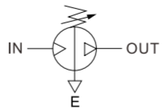
VBA Series Booster Regulator



Ordering Code

VBA Series Booster Regulator

VBA 40A - □ 04 □ - □

Body size

10A	1/4", Knob-operated type	Pressure increase ratio: Twice
20A	3/8", Knob-operated type	
40A	1/2", Knob-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", Knob-operated type	Pressure increase ratio: 2 to 4 times

* Set the pressure increase ratio to 2 or more.

Thread type

Nil: Rc
F: G
N: NPT
T: NPTF

* 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

Option

Nil: None
G: Pressure gauge
N: Silencer
S: High-noise reduction silencer*
GN: Pressure gauge, Silencer
GS: Pressure gauge, High-noise reduction silencer*
LN: Elbow silencer*
LS: Elbow high-noise reduction silencer*
GLN: Pressure gauge, Elbow silencer*
GLS: Pressure gauge, Elbow high-noise reduction silencer*

* Refer to "Combination of Thread Type and Options."

Semi-standard

Nil: Standard product
Z*: ● Pressure unit on the product name label: psi
● Pressure unit on the pressure gauge: MPa and psi
* Thread type: NPT, NPTF

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	VBA10A/11A	VBA20A/22A	VBA40A/22A	VBA43A
VBAT05A(1)	●	–	–	–
VBAT05S(1)				
VBAT10A(1)	●	●	–	–
VBAT10S(1)				
VBAT20A(1)	–	●	●	–
VBAT20S(1)				●
VBAT38A(1)	–	●	●	–
VBAT38S(1)				●

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VBA Series Booster Regulator

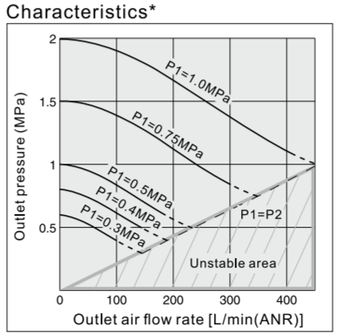
Specifications

Model	VBA10A-02	VBA20A-03	VBA40A-04	VBA22A-03	VBA42A-04	VBA43A-04	VBA11A-02
Working medium	Clean Air						
Pressure increase ratio	Twice						2 to 4 times *4)
Pressure adjustment mechanism	Knob-operated with relief mechanism *2)			Air-operated		Knob-operated with relief mechanism *2)	
Max. flow rate [L/min(ANR)] *3)	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	0.4 to 2.0
Supply pressure range (MPa)	0.1 to 1.0	0.1 to 0.9				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						
Tank connection port (with plug) *5)	1/4	3/8	1/2	3/8	1/2		1/4
Working 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

*1) Be sure to secure an air supply capacity of the minimum operating pressure (0.1 MPa) or more.
*2) If the OUT pressure is higher than the set pressure by the knob, excess pressure is exhausted from the back of the knob.
*3) Flow rate at IN= OUT= 0.5 MPa. The pressure varies depending on the operating conditions. Refer to "Flow Rate Characteristics".
*4) Set the pressure increase ratio to 2 or more.
*5) The tank connection port cannot be used for applications other than the connection with VBAT.

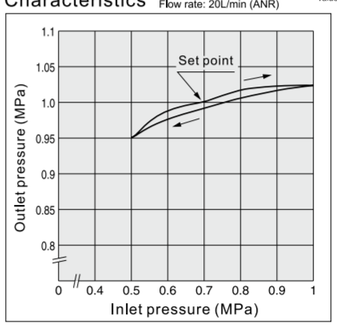
VBA10A

Flow Rate Characteristics*

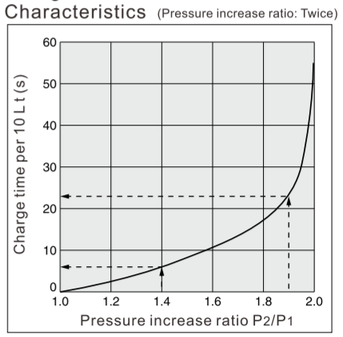


Pressure Characteristics

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



Charge Characteristics (Pressure increase ratio: Twice)



