Booster Regulator
Series VBA

RoHS

How to Order

Made to Order (For details, refer to page 11.)

VBA 40A – □ 04 □ – □

Body size

10A	1/4", Handle-operated type	Pressure increase ratio: Twice
20A	3/8", Handle-operated type	
40A	1/2", Handle-operated type	
22A	3/8", Air-operated type	
42A	1/2", Air-operated type	
43A	1/2", Max. operating pressure 1.6 MPa	
11A	1/4", Handle-operated type	Pressure increase ratio: 2 to 4 times

Thread type Note)

Symbol	Thread type
Nil	Rc
F	G
N	NPT
T	NPTF

Note) Thread types apply to the IN, OUT, and EXH ports of the VBA1□A and to the IN, OUT, EXH, and gauge ports of the VBA2□A and VBA4□A.
The gauge ports of the VBA1□A are Rc thread type regardless of the thread type indication.

Port size

Symbol	Port size	Applicable series
02	1/4	VBA1□A
03	3/8	VBA2□A
04	1/2	VBA4□A

Semi-standard

Symbol	Semi-standard
Nil	Standard product
Z Note)	Pressure unit on the product name label and pressure gauge: psi

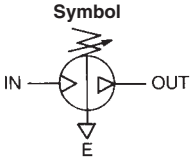
Note) Thread type: NPT, NPTF
Under the new measurement law, the pressure unit of "psi" on the pressure gauges cannot be used in Japan.

Option

Symbol	Option
Nil	None
G	Pressure gauge
N	Silencer
S	High-noise reduction silencer Note)
GN	Pressure gauge, Silencer
GS	Pressure gauge, High-noise reduction silencer Note)
LN	Elbow silencer Note)
LS	Elbow high-noise reduction silencer Note)
GLN	Pressure gauge, Elbow silencer Note)
GLS	Pressure gauge, Elbow high-noise reduction silencer Note)

Note) Refer to "Combination of Thread Type and Options."

Symbol



VBA10A-02

VBA11A-02

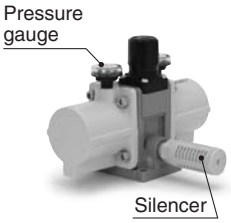
VBA20A-03

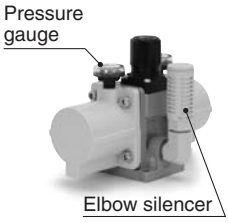
VBA22A-03

VBA40A-04

VBA42A-04

VBA43A-04





Combination of Thread Type and Options

Body size	Thread type	Option										Semi-standard	
		Nil	G	N	S	GN	GS	LN	LS	GLN	GLS	Nil	-Z
10A 11A	Nil	●	●	●	●	●	●	●	●	●	●	●	—
	F	●	●	●	●	●	●	●	●	●	●	●	—
	N	●	●	●	—	●	—	●	—	●	—	●	●
	T	●	●	●	—	●	—	●	—	●	—	●	●
20A 22A	Nil	●	●	●	●	●	●					●	—
	F	●	●	●	●	●	●					●	—
	N	●	●	●	●	●	●					●	●
	T	●	●	●	●	●	●					●	●
40A 42A 43A	Nil	●	●	●	●	●	●					●	—
	F	●	●	●	●	●	●					●	—
	N	●	●	●	●	●	●					●	●
	T	●	●	●	●	●	●					●	●

Air Tank Compatibility Chart

Air tank \ Booster regulator	VBA1□A	VBA2□A	VBA4□A
VBAT05A	●	—	—
VBAT05S			
VBAT10A	●	●	—
VBAT10S			
VBAT20A	—	●	●
VBAT20S			
VBAT38A	—	●	●
VBAT38S			

Standard Specifications

Model	VBA10A-02	VBA20A-03	VBA40A-04	VBA22A-03	VBA42A-04	VBA43A-04	VBA11A-02
Fluid	Compressed air						
Pressure increase ratio	Twice						2 to 4 times
Pressure adjustment mechanism	Handle-operated with relief mechanism Note 1)			Air-operated		Handle-operated with relief mechanism Note 1)	
Max. flow rate Note 2) **(L/min (ANR))**	230	1000	1900	1000	1900	1600	70
Set pressure range (MPa)	0.2 to 2.0	0.2 to 1.0		0.2 to 1.0		0.2 to 1.6	0.2 to 2.0
Supply pressure range (MPa)	0.1 to 1.0						
Proof pressure (MPa)	3	1.5				2.4	3
Port size (Rc) (IN/OUT/EXH: 3 locations)	1/4	3/8	1/2	3/8	1/2		1/4
Pressure gauge port size (Rc) (IN/OUT: 2 locations)	1/8						
Ambient and fluid temperature (°C)	2 to 50 (No freezing)						
Installation	Horizontal						
Lubrication	Grease (Non-lube)						
Weight (kg)	0.84	3.9	8.6	3.9	8.6	8.6	0.89

Note 1) If the OUT pressure is higher than the set pressure by the handle, excess pressure is exhausted from the back of the handle.
Note 2) Flow rate at IN= OUT= 0.5 MPa. The pressure varies depending on the operating conditions. Refer to "Flow-rate Characteristics" on pages 3 and 4.

Options/Part No.

Pressure Gauge, Silencer (When thread type is Rc or G.)

Description \ Model		VBA10A-02 VBA10A-F02	VBA20A-03 VBA20A-F03	VBA40A-04 VBA40A-F04	VBA22A-03 VBA22A-F03	VBA42A-04 VBA42A-F04	VBA43A-04 VBA43A-F04	VBA11A-02 VBA11A-F02
Pressure gauge	G	G27-20-01	G36-10-01		KT-VBA22A-7	G36-10-01	G27-20-01	G27-20-01
Silencer	N	AN200-02	AN300-03	AN400-04	AN300-03	AN400-04	AN400-04	AN200-02
High-noise reduction silencer	S	ANA1-02	ANA1-03	ANA1-04	ANA1-03	ANA1-04	ANA1-04	ANA1-02
Elbow for silencer	L	KT-VBA10A-18	—	—	—	—	—	KT-VBA10A-18

Note 1) In the case of options GN, two pressure gauges and one silencer are included in the same container as accessories.
Note 2) KT-VBA22A-7 is a pressure gauge with fitting. (Please order two units when using with IN and OUT.)

Pressure Gauge, Silencer (When thread type is NPT or NPTF.)

Description \ Model		VBA10A-N02* VBA10A-T02* *: when "-Z"	VBA20A-N03* VBA20A-T03* *: when "-Z"	VBA40A-N04* VBA40A-T04* *: when "-Z"	VBA22A-N03* VBA22A-T03* *: when "-Z"	VBA42A-N04* VBA42A-T04* *: when "-Z"	VBA43A-N04* VBA43A-T04* *: when "-Z"	VBA11A-N02* VBA11A-T02* *: when "-Z"
Pressure gauge *: when Nil	G	G27-20-01	G36-10-N01		KT-VBA22A-7N	G36-10-N01	G27-20-N01	G27-20-01
Pressure gauge *: when "-Z" Note 4)		G27-P20-01	G36-P10-N01		KT-VBA22A-8N	G36-P10-N01	G27-P20-N01	G27-P20-01
Silencer	N	AN200-N02	AN300-N03	AN400-N04	AN300-N03	AN400-N04	AN400-N04	AN200-N02
High-noise reduction silencer	S	—	ANA1-N03	ANA1-N04	ANA1-N03	ANA1-N04	ANA1-N04	—
Elbow for silencer	L	KT-VBA10A-18N	—	—	—	—	—	KT-VBA10A-18N

Note 1) In the case of options GN, two pressure gauges and one silencer are included in the same container as accessories.
Note 2) KT-VBA22A-7N, KT-VBA22A-8N are pressure gauges with fittings. (Please order two units when using with IN and OUT.)
Note 3) Under the new measurement law, the pressure unit of "psi" on the pressure gauges cannot be used in Japan.
Note 4) Pressure unit on the pressure gauge: psi

Related Products/Part No.

