Increase factory air pressure by up to 4 times! Air-only operation requires no power supply, reduces heat generation, and allows easy installation.

No power supply or wiring needed
There is no need to install dedicated electrical wiring.

Easy installation
Simply install the unit in the air line. Requires far less space than installing the compressor.

Low heat generation
Very little heat is generated because no electricity is used, and there is no impact on cylinders, solenoid valves, etc.

Air-only operation
Operation is safe because no electricity is used.

Booster Regulator/Air Tank
**VBA/VBAT Series**

Boost pressure

RoHS
+ Except the Chinese pressure vessel regulations compliant product (-X104)

Boost pressure

0.6 MPa

Heavy

Booster Regulator + Air Tank

Factory line

Compressor

0.3 MPa

0.3 MPa

Loss of pressure

0.3 MPa

0.3 MPa

Booster Regulator/Air Tank

VBA/VBAT Series

Booster Regulator/VBA Series

Air Tank/VBAT Series

No power supply or wiring needed

Easy installation

Low heat generation

Air-only operation

SMC

ARJ

AR425

ARX

ARM

ARP

IR

IRV

VEX

SRH

SRP

SRF

ITV

IC

ITVH

ITVX

PVQ

VY1

VBA

VBAT

AP100

1007
Booster Regulator *VBA* Series

**Doubled**
- Floating piston structure
- Grease retaining groove
  - Except VBA10A, 11A

**Improved service life**

**Reduced noise**
- Metal noise reduced by a bumper on the impact part of the switch valve
- Exhaust noise reduced by a high-noise reduction silencer

**Improved reliability**

**Anti-condensation**
- Integrated air-feeding tube with the main tube
  - Mitigates condensation caused by cooling during exhaust expansion.

**Elbow silencer added** *(Option)*

**1/8” gauge ports**
- Allows use of standard fittings for remote pressure monitoring, etc.
  - Gauge ports changed from 1/16” to 1/8” (VBA1□A, 2□A)

**Space saving when installed has been realized.**
- Built-in mesh filter at IN port
  - Prevents operation failure due to foreign matter.
- Mesh filter

**Integrated air-feeding tube with the main tube**
- Grease retaining groove
- Floating piston structure

**Except VBA10A, 11A**

**Max. operating pressure 1.6 MPa**

**Fourfold pressure increase type**

**Air-operated type**
- VBA22A
- VBA42A
- VBA43A
- VBA11A
### Air Tank VBAT Series

**Perfect fit with a booster regulator**

This is an air tank to which a booster regulator can be connected compactly. It can be used alone as a tank. The pressure vessel law is different from country to country, so as an air tank suitable to a country needs to be confirmed.

**Extensive product lineup**

To meet a variety of usage environment and pressure specifications, models are available in two materials, stainless steel 304 and carbon steel (SS400), and in four sizes ranging from 5 liters to 38 liters.

<table>
<thead>
<tr>
<th>Body size</th>
<th>VBA10A-02 (0.2 to 2.0 MPa)</th>
<th>VBA22A-03</th>
<th>VBA42A-04</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>VBA20A-03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>VBA40A-04</td>
<td>VBA43A-04</td>
<td></td>
</tr>
</tbody>
</table>

#### Caution

When used as a single unit (not connected with a booster regulator) and pressurized at over 1 MPa at normal temperatures, the air tank falls under the scope of the "High Pressure Gas Safety Act" in Japan.

#### Table

<table>
<thead>
<tr>
<th>Pressure increase ratio</th>
<th>Twisted</th>
<th>2 to 4 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>Knob-operated type</td>
<td>Air-operated type</td>
</tr>
<tr>
<td>Set pressure range</td>
<td>(Direct operation)</td>
<td>(Remote operation)</td>
</tr>
<tr>
<td>0.2 to 1.0 MPa</td>
<td>VBA10A-02</td>
<td>VBA11A-02</td>
</tr>
<tr>
<td>0.2 to 1.0 MPa</td>
<td>VBA20A-03</td>
<td></td>
</tr>
<tr>
<td>0.4 to 2.0 MPa</td>
<td>VBA38A-04</td>
<td></td>
</tr>
</tbody>
</table>

#### Specifications

- **Model**
  - VBAT05A
  - VBAT10A
  - VBAT20A
  - VBAT38A
- **Tank capacity (L)**
  - 5
  - 10
  - 20
  - 38
- **Max. operating pressure (MPa)**
  - 2.0
  - 1.0

#### Notes

- **Material**
  - Carbon steel
  - Stainless steel

#### Dimensions

- **Body size**
  - 1/4"
  - 3/8"
  - 1/2"

<table>
<thead>
<tr>
<th>Model</th>
<th>VBAT05S</th>
<th>VBAT10S</th>
<th>VBAT20S</th>
<th>VBAT38S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank capacity (L)</td>
<td>5</td>
<td>10</td>
<td>20</td>
<td>38</td>
</tr>
<tr>
<td>Max. operating pressure (MPa)</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Carbon steel</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**ARJ**
**AR425 to 935**
**ARX**
**ARM**
**ARP**
**IR-C-A**
**IR**
**IRV**
**VEX**
**SRH**
**SRP**
**SRF**
**ITV**
**IC**
**ITVH**
**ITVX**
**PVO**
**VY1**
**VBA**
**VBAT**
**AP100**
**Booster Regulator**

**VBA Series**

**How to Order**

**VBA 40A** - 04 -

**Body size**

- 10A: 1/4", Knob-operated type
- 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

**Pressure increase ratio**:

- Twice
- 2 to 4 times

**Port size**

- 02: 1/4"
- 03: 3/8"
- 04: 1/2"

**Thread type**

- Nil
- Rc
- G
- N
- NPT
- T
- NPTF

**Note**

- Set the pressure increase ratio to 2 or more.