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

$\frac{P2}{P1}=\frac{0.7}{0.5}=1.4$ $\frac{P2}{P1}=\frac{0.95}{0.5}=1.9$

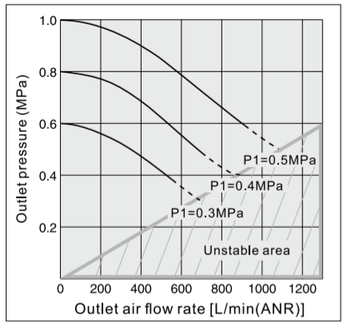
● With the pressure increase ratio from 1.4 to 1.9, the charge time of 23 – 6 = 17 sec. (t) is given by the graph. Then, the charge time (T) for a 10 L tank:

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

VBA Series Booster Regulator

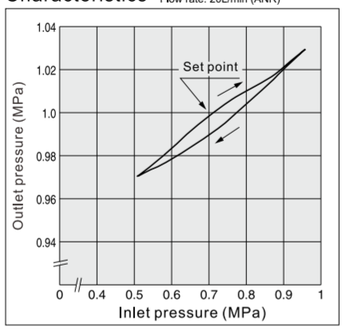
VBA20A,22A

Flow Rate Characteristics*

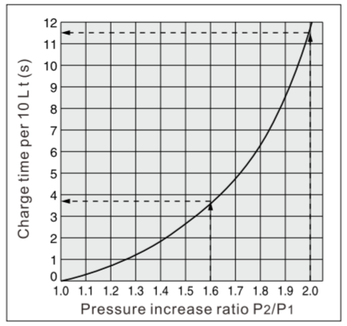


Pressure Characteristics

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



Charge Characteristics (Pressure increase ratio: Twice)



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

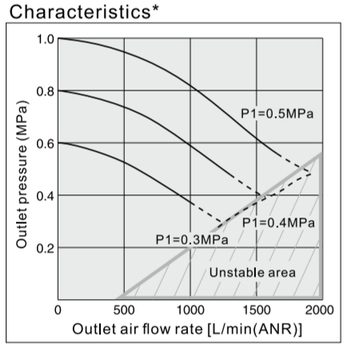
$$\frac{P2}{P1}=\frac{0.8}{0.5}=1.6 \qquad \frac{P2}{P1}=\frac{1.0}{0.5}=2.0$$

- 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:

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

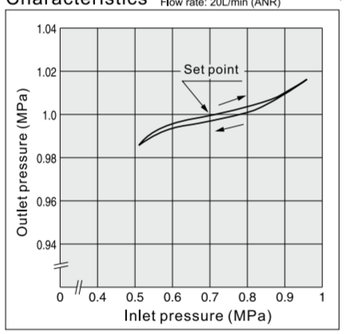
VBA40A,42A

Flow Rate Characteristics*

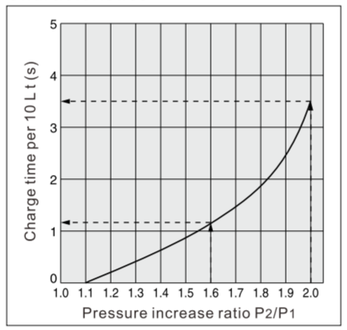


Pressure Characteristics

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



Charge Characteristics (Pressure increase ratio: Twice)



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

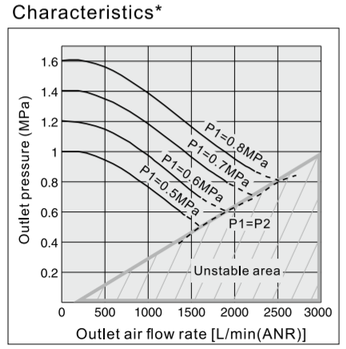
$$\frac{P2}{P1}=\frac{0.8}{0.5}=1.6 \qquad \frac{P2}{P1}=\frac{1.0}{0.5}=2.0$$

- 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:

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

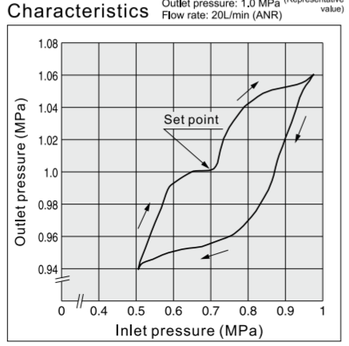
VBA43A

Flow Rate Characteristics*

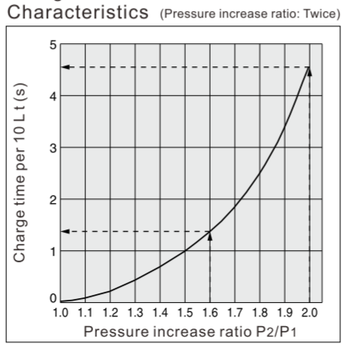


Pressure Characteristics

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



Charge Characteristics (Pressure increase ratio: Twice)