Mist Separator, Exhaust Cleaner

Description \ Model	For **VBA10A-02** For **VBA11A-02**	For **VBA20A-03** For **VBA22A-03**	For **VBA40A-04** For **VBA42A-04** For **VBA43A-04**
Mist separator	AM250C-02	AM450C-04, 06	AM550C-06, 10
Exhaust cleaner	AMC310-03	AMC510-06	AMC610-10

Note) Refer to page 12 for air tanks, Best Pneumatics No. 5 for mist separators and Best Pneumatics No. 6 for exhaust cleaners.
Refer to the separate operation manual for the connection method.

Design

⚠Caution

1. System configuration
- The IN port of the booster regulator has metallic mesh to prevent dust from entering the booster regulator. However, it cannot remove dust continuously or separate drainage. Make sure to install a mist separator (AM series) on the inlet side of the booster regulator.
- The booster regulator has a sliding part inside, and it generates dust. Also, install an air purification device such as an air filter or a mist separator on the outlet side as necessary.
- Connect a lubricator to the outlet side, because the accumulated oil in the booster regulator may result in a malfunction.

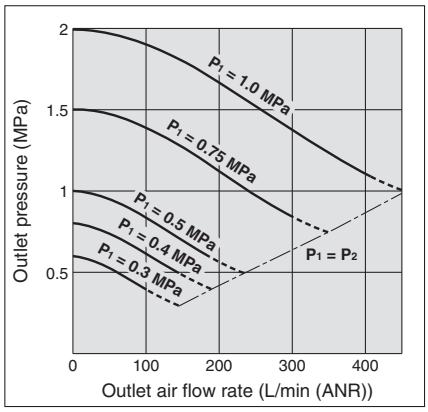
2. Exhaust air measures
- Provide a dedicated pipe to release the exhaust air from each booster regulator. If exhaust air is converged into a pipe, the back pressure that is created could cause improper operation.
- Depending on the necessity, install a silencer or an exhaust cleaner on the exhaust port of the booster regulator to reduce the exhaust noise.

3. Maintenance space
- Allow the sufficient space for maintenance and inspection.

Series VBA

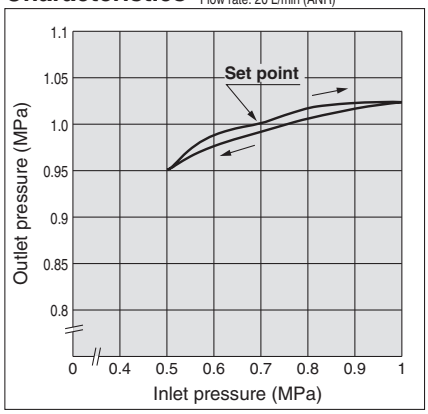
VBA10A

Flow-rate Characteristics

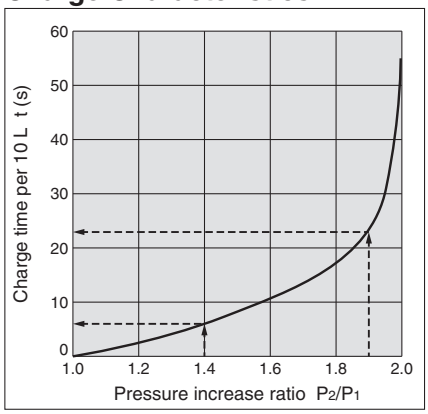


Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/min (ANR)
(Representative value)



Charge Characteristics



VBA10A

- The time required to charge pressure in the tank from 0.7 MPa to 0.95 MPa at 0.5 MPa supply pressure:

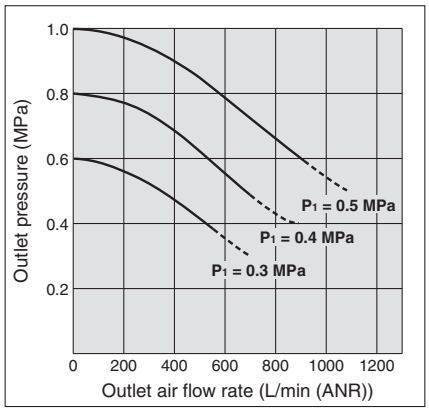
$\frac{P_2}{P_1} = \frac{0.7}{0.5} = 1.4$ $\frac{P_2}{P_1} = \frac{0.95}{0.5} = 1.9$

With the pressure increase ratio from 1.4 to 1.9, the charge time of 23 – 6 = 17 sec. (t) is given by the graph. Then, the charge time (T) for a 10 L tank:

$T = t \times \frac{V}{10} = 17 \times \frac{10}{10} = 17$ (s).

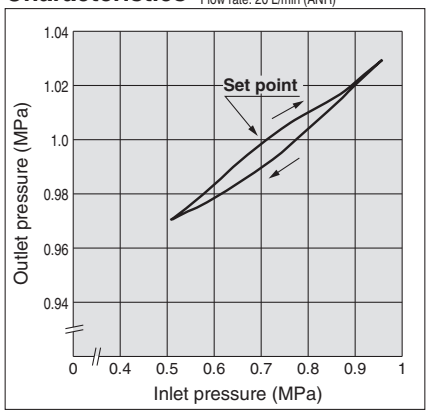
VBA20A, 22A

Flow-rate Characteristics

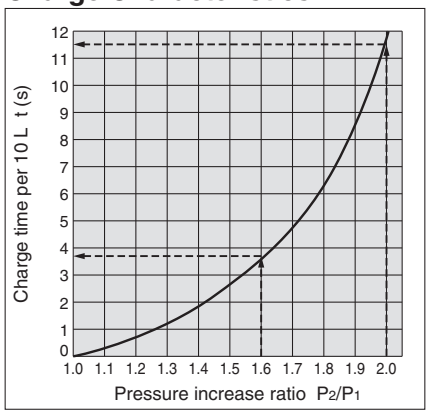


Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/min (ANR)
(Representative value)



Charge Characteristics



VBA20A, 22A

- The time required to charge pressure in the tank from 0.8 MPa to 1.0 MPa at 0.5 MPa supply pressure:

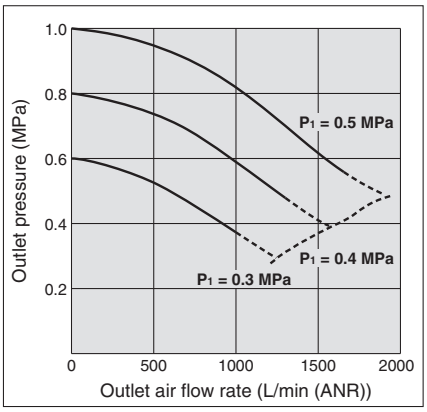
$\frac{P_2}{P_1} = \frac{0.8}{0.5} = 1.6$ $\frac{P_2}{P_1} = \frac{1.0}{0.5} = 2.0$

With the pressure increase ratio from 1.6 to 2.0, the charge time of 11.5 – 3.8 = 7.7 sec. (t) is given by the graph. Then, the charge time (T) for a 100 L tank:

$T = t \times \frac{V}{10} = 7.7 \times \frac{100}{10} = 77$ (s).