**Option**

- Nil
- 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

**Combination of Thread Type and Options**

**Air Tank Compatibility Chart**

<table>
<thead>
<tr>
<th>Air tank</th>
<th>Booster regulator</th>
<th>VBA10A/11A</th>
<th>VBA20A/22A</th>
<th>VBA40A/42A</th>
<th>VBA43A</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBAT05A(1)</td>
<td>VBAT05S(1)</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VBAT05A(1)</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VBAT05S(1)</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VBAT10A(1)</td>
<td>VBAT10S(1)</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VBAT10A(1)</td>
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<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VBAT10S(1)</td>
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<td>✔</td>
<td></td>
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</tr>
<tr>
<td>VBAT20A(1)</td>
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<td>VBAT20A(1)</td>
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<td></td>
</tr>
<tr>
<td>VBAT20S(1)</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VBAT20S(1)</td>
<td>✔</td>
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</tr>
<tr>
<td>VBAT38A(1)</td>
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<td>✔</td>
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<td></td>
</tr>
</tbody>
</table>

[Image and text content as per the original document]
### Standard Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VBA10A-02</th>
<th>VBA20A-03</th>
<th>VBA40A-04</th>
<th>VBA22A-03</th>
<th>VBA42A-04</th>
<th>VBA43A-04</th>
<th>VBA11A-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Compressed air</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure increase ratio</td>
<td>Twice</td>
<td>2 to 4 times Note 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure adjustment mechanism</td>
<td>Knob-operated with relief mechanism Note 2</td>
<td>Air-operated</td>
<td>Knob-operated with relief mechanism Note 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. flow rate (L/min (ANR))</td>
<td>230</td>
<td>1000</td>
<td>1900</td>
<td>1000</td>
<td>1900</td>
<td>1600</td>
<td>70</td>
</tr>
<tr>
<td>Set pressure range (MPa)</td>
<td>0.2 to 2.0</td>
<td>0.2 to 1.0</td>
<td>0.2 to 1.0</td>
<td>0.2 to 1.6</td>
<td>0.4 to 2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply pressure range (MPa)</td>
<td>0.1 to 1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proof pressure (MPa)</td>
<td>3</td>
<td>1.5</td>
<td>2.4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port size (Rc)</td>
<td>1/4</td>
<td>3/8</td>
<td>1/2</td>
<td>3/8</td>
<td>1/2</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>Tank connection port (with plug) Note 5</td>
<td>1/4</td>
<td>3/8</td>
<td>1/2</td>
<td>3/8</td>
<td>1/2</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>2 to 50 (No freezing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.84</td>
<td>3.9</td>
<td>8.6</td>
<td>3.9</td>
<td>8.6</td>
<td>8.6</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Note 1) Be sure to secure an air supply capacity of the minimum operating pressure (0.1 MPa) or more.
Note 2) If the OUT pressure is higher than the set pressure by the knob, excess pressure is exhausted from the back of the knob.
Note 3) Flow rate at IN= OUT= 0.5 MPa. The pressure varies depending on the operating conditions. Refer to “Flow Rate Characteristics” on pages 1012 and 1013.
Note 4) Pressure unit on the pressure gauge: MPa and psi
Note 5) The tank connection port cannot be used for applications other than the connection with VBAT.

### Options/Part No.

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Model</th>
<th>VBA10A-02</th>
<th>VBA20A-03</th>
<th>VBA40A-04</th>
<th>VBA22A-03</th>
<th>VBA42A-04</th>
<th>VBA43A-04</th>
<th>VBA11A-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silencer</td>
<td>N</td>
<td>AN20-02</td>
<td>AN30-03</td>
<td>AN40-04</td>
<td>AN30-03</td>
<td>AN40-04</td>
<td>AN40-04</td>
<td>AN20-02</td>
</tr>
<tr>
<td>High-noise reduction silencer</td>
<td>S</td>
<td>AN1-02</td>
<td>AN1-03</td>
<td>AN1-04</td>
<td>AN1-03</td>
<td>AN1-04</td>
<td>AN1-04</td>
<td>AN1-02</td>
</tr>
</tbody>
</table>

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.)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure gauge</td>
<td>N</td>
<td>AN20-N02</td>
<td>AN30-N03</td>
<td>AN40-N04</td>
<td>AN30-N03</td>
<td>AN40-N04</td>
<td>AN40-N04</td>
<td>AN20-N02</td>
<td>AN30-N03</td>
<td>AN40-N04</td>
<td>AN40-N04</td>
<td>AN20-N02</td>
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<td>AN40-N04</td>
<td>AN20-N02</td>
<td>AN30-N03</td>
<td>AN40-N04</td>
<td></td>
</tr>
<tr>
<td>High-noise reduction silencer</td>
<td>S</td>
<td>—</td>
<td>AN1-N03</td>
<td>AN1-N04</td>
<td>AN1-N03</td>
<td>AN1-N04</td>
<td>AN1-N04</td>
<td>AN1-N03</td>
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<td>AN1-N04</td>
<td>AN1-N04</td>
<td>AN1-N03</td>
<td>AN1-N04</td>
<td>AN1-N04</td>
<td>AN1-N03</td>
<td>AN1-N04</td>
<td>AN1-N04</td>
<td></td>
</tr>
</tbody>
</table>

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: MPa and psi

### Related Products/Part No.

#### Mist Separator, Exhaust Cleaner

<table>
<thead>
<tr>
<th>Model</th>
<th>VBA10A-02</th>
<th>VBA20A-03</th>
<th>VBA40A-04</th>
<th>VBA22A-03</th>
<th>VBA42A-04</th>
<th>VBA43A-04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mist separator</td>
<td>AM350C-02</td>
<td>AM450C-04, 06</td>
<td>AM550C-06, 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust cleaner</td>
<td>AMC310-03</td>
<td>AMC510-06</td>
<td>AMC610-10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Refer to page 1022 for air tanks, page 223 for mist separators and Best Pneumatics No.7 for exhaust cleaners.
Refer to the separate operation manual for the connection method.
**VBA Series**

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

**VBA10A**

**Flow Rate Characteristics**

Set point

**Pressure Characteristics**

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/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:
  
  \[
  \frac{P_2}{P_1} = 0.7\quad \frac{P_2}{P_1} = 0.95\quad \frac{P_2}{P_1} = 1.4\quad \frac{P_2}{P_1} = 1.9
  \]

  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:

  \[
  T = \frac{V}{10} \times 17 = 17 \times \frac{10}{10} = 17 \text{ (s)}. \]

**VBA20A, 22A**

**Flow Rate Characteristics**

Set point

**Pressure Characteristics**

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/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:
  
  \[
  \frac{P_2}{P_1} = 0.8\quad \frac{P_2}{P_1} = 0.95\quad \frac{P_2}{P_1} = 1.0\quad \frac{P_2}{P_1} = 1.6\quad \frac{P_2}{P_1} = 2.0
  \]

  With the pressure increase ratio from 1.0 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:

  \[
  T = \frac{V}{100} \times 7.7 \times \frac{100}{10} = 77 \text{ (s)}. \]

**VBA40A, 42A**

**Flow Rate Characteristics**

Set point

**Pressure Characteristics**

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/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:
  
  \[
  \frac{P_2}{P_1} = 0.8\quad \frac{P_2}{P_1} = 0.95\quad \frac{P_2}{P_1} = 1.0\quad \frac{P_2}{P_1} = 1.6\quad \frac{P_2}{P_1} = 2.0
  \]

  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:

  \[
  T = \frac{V}{100} \times 2.4 \times \frac{100}{10} = 24 \text{ (s)}. \]

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.

