional dimensions

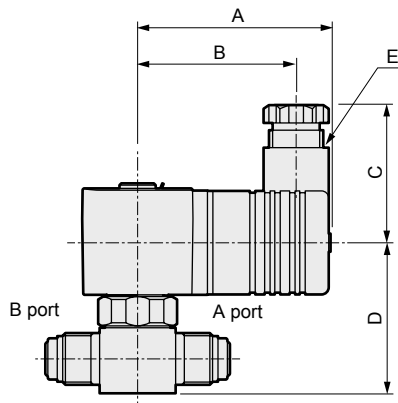
● Grommet lead wire (voltage: AC)/full-wave rectifier HVB\*12-\*. \*- [2CR] Refer to the dimensions of grommet lead wire (DC type) on pages 486 and 487 for common dimensions.



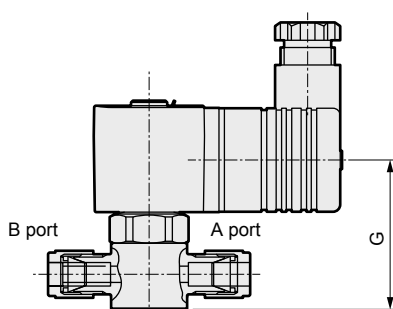
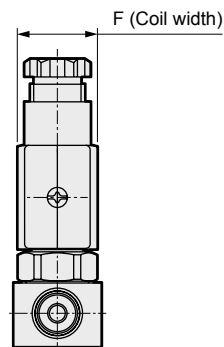
Model No.	A	B
HVB212	26.5	22
HVB312	29.5	28
HVB412	34	34
HVB512	37.5	40

● DIN terminal box (with lamp/surge suppressor)

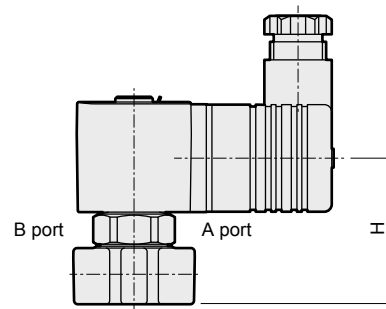
HVB\*12-\*. \*- [2G  
2HS]



JXR male fitting: 4RM, 6RM



Double barbed fitting: 4S, 6S



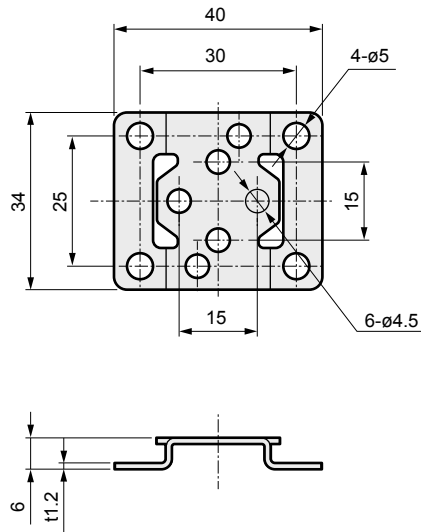
NPT:6N, 8N, 10N  
Rc thread: 6, 8, 10

Model No.	A	B	C	D	E	F	G	H
HVB212	53	44	38	41.5	Pg9	22	41.5	39
HVB312	58.5	47	42	47.5	Pg11	28	47.5	51
HVB412	62	50.5	42	59.5	Pg11	34	59.5	61
HVB512	65.5	54	42	67	Pg11	40	67	69.5

## Optional dimensions

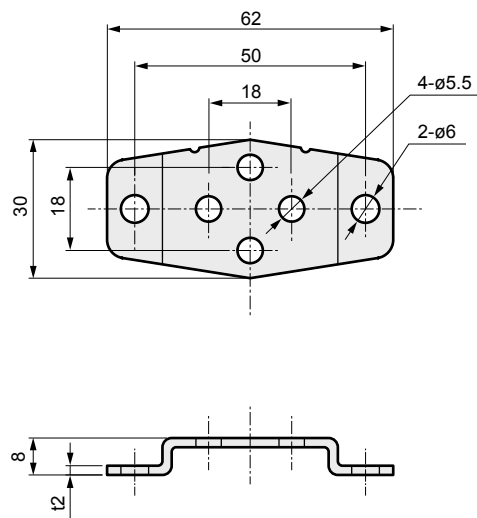
- Mounting plate  
HVB212-\*-\*-\* [B]