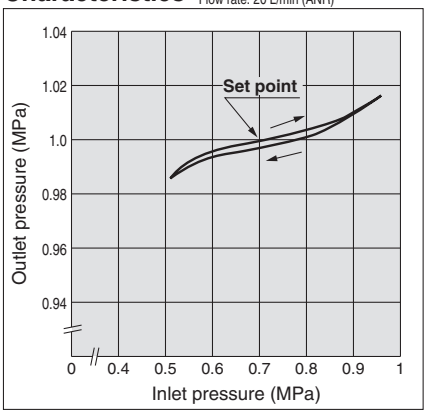
VBA40A, 42A

Flow-rate Characteristics

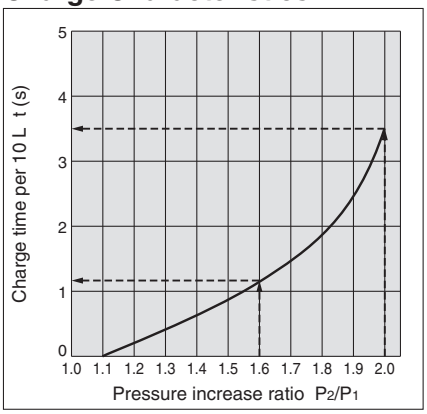


Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/min (ANR)
(Representative value)



Charge Characteristics



VBA40A, 42A

- The time required to charge pressure in the tank from 0.8 MPa to 1.0 MPa at 0.5 MPa supply pressure:

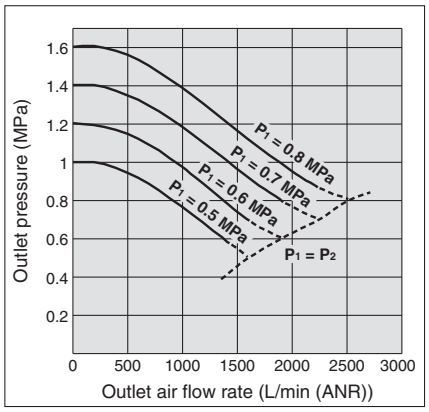
$\frac{P_2}{P_1} = \frac{0.8}{0.5} = 1.6$ $\frac{P_2}{P_1} = \frac{1.0}{0.5} = 2.0$

With the pressure increase ratio from 1.6 to 2.0, the charge time of 3.5 – 1.1 = 2.4 sec. (t) is given by the graph. Then, the charge time (T) for a 100 L tank:

$T = t \times \frac{V}{10} = 2.4 \times \frac{100}{10} = 24$ (s).

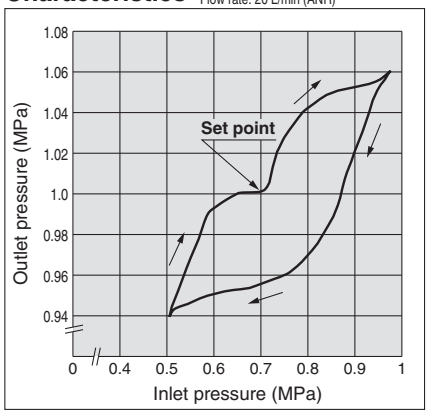
VBA43A

Flow-rate Characteristics

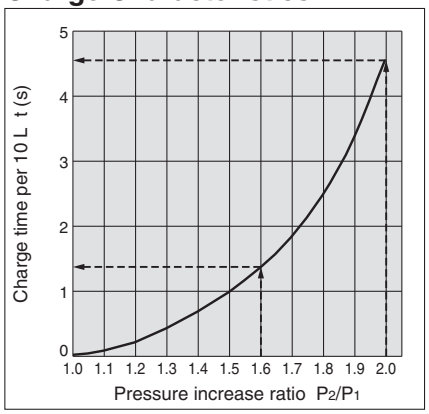


Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/min (ANR)
(Representative value)



Charge Characteristics



VBA43A

- The time required to charge pressure in the tank from 0.8 MPa to 1.0 MPa at 0.5 MPa supply pressure:

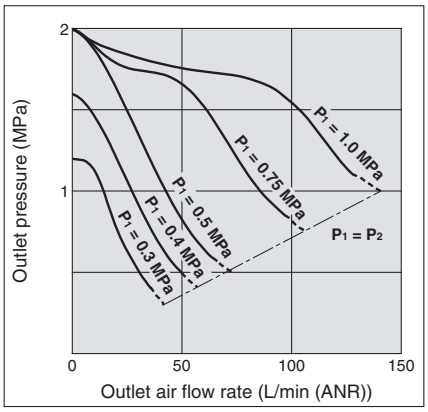
$$\frac{P_2}{P_1} = \frac{0.8}{0.5} = 1.6 \qquad \frac{P_2}{P_1} = \frac{1.0}{0.5} = 2.0$$

With the pressure increase ratio from 1.6 to 2.0, the charge time of 4.5 – 1.3 = 3.2 sec. (t) is given by the graph. Then, the charge time (T) for a 100 L tank:

$$T = t \times \frac{V}{10} = 3.2 \times \frac{100}{10} = 32 \text{ (s)}.$$

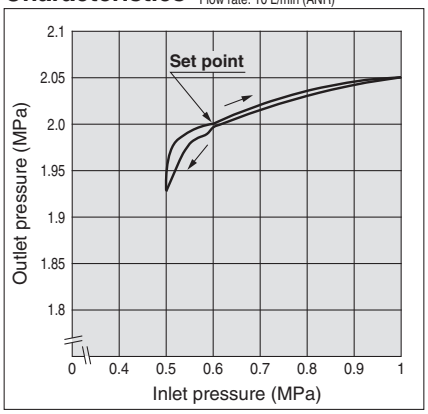
VBA11A

Flow-rate Characteristics

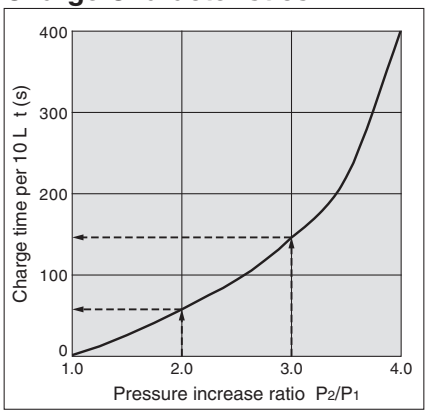


Pressure Characteristics

Inlet pressure: 0.6 MPa
Outlet pressure: 2.0 MPa
Flow rate: 10 L/min (ANR)
(Representative value)



Charge Characteristics



VBA11A

- The time required to charge pressure in the tank from 1.0 MPa to 1.5 MPa at 0.5 MPa supply pressure:

$$\frac{P_2}{P_1} = \frac{1.0}{0.5} = 2.0 \qquad \frac{P_2}{P_1} = \frac{1.5}{0.5} = 3.0$$

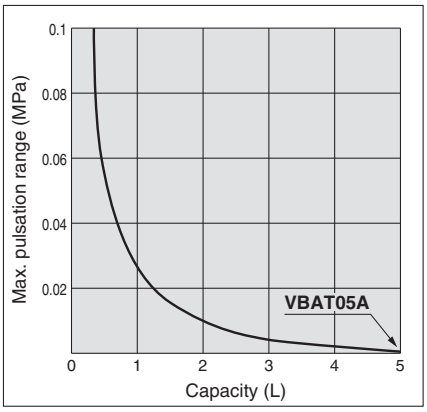
With the pressure increase ratio from 2.0 to 3.0, the charge time of 147 – 58 = 89 sec. (t) is given by the graph. Then, the charge time (T) for a 10 L tank:

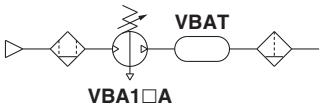
$$T = t \times \frac{V}{10} = 89 \times \frac{10}{10} = 89 \text{ (s)}.$$

Pulsation/Pulsation is decreased with a tank.

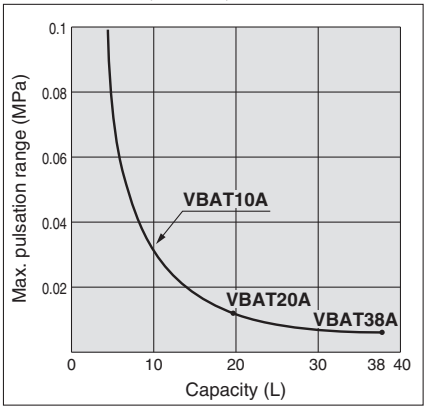
If the outlet capacity is undersized, pulsation may occur.

