

Power Valve Regulator Valve Series VEX1

Large Capacity Relief Regulator

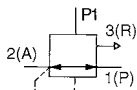
3 port large capacity poppet
exhausting regulator
equipped with a relief port the
same size as the connection
port.



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	1	1 1/4	1 1/2	2
	A	1/8	1/4	1/8	1/4	1/4	3/8	1/2	1/2	3/4	1	1 1/4	1 1/4	2		
Effective area	R															
	mm ²	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				

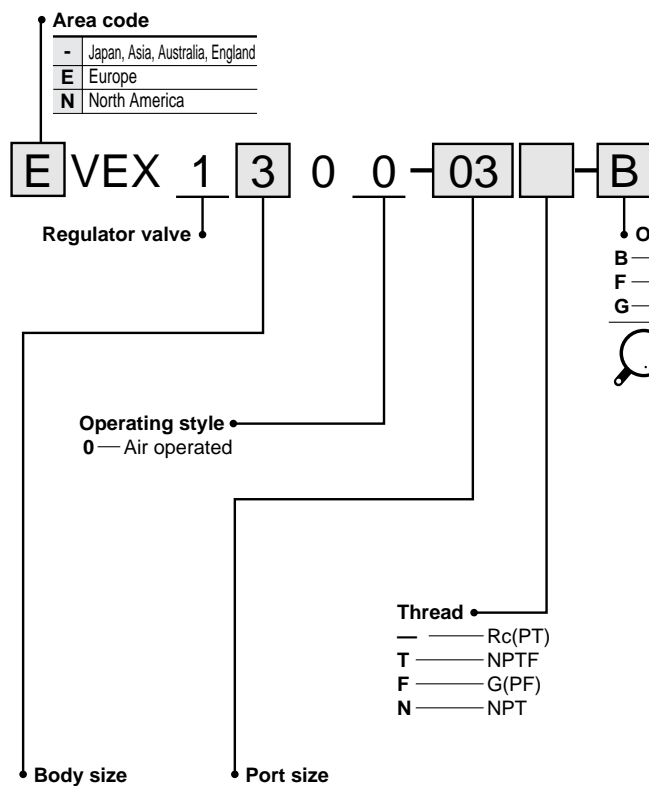
Options

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 requiring 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

How to Order



Body size		Port size		
		Port	P, A port	R port
Body ported	1	01	1/8	1/8
		02	1/4	1/4
	3	03	3/8	3/8
		04	1/2	1/2
	5	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	Without 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

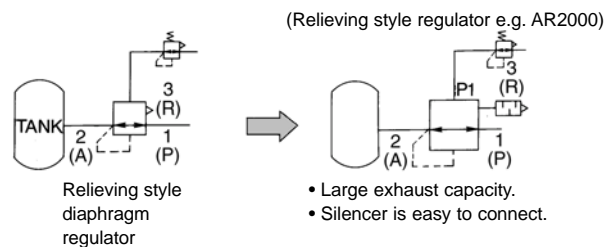
⚠ Caution

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

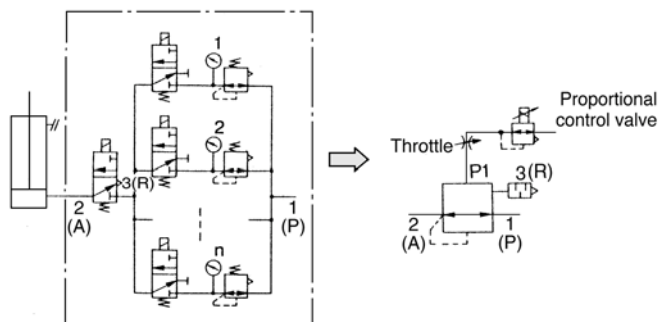
Applications

① Relief regulator

(Rapid tank internal pressure setting)



② Multiple 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.

