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Best Pneumatics 1 Power Valve/Silencer

Power Valve



RegulatorValve: **VEX1**·····P.5.1-1
3 Position Valve: **VEX3**·····P.5.1-10
Economy Valve: **VEX5**·····P.5.1-21

Silencer

Silencer: **AN**·····P.5.2-1
High Noise Reduction Silencer:
AN□1·····P.5.2-5
Exhaust Cleaner: **AMC**·····P.5.3-1
Exhaust Cleaner for
Clean Rooms: **AMP**·····P.5.4-1

VEX

AN

AMC

AMP

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Power Valve
Regulator Valve

Series VEX1

Large Capacity Relief Regulator

3 port large capacity poppet exhausting regulator equipped with a relief port the same size as the connection port.



Air operated

Symbol

Air operated



Specifications

Model		VEX110□-01/02	VEX120□-01/02	VEX130□-02/03/04	VEX150□-04/06/10	VEX170□-10/12	VEX190□-14/20
Operating style		Air operated					
Fluid		Air, Inert gas					
Proof pressure		1.5MPa					
Max. operating pressure		1.0MPa					
Set press. range	Air operated	0.05 to 0.9MPa					
Ambient and fluid temperature		0 to 50°C(Air operated: 0 to 60°C)					
Hysteresis		0.03MPa					
Repeatability		0.01MPa					
Sensitivity		0.01MPa					
Mounting		Free					
Lubrication		Not required (Use turbine oil No.1 ISO VG32, if lubricated)					

Port size	Port	01	02	01	02	02	03	04	04	06	10	10	12	14	20
	P	1/8	1/4	1/8	1/4	1/4	3/8	1/2	1/2	3/4	1	1	1 1/4	1 1/2	2
	A											1 1/4		2	
	R														
Effective area	mm²	16	25	16	25	36	60	70	130	160	180	300	330	590	670
	Nℓ/min	883	1374	883	1374	1963	3238	3827	7066	8735	9815	16685	17667	32389	36315
Weight (kg)	Air operated	0.1		0.2		0.4			1.3			1.9		3.9	

Options

Parts name		Part No.					
		VEX110□-01/02	VEX120□-01/02	VEX130□-02/03/04	VEX150□-04/06/10	VEX170□-10/12	VEX190□-14/20
Bracket (with bolt and washer)	B	VEX1-18-1A	—	VEX3-32A	VEX5-32A	VEX7-32A	VEX9-32A
	F	VEX1-18-2A	—	—	—	—	—
Pressure gauge (1)	G	G27-10-01		G36-10-01	G46-10-01		

Note 1) When requring the gauge except mentioned above, specify the model number. Option is packed with it.
(Refer to Best Pneumatics 4.)
Example: VEX1300-03
G36-4-01

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How to Order

Area code

-	Japan, Asia, Australia, England
E	Europe
N	North America

E VEX 1 3 0 0 – 03 – B

Regulator valve

Operating style
0 — Air operated

Thread
— — Rc(PT)
T — NPTF
F — G(PF)
N — NPT

Option
B — Bracket
F — Foot (Only VEX110)
G — Gauge

• When specifying more than one option, combine symbols in alphabetical order.

Body size **Port size**

Body size		Port size		
		Port	P, A port	R port
Body ported	1	01	1/8	1/8
		02	1/4	1/4
	3	02	1/4	1/4
		03	3/8	3/8
		04	1/2	1/2
	5	04	1/2	1/2
		06	3/4	3/4
		10	1	1
	7	10	1	1 1/4
		12	1 1/4	
	9	14	1 1/2	2
		20	2	
Base mounted	2	—	Wihout subplate	
		01	1/8	1/8
		02	1/4	1/4

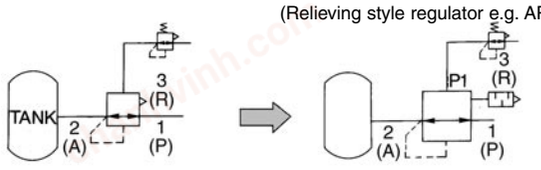
Model

Model	Air operated	Port size	
		P,A port	R port
Regulator valve	VEX1100	1/8, 1/4	1/8, 1/4
	VEX1200	1/8, 1/4	1/8, 1/4
	VEX1300	1/4, 3/8, 1/2	1/4, 3/8, 1/2
	VEX1500	1/2, 3/4, 1	1/2, 3/4, 1
	VEX1700	1, 1 1/4	1 1/4
	VEX1900	1, 1 1/2	2

Applications

①Relief regulator (Rapid tank internal pressure setting)

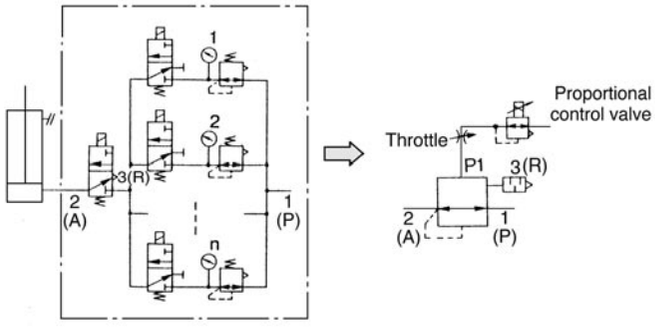
(Relieving style regulator e.g. AR2000)



Relieving style diaphragm regulator

• Large exhaust capacity.
• Silencer is easy to connect.

2②Multiple step pressure control (Toward stepless control)



• The main driving system is simple consisting of one VEX only.
• Remotely controlled by compact pilot system.
• Steplessly and remotely controlled by electric signals.
• Flexibility for pressure control for welders.

⚠ Caution

Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.

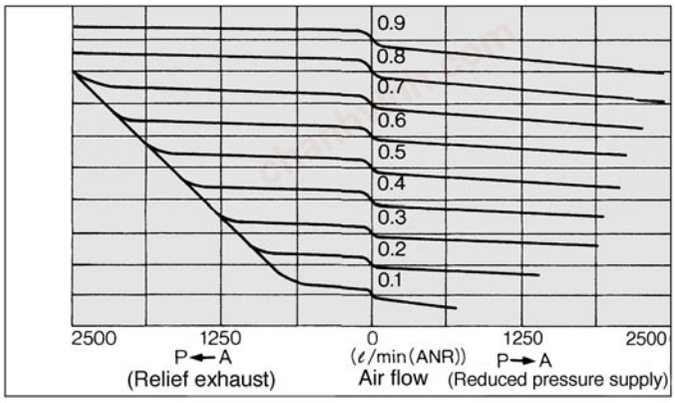
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VEX1

Flow Characteristics

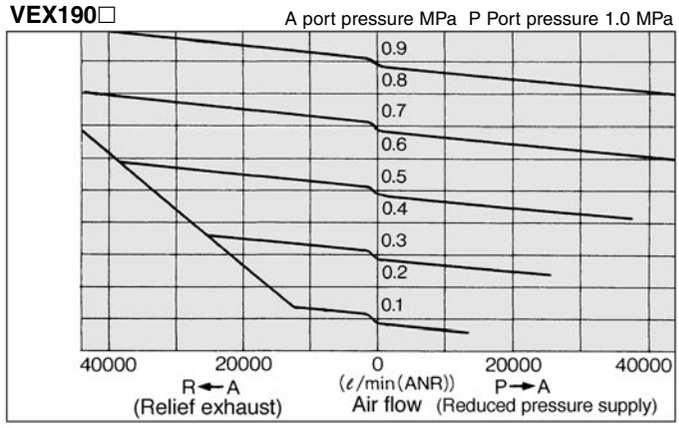
VEX110□, 120□

A port pressure MPa P Port pressure 1.0 MPa



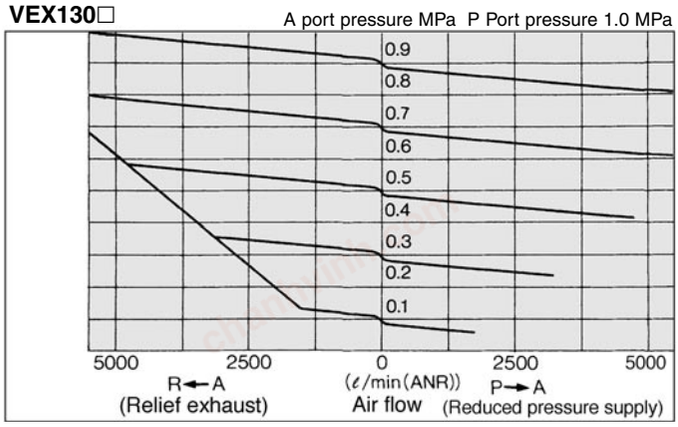
VEX190□

A port pressure MPa P Port pressure 1.0 MPa



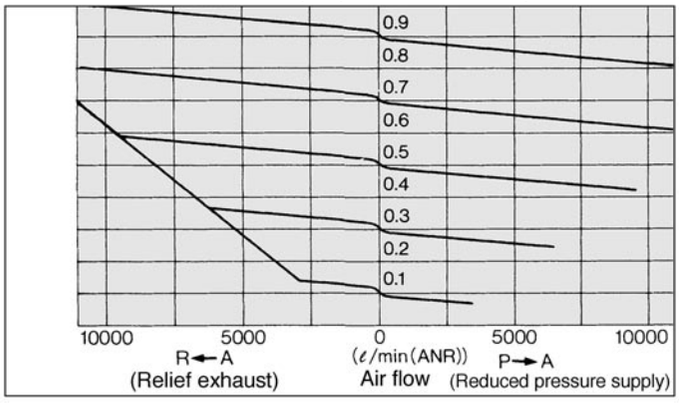
VEX130□

A port pressure MPa P Port pressure 1.0 MPa



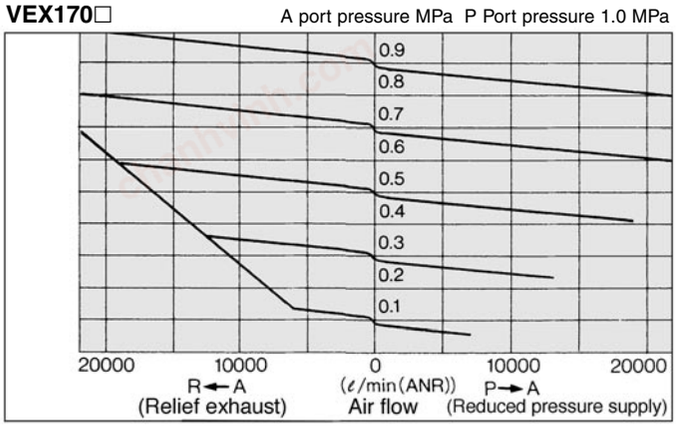
VEX150□

A port pressure MPa P Port pressure 1.0 MPa



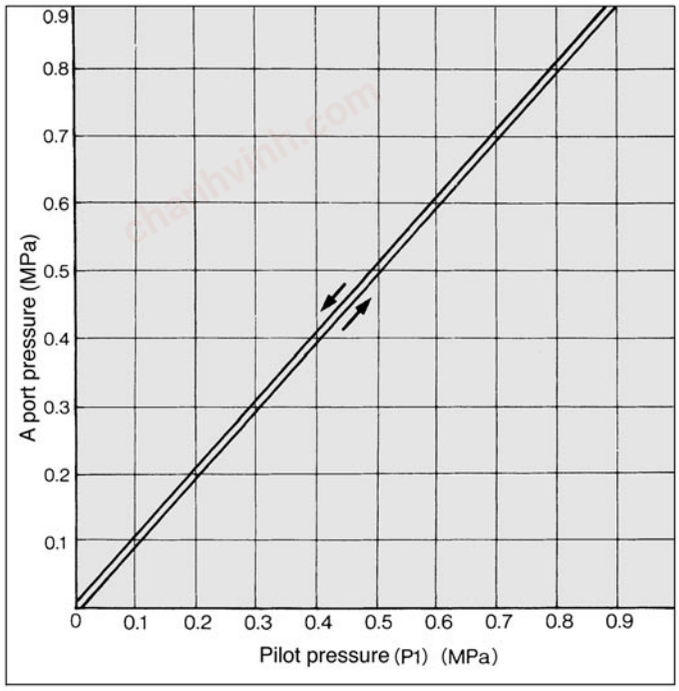
VEX170□

A port pressure MPa P Port pressure 1.0 MPa



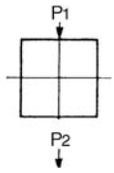
Setting Pressure Characteristics

A port pressure is set in accordance with pilot pressure

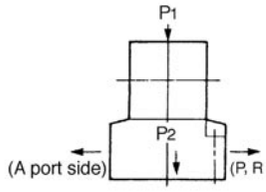


External Pilot Piping

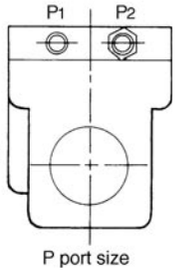
VEX110□



VEX120□



VEX130□ VEX150□ VEX170□ VEX190□



Port	VEX1□00
P1	External Pilot
P2	—

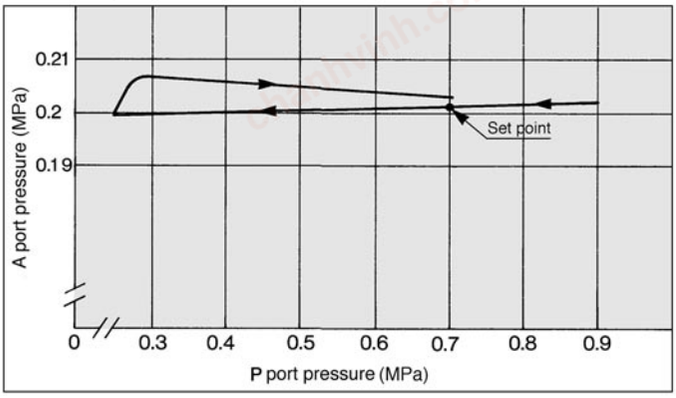
SMC

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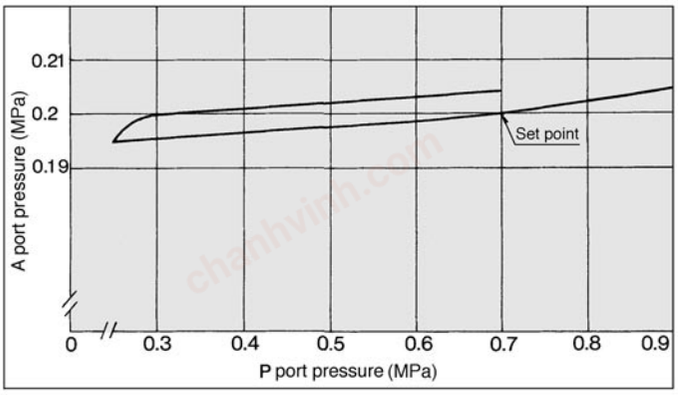
Pressure Characteristics

Shown the change of secondary pressure (A port) to the change of supply pressure (P port).
As per JIS B8372 (Pneumatic regulator)