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

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:

\[
T = \frac{V}{10} \times 17 = 17 \times \frac{10}{10} = 17 \text{ (s)}. \]

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

With the pressure increase ratio from 1.0 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:

\[
T = \frac{V}{100} \times 7.7 \times \frac{100}{10} = 77 \text{ (s)}. \]

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:

\[
T = \frac{V}{100} \times 2.4 \times \frac{100}{10} = 24 \text{ (s)}. \]
Booster Regulator  VBA Series

VBA43A

Flow Rate Characteristics

Outlet pressure (MPa) vs. Outlet air flow rate (L/min (ANR))

When operated at a flow rate that falls within the unstable area (P<sub>2</sub> < P<sub>1</sub> conditions) as shown in the graphs above, the booster regulator may not operate normally and may therefore fail to increase the pressure.

Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 10 L/min (ANR)

Charge Characteristics (Pressure increase ratio: Twice)

VBA11A

Flow Rate Characteristics

Outlet pressure (MPa) vs. Outlet air flow rate (L/min (ANR))

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

Pressure Characteristics

Inlet pressure: 0.6 MPa
Outlet pressure: 1.0 MPa
Flow rate: 10 L/min (ANR)

Charge Characteristics (Pressure increase ratio: Twice)

VBAT05A

Max. pulsation range vs. Capacity (L)

VBA11A

VBA10A, 20A, 38A

Max. pulsation range vs. Capacity (L)

VBAT05A

VBAT10A, 20A, 38A

VBAT10A

VBAT20A

VBAT38A

Conditions:
Inlet pressure: 0.5 MPa
Outlet set pressure: 1.0 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 P<sub>2</sub> < P<sub>1</sub> conditions can be prevented when the outlet side air has been consumed.
Please use the Booster Regulator Model Selection Software on the SMC website.

### Sizing

Provide requisite conditions for selection.

**Necessary conditions:**
- \( D \) [mm]: Cylinder bore size
- \( L \) [mm]: Cylinder stroke
- \( W \) [mm³/s]: Cylinder operating speed
- \( C \) [pc.]: Number of cylinders
- \( T_c \) [s]: Cylinder operating time
- \( T_s \) [s]: Cylinder stop time
- \( P_1 \) [MPa]: Inlet pressure
- \( P_2 \) [MPa]: Necessary supply pressure to cylinder

**Other conditions:**
- \( Q \) [L/min (ANR)]: Required air flow rate
- \( Q_b \) [L/min (ANR)]: Outlet air flow rate of booster regulator
- \( T_{c} \) [s]: Time to charge (Time to charge to \( P_2 \))
- \( T_{s} \) [s]: Time to charge (Time to charge from \( P_2 \) to \( P_3 \))
- \( P_3 \) (MPa): Tank charge pressure
- \( Z \) [pc.]: Number of cylinders

### Judgement of flow rate

**NO**: Need no tank. The VBA4A cannot supply necessary pressure.

**YES**

**Calculate required air flow rate \( Q \).**

\[
Q = \frac{\pi \times D^2 \times L}{4 \times 10^2} \times \left( \frac{P_2 + 0.101}{P_1 - P_2} \right) \times 60 \times C
\]

**Obtain the tank capacity \( V \).**

\[
V = \frac{841 - 600 Q}{\left(\frac{0.8 + 0.101}{60} \times 1 \right) \times \left( P_2 - P_1 \right) \times \frac{0.101}{9.9}}
\]

\[
V = \frac{841 - 600 Q}{\left(\frac{0.8 + 0.101}{60} \times 1 \right) \times \left( P_2 - P_1 \right) \times \frac{0.101}{9.9}}
\]

**Select the tank capacity over \( V \).**

**Calculate time \( T \) from charge characteristics table.**

\[
T = \frac{4.6}{10} \times \left( \frac{T_c - \frac{T_s}{2}}{9.9} \right)
\]

**Judgement of charge time \( T \geq T_s \)**

**YES**

**Extend stop time \( T_s \) up to charge time \( T \) or more.**

**END**

**Avoid pulsation. (Max. 0.05 MPa)**

**Select the tank from table below.**

**Tank model**
- VBAT05A(1)
- VBAT05S(1)
- VBAT10A(1)
- VBAT10S(1)
- VBAT20A(1)
- VBAT20S(1)
- VBAT38A(1)
- VBAT38S(1)

**Applicable combination model**
- VBA0A/11A
- VBA20A/22A
- VBA40A/42A/43A

**Note 1)** \( P_2 \) is the necessary supply pressure to a cylinder, and set the pressure below the lower limit of pressure inside the tank.

**Note 2)** \( P_3 \) is the output pressure of the booster regulator, which is also the upper limit of charge pressure to the tank.

**Caution**

- Set the pressure increase ratio of the VBA11A (pressure increase ratio 4) to 2 or more. As a malfunction may occur when operated at a pressure increase ratio of 2 times or less, operate at a pressure increase ratio of 2 (VBA10, VBA20A, etc.).
- Since the booster regulator is a compressor powered by the air, it consumes the air. The air consumption is approximately 1.2 times (pressure increase ratio 2) or 3.7 times (pressure increase ratio 4) larger than the outlet side volume. Therefore, the booster regulator requires a supply capacity of the inlet side volume that is approximately 2.2 times (pressure increase ratio 2) or 3.7 times (pressure increase ratio 4) larger than the outlet side volume.

**Example**

\[
D = 84 \text{ mm} \\
L = 0.3 \text{ m} \\
W = 2 \text{ mm/s} \\
C = 10 \text{ pc.} \\
T_c = 3 \text{ s} \\
T_s = 1 \text{ s} \\
P_1 = 0.8 \text{ MPa} \\
P_2 = 1.0 \text{ MPa} \\
Q = 841 \text{ L/min (ANR)}
\]

\[
V = \frac{841 - 600 \times 841}{\left(\frac{0.8 + 0.101}{60} \times 1 \right) \times 0.8} = 4.6 \text{ [L]}
\]

**Table of VBA Series**

<table>
<thead>
<tr>
<th>Tank model</th>
<th>Internal capacity</th>
<th>Applicable combination model</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBAT05A(1)</td>
<td>5L</td>
<td>VBA0A/11A</td>
</tr>
<tr>
<td>VBAT05S(1)</td>
<td>5L</td>
<td>VBA0A/11A</td>
</tr>
<tr>
<td>VBAT10A(1)</td>
<td>10L</td>
<td>VBA20A/22A</td>
</tr>
<tr>
<td>VBAT10S(1)</td>
<td>10L</td>
<td>VBA20A/22A</td>
</tr>
<tr>
<td>VBAT20A(1)</td>
<td>20L</td>
<td>VBA40A/42A/43A</td>
</tr>
<tr>
<td>VBAT20S(1)</td>
<td>20L</td>
<td>VBA40A/42A/43A</td>
</tr>
<tr>
<td>VBAT38A(1)</td>
<td>38L</td>
<td>VBA40A/42A/43A</td>
</tr>
<tr>
<td>VBAT38S(1)</td>
<td>38L</td>
<td>VBA40A/42A/43A</td>
</tr>
</tbody>
</table>

**Review the size and select a different booster regulator.**

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.
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 knob operation and pressure adjustment in the drive chamber by feeding back the outlet pressure.

