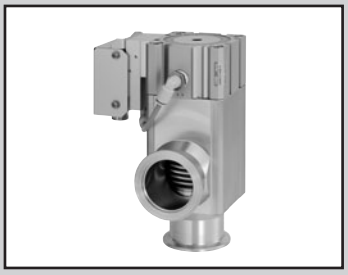
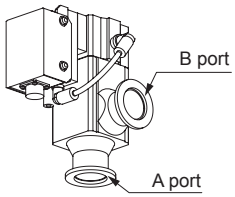


Pneumatic vacuum control system

IAVB Series

RoHS

Specifications

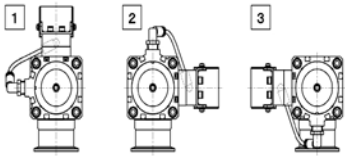
Description	IAVB217	IAVB317	IAVB417	IAVB517
Working fluid	Vacuum and inert gas			
Working pressure Pa (abs)	1.3×10^{-6} to 1×10^{5}			
Maximum working differential pressure MPa	0.1			
Valve seat leakage Pa·m³/s(He)	1.3×10^{-10} or less			
External leakage Pa·m³/s(He)	1.3×10^{-11} or less			
Withstanding pressure MPa	0.3 MPa			
Fluid temperature °C	5 to 60			
Ambient temperature °C	5 to 45			
Orifice size mm	ø17	ø24	ø43	ø48
Conductance *1 ℓ/s	5	13	43	74
Connection	NW16	NW25	NW40	NW50
Weight kg	0.6	0.8	1.6	2.4
Pilot air pressure MPa	0.45 to 0.55 MPa			
Mounting orientation	Flexible			
Connecting direction *2	Connect A port on the chamber side, B port on the vacuum pump side. 			

*1: Conductance values are obtained by theoretical calculation in the molecular flow range, not by measurement.
*2: Reverse connection is not allowed because it will lead to unstable vacuum pressure control, while full-open/full-close operation can be made.
Note: A coating of vacuum grease is applied to the O-ring of the outside seal part.

How to order

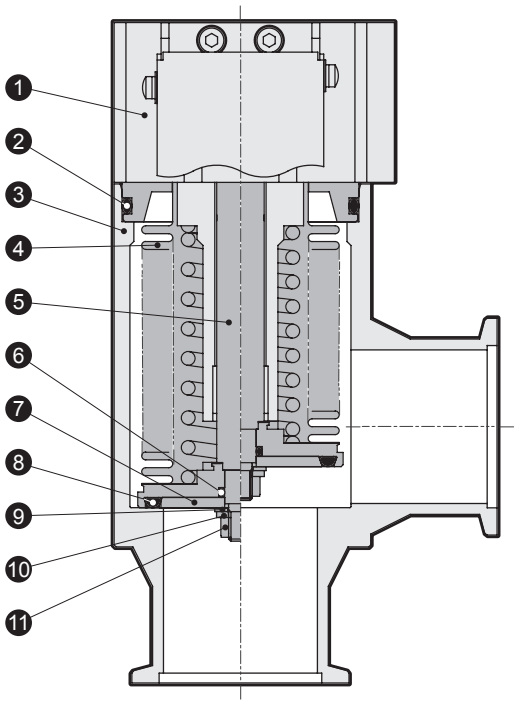
IAVB 2 1 7 - 16 K - 3

- IAVB: Model No.
- 2: Ⓐ Orifice size
- 1: Actuation NC type
- 7: Aluminum single-acting valve
- 16 K: Ⓑ Connection
- 3: Ⓒ Operating port position

Code	Descriptions
ⒶOrifice size	
2	Orifice size ø17
3	Orifice size ø24
4	Orifice size ø39
5	Orifice size ø48
ⒷConnection	
16 K	NW16
25 K	NW25
40 K	NW40
50 K	NW50
ⒸOperating port position	
3	
1	
2	Operation port positions are indicated with 3 (standard), 1, 2 in reference to the flange direction viewed from the valve top surface.

