CV3000 Alphaplus series
Top-Bottom Guided Double-Seat Control Valves (6 to 12 inches)
Model ADVB / ADVM

OVERVIEW

The CV3000 Alphaplus top and bottom guided double-seat control valves have a flow passage that allows fluid to flow smoothly and with minimal pressure loss.
Valve plug shape implements design features that optimize flow and pressure balance around the plug, and improves the stability of control for a wide range of fluid conditions. The plug guide is supported at the top and bottom, and has a high resistance to vibration and abrasion.
Valve body is light-weight, and employs a fixed guide structure for the bottom guide of the plug. For the plug and seat ring, a top-entry method improves ease of maintenance regardless of the valve action. Integral seat ring ensures identical seat-leakage performance (IEC Class IV) as single-seat valves.
The valve also features a compact, but powerful, multi-spring actuator.
Model ADVB/ADVM control valves are particularly applicable for high-pressure and high differential-pressure process lines where high dynamic stability and high reliability are essential.

1. Selection of Alphaplus Specifications

Selection of control valves has traditionally required special knowledge and experience. However, CV3000 Alphaplus offers you more accurate product specifications, so that you can easily pinpoint the control valve that satisfies fluid specifications (such as flowrate, pressure, and temperature) at your plant and provides the functions you need.

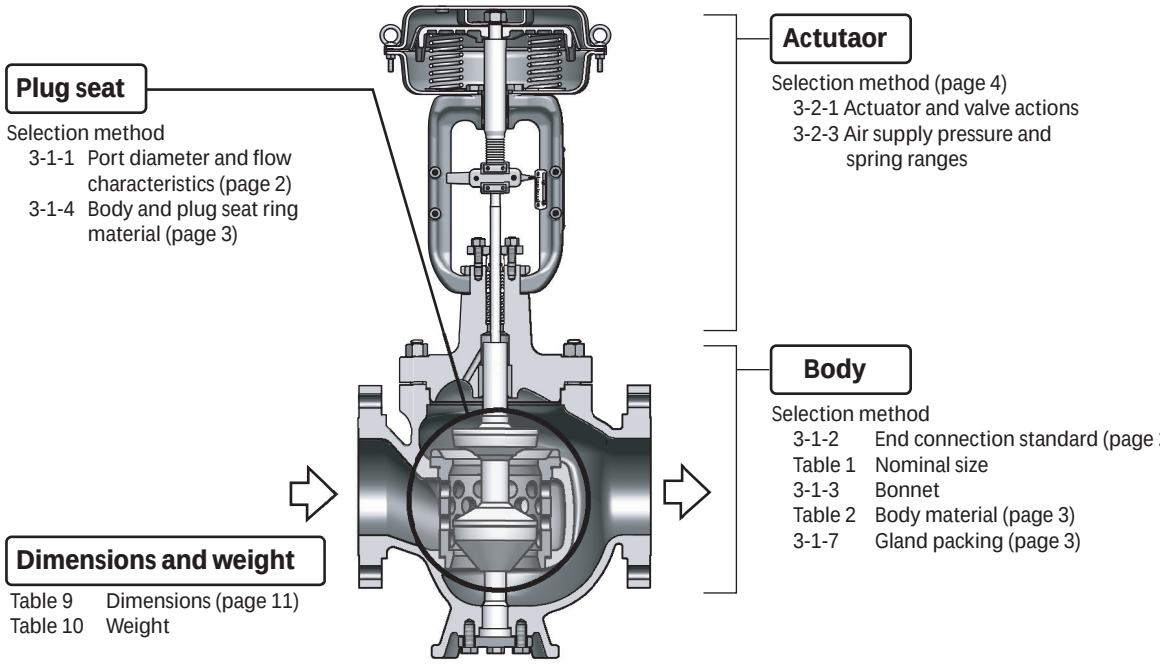

Figure 1 CV3000 Alphaplus selection map

2. Basic Model Numbers

The basic model number of the CV3000 Alphaplus series of control valves you eventually choose will be either:
Model ADVB: JIS 10K, ANSI 150, JPI 150
Model ADVM: JIS 20K, JIS 30K, ANSI 300, JPI 300

3. Optional Specifications

3-1 Body

3-1-1 Port diameter and flow control characteristics

The selection of the port diameter and the rated Cv value falls within the scope of Table 1 according to the flange diameter.