VEX

AN

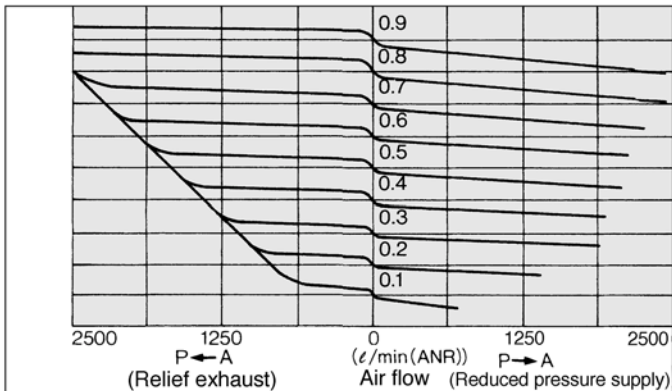
AMC

AMP

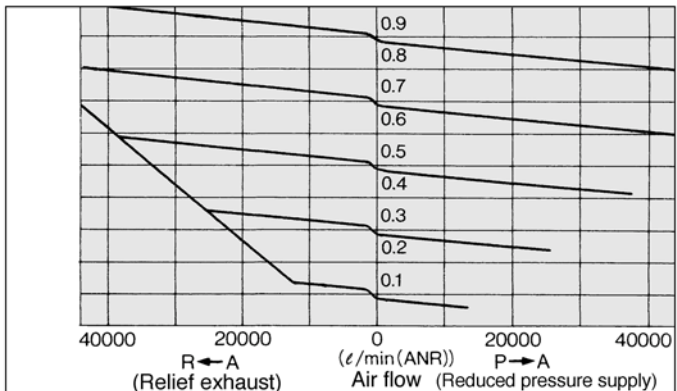
VEX1

Flow Characteristics

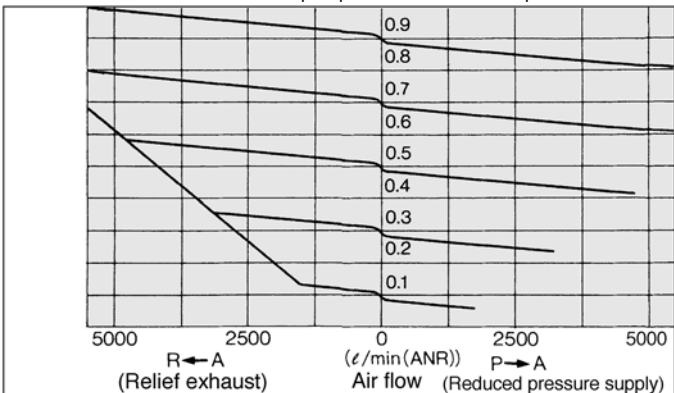
VEX110□, 120□ A port pressure MPa P Port pressure 1.0 MPa



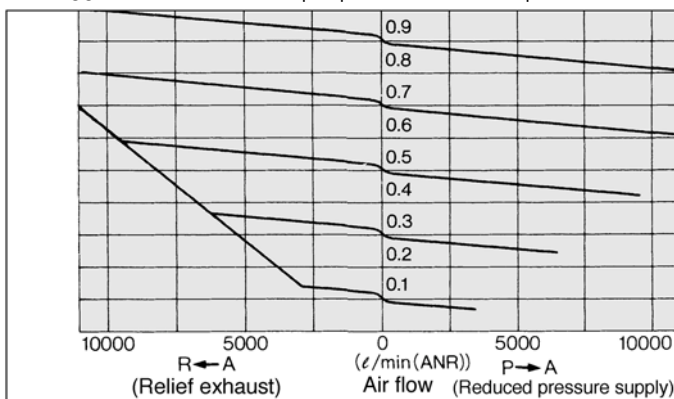
VEX190□ A port pressure MPa P Port pressure 1.0 MPa



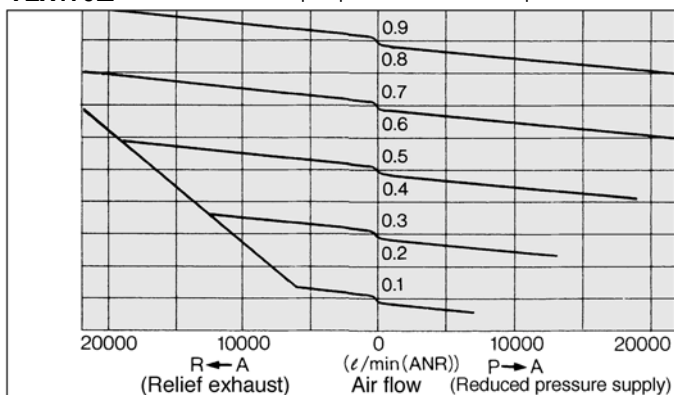
VEX130□ A port pressure MPa P Port pressure 1.0 MPa



