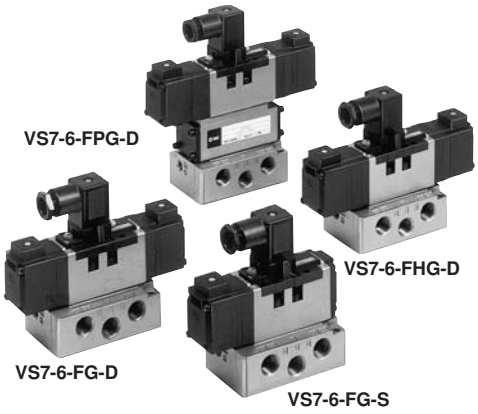
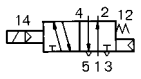
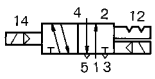
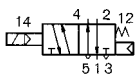
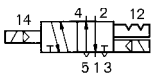
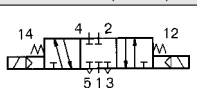
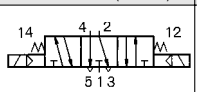
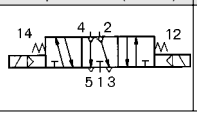
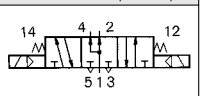
ISO Interface Solenoid Valve/SIZE①
Metal Seal
Series VS7-6



	Single solenoid (FG-S)	Double solenoid (FG-D)	Reverse pressure (YZ-S)*	Reverse pressure (YZ-D)*
2 position				

	Closed centre (FHG-D)	Exhaust centre (FJG-D)	Double pilot check (FPG-D)	Pressure centre (FLG-D)*
3 position				

* Option

Standard Specifications

Fluid	Air/Inert gas
Operating pressure	0.1 to 1.0MPa
Ambient and fluid temperature	5 to 60°C
Manual override	Non-locking style, Locking style*
Electrical entry	DIN connector
Lubrication	Non-lube
	If provided, use turbine oil (ISO, VG32)
Shock resistance (Vibration resistance) (1)	150/50 m/s²
Applicable sub-plate	VS7-1 (ISO size ①)

* Option
Note) Shock resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve and armature, for both energized and de-energized states. (Value in the initial stage.)
Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000 Hz. Test was performed at both energized and de-energized states to the axis and right angle directions of the main valve and armature. (Value in the initial stage.)

Pilot Valve/Spacifications

Part No.*	$AXT511^{A}_{B}$-1 (V)	$AXT511^{A}_{B}$-2 (V)	$AXT511^{A}_{B}$-3 (V)	$AXT511^{A}_{B}$-4 (V)
Rated voltage (V)	100V AC 50/60 Hz	200V AC 50/60 Hz	24V DC	12V DC
Inrush current (A)	0.049/0.043	0.024/0.021	0.075	0.15
Holding current (A)	0.031/0.020	0.015/0.01		
Allowable voltage (V)	85 to 110% of rated voltage			
Insulation	Class B (130°C) or equivalent			

* A: With 2-M4 X 46 bolts for 2 position valve, B: With 2-M4 X 54 bolts for 3 position valve Note) Based on JIS C4003.
(V): Pilot EXH individual style.

Option/Interface regulator

Interface regulator model (1)		ARB250		
Applicable solenoid valve		VS7-6		
Regulation port		A	B	P
Proof pressure		1.5MPa		
Max. operating pressure		1.0MPa		
Set pressure range		0.1 to 0.83 Mpa		
Ambient and fluid temperature		5 to 60°C		
Pressure gauge port size		1/8		
Weight (kg)		0.55		
Air supply side eff. area S (P=0.7MPa, P1=0.5MPa) (2) (mm²)	P/A	15	16	13
	P/B	16	16	11
Air exhaust side eff. area S (P2=0.5MPa) (2)	A/EA	25 mm²		
	B/EB	18 mm²		

Note 1) Use "ABR210" for pressure centre style and reverse pressure style.
Note 2) Synthesized effective area with 2 position single style solenoid valve.

Model

No. of positions	Model	Effective area (With 1/4 sub-plate) (mm²) (N ℓ/min)	Max. operating rate (1) (cycle/sec.)	Response time (2) (sec)	Weight (3) (kg)
2 (Single)	**VS7-6-FG-S-□-Q**	27 (1472.25)	20	0.025 or less	0.460
2 (Double)	**VS7-6-FG-D-□-Q**	27 (1472.25)	20	0.015 or less	0.560
3 (Closed centre)	**VS7-6-FHG-D-□-Q**	25.5 (1374.10)	10	0.045 or less	0.635
3 (Exhaust centre)	**VS7-6-FJG-D-□-Q**	27 (1374.10)	10	0.045 or less	0.635
3 (Pilot check)	**VS7-6-FPG-D-□-Q**	20 (1079.65)	10	0.05 or less	0.990

(1) Min. operating frequency is based on JIS B8375. (Once every 30 days)
(2) Based on JIS B8375-1975 (At 0.5MPa)
(3) Weight without sub-plate (Sub-plate: 0.37kg)
(4) (1) and (2) are the rates in the condition of controlled clean air.

Note:

Please note that single subplates and manifolds have changed colour from platinium silver to white as standard. Valves will remain platinium silver.

Accessories

Mounting bolt (with washer)	TA-B-5 X 35
Packing	AXT500-13
Indicator light	(Option)

Optional Specifications

Surge voltage suppressor	Available
Reverse pressure	R1/R2 port: Pressure in R1=P1 pressure R2=P2 pressure, P1≦P2

Double Pilot Check Spacer/Series FPG

Cylinder mid-stroke, long term retention possible.

The use of the double pilot check spacer equipped with a built-in double check valve enables the cylinder to stop and remain at mid-stroke for long periods regardless of air leakage between the spool and sleeve.

3 Position Double Pilot Check Valve (Wedge packing style) VS7-6-FHG-D-□R

3 position double pilot check valve achieves a reduction in air leakage as a result of main valve construction which features co-axial wedge packing (Max. leakage: 10 cm³/min (ANR)).

⚠ Caution

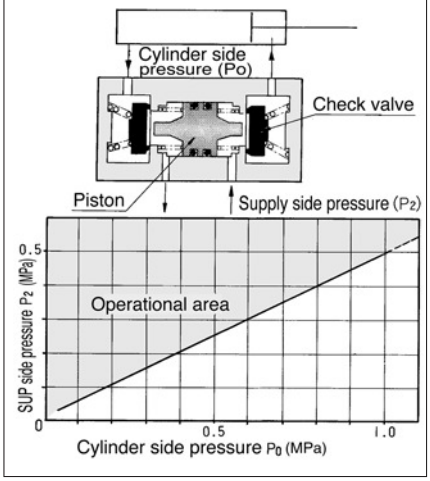
- Verify that there is no leakage from the pipes between valve and cylinder, and from fittings. Check for leaks by using neutral detergent solution before use. Also check the cylinder packing and the piston packing. If there is leakage, cylinder may not stop at the mid-stroke position, and could move immediately after the valve is de-energized.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

Double Pilot Check Spacer Specifications

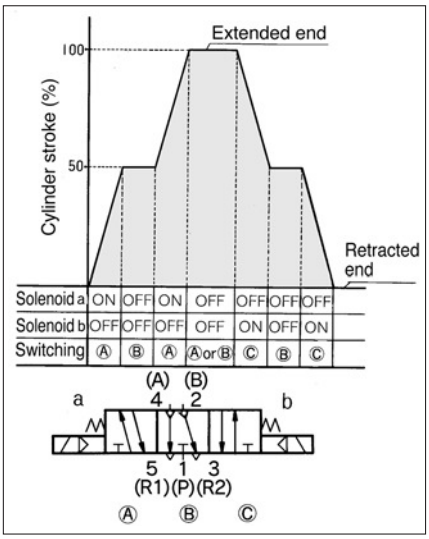
Double pilot check spacer model		VV71-FPG		
Applicable solenoid valve/air operated valve		Series VS7-6/VSA7-6		
Leakage (cm³/min (ANR))	With one side solenoid energized. (With one side pilot air pressured)	P	R_1	130
			R_2	
	Both sides solenoids de-energized. (With both sides pilots not air pressured)	P	R_1	130
			R_2	
		B	R_1	0
		A	R_2	

Check Valve/Operation Pressure Characteristics

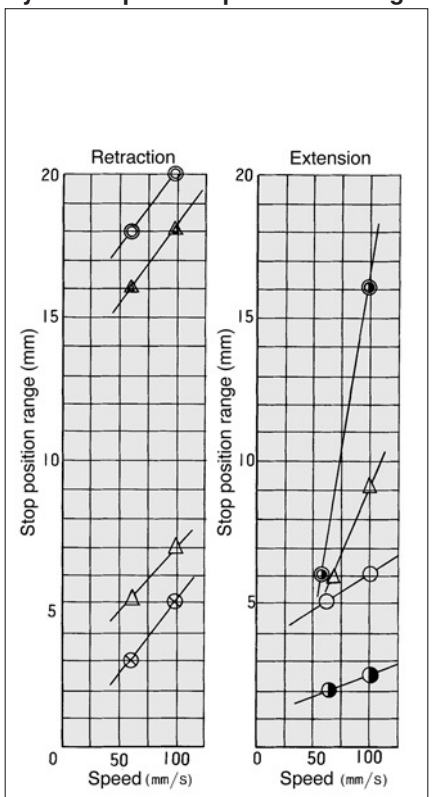
The check valve will operate correctly providing that cylinder side pressure is not in excess of two times the supply pressure.



Cylinder Operation Chart



Cylinder Speed/Stop Position Range

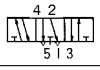


Cylinder ø50-450st	Cylinder ø80-450st	Supply pressure	Load	Load factor ø50	Load factor ø80
—◎—	—○—	0.2MPa	25kg	51%	28%
	—⊗—	0.5	25	25	11
—◑—	—◑—	0.2	35	72	39
—◬—	—△—	0.5	35	36	16

How to Order

E VS7 − 6 − FG − S − 1 □ □ □ □ − Q

Symbol

FG		FJG	
YZ*		FPG	
FHG		FIG*	

∗ Option

Number of solenoid

S	Single
D	Double

Rated voltage

1	100V AC
2	200V AC
3	24V DC
4	12V DC
9	Others (250V or less)

Order Made Contact SMC for other voltages (9)

Protective class class I (Mark: ⏚)

Option

—	None
N	Indicator light
M	Direct manual override
Z	Indicator light with surge voltage suppressor
MR	Wedge packing style with direct manual override
R	Wedge packing style
V	Individual pilot EXH

∗ If specifying more than one symbol, indicate them in the alphabetical order.

Port size of sub-plate

—	Without sub-plate
A02	Side piping 1/4 *
A03	Side piping 3/8
B02	Bottom piping 1/4 *
B03	Bottom piping 3/8

∗ R port: 3/8

Connector

—	Connector
0	W/o connector

Thread

—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

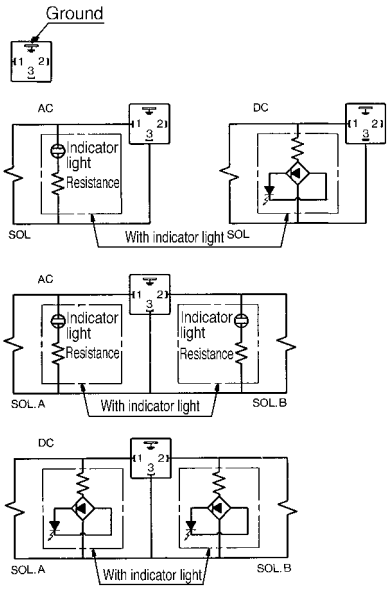
Note:
Manifold exploded view see page 1.19-33 for details.

⚠ Precautions

Be sure to read before handling. Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.

⚠ Caution

DIN Connector (Wiring)



Interface Regulator Specifications

Specifications

Interface regulator model		ARB250		
Applicable solenoid valve		VS7-6		
Regulation port		A	B	P
Max. operating pressure		1.0MPa (1)		
Setting pressure range		0.1 to 0.83MPa (1)		
Ambient and fluid temperature		5 to 60°C (3)		
Pressure gauge port size		1/8		
Weight (kg)		0.55		
Air supply side eff area (mm^2) S (P=0.7MPa, P1=0.5MPa)	P→A	15	16	13
	P→B	16	16	11
Air exhaust side eff area S (P2=0.5MPa)	A→EA	25 mm^2		
	B→EB	18 mm^2		

Note 1) Maximum operating pressure of solenoid valve is 0.9 MPa.
Note 2) Be sure to set pressure within setting pressure range of the solenoid valve.
Note 3) Solenoid valve: Max. 50°C
Note 4) Synthesized effective area with 2 position single style solenoid valve.
Note 5) •Supply pressure to interface regulator only from P port except when it is used with reverse pressure style valve.
•Use the ARB210 or ARB310 model to combine a pressure centre valve and the A and B port pressure reduction of a spacer style regulator.
•Use the ARB210 or ARB310 model to combine a reverse pressure valve and a spacer style regulator. The P port pressure reduction cannot be used.
•To use a perfect valve and a spacer style regulator, use a manifold or a sub plate as the standard and stack in the following order: the perfect spacer, spacer style regulator, and the valve.
•When a closed centre valve is combined with the A and B port pressure reduction of a spacer style regulator, it cannot be used for intermediate stops of the cylinder because of the leakage from the relief port of the regulator.

Power Source and Wiring

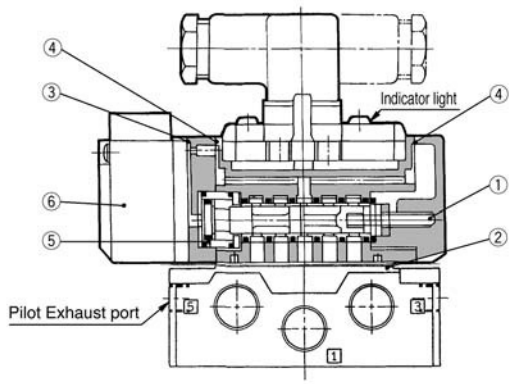
①Make sure all contacts are secure.
②Voltage should be held within the allowable voltage range.

How to calculate flow rate

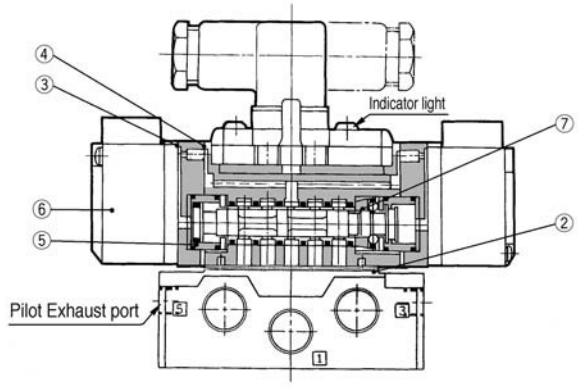
Refer to p.0-36 for flow rate calculations.