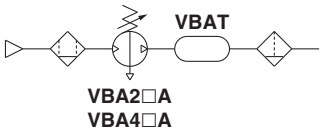
VBAT05A





VBAT10A, 20A, 38A





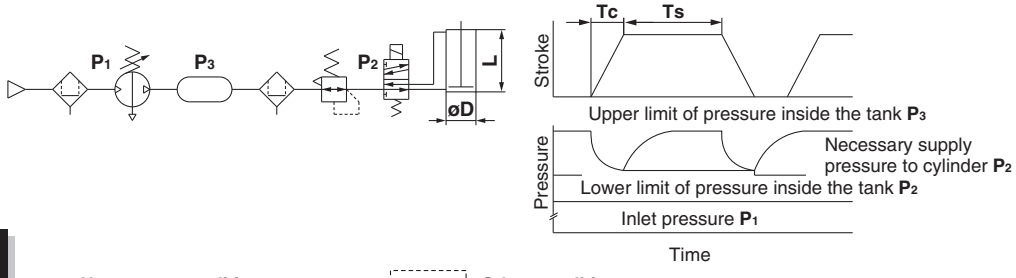
Conditions:
Inlet pressure: 0.5 MPa
Outlet set pressure: 1 MPa
Flow rate: Between 0 and max. flow rate

- Performance of air tank
  - Alleviates the pulsation generated on the outlet side.
  - When air consumption exceeds air supply during intermittent operation, required air will be accumulated in the tank for use. This does not apply for continuous operation.

Series VBA

Sizing

Sizing can be achieved with the SMC Pneumatic System Energy Saving Program Ver. 3.1 which can be downloaded from the SMC website: http://www.smcworld.com/



START

Provide requisite conditions for selection.

Necessary conditions:

	Example
D [mm]: Cylinder bore size	100
L [mm]: Cylinder stroke	100
W [mm/s]: Cylinder operating speed	200
C [pc.]: Number of cylinders	1
Tc [s]: Cylinder operating time	0.5
Ts [s]: Cylinder stop time	30
P1 [MPa]: Inlet pressure	0.5
P2 [MPa] Note 1): Necessary supply pressure to cylinder	0.8

Other conditions:

Q [L/min (ANR)]: Required air flow rate
Qb [L/min (ANR)]: Outlet air flow rate of booster regulator
Tc [s]: Cylinder operating time
K: Cylinder double-acting: 2, single-acting: 1
P3 [MPa] Note 2): Tank charge pressure
T1 [s]: Time to charge (Time to charge to **P2**)
T2 [s]: Time to charge (Time to charge to **P3**)
T [s]: Time to charge (Time to charge from **P2** to **P3**)
Z: Number of booster regulators

Note 1) P2 is the necessary supply pressure to a cylinder, and set the pressure below the lower limit of pressure inside the tank with a regulator. Adjust the pressure taking the maximum operating pressure of equipment in use into consideration.
Note 2) P3 is the output pressure of the booster regulator, which is also the upper limit of charge pressure to the tank.

Calculate required air flow rate Q.

$$\mathbf{Q}\ [\text{L/min (ANR)}] = \frac{\pi \times \mathbf{D}^2 \times \mathbf{W}}{4 \times 10^6} \times \frac{(\mathbf{P_2} + 0.101)}{0.101} \times 60 \times \mathbf{C}$$

$$\mathbf{Q} = \frac{\pi \times 100^2 \times 200}{4 \times 10^6} \times \frac{(0.8 + 0.101)}{0.101} \times 60 \times 1 = 841\ [\text{L/min (ANR)}]$$

Select booster regulator size from flow-rate characteristics table.

VBA2□A: Qb = 600 [L/min (ANR)]
VBA4□A: Qb = 1050 [L/min (ANR)]

Refer to “Flow-rate Characteristics” on pages 3 and 4.

⚠Caution

- Use the VBA11A (pressure increase ratio 4) with pressure increase ratio 2 to 4. Usage of pressure increase ratio below 2 is preferred for the VBA10A (pressure increase ratio 2). A stable operation and increased life expectancy will result.
- Inlet supply pressure volume is {approximately twice (pressure increase ratio 2), approx. 4 times (pressure increase ratio 4)} the volume of the outlet side. Booster regulator requires the inlet side volume which is the sum of the flow volume running into the outlet side and the volume exhausted from E port (for driving), because air is the power source.

Judgement of flow rate

NO: Need no tank — The **VBA4□A** can supply necessary pressure.

YES — The **VBA2□A** cannot obtain necessary pressure.

Avoid pulsation. (Max. 0.05 MPa)

NO

YES

Select the tank from table below.

Tank model	Internal capacity	Applicable combination model		
VBAT05□	5 L	VBA1□A	—	—
VBAT10□	10 L	VBA1□A	VBA2□A	—
VBAT20□	20 L	—	VBA2□A	VBA4□A
VBAT38□	38 L	—	VBA2□A	VBA4□A

Obtain the tank capacity V.

$$\mathbf{V}\ [\text{L}] = \frac{(\mathbf{Q} - \mathbf{Qb}/2) \times (\mathbf{Tc} \times \mathbf{K}/60)}{(\mathbf{P_3} - \mathbf{P_2}) \times 9.9}$$

$$\mathbf{V} = \frac{(841 - 600/2) \times (0.5 \times 2/60)}{(1.0 - 0.8) \times 9.9} = 4.6\ [\text{L}]$$

Select the tank capacity over V.

Select the **VBAT10□**, which can be directly connected to the **VBA2□A**.

Calculate time T from charge characteristics table.

Refer to “Charge Characteristics” on pages 3 and 4.

$$\mathbf{T}\ [\text{s}] = \left(\frac{\mathbf{V}}{10}\right) \times \frac{\mathbf{T_2} - \mathbf{T_1}}{\mathbf{Z}}$$

$$\mathbf{T} = \left(\frac{4.6}{10}\right) \times \frac{11.5 - 3.8}{1} = 3.5\ [\text{s}]$$

Judgement of charge time T ≤ Ts

NO

Extend stop time Ts up to charge time T or more.

NO

Increase number of booster regulators (Z) to decrease T.

YES **YES** **YES**

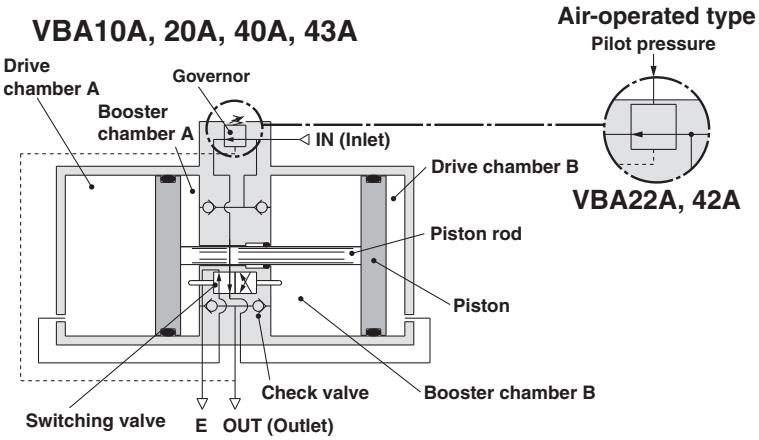
When running continuously for longer periods of time, confirm the life expectancy.
When the life expectancy is shorter than required, select a larger sized booster regulator.