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

* When using two booster regulators for 2-stage pressure boost, be sure to supply sufficient flow to each booster regulator in order to stabilize the booster regulator inlet pressure. Refer to Selection 2. on page 1016 for the inlet side supply amount.

* 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.

Initially, inlet pressure \(P_1\) passes through the check valve, fills \(P_2\), and results in \(P_1 = P_2\).


## 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. If operation at a flow rate that falls within the unstable area \( P_1 \geq P_2 \) occurs due to outlet pressure consumption, install an air tank, etc. (Refer to page 1013.)
   - 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.
   - If operated so that the inlet pressure and outlet pressure are exhausted every operational cycle, the flow rate will occasionally fall within the unstable area shown in the Flow Rate Characteristics graphs on pages 1012 and 1013, resulting in the switching valve stopping halfway and failing to increase the pressure. (The restart method is shown on page 1017-1.)
   - When exhausting inlet pressure or outlet pressure (residual pressure), supply inlet pressure to the booster regulator after supplying the inlet pressure to the outlet side volume.

### Selection

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 and cycle time) required for the outlet side of the booster regulator, check the selection procedures described in this catalog or model selection software for size selection of the booster regulator. Model selection can be done using the selection software on the SMC website. Go to Documents/Downloads → Model Selection Software → Booster Regulators
   - Since the booster regulator is a compressor powered by the air, it consumes the air. The air consumption is approximately 1.2 times (pressure increase ratio 2) or 3.7 times (pressure increase ratio 4) larger than the outlet side volume. Therefore, the booster regulator requires a supply capacity of the inlet side volume that is approximately 2.2 times (pressure increase ratio 2) or 4.7 times (pressure increase ratio 4) larger than the outlet side volume.
   - Set the pressure of the VBA10A, VBA20A, VBA22A, VBA40A, VBA42A or VBA43A (pressure increase ratio 2) to a level that is at least 0.1 MPa higher than the inlet pressure. If the pressure differential is 0.1 MPa or less, the internal operating pressure becomes the minimum operating pressure or less and the switching valve may remain at the intermediate position, causing a restart failure.
   - Set the pressure increase ratio of the VBA11A (pressure increase ratio 4) to 2 or more. When the VBA11A is used at a pressure increase ratio of 2 or less, the internal operating pressure becomes the minimum operating pressure or less and the switching valve may remain at the intermediate position, causing a restart failure.
   - When operating the booster regulator continuously for longer periods of time, particularly confirm its service life.
   - The service life of the booster regulator depends on not the operation hours but the operating cycles (piston sliding distance). The operating cycles (piston sliding distance) depend on the outlet flow of the booster regulator. Thus, when more outlet flow of the booster regulator is used, its service life becomes shorter. Selecting a booster regulator of a larger size will result in reduced operation frequency, thus increasing the service life of the product.
   - When using two booster regulators for 2-stage pressure boost, be sure to provide a stable supply of pressure to the downstream booster regulator, and install a pressure vessel such as an air tank, etc., between the booster regulators. (Refer to the circuit diagram shown on page 1015.)
1. Setting the pressure on the knob-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 knob, releasing the lock, and rotating the knob in the direction of the arrow (+).
- There is an upper and lower limit for the knob rotation. If over-rotating the knob even after reaching to the limit, the internal parts may be damaged. If the knob suddenly feels heavy while being turned, stop turning the knob.
- Once the setting is completed, push the knob down and lock it.
- To decrease the outlet pressure, after the pressure has been set, rotate the knob in the direction of the arrow (–). The residual air will be released from the area of the knob, 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
Caution

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
• If the air on the OUT side is not consumed for a long period of time when the pressure increase ratio is set to 2 or less, there may be delays in the left and right switching operation of the piston, which may result in air leakage from the exhaust port. This phenomenon is not considered abnormal. The leak will stop once the air on the OUT side is consumed.

5. Maintenance
Booster regulator
• 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 knob.
  • 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 lot 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 1018, and the figure shows the position of the parts.

Silencer
It is normal for the silencer to change in color due to the turbine oil, grease, and drain contained in the exhaust, the surrounding atmosphere, etc. Back pressure will be generated if the silencer is clogged, which may result in the switching valve stopping halfway and failing to increase the pressure; therefore, be sure to perform regular maintenance on the product.

6. Restart method when the pressure will not increase
• With the inlet side in a pressurized state, use your finger, a finger valve, etc., to block the exhaust port, let the exhaust pressure rise, and then quickly release it.
• Release inlet and outlet pressure air and, after confirming the safety of the downstream devices, resupply the air.
Construction/Replacement Parts

VBA10A

VBA11A

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

Replacement Parts/Kit No.

Place an order with the following applicable kit number.

<table>
<thead>
<tr>
<th>Model</th>
<th>VBA10A</th>
<th>VBA20A</th>
<th>VBA40A</th>
<th>VBA22A</th>
<th>VBA42A</th>
<th>VBA43A</th>
<th>VBA11A</th>
</tr>
</thead>
</table>

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

- Piston seal
- Governor assembly
- Check valve
- Gasket
- Rod seal
- Mounting screw
- Cover C assembly

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>VBA10A</th>
<th>VBA20A</th>
<th>VBA40A</th>
<th>VBA22A</th>
<th>VBA42A</th>
<th>VBA43A</th>
<th>VBA11A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Piston seal</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Governor assembly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Check valve</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Gasket</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Rod seal</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Mounting screw</td>
<td>8</td>
<td>12</td>
<td>8</td>
<td>12</td>
<td>8</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Cover C assembly</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
</tr>
</tbody>
</table>

- Grease pack 1 each large and small

* 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.
* Refer to page 1011 for pressure gauges.
**Dimensions**

**VBA22A-03**

- **IN side gauge port**: 1/8
- **OUT side gauge port**: 1/8
- **Pressure gauge (Option)**: 300

**VBA42A-04**

- **IN side gauge port**: 1/8
- **OUT side gauge port**: 1/8
- **Pressure gauge (Option)**: 404

**VBA43A-04**

- **IN side gauge port**: 1/8
- **OUT side gauge port**: 1/8
- **Pressure gauge (Option)**: 404

**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 have been changed to general resin.

2. **CE explosion-proof directive (ATEX) compliant**

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.