Construction

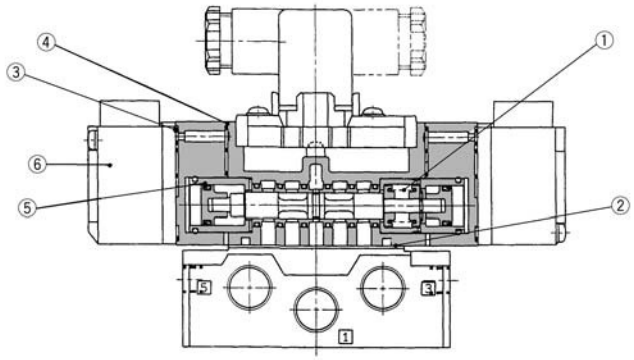
VS7-6-FG-S-□□-Q



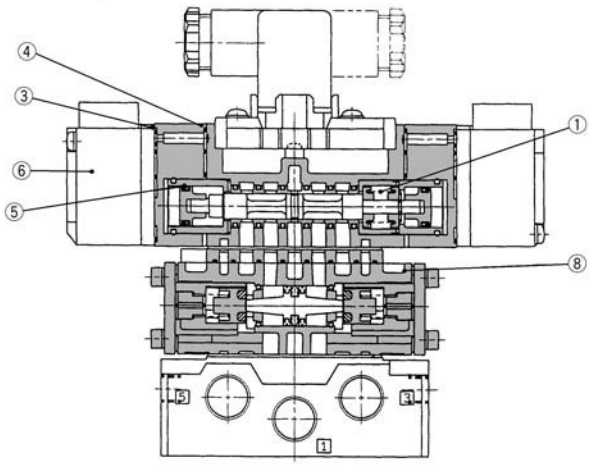
VS7-6-FG-D-□□-Q



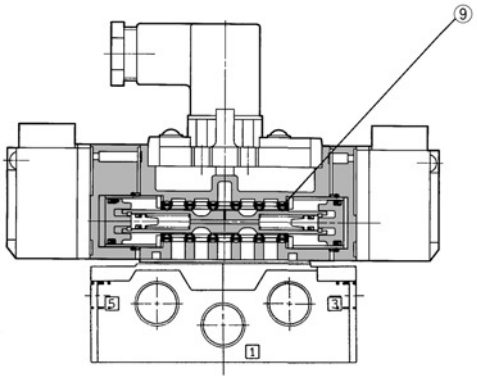
VS7-6-FHG-□□-Q
VS7-6-FJG-□□-Q



VS7-6-FPG-□□-Q



VS7-6-FHG-D-□R-Q

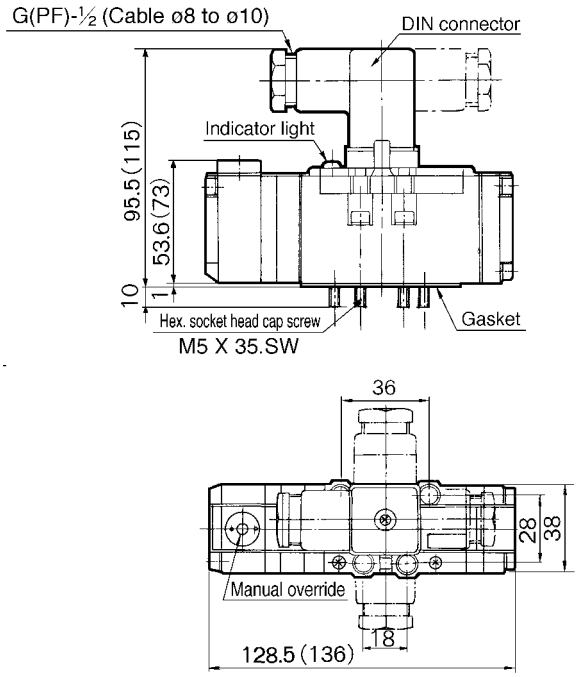


Replacement Parts

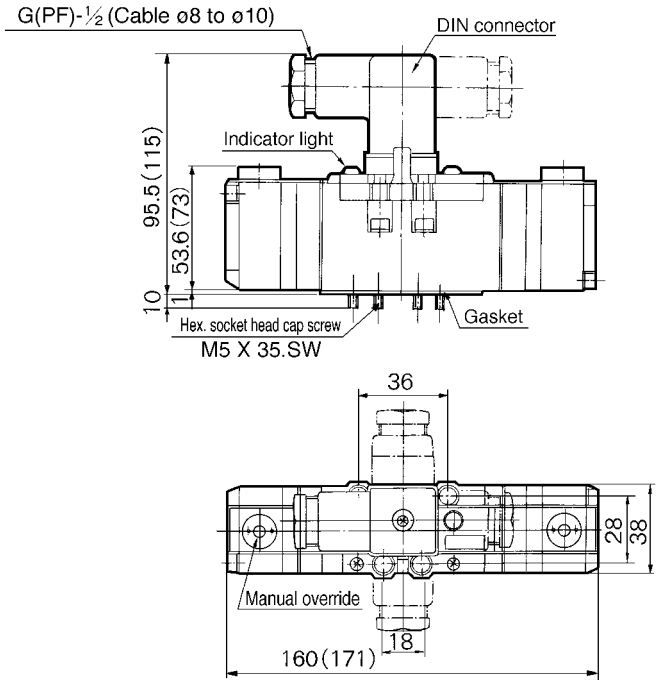
No.	Description	Material	Part No.				
			VS7-6-FG-S	**VS7-6-FG-D**	**VS7-6-FHG**	**VS7-6-FJG**	**VS7-6-FPG**
①	Return spring	SUS	AXT500-12-2	—	VFS3000-17-2	VFS3000-17-2	VFS3000-17-2
②	Gasket	NBR	AXT500-13	AXT500-13	AXT500-13	AXT500-13	AXT500-13
③	Gasket	NBR	AXT503-35	AXT503-35	AXT503-35	AXT503-35	AXT503-35
④	Gasket	NBR	AXT503-12-1	AXT503-12-1	AXT503-12-1	AXT503-12-1	AXT503-12-1
⑤	Mini-Y-packing	NBR	MY-11N	MY-11N	MY-11N	MY-11N	MY-11N
⑥	Pilot valve assembly	—	AXT511A-□	AXT511A-□	AXT511B-□	AXT511B-□	AXT511B-□
⑦	Detent assembly		—	AXT500-9	—	—	—
⑧	Double pilot check spacer	—	—	—	—	—	VV71-FPG
⑨	Packing	NBR	—	—	AXT643-2-1	—	—

Without Sub-plate/Dimensions

VS7-6-FG-S-□□-Q

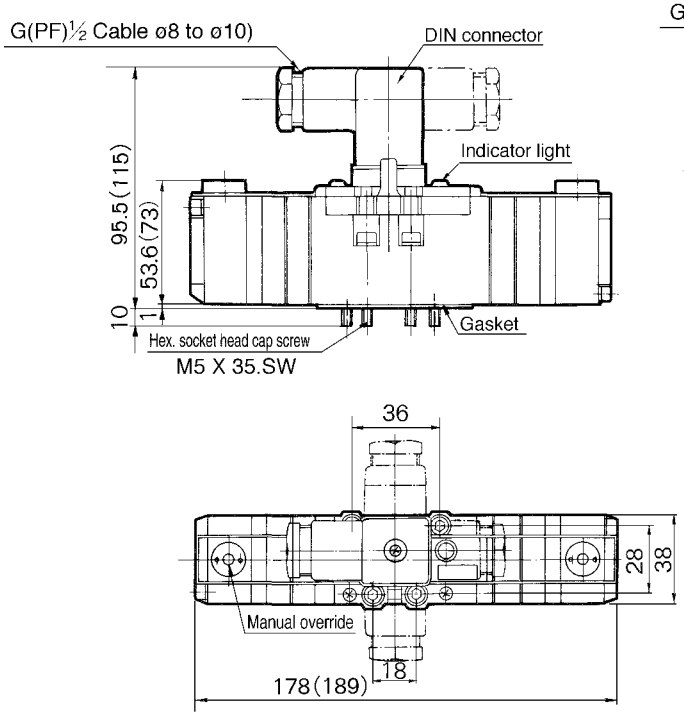


VS7-6-FG-D-□□-Q

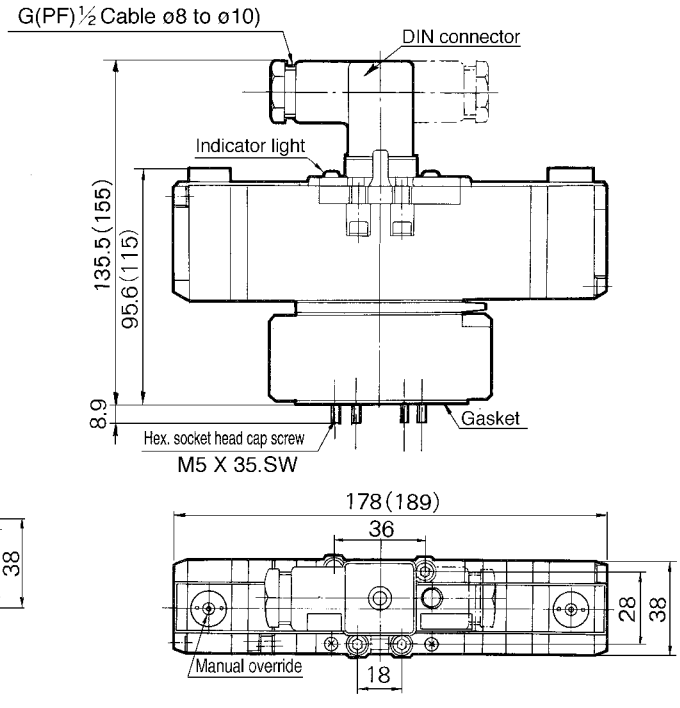


( ): In case of direct manual override style.

VS7-6-FHG-□□-Q
VS7-6-FJG-□□-Q



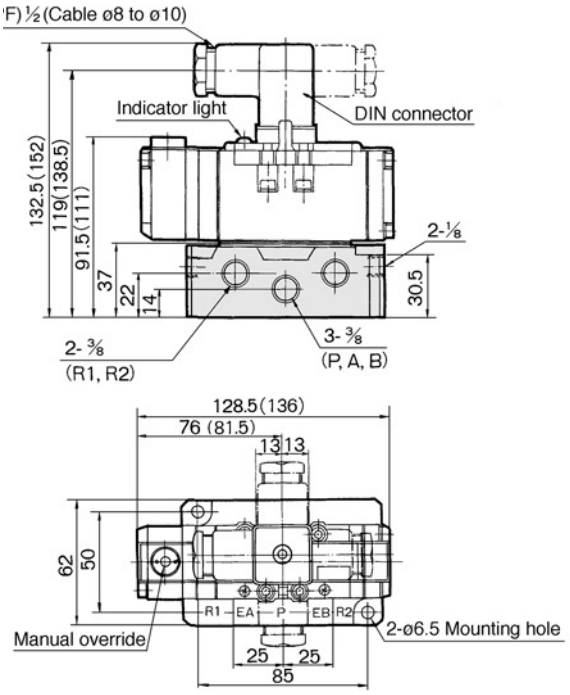
VS7-6-FPG-□□-Q



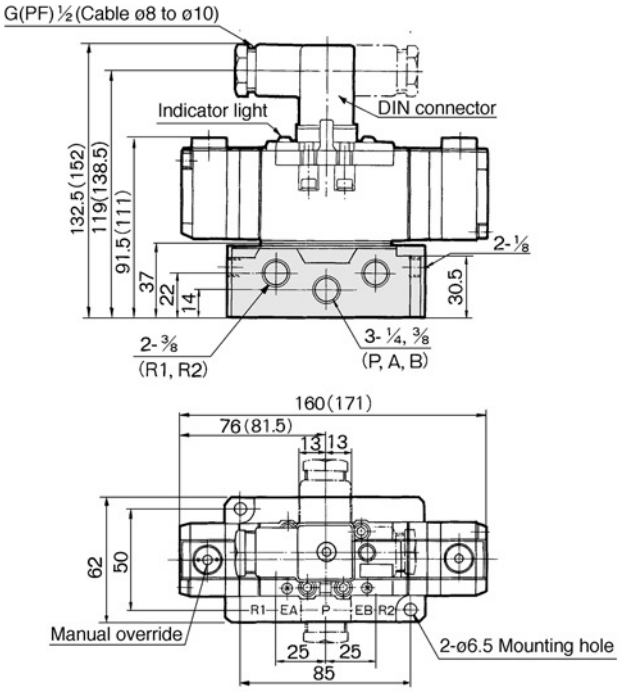
( ): In case of direct manual override style.

With Sub-plate/Dimensions

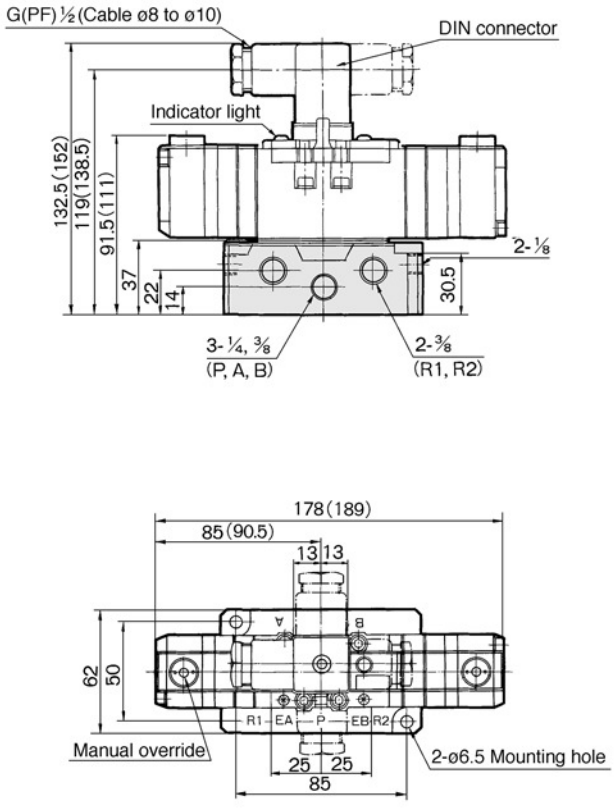
VS7-6-FG-S-□□ Port size of sub-plate -Q



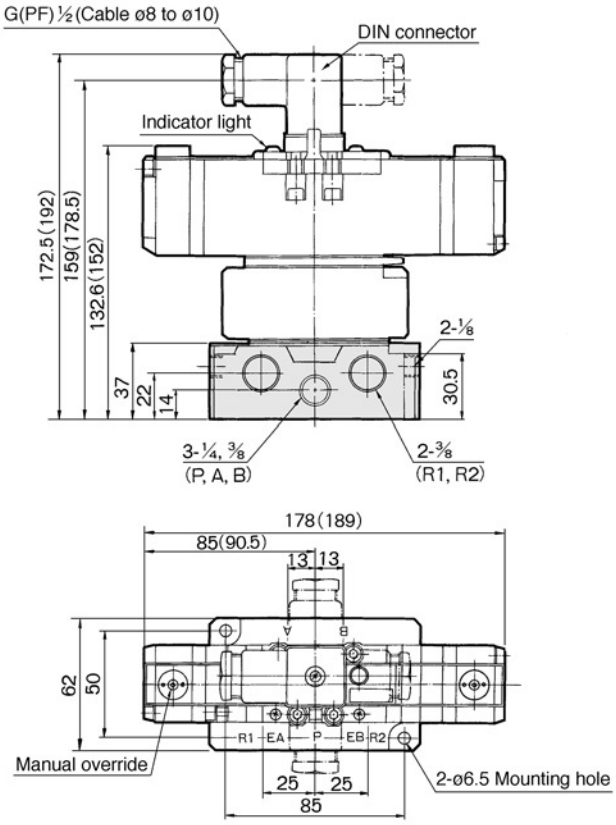
VS7-6-FG-D-□□ Port size of sub-plate -Q



VS7-6-FHG-□□ Port size of sub-plate -Q
VS7-6-FJG-□□ Port size of sub-plate -Q



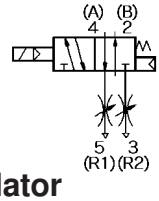
VS7-6-FPG-□□ Port size of sub-plate -Q



( ): In case of direct manual override style.