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

$$\frac{P2}{P1}=\frac{0.8}{0.5}=1.6 \qquad \frac{P2}{P1}=\frac{1.0}{0.5}=2.0$$

- 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:

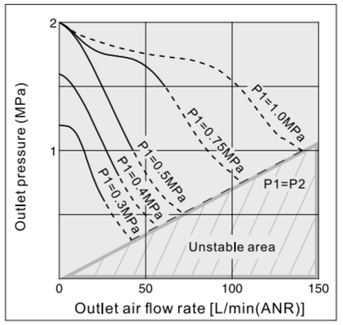
$$T=t\times\frac{V}{10}=3.2\times\frac{100}{10}=32\ (s)$$

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VBA Series Booster Regulator

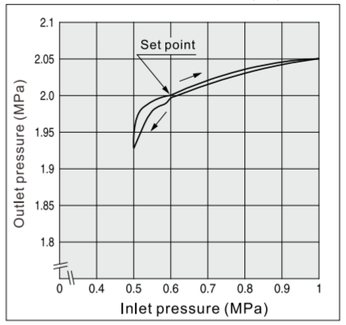
VBA11A

Flow Rate Characteristics*

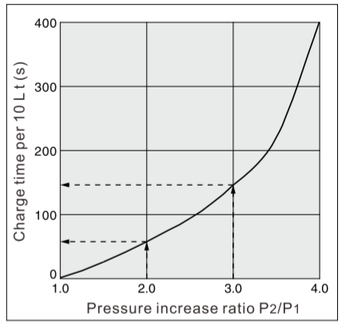


Pressure Characteristics

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



Charge Characteristics (Pressure increase ratio: Twice)



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

$$\frac{P2}{P1}=\frac{1.0}{0.5}=2.0 \qquad \frac{P2}{P1}=\frac{1.5}{0.5}=3.0$$

- 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:

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

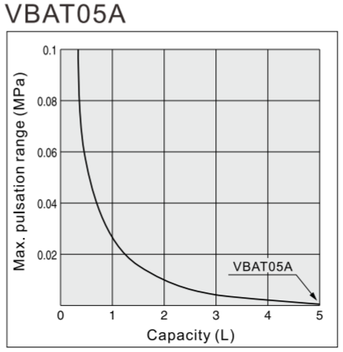
Solid line: Operating range
Operate so that the flow rate follows the solid line even when the outlet side air has been consumed.
Ex.) For the VBA10A: When the inlet pressure is 0.5 MPa and the set pressure is 1.0 MPa, operate at an outlet air flow rate of 180 L/min (ANR) or less.
Dotted line: Outside of the set pressure range
P1: Inlet pressure P2: Outlet pressure

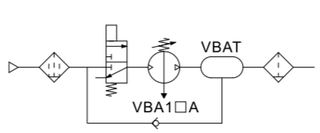
* When operated at a flow rate that falls within the unstable area (P2 < P1 conditions) as shown in the graphs above, the booster regulator may not operate normally and may therefore fail to increase the pressure.

Tank Pressure Pulsation

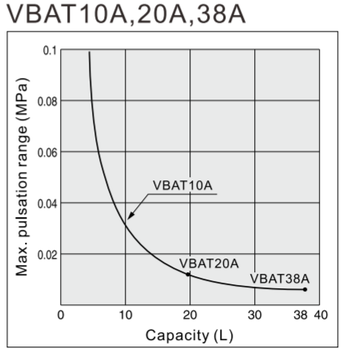
Pulsation is decreased with a tank. If the outlet capacity is undersized, pulsation may occur.