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

---

**Notes:**

- Made to Order Copper-free/Fluorine-free (Excludes models with a pressure gauge (Option))
- Made to Order CE explosion-proof directive (ATEX): Category 3GD
- Made to Order Ozone resistant

* This option cannot be selected for air tank with safety valve.
Air Tank
VBAT Series

How to Order

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

VBAT10A1-S

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Internal capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>5 L</td>
</tr>
<tr>
<td>10</td>
<td>10 L</td>
</tr>
<tr>
<td>20</td>
<td>20 L</td>
</tr>
<tr>
<td>38</td>
<td>38 L</td>
</tr>
</tbody>
</table>

Material

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Carbon steel (SS400)</td>
</tr>
<tr>
<td>S</td>
<td>Stainless steel 304</td>
</tr>
</tbody>
</table>

Tank internal capacity

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Internal capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>5 L</td>
</tr>
<tr>
<td>10</td>
<td>10 L</td>
</tr>
<tr>
<td>20</td>
<td>20 L</td>
</tr>
<tr>
<td>38</td>
<td>38 L</td>
</tr>
</tbody>
</table>

Material

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Carbon steel (SS400)</td>
</tr>
</tbody>
</table>

Note) The thread type for each port is Rc.

Option

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Option</th>
<th>Applicable model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>None</td>
<td>All models</td>
</tr>
<tr>
<td>V</td>
<td>Drain valve</td>
<td>VBAT05A1, VBAT10A1, VBAT20A1, VBAT38A1</td>
</tr>
</tbody>
</table>

CE Certified Product

VBAT10AF-SVQ

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Accessories</th>
<th>Applicable model</th>
</tr>
</thead>
<tbody>
<tr>
<td>RV</td>
<td>Safety valve (Set pressure: 1 MPa)</td>
<td>VBAT20A, VBAT38A</td>
</tr>
<tr>
<td>SV</td>
<td>Safety valve (Set pressure: 2 MPa)</td>
<td>VBAT05A, VBAT10A</td>
</tr>
</tbody>
</table>

Thread type

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Thread type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Rc</td>
</tr>
<tr>
<td>F</td>
<td>G</td>
</tr>
</tbody>
</table>

Caution

When used as a single unit (not connected with a booster regulator) and pressurized at over 1 MPa at normal temperatures, the air tank falls under the scope of the “High Pressure Gas Safety Act” in Japan.
Chinese Pressure Vessel Regulations Compliant Product

**VBAT 05[A1] - U - X104**

- **Safety valve/Pressure gauge set**
  - Symbol: U
  - Applicable model: VBAT05A1, VBAT10A1, VBAT05S1, VBAT10S1

**ASME Standards Compliant Product**

**VBAT 05[A1] - E - X105**

- **ASME standards compliant product**
  - Note: This product can only be purchased from the SMC Corporation of America. For details on how to order and lead times, please contact SMC separately.

**List of Air Tank for Overseas**

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Law</th>
<th>Exportable models</th>
<th>Details</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>1. Occupational Safety and Health Act</td>
<td>VBAT05A1-X101 (Note 2)</td>
<td>1. KCs Certification compliant product</td>
<td>VBAT-K (Note 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT05A1-X101</td>
<td>2. A safety valve must be mounted.</td>
<td>VBAT-V1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10A1-X101</td>
<td>A safety valve must be mounted.</td>
<td>(Drain valve)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT05S1-X101</td>
<td>A safety valve must be mounted.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10S1-X101</td>
<td>A safety valve must be mounted.</td>
<td></td>
</tr>
<tr>
<td>Thailand, Taiwan</td>
<td>No applicable standard</td>
<td>VBAT05S1-X101</td>
<td>Not applicable when maximum operating pressure: 0.97 MPa</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20S1-X101</td>
<td>Not applicable when maximum operating pressure: 0.97 MPa</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT38S1-X101</td>
<td>Not applicable when maximum operating pressure: 0.97 MPa</td>
<td></td>
</tr>
</tbody>
</table>

Note 1) VBAT-K is not RoHS compliant.

Note 2) KCs certification is not applicable for this product. (Exception: When the inner diameter is less than 150 mm) KCs certification is not required for the VBAT05A1-X101, so there is no certification mark on the product.

In addition, as KCs certification is not applicable for this product, the installation of a safety valve is optional. If installation is desired, the VBAT-R may also be used.
The Accessory Kit is a Set of Nos. ① to ④.

### Specifications

**Standard Product (For Japanese Market)**

<table>
<thead>
<tr>
<th>Model</th>
<th>VBAT05S1-1</th>
<th>VBAT10S1-1</th>
<th>VBAT20S1-1</th>
<th>VBAT38S1-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Compressed air</td>
<td>Compressed air</td>
<td>Compressed air</td>
<td>Compressed air</td>
</tr>
<tr>
<td>Tank capacity (L)</td>
<td>5</td>
<td>10</td>
<td>20</td>
<td>38</td>
</tr>
<tr>
<td>Max. operating pressure (MPa)</td>
<td>VBAT-R</td>
<td>VBAT-S</td>
<td>VBAT-R</td>
<td>VBAT-S</td>
</tr>
<tr>
<td>IN port size</td>
<td>3/8</td>
<td>1/2</td>
<td>1/2</td>
<td>3/4</td>
</tr>
<tr>
<td>OUT port size</td>
<td>3/8</td>
<td>1/2</td>
<td>1/2</td>
<td>3/4</td>
</tr>
<tr>
<td>Proof pressure (MPa)</td>
<td>VBAT-R</td>
<td>VBAT-S</td>
<td>VBAT-R</td>
<td>VBAT-S</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>0 to 75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>Horizontal (Floor mounting)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>VBAT-R</td>
<td>VBAT-S</td>
<td>VBAT-R</td>
<td>VBAT-S</td>
</tr>
<tr>
<td>Material</td>
<td>Carbon steel (SS400)</td>
<td>Stainless steel 304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint</td>
<td>Outside: Silver paint, Inside: Rustproof paint</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Options/Accessories/Part No.**

### For VBAT-A1 (Carbon Steel)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety valve (When selecting an option)</td>
<td>VBAT-R (Set pressure: 1 MPa), VBAT-S (Set pressure: 2 MPa)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drain valve (When selecting an option)</td>
<td>VBAT-V1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### For VBAT-S1 (Stainless Steel)

<table>
<thead>
<tr>
<th>Model</th>
<th>VBAT05S1-1</th>
<th>VBAT10S1-1</th>
<th>VBAT20S1-1</th>
<th>VBAT38S1-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain valve (When selecting an option)</td>
<td>VBAT-V1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Made to Order**

1 Copper-free/Fluorine-free

VBAT-V2 (A set of stainless steel needle valve and fittings) is included with the standard product.