Material: Steel  
Nickel plating treatment



- Mounting plate  
HVB<sup>345</sup>12-\*-\*-\* [B]

Material: Steel  
Nickel plating treatment



EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
<b>HVB/HVL</b>
S <sup>3</sup> B/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
Outdoor
SpecFld
Custom
Ending



Solenoid valve for high vacuum

# HVB112 Series

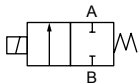
- NC (open when energized)
- Port size: NPT1/8, 1/4" JXR female fitting



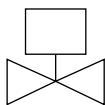
- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL**
- S◇B/NAB
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- Water-Rela
- NP/NAP/NVP
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- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending

## JIS symbol

● NC (open when energized)



## Mounting orientation



## Specifications

Item	HVB112-6N-*	HVB112-8R-*
Working fluid	Vacuum/inert gas (*1)	
Working pressure Pa(abs)	1.3 x 10 <sup>-6</sup> to 3 x 10 <sup>5</sup> (*3)	
Max. working pressure differential MPa	0.3	
Valve seat leakage Pa·m <sup>3</sup> /s (He)	1.0 x 10 <sup>-9</sup> or less	
External leakage Pa·m <sup>3</sup> /s (He)	1.0 x 10 <sup>-9</sup> or less	
Proof pressure MPa	0.5 (≈73 psi, 5 bar)	
Back pressure (*2) MPa	0.2 (≈29 psi, 2 bar)	
Fluid temperature °C	5 (41°F) to 55 (131°F)	
Ambient temperature °C	0 (32°F) to 55 (131°F)	
Orifice size mm	1.6	
Cv	0.09	
Frequency times/min. or less	60	
Port size	NPT1/8	1/4" JXR female fitting
Mounting orientation	Vertical direction with the coil on top	
Weight kg	0.15	0.24
Electrical specifications		
Rated voltage	100/200 VAC(50/60 Hz), 24 VDC	
Voltage fluctuation range	Rated voltage ±10%	
Power consumption W	4.0	
Thermal class	Class 130 (B)	
Temperature rise K	70	

\*1 : The number of durability times may decrease sharply depending on the degree of dryness.

\*2 : Atmospheric pressure at port B that can be applied from port A

\*3 : The working pressure vacuum does not guarantee the vacuum attainment time or that the vacuum will not change.

\*4 : FKM is used for sealant material, so consider the generation of discharge gas during use.

\*5 : Grease for high vacuum is used on the O-rings of gas contacting parts.

## How to order

**HVB 112 - 6N - 5 - AC100V**

Model No.

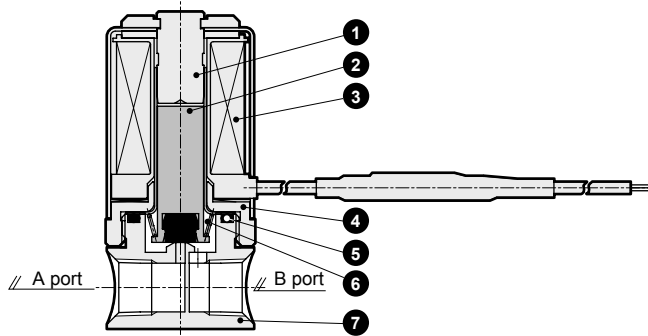
Orifice size ø1.6

A Port size

B Voltage

Code	Description
A Port size	
6N	NPT1/8
8R	1/4" JXR female fitting
B Voltage	
AC100V	100 VAC(50/60 Hz)
AC200V	200 VAC(50/60 Hz)
DC24V	24 VDC