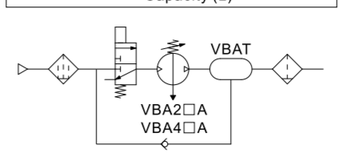
VBAT05A





VBAT10A,20A,38A





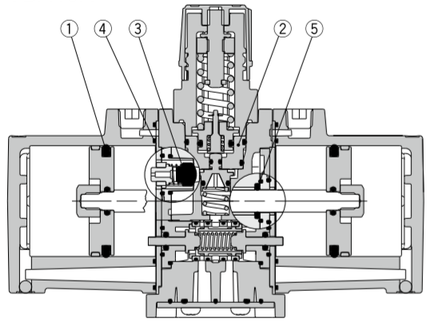
Conditions
Inlet pressure: 0.5 MPa
Outlet set pressure: 1 MPa
Flow rate: Between 0 and max. flow rate

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.
- Operation at a flow rate that falls within the unstable area under temporary P1 ≥ P2 conditions can be prevented when the outlet side air has been consumed.

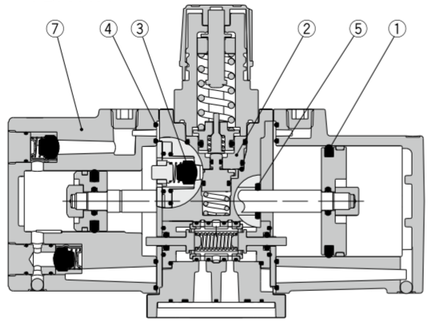
VBA Series Booster Regulator

Internal Structure

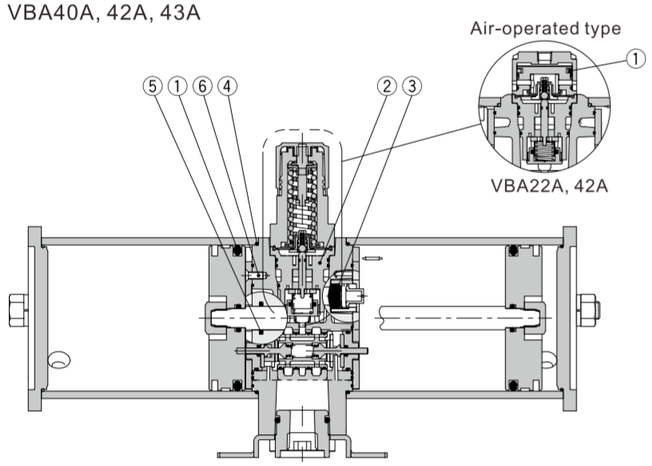
VBA10A



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

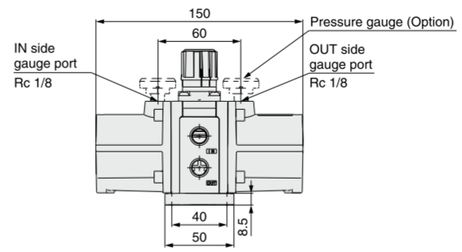
* The grease pack has 10 g of grease.
* Make sure to refer to the procedure for maintenance.
* For details on the replacement parts kit, refer to the procedure for maintenance.

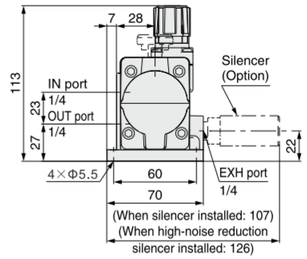
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VBA Series Booster Regulator

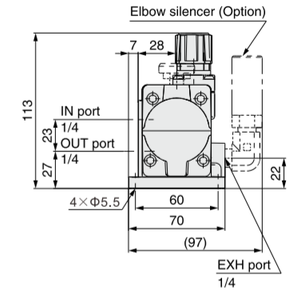
Main Dimensions

VBA10A-02

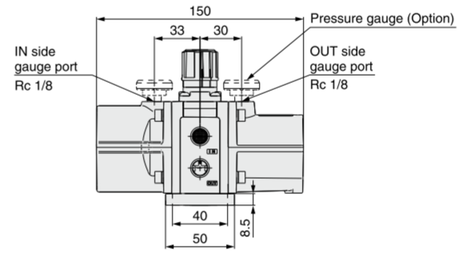


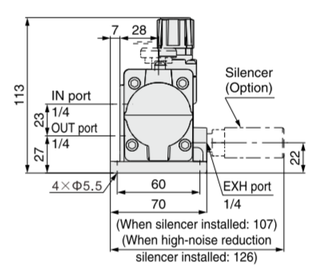


With elbow silencer (Option)