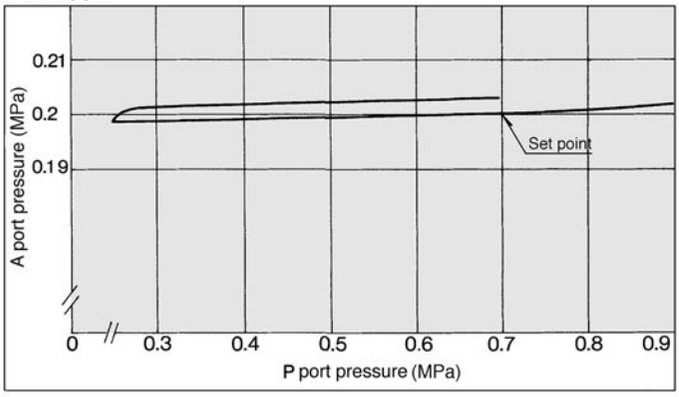
VEX110□, 120□



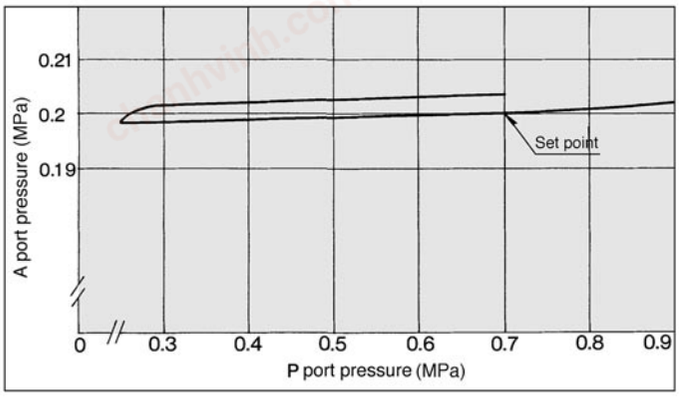
VEX130□



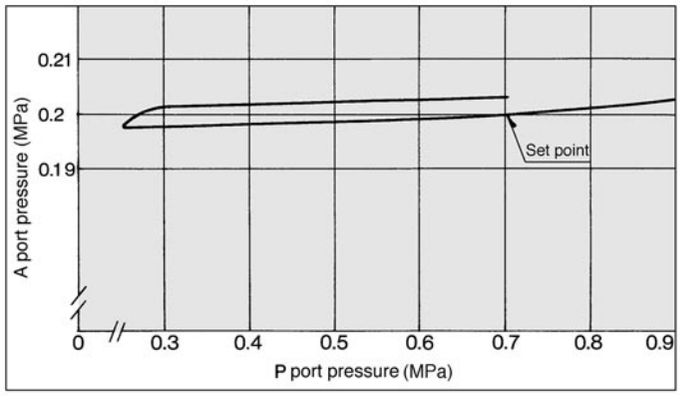
VEX150□



VEX170□

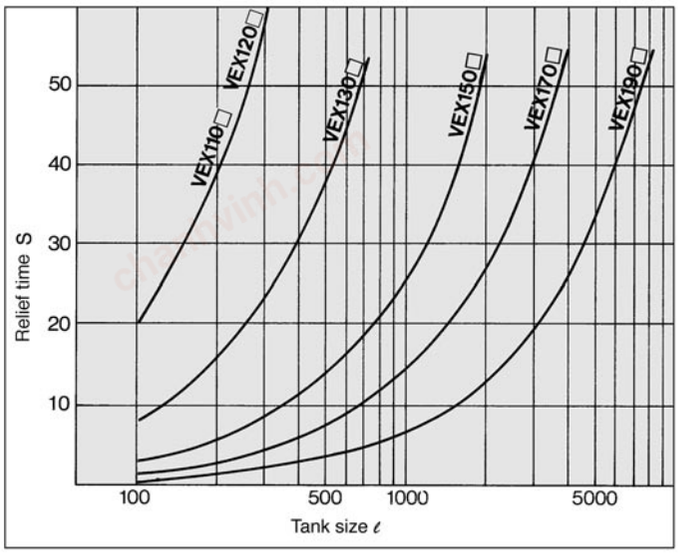


VEX190□

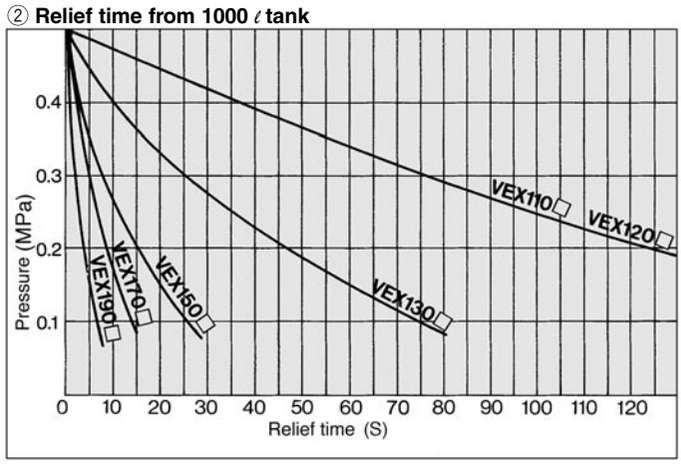


Relief Time

① Relief time from 0.5MPa to 1MPa



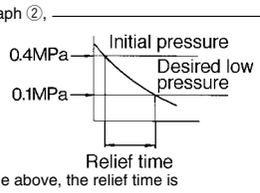
② Relief time from 1000 ℓ tank



③ Relief time from an arbitrary pressure

[Example] VEX 1500 lowers 2000ℓ tank from 0.4MPa to 0.1MPa:

a) In graph ②,



From the above, the relief time is
26–3=23S

b) Then, the relief time for the 2000ℓ tank is found by conversion as shown below.

$$t = \frac{\text{Tank capacity}}{1000} \times \left[\text{Relief time that is read}\right]$$

$$= \frac{2000}{1000} \times 23$$

$$= 46$$

The result is 46S.

VEX

AN

AMC

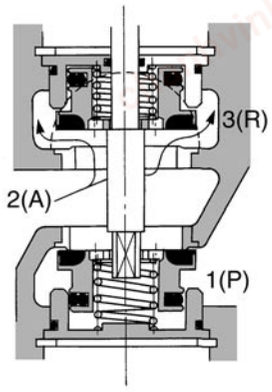
AMP

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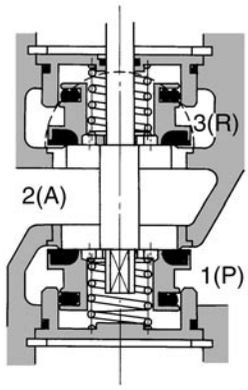
VEX1

Construction/Operation Principles/Component Parts

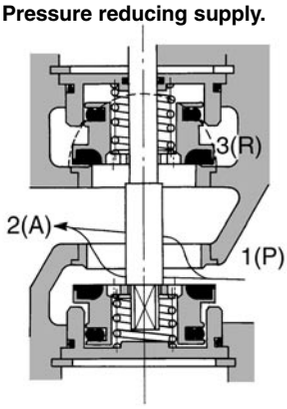
[1] When A port pressure is high.



[2] Setting pressure condition

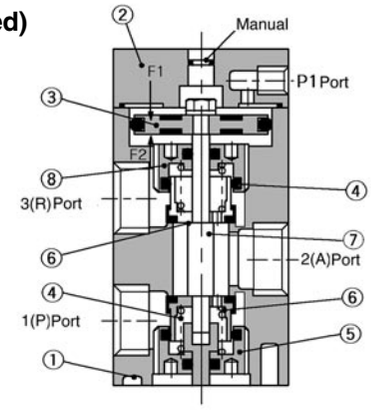


[3] When A port pressure is low.
Pressure reducing supply.

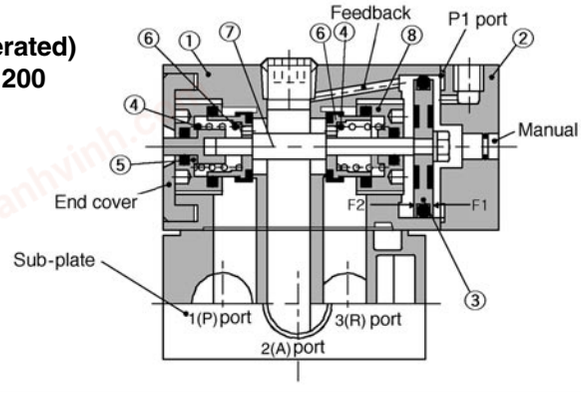


- The balance between the acting force F1 of the pilot pressure(P1 port)over the upper surface of the pressure regulating piston ③ and the acting force F2 of the pressure at A port leading to a space under the piston through the feed back flow root closes a couple of poppet valves ⑥ and sets A port pressure that corresponds to P1 port pressure. The poppet valves are backed up by spring ④- in the pressure balance structure by means of A port pressure.(DRW(2))
- When A port pressure exceeds P1 port pressure, F2 becomes larger than F1,and the pressure regulating piston moves upward, opening the upper poppet valves. Thus air is released from A port to R port. (DRW(1)) When A port pressure lowers enough to restore the balance, the regulator valve returns again to the DRA (2) condition.
- When A port pressure is lower than P1 port pressure, F1 becomes larger than F2, and the pressure regulating piston moves downwards,opening the lower poppet valves.Thus air is supplied from P port to A port.(DRW(3)) When A port pressure rises enough to restore the balance, the regulator valve returns again to the DRW(2) condition.

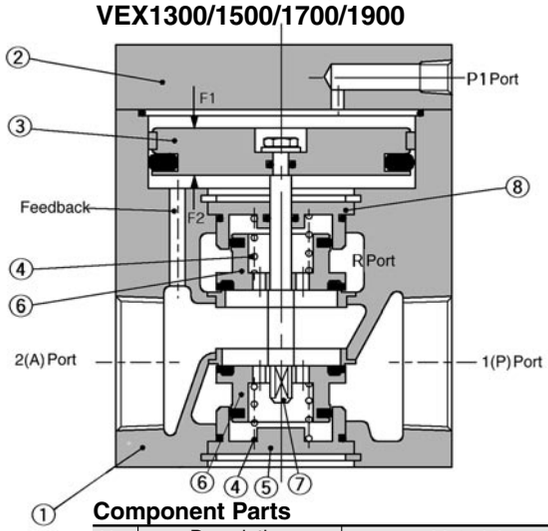
(Air operated)
VEX1100



(Air operated)
VEX1200



(Air operated)
VEX1300/1500/1700/1900



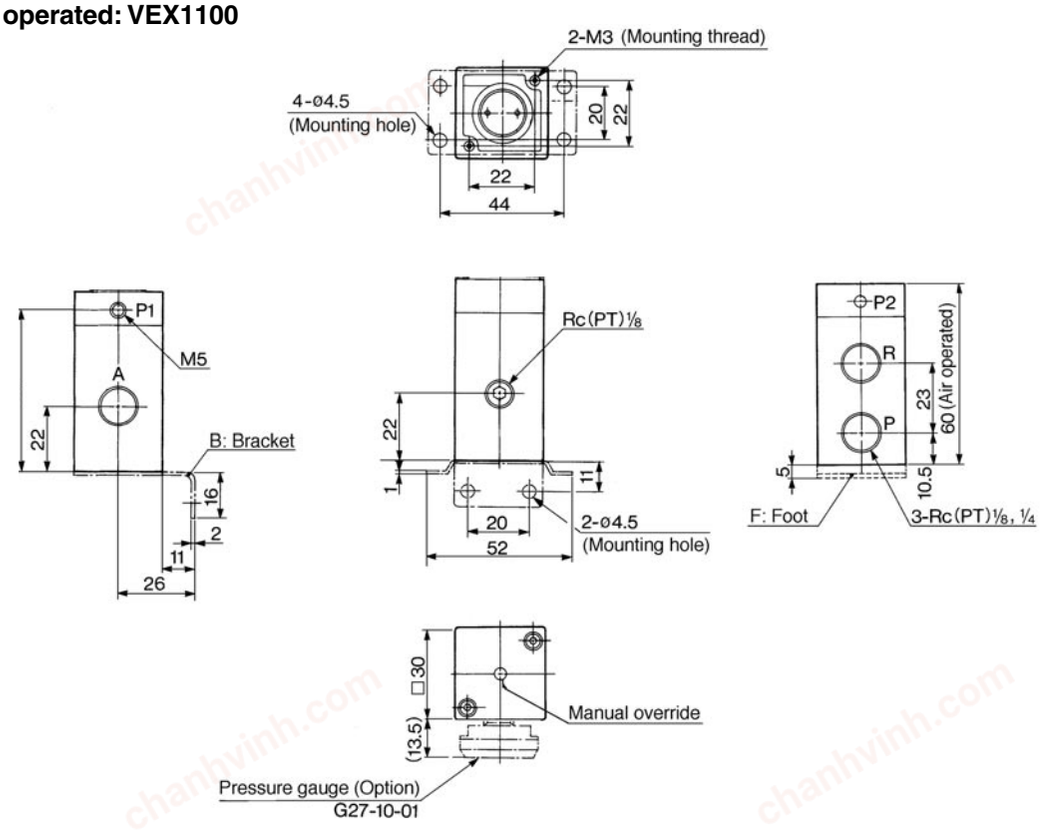
Component Parts

No.	Description	Material
①	Body	Aluminium alloy die cast
②	Cover	Aluminium alloy die cast
③	Piston	Aluminium alloy
④	Spring	Stainless steel
⑤	Valve guide	Aluminium alloy
⑥	Poppet valve	Aluminium alloy, NBR
⑦	Shaft	Stainless steel
⑧	Valve guide	Aluminium alloy

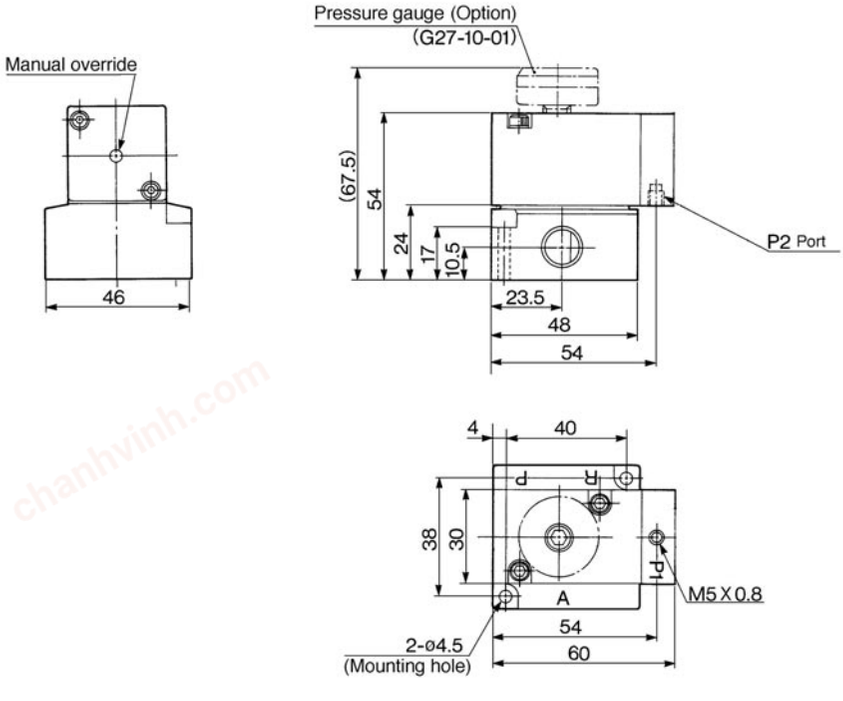
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Dimensions