END

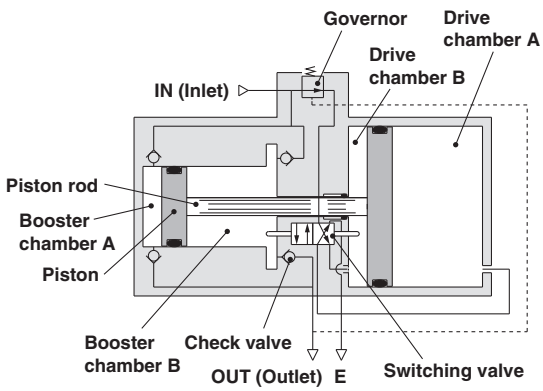
Working Principle

The **IN** air passes through the check valve to **booster chambers A and B**. Meanwhile, air is supplied to **drive chamber B** via the governor and the switching valve. Then, the air pressure from **drive chamber B** and **booster chamber A** are applied to the piston, boosting the air in **booster chamber B**. As the piston travels, the boosted air is pushed via the check valve to the **OUT** side. When the piston reaches to the end, the piston causes the switching valve to switch, so that **drive chamber B** is in the exhaust state and **drive chamber A** is in the supply state respectively. Then, the piston reverses its movement, this time, the pressures from **booster chamber B** and **drive chamber A** boosts the air in **booster chamber A** and sends it to the **OUT** side. The process described above is repeated to continuously supply highly pressurized air from the **IN** to the **OUT** side. The governor establishes the outlet pressure by handle operation and pressure adjustment in the drive chamber by feeding back the outlet pressure.

VBA10A, 20A, 40A, 43A

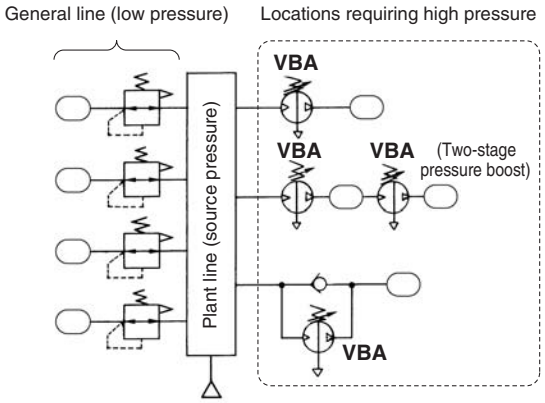


VBA11A

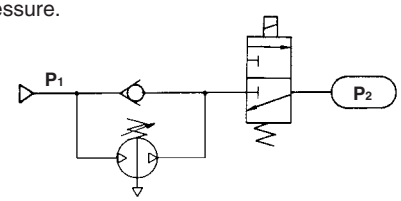


Circuit Example

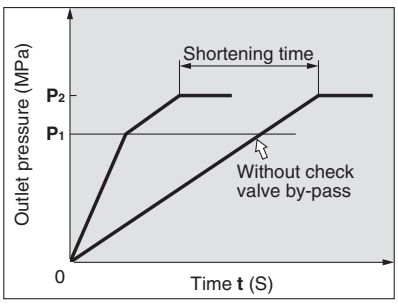
- When only some of the machines in the plant require high-pressure air, booster regulators can be installed for only the equipment that requires it. This allows the overall system to use low-pressure air while accommodating machines requiring high-pressure air.



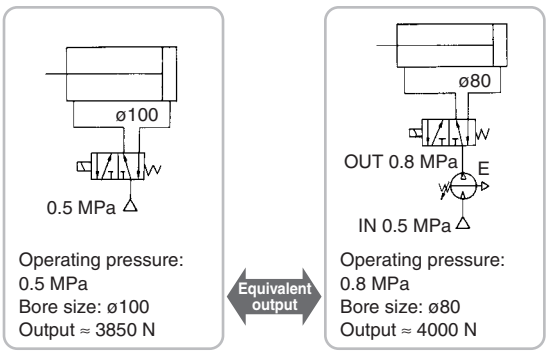
- When charging a tank or the like from a source at atmospheric pressure, a circuit with a check valve can be used to reduce the charge time by allowing air to pass through the check valve up to the inlet pressure.



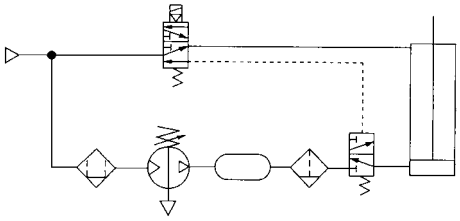
Initially, inlet pressure (**P1**) passes through the check valve, fills **P2**, and results in **P1** = **P2**.



- When the actuator output is insufficient but space limitations prohibit switching to a larger cylinder diameter, a booster regulator can be used to increase the pressure. This makes it possible to boost the output without replacing the actuator.
- When a certain level of output is required but the cylinder size must be kept small so that the driver remains compact.



- When only one side of the cylinder is used for work, booster regulators can be installed only on the lines that require them to reduce the overall air consumption volume.



Design

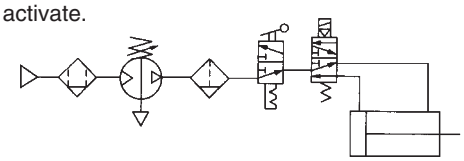
⚠Warning

1. Warning concerning abnormal outlet pressure

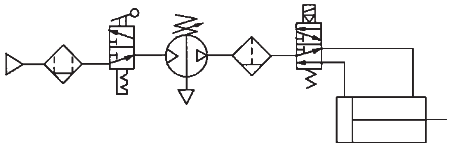
- If there is a likelihood of causing an outlet pressure drop due to unforeseen circumstances such as equipment malfunction, thus leading to a major problem, take safety measures on the system side.
- Because the outlet pressure could exceed its set range if there is a large fluctuation in the inlet pressure, leading to unexpected accidents, take safety measures against abnormal pressures.
- Operate the equipment within its maximum operating pressure and set pressure range.

2. Residual pressure measures

- Connect a 3-port valve to the OUT side of the booster regulator if the residual pressure must be released quickly from the outlet pressure side for maintenance, etc. (Refer to the diagram below.) The residual outlet pressure side cannot be released even if the 3-port valve is connected to the IN side because the check valve in the booster regulator will activate.



- After operation is finished, release the supply pressure at the inlet. This stops the booster regulator from moving needlessly and prevents operating malfunctions.



Selection

⚠Caution

1. Check the specifications.

- Consider the operating conditions and operate this product within the specification range that is described in this catalog.

2. Selection

- Based on the conditions (such as pressure, flow rate, takt time) required for the outlet side of the booster regulator, select the size of the booster regulator in accordance with the selection procedures described in this catalog or model selection program.
- Use the VBA11A (pressure increase ratio 4) with pressure increase ratio 2 to 4. Usage of pressure increase ratio below 2 is preferred for the VBA10A (pressure increase ratio 2). A stable operation and increased life expectancy will result.
- Inlet supply pressure volume is {approximately twice (pressure increase ratio 2), approx. 4 times (pressure increase ratio 4)} the volume of the outlet side. Booster regulator requires the inlet side volume which is the sum of the flow volume running into the outlet side and the volume exhausted from E port (for driving), because air is the power source.
- When running continuously for longer periods of time, confirm the life expectancy. The life expectancy of a booster regulator is dependent upon the operational cycle. Thus, when used for driving cylinders, etc. in the outlet side, life expectancy will be reduced.
- Make sure the outlet pressure is set 0.1 MPa or higher than the inlet pressure. A pressure difference below 0.1 MPa makes the operation unstable and may result in a malfunction.

Mounting

⚠Caution

1. Transporting

- When transporting this product, hold it lengthwise with both hands. Never hold it by the black handle that protrudes from the center because the handle could become detached from the body, causing the body to fall and leading to injury.

2. Installation

- Install this product so that the silver-colored tie-rods and cover are placed horizontally. If mounted vertically, it may result in a malfunction.
- Because the piston cycle vibration is transferred, use the following mounting bolts (VBA1: M5; VBA2, 4: M10) and tighten them with the specified torque (VBA1: 3 N·m; VBA2, 4: 24 N·m).
- If the transmission of vibration is not preferred, insert an isolating rubber material before installation.
- Mount the pressure gauge with a torque of 7 to 9 N·m.