VEX150□ A port pressure MPa P Port pressure 1.0 MPa

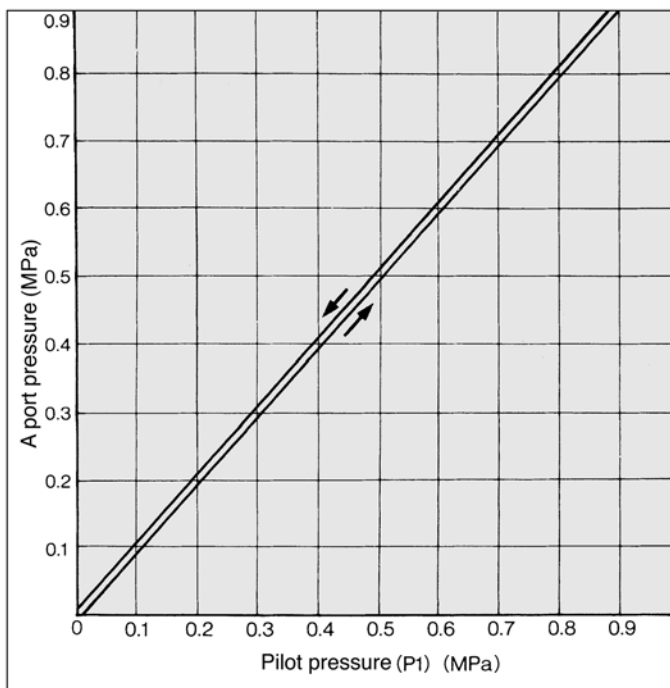


VEX170□ A port pressure MPa P Port pressure 1.0 MPa

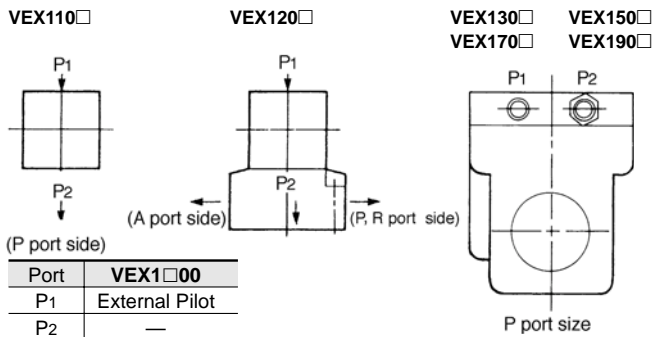


Setting Pressure Characteristics

A port pressure is set in accordance with pilot pressure



External Pilot Piping

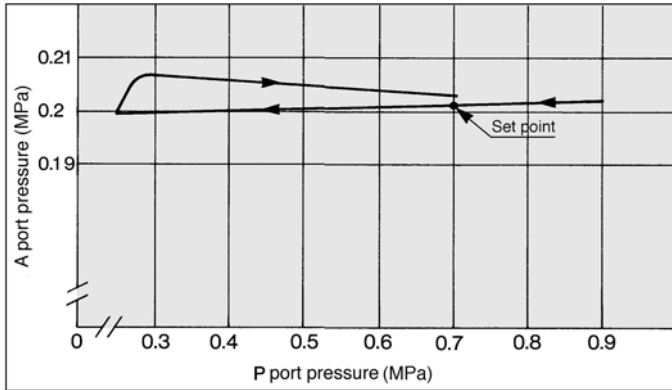


Pressure Characteristics

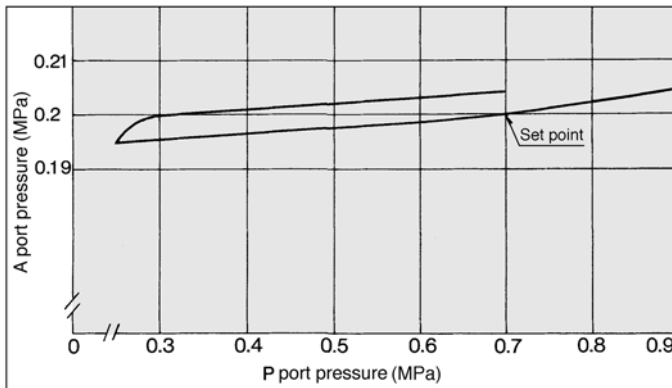
Shown the change of secondary pressure (A port) to the change of supply pressure (P port).

As per JIS B8372 (Pneumatic regulator)