Air operated: VEX1100



Air operated: VEX1200



VEX

AN

AMC

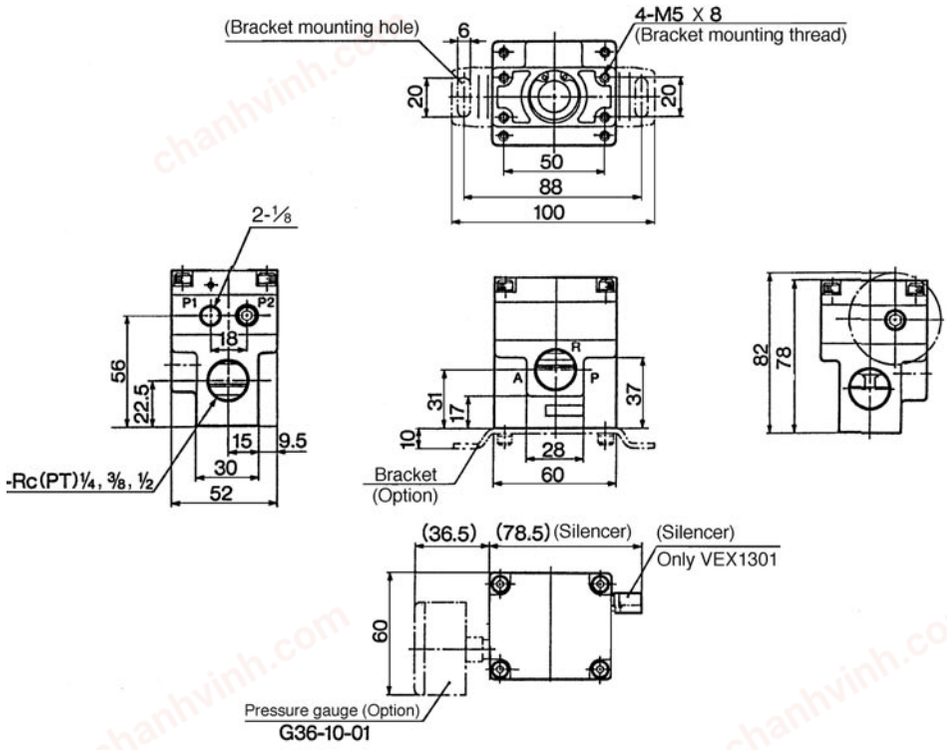
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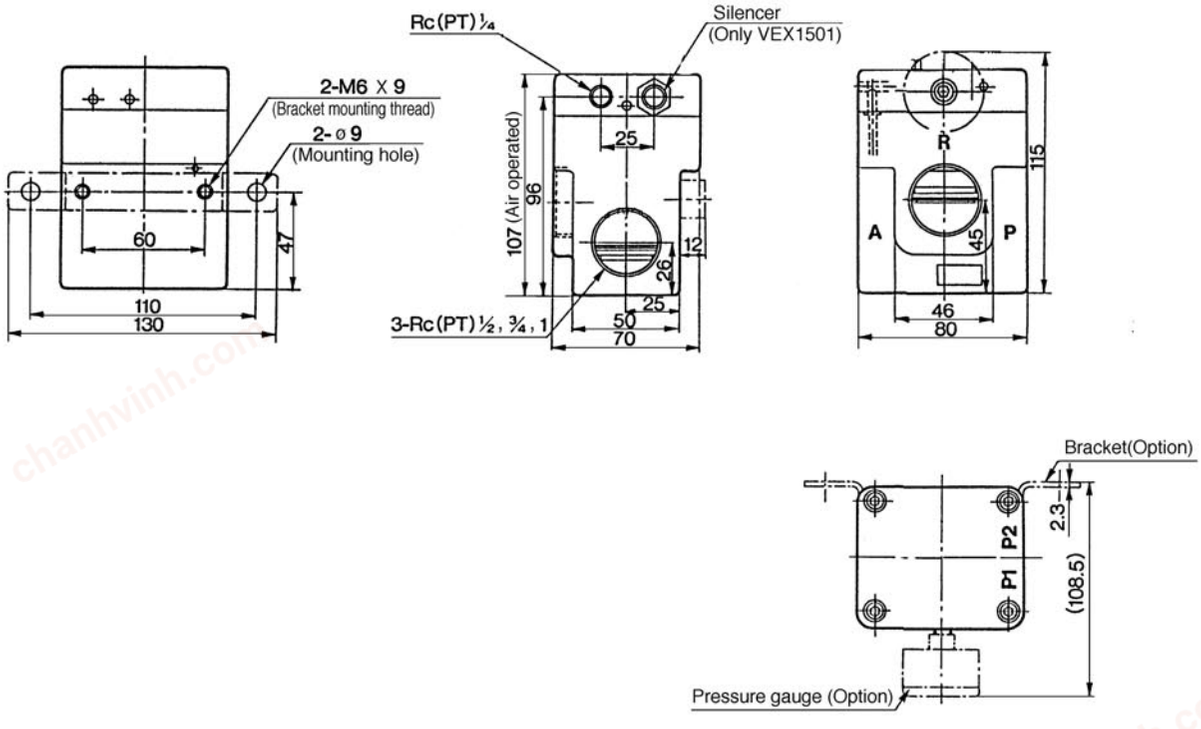
VEX1

Dimensions

Air operated: VEX1300



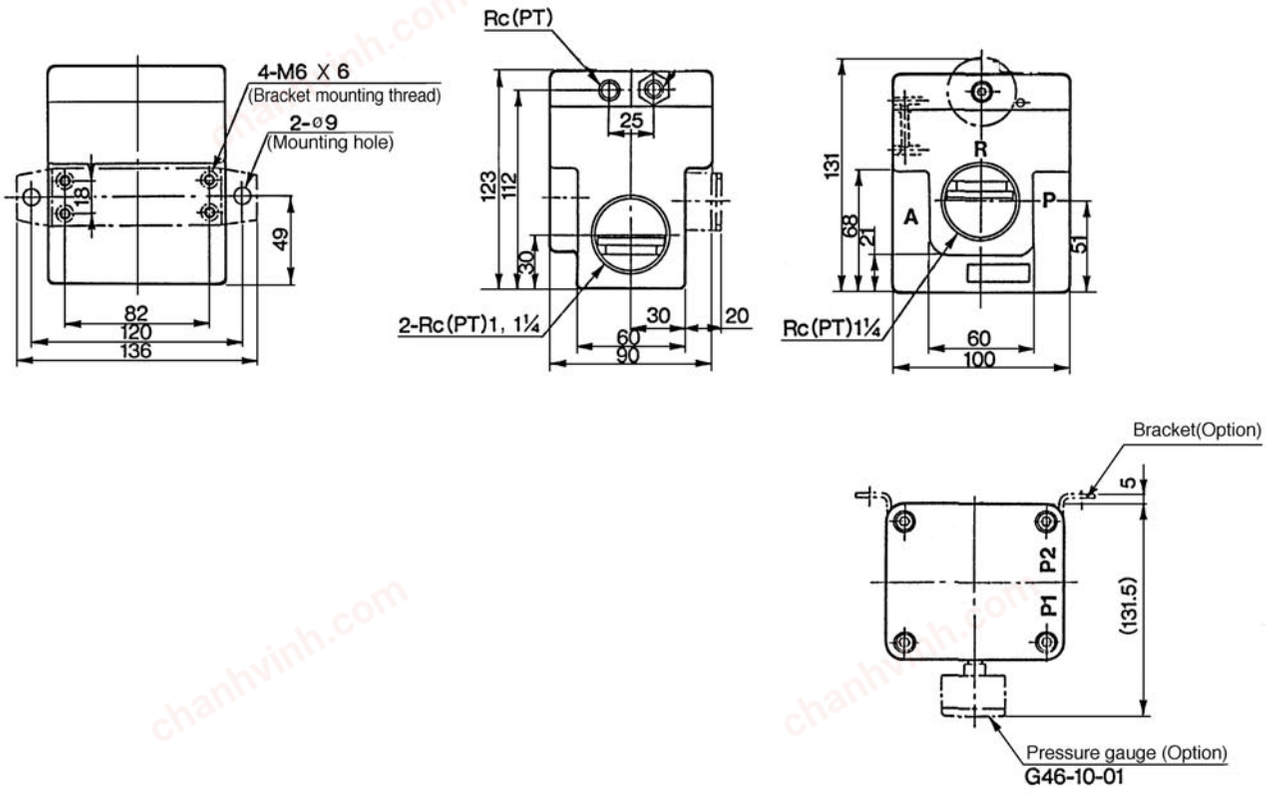
Air operated: VEX1500



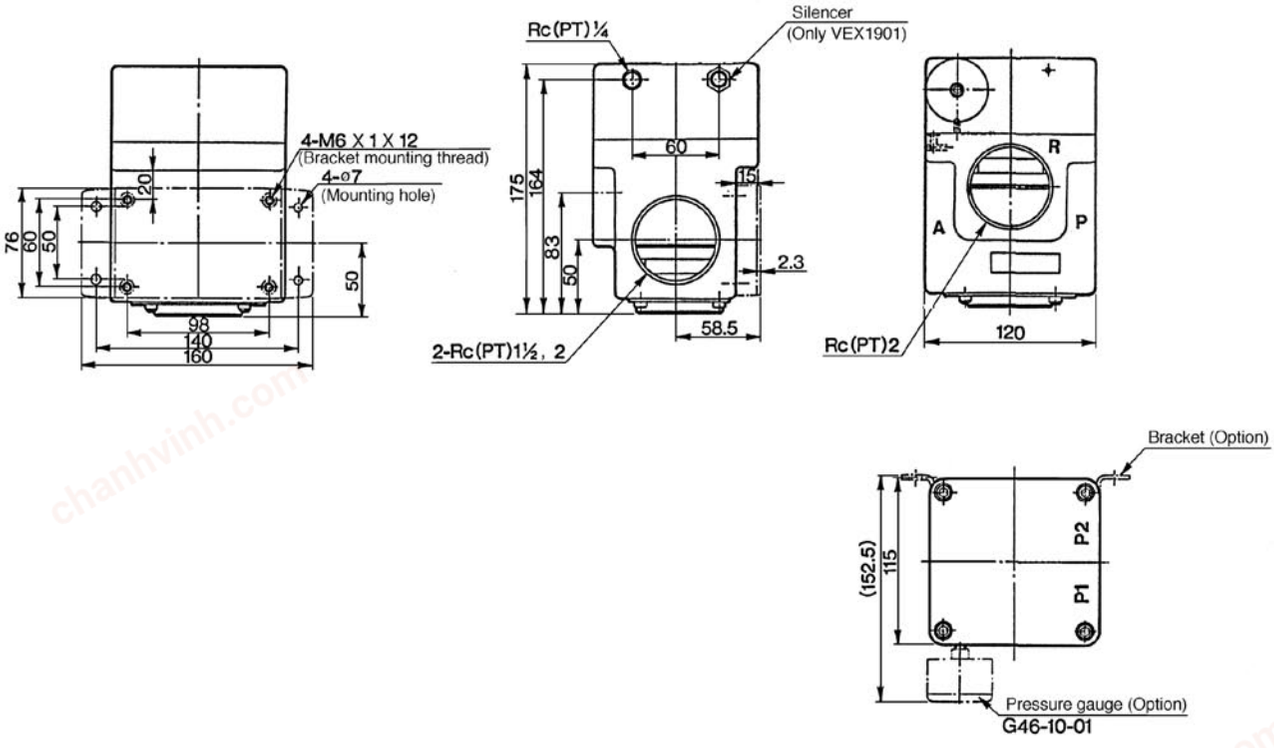
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Dimensions

Air operated: VEX1700

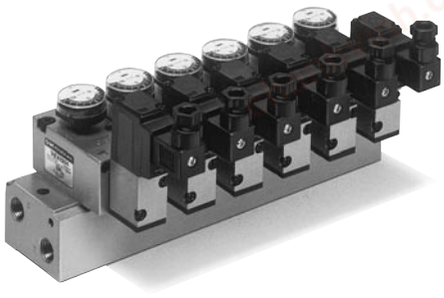


Air operated: VEX1900



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Series VEX1
Manifold



Specifications

Valve stations	2 to 8 (1)
Passage specifications	Common SUP,EXH
Port size P, A, R port	Rc(PT), NPTF,G(PF),NPT 1/4
Applicable valve	VEX1200, VEX1201 (2)
Applicable blank plate	VEX1-17 (With gasket,bolt)

Note 1) When there are 5 stations or more, pressurize from P ports on both sides and exhaust from R ports on both sides.
Note 2) Manifold base P1 (pilot port) is not used for VEX1200 (air operated) and VEX1201 (external pilot solenoid operated) because both are of an individual external pilot.

How to Order

VVEX2 − 1 − 6 − 02 □

Series VEX1 Manifold

Stations

2	2 stations
⋮	⋮
8	8 stations

Port thread

—	Rc(PT)
T	NPTF
F	G(PF)
N	NPT

P, A, R port size

02	Rc(PT)1/4

How to Order Manifold

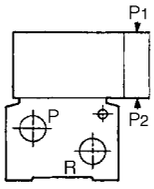
Please order the appropriate regulator valve and/or blank plate with manifold base.

(Ex.) VVEX2-1-5-02N·····1 5 stations manifold base, port thread NPT
∗ VEX1201-5DOZ-G···4 Regulator valve, External pilot solenoid valve, 24V DC, DIN connector (without connector), with indicator light and surge voltage suppressor, Option···With pressure gauge (1)
∗ VEX1-17·····1 Blank plate

Note 1) In case of manifold, pressure gauge: Only G27-10-01(O.D.ø26)

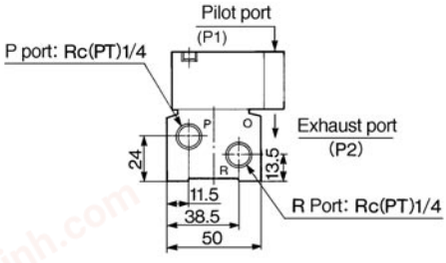
External Pilot Piping

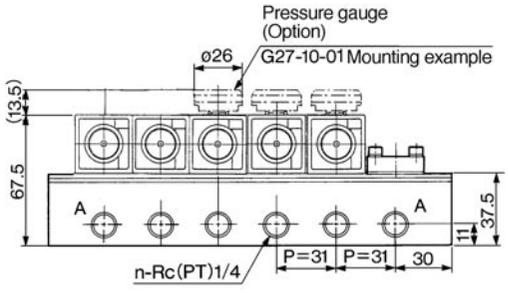
Style / Valve port	Air operated
Valve	VEX1200
P1	External pilot
P2	—

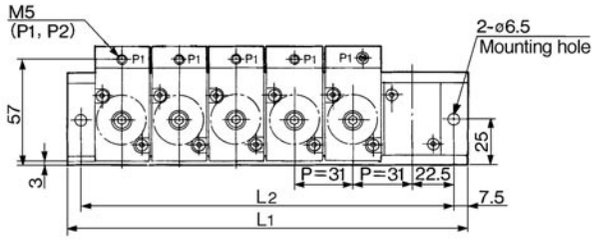


Dimensions

VVEX2-1-1- Station -02







n: Station

L \ n	2	3	4	5	6	7	8	Calculation
L1	91	122	153	184	215	246	277	L1=31Xn+29
L2	76	107	138	169	200	231	262	L2=31Xn+14

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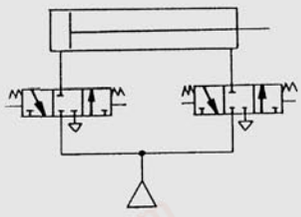
Power Valve

3 Position Valve

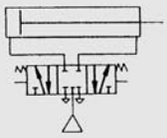
A variety of circuits in simple construction

Intermediate and emergency stops with a large size cylinder

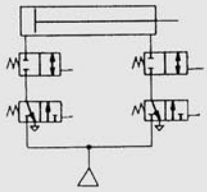
System construction with VEX



Conventional system construction



- There were not many appropriate large capacity 5 port valves with a closed centre.