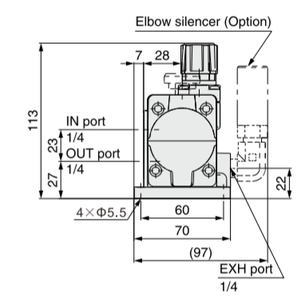


VBA11A-02

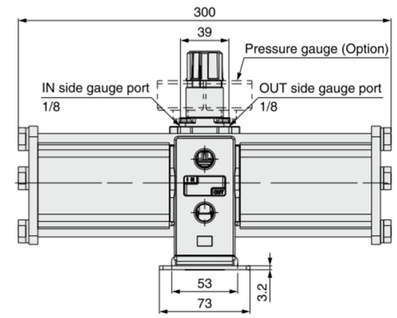


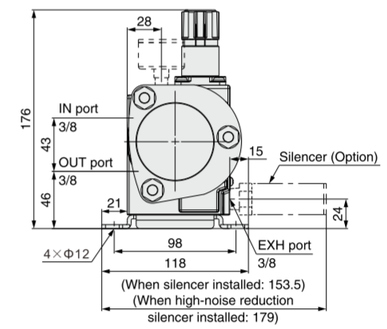


With elbow silencer (Option)

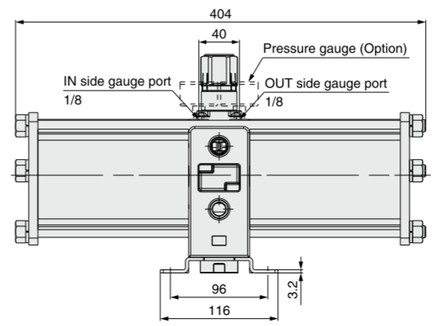


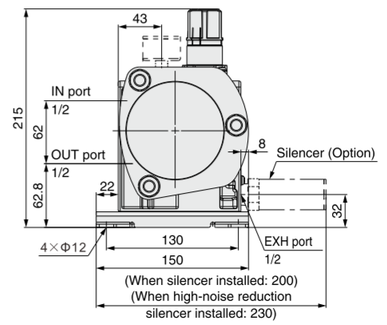
VBA20A-03





VBA40A-04

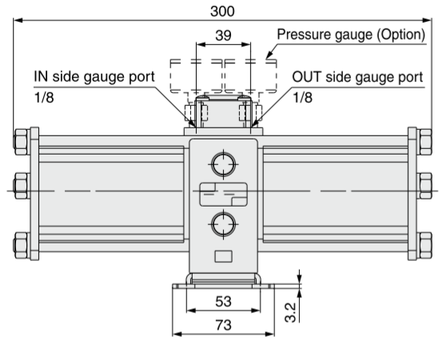


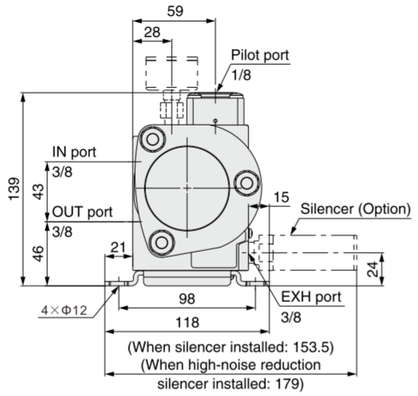


VBA Series Booster Regulator

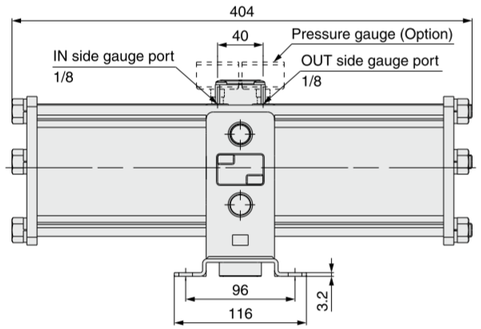
Main Dimensions

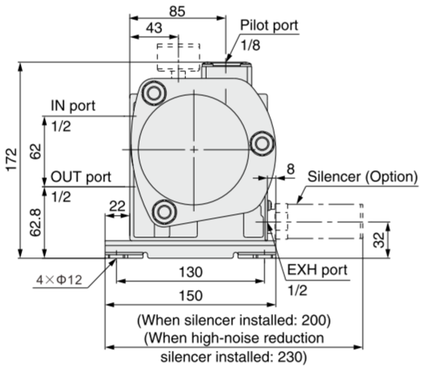
VBA22A-03



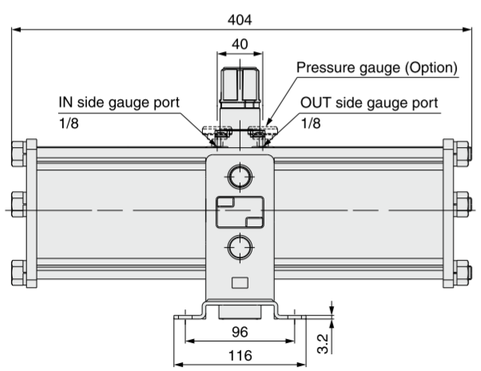


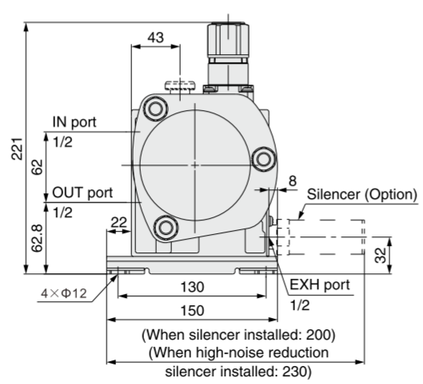
VBA42A-04





VBA43A-04





* For detailed dimensions, specifications and lead times, please contact VPC.

VBAT Series Air Tank





- Compact connections are possible with booster regulators.
- It can be used alone as a tank.
- Also partially compatible with overseas standards

Ordering Code

VBAT Series Air Tank

VBAT10 | A | - | F | SV | - | Q

- VBAT10 — Tank internal capacity
  - 05: 5L
  - 10: 10L
  - 20: 20L
  - 38: 38L
- A — Material
  - A: Carbon steel (SS400)
- F — Thread type
  - Nil: Rc
  - F: G
- SV — Accessories

Accessories

Symbol	Accessories	Applicable model
RV	Safety valve (Set pressure: 1 MPa) Drain valve	VBAT20A VBAT38A