Table 1 Nominal size and port diameter

Nominal size (inches)	6		8		10			12		
Port diameter (inches)	4	6	6	8	6	8	10	8	10	12
Rated Cv value	215	450	450	705	450	705	1100	705	1100	1580
Rated travel (mm)	38		75							
Flow characteristics	Equal percentage, linear*									

*Note) *: In case of linear characteristics, it is changed a characteristics by positioner.*

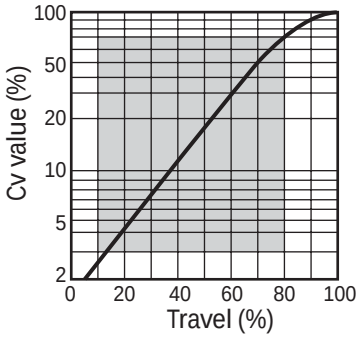

Figure 2 Equal percentage

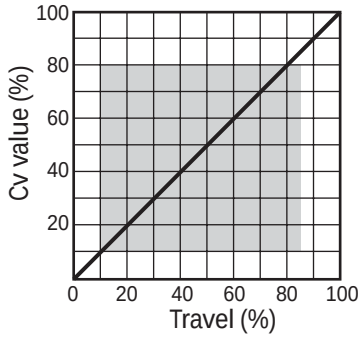

Figure 3 Linear

Note) : Scope of control generally considered feasible (Cv value in percentage and travel in percentage and input signal.)

3-1-2 End connection standard (flange type)

We manufacture JIS 10K RF, ANSI 150RF, JPI 150RF, JIS 20K RF, JIS 30K RF, ANSI 300RF and JPI 300RF

3-1-3 Bonnet

We manufacture bonnets that can be used at fluid temperatures ranging from -17°C to+ 400°C.
Plain type : -5°C $\leq$ t $\leq$ +230°C (Stainless steel: ASTM A351CF8, A351CF8M is -17°C $\leq$ t $\leq$ +230°C)
Extension type : +230°C $\leq$ t $\leq$ +400°C (high temperature)

3-1-4 Body and plug seat ring materials

For combination of body and plug seat ring materials and their applicable temperature ranges, see Table 2. In some ranges the plug seat ring material needs hardening treatment.

Table 2 Body/trim material combinations and operating temperature ranges (°C)

Body material		Trim material	Temperature	Details of Trim material			
JIS	ASTM			Valve plug	Stem	Seat ring	Plug guide
SCPH2	A216WCB	SUS316	-5 to +300	SUS316L	SUS316	SCS14A	SUS440C
		SUS316 Stellite	-5 to +400	SUS316L Stellite	SUS316	SCS14A Stellite	
		SUS316 Stellite face	-5 to +400	SUS316L Stellite face	SUS316	SCS14A Stellite	
		SUS316 Stellite sheath (UOP-G)	-5 to +400	SUS316L Stellite sheath (UOP-G)	SUS316	SCS14A Stellite	
SCS13A/ SCS14A	A351CF8/ A351CF8M	SUS316	-17 to +300	SUS316L	SUS316	SCS14A	SUS316 Stellite
		SUS316 Stellite	-17 to +400	SUS316L Stellite	SUS316	SCS14A Stellite	
		SUS316 Stellite face	-17 to +400	SUS316L Stellite face	SUS316	SCS14A Stellite	
		SUS316 Stellite sheath (UOP-G)	-17 to+ 400	SUS316L Stellite sheath (UOP-G)	SUS316	SCS14A Stellite	

Note) 1. " ▭ " shows standard combination of valve body and trim materials.
2. For valve for cavitations/flashing service, oil-free service or tight shut-off service, Stellite is recommended regardless of process fluid temperatures or differential pressures.

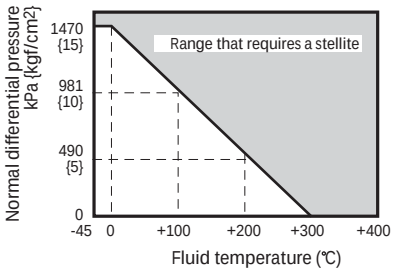

Figure 4 Temperature and normal differential pressure ranges that require Stellite

3-1-5 Leakage specification

For the seat leak performance when the valve is fully closed, select from among the following two classifications, which conform to IEC 60534-4:2006 and JIS B 2005-4:2008.

Class III : Leakage less than 0.1% of maximum valve capacity.
Class IV : Leakage less than 0.01% of maximum valve capacity.