Internal structure and parts list

● IAVB217 • IAVB317 • IAVB417 • IAVB517

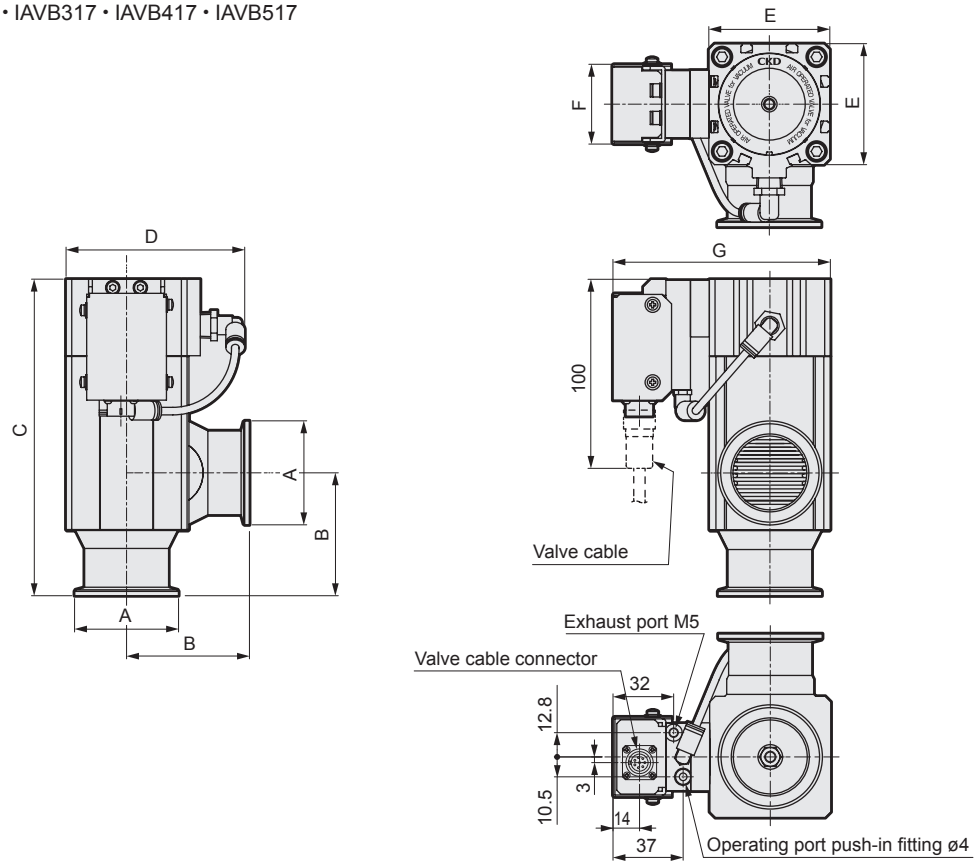


No.	Parts name	Material
1	Cylinder (in the magnet)	
2	O-ring	FKM *
3	Body	A6063
4	Bellows	SUS316L
5	Rod	SUS316L
6	O-ring	FKM
7	Valve disk B	SUS316L
8	O-ring	FKM
9	Plain washer	SUS304
10	Spring washer	SUS304
11	Hexagon nut	SUS304

*For other O-ring materials, please contact CKD.

Dimensions

● IAVB217 • IAVB317 • IAVB417 • IAVB517



Model No.	A	B	C	D	E	F	G
16K	ø30 (NW16)	40	114	57	40	43	91
25K	ø40 (NW25)	50	127	71	45	43	96
40K	ø55 (NW40)	65	168	95	64	43	115
50K	ø75 (NW50)	70	186	108	77	43	128