Piping

⚠Caution

1. Flushing

- Use an air blower to flush the piping to thoroughly remove any cutting chips, cutting oil, or debris from the piping inside, before connecting them. If they enter the inside of the booster regulator, they could cause the booster regulator to malfunction or its durability could be affected.

2. Piping size

- To bring the booster regulator's ability into full play, make sure to match the piping size to the port size.

Air Supply

⚠Caution

1. Quality of air source

- Connect a mist separator to the inlet side near the booster regulator. If the quality of the compressed air is not thoroughly controlled, the booster regulator could malfunction (without being able to boost) or its durability could be affected.
- If dry air (atmospheric pressure dew point: –17°C or less) is used, the life expectancy may be shortened because dry air will accelerate evaporation of grease inside.

Operating Environment

⚠Caution

1. Installation location

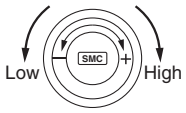
- Do not install this product in an area that is exposed to rainwater or direct sunlight.
- Do not install in locations influenced by vibrations. If it must be used in such an area due to unavoidable circumstances, please contact SMC beforehand.

Handling

⚠Caution

1. Setting the pressure on the handle-operated type

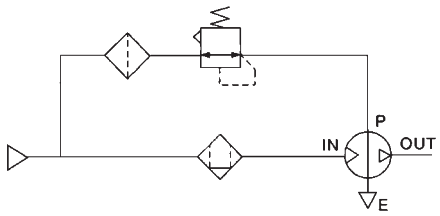
- If air is supplied to the product in the shipped state, the air will be released.
  Set the pressure by quickly pulling up on the governor handle, releasing the lock, and rotating the handle in the direction of the arrow (+).
- There is an upper and lower limit for the handle rotation. If over-rotating the handle even after reaching to the limit, the internal parts may be damaged. If the handle suddenly feels heavy while being turned, stop turning the handle.
- Once the setting is completed, push the handle down and lock it.
- To decrease the outlet pressure, after the pressure has been set, rotate the handle in the direction of the arrow (–). The residual air will be released from the area of the handle, due to the relief construction of the governor.
- To reset the pressure, first reduce the pressure so that it is lower than the desired pressure; then, set it to the desired pressure.



2. Setting the pressure on the air-operated type (VBA22A, 42A)

- Connect the outlet pipe of the pilot regulator for the remote control to the pilot port (P). (Refer to the diagram below.)
- Refer to the graph below for the relationship between the pilot pressure and outlet pressure.
- The AR20 and AW20 are recommended for the pilot regulator.

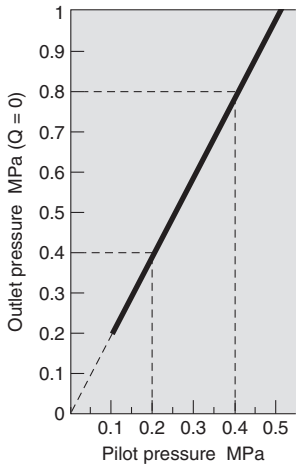
Pilot regulator



- The outlet pressure is twice the pilot pressure.
- When the inlet pressure is 0.4 MPa:

Pilot pressure
0.2 MPa to 0.4 MPa

Outlet pressure
0.4 MPa to 0.8 MPa



3. Draining

- If this product is used with a large amount of drainage accumulated in the filter, mist separator or tank, the drainage could flow out, leading to equipment malfunction. Therefore, drain the system once a day. If it is equipped with an auto drain, check its operation once a day.

4. Exhaust

- Exhausting time from E port may be longer for a booster regulator which is set to switch in longer hour intervals. This is not an abnormal phenomenon.

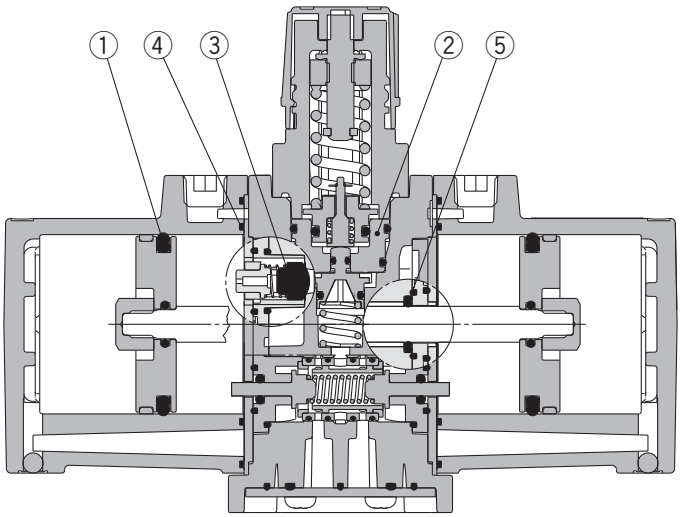
5. Maintenance

- Life expectancy varies depending on the quality of air and the operating conditions. Signs that the unit is reaching the end of its service life include the following:
  - Constant bleed from under the handle.
  - Air exhaust noise can be heard from the booster regulator at 10 to 20 second intervals even when there is no air consumption on the outlet side.

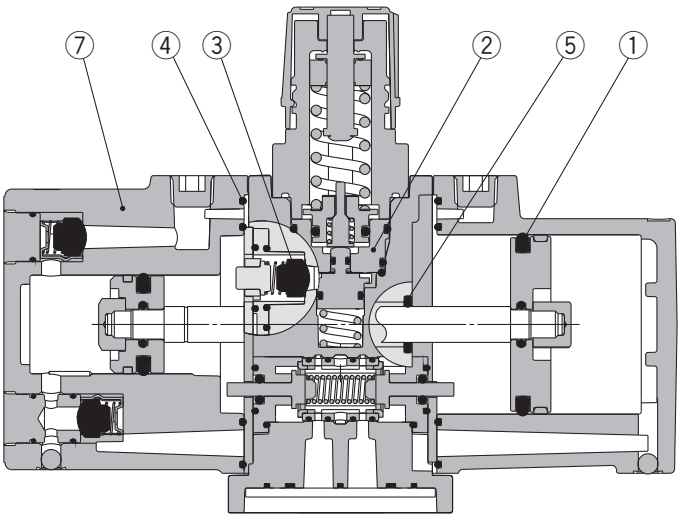
  Conduct maintenance earlier than scheduled in such cases.
- When maintenance is required, confirm the model and serial number of the booster regulator, and please contact SMC for maintenance kit.
- Conduct maintenance according to the specified maintenance procedure by individuals possessing enough knowledge and experiences in maintaining pneumatic equipment.
- The list of replacement parts and kit number are shown on page 9, and the figure shows the position of the parts.

Construction/Replacement Parts

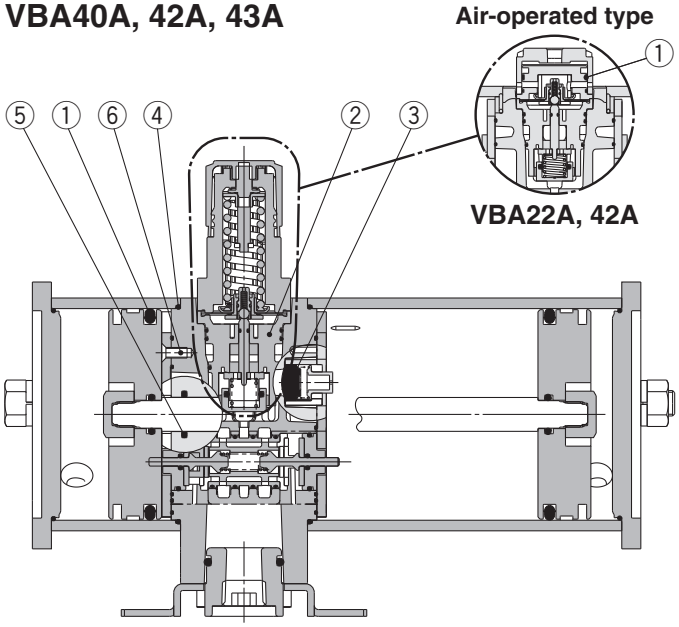
VBA10A



VBA11A



VBA20A, 22A, VBA40A, 42A, 43A



Replacement Parts/Kit No.