3-1-6 Inherent range ability

50 : 1

3-1-7 Gland packing

According to your application, select the appropriate type of gland packing from the followings:

Table 3 Gland packing

Use	Type	Material
General use (oils, solvent acids, alkalis, etc.)	PTFE yarn packing (P4519)	Woven PTFE yarn with carbon fiber core
Waste oil washing	V type PTFE packing	PTFE molding
Vacuum service	V type PTFE packing (direct + reverse) mounted	PTFE molding
Low-temperature service	V type PTFE packing	PTFE molding
High-temperature service	* Graphite yarn packing (P6722 + P6610CL)	Graphite

*Note) PTFE: polytetrafluoroethylene resin * Grease is necessary.*

For other gland packing materials, please provide closest model no. and Yamatake will consider your request.

3-1-8 Gasket

The combination of gaskets as the following table is based on the temperature condition.

Table 4 Combination of gasket

	Normal temperature	High temperature
Top bonnet	Serrated gasket with PTFE coating (V543 PTFE coating)	Serrated gasket (V543 graphite coating)
Seat ring upper part	Flat metal gasket with PTFE coating (V563 PTFE coating)	Flat metal gasket (V563 graphite coating)
Seat ring lower part	Spiral wound metal gasket (graphite filled) (V6590)	
Bottom bonnet	Serrated gasket with PTFE coating (V543 PTFE coating)	Serrated gasket (V543 Graphite coating)

3-2 Actuator

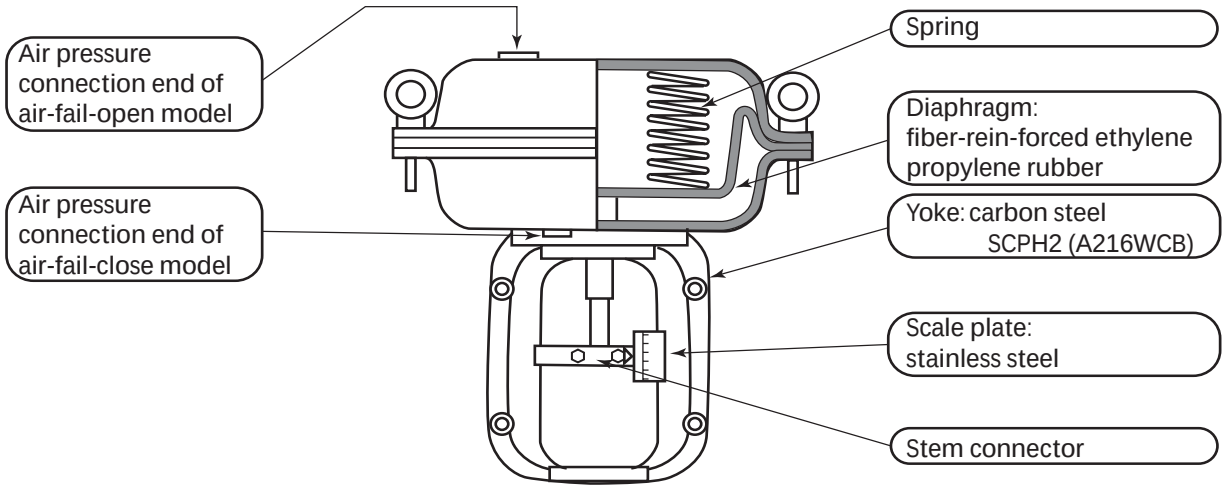

Figure 5 Actuator structure

3-2-1 Actuator and valve actions

Selection of actuator actions determines valve actions (in response to input signals).

Air-to-open : actuator action where the valve opens as the input signal increases

Air-to-close : actuator action where the valve closes as the input signal increases

With the Alphaplus, the valve closes as the plug lowers. The valve action depends, in turn, on whether an Reverse or Direct actuator is chosen.

3-2-2 Tables of allowable differential pressures

Ensure the required shutoff differential pressure specified in the equipment design is satisfied by selecting an actuator with an allowable differential pressure equal to or higher than the shut-off pressure.

3-2-3 Air supply pressure and spring ranges

Select the actuator using the table of allowable differential pressures. The table also assists in determining the actuator's required air supply pressure and required spring range.

If the applicable value in the table of allowable differential pressures is not large enough for the shut-off pressure you need, we sill, at your request, consider a larger actuator size.

3-2-4 Finish

The normal standard finish color for Yamatake control valves is blue (Munsell 10B 5/10). Silver is also available as standard.

You can specify any other color using the number code of the Japan Paint Industry Assignment or the Munsell color system.