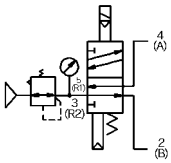
¡Interface Speed Control

Symbol

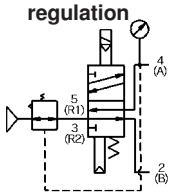


¡Interface Regulator

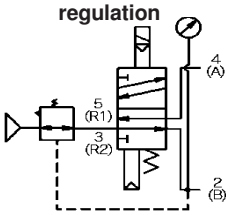
Symbol



P port regulation



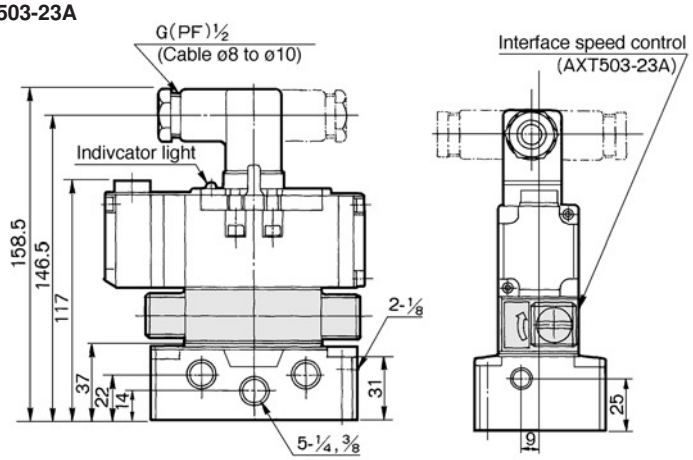
A port regulation



B port regulation

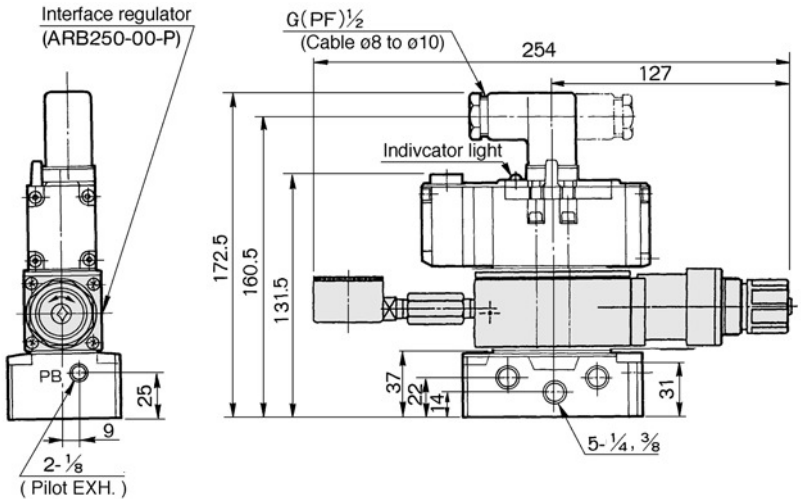
Interface Speed Control

AXT503-23A

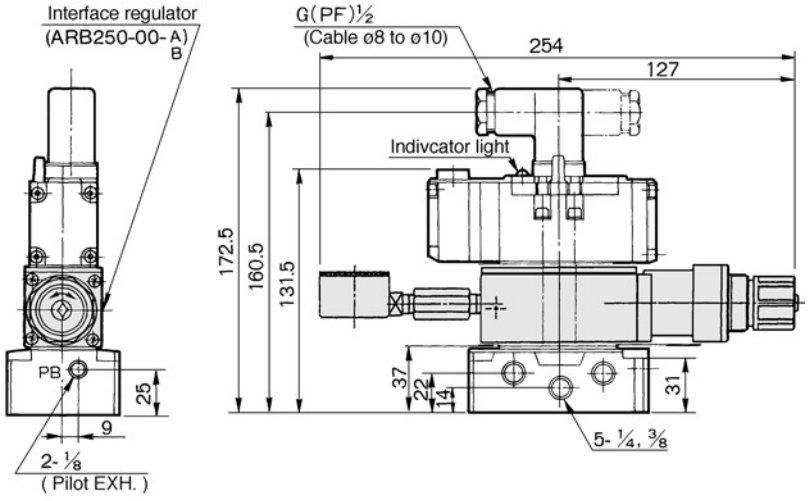


Interface Regulator/Dimensions

P regulation/ARB250-00-P



A port regulation/ARB250-00-A
B port regulation/ARB250-00-B



Series VS7-6
Sub-plate

Sub-plate: Series VS7-1/VSA7-1

Specifications

Applicable solenoid valve/air operated valve	Series ISO size ①
Sub-plate size	ISO size ①
Piping*	Side piping 1/4 3/8
	Bottom piping 1/4 3/8
Weight	0.37kg

* All R ports: 3/8

How to Order

E VS7 – 1 – A02 □

Piping

A02	Side piping 1/4*
A03	Side piping 3/8
B02	Bottom piping 1/4*
B03	Bottom piping 3/8

* R port: 3/8

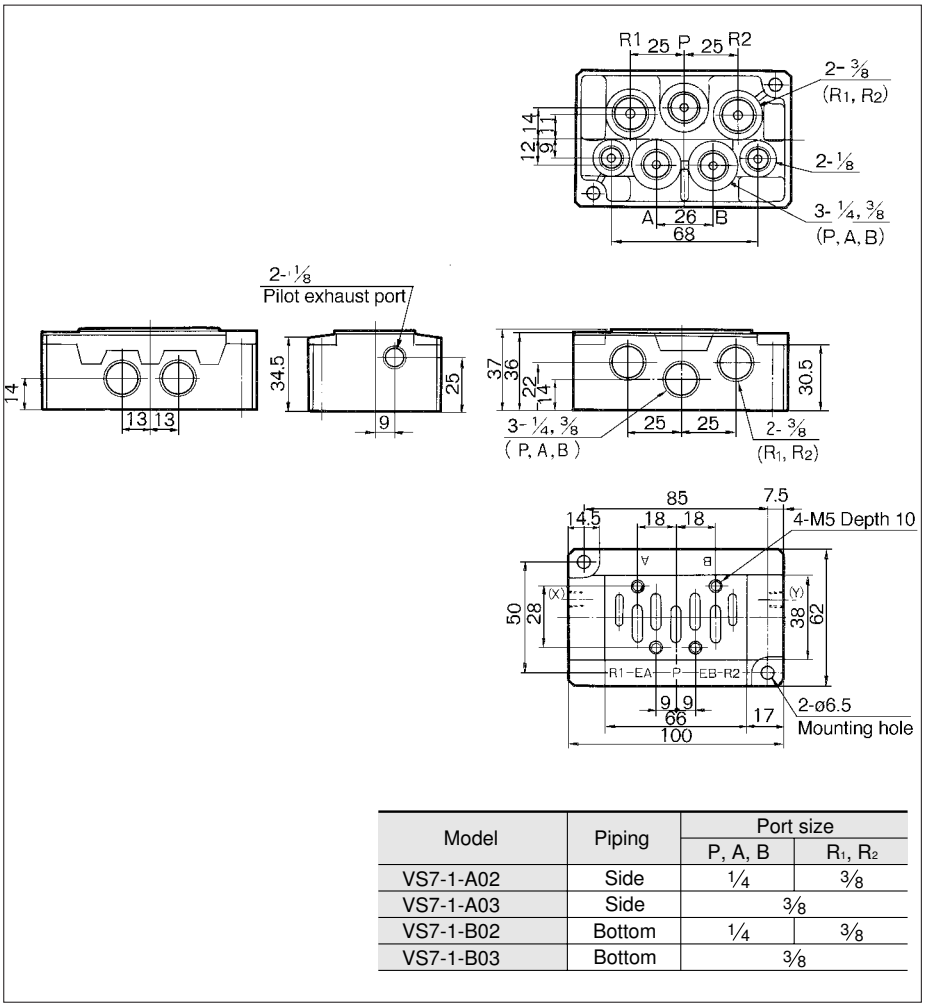
Thread

—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Dimensions



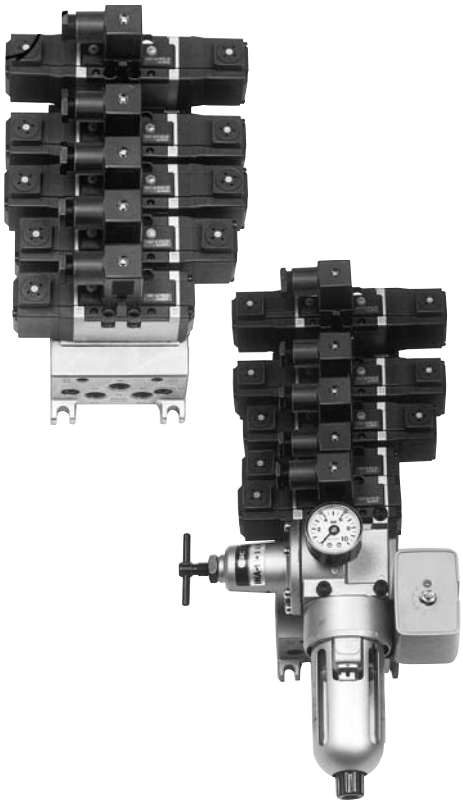
Model	Piping	Port size	
		P, A, B	R1, R2
VS7-1-A02	Side	1/4	3/8
VS7-1-A03	Side	3/8	
VS7-1-B02	Bottom	1/4	3/8
VS7-1-B03	Bottom	3/8	

Note:

Please note that single subplates and manifolds have changed colour from platinium silver to white as standard. Valves will remain platinium silver.

Manifold

Manifold: Series VV71



Standard Specifications

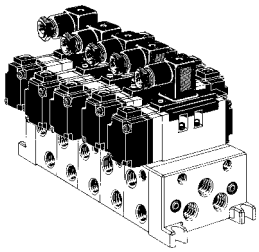
Manifold block size		ISO size ①
Applicable solenoid valve		Series ISO size ①
Number of stations		1 to 10*
Piping	A, B-port	1/4 3/8 One-touch fitting: ø6, ø8, ø10
	P, R1, R2-port	1/4 3/8 One-touch fitting: ø12
F. R. Unit		Air filter (Auto drain, Manual drain), Regulator, Pressure switch, Air release valve
Individual SUP spacer		VV71-P-□(02:1/4 ,03:3/8 ,C10: ø10)
Individual EXH spacer		VV71-R-□(02:1/4 ,03:3/8 ,C12: ø12)
Gallery blank disc (Differential pressure style)		AXT502-14

* Including F.R.Unit (equivalent to 2 stations)

The manifold Series VV71□ has a wide variety of functions and piping, compatible with virtually any application.

Common EXH Style

Every valve is supplied and exhausted by the same SUP and EXH ports running through the connected manifolds. This is the most popular configuration. When there are 5 or more stations operating simultaneously and pilot back pressure is 0.2kgf/cm² or more, it is recommended that all pilot EXH ports (PE) of the manifold base (4 on U side and 2 on D side, total 6 ports) be open.
Also, use "AN110-01" for silencer for pilot EXH.



Multiple Pressure SUP Style

Allows supply of 2 or more different pressure to one manifold.

¡Put in a gallery blank disc (AXT502-14) between the stations to operate at different pressures. A dual pressure supply can be supplied from both the left and right sides of the manifold. If 3 or more pressures are supplied, the individual SUP spacer should be used.

Bottom Piping Style/1/4, 3/8 **(A, B-port)**

When side piping appearance is not acceptable or space is limited, either some of, or all ports, can be arranged with bottom piping.

Individual Pilot EXH Style

If there are many valve stations operating at the same time or operation frequency is high, trouble caused by back pressure will be prevented by using individual pilot EXH style valve ("VS7-6-□-□").

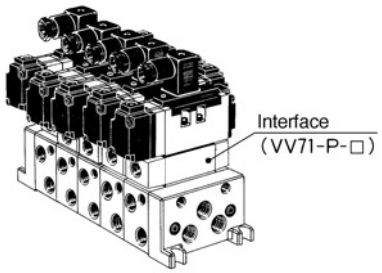
Individual EXH Style

Every valve has an independent EXH port of its own.

¡An Individual EXH spacer (VV71-R-□) mounted on the manifold block allows each valve to exhaust individually.

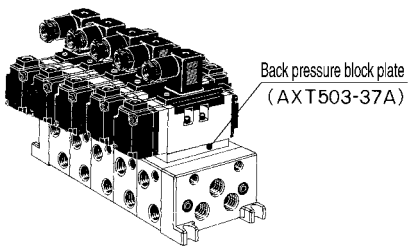
Individual SUP Style

¡An Individual SUP spacer (VV71-P-□) mounted on the manifold block allows each valve to be supplied individually.



Main EXH Back Pressure Block Style

¡If there are many valve stations operating at the same time and main EXH back pressure may cause trouble, mount back pressure block plate ("AXT503-37A") to prevent effects of main EXH back pressure.



Note:

Please note that single subplates and manifolds have changed colour from platinium silver to white as standard. Valves will remain platinium silver.

VS7-6

How to Order (Manifold)

E VV71 5 — 03R — □ 03D □ □ — Q

Stations

1	1
⋮	⋮
10	10*

* Includes F. R. Unit (equivalent to 2 stations).

Piping/A, B port

02R	1/4 (Right)
03R	3/8 (Right)
02L	1/4 (Left)
03L	3/8 (Left)
02Y	1/4 (Bottom)
03Y	3/8 (Bottom)
C6R	One-touch for ø6 tube (Right)
C8R	One-touch for ø8 tube (Right)
C10R	One-touch for ø10 tube (Right)
C6L	One-touch for ø6 tube (Left)
C8L	One-touch for ø8 tube (Left)
C10L	One-touch for ø10 tube (Left)
*	Combination

* Please provide piping specifications.

Control unit

—	Without
A	Filter with auto-drain, regulator, air release valve
AP	Filter with auto-drain, regulator, pressure switch, air release valve
M	Filter with manual drain, regulator, air release valve
MP	Filter with manual drain, regulator, pressure switch, air release valve
F	Filter with auto-drain, regulator (air release valve-blank)
G	Filter with manual drain, regulator (air release valve-blank)
C	Air release valve (filter, regulator-blank)
E	Air release valve

Piping/P, R1, R2 Port

02D	1/4 (Bottom)
02U	1/4 (Top)
02B	1/4 (Both sides)
03D	3/8 (Bottom)
03U	3/8 (Top)
03B	3/8 (Both sides)
C12D	One-touch fitting for ø12 tube (Bottom)
C12U	One-touch fitting for ø12 tube (Top)
C12B	One-touch fitting for ø12 tube (Both sides)
*	Combination

* Please provide piping specifications.

Silencer box

—	W/o silencer box
SB	Silencer box

* Mounting position of silencer box is in accordance with piping of R1 and R2 ports.

Air release valve/Rated voltage

—	Without air release valve
1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	24V DC
4	12V DC
9	Others(250V or less)

Contact SMC for other voltages (9)

Protective class class I (Mark: ⏚)

Note) Manifold exploded view see page 1.19-33 for details

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

F. R. Unit for Manifold

Air filter, regulator, pressure switch, air release valve can be directly mounted to the manifold base, simplifying piping.