**Material**

- **Symbol**: A (Carbon steel (SS400))
- **Material**: Stainless steel

Note 1) The thread type for each port is Rc.

Note 2) Stainless steel fittings and a needle valve are included in the same container. (For lead times and detailed dimensions, please contact SMC.) It can be ordered separately.

Note 3) Since neither copper nor fluorine parts are used for the tank, the standard model can be used as a copper-free product when drain valve is not necessary.

Note 4) The material of the safety valve is brass only.
Dimensions: Standard Product (For Japanese Market)

**VBAT05A1** Material: Carbon steel
Connected to VBA10A, 11A

**VBAT10A1** Material: Carbon steel
Connected to VBA10A, 11A

**VBAT20A1** Material: Carbon steel
Connected to VBA20A, 40A

**VBAT22A1** Connected to VBA22A, 42A

---

* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
** 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.

---

<table>
<thead>
<tr>
<th>Booster regulator model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D (Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBA20A</td>
<td>481</td>
<td>394</td>
<td>Rc 3/8</td>
<td>—</td>
</tr>
<tr>
<td>VBA40A</td>
<td>520</td>
<td>429.8</td>
<td>Rc 1/2</td>
<td>—</td>
</tr>
<tr>
<td>VBA22A</td>
<td>444</td>
<td>394</td>
<td>Rc 3/8</td>
<td>469</td>
</tr>
<tr>
<td>VBA42A</td>
<td>477</td>
<td>429.8</td>
<td>Rc 1/2</td>
<td>493</td>
</tr>
</tbody>
</table>

Note) When option G (pressure gauge) is selected.
**Dimensions: Standard Product (For Japanese Market)**

**VBAT38A1** Material: Carbon steel

Connected to VBA20A, 40A

**VBAT05S1** Material: Stainless steel 304

Connected to VBA10A, 11A

**VBAT10S1** Material: Stainless steel 304

Connected to VBA10A, 11A

Connected to VBA20A

Connected to VBA22A

---

* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.  
** 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.
Dimensions: Standard Product (For Japanese Market)

**VBAT20S1**  Material: Stainless steel 304
Connected to VBA20A, 40A, 43A

**VBAT38S1**  Material: Stainless steel 304
Connected to VBA20A, 40A, 43A

**VBAT05 A1-** R
With safety valve

**VBAT 20 A1-** R
With safety valve
**CE Marking-Conformity Products**

### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Model</th>
<th>VBAT05A-SV-Q</th>
<th>VBAT10A-SV-Q</th>
<th>VBAT20A-RV-Q</th>
<th>VBAT38A-RV-Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank capacity (L)</td>
<td>5</td>
<td>10</td>
<td>20</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Max. operating pressure (MPa)</td>
<td>2.0</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN port size</td>
<td>3/8</td>
<td>1/2</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OUT port size</td>
<td>3/8</td>
<td>1/2</td>
<td>1/2</td>
<td>3/4</td>
<td></td>
</tr>
<tr>
<td>Proof pressure (MPa)</td>
<td>3.3</td>
<td></td>
<td></td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td></td>
<td></td>
<td></td>
<td>0 to 75</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>Horizontal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>6.6</td>
<td>10</td>
<td>14</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Carbon steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint</td>
<td>Outside: Silver paint, Inside: Rustproof paint</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) Accessories are included in the same container.
Note 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.

### Accessories/Part No.

**<CE Marking-Conformity Products>**

<table>
<thead>
<tr>
<th>Model</th>
<th>VBAT05A-SV-Q</th>
<th>VBAT10A-SV-Q</th>
<th>VBAT20A-RV-Q</th>
<th>VBAT38A-RV-Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety valve</td>
<td>VBAT-S (Set pressure: 2 MPa)</td>
<td></td>
<td>VBAT-R (Set pressure: 1 MPa)</td>
<td></td>
</tr>
<tr>
<td>Drain valve</td>
<td>VBAT-V1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Bushing assembly (with O-ring)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>②</td>
<td>Hexagon socket head taper screwed plug (for drain port)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>③</td>
<td>Hexagon socket head cap screw</td>
<td>4</td>
<td>4 (VBA1A)</td>
<td>4 (VBA2A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>④</td>
<td>Anchor bolt/nut</td>
<td>—</td>
<td>—</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td>Hexagon socket head taper screwed plug (for safety valve port)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Drain valve: VBAT-V1**

**Body material: Brass**

**Safety valve: VBAT-R, VBAT-S**

**Body material: Brass**
### Dimensions: CE Marking-Conformity Products

**VBAT05A-Q**  
**Material: Carbon steel**  
Connected to VBA10A, 11A

* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.  
** 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.

**VBAT10A-Q**  
**Material: Carbon steel**  
Connected to VBA10A, 11A

* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.  
** 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.

**Connected to VBA20A**

**Connected to VBA22A**

* When option G (pressure gauge) is selected
VBAT Series

Dimensions: CE Marking-Conformity Products

VBAT20A-Q [Material: Carbon steel]

Connected to VBA20A, 40A

Connected to VBA22A, 42A

VBAT38A-Q [Material: Carbon steel]

Connected to VBA20A, 40A

Connected to VBA22A, 42A

* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
** 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.
**ASME Standards Compliant Product**