- There were not many appropriate large capacity 2 port valves for stopping operations.

Cylinder Speed

This table should be used as a guide only, because the cylinder speed is subject to the equipment in the piping. For details,refer to the cylinder working capacity and maximum working speed data on p.5.1-13.

Condition: Pressure 0.5MPa, Load 50%, Piping length 5m

		Effective area mm²(N ℓ/min) / Port size	Cylinder speed (mm/s)	Bore size (mm)											
				ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160	ø180	ø200	ø250	ø300
Body ported	VEX312□ -01, 02	25(1374) / 02 (1/4)	250	■	■	■	■								
			500	■	■	■									
			750	■	■										
	VEX332□ -02, 03, 04	60(3238) / 03 (3/8)	250	■	■	■	■	■							
			500	■	■	■	■								
			750	■	■	■									
	VEX350□ -04, 06, 10	160(8735) / 06 (3/4)	250	■	■	■	■	■	■	■	■	■	■		
			500	■	■	■	■	■	■	■					
			750	■	■	■	■	■	■						
	VEX370□ -10, 12	300(16685) / 10(1)	500	■	■	■	■	■	■	■	■	■	■		
			750	■	■	■	■	■	■	■	■	■			
			1000	■	■	■	■	■	■	■	■				
	VEX390□ -14, 20	590(32389) / 14(1 1/2)	500	■	■	■	■	■	■	■	■	■	■	■	■
			750	■	■	■	■	■	■	■	■	■	■	■	
			1000	■	■	■	■	■	■	■	■	■	■		
Base mounted	VEX322□ -01, 02	25(1374) / 02 (1/4)	250	■	■	■	■								
			500	■	■	■									
			750	■	■										
	VEX342□ -02, 03, 04	70(3827) / 04(1/2)	250	■	■	■	■	■	■	■					
			500	■	■	■	■	■							
			750	■	■	■	■								

VEX

AN

AMC

AMP

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VEX3

How to Order



Body size • **Port size**

Body size	Port size		
	Port	P, A port	R port
12	01	1/8	
	02	1/4	
32	02	1/4	
	03	3/8	
	04	1/2	
50	04	1/2	
	06	3/4	
	10	1	
70	10	1	1 1/4
	12	1 1/4	
90	14	1 1/4	2
	20	2	

Body ported VEX3 [12] [0] — [01] [ ] — [B]

Base mounted VEX3 [22] [0] — [01] [ ] — [B]



Operation
0 — Air operated

Option
B — Bracket (Except VEX332□)
F — Foot (Only VEX312□, VEX332□)
N — Silencer for pilot exhaust (P_2) port (Only solenoids)

Body size • **Port size**

Body size	Port size		
	Port	P, A port	R port
22	—	Without subplate	
	01	1/8	
	02	1/4	
42	—	Without subplate	
	02	1/4	
	03	3/8	
	04	1/2	

Thread •
— — Rc(PT)
T — NPTF
F — G(PF)
N — NPT

⚠ Caution

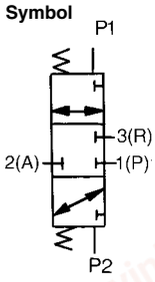
Refer to p.0-33 to 0-36 for Safety Instructions and common precautions

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Air operated

Symbol



Air operated

Specifications

Model						
Body ported	VEX312□-01/02	VEX332□-02/03/04	VEX350□-04/06/10	VEX370□-10/12	VEX390□-14/20
Base mounted	VEX322□-01/02	VEX342□-02/03/04	—	—	—

Operation		Air operated											
Fluid		Air											
Proof pressure		1.5MPa											
Set pressure range	Air operated	Low vacuum to 1.0MPa											
		External pilot pressure 0.2 to 1.0MPa											
Ambient and fluid temperature		Max. 50°C (Air operated: 60°C)											
Response time		40ms or less (Pilot pressure 0.5MPa)	60ms or less (Pilot pressure 0.5MPa)										
Max. operating frequency		3 cycles/s											
Mounting		Free											
Lubrication		Not required (Use turbine oil No.1, ISO VG32, if lubricated)											
Port size	Port	01	02	02	03	04	04	06	10	10	12	14	20
	P	1/8	1/4	1/4	3/8	1/2	1/2	3/4	1	1	1 1/4	1 1/2	2
	A												
	R									1 1/4		2	
Effective area	mm²	16	25	36	60	70	130	160	180	300	330	590	670
	Nℓ/min	883.35	1374.10	1963	3238	3827	7066	8735	9815	16685	17667	32389	36315

Option

Parts name		Part No.						
		VEX312□-01/02	VEX322□-01/02	VEX332□-02/03/04	VEX342□-02/03/04	VEX350□-04/06/10	VEX370□-10/12	VEX390□-14/20
Bracket (With bolt and washer)	B	VEX1-18-1A	—	—	—	VEX5-32A	VEX7-32A	VEX9-32A
Foot (With bolt and washer)	F	VEX1-18-2A	—	VEX3-32-2A	—	—	—	—
Pilot exhaust (P2) port silencer	N	AN120-M5		AN103-01		AN210-02		

Weight (kg)

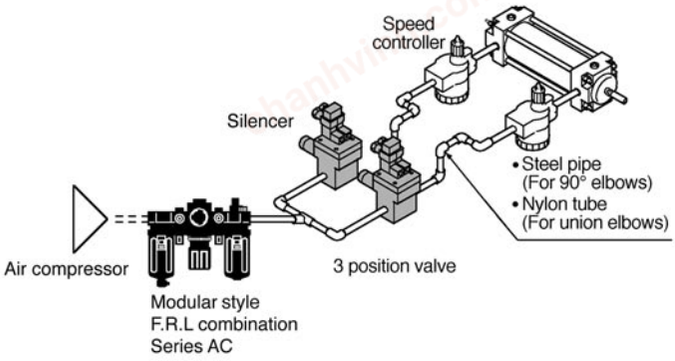
Model	VEX312□-01/02	VEX322□-01/02	VEX332□-02/03/04	VEX342□-02/03/04	VEX350□-04/06/10	VEX370□-10/12	VEX390□-14/20
Air operated	0.1	0.2	0.3	0.6	1.4	2.1	3.3

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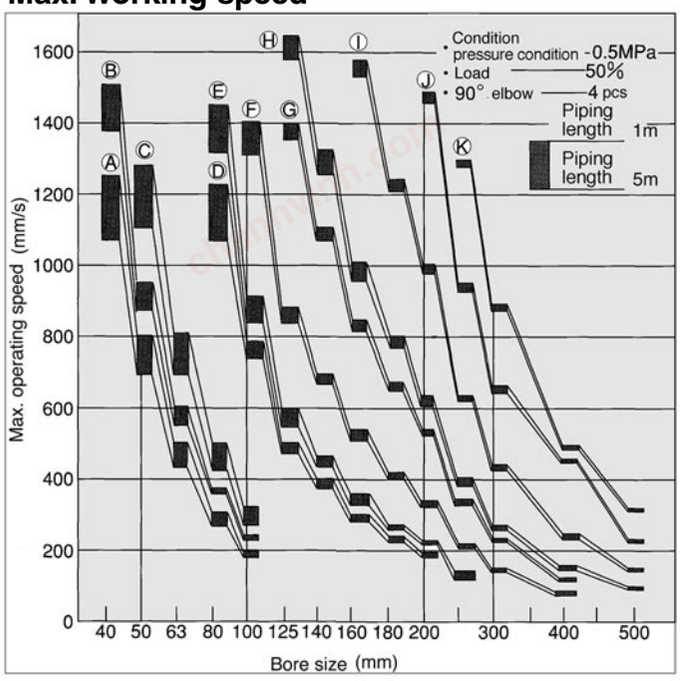
VEX3

Cylinder Speed

System



Max. Working speed



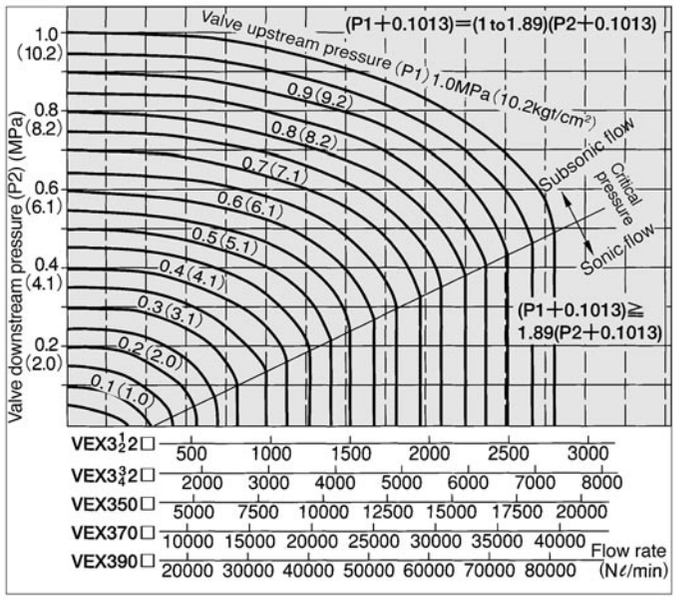
System	Solenoid valve	Speed controller	Silencer	Port size	Fitting (One side) 4 pcs
A	VEX3 1/2 2□	AS4000	AN200	T1075* (ø10)	DL10-02
B				T1209* (ø12)	DL12-02
C	VEX3 3/4 2□	AS420	AN300	T1209* (ø12)	DL12-03
D		AS420	AN400	SGP1/2 B	90° elbow
E	VEX350□	AS420	AN400	SGP 1/2 B	90° elbow
F		AS500	AN500	SGP 3/4 B	90° elbow
G		AS600	AN600	SGP1B	90° elbow
H	VEX370□	AS600	AN600	SGP1B	90° elbow
I		AS700	AN700	SGP1 1/4B	90° elbow
J	VEX390□	AS800	AN800	SGP1 1/2B	90° elbow
K		AS900	AN900	SGP2B	90° elbow

* Nylon tube No.

⚠ Caution

- The cushion incorporated in the cylinder has a limit to the relationship between maximum working speed and load.
  Please check it with the cylinder catalog.
- When the load factor is 0% (no load), the maximum working speed will be 1.2 times, and when the load factor is 75%, it will be 0.7 times.

Flow Characteristics



When air is used, the flow characteristics are subject to P_1 (Mpa), P_2 (Mpa) ΔP (Mpa), and the distinction between sonic and subsonic flow.

①Equation in the domain of subsonic flow.

Calculation by effective area

$$Q=226S\sqrt{\frac{\Delta P(P_2+0.1013)}{G}}\cdot\sqrt{\frac{273}{273+\theta}}\quad\cdots\ \ell/\text{min(ANR)}$$

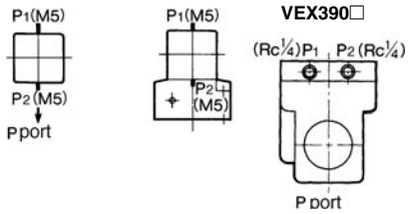
②Equation in the domain of sonic flow.

$$Q=113S(P_1+0.1013)\ \frac{1}{\sqrt{G}}\cdot\sqrt{\frac{273}{273+\theta}}\quad\cdots\cdots\ \ell/\text{min(ANR)}$$

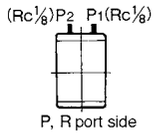
Q: Flow rate (ℓ/min)
ΔP: Pressure differential (P_1–P_2)
P_1: Upstream pressure (MPa)
P_2: Downstream pressure (MPa)
G: Specific gravity (Air = 1)
θ: Temperature (∞C)
S: Effective area (mm^2)

External Pilot Piping

VEX312□ **VEX332□** **VEX350□ VEX370□ VEX390□**

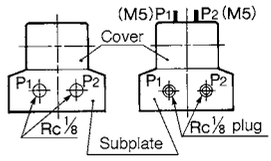


VEX322□



VEX342□ Solenoid for subplate

VEX342□ Air operated for subplate



Port	VEX3□□0
P1	External pilot
P2	External pilot

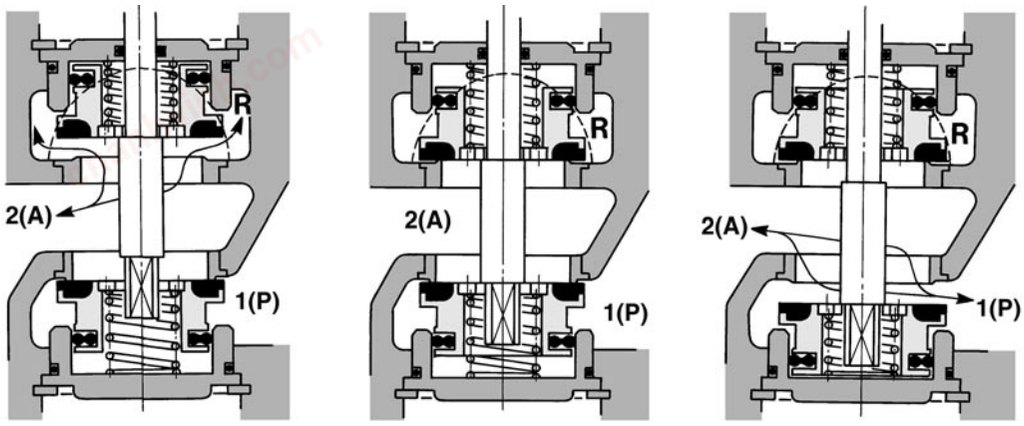
⚠ Caution

When the VEX3420 air operated power valve is delivered from our factory, the M5 threaded pilot ports P1 and P2 in the cover are open and the Rc1/8 pilot port in the subplate is plugged. Before connecting pipes to P1 and P2 ports in the subplate, remove the 1/8 plug from the subplate and put M5 plugs into P1 and P2 ports in the cover.
M5 plug - M-5P