## Internal structure and parts list

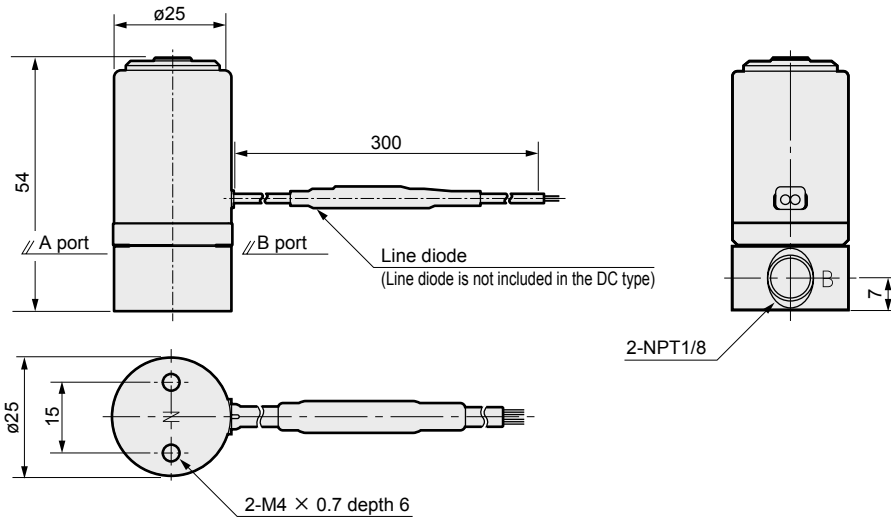


No.	Part name	Material
1	Core assembly	SUS316 SUS405
2	Plunger assembly	SUS405 FKM
3	Coil assembly	
4	Core B	SUM22
5	O-ring	FKM
6	Spring	SUS304
7	Body	SUS303

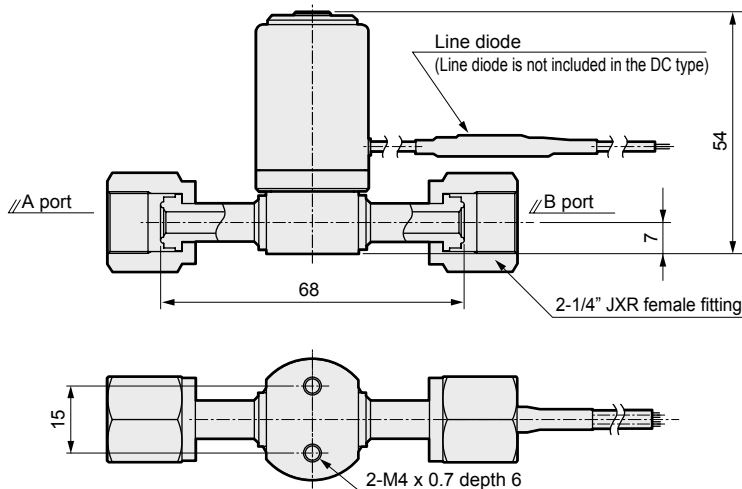
## Dimensions and optional dimensions



### ● HVB112



### ● With JXR fitting HVB112- 8R



Note: Line diode is not included in the DC type.

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
<b>HVB/ HVL</b>
S 4 B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH/ CPE/D
LifeSci
Gas- Combus
Auto- Water
Outdoor
SpecFld
Custom
Ending



Solenoid valve for high vacuum

# HVB<sup>6</sup><sub>7</sub>12 Series

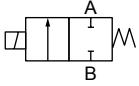
- NC (open when energized)
- Port size: Flange ø48, ø52



- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL**
- S<sup>◇</sup>B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending

## JIS symbol

● NC (open when energized)



## Specifications

Model No.		HVB612-12F				HVB712-15F		
		-8B	-8H	-12B	-12B	-12H	-15B	-15H
Working fluid		Vacuum and inert gas (*1)						
Working pressure Pa(abs)		1.3×10 <sup>-6</sup> to 2.0×10 <sup>5</sup>	1.3×10 <sup>-6</sup> to 3.0×10 <sup>5</sup>	1.3×10 <sup>-6</sup> to 1.0×10 <sup>5</sup>	1.3×10 <sup>-6</sup> to 1.5×10 <sup>5</sup>	1.3×10 <sup>-6</sup> to 3.0×10 <sup>5</sup>	1.3×10 <sup>-6</sup> to 1.0×10 <sup>5</sup>	1.3×10 <sup>-6</sup> to 1.0×10 <sup>5</sup>
Max. working pressure differential MPa		0.2	0.3	0.1	0.15	0.3	0.1	0.1
Orifice size mm		8		12	12		15	
Cv		Straight		1.8	2.7	3.2		4.3
		L direction		2.1	3.2	3.6		4.7
Back pressure (*2) MPa		0.1		0.02	0.1		0.02	0.1
Valve seat leakage Pa·m <sup>3</sup> /s (He)		1.0 x 10 <sup>-9</sup> or less						
External leakage Pa·m <sup>3</sup> /s (He)		1.0 x 10 <sup>-9</sup> or less						
Proof pressure MPa		0.5 (≈73 psi, 5 bar)						
Fluid temperature °C		5 (41°F) to 55 (131°F)						
Ambient temperature °C		0 (32°F) to 55 (131°F)						
Frequency times/min. or less		10						
Mounting orientation		Unrestricted						
Port size		ø48 flange			ø52 flange			
Weight kg		1.15			2.0			
<b>Electrical specifications</b>								
Rated voltage		100/200 VAC (50/60 Hz), 24 VDC						
Voltage fluctuation range		Rated voltage ±10%						
Power consumption W		14.3	28	14.3	19	AC:32.5 DC:40	19	AC:32.5 DC:40
Thermal class		B	H	B	B	H	B	H
Temperature rise K		75	125	75	75	125	75	125