Allowable differential pressure for model ADVB

Table 5 Air-to-open

Nominal size (inches)	Actuator	Supply kPa{kgf/cm²}	Spring range kPa{kgf/cm²}	Differential pressure (classified by port diameter) kPa{kgf/cm²}				
				4	6	8	10	12
6	PSA3R	390 {4.0}	80 to 240 {0.8 to 2.4}	1800 {18.0}	1800 {18.0}	-	-	-
				1960 {20.0}	1960 {20.0}	-	-	-
	PSA4R	390 {4.0}	80 to 240 {0.8 to 2.4}	1960 {20.0}	1960 {20.0}	-	-	-
				1960 {20.0}	1960 {20.0}	-	-	-
8	HA4R	390 {4.0}	80 to 240 {0.8 to 2.4}	-	1960 {20.0}	1960 {20.0}	-	-
				-	1960 {20.0}	1960{20.0}	-	-
10	HA4R	390 {4.0}	80 to 240 {0.8 to 2.4}	-	1960 {20.0}	1960 {20.0}	1960 {20.0}	-
				-	1960 {20.0}	1960 {20.0}	1960 {20.0}	-
12	HA4R	390 {4.0}	80 to 240 {0.8 to 2.4}	-	-	500 {5.0}	500 {5.0}	500 {5.0}
				-	-	1960 {20.0}	1960 {20.0}	1960 {20.0}

Table 6 Air-to-close

Nominal size (inches)	Actuator	Supply kPa{kgf/cm²}	Spring range kPa{kgf/cm²}	Differential pressure (classified by port diameter) kPa{kgf/cm²}				
				4	6	8	10	12
6	PSA3D	390 {4.0}	80 to 240 {0.8 to 2.4}	1800 {18.0}	1800 {18.0}	-	-	-
				1960 {20.0}	1960 {20.0}	-	-	-
	PSA4D	390 {4.0}	80 to 240 {0.8 to 2.4}	1960{20.0}	1960 {20.0}	-	-	-
				1960 {20.0}	1960 {20.0}	-	-	-
8	HA4D	390 {4.0}	80 to 240 {0.8 to 2.4}	-	1500 {15.3}	1500 {15.3}	-	-
				-	1960 {20.0}	1960 {20.0}	-	-
10	HA4D	390 {4.0}	80 to 240 {0.8 to 2.4}	-	1500 {15.3}	1500 {15.3}	1500 {15.3}	-
				-	1960 {20.0}	1960 {20.0}	1960 {20.0}	-
12	HA4D	390 {4.0}	80 to 240 {0.8 to 2.4}	-	-	500 {5.0}	500 {5.0}	500 {5.0}
				-	-	1960 {20.0}	1960 {20.0}	1960 {20.0}

Note) 1. Note that the maximum allowable differential pressures must not exceed the maximum working pressure specified by JIS B2201-1984, ANSI B 16.34-1981, and JPI-7S-65-83.

2. In the differential pressure column, upper figures show operating differential pressures and lower figures show differential pressures when the valve is fully closed.

Allowable differential pressures for model ADVM

Table 7 Air-to-open

Nominal size (inches)	Actuator	Supply kPa{kgf/cm²}	Spring range kPa{kgf/cm²}	Differential pressure (classified by port diameter) kPa {kgf/cm²}				
				4	6	8	10	12
6	PSA3R	390 {4.0}	80 to 240 {0.8 to 2.4}	1800 {18.0}	1800 {18.0}	-	-	-
				5100 {52.0}	5100 {52.0}	-	-	-
	PSA4R	390 {4.0}	80 to 240 {0.8 to 2.4}	2900 {30.0}	2900 {30.0}	-	-	-
				5100 {52.0}	5100 {52.0}	-	-	-
8	HA4R	390 {4.0}	80 to 240 {0.8 to 2.4}	-	2900 {30.0}	2900 {30.0}	-	-
				-	5100 {52.0}	5100 {52.0}	-	-
10	HA4R	390 {4.0}	80 to 240 {0.8 to 2.4}	-	2000 {20.4}	2000 {20.4}	2000 {20.4}	-
				-	4400 {45.0}	4400 {45.0}	4400 {45.0}	-
12	HA4R	390 {4.0}	80 to 240 {0.8 to 2.4}	-	-	500 {5.0}	500 {5.0}	500 {5.0}
				-	-	2000 {20.4}	2000 {20.4}	2000 {20.4}