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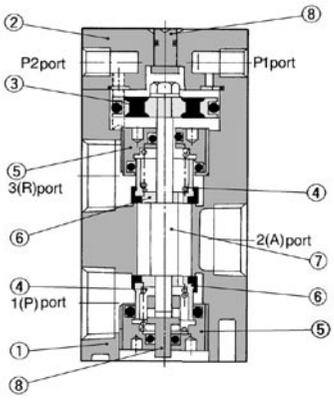
Construction/Operation Principles

[1]2(A)↔3(R) [2] Closed centre [3]1(P)↔2(A)

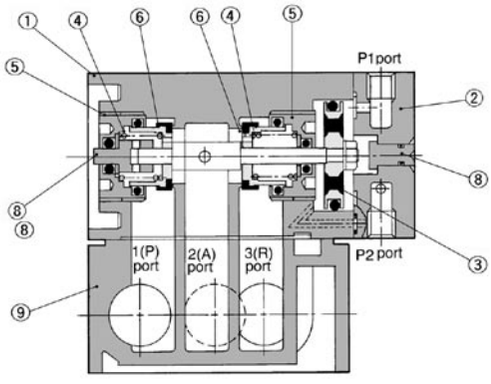


- This is a 3 port switch valve in which the shaft ⑦- extending from the driving piston ③ opens/closes a pair of poppet valves ⑥. The poppet valve has a pressure balancing mechanism in which A port pressure is constantly applied from the back and the centre spring ④ is acting as a backup.
- When neither the pilot solenoid valve "a" nor "b" are energized (or when air is exhausted both from the P1 and P2 ports of the air-operated style), no force will act on the working piston, and the spring closes the poppet valve, thus the valve assuming the closed centre position.([2])
- When the pilot solenoid valve "a" is energised (or when pressurised air enters through the P1 port of the air operated style), pilot air that enters the space above the working piston pushes down the piston and opens the lower poppet valve, thus connecting the P port and A port.([3]) The upper poppet valve continues to close the R port by means of pressure balance and the spring.
- When the pilot solenoid valve "b" is energised (or when pressurised air enters through the P2 port of the air-operated style), the pilot air that enters the space under the working piston pushes the piston upward and opens the upper poppet valve, thus connecting the A port and R port. ([1]) The lower poppet valve continues to close the P port by means of pressure balance and the spring.

VEX3120(Air operated)

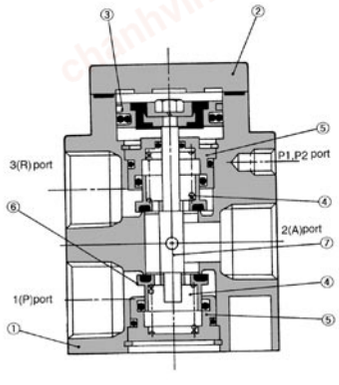


VEX3220(Air operated)

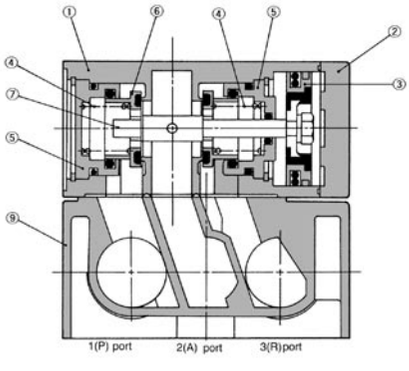


Construction (Component Parts)

VEX3320 (Air operated)



VEX3420 (Air operated)



Component Parts

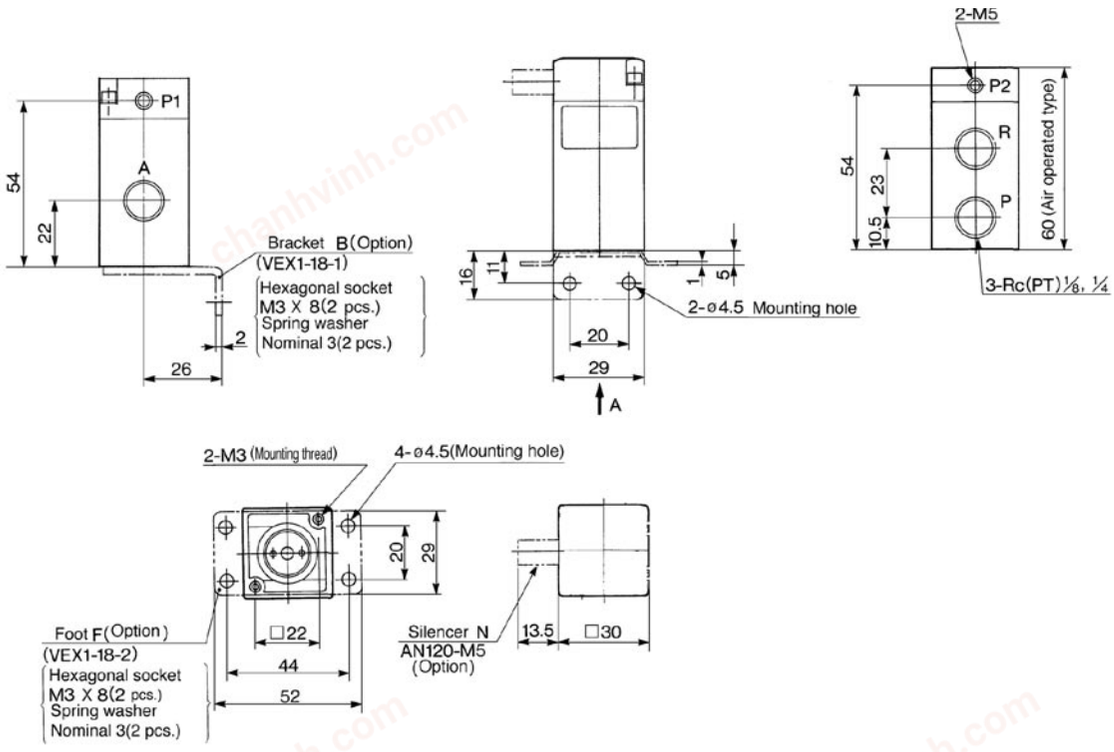
No.	Description	Material
①	Body	Aluminium alloy
②	Cover	Aluminium alloy
③	Working piston	Aluminium alloy
④	Center spring	Stainless steel
⑤	Valve guide	Aluminium alloy
⑥	Poppet valve	Aluminium alloy, NBR
⑦	Shaft	Stainless steel
⑧	Manual override	P.O.M
⑨	Sub-plate	Aluminium alloy

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VEX3

Body Ported/VEX312□

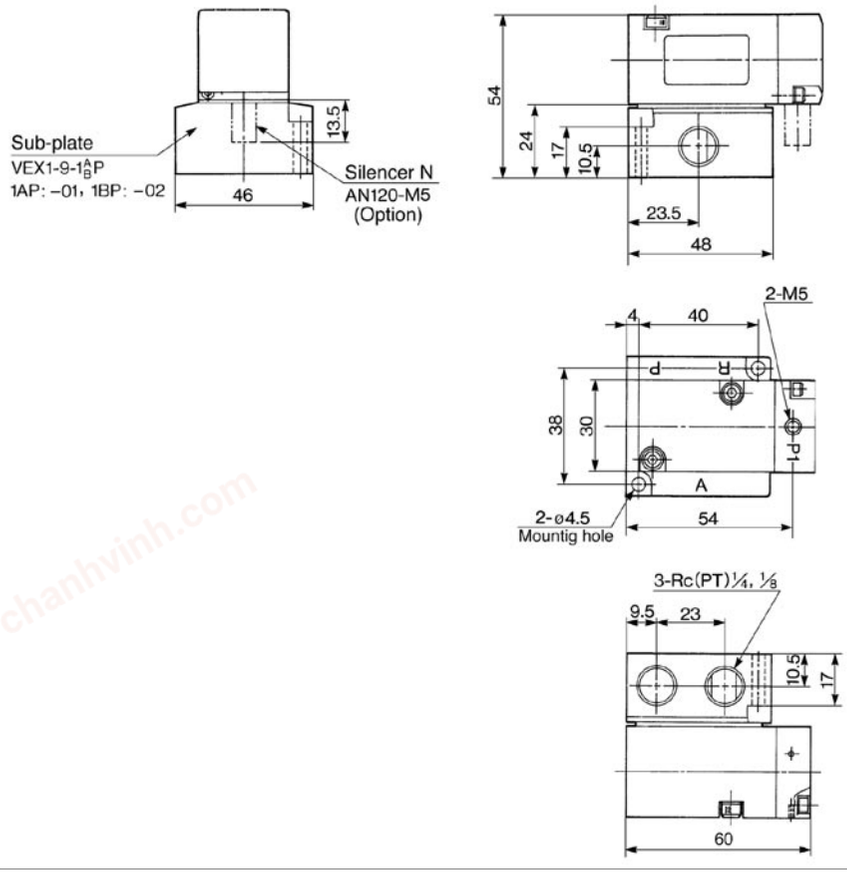
Air operated: VEX3120



A perspective drawing

Base mounted/VEX322□

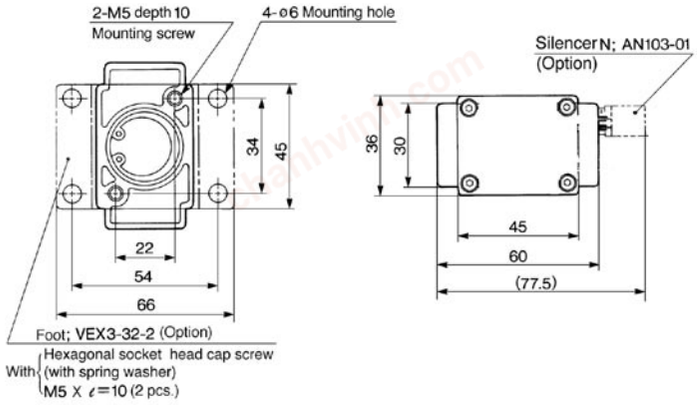
Air operated: VEX3220



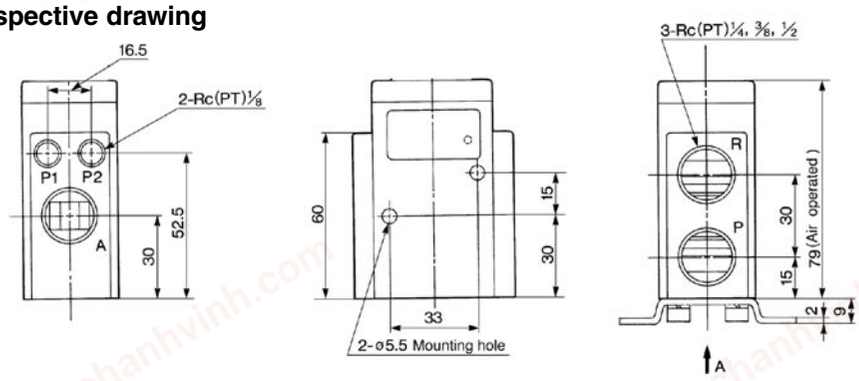
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Body ported: VEX332□