Controller for IAVB

RoHS

General specifications

Description		IAVB-CONT			
		IAVB217	IAVB317	IAVB417	IAVB517
Power supply voltage		24 VDC ± 10% (stabilized power supply with ripple factor 1% or less)			
Current consumption		0.5 A or less (fuse capacity 1 A)			
Ambient temperature	°C	10 to 40			
External input	Input points	2 points			
	Input method	Non-voltage contact input (photo-coupler isolation)			
	Input capacitance	24 VDC 10 mA or less			
External output	Output points	2 points			
	Output method	NPN open collector output (photo-coupler isolation)			
	Load capacitance	30 VDC 15 mA or less			
	Internal voltage drop	1.2 VDC or less			
Analog voltage input	Number of points	2 points			
	Method	0-10 VDC 0-5 VDC (with input load of 20 kΩ for either case)			
Analog voltage output	Number of points	1 point			
	Output	0-10 VDC (with connection load of 10 kΩ)			
Repeatability		In a range of ± 1% F.S.			
Operation method		Operated by serial communication or by contact input and analog voltage (selective)			
Communication method		RS-485			
Number of pressure controls		1 ch			

Use a power supply capable enough for the fuse capacity (current).

How to order

How to order discrete controllers

IAVB-CONT

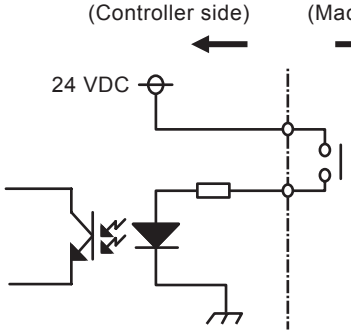
How to order discrete valve cables

IAVB-VCBL-03

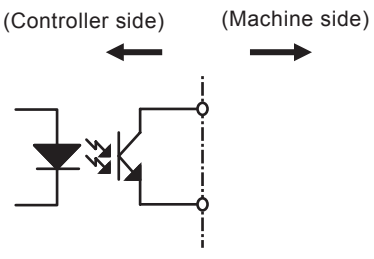
Cable length 3 m

Interface circuit

Non-voltage contact input:
photo-coupler input
With the contact closed, a current of about 5 mA flows.

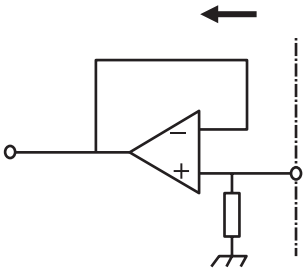


NPN open collector output:
photo-coupler output
Load capacitance 30 VDC, 15 mA or less
Internal voltage drop 1.2 VDC or less



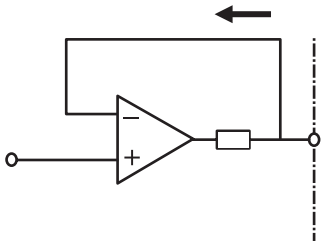
Analog voltage input: follower input
Input load 20 kΩ

(Controller side) (Machine side)



Analog voltage output: follower output
Analog voltage output: follower output

(Controller side) (Machine side)



Pin assignment of connector for controller

1. MAIN (D-SUB 25 pin male)

Pin number	Signal name	Input/output	Remarks
1	Earth terminal	Earth	i.e grounding
2	(NC)	—	(Do not connect.)
3	Power supply 24 VDC	Power input (+)	Power source (+)
4	(NC)	—	(Do not connect.)
5	(NC)	—	(Do not connect.)
6	(Inspection port used by CKD)	—	(Do not connect.)
7	PRESS monitor output (0-10 V)	Analog output	0-10 V corresponds to 0-100% on the sensor.
8	PRESS command value input (0-5 V)	Analog input	0-5 V corresponds to 0-100% on the sensor.
9	Valve status output	NPN output	Photo-coupler collector output 2
10	Alarm status output	NPN output	Photo-coupler collector output 1
11	Valve operation input COM	Contact input (-) COM	Contact input (-) COM
12	Valve operation contact 2 input	Contact input (+)	Photo-coupler cathode 2
13	AGND	Analog GND	Analog line 0 V
14	(NC)	—	(Do not connect.)
15	(NC)	—	(Do not connect.)
16	Power supply GND	Power input (-)	Power source (-)
17	(NC)	—	(Do not connect.)
18	AGND	Analog GND	Analog line 0 V
19	(NC)	—	(Do not connect.)
20	AGND	Analog GND	Analog line 0 V
21	AGND	Analog GND	Analog line 0 V
22	(Reserved)	(NPN output)	(Photo-coupler collector output 3)
23	Status COM	Photo-coupler emitter COM	Photo-coupler emitter COM
24	Valve operation contact 1 input	Contact input (+)	Photo-coupler cathode 1
25	(Inspection port used by CKD)	—	(Do not connect.)