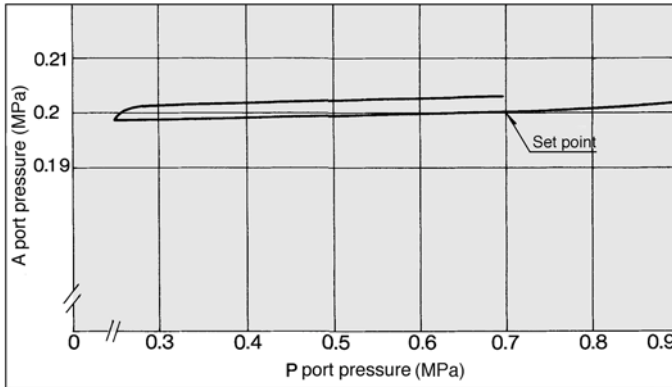
VEX110□, 120□



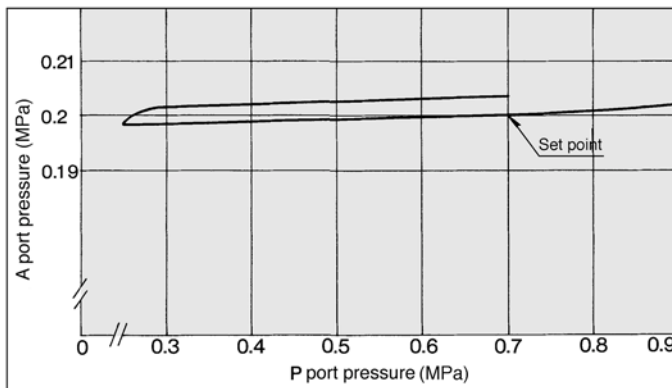
VEX130□



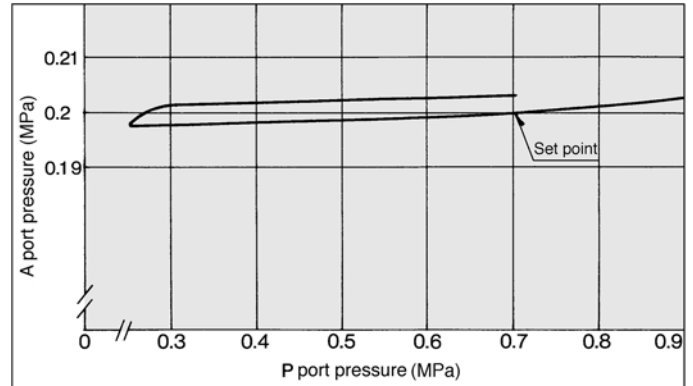
VEX150□



VEX170□

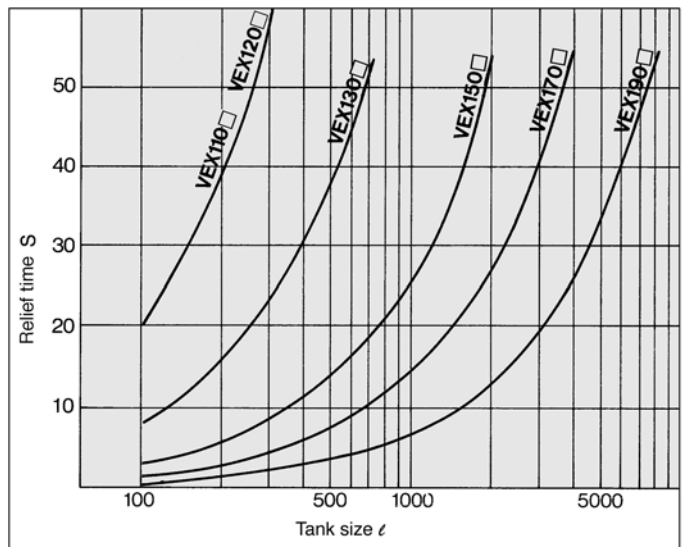


VEX190□

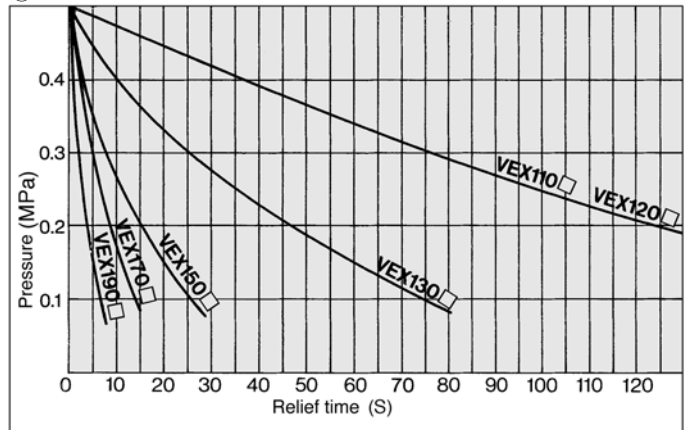


Relief Time

① Relief time from 0.5MPa to 1MPa



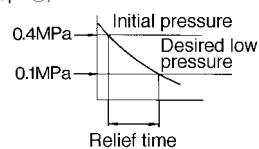
② Relief time from 1000 l tank



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

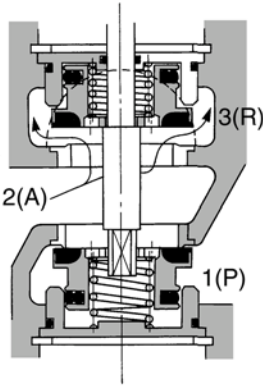
AN

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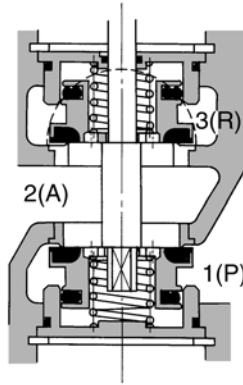
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Construction/Operation Principles/Component Parts

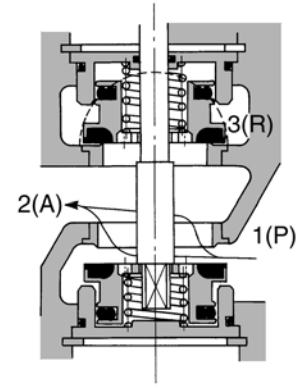
[1] When A port pressure is high.



[2] Setting pressure condition

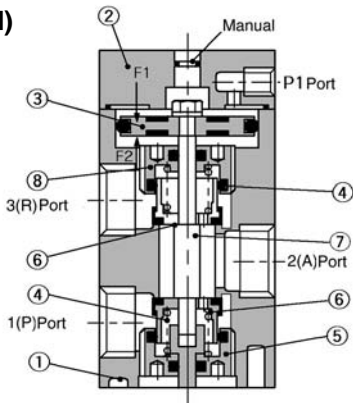


[3] When A port pressure is low.
Pressure reducing supply.

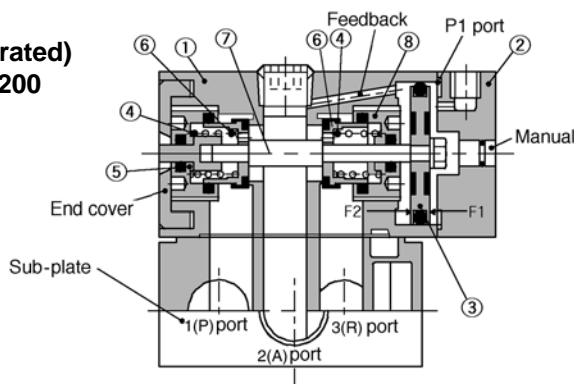


- The balance between the acting force F_1 of the pilot pressure(P1 port)over the upper surface of the pressure regulating piston ③ and the acting force F_2 of the pressure at A port leading to a space under the piston through the feed back flow root closes a couple of poppet valves ⑥ and sets A port 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, F_2 becomes larger than F_1 ,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, F_1 becomes larger than F_2 , 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.