Air operated: VEX3320

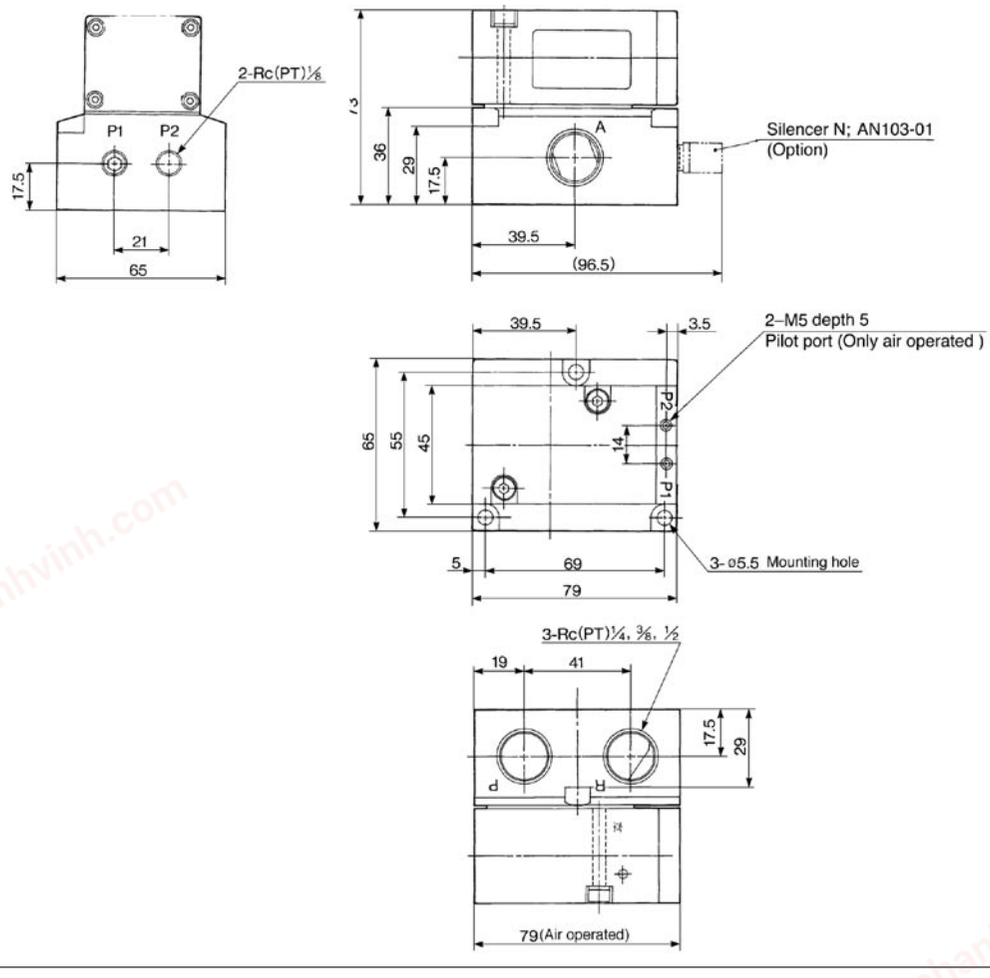


A perspective drawing



Base mounted: VEX342□

Air operated: VEX3420

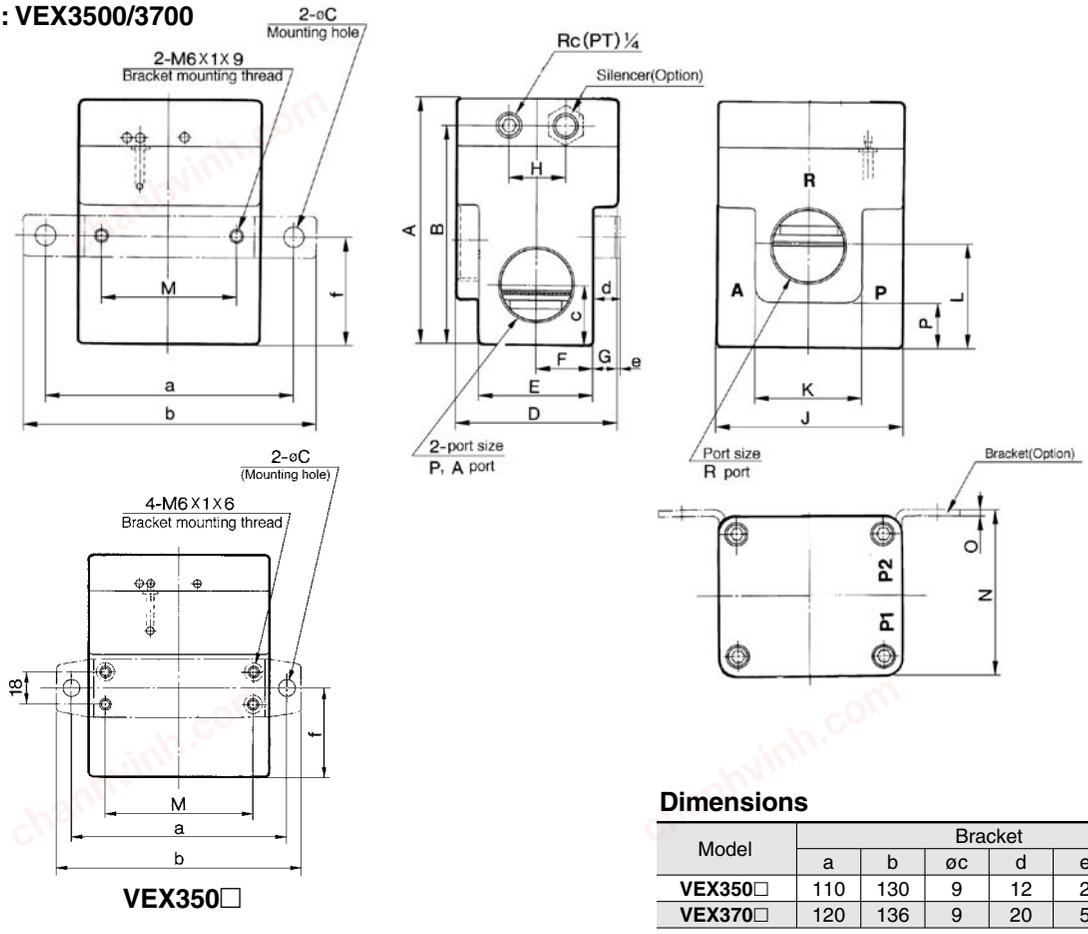


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VEX3

Body ported/VEX350□/370□

Air operated: VEX3500/3700



VEX350□

Dimensions

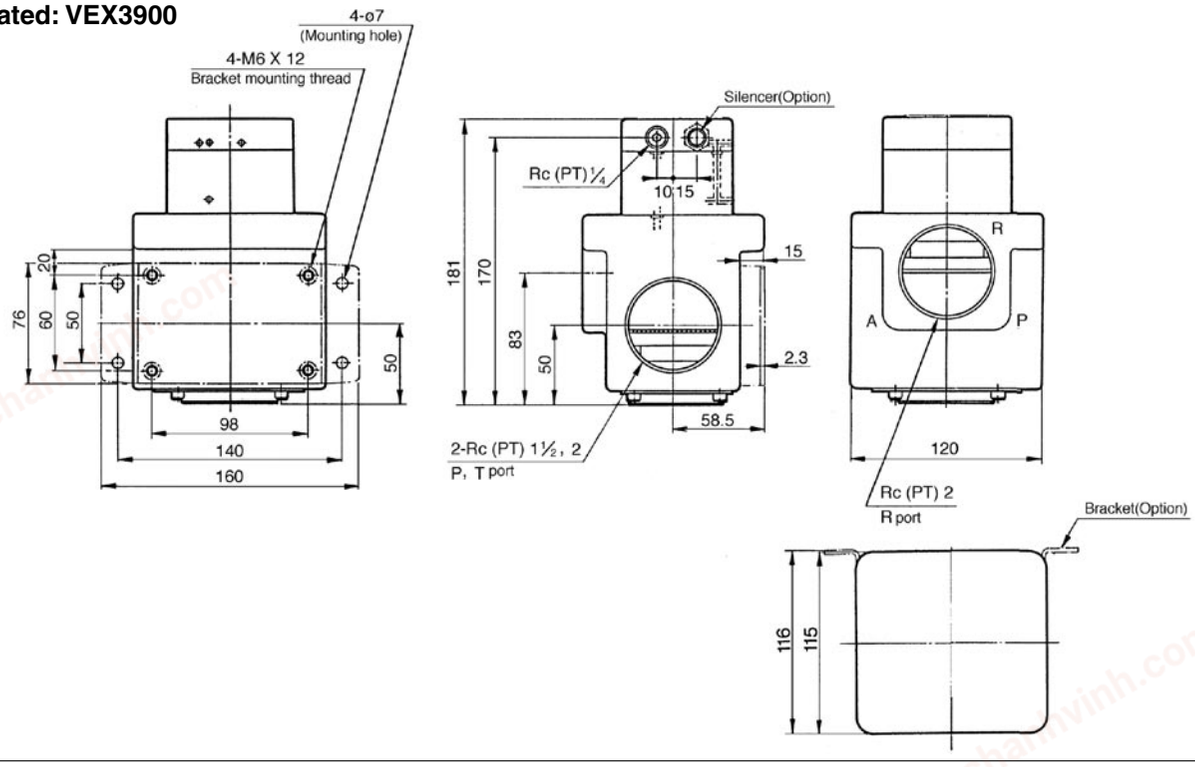
Model	Bracket					
	a	b	øc	d	e	f
VEX350□	110	130	9	12	2	47
VEX370□	120	136	9	20	5	49

Dimensions

Model	Port size		A	B	C	D	E	F	G	H	J	K	L	M	N	O
	P, A port	R port														
VEX350□	Rc(PT)1/2 , 3/4 , 1		107	96	26	70	50	25	10	25	80	46	45	60	72	2.3
VEX370□	Rc(PT)1, 1¼	Rc(PT)1¼	123	112	30	90	60	30	15	25	100	60	51	82	95	2.3

Body ported/VEX390□

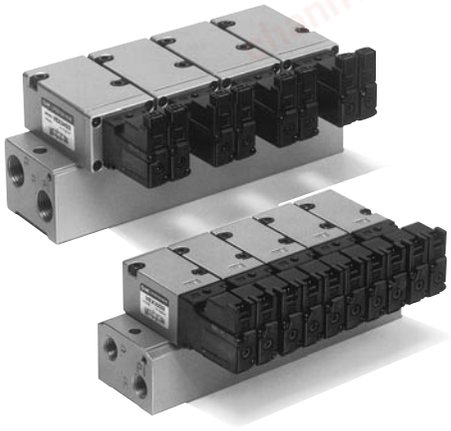
Air operated: VEX3900



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Series VEX3
Manifold

Manifold: Series VVEX



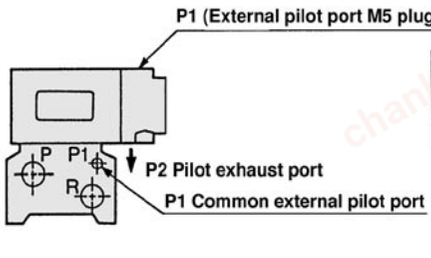
Specifications

Model		VVEX2	VVEX4		
Applicable valve		VEX3220, VEX3222	VEX3420, VEX3422		
Valve stations (1)		2 to 8	2 to 6		
Port specifications		Common SUP, EXH			
Pilot		Internal pilot, Common external pilot			
Common external pilot port size		M5 X 0.8 Length of thread 5			
Port size	P	1/4	3/8	3/8	1/2
	R				
	A		1/4	3/8	3/8
Blank plate		VEX1-17 (With gasket, mounting bolt)	VEX4-5 (With gasket, mounting blot)		

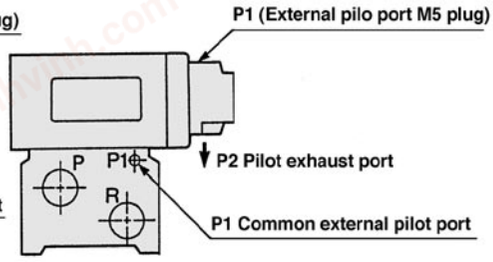
Note 1) When series VVEX2 is used with more than 5 stations, Series VVEX4 is used with more than 4 stations, apply pressure to the P port on both sides and exhaust from the R port on both sides.

External Pilot Piping

VVEX2-2



VVEX4-2



How to Order Manifold Base

VVEX 2 − 1 − 6 − 02 □

- Body size: 2
- Pilot style: 1 Internal pilot; 2 Common external pilot
- Stations: 2 to 8 (2 stations, ⋮, 6 stations, ⋮, 8 stations)
- Port size: Thread — Rc(PT); T — NPTF; F — G(PF); N — NPT

Body size	Pilot style		Applicable Valve	Valve stations		Port size			
						Port	P	R	A
2	1	Internal pilot	Air operated: VEX3220 (1)	2	2 stations	02	1/4		
				⋮	⋮				
	2	Common external pilot		6	6 stations				
				⋮	⋮				
				8	8 stations				
4	1	Internal pilot	Air operataed: VEX3420 (1)	2	2 stations	A	3/8		1/4
				⋮	⋮	B	3/8		
	2	Common external pilot		6	6 stations	C	1/2		3/8

Note) Air operated
VEX 3220 and VEX3420 (air operated) are used. Distinction between the pilots (internal or external pilot) of the manifold base does not matter. Either may be used.

Example of ordering a manifold base:
The valve and blank plate for manifold arrangement should be specified in order from the left side of the manifold base (With the A port on your side).
(Example) **VVEX4-2-6-A**
- ∗ VEX3420 — 5 pcs.
- ∗ VEX4-5 — 1 pc.

} Air operated

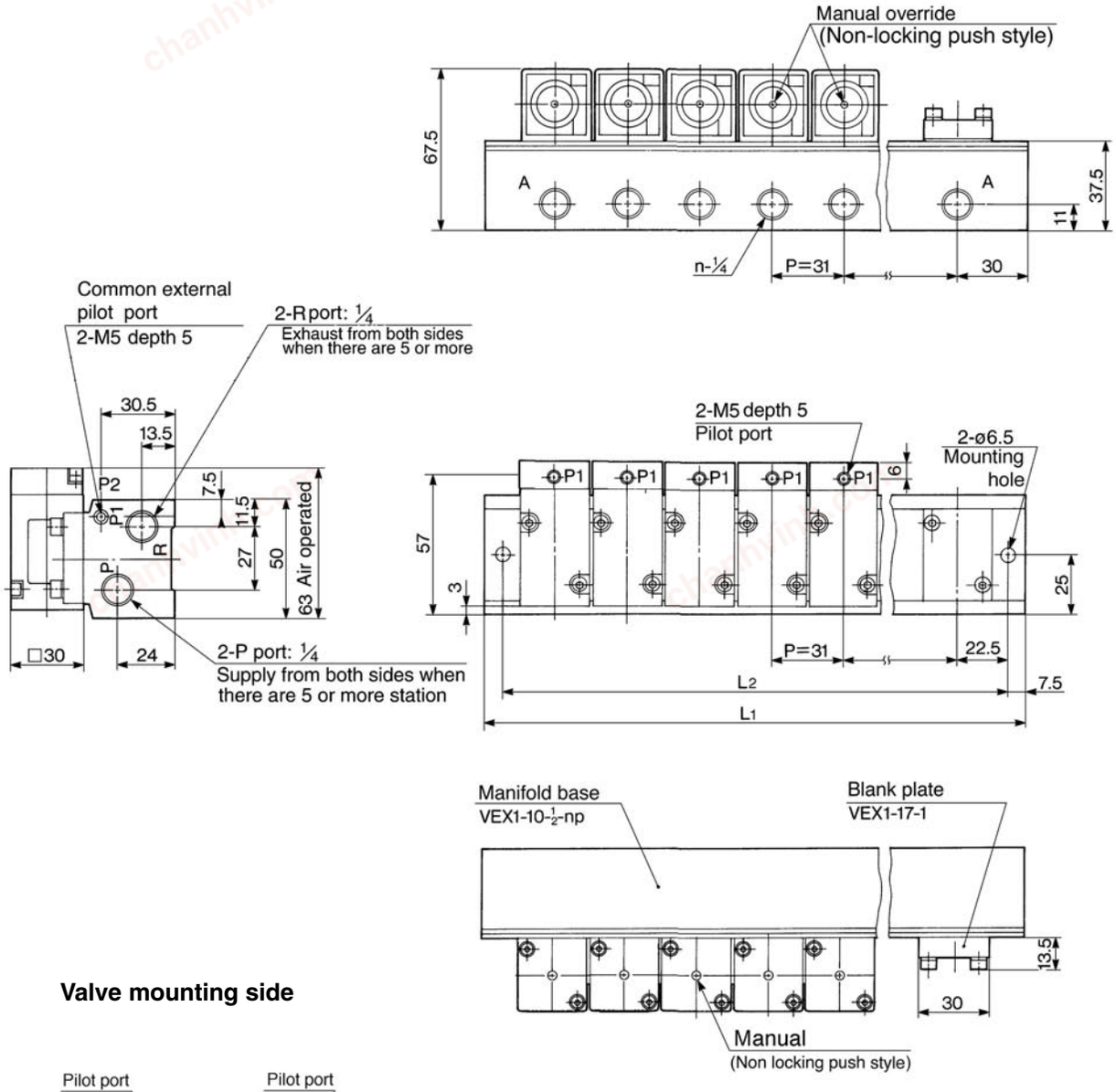
VEX
AN
AMC
AMP

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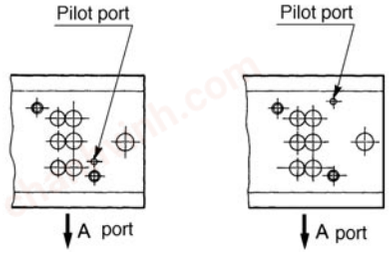
VEX3

Manifold/VVEX2□

VVEX2- 1/2 Applicable valve: VEX3220



Valve mounting side



Internal pilot **Common external pilot**

L: Dimensions Equation L_1=31n+29, L_2+31n+14 n: Station

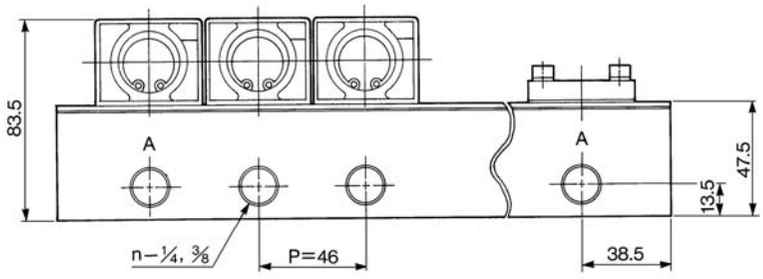
L \ n	2	3	4	5	6	7	8
L_1	91	122	153	184	215	246	277
L_2	76	107	138	169	200	231	262