Classification of Control Unit

Control unit \ Symbol	—	A	AP	M	MP	F	G	C	E
Air filter with auto-drain		○	○			○			
Air filter with manual drain				○	○		○		
Regulator		○	○	○	○	○	○		
Air release valve		○	○	○	○			○	○
Pressure switch			○		○				
Blank plate (Air release valve)						○	○		
Blank plate (Air filter, Regulator)								○	
Manifold blocks necessary for mounting	—	2	2	2	2	2	2	2	1

F. R. Unit/Specifications

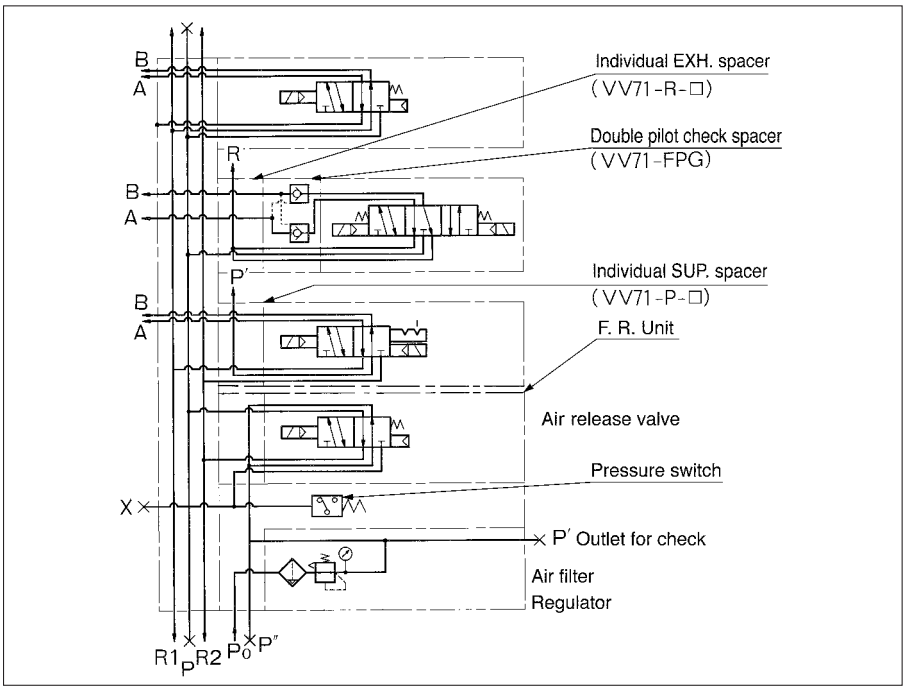
Air filter (w/auto-drain, w/manual drain)	
Filtration	5μm
Regulator	
Set press. (secondary)	0.05 to 0.85MPa
Pressure switch	
Pressure regulation range	0.1 to 0.7MPa
Contacts	1ab
Rated current	(Induction load) 125V AC 3A, 250V AC 2A
Air release valve (Single only)	
Operating press. range	0.1 to 1.0MPa

Options

Blank plate	AXT502-9A (for manifold)
	AXT502-18A (for air release valve adaptor plate)
	MP2 (for control unit/filter regulation valve)
	MP3 (for pressure switch)
Air release valve adaptor plate	AXT502-17A
F. R. Unit	VAW-A (Adaptor plate, filter with auto drain cock, regulator)
	VAW-M (Adaptor plate, filter with manual drain cock, regulator)
Pressure switch	IS3100-X230 (2-M5 X 12)

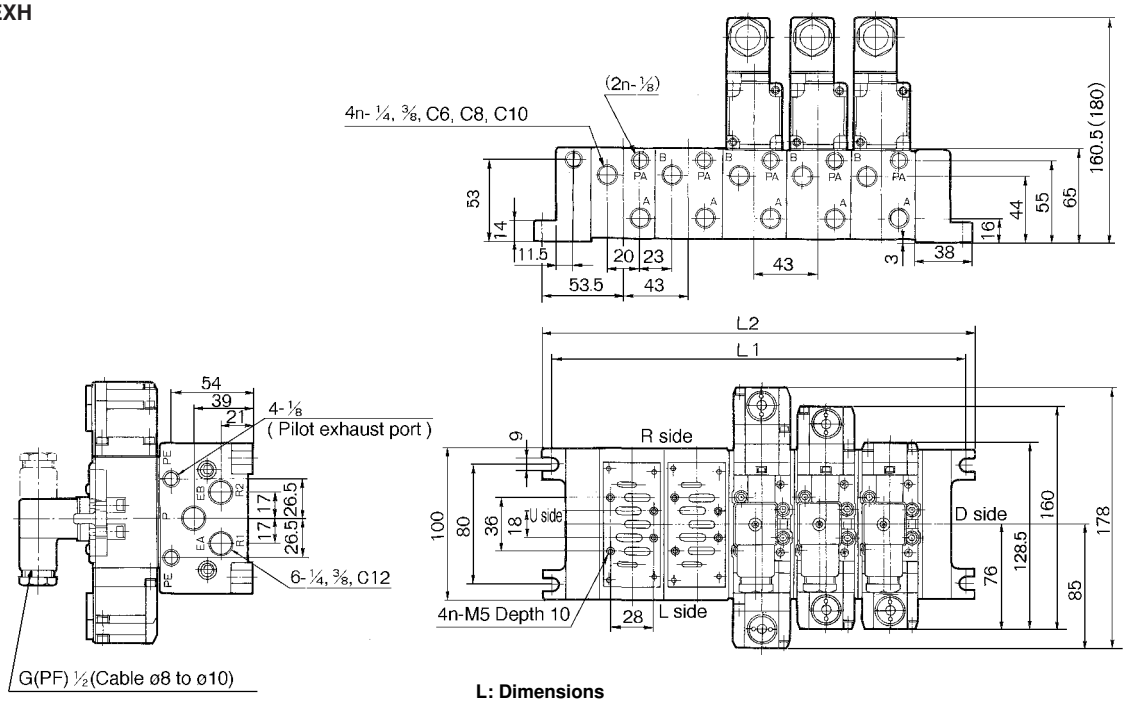
Interface for reverse pressure		AXT502-21A-1 (3/8)
R1, R2 individual EXH spacer		VV71-R2-03
Interface speed control		AXT503-23A
Lock up cylinder adaptor plate		AXT502-26A
Interface regulator	Relieving style	ARB250-00- P port regulation / A port regulation / B port regulation
Main EXH back pressure block plate		AXT503-37A
Silencer for pilot EXH		AN110-01
Residual pressure release valve spacer		VV71-R-AB
Individual SUP spacer with residual pressure release valve		VV71-PR-□ 02: 1/4, 03: 3/8
Double pilot check spacer with residual pressure release valve		VV71-FPGR

Manifold/Applications



Manifold/Dimensions

Common EXH



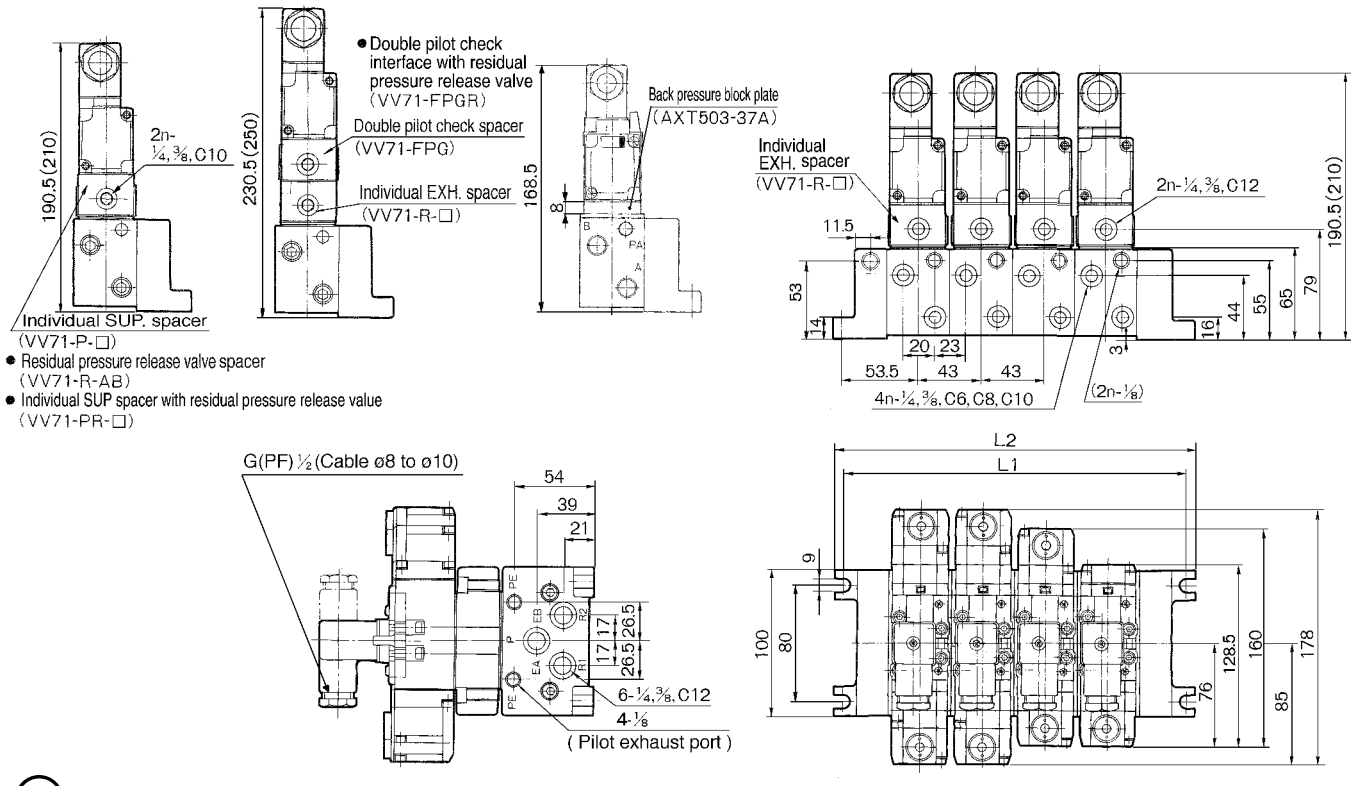
( ): In case of direct manual override style.

L: Dimensions n: Station

L \ n	1	2	3	4	5	6	7	8	9	10	Equation
L1	107	150	193	236	279	322	365	408	451	494	L1=43n+64
L2	119	162	205	248	291	334	377	420	463	506	L2=43n+76

Manifold weight general formula=0.43n+0.49 (kg)

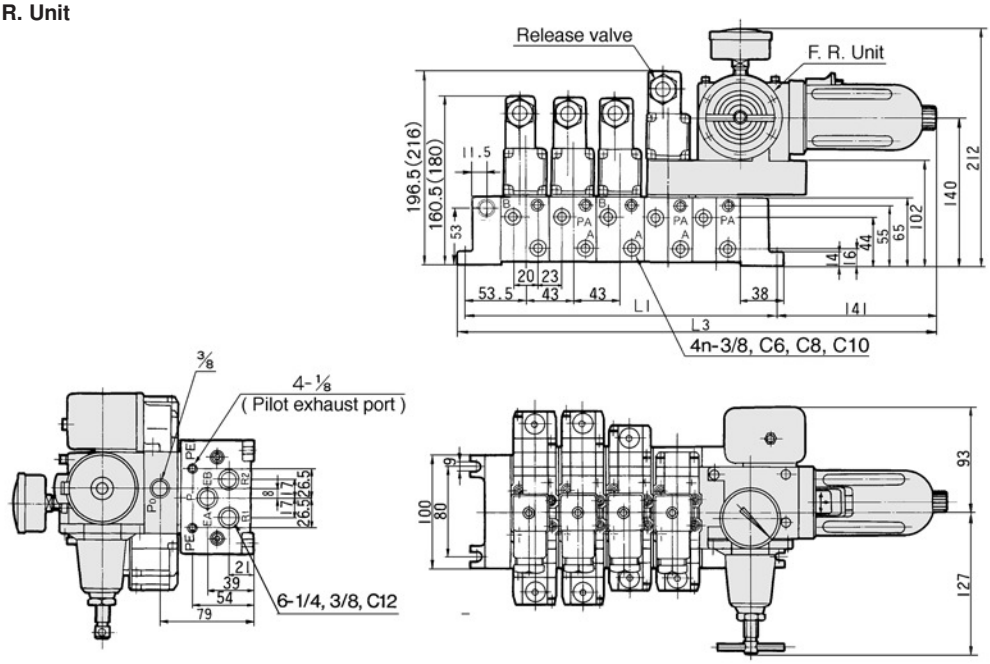
Individual EXH



( ): In case of direct manual override style.

Manifold/Dimensions

F. R. Unit

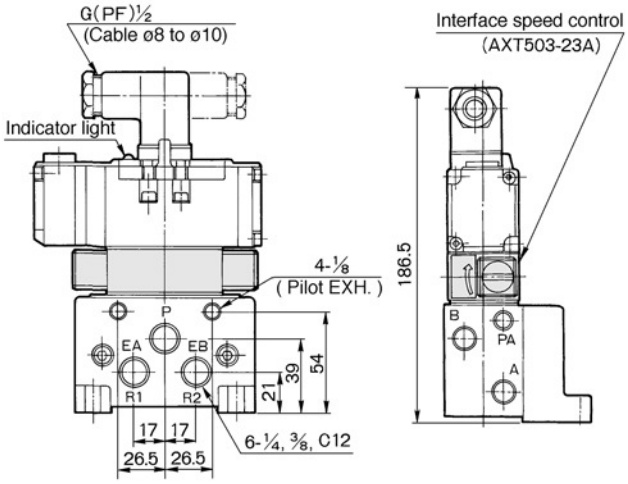


L: Dimensions n: Station

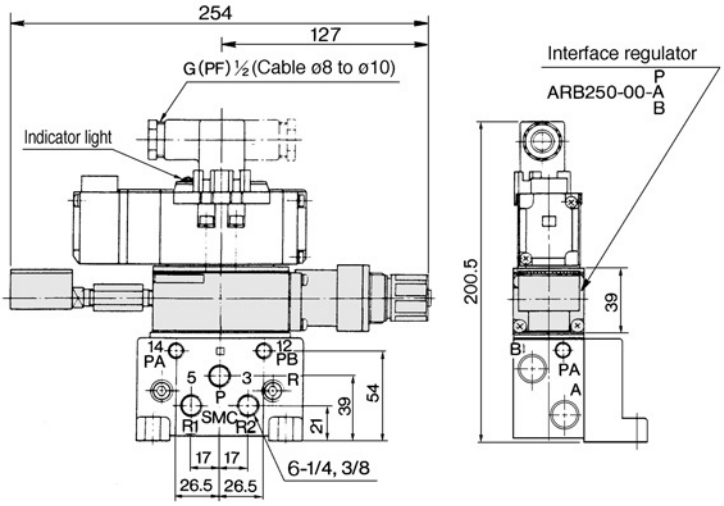
L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	150	193	236	279	322	365	408	451	494	L1=43n+64
L2	162	205	248	291	334	377	420	463	506	L2=43n+76
L3	297	340	383	426	469	512	555	598	641	L3=43n+211

( ): In case of direct manual override style.

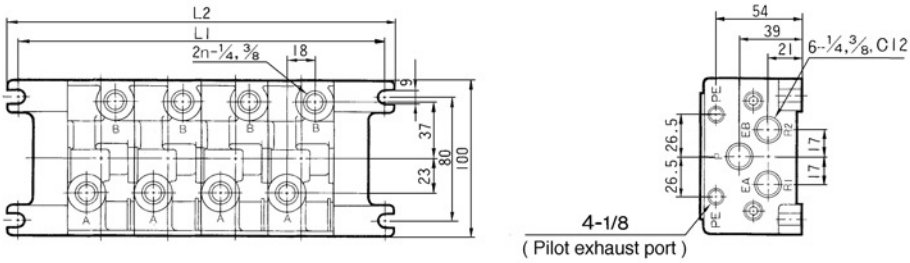
Interface Speed Control



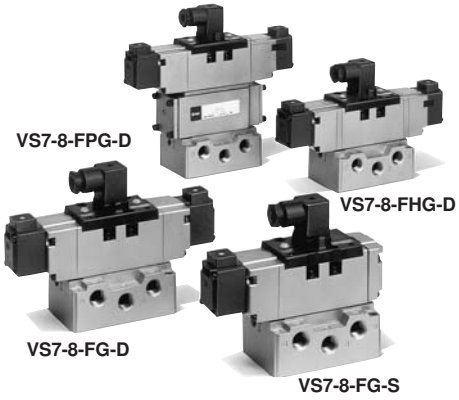
Interface Regulator

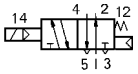
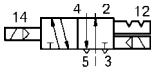
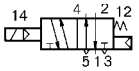
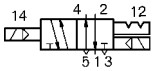
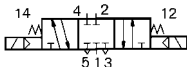
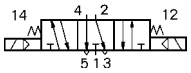
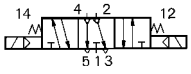
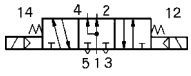


Bottom Piping



ISO Interface Solenoid Valve/SIZE②
Metal Seal
Series VS7-8



2 position	Single solenoid (FG-S)	Double solenoid (FG-D)	Reverse pressure (YZ-S)*	Reverse pressure (YZ-D)*
				
3 position	Closed centre (FHG-D)	Exhaust centre (FJG-D)	Double pilot check (FPG-D)	Pressure centre (FIG-D)*
				

* Option

Standard Specifications

Fluid	Air/Inert gas
Operating pressure	0.1 to 1.0MPa
Ambient and fluid temperature	5 to 60 °C
Manual override	Non-locking style, Locking style*
Electrical entry	DIN connector
Lubrication	Non-lube
	If provided, use turbine oil (ISO, VG32)
Shock/Vibration resistance (1)	150/50 m/s²
Applicable sub-plate	VS7-2 (ISO size ②)

* Option

NOTE 1): Shock resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve and armature, for both energized and de-energized states. (Value in the initial stage.)
Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000 Hz. Test was performed at both energized and de-energized states to the axis and right angle directions of the main valve and armature. (Value in the initial stage.)