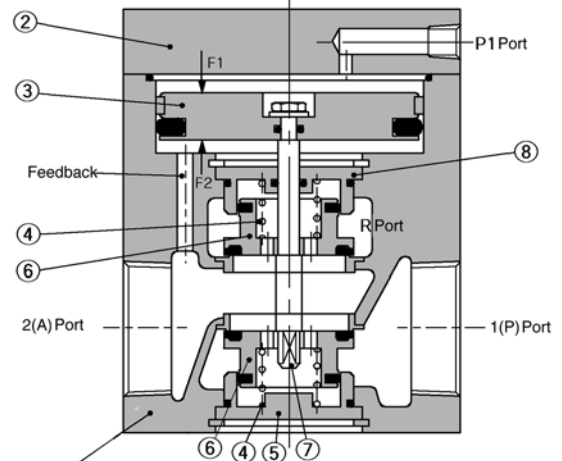
(Air operated)
VEX1100



(Air operated)
VEX1200



(Air operated)
VEX1300/1500/1700/1900

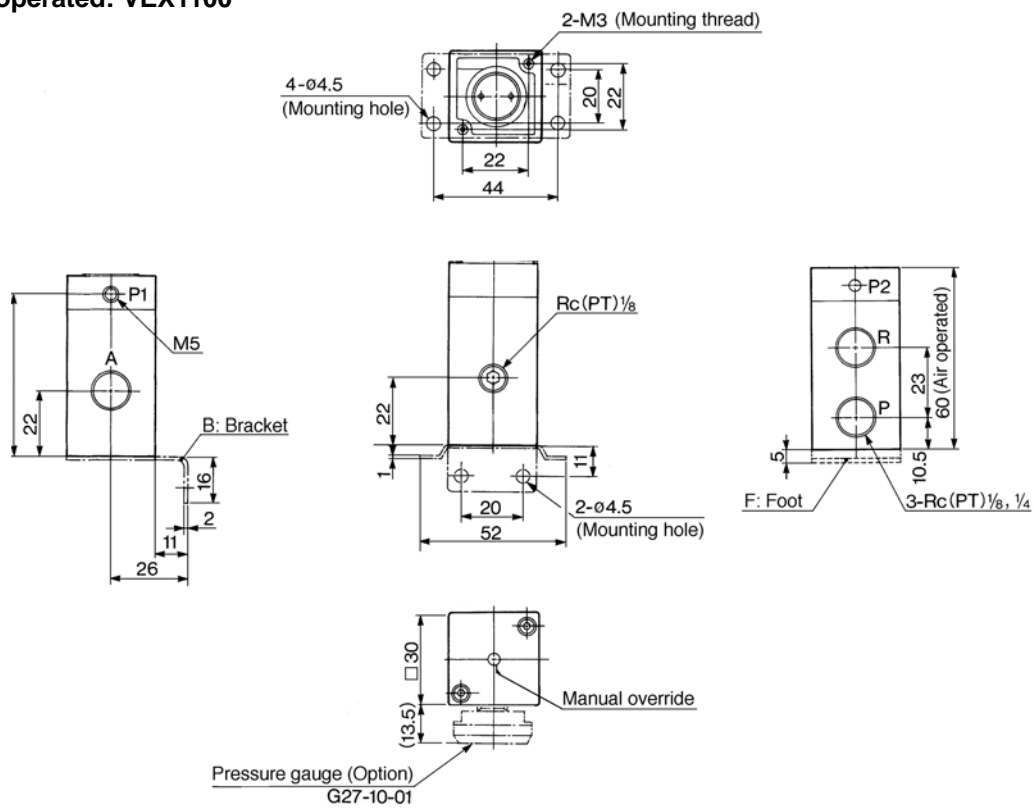


Component Parts

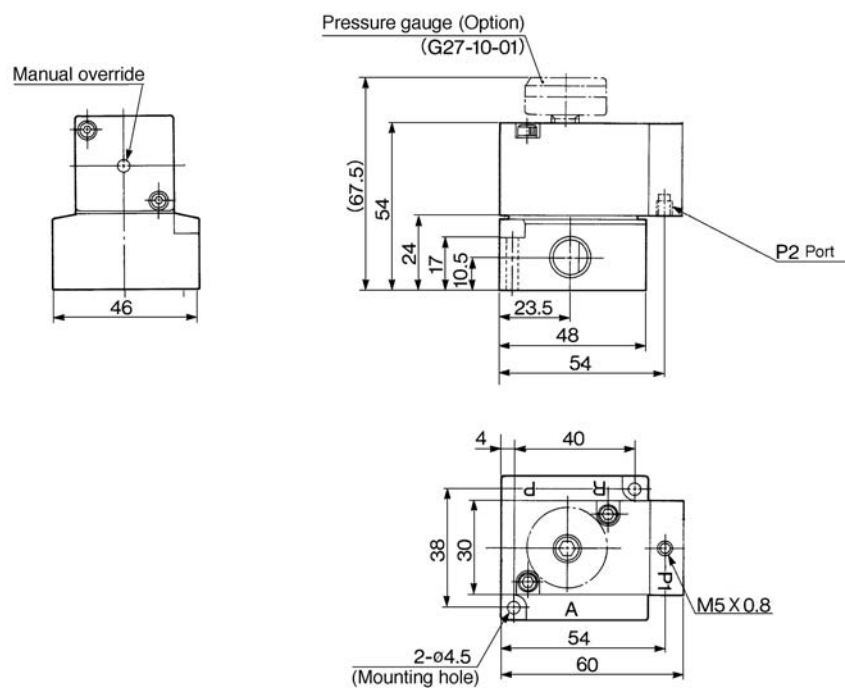
No.	Description	Material
①	Body	Aluminium alloy die cast
②	Cover	Aluminium alloy die cast
③	Piston	Aluminium alloy
④	Spring	Stainless steel
⑤	Valve guide	Aluminium alloy
⑥	Poppet valve	Aluminium alloy, NBR
⑦	Shaft	Stainless steel
⑧	Valve guide	Aluminium alloy