Table 8 Air-to-close

Nominal size (inch)	Actuator	Supply kPa{kgf/cm²}	Spring range kPa{kgf/cm²}	Differential pressure (classified by port diameter) kPa {kgf/cm²}				
				4	6	8	10	12
6	PSA3D	390{4.0}	80 to 240 {0.8 to 2.4}	1800 {18.0}	1800 {18.0}	-	-	-
				5100 {52.0}	5100 {52.0}	-	-	-
	PSA4D	390{4.0}	80 to 240 {0.8 to 2.4}	2900 {30.0}	2900 {30.0}	-	-	-
				5100 {52.0}	5100 {52.0}	-	-	-
8	HA4D	390{4.0}	80 to 240 {0.8 to 2.4}	-	1500 {15.3}	1500 {15.3}	-	-
				-	5100 {52.0}	5100 {52.0}	-	-
10	HA4D	390{4.0}	80 to 240 {0.8 to 2.4}	-	1500 {15.3}	1500 {15.3}	1500 {15.3}	-
				-	5100 {52.0}	5100 {52.0}	5100 {52.0}	-
12	HA4D	390{4.0}	80 to 240 {0.8 to 2.4}	-	-	500 {5.0}	500 {5.0}	500 {5.0}
				-	-	4400 {45.0}	4400 {45.0}	4400 {45.0}

Note) 1. Note that the maximum allowable differential pressures must not exceed the maximum working pressure specified by JIS B2201-1984, ANSI B 16.34-1981, and JPI-7S-65-83.

2. In the differential pressure column, upper figures show operating differential pressures and lower figures show differential pressures when the valve is fully closed.

MODEL SELECTION

CV3000 Alphaplus model no. construction table for pressure-balance type control valve (model ADVB)
Model ADVB - I II III IV V VI VII VIII IX X XI - XII XIII XIV XV XVI - Option

Basic model no.				Selection										
	ADVB	-												
I	Nominal size	6 inches	(150 mm)	A										
		8 inches	(200 mm)	B										
		10 inches	(250 mm)	C										
		12 inches	(300 mm)	D										
II	Port size	4 inches	(100 mm) EQ% *1		U									
		6 inches	(150 mm) EQ% *1		W									
		8 inches	(200 mm) EQ% *1		Y									
		10 inches	(250 mm) EQ% *1		1									
		12 inches	(300 mm) EQ% *1		2									
III	Rating	JIS 10K RF				J								
		ANSI 150 RF				A								
		JPI 150 RF				P								
IV	Bonnet	General purpose for fluid temp. -17 to +230°C					1							
		Extension type for fluid temp. -45 to -17°C or +230 to 400°C					2							
V	Body material	SCPH2						1						
		SCS13A						2						
		SCS14A						3						
		A216WCB						A						
		A351CF8						B						
		A351CF8M						C						
		Others	Enter client's request					9						
VI	Plug material	SUS316							2					
		SUS316 Stellite							4					
		SUS316 Stellite face							7					
		SUS316 Stellite sheath							F					
		UOP-A							H					
		UOP-G							K					
		Others	Enter client's request						9					
VII	Seat leakage	Class III	(0.1% of Cv value)							6				
		Class IV	(0.01% of Cv value)							1				
VIII	Gland packing	PTFE yarn	(for general purpose)								1			
		V shaped PTFE	(for general purpose)								2			
		V shaped PTFE (D)+(R)	(for vacuum service)								3			
		V shaped PTFE	(for low-temp. service)								5			
		V shaped PTFE (Oil free use)									A			
		Graphite yarn	(for high-temp. & water-resistant)								4			
		Graphite yarn	(for high&low-temp. oil-resistant)								6			
		Graphite yarn	(for alkaline & acid resistant)								7			
		Graphite yarn	(for solvent resistant)								8			
		Others	Enter client's request								9			
IX	Actuator and valve	PSA3R	Reverse (Air fail close)									E		
		PSA3D	Direct (Air fail open)									F		
		PSA4R	Reverse (Air fail close)									G		
		PSA4D	Direct (Air fail open)									H		
		HA4R	Reverse (Air fail close)									1		
		HA4D	Direct (Air fail open)									2		
X	Air supply press. spring range	390 kPa / 80-240 kPa											4	
XI	Finish	Standard (Blue: M10B5/10)												1
		Silver												2
		Silver, heat-resistant												3
		Silver, corrosion-resistant												4
		Silver, saline-resistant (Recommend: exposed bolts & nuts: SUS304)												5
		Others	Body / Diaphragm case / Yoke (Enter client's request)											9