Pilot Valve/Spacifications

Part No.	AXT511C-1 (V)	AXT511C-2 (V)	AXT511C-3 (V)	AXT511C-4 (V)
Rated voltage (V)	100V AC 50/60 Hz	200V AC 50/60 Hz	24V DC	12V DC
Inrush current (A)	0.049/0.043	0.024/0.021	0.075	0.15
Holding current (A)	0.031/0.02	0.015/0.01		
Allowable voltage (V)	85 to 110% of rated voltage			
Insulation	Class B (130°C) or equivalent			

(V): Pilot EXH individual style.

Option/Interface Regulator

Interface regulator model (1)		ARB350		
Applicable solenoid valve		VS7-8		
Regulation port		A	B	P
Proof pressure		1.5MPa		
Max. operating pressure		1.0MPa		
Set pressure range		0.1 to 0.83 MPa		
Ambient and fluid temperature		5 to 60°C		
Pressure gauge port size		1/8		
Weight (kg)		0.83		
Air supply side eff. area S (P=0.7MPa, P1=0.5MPa) (2) (mm²)	P/A	40	31	27
	P/B	31	34	27
Air exhaust side eff. area S (P2=0.5MPa) (2)	A/EA	60 mm²		
	B/EB	53 mm²		

Note 1) Use "ABR210" for pressure centre style and reverse pressure style.
Note 2) Synthesized effective area with 2 position single style solenoid valve.

Option

Blank plate	AXT512-9A

Model

No. of positions	Model	Effective area (With 3/8 sub-plate) (mm²) (Nℓ/min)	Max. operating rate (1) (cycle/sec)	Response time (2) (sec)	Weight (3) (kg)
2 (Single)	VS7-8-FG-S-□-Q	58 (3140.80)	15	0.040 or less	0.655
2 (Double)	VS7-8-FG-D-□-Q	58 (3140.80)	15	0.020 or less	0.74
3 (Closed centre)	VS7-8-FHG-D-□-Q	58 (3140.80)	10	0.05 or less	0.89
3 (Exhaust centre)	VS7-8-FJG-D-□-Q	58 (3140.80)	10	0.05 or less	0.89
3 (Pilot check)	VS7-8-FPG-D-□-Q	40 (2159.30)	8	0.06 or less	2.12

(1) Min. operating frequency is based on JIS B8375. (Once in 30 days)
(2) Based on JIS B8375-1975 (At 0.5MPa)
(3) Weight without sub-plate (Sub-plate: 0.37kg)
(4) (1) and (2) are the rates in the condition of controlled clean air.

Note:

Please note that single subplates and manifolds have changed colour from platinium silver to white as standard. Valves will remain platinium silver.

Accessories

Mounting bolt (with washer)	TA-B-6 X 45
Packing	AXT510-13
Indicator light	(Option)

Optional Specifications

Surge voltage suppressor	Available
Reverse pressure	R1/R2 port: Pressure in R1=P1 pressure R2=P2 pressure, P1≦P2

Double Pilot Check Spacer/Series FPG

Cyinder mid-stroke/long term retention possible.

The use of the double pilot check spacer equipped with a built-in double check valve enables the cylinder to stop and remain at mid-stroke for long periods regardless of air leakage between the spool and sleeve.

3 Position Double Pilot Check Valve (Wedge packing style)

VS7-8-FHG-D-□R

3 position double pilot check valve achieves a reduction in air leakage as a result of main valve construction which features co-axial wedge packing (Max. leakage: 10 cm³/min (ANR)).

⚠ Caution

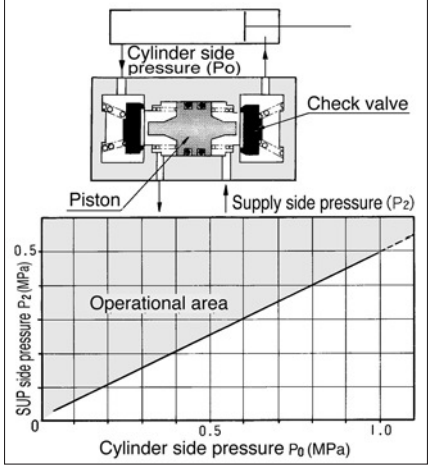
- Verify that there is no leakage from the pipes between valve and cylinder, and from fittings. Check for leaks by using neutral detergent solution before use. Also check the cylinder packing and the piston packing. If there is leakage, cylinder may not stop at the mid-stroke position, and could move immediately after the valve is de-energized.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

Double Pilot Check Spacer Specifications

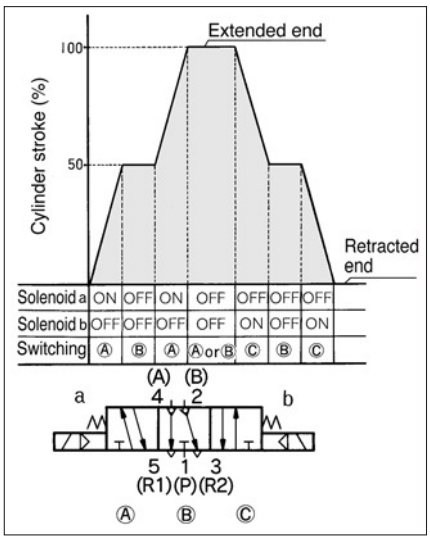
Double pilot check spacer model		VV72-FPG		
Applicable solenoid valve/air operated valve		Series VS7-8/VSA7-8		
Leakage (cm³/min (ANR))	With one side solenoid energized. (With one side pilot air pressured)	P	R1	280
			R2	
	Both sides solenoids de-energized. (With both sides pilots not air pressured)	P	R1	280
			R2	
		A	R1	0
		B	R2	

Check Valve/Operation Pressure Characteristics

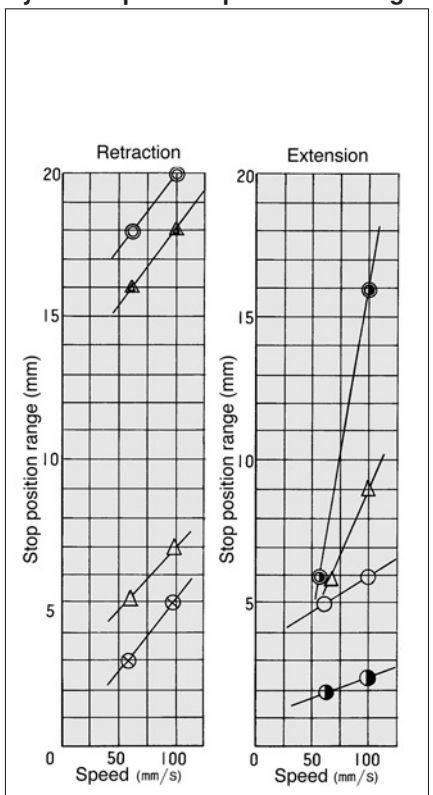
The check valve will operate correctry providing that cylinder side pressure is not in excess of two times the supply pressure.



Cylinder Operation Chart



Cylinder Speed/Stop Position Range



Cylinder ø50-450st	Cylinder ø80-450st	Supply pressure	Load	Load factor ø50	Load factor ø80
—◎—	—○—	0.2MPa	25kg	51%	28%
	—⊗—	0.5	25	25	11
—◑—	—◑—	0.2	35	72	39
—△—	—△—	0.5	35	36	16

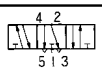
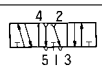
How to Order

E VS7 − 8 − FG − S − 1 □ □ □ □ − Q

Thread

—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Symbol

FG		FJG	
YZ*		FPG	
FHG		FIG*	

* Option

No. of solenoids

S	Single
D	Double

Rated voltage

1	100V AC
2	200V AC
3	24V DC
4	12V DC
9	Others (250V or less)

Contact SMC for other voltages (9)

Protective class class I (Mark: ⏚)

Option

—	None
N	Indicator light
M	Direct manual override
Z	Indicator light with surge voltage suppressor
MR	Wedge packing style with direct manual override
R	Wedge packing style
V	Individual pilot EXH

* If specifying more than one symbol, indicate them in alphabetical order.

Port size of sub-plate

—	Without sub-plate
A03	Side piping 3/8
A04	Side piping 1/2
A06	Side piping 3/4
B03	Bottom piping 3/8
B04	Bottom piping 1/2
B06	Bottom piping 3/4

Connector

—	Connector
0	W/o connector

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Note:
Manifold exploted view see page 1.19-34 for details.

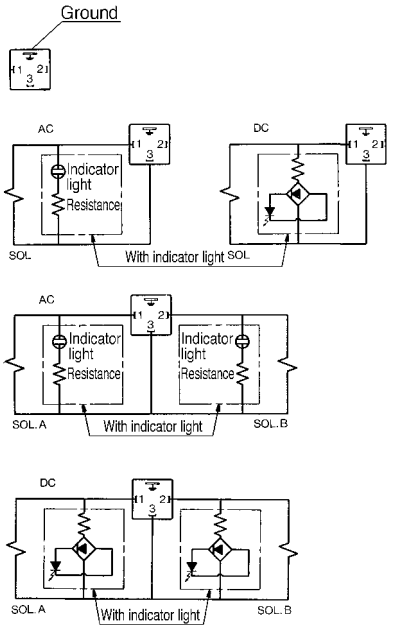
SV
SY
SYJ
SX
VK
VZ
VF
VFR
VP7
VQC
SQ
VQ
VQ4
VQ5
VQZ
VQD
VFS
VS
VS7
VQ7

⚠ Precautions

Be sure to read before handling. Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.

⚠ Caution

DIN Connector (Wiring)



Power Source and Wiring

①Make sure all contacts are secure.
②Voltage should be held within the allowable voltage range.

Interface Regulator Specifications

Specifications

Interface regulator model		ARB350		
Applicable solenoid valve		VS7-8		
Regulation port		A	B	P
Max. operating pressure		1.0MPa (1)		
Set pressure range		0.1 to 0.83MPa (2)		
Ambient and fluid temperature		5 to 60°C (3)		
Pressure gauge port size		1/8		
Weight (kg)		0.83		
Air supply side eff. area (mm^2) S (P=0.7MPa, P1=0.5MPa)	P→A	40	31	27
	P→B	31	34	27
Air exhaust side eff. area S (P2=0.5MPa)	A→EA	60 mm^2		
	B→EB	53 mm^2		

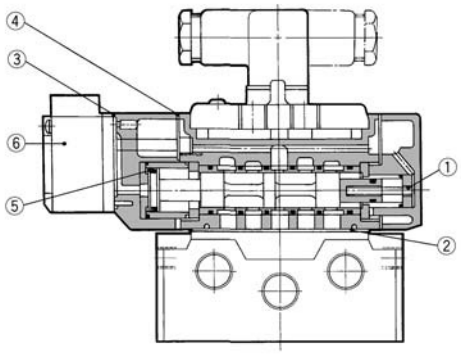
Note 1) Maximum operating pressure of solenoid valve is 0.9 MPa.
Note 2) Be sure to set pressure within setting pressure range of the solenoid valve.
Note 3) Solenoid valve: Max. 50°C
Note 4) Synthesized effective area with 2 position single style solenoid valve.
Note 5) •Supply pressure to interface regulator only from P port except when it is used with reverse pressure style valve.
•Use the ARB210 or ARB310 model to combine a pressure centre valve and the A and B port pressure reduction of a spacer style regulator.
•Use the ARB210 or ARB310 model to combine a reverse pressure valve and a spacer style regulator. The P port pressure reduction cannot be used.
•To use a perfect valve and a spacer style regulator, use a manifold or a sub plate as the standard and stack in the following order: the perfect spacer, spacer style regulator, and the valve.
•When a closed centre valve is combined with the A and B port pressure reduction of a spacer style regulator, it cannot be used for intermediate stops of the cylinder because of the leakage from the relief port of the regulator.

How to calculate flow rate

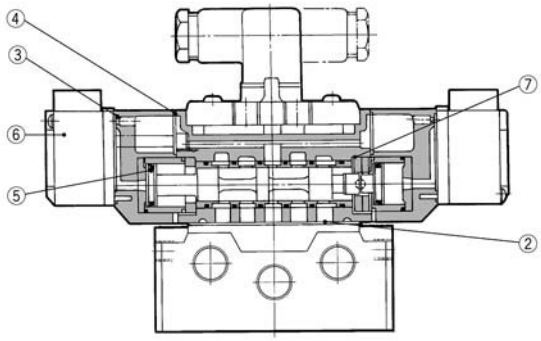
Refer to p.0-36 for flow rate calculation.