Dimensions

Air operated: VEX1100



Air operated: VEX1200



VEX

AN

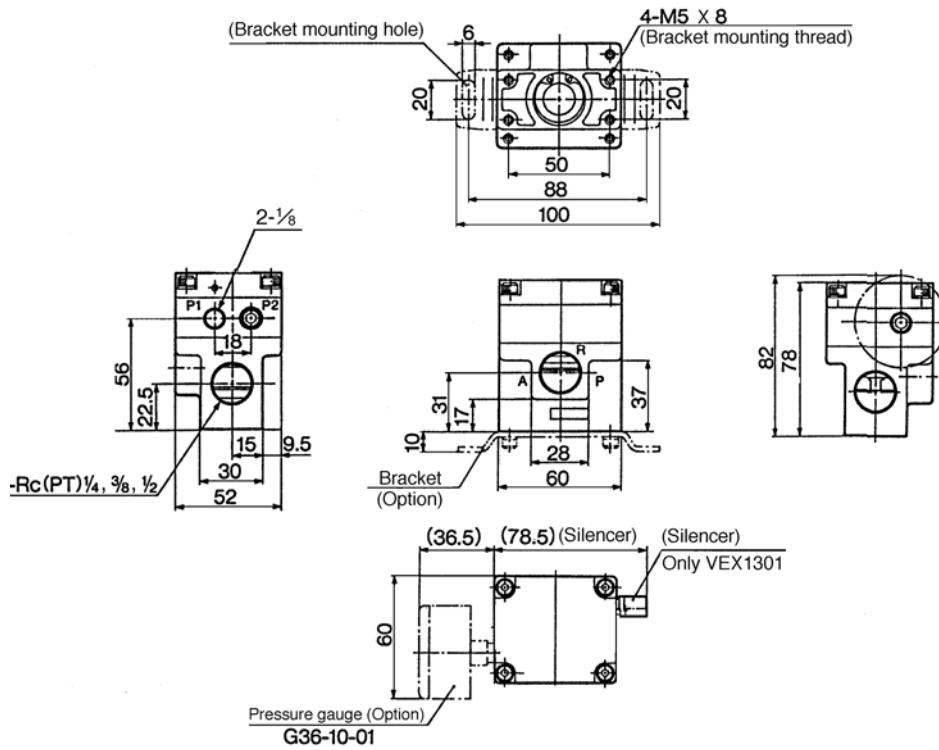
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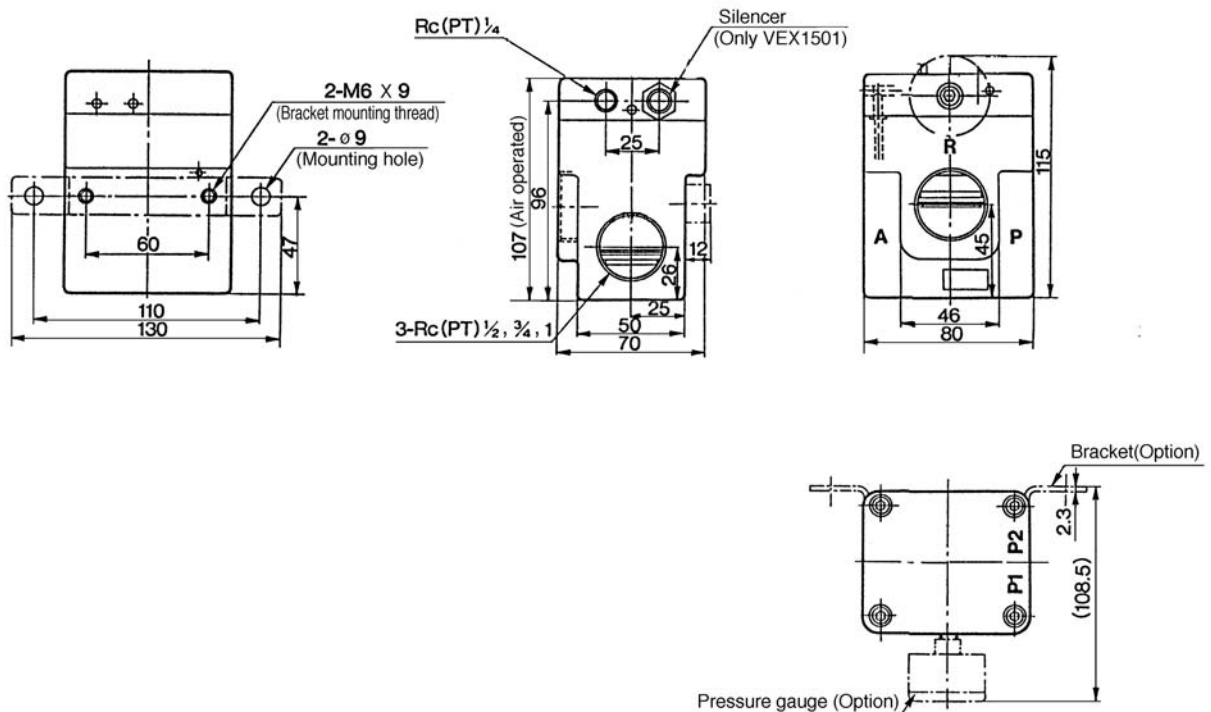
VEX1