\*1 : The number of durability times may decrease sharply 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.

## How to order

**HVB** **6** **12** - **12F** - **8** **B** - **3N** - **AC100V**

Model No.

**A** Series

**B** Connection

**C** Orifice size

**D** Thermal class  
\*1

**E** Option  
\*2

**F** Voltage  
\*3

Model No.

HVB612

HVB712

Code	Description	HVB612	HVB712
<b>A Series size</b>			
6	60 mm	●	●
7	70 mm	●	●
<b>B Connection</b>			
12F	Flange ø48	●	●
15F	Flange ø52	●	●
<b>C Orifice size</b>			
8	ø8	●	●
12	ø12	●	●
15	ø15	●	●
<b>D Thermal class</b>			
B	Class 130 (B)	●	●
H	Class 180 (H)	●	●
<b>E Option</b>			
Blank	None	●	●
3M	HP terminal box G1/2	●	●
3N	HP terminal box with lamp G1/2	●	●
F	With companion flange	●	●
3MF	HP terminal box G1/2 + companion flange	●	●
3NF	HP terminal box with lamp G1/2 + Companion flange	●	●
<b>F Voltage</b>			
AC100V	100 VAC (50/60 Hz) with full-wave rectifier	●	●
AC200V	200 VAC (50/60 Hz) with full-wave rectifier	●	●
DC24V	24 VDC	●	●

[Example of model No.]

**HVB612-12F-8B-3N-AC100V**

Model: HVB612

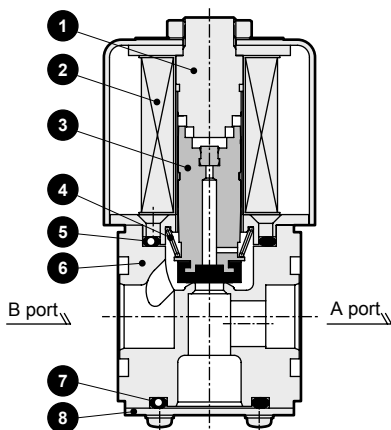
- A** Series : 60 mm
- B** Connection : Flange ø48
- C** Orifice size : ø8
- D** Thermal class : Class 130 (B)
- E** Option : HP terminal box with light G1/2
- F** Voltage : 100 VAC (50/60 Hz)

## ⚠ 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 **E** with H selected for Item **D**, AC voltage type is not available.
- \*3 : Surge suppressor is included as standard in the models with full-wave rectifier.

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XPLNprf
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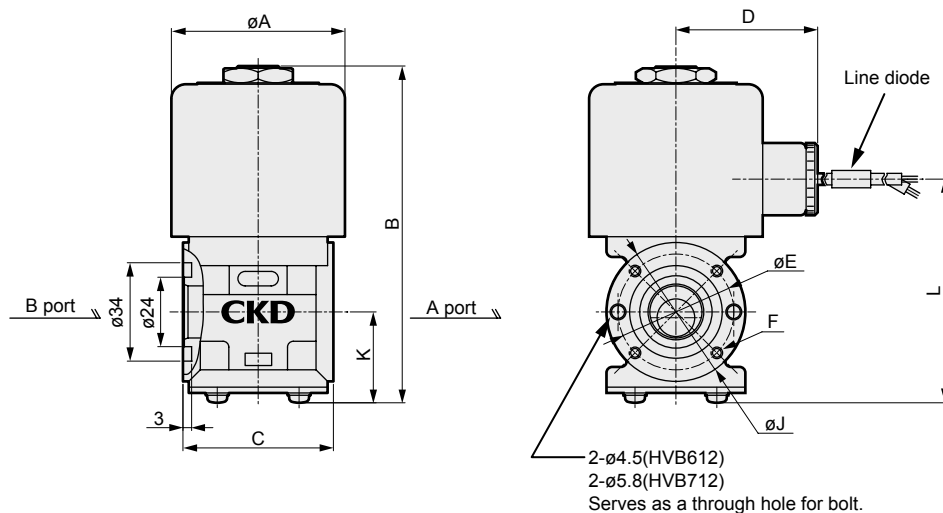
## EXA Internal structure and parts list