Construction

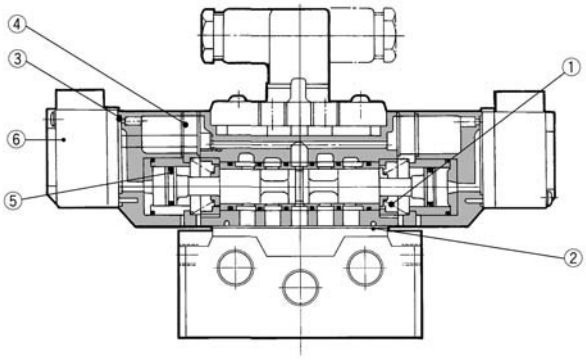
VS7-8-FG-S-□□-Q



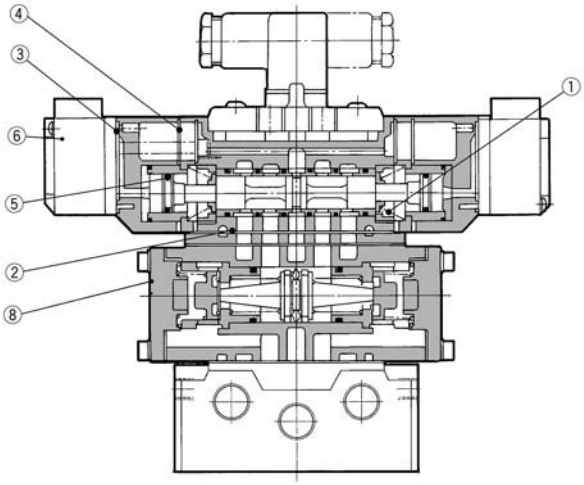
VS7-8-FG-D-□□-Q



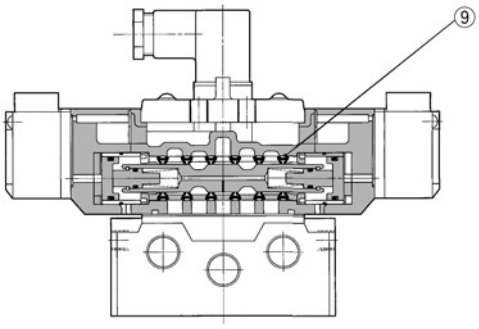
VS7-8-FHG-□□-Q
VS7-8-FJG-□□-Q



VS7-8-FPG-□□-Q



VS7-8-FHG-D-□R-Q

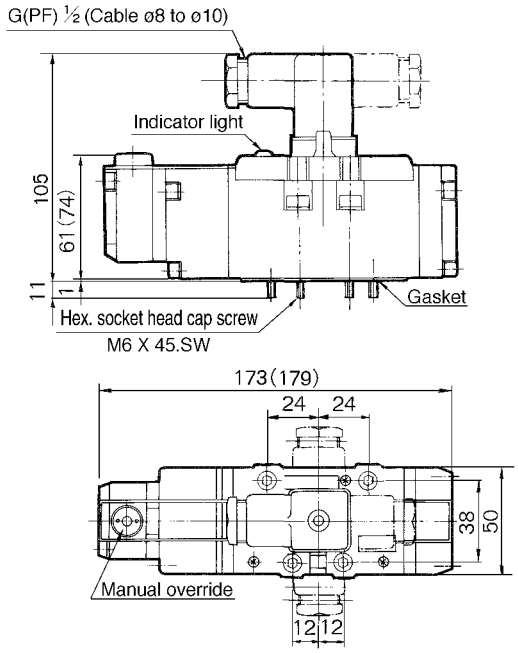


Replacement Parts

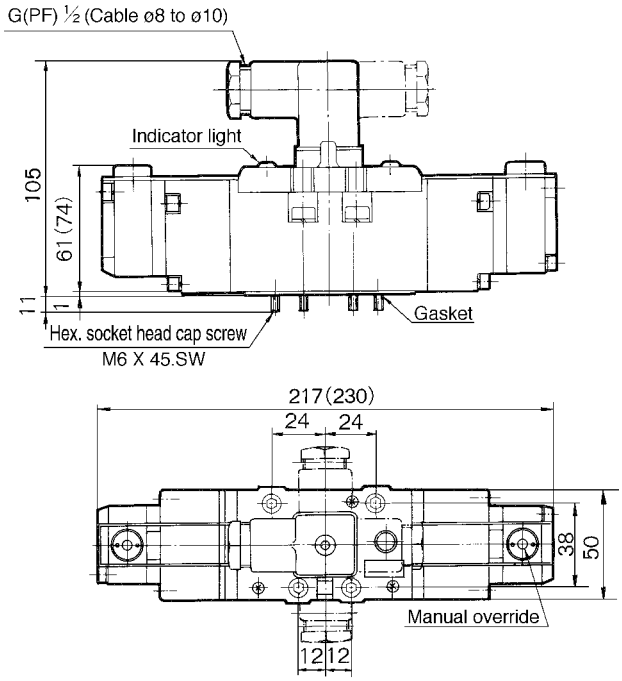
No.	Description	Material	Part No.				
			VS7-8-FG-S	**VS7-8-FG-D**	**VS7-8-FHG**	**VS7-8-FJG**	**VS7-8-FPG**
①	Return spring	SUS	AXT510-12	—	AXT510-21	AXT510-21	AXT510-21
②	Gasket	NBR	AXT510-13	AXT510-13	AXT510-13	AXT510-13	AXT510-13
③	Gasket	NBR	AXT510-14-2	AXT510-14-2	AXT510-14-2	AXT510-14-2	AXT510-14-2
④	Gasket	NBR	AXT510-14-1	AXT510-14-1	AXT510-14-1	AXT510-14-1	AXT510-14-1
⑤	Mini-Y-packing	NBR	MY-16N	MY-16N	MY-14N	MY-14N	MY-14N
⑥	Pilot valve assembly	—	AXT511C-□	AXT511C-□	AXT511C-□	AXT511C-□	AXT511C-□
⑦	Detent assembly		—	AXT510-9	—	—	—
⑧	Double pilot check spacer	—	—	—	—	—	VV72-FPG
⑨	Packing	NBR	—	—	AXT644-7-1	—	—

With Sub-plate/Dimensions

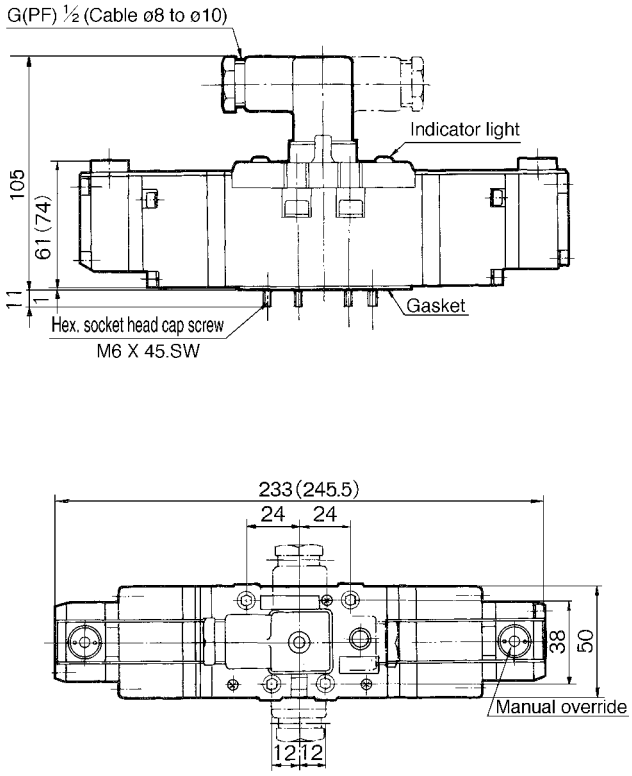
VS7-8-FG-S-□□-Q



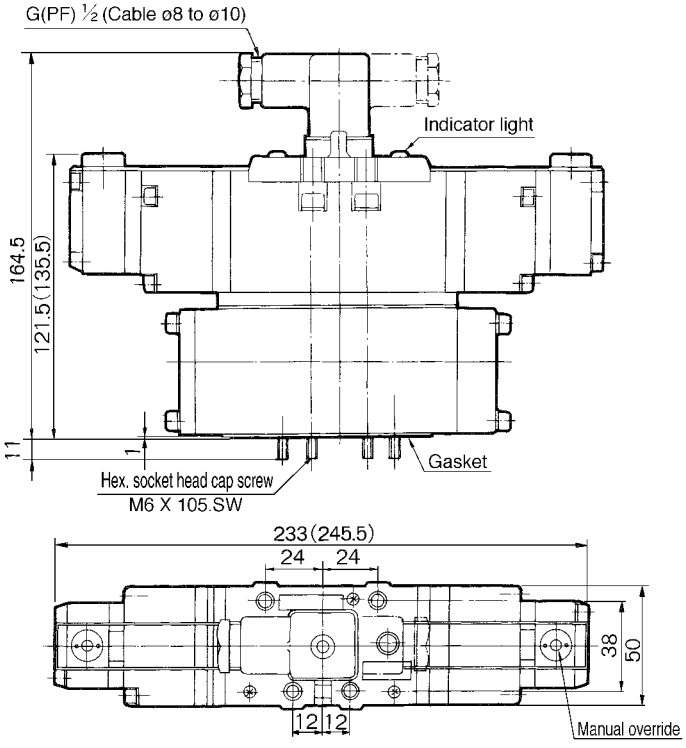
VS7-8-FG-D-□□-Q



VS7-8-FHG-□□-Q
VS7-8-FJG-□□-Q



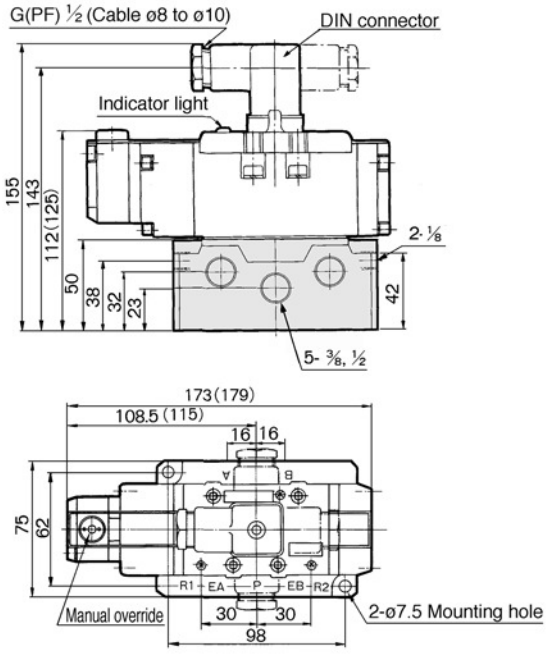
VS7-8-FPG-□□-Q



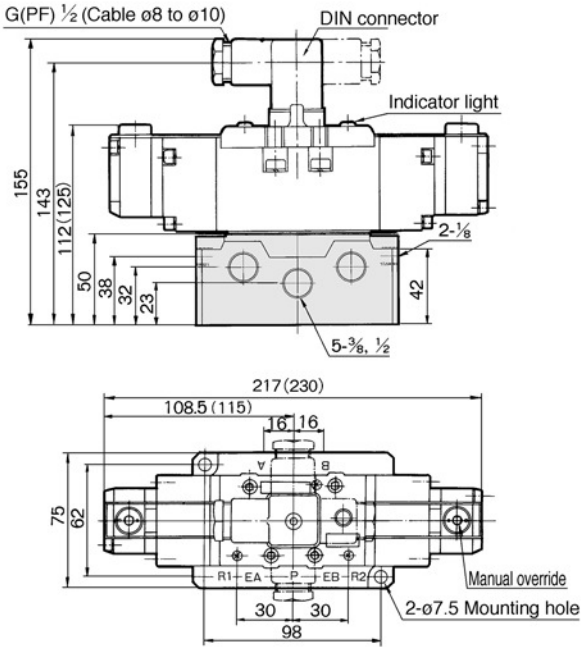
( ): In case of direct manual override style.

Without Sub-plate/Dimensions

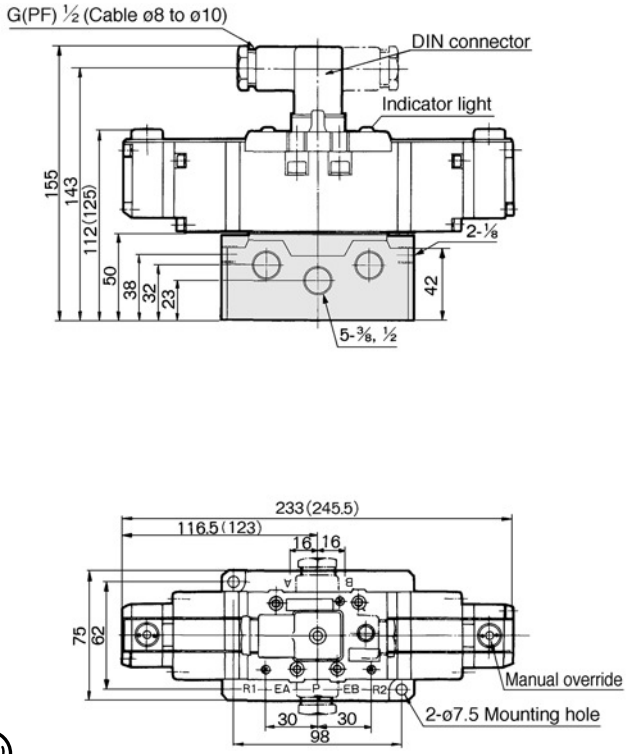
VS7-8-FG-S-□□ Port size of sub-plate -Q



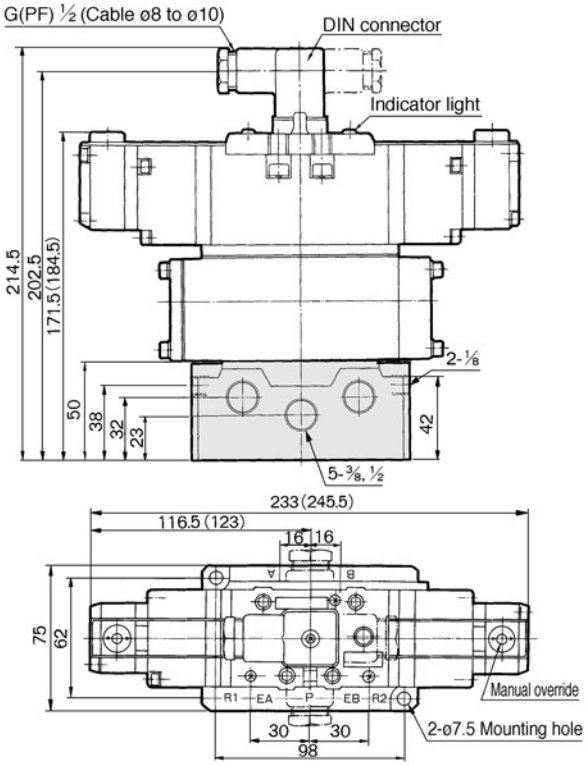
VS7-8-FG-D-□□ Port size of sub-plate -Q



VS7-8-FHG-□□ Port size of sub-plate -Q
VS7-8-FJG-□□ Port size of sub-plate -Q



VS7-8-FPG-□□ Port size of sub-plate -Q

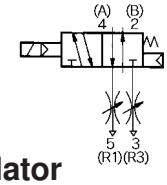


( ): **In case of direct manual override style.**

Note) Symbol EA and EB correspond to R_1 and R_2 respectively (R_1=EA, R_2=EB)

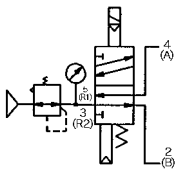
¡Interface Speed Control

Symbol

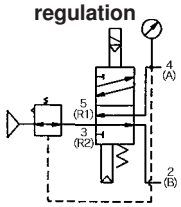


¡Interface Regulator

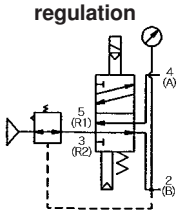
Symbol



P port regulation



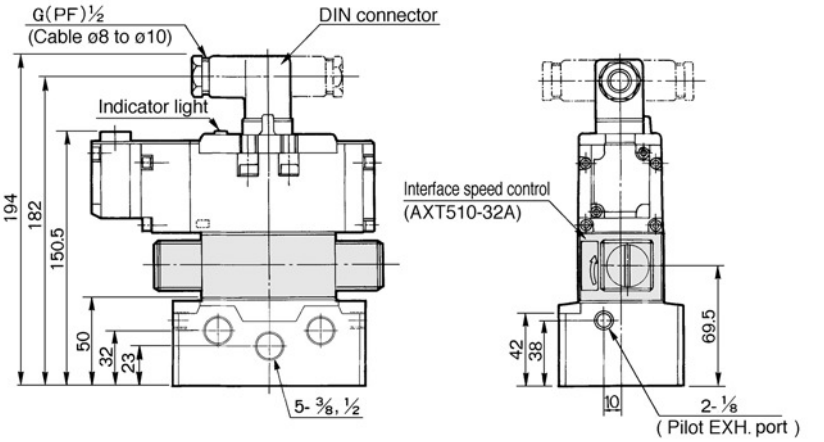
A port regulation



B port regulation

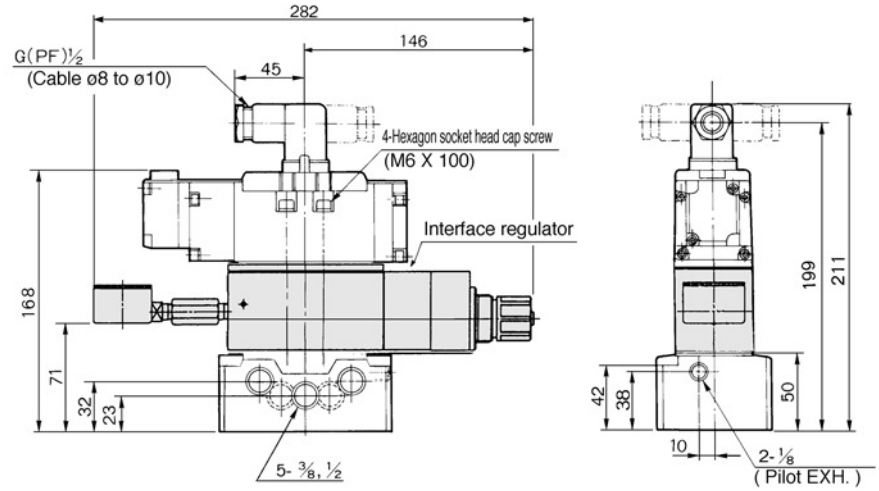
Interface Speed Control/Dimensions

AXT510-32A

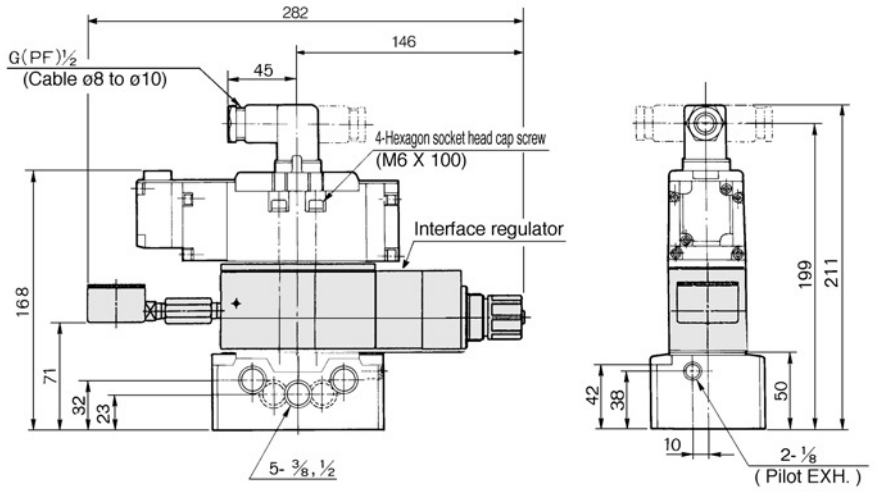


Interface Regulator/Dimensions

P port regulation/ARB350-00-P



A port regulation/ARB350-00-A
B port regulation/ARB350-00-B



Series VS7-8
Sub-plate

Sub-plate: Series VS7-2/VSA7-2

Specifications

Applicable solenoid valve/air operated valve	Series ISO size ②
Sub-plate size	ISO size ②
Piping	Side piping: 3/8 ,1/2 3/4
	Bottom piping: 3/8 , 1/2 , 3/4
Weight	0.68kg (3/8,1/2)1.29kg (3/4)