2. PRESS (D-SUB 9 pin female)

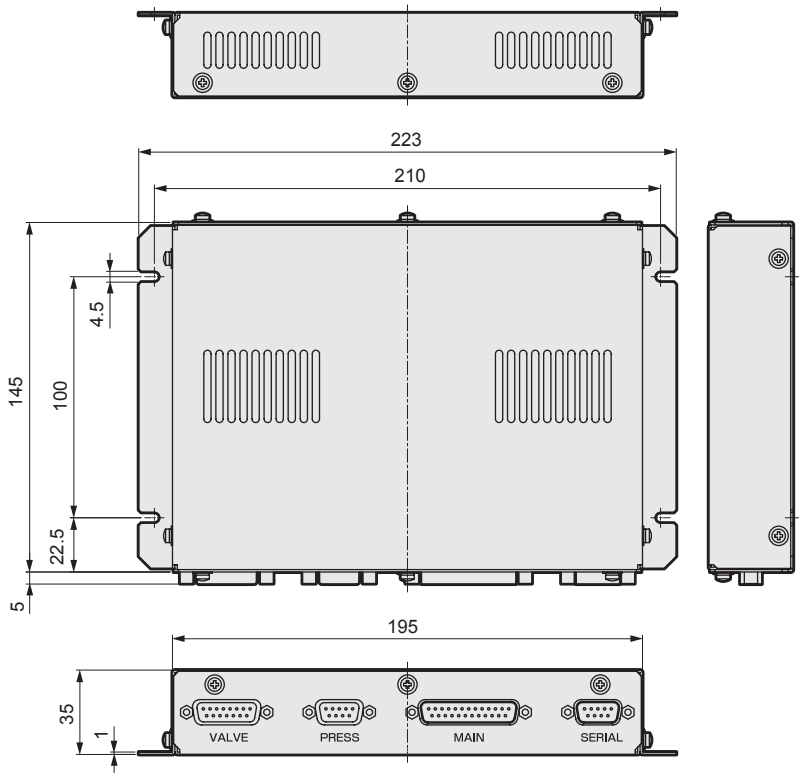
Pin number	Signal name	Input/output	Remarks
1	(Inspection port used by CKD)	—	(Do not connect.)
2	(Inspection port used by CKD)	—	(Do not connect.)
3	PRESS input (0-10 V)	Analog input	Chamber pressure sensor
4	PRESS GND	Analog GND	Sensor signal GND
5-9	(NC)	—	(Do not connect.)

3. SERIAL (D-SUB 9 pin male)

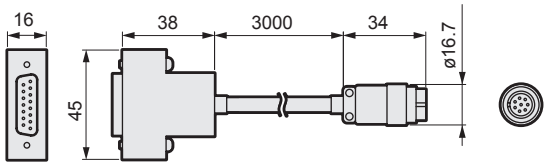
Pin number	Signal name	Input/output	Remarks
1	NC	—	(Do not connect.)
2	NC	—	(Do not connect.)
3	TXD (+) / RXD (+)	Sent/received (+)	Controller (+) ⇔ Host (+)
4	TXD (-) / RXD (-)	Sent/received (-)	Controller (-) ⇔ Host (-)
5	SG	Signal ground	Serial power supply 0 V
6-9	(NC)	—	(Do not connect.)