Place an order with the following applicable kit number.

Model	VBA10A	VBA20A	VBA40A	VBA22A	VBA42A	VBA43A	VBA11A
Kit no.	KT-VBA10A-1	KT-VBA20A-1	KT-VBA40A-1	KT-VBA22A-1	KT-VBA42A-1	KT-VBA43A-1	KT-VBA11A-20

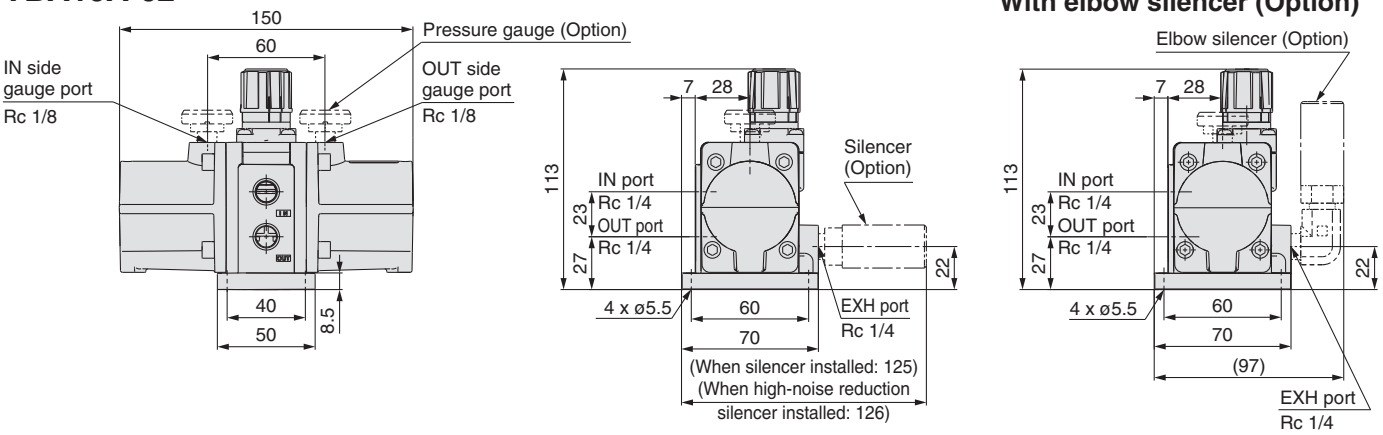
The kit includes the parts from ① to ⑦ and a grease pack.

No.	Description \ Model	VBA10A	VBA20A	VBA40A	VBA22A	VBA42A	VBA43A	VBA11A
		Quantity						
1	Piston seal	2			2 large 1 small		2	1 each large and small
2	Governor assembly	1						
3	Check valve	4						2
4	Gasket	2						
5	Rod seal	1						
6	Mounting screw	—	8	12	8	12		—
7	Cover C assembly	—						1
—	Grease pack	1		2	1	2		1

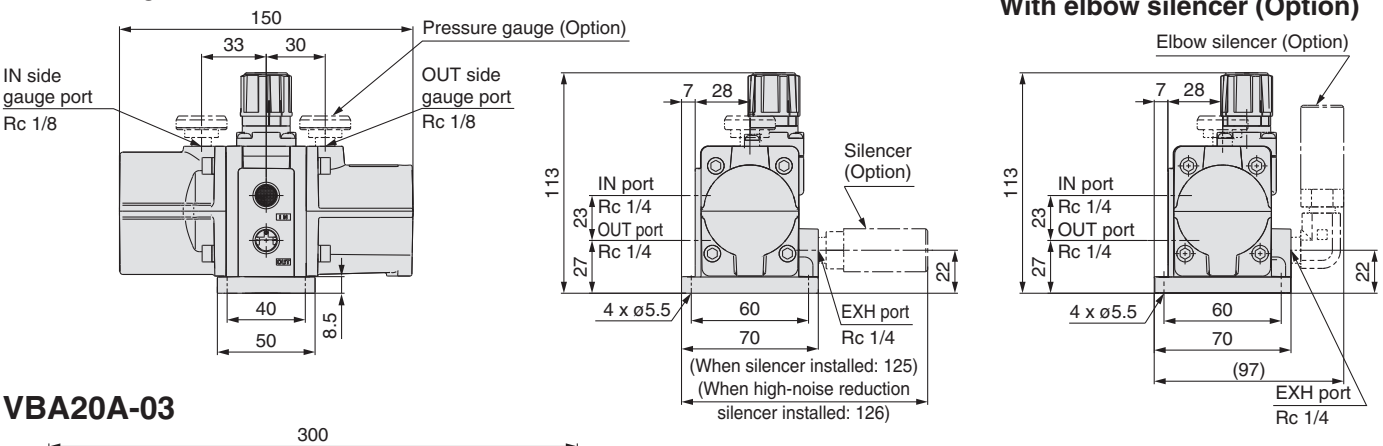
∗ The grease pack has 10 g of grease.
∗ Make sure to refer to the procedure for maintenance.