How to Order

E VS7 – 2 – A03 □

Piping

A03	Side piping: 3/8
A04	Side piping: 1/2
A06	Side piping: 3/4
B03	Bottom piping: 3/8
B04	Bottom piping: 1/2
B06	Bottom piping: 3/4

Thread

–	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

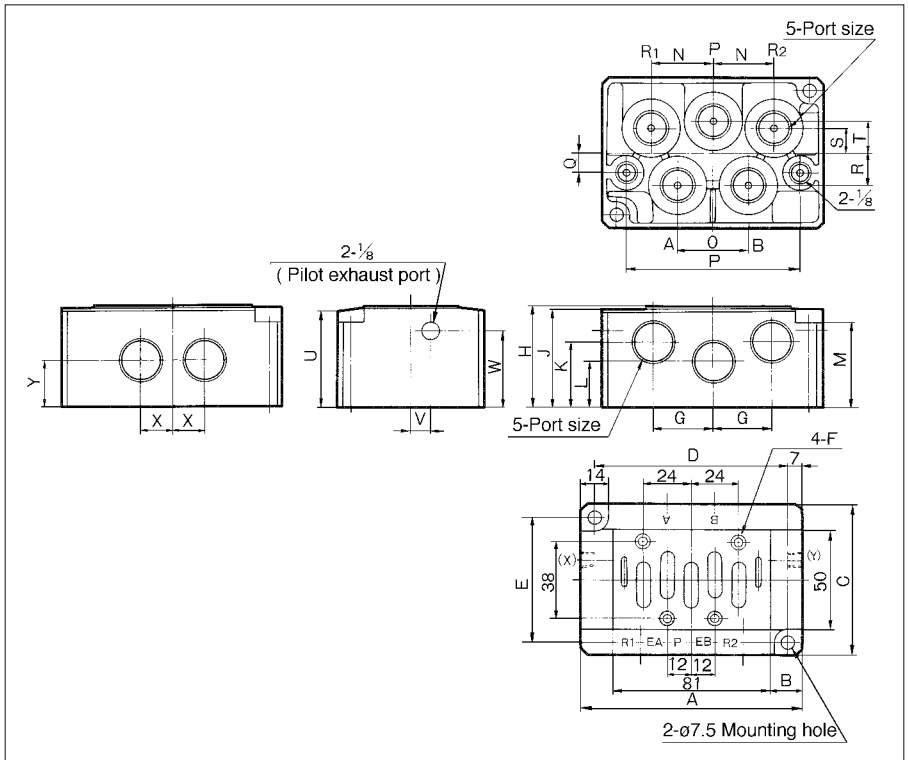
Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Note:

Please note that single subplates and manifolds have changed colour from platinium silver to white as standard. Valves will remain platinium silver.

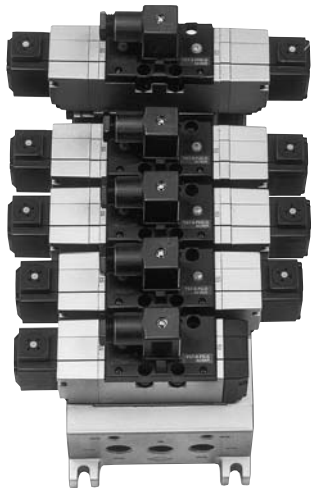
Dimensions

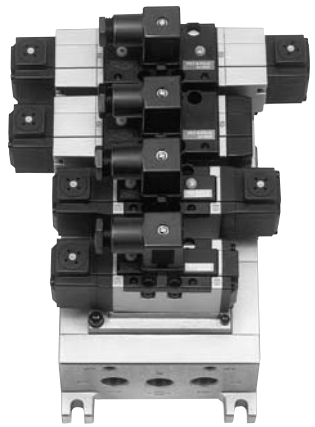


Model / Symbol	Piping	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
VS7-2- A03 A04	Side	3/8 , 1/2	112	15.5	75	98	62	4-M6 Depth 10	30	50	49	32	23	42	31	36	88	10	16	12	16	47.5	10	38	16	23
VS7-2- B03 B04	Bottom																									
VS7-2-A06	Side	3/4	142	30.5	86	128	72	4-M6 Depth 12	42	63	62	42	30	55	42	40	116	11	22	16	23	61.5	11	53	20	30
VS7-2-B06	Bottom																									

Manifold

Manifold: Series VV72





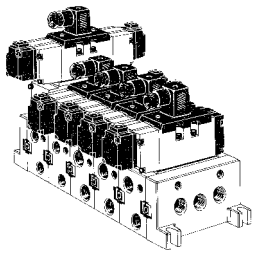
Standard Specifications

Manifold block size		ISO Size ②
Applicable solenoid valve		Series ISO Size ②
Number of stations		1 to 10*
Piping	A, B-port	3/8, 1/2
	P, R1, R2-port	1/2, 3/4
Individual SUP spacer		VV72-P-□
Individual EXH spacer		VV72-R-□
Gallery blank disc (Differential pressure style)		AXT512-14-1A (for P port)
		AXT512-14-2A (for R1, R2 port)

The manifold Series VV72□ has a wide variety of functions and porting compatible with virtually any application need.

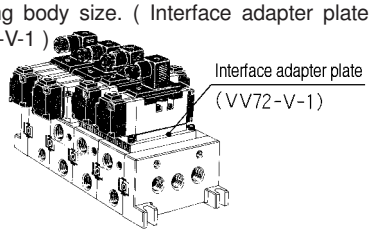
Common EXH Style

Every valve is supplied and exhausted by the same SUP and EXH ports running through the connected manifolds. This is the most popular configuration. When there are 5 or more stations operating simultaneously and pilot back pressure is 0.2kgf/cm² or more, it is recommended that all pilot EXH ports (PE) of the manifold base (4 on U side and 2 on D side, total 6 ports) be opened.
Also, use "AN110-01" for silencer for pilot EXH.



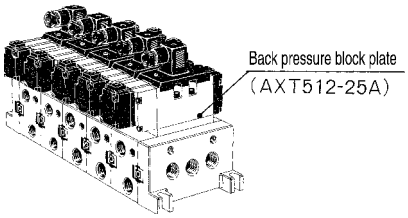
V Type

V type allows combinations with valves of varying body size. (Interface adapter plate VV72-V-1)



Main EXH Back Pressure Block Style

¡If there are many valve stations operating at the same time and main EXH back pressure may cause trouble, mount back pressure block plate ("AXT503-37A") to prevent effects of main EXH back pressure.

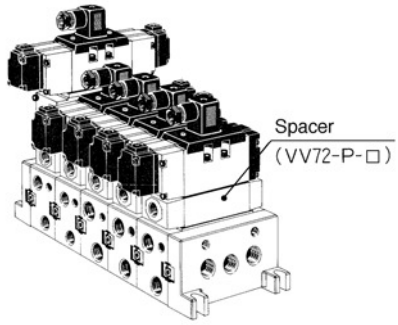


Individual EXH Style

Every valve has an independent EXH port of its own.
¡An individual EXH spacer (VV72-R-03, 04) mounted on the manifold block allows each valve to exhaust individually.

Individual SUP Style

¡An individual SUP spacer (VV72-P-03, 04) mounted on the manifold-block allows each valve to be supplied individually.



Multiple Pressure SUP Style

Allows supply of 2 or more different pressures to one manifold.
¡Put in a gallery blank disc (AXT512-14-1A) between the stations to operate at different pressures. When using a dual pressures supply, the pressure can be supplied from both the left and right sides of the manifold. If 3 or more pressures are supplied, pressure should be supplied from the spacer (VV72-P-□) port.

Bottom Piping Style (3/8, 1/2)

When side piping appearance is not acceptable or space is limited, bottom piping for A or B ports is possible.

Individual Pilot EXH Style

¡If there are many valve stations operating at the same time or operation frequency is high, trouble caused by back pressure will be prevented by using individual pilot EXH style valve ("VS7-8-□-□V").

Note:

Please note that single subplates and manifolds have changed colour from platinium silver to white as standard. Valves will remain platinium silver.

How to Order (Manifold)

E VV72 5 – 03R – □ 04D □ □ – Q

Stations

1	1
⋮	⋮
10	10

Piping/A, B port

03R	3/8 (Right)
04R	1/2 (Right)
03L	3/8 (Left)
04L	1/2 (Left)
03Y	3/8 (Bottom)
04Y	1/2 (Bottom)
*	Combination

Note) When mixing, inscride a "*" mark and designate a separate piping specification.

Air release valve

–	Without air release valve
E	With air release valve

Piping/P, R1, R2 Port

04D	1/2 (Bottom)
04U	1/2 (Top)
04B	1/2 (Both sides)
06D	3/4 (Bottom)
06U	3/4 (Top)
06B	3/4 (Both sides)

Silencer box

–	Without silencer box
SB	With silencer box

* Mounting position of silencer box is in accordance with piping of R1 and R2 port.

Air release valve/Voltage

–	Without air release valve
1	100A CV 50/60Hz
2	200A CV 50/60Hz
3	24V DC
4	12V DC
9	Others (250V or less)

Order Made Contact SMC for other voltages (9)

Protective class class I (Mark: ⏚)

Note) Manifold exploded view see page 1.19-34

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Option

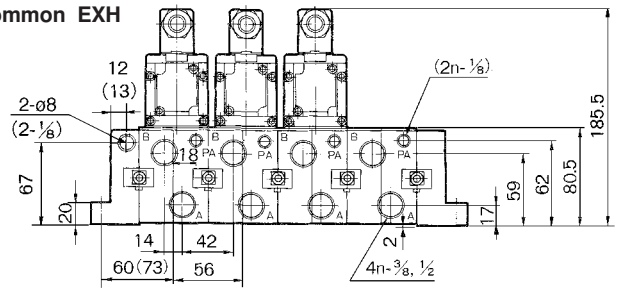
Blank plate		AXT512-9A
		AXT512-18A (for air release valve adaptor plate)
Air release valve adaptor plate		AXT512-17A
Interface regulator	Relief style	ARB350-00- P (P port reguralation) A (A port reguralation) B (B port reguralation)
Interface for reverse pressure		AXT512-19A-1 3/8 AXT512-19A-2 1/2
R1, R2 Individual EXH spacer		VV72-R2-04
Interface speed control		AXT510-32A
Main EXH back pressure block plate		AXT512-25A
Silencer for pilot EXH		AN110-01

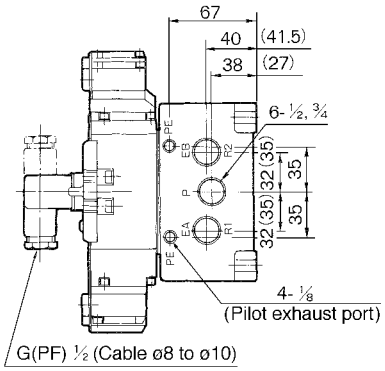
Manifold/Dimensions

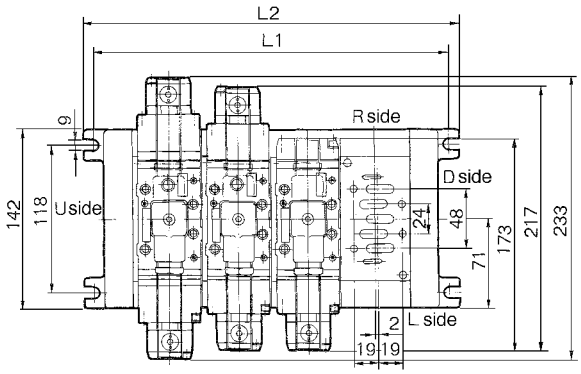
L: Dimensions

Size	L \ n	1	2	3	4	5	6	7	8	9	10	Equation
1/2	L1	120	176	232	288	344	400	456	512	568	624	n: stations L1=56n+64
	L2	136	192	248	304	360	416	472	528	584	640	L2=56n+80
3/4	L1	146	202	258	314	370	426	482	538	594	650	n: stations L1=56n+90
	L2	162	218	274	330	386	442	498	554	610	666	L2=56n+106

Common EXH

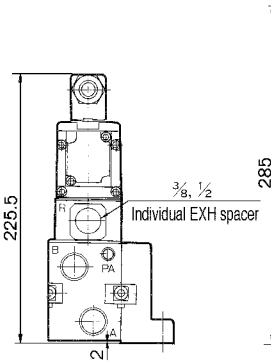




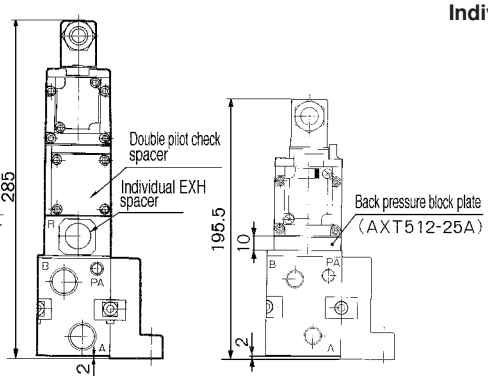


( ): In case of direct manual override style.