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Optional selection - Option

XII	Manual handwheel	No selection			X		
		Side mount			S		
		Top mount (HA4 actuator only)			T		
XIII	Positioner	No selection				X	
		Smart I/P	[AVP300]			C	
		Smart I/P (with position Tx)	[AVP301]			D	
		I/P TIIS water-proof	[HEP17]			1	
		I/P new TIIS flameproof	[HEP15]			2	
		Pneumatic Std type	[HTP]			6	
		Others	Enter client's request			9	
XIV	Combination filter and regulator	No selection					X
		Yes (without pressure gauge) [KZ03]					1
		Others	Enter client's request				9
XV	Solenoid valves	No selection					X
		General purpose water-proof type J320G174 (ASCO)					1
		TIIS flameproof type JE3J320G174 (ASCO)					3
		Others	Enter client's request				9
XVI	Limit switch	No selection					X
		Water-proof single mount	[VCL5001]				1
		Water-proof dual mount	[VCL5001]				2
		TIIS flameproof single mount	[VCX5001]				3
		TIIS flameproof dual mount	[VCX5001]				4
		Others	Enter client's request				9

No selection	X
Vinyl-sheathed copper tube + cap	A
Exposed bolts & nuts: SUS304 *2	B
Copper-free treatment (wetted part)	E
Others	9
Water-free treatment	D

* For [Others] in the additional specification check the following items

[ ] Material certificates of body&bonnet.
[ ] Strength calculation
[ ] Air piping connection 1/4 inch NPT
[ ] Flow characteristics inspection
[ ] Radiographic test (RT)
[ ] Liquid penetrant test (PT)

High-pressure gas regulation approval	Applicable fluid
	Gas type [ ] Toxic gas [ ] Flamable gas [ ] Special HP. gas [ ] Others
	Grade [ ] Grade 1 [ ] Grade 2 [ ] Grade 3
	Design temperature deg.C
	Design pressure MPa
	Applicable plant name

Positioner	Input signal: mA, kPa, kgf/cm²		
	Change of action: [ ] No (direct), [ ] Yes (reverse) *3		
	Change of output characteristics: [ ] No, [ ] Yes *1		
	Position transmit'g feature: (for model AVP301 only): [ ] 4-20mA, [ ] DE *4		
	Compression packings	HEP	[ ] None, [ ] 1 piece
	TIIS flameproof	AVP	[ ] No, [ ] Yes

Solenoid valves	Energize: [ ]CV CONTROL, [ ]CV CLOSE, [ ]CV OPEN, [ ]OTHERS			
	De-energize: [ ]CV CONTROL, [ ]CV CLOSE, [ ]CV OPEN, [ ]OTHERS			
	Power supply	[ ]AC, [ ]DC	V	Hz

Limit switch	Operating position: [ ]CLOSE, [ ]OPEN, [ ]OPEN&CLOSE, [ ]OTHERS
	[ ] Pressure-tight packing adaptor

*Note) *1 Output characteristics conversion*
In case of "No", A to C shall be linear characteristics, and D to U shall be EQ% characteristics.
In case of "Yes", A to C shall be EQ% characteristics, and D to U shall be linear characteristics.
Those above conversion shall be made by positioner.

*Note) *2 Applicable to stud bolts for body, bolts and nuts for handwheel, accessories, and actuators*

*Note) *3 Positioner action*
Direct action: Increase pneumatic output when input signal increased.
Reverse action: Decreased pneumatic output when input signal increased.

*Note) *4 AVP position transmitting feature (model AVP301 only)*
Four-wire connection is required when use position transmitting feature.
DE: Digital signal common to YC group.

CV3000 Alphaplus model no. construction table for pressure-balance type control valve (model ADVM)
Model ADVM - I II III IV V VI VII VIII IX X XI - XII XIII XIV XV XVI - Option