SV	Safety valve (Set pressure: 2 MPa) Drain valve	VBAT05A VBAT10A

- Q — CE/UKCA certified product (Self-declaration document attached)

* When used as a single unit (not connected with a booster regulator) and pressurized at over 1 MPa at normal temperatures.

Specifications

Model	VBAT05A□-SV-Q	VBAT10A□-SV-Q	VBAT20A□-RV-Q	VBAT38A□-RV-Q
Working medium	Compressed air			
Tank capacity	5L	10L	20L	38L
Max. operating pressure	2.0MPa		1.0MPa	
IN port size	3/8	1/2	3/4	
OUT port size	3/8	1/2	1/2	3/4
Proof pressure	3.3MPa		1.6MPa	
Working temperature	0 to 75°C			
Installation	Horizontal (Floor mounting)			
Weight	6.6Kg	10Kg	14Kg	21Kg
Material	Carbon steel (SS400)			
Paint	Outside: Silver paint, Inside: Rustproof paint			

*1) Accessories are included in the same container.
*2) Scratches, scrapes, blotches, and uneven color may be present on the surface, but they do not affect the function or performance of the product.

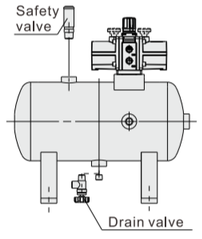
VBAT Series Air Tank

Accessories/Part No.

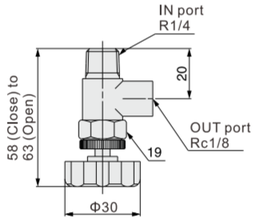
Model	VBAT05A□-SV-Q	VBAT10A□-SV-Q	VBAT20A□-RV-Q	VBAT38A□-RV-Q
Accessory kit	VBAT5A-Y-2	VBAT10A-Y-2	VBAT20A-Y-2	
Safety valve	VBAT-S (Set pressure: 2 MPa)		VBAT-R (Set pressure: 1 MPa)	
Drain valve	VBAT-V1			

The Accessory Kit is a Set of Nos. ① to ⑤.