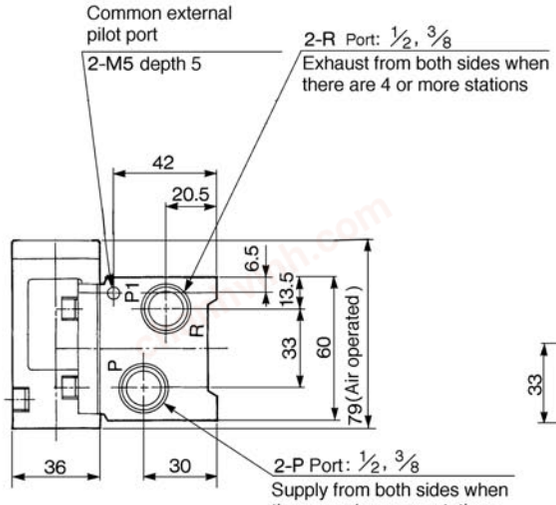
SMC

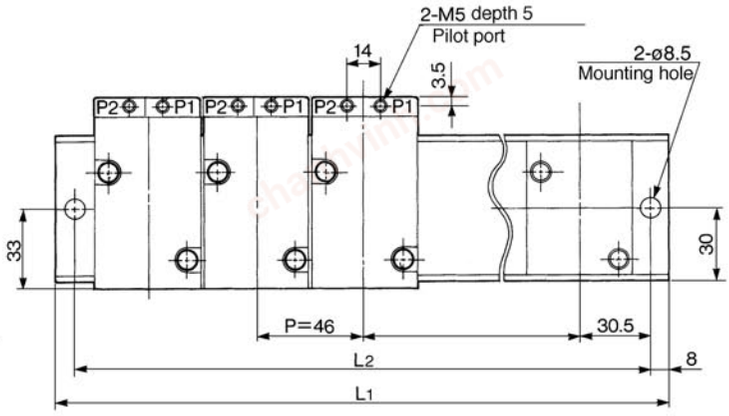
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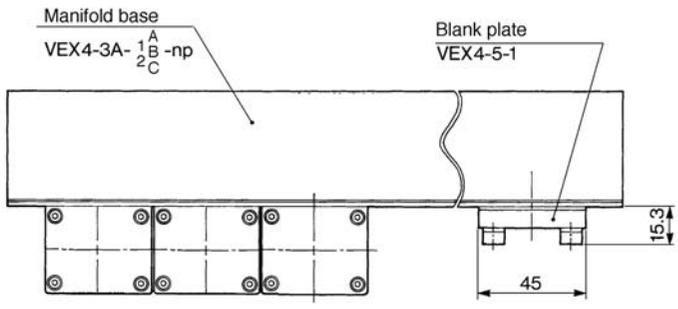
Manifold/VVEX4-1□

VVEX4-1 Applicable valve: VEX3420
VVEX4-2 Applicable valve: VEX3420

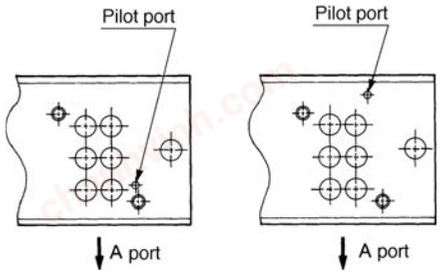








Valve mounting side



L: Dimensions

L1=46n+31, L2+46n+15 n: Station

L \ n	2	3	4	5	6
L1	123	169	215	261	307
L2	107	153	199	245	291

VEX
AN
AMC
AMP

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Power Valve
Economy Valve
Series VEX5

The conventional valve combination circuit has been condensed into a single valve.

Three functions (pressure regulator, switching valve, and speed controller) are provided by a single valve.

A large capacity and economical system.

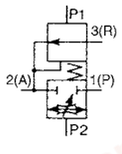
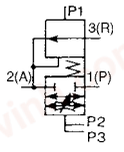
This valve provides twice the system capacity of the conventional circuit. Therefore, it is possible to downsize 1 or 2 sizes (for example, a conventional 32A circuit can be changed to a 25A or a 20A). It is economical, as its performance cost (system price/effective area) is one half of the conventional style. (Comparison based on SMC data.)



Basic



Select style

	Basic	Select style
Air operated		

Standard Specifications

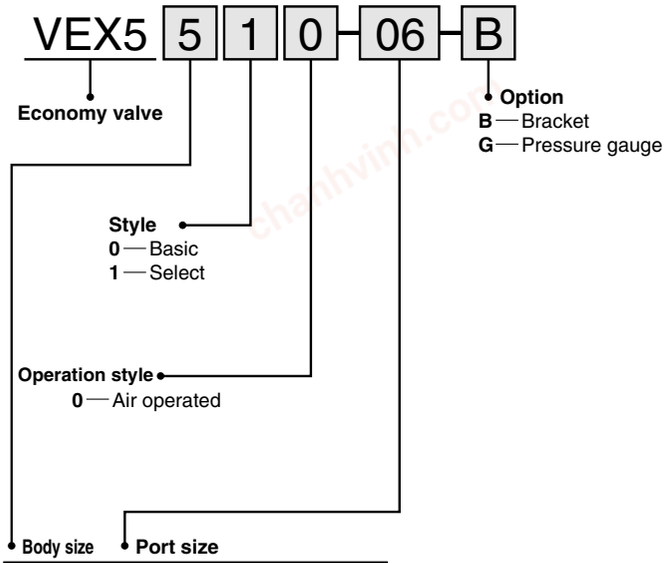
Model		VEX55□□ 04/06/10			VEX57□□ 10/12		VEX59□□ 14/20	
Style		Air operated						
Fluid		Air						
Proof pressure		1.5MPa						
Pressure range		0 to1.0MPa						
Set pressure range		0.05 to 0.9MPa						
Ambient and fluid temp.		Max. 50°C(Air operated 60°C)						
Pilot pressure		P1: 0.05 to 0.9MPa P2, P3: 0.2 to 0.9MPa P2≤P3						
Repeatability		0.01MPa						
Sensitivity		0.01MPa						
Response time		60ms or less						
Max. operating frequency		3 cycles/sec.						
No. of needle rotations		6 turns			8 turns			
Mounting		Free						
Lubrication		Not required(use turbine oil No.1 ISO VG32, if lubricated)						
Port size Rc(PT)	Port	04	06	10	10	12	14	20
	P	½	¾	1	1	1¼	1¼	2
	A							
	R				1¼		2	
Effective area	mm²	130	160	180	300	330	590	670
	Cv	7066	8735	9815	16685	17667	32389	36315
Weight (kg)	Basic	2.0			3.2		4.7	
	Select	2.3			3.5		5.0	

Accessories/Part No.

Description \ Model	Part No. VEX55□□ 04/06/10	VEX57□□ 10/12	VEX59□□ 14/20
Bracket (With bolt and washer)	VEX5-32A	VEX7-32A	VEX9-32A
Pressure gauge	G46-10-01		

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How to Order

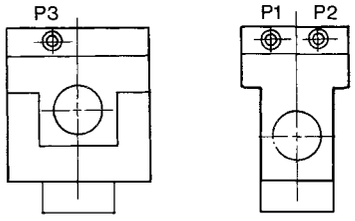


Body size		Port size Rc(PT)	
		P, A port	R port
5	04	1/2	1/2
	06	3/4	3/4
	10	1	1
7	10	1	1 1/4
	12	1 1/4	
9	14	1 1/4	2
	20	2	

Model

Model	Basic	Select	Port size Rc(PT)	
	Air operated	Air operated	P, A port	R port
Economy valve	**VEX5500**	**VEX5510**	1/2, 3/4, 1	1/2, 3/4, 1
	VEX5700	**VEX5710**	1, 1 1/4	1 1/4
	VEX5900	**VEX5910**	1 1/2, 2	2

External Pilot Piping



R port size **P port size**

Model	P1	P2	P3
VEX5□00	External pilot	External pilot	Plug
VEX5□10	External pilot	External pilot	External pilot

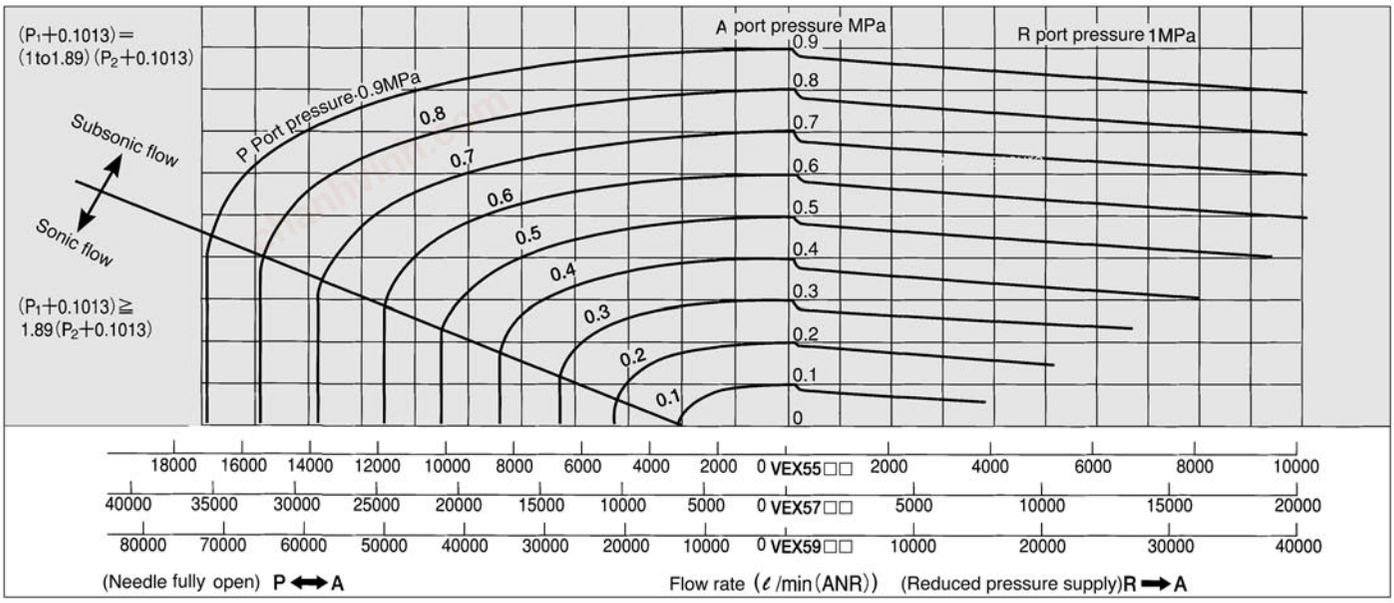
⚠ Caution

Refer to p.0-33 to 0-36 for Safety Instructions and common precautions

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VEX5

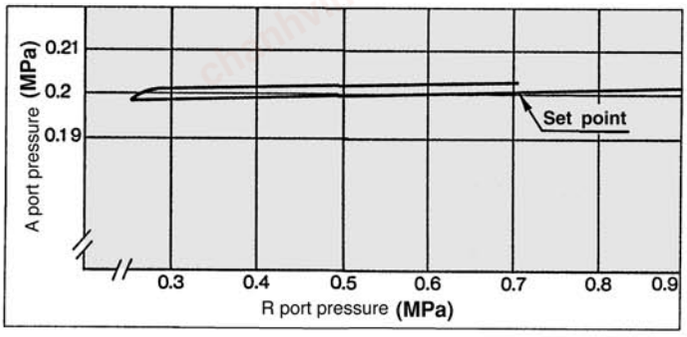
Flow Characteristics



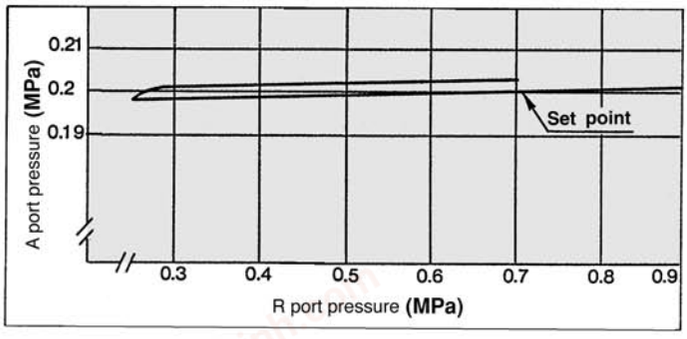
Pressure Characteristics

Shows secondary pressure (A port) change against primary pressure (R port) change. They conform to JISB8372(Air pressure regulator)

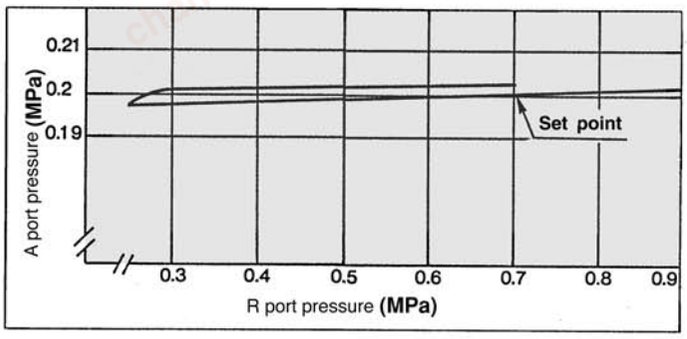
VEX55□□



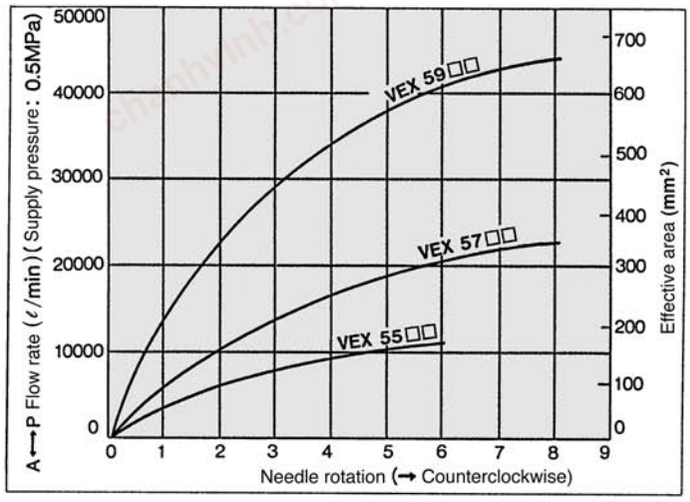
VEX57□□



VEX59□□

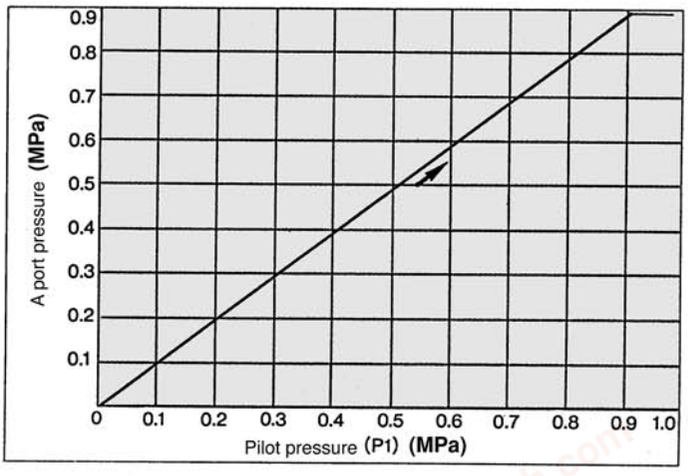


Needle Characteristics A↔P



Setting Pressure Characteristics

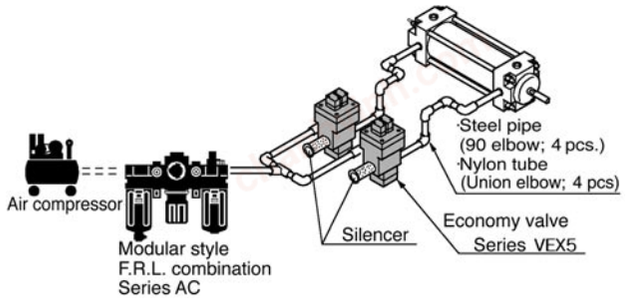
A port pressure is set according to pilot pressure
(R→A: Non-relief regulator)