Dimensions

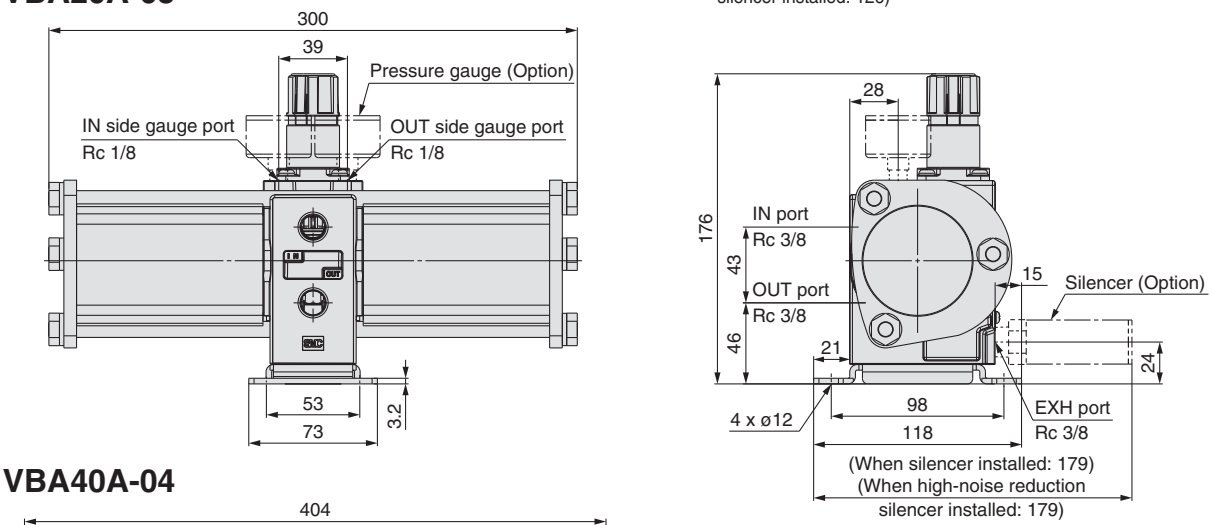
VBA10A-02



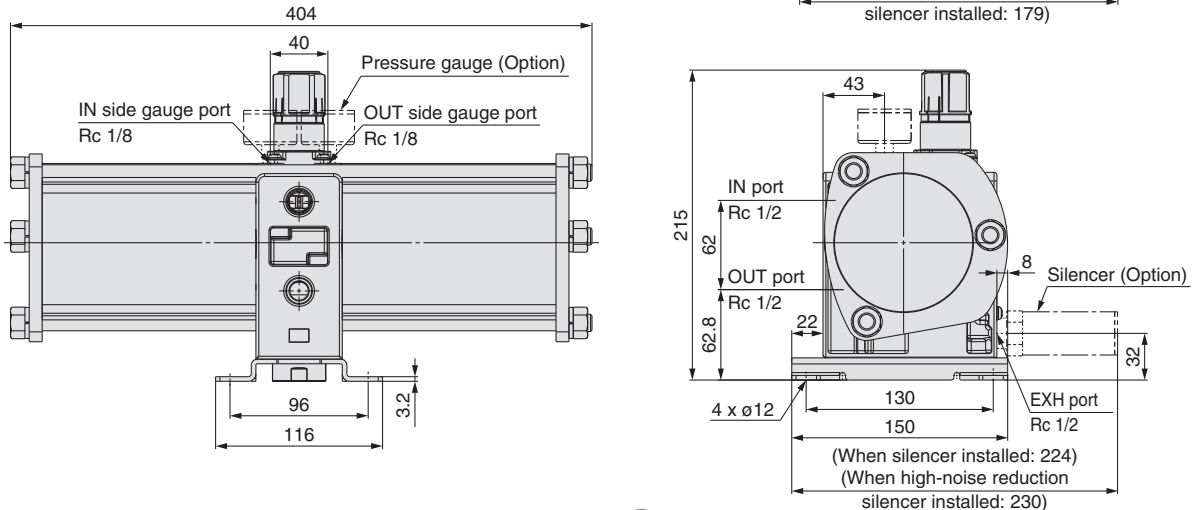
VBA11A-02



VBA20A-03



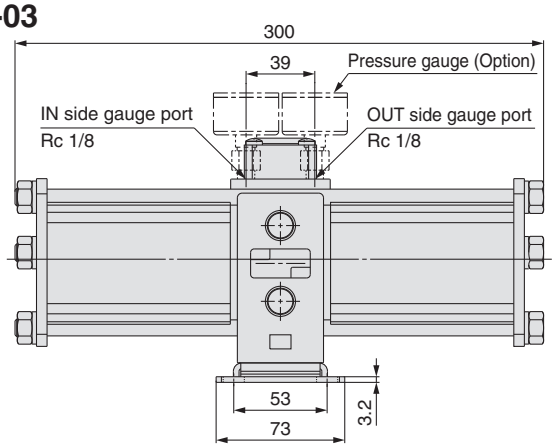
VBA40A-04

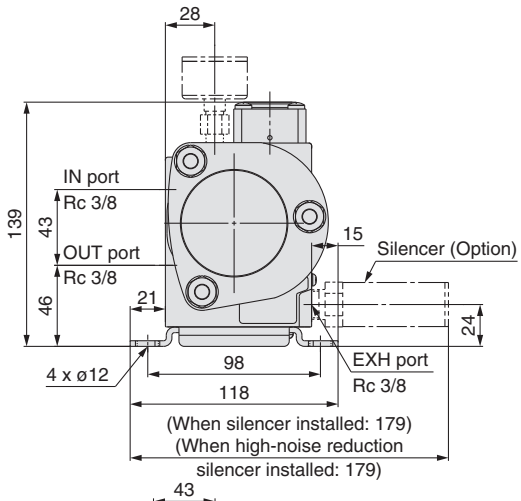


Series VBA

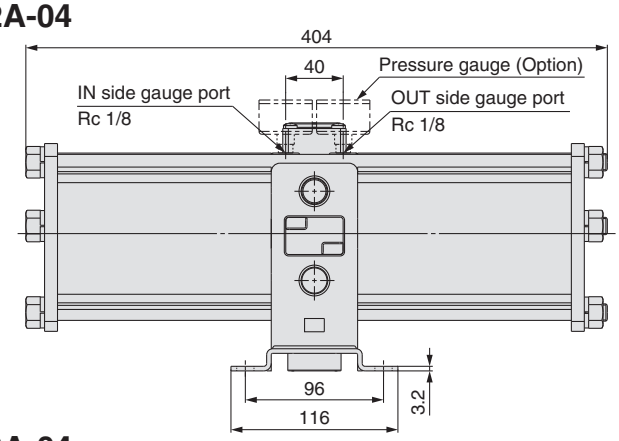
Dimensions

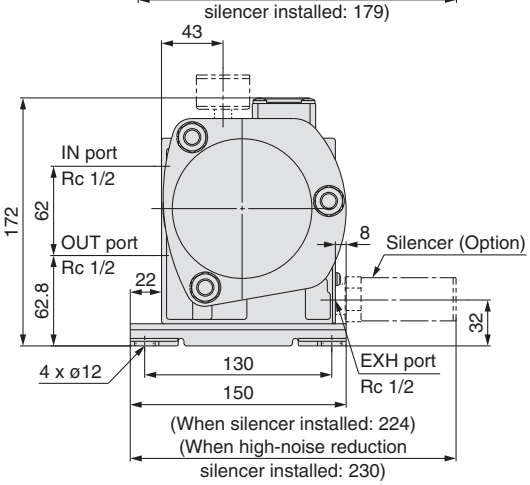
VBA22A-03



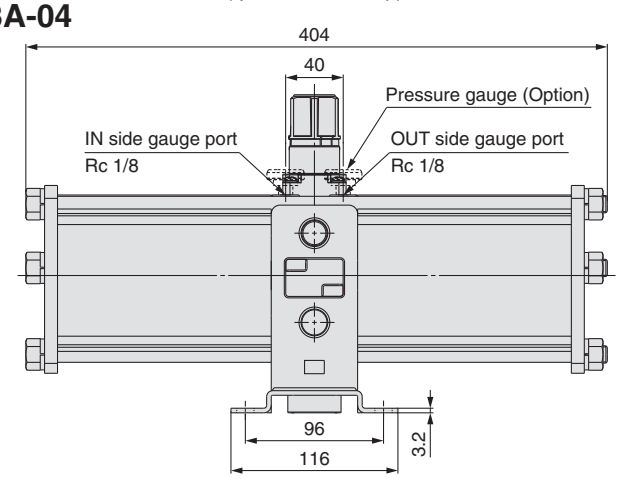


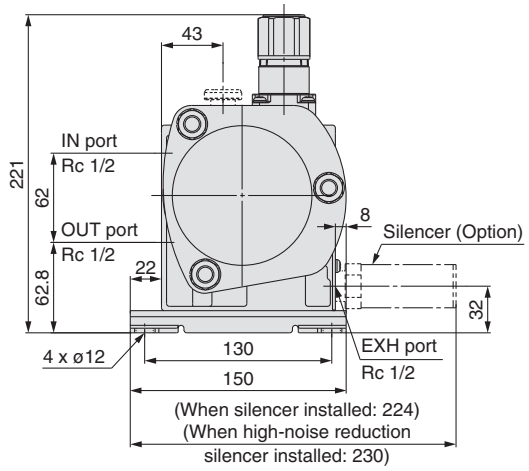
VBA42A-04





VBA43A-04





Made to Order For detailed dimensions, specifications and lead times, please contact SMC.

Made to Order

1 Copper-free/Fluorine-free

The inner or outer copper parts material has been changed to stainless steel or aluminum. The fluorine resin parts has been changed to general resin.

20 — Standard model no.

Made to Order
Copper-free/Fluorine-free

∗ For booster regulator with pressure gauge, please consult SMC.
∗ This option cannot be selected for air tank with safety valve.

2 CE explosion-proof directive (ATEX) compliant

56 — Standard model no.

Made to Order
CE explosion-proof directive (ATEX): Category 3GD

3 Ozone resistant

Ozone resistance is strengthened through the use of fluororubber (diaphragm) and hydrogenated NBR (valve, rod seal) for the rubber parts of the seal material.

80 — Standard model no.

Made to Order
Ozone resistant

∗ Weather resistant NBR (diaphragm) and hydrogenated NBR (valve) are used for the rubber parts of the standard model.