No.	Description \ Model	VBAT5A-Y-2	VBAT10A-Y-2	VBAT20A-Y-2
		Quantity		
①	Bushing assembly (with O-ring)	1	1	1
②	Hexagon socket head taper screwed plug (for drain port)	1	1	1
③	Hexagon socket head cap screw	4	4(VBA1□A) 4(VBA2□A)	4
④	Anchor bolt/nut	—	—	4
⑤	Hexagon socket head taper screwed plug (for safety valve port)	1	1	1

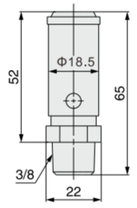


Drain valve: VBAT-V1



Body material: Brass

Safety valve: VBAT-R, VBAT-S

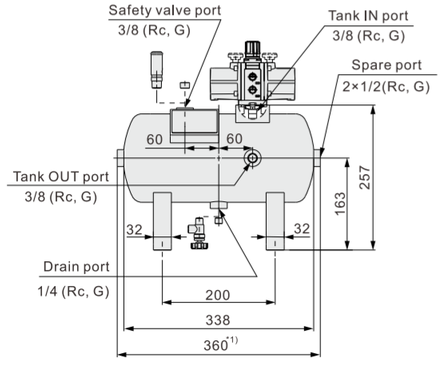


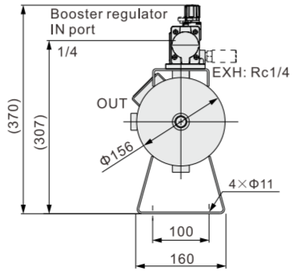
(Width across flats 19)
Body material: Brass

Main Dimensions

VBAT05A-Q

Connected to VBA10A, 11A





*1) The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
*2) The plug in the spare port has been firmly secured with adhesive. When removing the plug to use the port, be careful so as not to damage the plug.

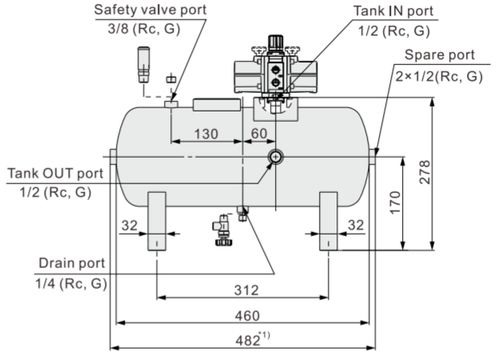
VPC PNEUMATIC®
ISO9001 CE

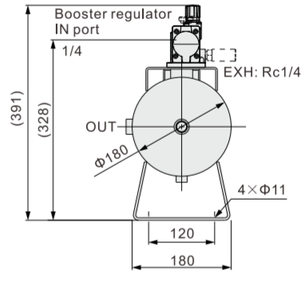
VBAT Series Air Tank

Main Dimensions

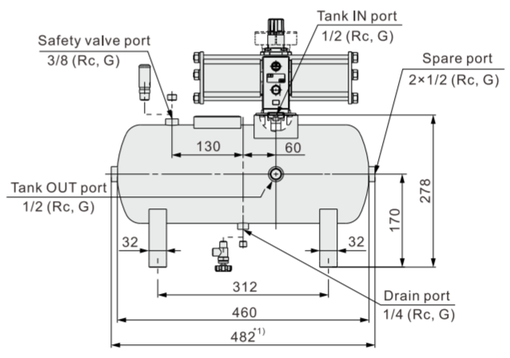
VBAT10A-Q

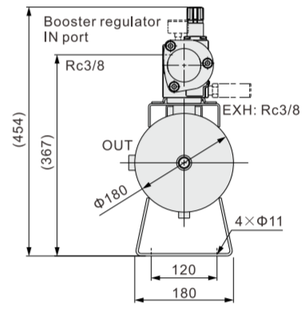
Connected to VBA10A, 11A



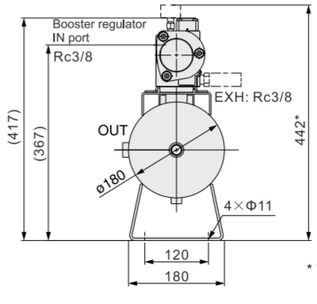


Connected to VBA20A





Connected to VBA22A



* When option G (pressure gauge) is selected.