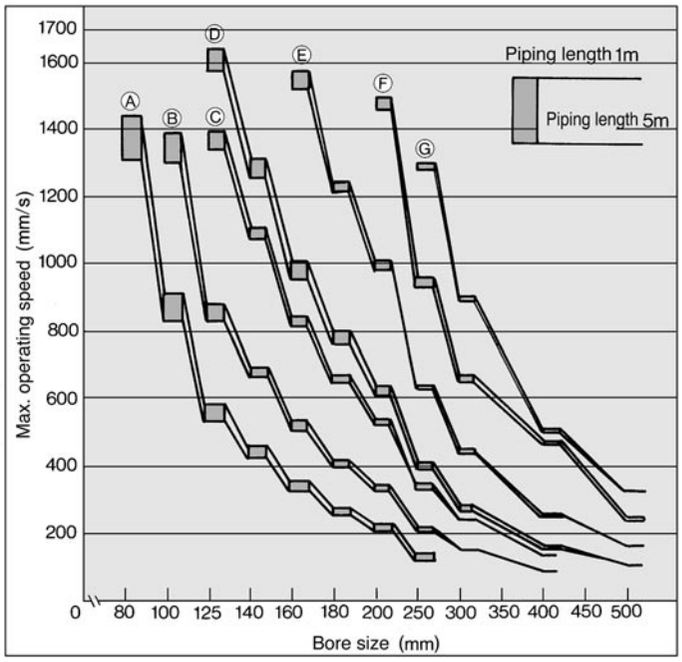
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Cylinder Speed

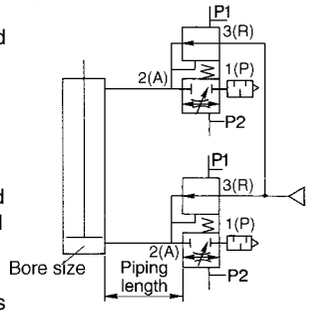
System diagram



System	Solenoid valve	Silencer	Port size	Fitting (One side) 4 pcs
A	**VEX55□□**	AN400	SGP 1/2 B	90° Elbow
B	**VEX55□□**	AN500	3/4 B	90° Elbow
C	**VEX55□□**	AN600	1B	90° Elbow
D	**VEX57□□**	AN600	1B	90° Elbow
E	**VEX57□□**	AN700	1 1/4B	90° Elbow
F	**VEX59□□**	AN800	1 1/2B	90° Elbow
G	**VEX59□□**	AN900	2B	90° Elbow



- Supply air pressure
  Set pressure is 0.5MPa both on rod and head side.
- Needle fully open
- Load 50%
- 90° elbow 4 pcs.
- There is a limit to the relation between maximum operational speed and load in the cushion incorporated in the cylinder. Check it with the cylinder catalogue.
- Maximum working speed is 1.2 times when load factor is 0% and is 0.7 times when load factor is 75%.



Energy Saving Lifter

• Simple
Two economy valves and a tank move the double-acting cylinder to raise and lower heavy objects.

• Energy saving
The balancing air reciprocates between the lower cylinder chamber and the tank, thus not being consumed. Low pressure air alone is exhausted from the upper chamber in every cycle, so the air consumption is reduced to 20 to 30% of the air con sumption by the double acting cylinder with an ordinary change over valve.

• Excellent operation control
The economy valve sets pressure and permits high speed and low speed operation as well as suspension of operation. While the piston moves up and down, the valve controls speed change in the middle of strokes, terminal deceleration, inching, and emergency stops.

⚠ Caution

* A lifter circuit can be composed of air operated valves. Contact SMC for details.

Others

Exhaust Cleaner (Series AMC)

- Provides a silencing capability and an oil mist recovery function.
- Can also be used in a centralized piping system.



Model	Connection R(PT)	Effective area (mm^2)	Max.air flow (ℓ/min)
AMC310	3/8	16	300
AMC510	3/4	55	1,000
AMC610	1	165	3,000
AMC810	1 1/2	330	6,000
AMC910	2	550	10,000

- 99.9% of oil mist removal.
- Over 35dB noise reduction.
- Refer to p.5.3-1 for details.

Silencer (Series AN)

- Over 30dB noise reduction
- Sufficient effective area



Model	Connection R(PT)	Effective area (mm^2)
AN110	1/8	35
AN200	1/4	35
AN300	3/8	60
AN400	1/2	90
AN500	3/4	160
AN600	1	270
AN700	1 1/4	440
AN800	1 1/2	590
AN900	2	960

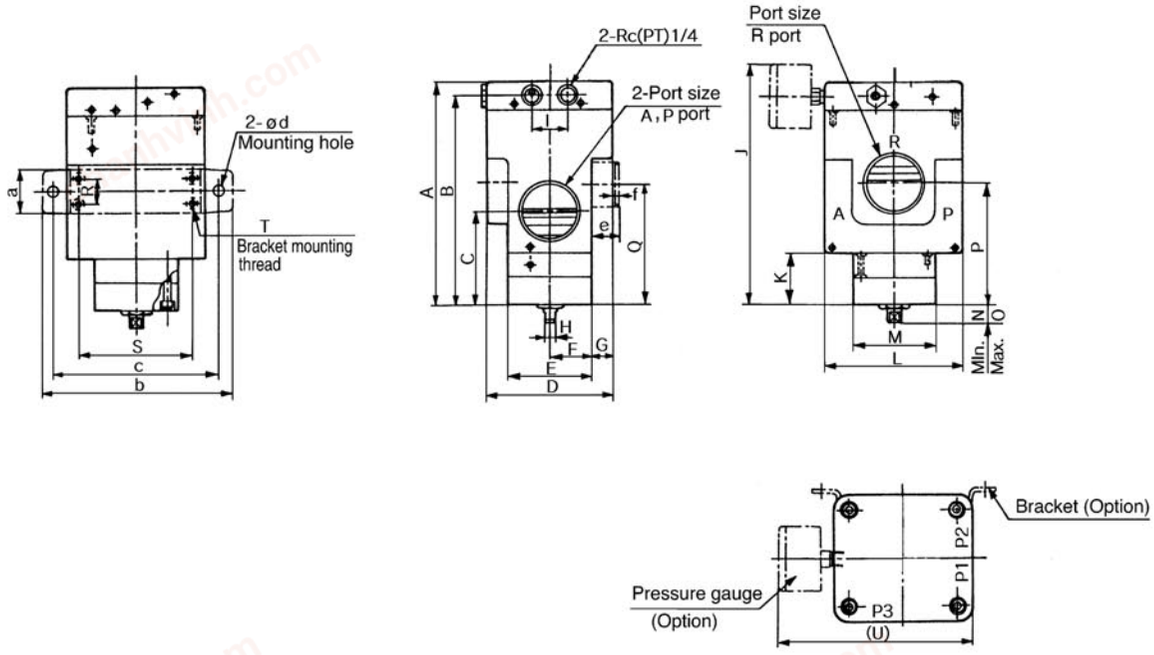
- Refer to p.5.2-1 for details.

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VEX5

Basic Dimensions

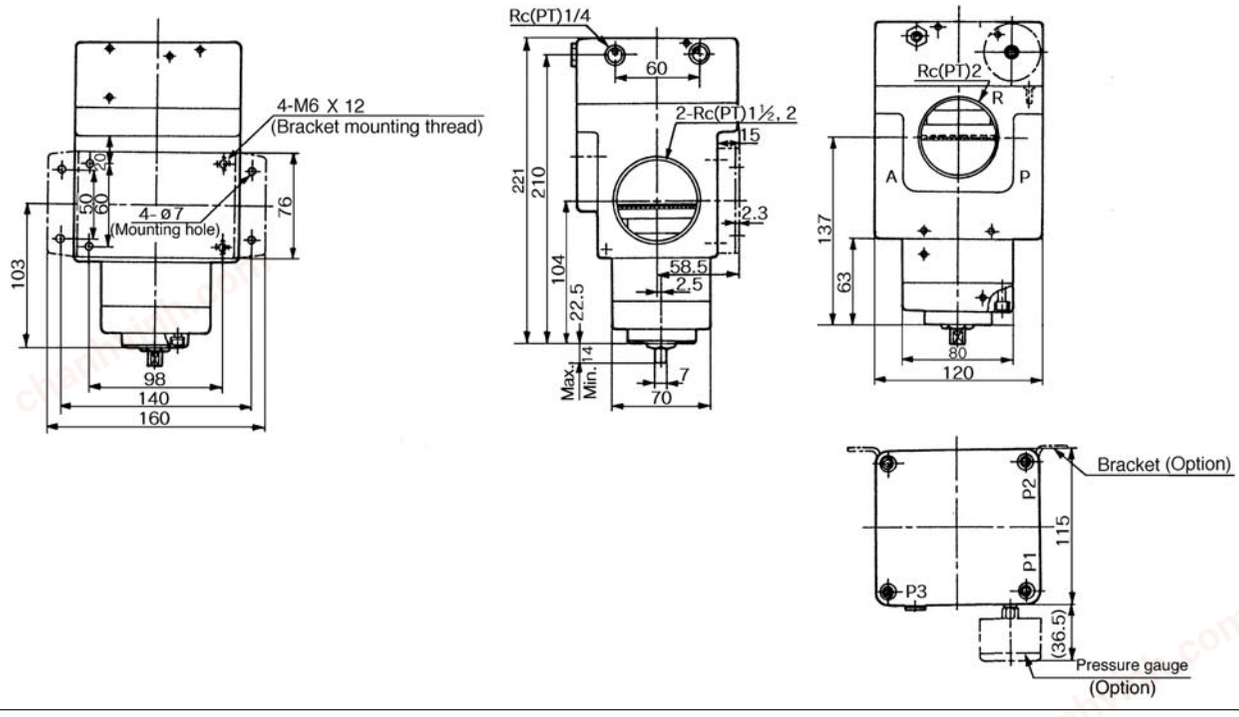
VEX5500
VEX5700



Model	Port size		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
	A, P port	R port																					
VEX5500	Rc(PT) 1/2, 3/4, 1	Rc(PT) 1/2, 3/4, 1	143.5	133.5	62.5	70	50	25	10	7	25	156.5	36.5	80	60	16.5	20	81.5	83.5	Center	60	2-M6 X Depth 9	116.5
VEX5700	Rc(PT) 1, 1 1/4	Rc(PT) 1 1/4	160.5	150.5	62.5	90	60	30	15	7	25	173.5	37.5	100	60	13	17	88.5	86.5	18	82	4-M6 X Depth 6	136.5

Model	Bracket mounting dimensions					
	a	b	c	ød	e	f
VEX5500	19	130	110	9	12	2.3
VEX5700	32	136	120	9	20	2.3

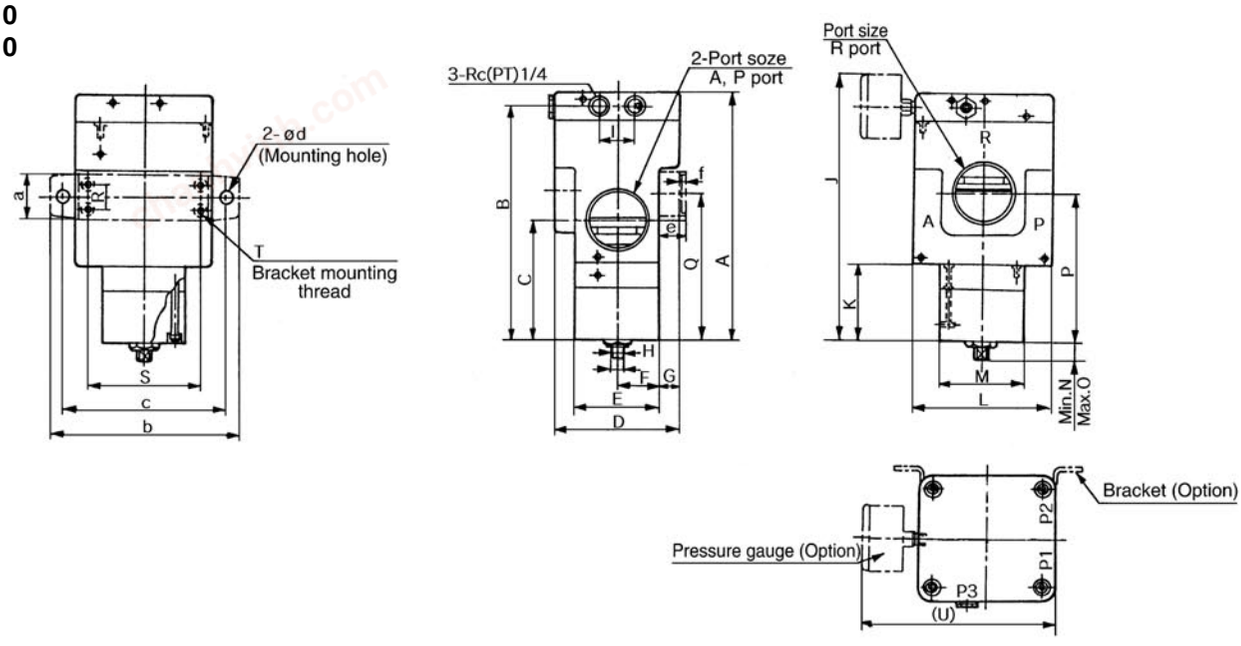
VEX5900



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Select style Dimensions

VEX5510
VEX5710



Model	Port size		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
	A,P port	R port																					
VEX5510	Rc(PT) 1/2, 3/4, 1	Rc(PT) 1/2, 3/4, 1	160	150	79	70	50	25	10	7	25	173	53	80	60	13	18	98	100	Center	60	2-M6 X depth 9	116.5
VEX5710	Rc(PT) 1, 1 1/4	Rc(PT) 1 1/4	177.5	167.5	84.5	90	60	30	15	7	25	190.5	54.5	100	60	13	17	105.5	103.5	18	82	4-M6 X depth 6	136.5

Model	Bracket mounting dimensions					
	a	b	c	ød	e	f
VEX5510	19	130	110	9	12	2.3
VEX5710	32	136	120	9	20	2.3

VEX5910