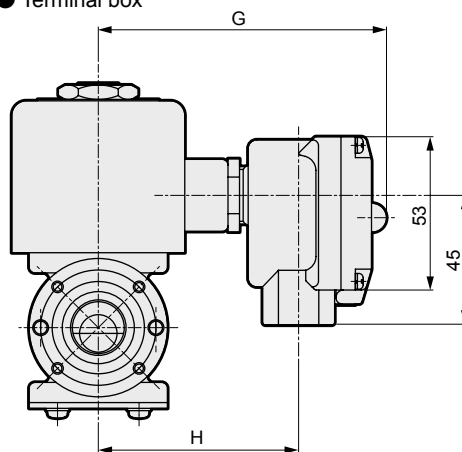
No.	Part name	Material
1	Core assembly	SUS405, SUS316, SUS403
2	Coil assembly	
3	Plunger assembly	SUS405, FKM, PFA, PET
4	Spring	SUS304
5	O-ring	FKM
6	Body	SCS13
7	O-ring	FKM
8	Bottom cover	SUS304

## Dimensions and optional dimensions

### ● HVB<sup>6</sup>12



### ● Terminal box



Model No.	Dimensions										
	A	B	C	D	E	F	G	H	J	K	L
HVB612	60	117	52	49	40	4-M4	101	70	48	32	77
HVB712	70	145	55	54	42.4	4-M5	106	75	52	33	107

Note: The line diode is enclosed only with the AC of thermal class H. Therefore, a terminal box cannot be assembled with this series.

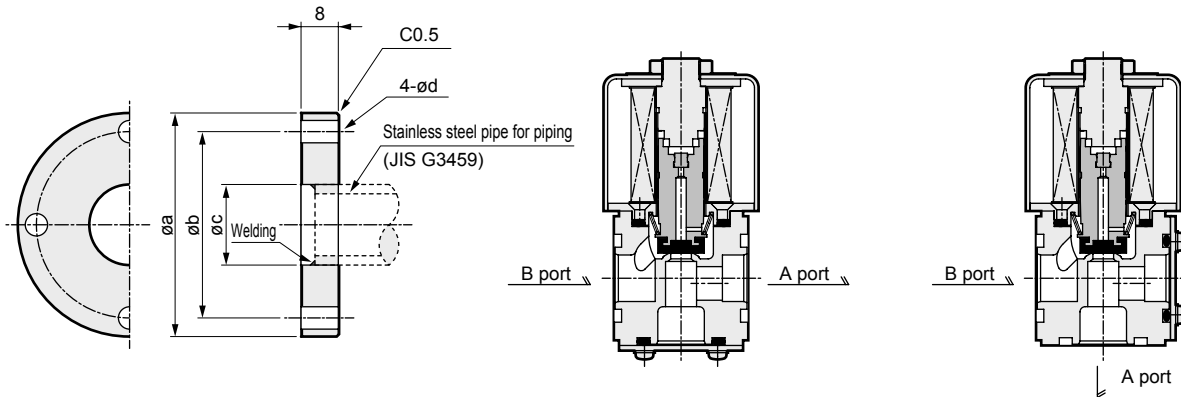
Note: Mounting bolts and O-rings are attached when the companion flange is ordered.

## Dimensions

● Companion flange dimensions

● Straight piping

● Radial piping



Companion flange dimensions

Model No.	Companion flange dimensions				Mounting bolt	O-ring
	a	b	c	d		
HVB612	48	40±0.2	17.3 <sup>+0.5</sup> <sub>0</sub>	4.8	M4-14	JIS B2401 V-24
HVB712	52	42.4±0.2	21.7 <sup>+0.5</sup> <sub>0</sub>	5.8	M5-14	

\* Mounting bolts and O-rings are attached when the companion flange is ordered.

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