**Specifications**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VBAT05, 10-X105</td>
<td>5</td>
<td>2.0</td>
<td>3/8</td>
<td>3/8</td>
<td>2.2</td>
<td>0 to 75</td>
<td>Horizontal (Cannot be mounted to walls or ceilings.)</td>
<td>4.5/3.2</td>
<td>Carbon steel SA-414 (Plug for inspection port is made of carbon steel.)</td>
<td>Outside: Silver gray, Inside: Phosphate coated treatment</td>
<td>Outside: Acid cleaning</td>
</tr>
<tr>
<td></td>
<td>VBAT10, 10-X105</td>
<td>10</td>
<td></td>
<td>1/2</td>
<td>1/2</td>
<td></td>
<td></td>
<td></td>
<td>9.1/8.2</td>
<td>Stainless steel SA-240 316 (Plug for inspection port is made of stainless steel.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VBAT20, 10-X105</td>
<td>22</td>
<td></td>
<td>1/2</td>
<td>1/2</td>
<td></td>
<td></td>
<td></td>
<td>15.0/13.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VBAT38, 10-X105</td>
<td>38</td>
<td></td>
<td>3/4</td>
<td>3/4</td>
<td></td>
<td></td>
<td></td>
<td>20.9/20.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VBAT05A01-X105</td>
<td>Carbon steel</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>VBAT</td>
<td>VBAT</td>
<td>VBAT</td>
</tr>
<tr>
<td></td>
<td>VBAT10A01-X105</td>
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<td>VBAT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VBAT20A01-X105</td>
<td></td>
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<td>VBAT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VBAT38A01-X105</td>
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<td></td>
<td></td>
<td></td>
<td>VBAT</td>
<td></td>
</tr>
</tbody>
</table>

**Options/Accessory Numbers**

**<VBAT A1-1-X105 (Carbon steel)>**

<table>
<thead>
<tr>
<th>Thread type</th>
<th>Accessory kit</th>
<th>Safety valve</th>
<th>Drain valve (When selecting an option)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPT</td>
<td>VBAT5A-Y-3N</td>
<td>VBAT-E1N</td>
<td>VBAT-V1N</td>
</tr>
<tr>
<td>Rc</td>
<td>VBAT10A-Y-3N</td>
<td>VBAT10A-Y-3</td>
<td></td>
</tr>
</tbody>
</table>

**<VBAT S1-1-X105 (Stainless steel)>**

<table>
<thead>
<tr>
<th>Thread type</th>
<th>Accessory kit</th>
<th>Safety valve</th>
<th>Drain valve (When selecting an option)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPT</td>
<td>VBAT5S-Y-4N</td>
<td>VBAT-E1N</td>
<td>VBAT-V1N</td>
</tr>
<tr>
<td>Rc</td>
<td>VBAT10S-Y-4N</td>
<td>VBAT10S-Y-4</td>
<td></td>
</tr>
</tbody>
</table>

The accessory kit is a set of nos. ① to ④.

<table>
<thead>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>O-ring</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>②</td>
<td>Hexagon socket head tapered plug (For drain port)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>③</td>
<td>Hexagon socket head cap screw</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>④</td>
<td>Anchor bolt/nut</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Drain valve:** VBAT-V1N

*When thread type is NPT.*

**Keep the manufacturer’s certificate of compliance in a safe place.**
Dimensions

VBAT05AN1-E□-X105/VBAT05A1-E□-X105
VBAT05SN1-E□-X105/VBAT05S1-E□-X105

Connected to VBA10A, 11A

* Order the booster regulator VBA separately.
* 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.
*1 The length may be longer than the specification if the plugs mounted on the tank are not tightly fitted to the ends.

VBAT10AN1-E□-X105/VBAT10A1-E□-X105
VBAT10SN1-E□-X105/VBAT10S1-E□-X105

Connected to VBA10A, 11A

* Order the booster regulator VBA separately.
* 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.
*1 The length may be longer than the specification if the plugs mounted on the tank are not tightly fitted to the ends.

* Connected to VBA20A

* Connected to VBA22A

Air Tank VBAT Series
The booster regulator is not subject to ASME standards.
Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VBAT05-U-X104</th>
<th>VBAT10-U-X104</th>
<th>VBAT20-T-X104</th>
<th>VBAT38-T-X104</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Compressed air</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tank capacity (L)</td>
<td>VBAT A1-104</td>
<td>5</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>Max. operating pressure (MPa)</td>
<td>1.5</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN port size</td>
<td>3/8</td>
<td>1/2</td>
<td>1/2</td>
<td>3/4</td>
</tr>
<tr>
<td>OUT port size</td>
<td>3/8</td>
<td>1/2</td>
<td>1/2</td>
<td>3/4</td>
</tr>
<tr>
<td>Proof pressure (MPa)</td>
<td>VBAT A1-104</td>
<td>2.39</td>
<td>2.05</td>
<td></td>
</tr>
<tr>
<td>VBAT S1-104</td>
<td>2.40</td>
<td>1.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>0 to 75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>VBAT A1-104</td>
<td>6.6</td>
<td>11.5</td>
<td>14</td>
</tr>
<tr>
<td>VBAT S1-104</td>
<td>4.6</td>
<td>8.5</td>
<td>13.9</td>
<td>19.8</td>
</tr>
<tr>
<td>Material</td>
<td>VBAT A1-104</td>
<td>Carbon steel (Equivalent to SS400)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VBAT S1-104</td>
<td>Stainless steel (Equivalent to stainless steel 304)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Paint</td>
<td>VBAT A1-104</td>
<td>Outside: Silver gray, Inside: Phosphate coated treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface treatment</td>
<td>VBAT A1-104</td>
<td>—</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>VBAT S1-104</td>
<td>Outside: Acid cleaning, Sandblasting Insid: Acid cleaning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Included parts

- Safety valve/Pressure gauge set: Safety valve, Pressure gauge, Piping for tank connections
- Accessories: O-ring, Drain port plug, VBA connection screw (4 pcs.), Anchor bolt/nut (4 pcs.: only 22 L/38 L)
- Product certificates: Product certificate, Product safety performance supervision test certificate, Product weight certificate, Manufacture license, Product manual, Completion drawing
- Operation manual

Note) There may be scratches, rubbing, stains, or discoloration on the surface of the product which do not affect its function or performance. The external appearance of the welded portion may also vary, but this does not affect the performance of the product.

The product certificates are required when exporting to and using the product in China. Keep them in a safe place.

Accessories/Part No.

<For VBAT A1-104(Carbon Steel)>

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Drain valve (Order it separately.)</td>
<td>VBAT-V1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<For VBAT S1-104(Stainless Steel)>

<table>
<thead>
<tr>
<th>Model</th>
<th>VBAT05S1-U-X104</th>
<th>VBAT10S1-U-X104</th>
<th>VBAT20S1-T-X104</th>
<th>VBAT38S1-T-X104</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain valve (Order it separately.)</td>
<td>VBAT-V1</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

The Accessory Kit is a Set of Nos. ① to ④.