Dimensions

Air operated: VEX1300

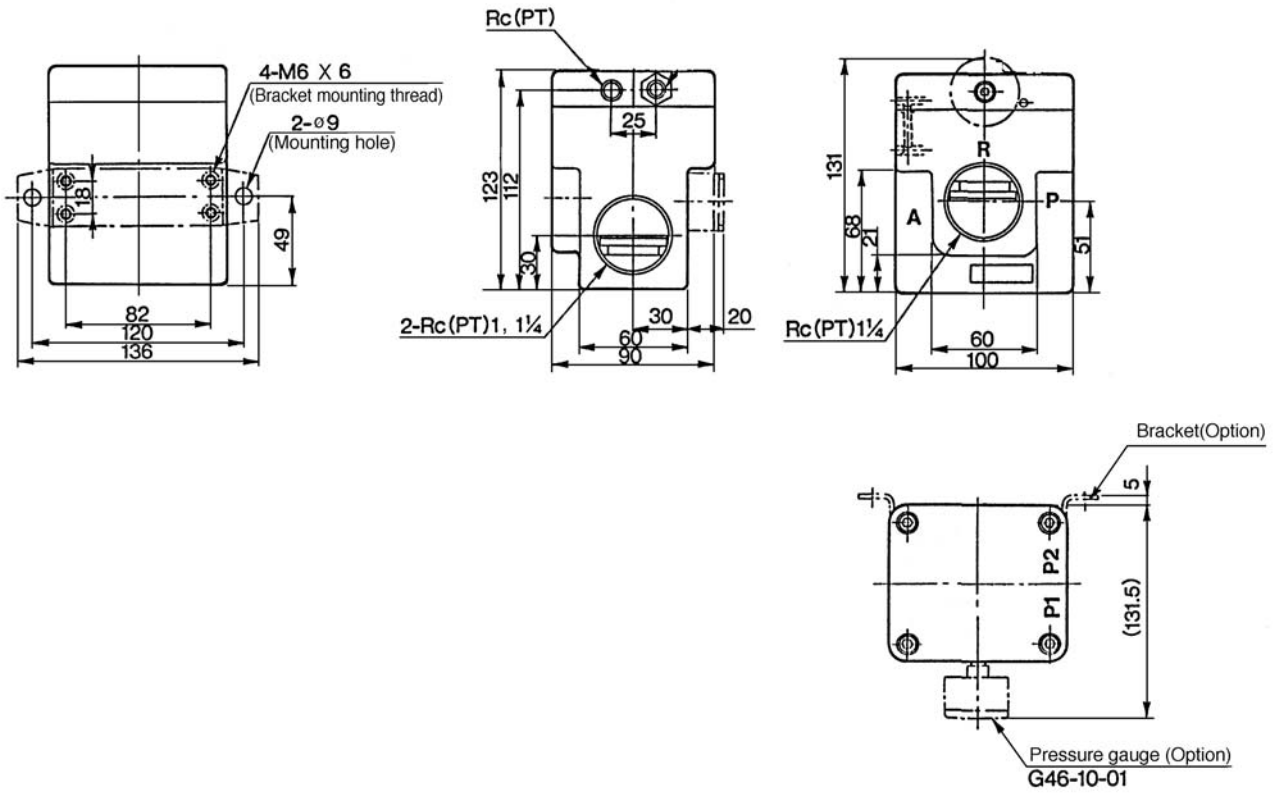


Air operated: VEX1500

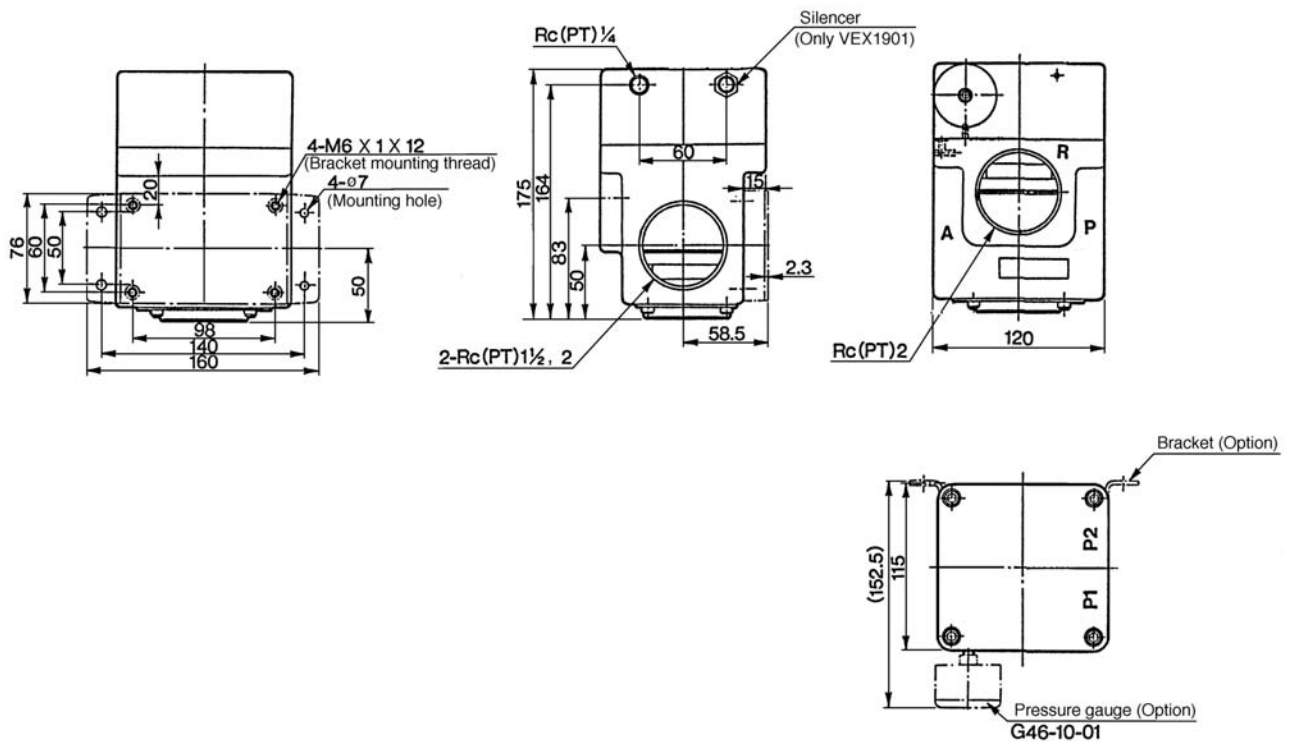


Dimensions

Air operated: VEX1700



Air operated: VEX1900



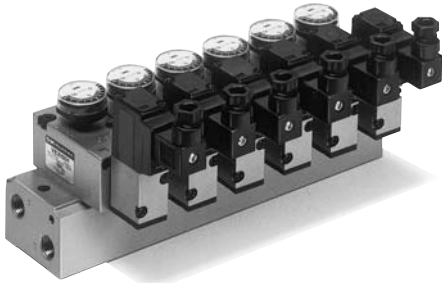
VEX

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Series VEX1 Manifold



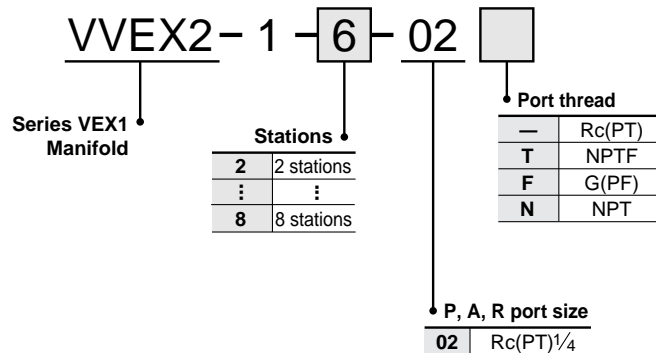
Specifications

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.

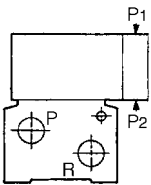
Note 2) Manifold base P1 (pilot port) is not used for VEX1200 (air operated) and VEX1201 (external pilot solenoid operated) because both are of an individual external pilot.