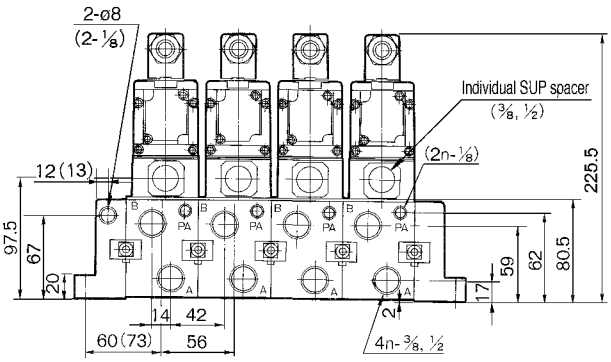
Individual SUP

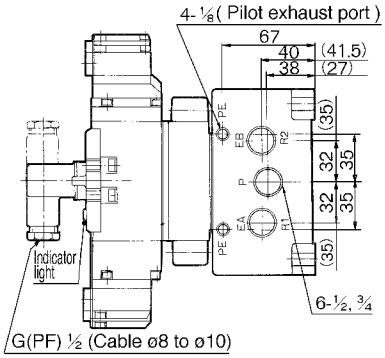


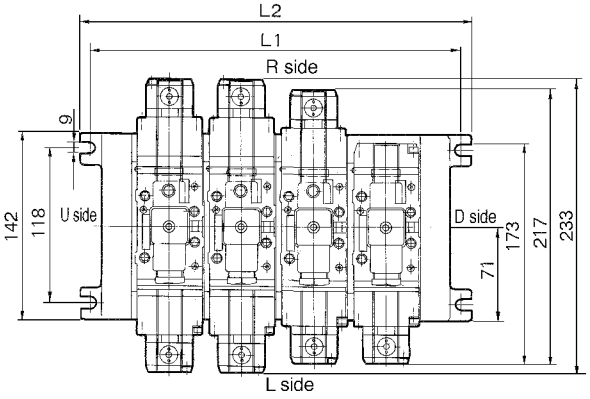
Individual EXH



Double pilot check







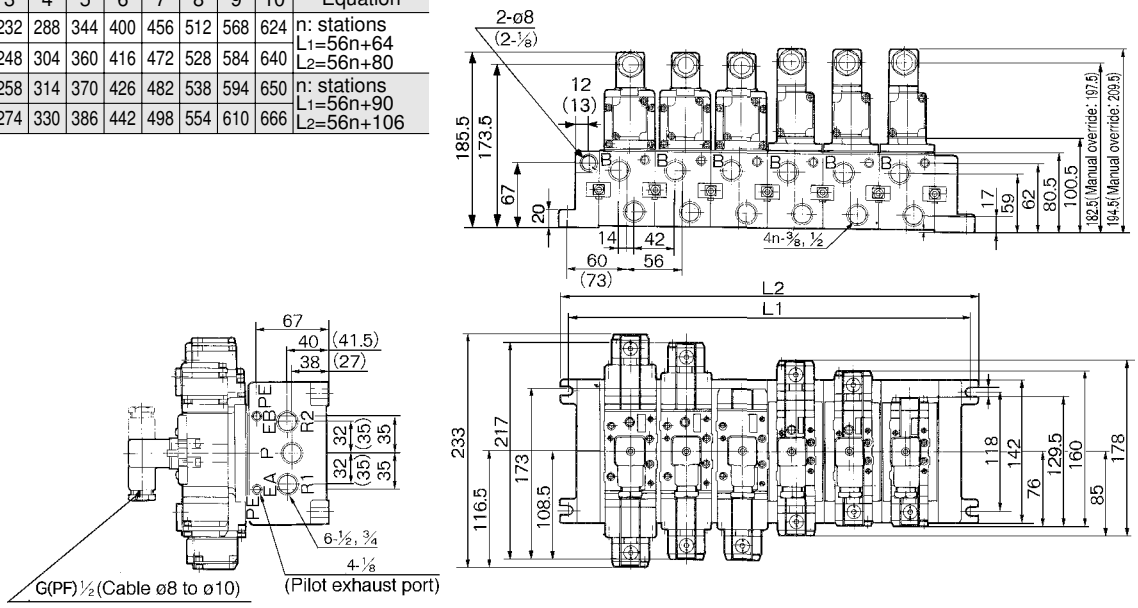
( ): In case of direct manual override style.

Manifold/Dimensions

L: Dimensions

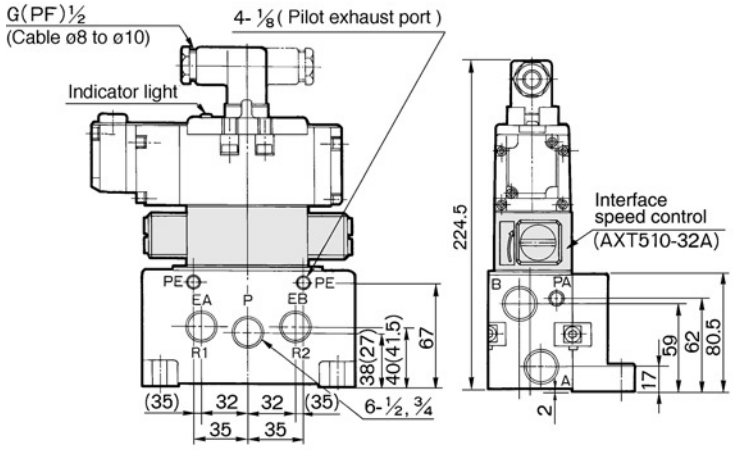
Size	L \ n	1	2	3	4	5	6	7	8	9	10	Equation
½	L1	120	176	232	288	344	400	456	512	568	624	n: stations L1=56n+64
	L2	136	192	248	304	360	416	472	528	584	640	L2=56n+80
¾	L1	146	202	258	314	370	426	482	538	594	650	n: stations L1=56n+90
	L2	162	218	274	330	386	442	498	554	610	666	L2=56n+106

V Type

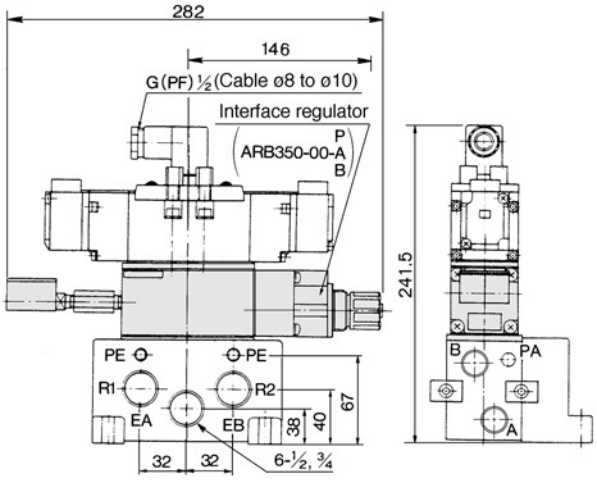


( ): In case of direct manual override style.

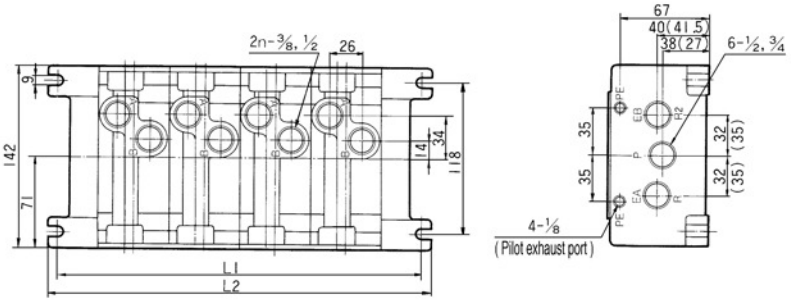
Interface Speed Control



Interface Regulator



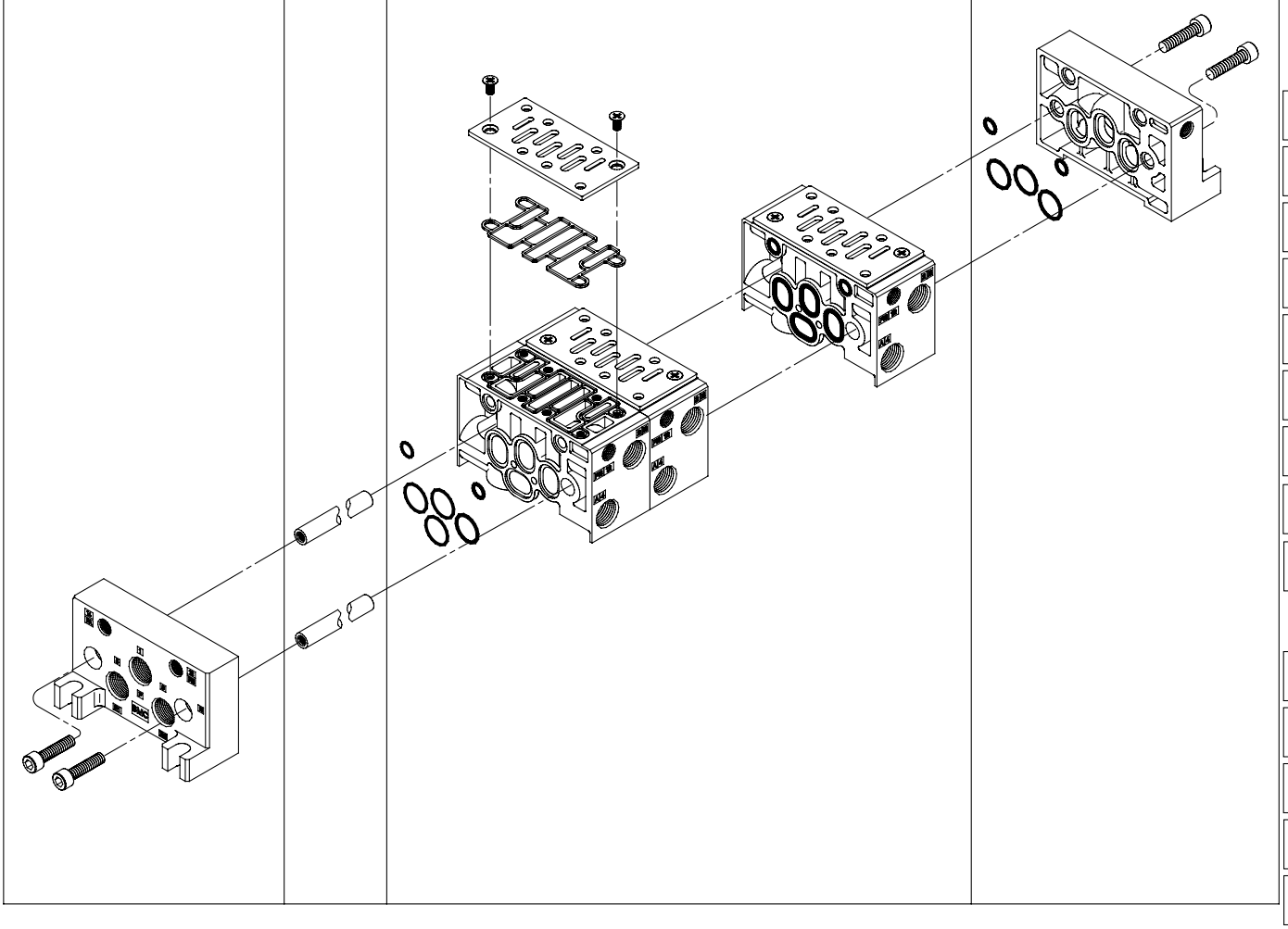
Bottom Piping



( ): In case of direct manual override style.

Manifold Exploded View VS7-6

D side end plate assembly	Tension bolt	Manifold block assembly	U side end plate assembly



< End plate assembly >

E AXT502 – □ A – □

End plate position

L	L side
R	R side

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

P, R port size

02	1/4
03	3/8
C12	ø12 One-touch fitting

<Tension bolt part number >

AXT502 – 34 – □

Number of stations

2	For 2 stations
3	For 3 stations
⋮	⋮
10	For 10 stations

Note) These tie-rods are solid pieces for each number of stations.

< Manifold block assembly>

∗ This manifold block assembly includes tension bolts for a single station addition.

E AXT502 – 1A – □ □ – □

Wiring specification

A	Side
B	Bottom

Cylinder port position

L	L side
R	R side

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Cylinder port size

02	1/4
03	3/8
C6 Note 1)	ø6 One-touch fitting
C8 Note 1)	ø8 One-touch fitting
C10 Note 1)	ø10 One-touch fitting

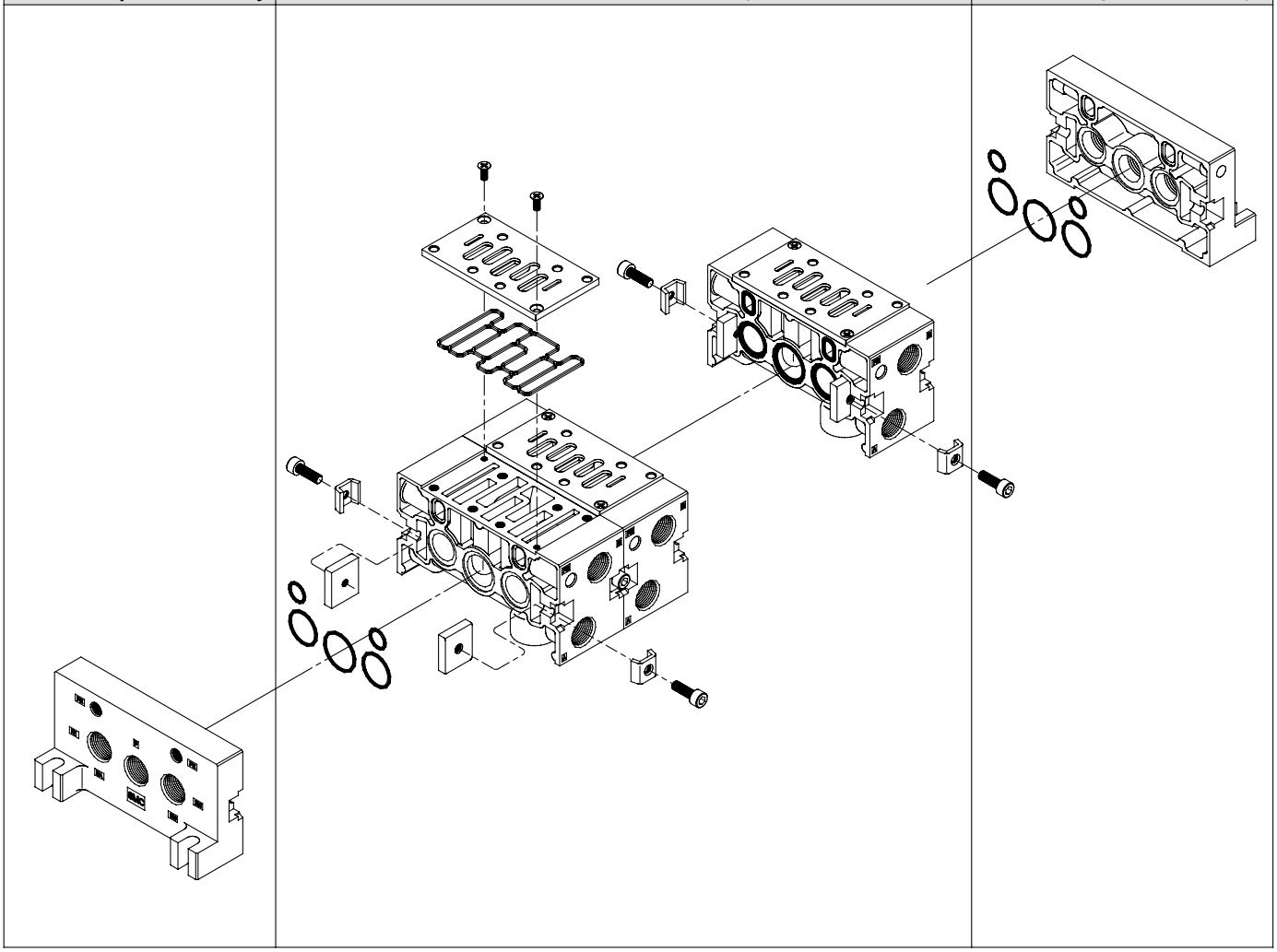
Note 1) Side ported only

< Manifold block replacement parts >

Part No.	Description	Qty.	Material
AXT502-19	O-ring	4	NBR
AXT502-20	O-ring	2	NBR
AXT502-22-2	Plate	1	SPCC
AXT502-31	Gasket	1	NBR
M4 X 8	Oval countersunk head screw	2	SWRH3

Manifold Exploded View VS7-8

D side end plate assembly	Manifold block assembly	U side end plate assembly



< End plate assembly >

E AXT512 – □ A – □

End plate position

L	L side
R	R side

P, R port size

04	1/2
06	3/4
C12	ø12 One-touch fitting

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

<Manifold block assembly>

E AXT512 – 1A – □ □ – □

Wiring specification

A	Side
B	Bottom

Cylinder port position

L	L side
R	R side

Cylinder port size

03	3/8
04	1/2

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

< Manifold block replacement parts>

Part No.	Description	Qty.	Material
AXT512-13	O-ring	2	NBR
AS568-022	O-ring	1	NBR
AS568-020	O-ring	2	NBR
AXT512-5	Gasket	1	NBR
AXT512-4	Plate	1	SPCC
M4X10	Oval countersunk head screw	2	SWRH3
AXT512-6-1	Connection fitting A	2	
AXT512-6-4	Connection fitting B	2	
AXT512-6-3	Hexagon socket head screw	2	