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Model</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>O-ring</td>
<td>VBAT5A-Y-3</td>
<td>1 (VBA1-A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10A-Y-3</td>
<td>1 (VBA2-A)</td>
</tr>
<tr>
<td>②</td>
<td>Hexagon socket head taper screwed</td>
<td>VBAT5S-Y-4</td>
<td>4 (VBA1-A)</td>
</tr>
<tr>
<td></td>
<td>plug (for drain port)</td>
<td>VBAT10S-Y-4</td>
<td>4 (VBA2-A)</td>
</tr>
<tr>
<td>③</td>
<td>Hexagon socket head cap screw</td>
<td>VBAT20A-Y-3</td>
<td>4</td>
</tr>
<tr>
<td>④</td>
<td>Anchor bolt/nut</td>
<td>VBAT20A-Y-4</td>
<td>4</td>
</tr>
</tbody>
</table>
**VBAT-X104**

**Dimensions**

**VBAT05A1-U-X104**  
Material: Carbon steel

Safety valve/Pressure gauge set  
(Supplied with product)

Safety valve port  
Rc3/8  
Tank IN port  
Rc3/8  
Tank OUT port  
Rc3/8  
Spare port  
2 x Rc1/2  
Drain valve  
Rc1/4  

drain port  
Rc1/4

**VBAT10A1-U-X104**  
Material: Carbon steel

Safety valve/Pressure gauge set  
(Supplied with product)

Safety valve port  
Rc3/8  
Tank IN port  
Rc3/8  
Tank OUT port  
Rc3/2  
Spare port  
2 x Rc1/2  
Drain valve  
Rc1/4

**Connected to VBA10A**

**Connected to VBA20A**

**Connected to VBA22A**

* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.

++ 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.
### Dimensions

**VBAT20A1-T-X104**  
**Material:** Carbon steel

Safety valve/Pressure gauge set  
(Supplied with product)

Connected to VBA20A, 40A

**VBAT38A1-T-X104**  
**Material:** Carbon steel

Safety valve/Pressure gauge set  
(Supplied with product)

Connected to VBA20A, 40A

- The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
- 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-X104**

**ARJ**
**AR425 to 935**
**ARX**
**ARM**
**ARP**
**IR**
**IRV**
**VEX**
**SRH**
**SRP**
**SRF**
**ITV**
**IC**
**ITVH**
**ITVX**
**PVQ**
**VY1**

**VBAT**

**VBA**

**AP100**
Dimensions

**VBAT05S1-U-X104** Material: Stainless steel

Safety valve/Pressure gauge set
(Supplied with product)

* The length may be longer than the specification if the plugs mounted on the tank are not tightly fitted to the ends.

** 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.

**VBAT10S1-U-X104** Material: Stainless steel

Safety valve/Pressure gauge set
(Supplied with product)

* The length may be longer than the specification if the plugs mounted on the tank are not tightly fitted to the ends.

** 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.
Air Tank  VBAT-X104

Dimensions

**VBAT20S1-T-X104**  
Material: Stainless steel

Safety valve/Pressure gauge set  
(Supplied with product)

Connected to VBA20A, 40A

Connected to VBA22A, 42A

Booster regulator IN port

OUT

EXH: C

Booster regulator IN port

OUT

EXH: C

Tank IN port  
Rc3/4

Tank OUT port  
Rc1/2

Drain port  
Rc1/4

Spare port  
2 x Rc1/2

+ The length may be longer than the specification if the plugs mounted on the tank are not tightly fitted to the ends.

**VBAT38S1-T-X104**  
Material: Stainless steel

Safety valve/Pressure gauge set  
(Supplied with product)

Connected to VBA20A, 40A

Connected to VBA22A, 42A

Booster regulator IN port

OUT

EXH: C

Booster regulator IN port

OUT

EXH: C

Tank IN port  
Rc3/4

Tank OUT port  
Rc3/4

Drain port  
Rc1/4

Spare port  
2 x Rc1/2

+ The length may be longer than the specification if the plugs mounted on the tank are not tightly fitted to the ends.

+ 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.
## Warning

### 1. Operating pressure
- Operate this product below the maximum operating pressure. If it is necessary, take appropriate safety measures to ensure that the maximum operating pressure is not exceeded.
- **When the tank alone is used**
  Use a pressure switch or a safety valve to ensure that the maximum operating pressure is not exceeded.

### 2. Connection
- The air tank (carbon steel) port portion (including the seal surface) and the mounting screws are untreated. The generation of rust on these untreated parts, as well as the inner surface of the tank, may occur to a degree that will not interfere with the performance of the product. If the generation of rust must be avoided, please consider selecting the stainless steel specification.
- Be sure to air blow (flush) the inside of the air tank before use. Dust or oil may flow out to the outlet side. After conducting air blow (flushing), install an air filter (AF series), etc., on the OUT port of the air tank.
- A VBA booster regulator can be connected directly with the tank accessories as indicated combinations below.

### Caution

#### 1. Accessories
- Refer to the operation manual regarding combining booster regulators with older model air tanks.
- The accessories are secured by bands to the feet of the air tank. Once removed, make sure not to lose them.

#### 2. Installation
- Install the tank away from people. It is dangerous if the accumulated air inside the tank were to seep out.
- Do not mount the air tank on a moving part or a place with vibration. If it must be used in such an area due to unavoidable circumstances, please contact SMC beforehand.
- When connecting a booster regulator with the tank, refer to the operation manual first, which is provided with the air tank before assembling.
- To mount the air tank on a floor surface, use the four holes to secure the tank with bolts or anchor bolts.
- Put measures into place to prevent load and vibrations from the piping from being applied to the air tank.

## Design

### Air Tank Compatibility Chart

<table>
<thead>
<tr>
<th>Air tank</th>
<th>Booster regulator</th>
<th>VBA10A/11A</th>
<th>VBA20A/22A</th>
<th>VBA40A/42A</th>
<th>VBA43A</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBAT05A(1)</td>
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<td>-</td>
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<tr>
<td>VBAT05S(1)</td>
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<tr>
<td>VBAT10A(1)</td>
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<td>VBAT10S(1)</td>
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<tr>
<td>VBAT20A(1)</td>
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<tr>
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<td>VBAT38A(1)</td>
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<tr>
<td>VBAT38S(1)</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* Excludes the Chinese pressure vessel regulations compliant product (X104)

## Mounting

#### Maintenance

### Warning

#### 1. Inspection
- The use of pressure vessels could lead to an unexpected accident due to external damage or internal corrosion caused by drainage. Therefore, make sure to check periodically for external damage, or the extent of internal corrosion through the port hole. An ultrasonic thickness indicator may also be used to check for any reduction in material thickness.

#### 2. Draining
- If this product is used with a large amount of drainage, the drainage could flow out, leading to equipment malfunction or corrosion inside the tank. Therefore, drain the system once a day.

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