How to Order



External Pilot Piping

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



How to Order Manifold

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

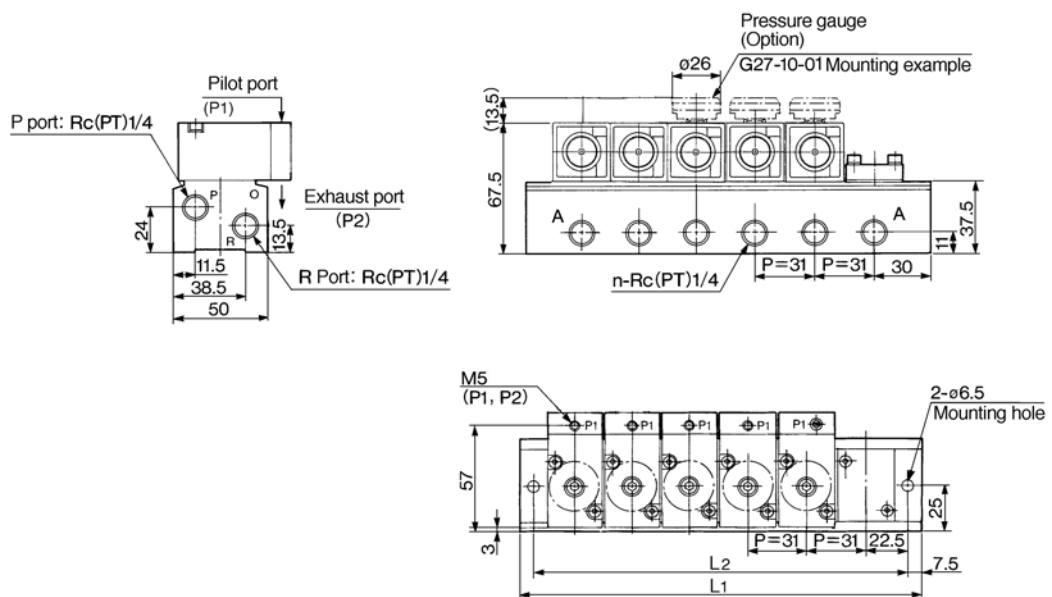
(Ex.) VVEX2-1-5-02N.....1 5 stations manifold base, port thread NPT
 * VEX1201-5DOZ-G...4 Regulator valve, External pilot solenoid valve, 24V DC, DIN connector (without connector), with indicator light and surge voltage suppressor, Option...With pressure gauge ⁽¹⁾

* VEX1-17.....1 Blank plate

Note 1) In case of manifold, pressure gauge: Only G27-10-01(O.D.φ26)

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