Dimensions

● IAVB-CONT



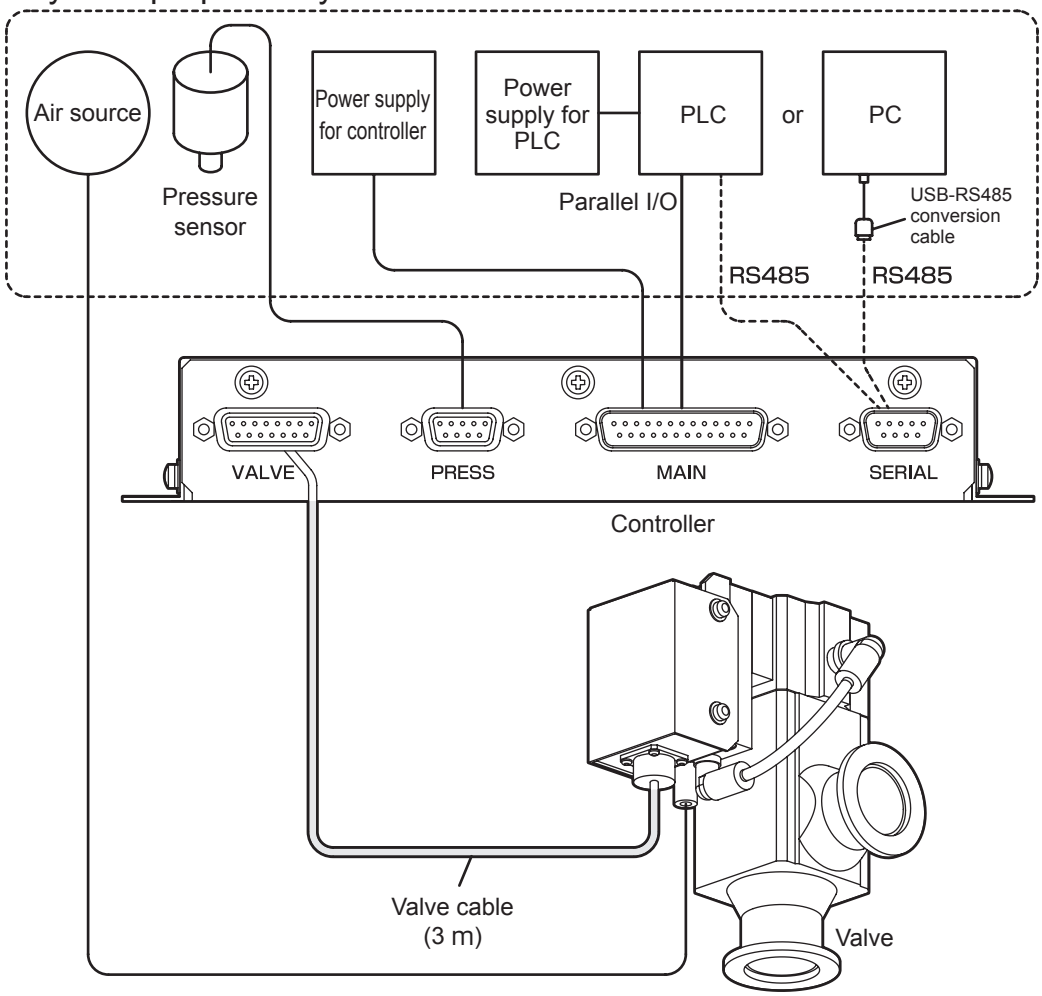
● IAVB-VCBL-03



Valve cable

System configuration

System prepared by customers



●As for a pressure sensor, a capacitance manometer (output 0-10 V) is recommended.
(For other pressure sensors, please consult CKD.)
●When using a PC, a USB-RS-485 conversion cable is required.

Product components

Name	Quantity
Valve	1
Controller	1
Valve cable	1

This product is to be communicated and controlled through the PLC prepared by customers. The confirmation as to the compatibility of the product to the system, equipment, devices, etc., that is to be used is the sole responsibility of the customer.
The purchase of a controller will include a free support software.
This free software is provided to support users to start up the product smoothly and quickly but does not guarantee for the proper operation which is dependent on the customer's individual computer environment.