Basic model no.				Selection										
	ADVM	-												
I	Nominal size	6 inches	(150 mm)	A										
		8 inches	(200 mm)	B										
		10 inches	(250 mm)	C										
		12 inches	(300 mm)	D										
II	Port size	4 inches	(100 mm) EQ% *1		U									
		6 inches	(150 mm) EQ% *1		W									
		8 inches	(200 mm) EQ% *1		Y									
		10 inches	(250 mm) EQ% *1		1									
		12 inches	(300 mm) EQ% *1		2									
III	Rating	JIS 20K RF				C								
		JIS 30K RF				D								
		ANSI 300 RF				E								
		JPI 300 RF				F								
IV	Bonnet	General purpose	for fluid temp. -17 to +230°C				1							
		Extension type	for fluid temp. -45 to -17°C or +230 to +400°C				2							
V	Body material	SCPH2						1						
		SCS13A						2						
		SCS14A						3						
		A216WCB						A						
		A351CF8						B						
		A351CF8M						C						
		Others	Enter client's request					9						
VI	Plug material	SUS316							2					
		SUS316 Stellite							4					
		SUS316 Stellite face (Consult with us)							7					
		SUS316 Stellite sheath							F					
		UOP-A							H					
		UOP-G (Consult with us)							K					
		Others	Enter client's request						9					
VII	Seat leakage	Class III	(0.1% of Cv value)							6				
		Class IV	(0.01% of Cv value)							1				
VIII	Gland packing	PTFE yarn	(for general purpose)								1			
		V shaped PTFE	(for general purpose & oil-free use)								2			
		V shaped PTFE (D)+(R)	(for vacuum service)								3			
		V shaped PTFE	(for low-temp. service)								5			
		V shaped PTFE (Oil-free use)									A			
		Graphite yarn	(for high-temp. & water-resistant)								4			
		Graphite yarn	(for high&low-temp. oil-resistant)								6			
		Graphite yarn	(for alkaline & acid resistant)								7			
		Graphite yarn	(for solvent resistant)								8			
		Others	Enter client's request								9			
IX	Actuator and valve	PSA3R	Reverse (Air fail close)									E		
		PSA3D	Direct (Air fail open)									F		
		PSA4R	Reverse (Air fail close)									G		
		PSA4D	Direct (Air fail open)									H		
		HA4R	Reverse (Air fail close)									1		
		HA4D	Direct (Air fail open)									2		
X	Air supply press. spring range	390 kPa / 80-240 kPa											4	
XI	Finish	Standard (Blue: M10B5/10)												1
		Silver												2
		Silver, heat-resistant												3
		Silver, corrosion-resistant												4
		Silver, saline-resistant (Recommend: exposed bolts & nuts: SUS304)												5
		Others	Body / Diaphragm case / Yoke (Enter client's request)											9

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Optional selection

Option

XII	Manual handwheel	No selection		X		
		Side mount		S		
		Top mount (HA4 actuator only)		T		
XIII	Positioner	No selection			X	
		Smart I/P	[AVP300]		C	
		Smart I/P (with position Tx)	[AVP301]		D	
		Smart I/P TIIS water-proof	[AVP300]		G	
		Smart I/P new TIIS flameproof type (with motion transmitter)	[AVP301]		H	
		I/P TIIS water-proof	[HEP17]		1	
		I/P new TIIS flameproof	[HEP15]		2	
		Pneumatic Std type	[HTP]		6	
		Others	Enter client's request		9	
XIV	Combination filter and regulator	No selection				X
		Yes (without pressure gauge)	[KZ03]			1
		Others	Enter client's request			9
XV	Solenoid valves	No selection				X
		General purpose water-proof type J320G174 (ASCO)				1
		JIS flameproof type JE3J320G174 (ASCO)				3
		Others	Enter client's request			9
XVI	Limit switch	No selection				X
		Water-proof single mount	[VCL5001]			1
		Water-proof dual mount	[VCL5001]			2
		TIIS flameproof single mount	[VCX5001]			3
		TIIS flameproof dual mount	[VCX5001]			4
		Others	Enter client's request			9

No selection	X
Vinyl-sheathed copper tube + cap	A
Exposed bolts & nuts: SUS304 *2	B
Copper-free treatment (wetted part)	E
Others	9
Water-free treatment	D

* For [Others] in the additional specification check the following items
[ ] Material certificates of body&bonnet.
[ ] Strength calculation
[ ] Air piping connection 1/4 inch NPT
[ ] Flow characteristics inspection
[ ] Radiographic test (RT)
[ ] Liquid penetrant test (PT)

High-pressure gas regulation approval	Applicable fluid
	Gas type [ ] Toxic gas [ ] Flamable gas [ ] Special HP. gas [ ] Others
	Grade [ ] Grade 1 [ ] Grade 2 [ ] Grade 3
	Design temperature deg.C
	Design pressure MPa
	Applicable plant name

Positioner	Input signal: mA, kPa, kgf/cm²		
	Change of action: [ ] No (direct), [ ] Yes (Reverse) *3		
	Change of output characteristics: [ ] No, [ ] Yes *1		
	Position transmit'g feature: (for model AVP301 only): [ ] 4-20mA, [ ] DE *4		
	Compression packings	HEP	[ ] None, [ ] 1 piece
	TIIS flameproof	AVP	[ ] No, [ ] Yes

Solenoid valves	Energize: [ ]CV CONTROL, [ ]CV CLOSE, [ ]CV OPEN, [ ]OTHERS			
	De-energize: [ ]CV CONTROL, [ ]CV CLOSE, [ ]CV OPEN, [ ]OTHERS			
	Power supply	[ ]AC, [ ]DC	V	Hz

Limit switch	Operating position: [ ]CLOSE, [ ]OPEN, [ ]OPEN&CLOSE, [ ]OTHERS
	[ ] Pressure-tight packing adaptor

*Note) *1 Output characteristics conversion*
In case of "No", A to C shall be linear characteristics, and D to U shall be EQ% characteristics.
In case of "Yes", A to C shall be EQ% characteristics, and D to U shall be linear characteristics.
Those above conversion shall be made by positioner.