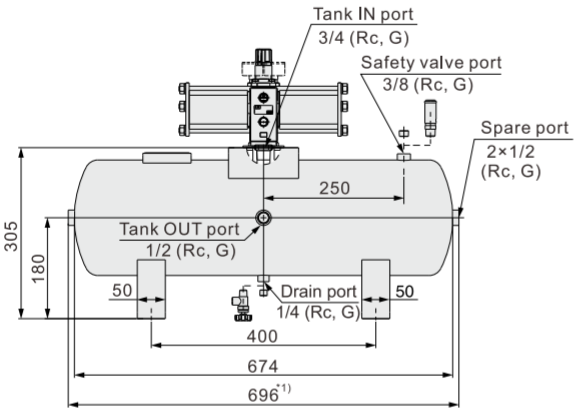
*1) The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
*2) The plug in the spare port has been firmly secured with adhesive. When removing the plug to use the port, be careful so as not to damage the plug.

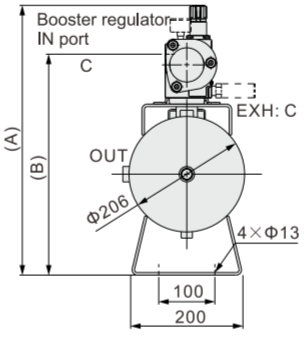
VBAT Series Air Tank

Main Dimensions

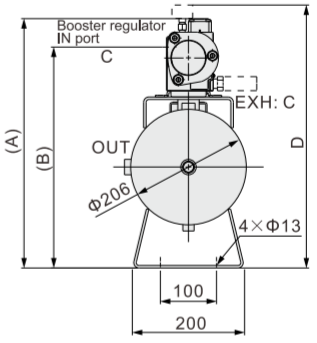
VBAT20A-Q

Connected to VBA20A, 40A





Connected to VBA22A, 42A



(mm)

Booster regulator mode	A	B	C	D*
VBA20A	481	394	Rc3/8	—
VBA40A	520	429.8	Rc1/2	—
VBA22A	444	394	Rc3/8	469
VBA42A	477	429.8	Rc1/2	493

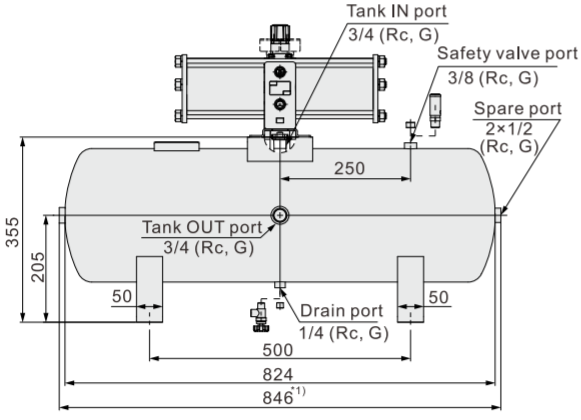
*When option G (pressure gauge) is selected.

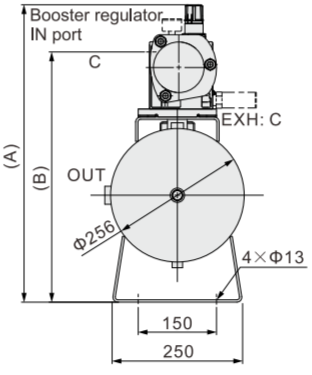
*1) The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
*2) The plug in the spare port has been firmly secured with adhesive. When removing the plug to use the port, be careful so as not to damage the plug.

IV

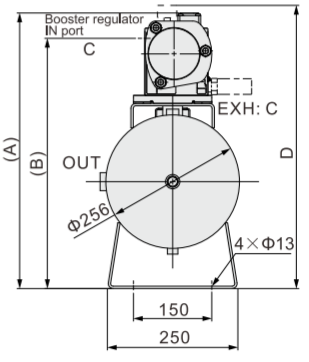
VBAT38A-Q

Connected to VBA20A, 40A





Connected to VBA22A, 42A



(mm)

Booster regulator mode	A	B	C	D*
VBA20A	531	444	Rc3/8	—
VBA40A	570	479.8	Rc1/2	—
VBA22A	494	444	Rc3/8	519
VBA42A	527	479.8	Rc1/2	543

*When option G (pressure gauge) is selected.

*1) The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
*2) The plug in the spare port has been firmly secured with adhesive. When removing the plug to use the port, be careful so as not to damage the plug.