*Note) *2 Applicable to stud bolts for body, bolts and nuts for handwheel, accessories, and actuators*

*Note) *3 Positioner action*
Direct action: Increase pneumatic output when input signal increased.
Reverse action: Decreased pneumatic output when input signal increased.

*Note) *4 AVP position transmitting feature (model AVP301 only)*
Four-wire connection is required when use position transmitting feature.
DE: Digital signal common to YC group.

DIMENSIONS

Table 9 Main dimensions

Nominal size (inches)	Actuator	A		H		E	B
		JIS 10K ANSI 150 JPI 150	ANSI 300 JPI 300	General use bonnet	Extension bonnet		
6	PSA3D, R	451	473	750	1000	265	350
	PSA4D, R			805	1055		470
8	HA4D, R	543	568	1010	1260	350	470
10	HA4D, R	673	708	1040	1290	400	470
12	HA4D, R	737	772	1070	1320	470	470

Table 10 Product weights

Nominal size (inches)	Actuator	Weight (kg) without handwheel			
		Class 150		Class 300	
		General use bonnet	Extension bonnet	General use bonnet	Extension bonnet
6	PSA3	195	200	215	215
	PSA4	215	220	230	235
8	HA4	410	415	440	445
10	HA4	595	600	635	640
12	HA4	825	830	890	895

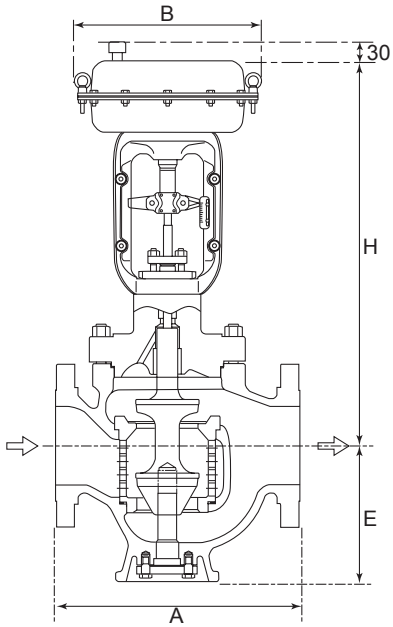

Figure 6 Face-to-face dimension and overall dimensions

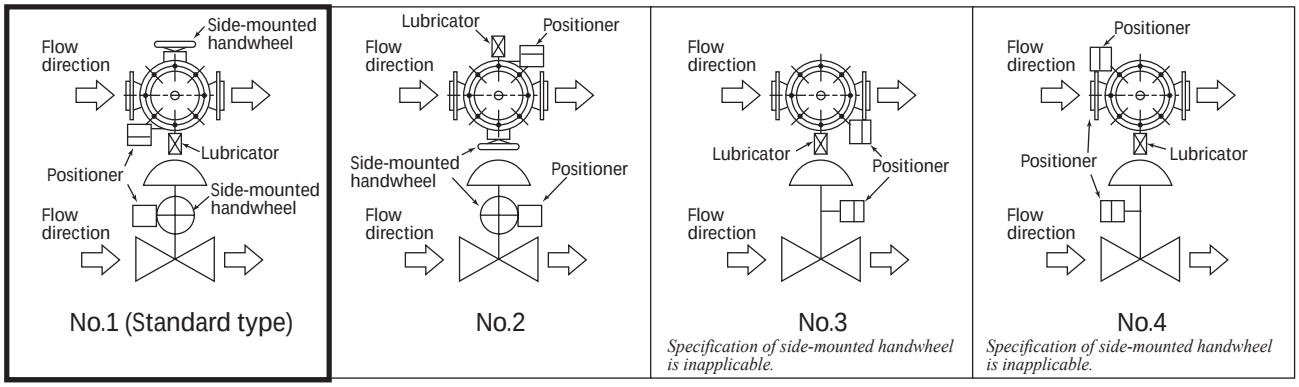

Figure 7 Actuator orientation

Note) Indicate by position number when installation other than the standard type is required.

Specifications are subject to change without notice.

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